Government of Western Australia
Development Assessment Panels

Metro Outer Joint Development Assessment Panel Agenda

Meeting Date and Time: Monday, 9 May 2022; 9:30am
Meeting Number: MOJDAP/171
Meeting Venue: Electronic Means

To connect to the meeting via your computer -
https://us06web.zoom.us/j/82521789861

To connect to the meeting via teleconference dial the following phone number - 08 7150 1149
Insert Meeting ID followed by the hash (#) key when prompted - 825 2178 9861

This DAP meeting will be conducted by electronic means (Zoom) open to the public rather than requiring attendance in person.

1 Table of Contents

1. Opening of Meeting, Welcome and Acknowledgement 3
2. Apologies 3
3. Members on Leave of Absence 3
4. Noting of Minutes 3
5. Declarations of Due Consideration 3
6. Disclosure of Interests 3
7. Deputations and Presentations 3
8. Form 1 – Responsible Authority Reports – DAP Applications 5
8.1 Lot 503 (113-121) Safety Bay Road, Shoalwater 5
8.2 Lot 53 (No.67) Folly Road, Baldivis 6
9. Form 2 – Responsible Authority Reports – DAP Amendment or Cancellation of Approval 6
Nil 6
10. State Administrative Tribunal Applications and Supreme Court Appeals 6
11. General Business 6
12. Meeting Closure 6

Attendance

DAP Members

Mr Ian Birch (Presiding Member)
Ms Sheryl Chaffer (Deputy Presiding Member)
Mr Jason Hick (Third Specialist Member)
Cr Lorna Buchan (Local Government Member, City of Rockingham)
Cr Mark Jones (Local Government Member, City of Rockingham)

Officers in attendance

Mr David Banovic (City of Rockingham)
Mr Mike Ross (City of Rockingham)

Item 8.1
Mr Neels Pretorius (City of Rockingham)
Mr Danny Sriono (City of Rockingham)

Item 8.2
Mr Chris Parlane (City of Rockingham)
Mrs Emma Lambert (City of Rockingham)

Minute Secretary

Ms Megan Ventris (DAP Secretariat)
Ms Zoe Hendry (DAP Secretariat)

Applicants and Submitters

Item 8.1
Mr Alessandro Stagno (Apex Planning)
Mr Behnam Bordbar (Transcore)

Item 8.2
Mr Gorki Bogdanich (Archetype Design Studio)
Ms Clare McLean (Peter Webb & Associates)
Mr Michael Paton
Mr Gregory Spoonheim
Ms Coleen Spoonheim
Mr Alanda Spoonheim
Mr Brad Woolley
Ms Margaret Smith
Ms Caroline Meeusen
Mr Geoffrey Tomlinson
Ms Michelle Harvey
Ms Debbie MacKenzie
Mr Peta Sims
Ms Fiona Tassell
Ms Julie Davey

Members of the Public / Media

Nil.

1. Opening of Meeting, Welcome and Acknowledgement

The Presiding Member declares the meeting open and acknowledges the traditional owners and pay respects to Elders past and present of the land on which the meeting is being held.

This meeting is being conducted by electronic means (Zoom) open to the public. Members are reminded to announce their name and title prior to speaking.

2. Apologies

Nil.

3. Members on Leave of Absence

Nil.

4. Noting of Minutes

Signed minutes of previous meetings are available on the DAP website.

5. Declarations of Due Consideration

The Presiding Member notes an addendum to the agenda was published to include details of a DAP request for further information and responsible authority response in relation to Item 8.1 & 8.2, received on 6 May 2022.

Any member who is not familiar with the substance of any report or other information provided for consideration at the DAP meeting must declare that fact before the meeting considers the matter.

6. Disclosure of Interests

Member	Item	Nature of Interest
Cr Lorna Buchan	8.1 & 8.2	Impartiality Interest – Under clause 2.4.9 of the DAP Code of Conduct, Cr Buchan participated in the prior Council decision in accordance with her functions as a member of a local government. However, under clause 2.1.2 of the DAP Code of Conduct, Cr Buchan acknowledge that she is not bound by any previous decision or resolution of the local government. Cr Buchan undertakes to exercise judgment in relation to any DAP application before her, which she will consider on its planning merits.
Cr Mark Jones	8.1 & 8.2	Impartiality Interest – Under clause 2.4.9 of the DAP Code of Conduct, Cr Jones participated in the prior Council decision in accordance with his functions as a member of a local government. However, under clause 2.1.2 of the DAP Code of Conduct, Cr Jones acknowledge that he is not bound by any previous decision or resolution of the local government. Cr Jones undertakes to exercise judgment in relation to any DAP application before him, which he will consider on its planning merits.

7. Deputations and Presentations

7.1 Mr Behnam Bordbar (Transcore) presenting in support of the recommendation for the application at Item 8.1. The presentation will address explain the traffic engineering reasons why the application should be approved.

7.2 Mr Alessandro Stagno (Apex Planning) presenting in support of the recommendation for the application at Item 8.1. The presentation will address

7.3 Mr Michael Paton presenting in support of the recommendation for the application at Item 8.2. The presentation will address the negative impact of the visual and lifestyle amenity of the local area.

7.4 Mr Gregory, Ms Coleen & Mr Alanda Spoonheim presenting in support of the recommendation for the application at Item 8.2. The presentation will address the effect the development will have on the rural environment and lifestyle and the water table.

7.5 Mr Brad Woolley presenting in support of the recommendation for the application at Item 8.2. The presentation will address Support the refusal and address traffic dangers, septic system impact on wetlands, noise and light pollution and the development

7.6 Ms Margaret Smith presenting in support of the recommendation for the application at Item 8.2. The presentation will address My opposition against the Hindu Temple Development including the 89metre in length noise barrier.

7.7 Ms Caroline Meeusen presenting in support of the recommendation for the application at Item 8.2. The presentation will address the Temple structures and development, location, concern for wetlands, traffic safety, noise and light pollution.

7.8 Mr Geoffrey Tomlinson presenting in support of the recommendation for the application at Item 8.2. The presentation will address concerns for the water table and land value.

7.9 Ms Michelle Harvey presenting in support of the recommendation for the application at Item 8.2. The presentation will address the development not meeting the rural expectation of the area and environmental impact

7.10 Ms Debbie MacKenzie presenting in support of the recommendation for the application at Item 8.2. The presentation will address the location, size of development, environmental concerns – wetlands / noise, as well as logistics with roads and traffic congestion.

7.11 Mr Peta Sims presenting in support of the recommendation for the application at Item 8.2. The presentation will address the rural amenity of the location and natural environment.

7.12 Ms Fiona Tassell presenting in support of the recommendation for the application at Item 8.2. The presentation will address the concern about the development in a rural placement, design for the rural setting and noise impact

7.13 Ms Julie Davey presenting in support of the recommendation for the application at Item 8.2. The presentation will address the rural impact, not consistent with Town Planning Scheme and devastation to waterways.

7.14 Ms M Christensen has provided a written submission in support of the recommendation for the application at Item 8.2. The submission addresses the support for the refusal of the Hindu Temple Complex.

7.15 Ms Ross McCamish has provided a written submission in support of the recommendation for the application at Item 8.2. The submission addresses the support for the refusal of the Hindu Temple Complex.

7.16 Ms Kym Robinson has provided a written submission in support of the recommendation for the application at Item 8.2. The submission addresses the support for the refusal of the Hindu Temple Complex.

7.17 Mr Rob Link has provided a written submission in support of the recommendation for the application at Item 8.2. The submission addresses the support for the refusal of the Hindu Temple Complex.

7.18 Mr Gorki Bogdanich (Archetype Design Studio) presenting against the recommendation for the application at Item 8.2. The presentation will address the main design issues contained in the RAR and provide updated and compliant design plans and perspectives.

7.19 Ms Clare McLean (Peter Webb & Associates) presenting against the recommendation for the application at Item 8.2. The presentation will address the concerns of the City of Rockingham about the development intensity and address the specific design measures and how the development fits within the established amenity and semi-rural environment.

The City of Rockingham may be provided with the opportunity to respond to questions of the panel, as invited by the Presiding Member.

8. Form 1 – Responsible Authority Reports – DAP Applications

8.1 Lot 503 (113-121) Safety Bay Road, Shoalwater

Development Description:	Proposed Service Station
Applicant:	APEX Planning
Owner:	MPX Group Pty Ltd
Responsible Authority:	City of Rockingham
DAP File No:	DAP/22/02177

8.2 Lot 53 (No.67) Folly Road, Baldivis

Development Description:	Proposed Place Of Worship (Hindu Temple)
Applicant:	Archetype Design Studio
Owner:	Ms A P Byers
Responsible Authority:	City of Rockingham
DAP File No:	DAP/21/02148

9. Form 2 – Responsible Authority Reports – DAP Amendment or Cancellation of Approval

Nil.

10. State Administrative Tribunal Applications and Supreme Court Appeals

Current SAT Applications				
File No. & SAT DR No.	**LG Name**	**Property Location**	**Application Description**	**Date Lodged**
DAP/21/2047 DR257/2021	City of Swan	Lots 136 (26) & 3235 (34) Asturian Drive and Lots 137 (238) & 138 (230) Henley Street, Henley Brook	Proposed education facility	03/12/2021

11. General Business

In accordance with Section 7.3 of the DAP Standing Orders 2020 only the Presiding Member may publicly comment on the operations or determinations of a DAP and other DAP members should not be approached to make comment.

12. Meeting Closure

Government of **Western Australia**
Development Assessment Panels

Direction for Further Services from the Responsible Authority

Regulation 13(1) and DAP Standing Orders 2020 cl. 3.3

Guidelines

A DAP Member who wishes to request further services (e.g. technical information or alternate recommendations) from the Responsible Authority must complete this form and submit to daps@dplh.wa.gov.au.

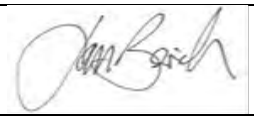
The request will be considered by the Presiding Member and if approved, the Responsible Authority will be directed to provide a response to DAP Secretariat within the form.

It is important to note that **the completed form containing the query and response will published on the DAP website** as an addendum to the meeting agenda.

DAP Application Details

DAP Name	MOJDAP/171
DAP Application Number	DAP/22/02177
Responsible Authority	City of Rockingham
Property Location	Lot 503 (113-121) Safety Bay Road, Shoalwater

Presiding Member Authorisation

Presiding Member Name	Mr Ian Birch
Signature	
Date	5 May 2022
Response Due	**6 May 2022; 2:00pm**

Nature of technical advice or information required*

1	**DAP query**	**Alternate recommendation for Approval with conditions**
	Response	Insert response to DAP query

* Any alternate recommendation sought does not infer a pre-determined position of the panel.
Any legal advice, commercially confidential or personal information will be exempt from publication.

Regulation 13 Request - Alternative Recommendation

On 5th May 2022, the Presiding Member of the Metro Outer Joint Development Assessment Panel (MOJDAP) directed the City of Rockingham to provide a response to the following:

"Alternate recommendation for Approval with Conditions."

This alternate recommendation has only been provided in response to a request from the Presiding Member of the MOJDAP, in accordance with Regulation 13 of the *Planning and Development (Development Assessment Panels) Regulations 2011* and does not change this Deferral recommendation provided by the City of Rockingham.

That the Metro Outer Joint Development Assessment Panel resolves to:

Approve DAP Application reference DAP/22/02177 and the accompanying plans:

- Overall Site Plan, dated 13.12.2021;
- Proposed Site Plan, dated 13.12.2021;
- Demolition Plan, dated 23.02.2021;
- Proposed Levels Plan, dated 13.12.2021;
- Proposed Floor Plan, dated 24.06.2021;
- Proposed Canopy Plan, dated 23.02.2021;
- Proposed Elevations Shop, dated 13.12.2021;
- Proposed Elevations Canopy, dated 23.02.2021; and
- Proposed Landscaping Plan, dated 13.12.2021.

In accordance with Clause 68 of the Planning and Development (Local Planning Schemes) Regulations 2015 and the provisions of clause 68(2)(b) of the deemed provisions of the City of Rockingham Town Planning Scheme No. 2, subject to the following conditions:-

Conditions

1. This decision constitutes development approval only and is valid for a period of 4 years from the date of approval. If the subject development is not substantially commenced within the specified period, the approval shall lapse and be of no further effect.

2. All development must be carried out in accordance with the approved plans, save that, in the event of an inconsistency between the approved plans and a requirement of the conditions set out below, the requirements of the conditions shall prevail.

3. Prior to apply for a Building Permit, revised plans shall be provided, illustrating:

    a. A revised access arrangement for the rationalisation of crossovers between the proposed Service Station and the Shopping Centre development which removes the traffic conflict associated with crossovers being immediately adjacent to each other.

    b. The proposed Service Station Pylon Sign and the existing Shopping Centre Pylon Sign to the north do not restrict sight distances.

c. The existing Shopping Centre Pylon Sign to the north is relocated to provide at least 1.0m horizontal clearance from the road pavement.

4. Stormwater from all roofed and paved areas shall be collected and contained on site. Stormwater must not affect or be allowed to flow onto or into any other property or road reserve. All stormwater generated by the development must be managed in accordance with Planning Policy 3.4.3 - Urban Water Management to the satisfaction of the City of Rockingham. The approved plans must be implemented and all works must be maintained for the duration of the development.

5. Prior to applying for a Building Permit, a Waste Management Plan must be prepared and include the following detail to the satisfaction of the City of Rockingham:

   (i) the location of bin storage areas and bin collection areas;
   (ii) the number, volume and type of bins, and the type of waste to be placed in the bins;
   (iii) management of the bins and the bin storage areas, including cleaning, rotation and moving bins to and from the bin collection areas; and
   (iv) frequency of bin collections.

   All works must be carried out in accordance with the Waste Management Plan and maintained at all times, for the duration of development.

6. Prior to applying for a Building Permit, a Landscaping Plan to the satisfaction of the City of Rockingham must be prepared and must include the following detail:

   (i) the location, number and type of existing and proposed trees and shrubs, including calculations for the landscaping area;
   (ii) any lawns to be established and areas to be mulched;
   (iii) any natural landscape areas to be retained;
   (iv) those areas to be reticulated or irrigated; and
   (v) proposed upgrading to landscaping, paving and reticulation of the street setback area and all verge areas.

   The landscaping, paving and reticulation must be completed prior to the occupation of the development, and must be maintained at all times to the satisfaction of the City of Rockingham for the duration of the development.

7. Prior to applying for a building permit, an external lighting plan is to be submitted and approved by the City of Rockingham demonstrating compliance with AS 4282 – Control of Obtrusive Effects of Outdoor Lighting. External lighting is to be implemented in accordance with the lighting plan for the duration of the development, to the satisfaction of the City of Rockingham.

8. Prior to the occupation of the development, any damage to existing City infrastructure within the road reservation including kerb, road pavement, turf, irrigation, bollards and footpaths is to be repaired to the satisfaction of the City of Rockingham at the cost of the applicant.

9. Prior to occupation, a final Acoustic Assessment must be prepared and submitted to the City of Rockingham which demonstrates to the City's satisfaction, that the completed development complies with the *Environmental Protection (Noise) Regulations 1997.*

10. The recommendations of the Llyod George Acoustics' Environmental Noise Assessment Reference: 20115960-01 are to be implemented for the duration of the development.

11. All commercial vehicle movements associated with service delivery and refuelling shall outside the AM and PM peak hour periods to minimise traffic safety risk.

12. The Service Station development shall incorporate Stage 1 vapour recovery and Stage 2 vapour recovery systems which are to be installed and operated at all times under a regular program of inspection and maintenance for the life of the development.

FOOTNOTES

Note 1: Where an approval has so lapsed, no development must be carried out without the further approval of the local government having first been sought and obtained.

Note 2: A separate approval from the City's Health Services is required under the Food Act 2008 and Food Safety Standards. This is required prior to the lodgement of an application for a Building Permit - Certified. The applicant should liaise with the City's Health Services in this regard.

Note 3: A Building Permit must be obtained for the proposed works prior to commencement of site works. The applicant and owner should liaise with the City's Building Services in this regard.

Note 4: All works in the road reserve, including construction of a crossover, planting of street trees, and other streetscape works and works to the road carriageway must be to the specifications of the City of Rockingham; the applicant should liaise with the City of Rockingham's Engineering Services in this regard.

Note 5: A Sign Permit must be obtained for any advertising associated with the development, including signage painted on the building. The applicant should liaise with the City of Rockingham's Building Services in this regard.

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Development Assessment Panels

Direction for Further Services from the Responsible Authority

Regulation 13(1) and DAP Standing Orders 2020 cl. 3.3

Guidelines

A DAP Member who wishes to request further services (e.g. technical information or alternate recommendations) from the Responsible Authority must complete this form and submit to daps@dplh.wa.gov.au.

The request will be considered by the Presiding Member and if approved, the Responsible Authority will be directed to provide a response to DAP Secretariat within the form.

It is important to note that **the completed form containing the query and response will published on the DAP website** as an addendum to the meeting agenda.

DAP Application Details

DAP Name	MOJDAP/171
DAP Application Number	DAP/21/02148
Responsible Authority	City of Rockingham
Property Location	Lot 53 (No 67) Folly Road, Baldivis

Presiding Member Authorisation

Presiding Member Name	Mr Ian Birch
Signature	
Date	4 May 2022
Response Due	**6 May 2022; 2:00pm**

Nature of technical advice or information required*

1	**DAP query**	**Alternate recommendation for Approval with Conditions.**
	Response	Insert response to DAP query

* Any alternate recommendation sought does not infer a pre-determined position of the panel.
Any legal advice, commercially confidential or personal information will be exempt from publication.

Regulation 13 Request - Alternative Recommendation

City of Rockingham Response

On 4th May 2022, the Presiding Member of the Metro Outer Joint Development Assessment Panel (MOJDAP) directed the City of Rockingham to provide a response to the following:

"Alternate recommendations for Approval with Conditions."

This alternate recommendation has only been provided in response to a request from the Presiding Member of the MOJDAP, in accordance with Regulation 13 of the *Planning and Development (Development Assessment Panels) Regulations 2011* and does not change this Refusal recommendation provided by the City of Rockingham.

The City's response is also based on the submitted Development Application.

That the Metro Outer Joint Development Assessment Panel resolves to:

Approve DAP Application reference DAP/21/02148 and the accompanying plans:

- Location Plan, Drawing No. 01, Revision 1, dated 2nd March 2022;
- Site Plan: Total Lot, Drawing No. 02, Revision 1, dated 2nd March 2022;
- Proposed Development East of Mid Tree Line, Drawing No.3, Revision 1, dated 2nd March 2022;
- Temple Plan, Priests Quarters & Toilet Block, Drawing No.4, Revision 1, dated 2nd March 2022;
- Elevations, Drawing No.5, Revision 1, dated 2nd March 2022;
- Multi-Purpose Hall, Dining & Library Plan, Drawing No.6, Revision 1, dated 2nd March 2022;
- Multi-Purpose Hall, Dining & Library Elevations, Drawing No.7, Revision 1, dated 2nd March 2022; and
- Guests Accommodation Plan & Elevations, Drawing No.8, Revision 1, dated 2nd March 2022;

In accordance with Clause 68 of the Planning and Development (Local Planning Schemes) Regulations 2015 and the provisions of clause 68(2)(b) of the deemed provisions of the City of Rockingham Town Planning Scheme No. 2, subject to the following conditions:-

Conditions

1. This decision constitutes development approval only and is valid for a period of 4 years from the date of approval. If the subject development is not substantially commenced within the specified period, the approval shall lapse and be of no further effect.

2. All development must be carried out in accordance with the approved plans, save that, in the event of an inconsistency between the approved plans and a requirement of the conditions set out below, the requirements of the conditions shall prevail.

3. Attendance and times of operation shall be limited to the following:

Weekday Prayers (Mon-Fri)	25-50 people (morning session)	7:00am to 12:00pm
	25-50 people (evening session)	5:00pm to 9:00pm
Weekday Yoga Classes (2 per week)	20 people (evening session)	6:00pm to 7:00pm
Saturday/Sunday Prayers	100-150 people (morning session)	7:00am to 12:00pm
	100-150 people (evening session)	5:00pm to 9:00pm
Saturday/Sunday Scripture Classes	50-75 people	3:00pm to 6:00pm
Special Hindu Festival Days occurring on average once per month		
Weekday	50-75 people (morning session)	7:00am to 12:00pm
	200-250 people (evening session)	5:00pm to 9:00pm
Weekend	200 people (morning session)	7:00am to 12:00pm
	200-250 people (evening session)	5:00pm to 9:00pm
Hindu Weddings up to a maximum 6 times per year on Friday nights or weekends		
Friday Nights or Weekend	300-400 people	6:00pm to 12:00am

4. Prior to commencement of development, a Construction Environmental Management Plan must be prepared and approved to the satisfaction of the City of Rockingham, to ensure appropriate management of construction related impacts including, but not limited to:

- Construction traffic management;
- Construction noise management;
- Dust management;
- Fauna management, including fauna relocation strategies;
- Tree protection; and
- Construction drainage management.

The approved Construction Environmental Management Plan must be implemented for the duration of construction works, to the satisfaction of the City of Rockingham.

5. Prior to applying for a building permit a pre-works Geotechnical Report prepared by a suitably qualified person must be submitted to the City of Rockingham for approval and this report must address:

(a) fill material composition and quality;
(b) on-site drainage, and
(c) establish the maximum groundwater levels beneath the site.

6. Prior to applying for a Building Permit, a Stormwater Management Plan must be prepared by a suitably qualified engineering showing how stormwater will be contained on-site and those plans must be submitted to the City of Rockingham for its approval. All stormwater generated by the development must be managed in accordance with Planning Policy 3.4.3 - Urban Water Management to the satisfaction of the City of Rockingham. The approved plans must be implemented and all works must be maintained for the duration of the development.

7. All vehicles are required to access/egress the site from Folly Road. No vehicles are permitted to access/egress the site from Young Road unless in an event of emergency.

8. Prior to the occupation of the development the existing crossover on Folly Road must be removed and the verge must be reinstated to the satisfaction of the City of Rockingham.

9. Prior to commencement of development, detailed civil engineering construction plans for the proposed left turn treatment (AUL(S)) within the Folly Road road reserve shall be submitted by a suitably qualified person to the City of Rockingham for approval, designed in accordance with Austroads' *Guide to Road Design Part 4A (Unsignalised and Signalised Intersections)*.

   These works must be constructed, in accordance with the approved plans, prior to the occupation of the development.

10. The carpark must:

    (i) provide a minimum of 103 car parking spaces;
    (ii) be designed, constructed, sealed, kerbed, drained and marked in accordance with User Class 2 of Australian/New Zealand Standard AS/NZS 2890.1:2004, Parking facilities, Part 1: Off-street car parking prior to applying for a Building Permit;
    (iii) provide 2 car parking space(s) dedicated to people with disabilities, which are designed, constructed, sealed, kerbed, drained and marked in accordance with Australian/New Zealand Standard AS/NZS 2890.6:2009, Parking facilities, Part 6: Off-street parking for people with disabilities and which are linked to the main entrance of the development by a continuous accessible path of travel designed and constructed in accordance with Australian Standard AS 1428.1—2009, Design for access and mobility, Part 1: General Requirements for access—New building work;
    (iv) be constructed, sealed, kerbed, drained and marked prior to the development being occupied and maintained thereafter; and
    (v) comply with the above requirements for the duration of the development.

11. Prior to applying for a Building Permit, a Landscaping Plan must be prepared to the satisfaction of the City of Rockingham and include the following detail:

    (i) The location, number and type of existing and proposed trees and shrubs, including calculations for the landscaping area;
    (ii) Any lawns to be established and areas to be mulched;
    (iii) Any natural landscape areas to be retained;
    (iv) Those areas to be reticulated or irrigated;
    (v) Proposed upgrading to landscaping, paving and reticulation of the street setback area and all verge areas; and
    (vi) Any unsuccessful tree plantings shall be replaced by the applicant with similar size tree species, and be maintained in perpetuity thereafter.

    The landscaping, paving and reticulation must be completed prior to the occupation of the development, and must be maintained at all times to the satisfaction of the City of Rockingham for the duration of the development.

12. Prior to applying for a Building Permit, the Bushfire Management Plan prepared by Envision Bushfire Protection dated 22nd February 2022 must be updated to the satisfaction of the City of Rockingham to distinguish between Low Threat vegetation and an Asset Protection Zone (APZ). The APZ shall be installed around the perimeter of buildings 8m wide in order to establish sufficient separation to the Class G-Grassland vegetation.

    The Bushfire Management Plan shall be implemented thereafter for the duration of the development.

13. Prior to applying for a Building Permit, a Waste Management Plan must be prepared and include the following detail to the satisfaction of the City of Rockingham:

    (i) The location of bin storage areas and bin collection areas;

    (ii) The number, volume and type of bins, and the type of waste to be placed in the bins;

    (iii) Management of the bins and the bin storage areas, including cleaning, rotation and moving bins to and from the bin collection areas; and

    (iv) Frequency of bin collections.

    All works must be carried out in accordance with the Waste Management Plan and maintained at all times, for the duration of development.

14. Prior to applying for a Building Permit, an Acoustic Report prepared by a suitably qualified acoustic consultant and demonstrating compliance with the Environmental Protection (Noise) Regulations 1997, must be submitted to and approved by the City of Rockingham. The Acoustic report shall, at a minimum but not limited to, address the following:

    - Clearly outline the final specification and construction methods, including any materials and treatments, for all building components of the development;
    - Include details of any proposed acoustic wall requirements, including heights from finished Lot levels, locations and materiality;
    - Detail mechanical plant elements including any bore pumps and any attenuation measures required;
    - Detail any mitigations or management controls for car parking areas;
    - Detail the parameters used for the modelling which considers the adjoining future development to achieve compliance, noting that land use and development on adjoining lots cannot be limited by virtue of the Temple use or its ability to meet compliance with the acoustic requirements.

    Any further works must be carried out in accordance with the Acoustic Report and implemented as such for the duration of the development.

15. The Building Permit application must be accompanied by written confirmation from a suitably qualified Acoustic Consultant that the plans have been reviewed and confirmed they incorporate the requirements of the relevant acoustic report as required by condition 14.

16. Prior to occupation of the development, written confirmation from the builder to be provided that all requirements indicated in the relevant acoustic report have been incorporated into the development.

17. Prior to occupation of the development, an Operational Noise Management Plan (ONMP) shall be provided to the satisfaction of the City of Rockingham, demonstrating how noise will be managed at the premises including the Temple, multi-purpose hall, dining hall and car parking areas during daily prayer sessions, monthly Hindu festivals and bi-monthly Hindu

weddings to ensure the development complies with the Environmental Protection (Noise) Regulations 1997. It is recommended that the ONMP is developed in consultation with a suitably qualified acoustic consultant. The development must operate in accordance with the approved ONMP for the duration of the land use.

18. Prior to the occupation of the development, an illumination report must be prepared which demonstrates to the satisfaction of the City of Rockingham, that the completed development complies with the requirements of Australian Standard AS 4282—1997, Control of the obtrusive effects of outdoor lighting.

19. Prior to occupation of development, a masonry wall shall be erected for a length of 89m as recommended in the Acoustic Report. The external facing side of the wall shall be treated, to the satisfaction of the City of Rockingham.

20. Prior to applying for a Building Permit, a schedule of the colours and textures of the building materials, must be provided to the satisfaction of the City of Rockingham. The development must be finished in accordance with the schedule provided and approved by the City of Rockingham, prior to occupation of the development and maintained for the duration of the use.

Advice Notes

1. The development must comply with the Food Act 2008, the Food Safety Standards and Chapter 3 of the Australian New Zealand Food Standards Code (Australia Only); the applicant and owner should liaise with the City's Health Services in this regard.

2. The development must comply with the Health (Public Building) Regulations 1992; the applicant and owner should liaise with the City's Health Services in this regard.

3. The proposed development will require a Lodging House Registration; the applicant and owner should liaise with the City's Health Services in this regard.

4. The Stormwater Management Plan must detail the stormwater drainage design, including the location and sizing of all drainage infrastructure and required storage including finished floor level separation requirements for all events.

5. An application will need to be made to the City of Rockingham Health Services for installation of the secondary treatment system.

Government of **Western Australia**
Development Assessment Panels

Presentation Request Form

Regulation 40(3) and DAP Standing Orders 2020 cl. 3.5

Must be submitted at least 72 hours (3 ordinary days) before the meeting

Presentation Request Guidelines

Persons interested in presenting to a DAP must first consider whether their concern has been adequately addressed in the responsible authority report or other submissions. Your request will be determined by the Presiding Member based on individual merit and likely contribution to assist the DAP's consideration and determination of the application.

Presentations are not to exceed **5 minutes**. It is important to note that the presentation content will be **published on the DAP website** as part of the meeting agenda.

Please complete a separate form for each presenter and submit to daps@dplh.wa.gov.au

Presenter Details

Name	Behnam Bordbar
Company (if applicable)	Transcore
Please identify if you have any special requirements:	**YES ☐** **NO ☒** If yes, please state any accessibility or special requirements: Click or tap here to enter text.

Meeting Details

DAP Name	MOJDAP
Meeting Date	9 May 2022
DAP Application Number	DAP/22/02177
Property Location	Lot 503 (113-121) Safety Bay Road, Shoalwater
Agenda Item Number	8.1

Presentation Details

I have read the contents of the report contained in the Agenda and note that my presentation content will be published as part of the Agenda:	**YES ☒**
Is the presentation in support of or against the report recommendation)? *(contained within the Agenda)*	**SUPPORT ☒** **AGAINST ☐**
Is the presentation in support of or against the proposed development?	**SUPPORT ☒** **AGAINST ☐**
Will the presentation require power-point facilities?	**YES ☐** **NO ☒** **If yes, please attach**

Government of **Western Australia**
Development Assessment Panels

Presentation Content*

These details may be circulated to the local government and applicant if deemed necessary by the Presiding Member. Handouts or power points will not be accepted on the day.

Brief sentence summary for inclusion on the Agenda	*The presentation will address:* Explain the traffic engineering reasons why the application should be approved.

In accordance with Clause 3.5.2 of the *DAP Standing Orders*, your presentation request must also be accompanied with a written document detailing the content of your presentation.

Please attach detailed content of presentation or provide below:

Refer to the attached submission.

transport planning
traffic engineering
transport modelling

4 May 2022

Metro Outer Joint Development Assessment Panel

Attention: Presiding Member and Panel Members

Dear Sirs and Madams,

Re: LOT 503 (56-62) SECOND AVENUE, SHOALWATER
DAP REF NO. DAP/22/02177

Transcore is acting as traffic engineers for MPX Group Pty Ltd for the proposed service station development at the abovementioned site. The location of the subject site is shown in **Figure 1**.



Figure 1: Location of the subject site

Transcore prepared a Transport Impact Assessment (TIA) for the proposed Development Application in March 2021. Following the submission of the Development Application, the City raised a number of queries with respect to the development. Transcore prepared a Technical Note dated 17 December 2021 to address traffic related issues raised by the City. A copy of this technical note is provided in **Attachment 1** of this submission.

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The Responsible Authority Report (RAR) by the City dated 27 April 2022 recommends the following:

DEFER *Development Assessment Panel reference DAP22/02177 and accompanying plans to give the applicant time to prepare an updated site plan which considers alternative access arrangements for Safety Bay Road.*

Reason

1. *There will be a traffic conflict between the proposed southern crossover for the Service Station and the existing adjoining main crossover for the Shoalwater Neighbourhood Shopping Centre, which is likely to have an unacceptable traffic safety risk and conflict with traffic entering and exiting from Safety Bay Road. The applicant must submit a revised site plan for the Service Station and the Shopping Centre to reconcile this traffic conflict between the crossovers, to the extent that the development can comply with Austroad's requirements.*

Accordingly, this submission provides commentary on the Responsible Authority recommendation and outlines why this recommendation is not appropriate and the application should be approved with the proposed crossovers and access/ egress arrangements. The proposed development plan and the crossovers system are shown in Figure 2.

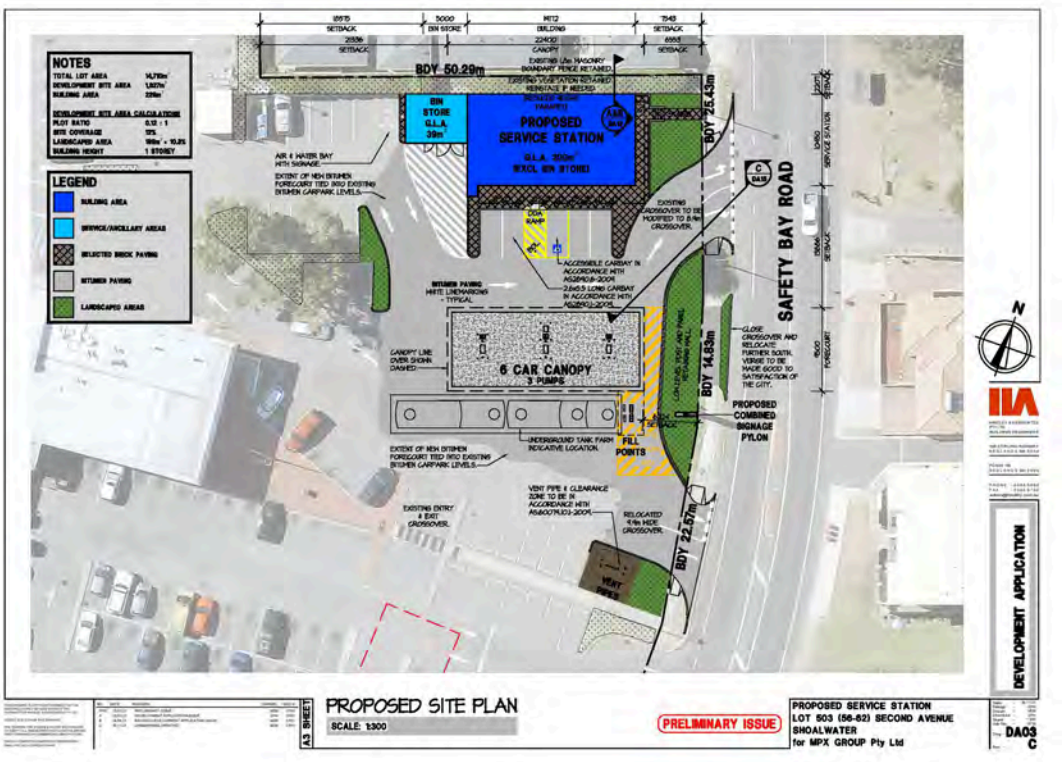


Figure 2. Proposed development plan

The Shoalwater Shopping Centre (SSC) along this section of Safety Bay Road (about 140m long) currently entails four crossovers north of Coventry Road. These crossovers are numbered and shown in sk08 in **Attachment 4**.

As part of the proposed development, crossover 1 is maintained but modified so that it operates only for exit movements. Crossover 2a is relocated further south to facilitate the satisfactory movements of the fuel tanker (crossover 2b). Crossovers 3 and 4 remain as they are. Please refer to **Figure 3** for the proposed tanker movement (extracted from December 2021 technical note).

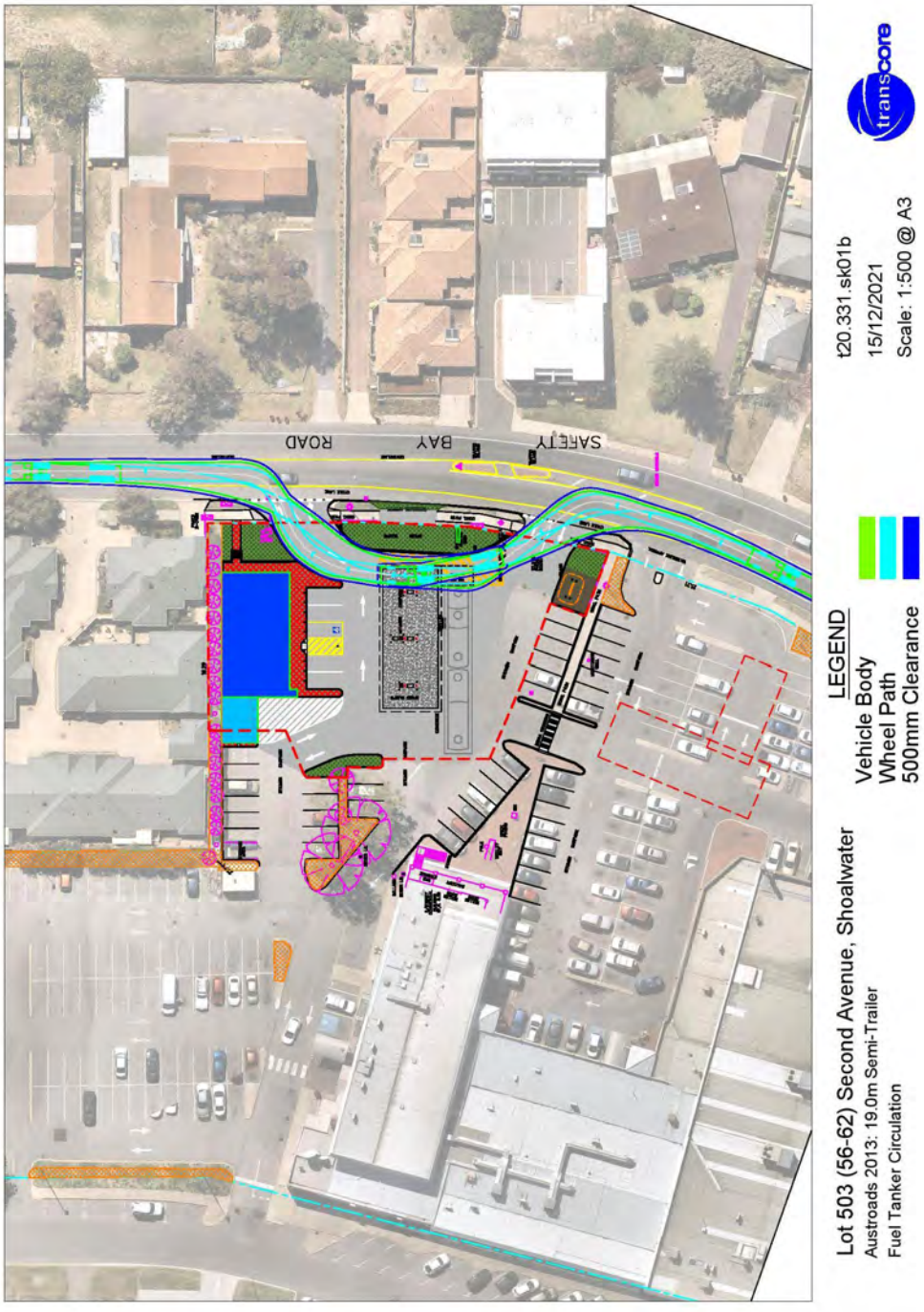


Figure 3. Fuel tanker circulation plan

As evident from sk07 in Attachment 2, the current separation between crossover 1 and crossover 2a is about 20m. The relocated crossover 2a results in separation of about 41m to crossover 1 and about 18.5m to crossover 3.

The city's main reason for recommendation of deferral appears to be the resulting separation between crossover 2b and crossover 3. However, as evident from sk07 this resulting separation is only 1.5m less than the existing separation between crossover 1 and crossover 2a.

Various issues raised by the City in pages 18 to 21 of the RAR to justify their recommendation of deferral are addressed under the following heading.

Austroads Guidelines

The City refers to Austroads Guide to Road Design Part 4 and the stopping sight distance requirement to determine appropriate separation between crossovers.

It is acknowledged that Austroads Part 4 provides guidelines on crossover spacing based on stopping sight distance, however in our opinion the onerous nature of this requirement should only apply to greenfield site and not a brown field site with existing operational crossovers.

Therefore, in our opinion it is inappropriate to use Austroads Guidelines and stopping sight distance as a means to establish spacing between crossovers for an existing shopping centre and crossovers.

Vehicle Entering Safety Bay Road from Crossover 3

It is claimed by the City that a vehicle entering Safety Bay Road from this crossover may incorrectly conclude that a vehicle indicating left on Safety Bay Road would be entering the existing vehicle crossover, but in fact they are intending to enter the proposed crossover for the service station directly to the north.

It should be noted that a vehicle exiting this crossover should give way to traffic on Safety Bay Road, regardless if this traffic is moving through or turning into any of the crossovers. Therefore, the exiting vehicle should not exit the crossover until the vehicle turning left into another crossover has completed the left turn and are no longer on Safety Bay Road unless it is actually safe to do so.

Nevertheless, this claim by the City equally applies to the four existing Shopping Centre crossovers in close proximity of each other along this 140m long section of Safety Bay Road. As outlined earlier, the existing separation between crossovers 1 and 2a is 20m which is very similar to the resulting separation of 18.5m between crossovers 2b and 3 (please refer to Attachment 2).

In order to understand the safety circumstance with respect to the operation of the four Shopping Centre crossovers in close proximity of each other, Transcore has reviewed the latest available crash records for this section of Safety Bay Road on the Main Roads website. The crash record extract from the Main Roads WA website is included in Attachment 3 of this submission.

As it is evident over the 5 years period ending December 2021, there has been only 2 recorded crashes along this section of Safety Bay Road. Sk08 in Attachment 4 shows the locations of these crashes. Crash 1 occurred in the vicinity of the existing crossover 2a and involved an out-of-control vehicle colliding with the fence. Therefore, this crash had nothing to do with the operation of the existing crossover 2a. Crash 2 occurred in the vicinity of the existing crossover 4 and involved an out-of-control vehicle colliding with the traffic island. Therefore, this crash had nothing to do with the operation of the existing crossover 4.

It is evident from the crash records over the last 5 years along this section of Safety Bay Road that the proximity of existing crossovers to each other has not resulted in any safety concerns or crashes.

Queue Backs from the Service Station

This issue has been adequately and comprehensively addressed in the December 2021 technical note. The technical note undertakes two different queue analysis methodologies and establishes that **under typical cheap fuel day peak conditions, adequate stacking space is available within the service station site without the risk of any queue backs onto Safety Bay Road**.

Further, **potential queue backs from the service station onto Safety Bay Road has no relevance to the City's main reason for deferral which is proximity of crossover 2b to crossover 3** (Please refer **Attachment 4**).

Insufficient Spacing between Vehicle Crossovers along Safety Bay Road

The spacing between Shopping Centre crossovers along Safety Bay Road is the existing situation and as demonstrated earlier, there is no evidence that this spacing has resulted in any unsafe circumstances or crashes. Further, spacing of crossovers does not impact on the sight line along the frontage road (Safety Bay Road).

Right In and Out Movements at Crossover 2b

The City is concerned that the right in and out movements at this crossover may impact the existing solid median on Safety Bay Road. As evident from sk09 and sk10 in **Attachment 5**, a B99 vehicle **can comfortably turn right in and out of the crossover without impacting the existing median**. In any case, this median is only

a splitter island and if minor adjustments are required, this can be addressed during the detailed design stage of the project.

Changes to Crossover Location

The City is requesting that the proximity of the crossovers should be resolved by alternative design. It has been communicated to the City that as the existing crossovers serve the Shopping Centre, any other modifications to the crossovers (other than what is proposed under this application) requires the Shopping Centre's approval. **The Shopping Centre has already stated it will not entertain any other changes to its existing crossovers.** As outlined earlier, the relocation of crossover 2a to crossover 2b is required to satisfactorily accommodate the movements of the fuel tanker.

Conclusion

Based on the detailed and comprehensive information provided in this submission, it is evident that there is no justification for deferral of the development application based on the reasons provided by the city. It is therefore respectfully requested that MOJDAP considers and approves the development application.

Regards,



Behnam Bordbar
Managing Director

Attachment 1

Transcore's Technical Note

transport planning
traffic engineering
transport modelling

Technical Note: No 2 **Date:** 17/12/2021
Project No: t20.331
Project: Lot 503 (56-62) Second Avenue, Shoalwater
Subject: Response to City's Comments

1.0 Introduction & Background

This Technical Note (TN) is prepared by Transcore on behalf of MPX Group Pty Ltd with regard to the proposed service station with convenience store to be located at Lot 503 (56-62) Second Avenue, Shoalwater in the City of Rockingham. The subject site is located within the north east portion of the parking area of Shoalwater Shopping Centre and the Shoalwater Shopping Centre is located at the north west corner of Safety Bay Road and Coventry Road intersection.

Transcore prepared a Traffic Impact Statement (hereafter TIS) for the proposed development in March 2021. Based on the information provided to Transcore, it is understood that the City of Rockingham has provided a number of preliminary comments on the traffic matters associated with the development application.

Accordingly, this technical note is prepared to provide Transcore's responses to City's traffic related comments. It should be noted that this technical note should be read in conjunction with Transcore's TIS (dated March 2021).

The revised development plan (in response to City's comments) is included in **Attachment A** and the updated turn path plans are included in **Attachment B**.

2.0 Preliminary Comments from the City's Technical Areas and Associated Responses from Transcore

The City's comments are presented with dot points and Transcore's responses are presented in *"italic"* format in this technical note.

2.1 Engineering

- Pram ramps are required at proposed crossover locations.

Pram ramps are provided in the revised site plan included in ***Attachment A****.*

- The proposed footpath extensions and any pram ramp reconfigurations are to be constructed in accordance with the City of Rockingham engineering standards. All concrete shall be broom finished perpendicular to the direction of pedestrian traffic to provide a non-slip surface in accordance with AS4586. Tactile pavers to be used at pram ramps in accordance with AS1428.4.1.

This is a detailed design issue and can be a condition of approval.

2.2 Traffic

- The proposed relocation for the southern crossover is located too close to the existing crossover to the south (approximately 18.0m separation distance when measured from the centre to centre however the wing for the crossover would be literally touching) and therefore likely to increase traffic safety risks. The City recommends to combine the two crossovers and amend the design accordingly.

If the two crossovers are combined, there will be potential significant impact on parking layout and circulation system of the shopping centre and therefore is considered to be beyond the scope of the service station proposal.

Australian Standard Parking facilities – Part 1: Off-street car parking (AS2890.1)

- AS2890.1 requires that when one side of a car parking bay has a vertical obstruction (i.e. higher than 0.15m) that restricts door opening then the bay width shall be increased by 0.3m. The wall for the proposed bin store would restrict the door opening for the existing car bay locate directly adjacent to it therefore please provide at least 0.3m horizontal clearance to the existing car parking bay.

*The revised site plan attached in **Attachment A** shows that the wall of the bin store has moved approximately 0.7m away from this 'air & water' bay and provide a separation median between the parking bay and bin store wall.*

- AS2890.1 requires a minimum standard car parking bay dimension of 2.6m (width) by 5.4m (length) for this type of land use (i.e. high turnover). Manual measurements from the site plan suggests a proposed car bay width less than 2.6m wide bay is proposed. Please confirm and amend drawing accordingly.

*The revised site plan attached in **Attachment A** indicates that the parking bays located in front of the convenience store are designed as 2.6m (width) x 5.5m (length) in accordance with AS2890.1.*

- AS2890.2 requires a minimum service bay dimension of 3.5m (width) by 8.8m (length) for a Medium Rigid Truck (MRV). The proposed location for the MRV (i.e., in front of the bin store) is not suitable as service bay because there is insufficient space and it will block the internal traffic flow.

*The revised site plan indicates that the proposed bin store design has improved and it provides sufficient area for a Medium Rigid Truck (MRV). The turn path analysis undertaken for an 8.8m service truck (sk02b and sk03b in **Attachment B**) confirms the satisfactory movements of service truck in and out of the service bay without blocking the internal traffic circulation.*

- AS2890.1 requires a minimum gradient of 1 in 100 (1%) so that parking floors will drain adequately for car bays located outdoors. Limited spot levels suggest that the car parking bays are likely to be flat (i.e. 0% gradient) therefore do not comply with AS2890.1. Please amend design accordingly.

This is a detailed design issue and can be a condition of approval.

- AS2890.2 requires a maximum service bay gradient of 1 in 25 (4%) for commercial vehicles (i.e. MRV in this particular case). Limited spot levels suggest that the proposed service bay would have a gradient of approximately 5% therefore does not comply with AS2890.2. Please amend design accordingly.

This is a detailed design issue and can be a condition of approval.

- AS2890.2 requires a maximum driveway gradient of 1 in 20 (5%) for a distance extending from the property line for at least 6.0m or the longest wheelbase of any vehicle likely to use the driveway, whichever is greater. Limited spot levels suggest that the proposed northern crossover has a gradient of approximately 20% therefore does not comply with AS2890.2.

The City recommends that a vertical swept path be provided to assess sufficient vertical clearance to the underside of the commercial vehicles.

This is a detailed design issue and can be a condition of approval.

- The City recommends that additional information be provided regarding the gradient for the site such that a complete assessment could be made.

This is a detailed design issue and please refer to previous responses.

- The City is concerned that there is insufficient queue length provide behind the bowser location. Please provide a queue analysis taking into account random arrival of vehicles and a minimum average service time of five (5) minutes. The City has completed a preliminary queue analysis which suggests that there would be at least three (3) vehicles queuing behind the bowser during cheap fuel days (assuming scale factor of 1.5 to account for cheap fuel days). It should be noted that there is not even sufficient queue length for two (2) vehicles behind the bowser before it will impact upon internal traffic flow.

The 5 minutes average service time is excessive, particularly during the cheap fuel days.

Transcore has undertaken the queue analysis for cheap fuel day scenario and the results are provided and explained in below paragraphs. This analysis is based on the average 3 minutes service time. The 3 minutes average service time has been used by Transcore on many service station application which has been accepted by approval authorities.

The subject service station is proposed to include a total of three dispensers – six filling positions under the canopy (i.e., up to six vehicles can simultaneously refuel at any one time). The dispensers are placed in one-by-three format (one rows of three dispensers)

As discussed in Section 6.2.2 of Transcore's TIS, the highest peak hour trip generation for the fuel bowsers is estimated to be 84 (42 inbound/ outbound) trips during the weekday PM peak hour period. (overall peak fuel bowsers trip generation). In order to ensure the robust assessment, it is conservatively assumed that the trade on "cheap fuel" day would be 50% higher than the typical weekday peak hour. Accordingly, it is assumed that the proposed service station would attract about 63 vehicles during the PM peak hour. It is assumed that all bowsers will be in operation during this peak period and each patron is free to choose which queuing line to join.

Although it is understood that the City suggested to assume 5 minutes service time, the experience indicates that under normal circumstances the rate of service per fill point (time taken for a customer to park at a fill point, get fuel, pay for fuel and leave the fill point and service station site) is usually between 2-3 minutes during peak times. However, during the "higher than average" scenario due to high turnover of vehicles and "pressure" from other patrons waiting to access the

bowsers, the refuelling activity during these periods is shortened but still assumed to be at the higher end of typical range – i.e., 3 minutes service time assumed.

Accordingly, a service rate of 180 seconds (60/3 = 20 vehicles per hour per fill point) is assumed for the "cheap fuel" day peak hour. Assuming that all bowsers will be in operation during the peak period result in a service rate of (20 vehicles x 6 bowsers = 120) vehicles per hour for a "cheap fuel" day scenario. This analysis indicates that conservatively the proposed fuel bowsers can service 57 more vehicles than the highest peak hour trip rate.

As an alternative methodology to the stacking capacity analysis, Transcore has undertaken a queuing analysis modelling for "cheap fuel" day scenario. This queuing analysis was undertaken to access the provision of storage for vehicles within the service channels. For this purpose, an M/M/1 queuing model was adopted for each bowser. The M/M/q is a single-server queue model that can be used to approximate simple systems.

The queueing model adopts the following assumptions:

- *Vehicles arrive randomly following Poisson's probability distribution;*
- *Service time is exponentially distributed;*
- *There is one server per queue;*
- *The capacity of the queue in which arriving users wait before being served is infinite (for the purpose of identifying queue space requirements);*
- *The population of users (i.e., the pool of users) available to join the system is infinite; and,*
- *The queue is serviced on a first come, first served basis.*

The results of the queuing analysis are detailed in ***Figure 1****.*

M/M/s - Car Park Queuing Analysis (Poisson Arrival and Service Rates)

M/M/s	vph	vps
Arrival rate	63	0.0175
Service rate	20	0.005556
Number of servers	6	6

Utilization	52.50%		52.50%	
P(0), probability that the system is empty	0.0419		0.0419	
Lq, expected queue length	0.1323	(cars)	6.0000	(metres)
L, expected number in system	3.2823	(cars)	24.0000	(metres)
Wq, expected time in queue	0.0021	(hours)	7.5600	(seconds)
W, expected total time in system	0.0521	(hours)	187.5600	(seconds)
Probability that a customer waits	0.1197		0.1197	
95% Queue	7.0000	(cars)	42.0000	(metres)

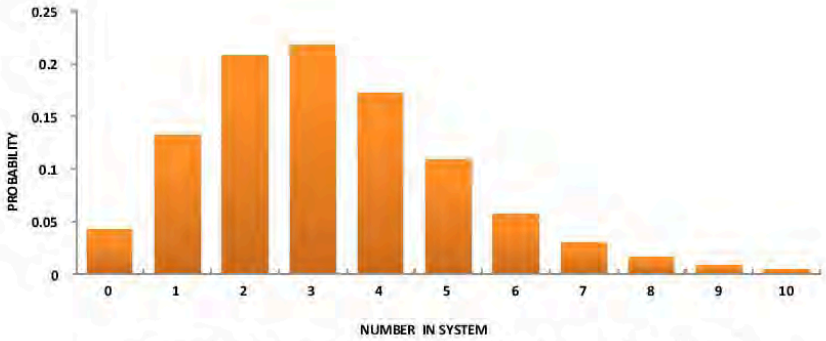


Figure 1. "Cheap fuel" PM peak hour queuing analysis

In summary, critical "cheap fuel" PM peak hour queuing analysis of the proposed fuel bowsers established the following:

- *The system utilisation rate is about 53% during the "cheap fuel" PM peak hour;*
- *The number of fill points in the system (refuelling) is 6;*
- *The expected number in the system is 3 vehicles;*
- *The expected time in the queue for a vehicle to get to a fill point is 8 seconds;*
- *The expected total time in the system is 188 seconds; and,*
- *The 95th percentile queue within the whole system is 7 vehicles during the weekday "cheap fuel" PM peak hour.*

The queuing usually adopted for robust analysis is the 95th percentile queue. Assuming equal queue distribution, it is estimated that in the PM peak hour, there will be 1 vehicle waiting behind refuelling vehicles at 6 bowsers.

However, in addition to the 6 vehicles parked at the bowsers, at least another 9 vehicles can be stacked behind the cars filling up at the bowsers without impacting the traffic circulations as shown in ***Figure 2****. This is 8 vehicles more than the 95th percentile (7 vehicles) queue reported during the "cheap fuel day" PM peak hour. Therefore, it is concluded that under typical peak conditions all queuing will be accommodated within the site and no stacking or queue backs onto Safety Bay Road are expected.*

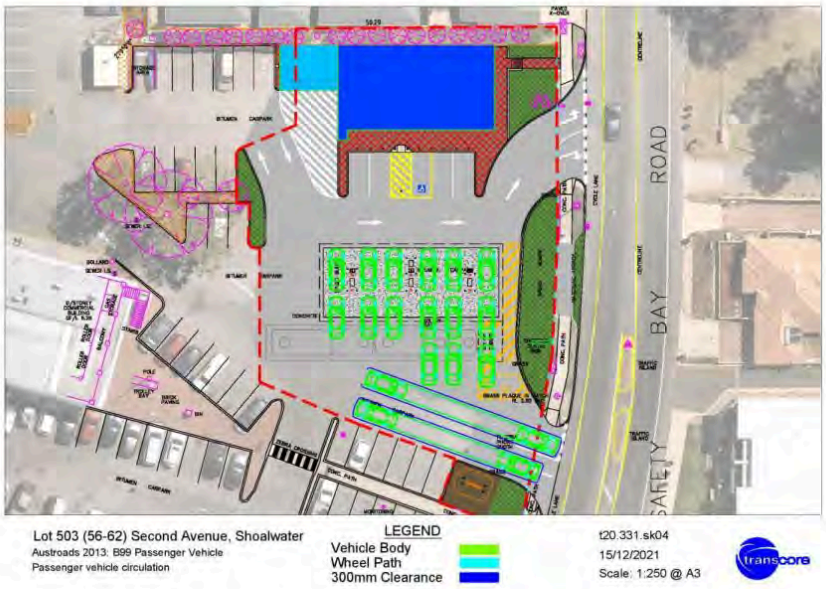


Figure 2. Queue Assessment Plan

- The existing shopping centre pylon sign is proposed to remain however with the proposed "*Tanker Standing Area*", this pylon is now located too close to the road pavement. At least 1.0m horizontal clearance is required to the road pavement.

The road pavement referred to is internal to the site as per existing situation and therefore this comment is not appropriate. Nevertheless, the revised site plan attached in ***Attachment A*** *shows that the landscape area has been widen and approximately 2.0m separation is provided between the existing shopping centre pylon sign and the internal pavement area.*

- The proposed extent of the "*New Bitumen Forecourt*" suggests that it will block some internal traffic flows within the site. Please provide more information on how the traffic would be managed during the construction stage.

This is not a matter for DA stage. A construction management plan will be prepared for the construction phase of the project.

- The City has completed a traffic analysis which suggest that turn treatments would be required at the proposed access off Safety Bay Road in accordance with Austroads' *Guide to Traffic Management Part 6 – Intersections, Interchanges and Crossings* and MRWA's Supplement to Austroads' guidelines. The required turn treatments are detailed as follows;
    - Auxiliary Right Turn (AUR)
    - Auxiliary Left Turn (AUL(S))

  The City understands that there is no turn treatments provided at the existing crossovers along Safety Bay Road however there is a central median provided directly adjacent to the shopping centre therefore this treatment should continue to the north (i.e. adjacent to the proposed service station) as a minimum.

This request is considered to be unreasonable. There are no turn lanes at all at any of the existing intersections or crossovers along this section of Safety Bay Road or for any of the intersections or crossovers on any other roads in the area. Notwithstanding the theoretical requirement in accordance with the book, the provision of turn lanes for this development are not feasible as they impact on existing crossovers and access points on both side of Safety Bay Roads.

- The City has completed a sight distance assessment at the two crossovers dedicated for the service station and found that the existing pylon (when there is non-permanent signage on the ground) and the proposed service station pylon would restrict sight distance because of the road alignment. Please relocate the signage accordingly.

*The location of the pylon sign is now changed in the latest plan. Transcore has undertaken the sight distance assessments for the proposed new location of the pylon sign for both northern and southern proposed crossovers on Safety Bay Road and the sight distance assessment plans are provided in **Figure 3** and **Figure 4**. The Australian Standard (AS2890.1 Figure 3.2) requires that the sight line to the frontage road should be measured from 2.5m back from the edge of the frontage road. As evident, the sight lines requirements of 65m for speed limit of 60km/h frontage road speed is satisfied in this instance for both northern and southern crossovers on Safety Bay Road.*

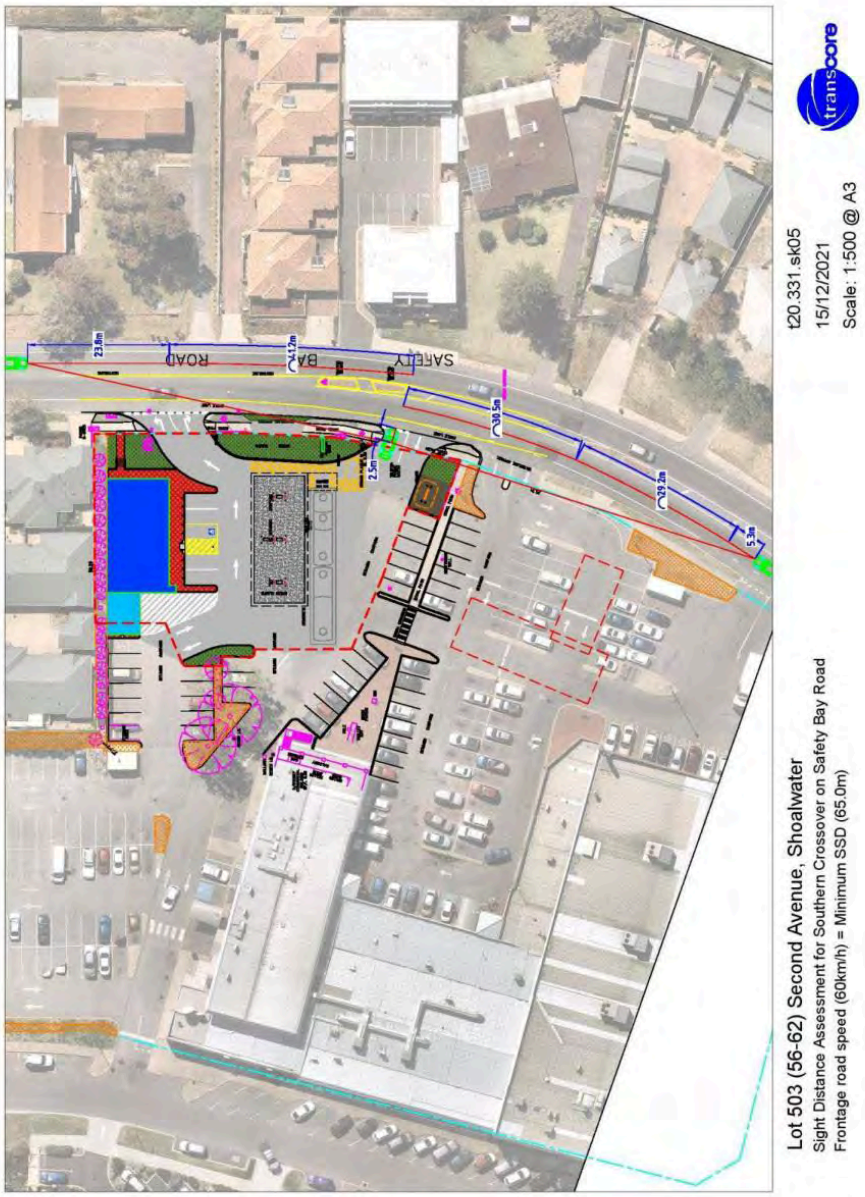
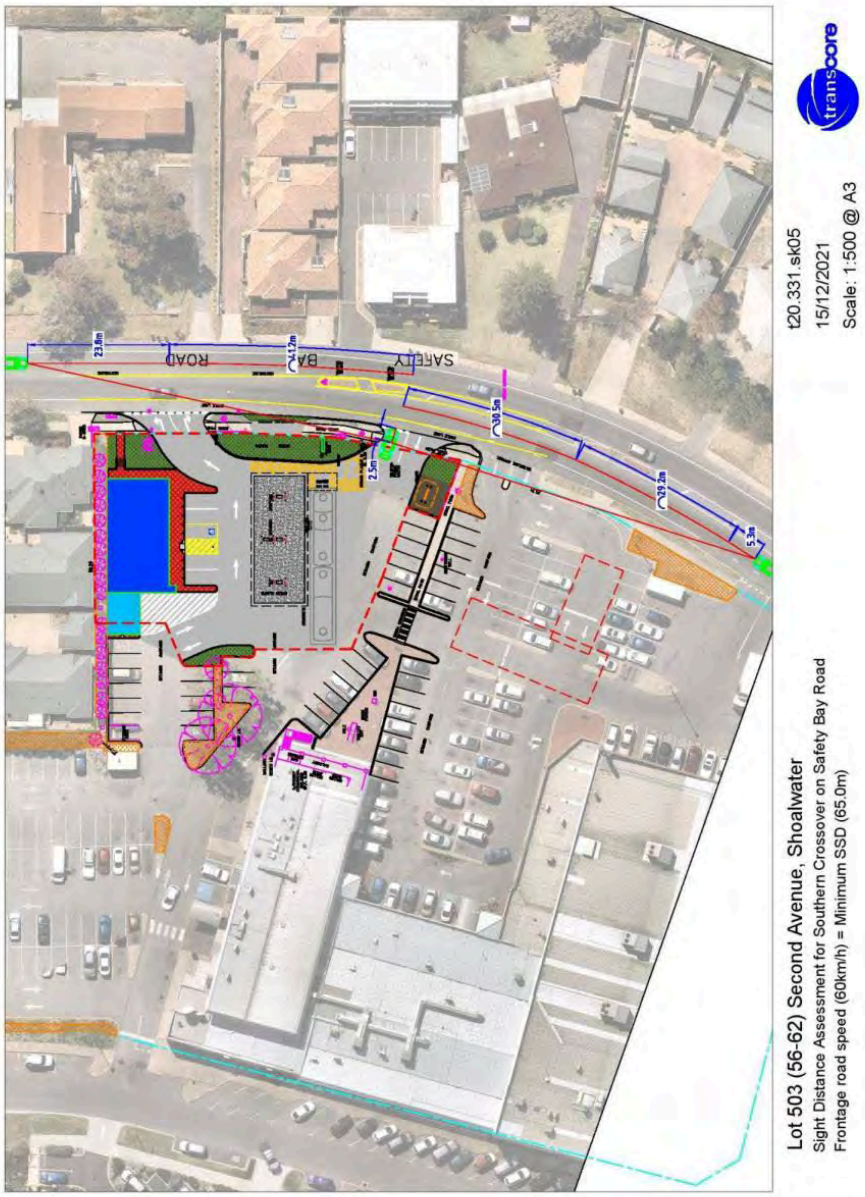


Figure 3. Sight Distance Assessment (Southern Crossover on Safety Bay Road)



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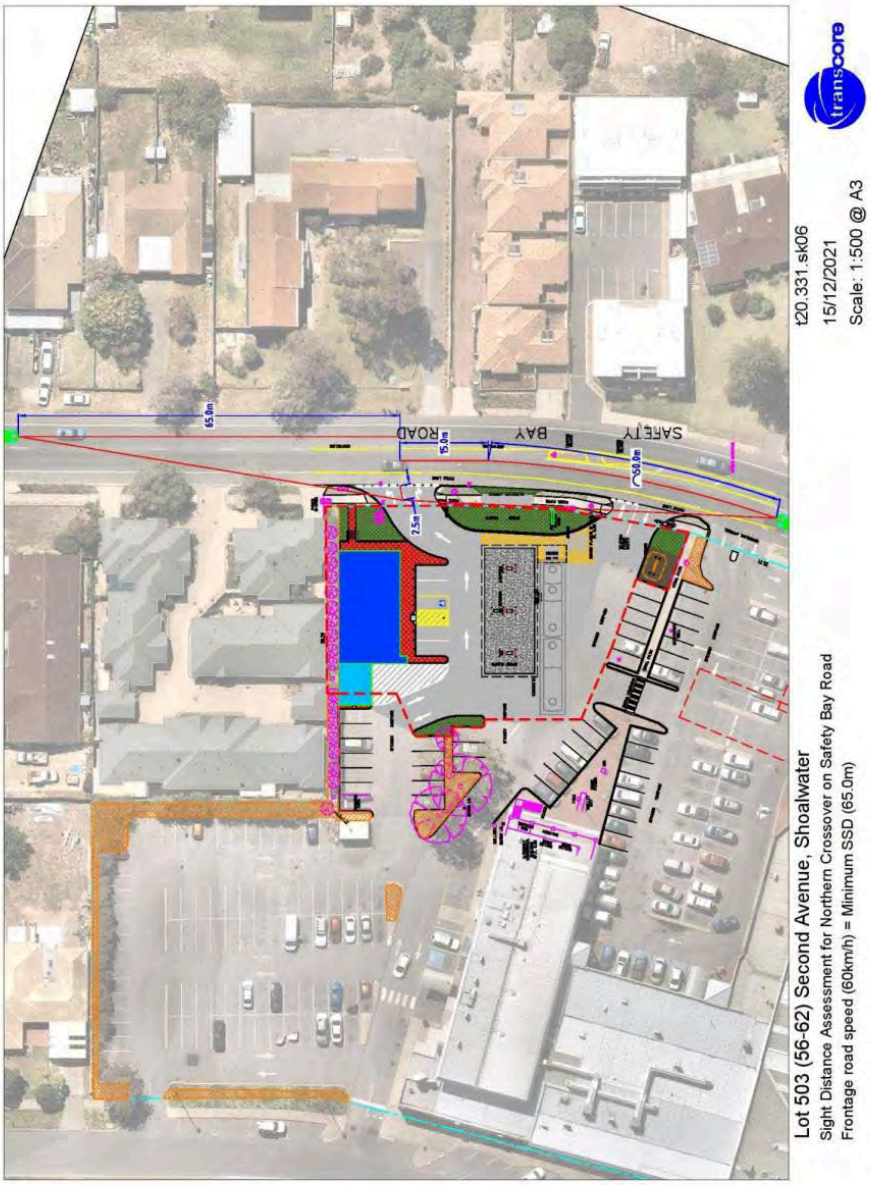


Figure 4. Sight Distance Assessment (Northern Crossover on Safety Bay Road)

- The City is concerned that vehicles may encroach significantly to the opposing traffic lane near the northern crossover, and recommends that a one-way system be adopted (i.e. entry only for the southern crossover and exit only for the northern crossover).

*One way traffic system is adopted in the revised development plan (please see **Attachment A**). Accordingly, the northern crossover on Safety Bay Road is converted to "exit only" crossover. Please note that the southern crossover on Safety Bay Road remains as "full movement" crossover as it also serves not only the proposed service station, but also the existing shopping centre.*

- Please consider providing means for universal access between the existing footpath and the proposed store for the service station.

This is a detailed design issue. However, it is understood that the revised site plan provides the universal access between the existing footpath and the proposed store for the service station.

- Please confirm the location of the *"Air & Water"* bay as the drawing suggest it is located in front of the store for the service station however in the noise report it is located adjacent to the bin store.

The revised site plan indicates that "Air & Water" bay is proposed adjacent to the bin store.

- The dimension for an *"Air & Water"* bay is normally wider than a normal bay to allow more room around the car. Please consider increasing it to be at least 3.2m wide (i.e. 2.6m standard bay with a 0.3m horizontal clearance on either side).

If deemed necessary by the operator, this can be achieved by adjusting the size of the bin store or by adjusting the shape of it.

- The dimension MRWA's Policy and Application Guidelines for Advertising Signs provides recommendations on the maximum values for luminance under varying ambient lighting conditions. Please ensure that the following maximum luminance values are adhered to; This can be achieved.

  Daytime - 6,000 cd/m2
  Dawn/Dusk - 600 cd/m2
  Night - 300 cd/m2

This can be achieved.

- Please provide a better resolution for the swept path analysis such that a more thorough assessment could be made.

Transcore will provide better resolution plans and the revised turn path plans are included in ***Attachment B****.*

- The City has some major concerns regarding the provided swept path analysis:

The following comments appears to be based on inappropriate reading of the turn path plans or lack of understanding of how commercial sites are designed and operated and the fact that how service vehicles are permitted to maneuver within a commercial site in accordance with relevant guidelines and standards.

- Potential clash with kerbing - (*Not correct*);
- Travelling across the proposed crossover (i.e., if there are vehicles waiting to exit at the crossover then the commercial vehicles would be restricted and would impact on flow along Safety Bay Road) - (*Not correct*);
- Encroaching into the fuel canopy (i.e., turning movements would be restricted if there are vehicles within the canopy) – (*Not an issue*);
- Reversing movement along a circulating roadway which increases traffic safety risks – (*Not an issue*);
- Blocking traffic flow which is not acceptable – (*Not an issue*);
- Travelling in the opposite traffic lane which increase traffic safety risks – (*Not an issue*); and,
- Encroaching into the parking bays – (*Not correct*).

<u>Transport Impact Statement (TIS)</u>

- The City provides the following comments regarding the Transport Impact Statement (TIS, dated 4th March 2021);

- Section 2 mentioned that "*A designated service vehicle bay located in front of the bin store area*". The City does not support this proposed service bay location because there is insufficient dedicated space and it will restrict the internal traffic flow.

Please refer to the previous response to the same point. There is now adequate space as demonstrated by the revised plan and revised turn paths attached.

- Section 3.1 mentioned that "*The fuel tanker would enter the site from crossover 1 and would exit in forward gear from crossover 2*". Please confirm the route for the fuel tanker would always be northbound (i.e. it will not turn right at the northern crossover).

Yes, it would be.

- Section 3.1 mentioned that "*The location and layout of the crossovers are satisfactory*". Please refer to the City's comments in the previous section because the City has concerns regarding the location and layout of the crossover.

Please refer to the previous response to the same point.

- Figure 3 suggests that the fuel tanker would be encroaching into the canopy which is not acceptable because its movement would be restricted when there is a vehicle stopping at the eastern most bowser location.

This fill point will be coned off during the fuel delivery operation. However, the fuel tanker would only service the site 2 to 3 times per week and generally outside peak operating conditions.

- Section 3.2 mentioned that "*Based on the information provided to Transcore, it is our understanding that the proposed car parking spaces are in accordance with relevant requirements*". The City disagrees with this statement because the car parking area has not been designed in accordance with AS2890. Please refer to previous section for details.

This statement by Transcore is relevant to number of parking bays and not the design of the parking bays. Further, the proposed new parking bays in front of the shop have been widened to 2.6m.

- Section 4 mentioned that "*Service vehicles are expected to access the site no more than 3-4 times a week and generally outside the peak road network and peak site activity periods*". Please note that this is difficult to manage as normally service vehicles would come at a time that suits them which could be during peak hours.

This is normal practice and service vehicle deliveries are scheduled.

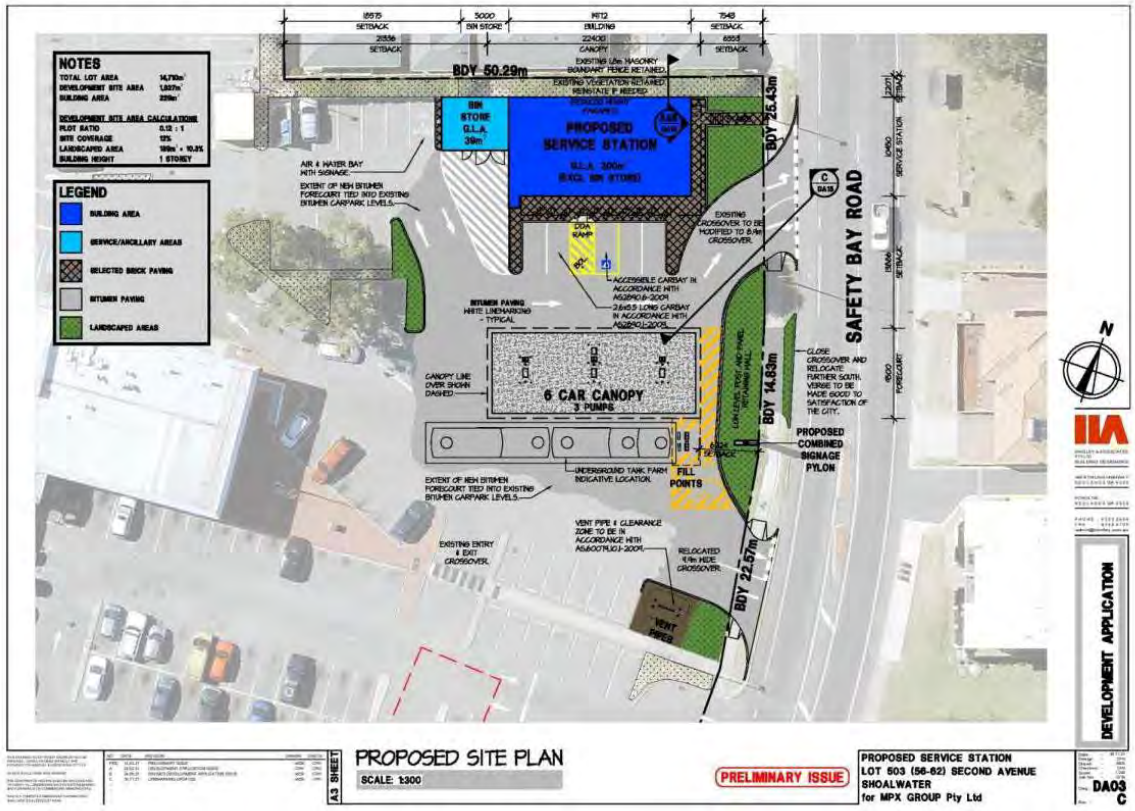
- Section 4 mentioned that "*Assuming a trip rate of 2vph per bay would result in existing trip generation of about 28vph for a Saturday. It is assumed that for a weekday the parking area trip generation is 50% of Saturday trip generation*". Please provide the reference used for these assumptions. It is noted that this is unlikely to change the outcome of the report.

This is an assumption and a very reasonable one and has been accepted for many previous projects.

- The City has concerns regarding the provided swept path analysis. Please refer to previous sections for details.

This concern is due to misreading the turn path plans. Please refer to the higher resolution turn paths provided.

Attachment 1: Proposed Revised Development Plan



Attachment 2: Revised Turn Path Plans

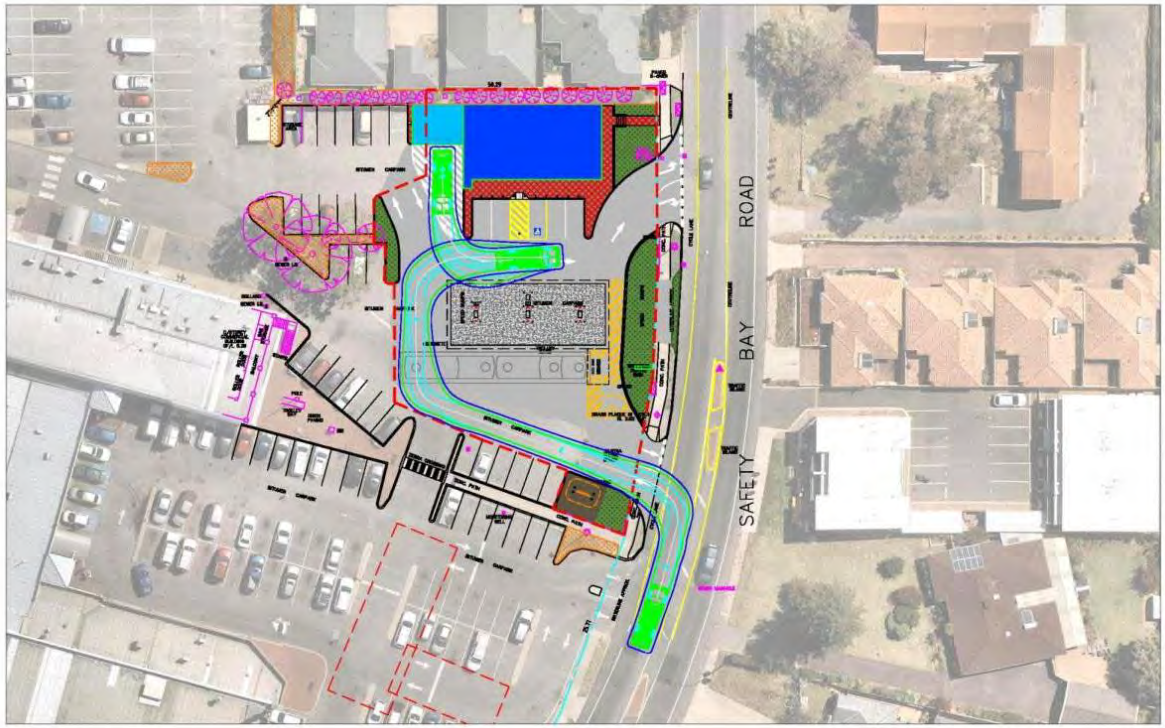


Lot 503 (56-62) Second Avenue, Shoalwater
Austroads 2013: 19.0m Semi-Trailer
Fuel Tanker Circulation

LEGEND
Vehicle Body
Wheel Path
500mm Clearance

t20.331.sk01b
15/12/2021
Scale: 1:500 @ A3

transcore

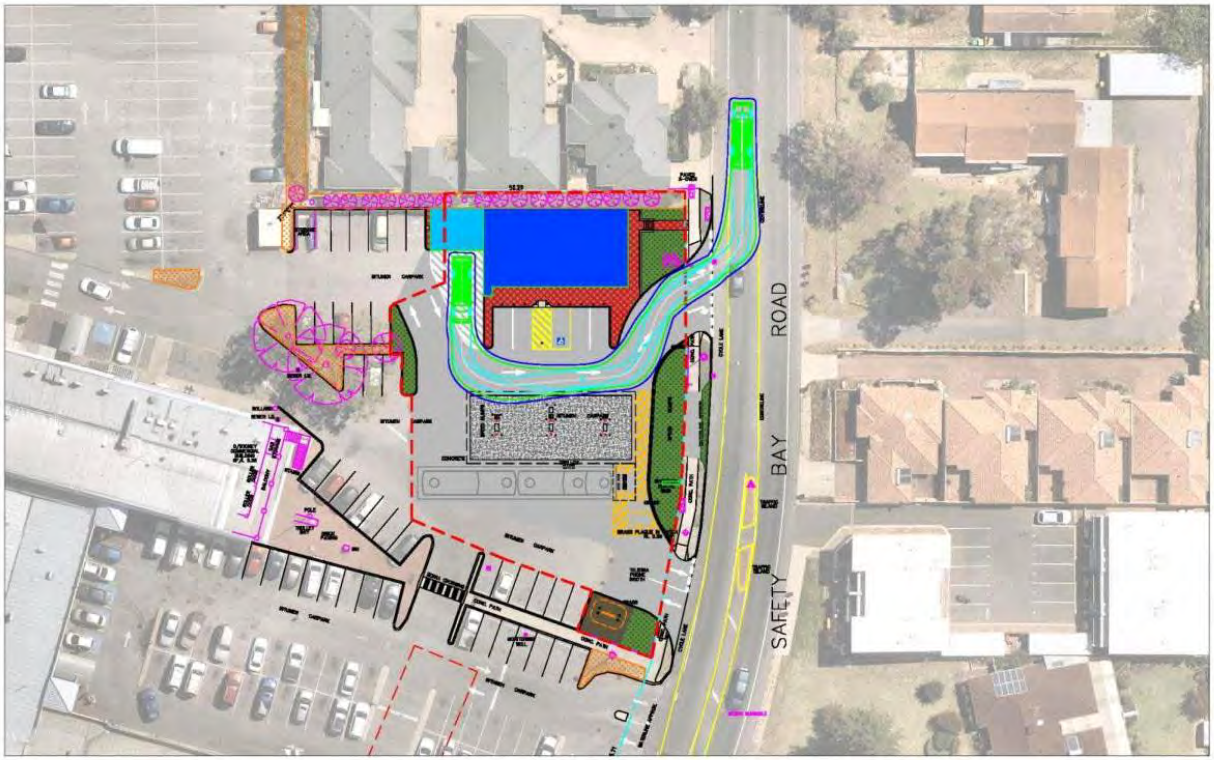


Lot 503 (56-62) Second Avenue, Shoalwater
Austroads 2013: 8.8m Service Vehicle
Service Vehicle Entry

LEGEND
Vehicle Body
Wheel Path
500mm Clearance

t20.331.sk02b
15/12/2021
Scale: 1:400 @ A3

transcore



Lot 503 (56-62) Second Avenue, Shoalwater
Austroads 2013: 8.8m Service Vehicle
Service Vehicle Exit

LEGEND
Vehicle Body
Wheel Path
500mm Clearance

t20.331.sk03b
15/12/2021
Scale: 1:400 @ A3

transcore

Attachment 2

Proposed Development Crossovers and Separations



Lot 503 (56-62) Second Avenue, Shoalwater

Proposed development crossovers and separations

t20.331.sk07

2/05/2022

Scale: 1:300 @ A3

Attachment 3

Crash Records

Detailed Crash History

Report Criteria

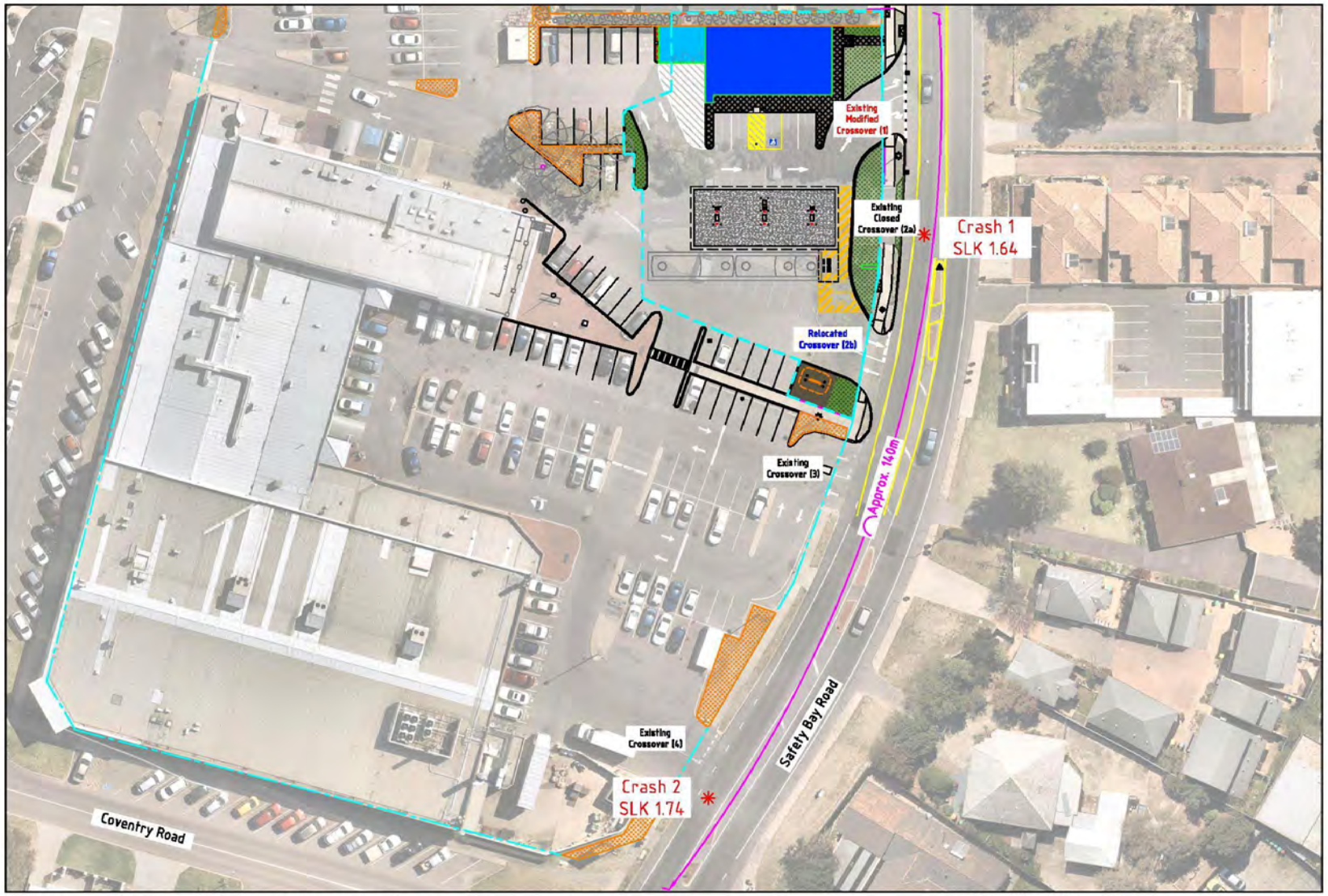
Road	SLK	CWY
1070003 - Safety Bay Rd	1.60 to 1.76	All

Parameter	Value	Description
From Date	01/01/2017	
To Date	31/12/2021	
Crash Type	Midblock	
Severity	All	

Road	Road Name	SLK	CWY	True Dist	Intersection	Date	Day	Time	Severity	Crash No.	Type	Light Cond	Road Cond	Speed Limit	Traffic Control	Road Feature	Road Alignment	Speed Factor	MR Nature	Location	RUM	Unit	Unit Type	From Dir	To Dir	Veh/Ped Move	First Object Hit	Second Object Hit	Third Object Hit	Target Impact Point
107000 3	Safety Bay Rd	1.64	S	1.64		28/11/ 2019	Thursday	1306	Hospital	20193 32315	Midblock	Daylight	Dry	60	No Sign Or Control		Straight			On Right Verge After Leaving Cway	40 Manoeuv: Other	Colliding	Station Wagon	S	N	Out Of Control: Other	Fence			
107000 3	Safety Bay Rd	1.74	S	1.74		15/06/ 2018	Friday	1500	Hospital	20181 25206	Midblock	Daylight	Dry	60	No Sign Or Control		Straight		Hit Object	On Left Verge After Leaving Cway	72 Off Path On Straight: Off Left Cway Obj	Colliding	Car	S	N	Out Of Control	Traffic Island	Kerb When Stated As Cause	Veh Parked Off Cway	

Attachment 4

Crashes Locations



Lot 503 (56-62) Second Avenue, Shoalwater

Crash Records

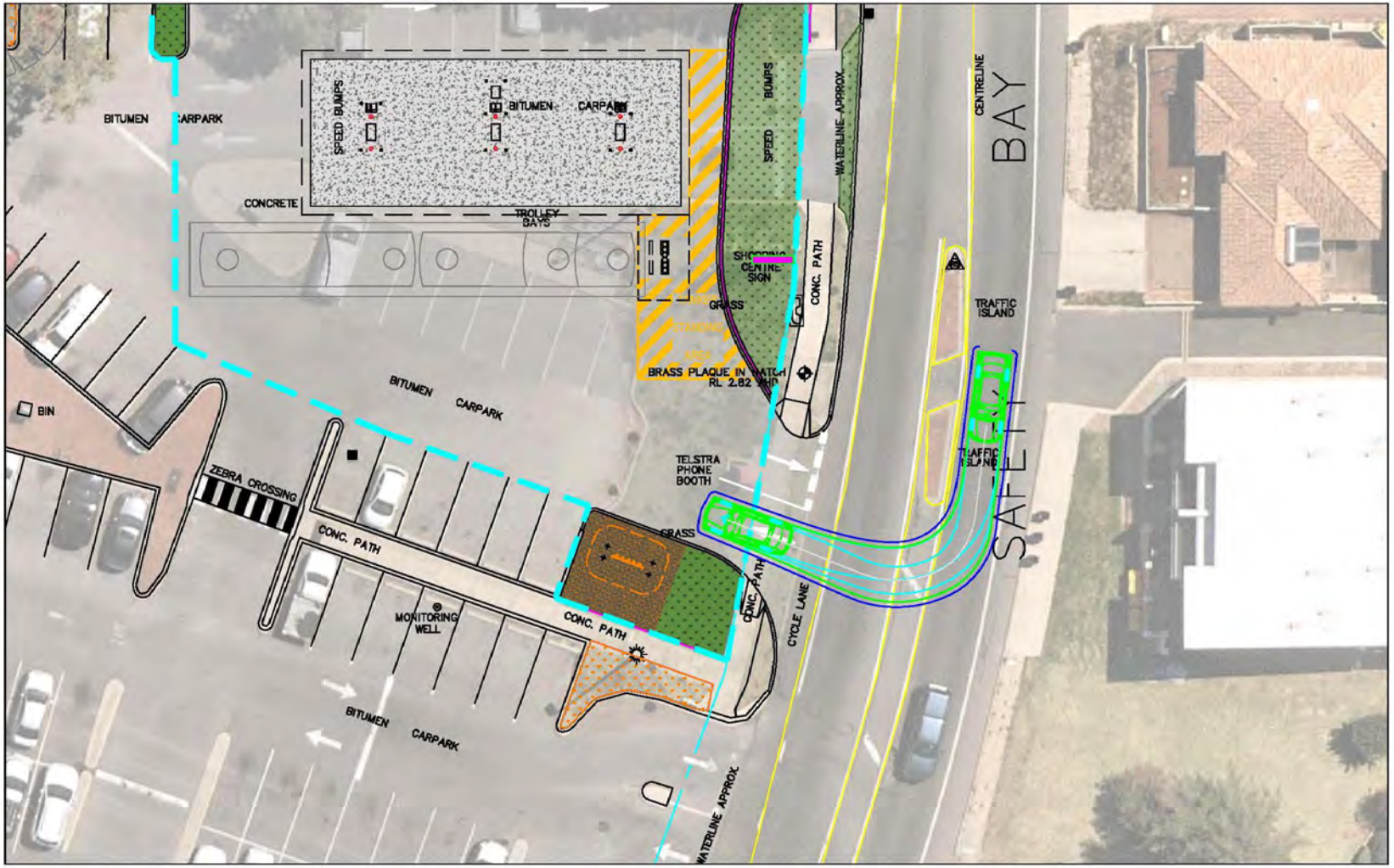
t20.331.sk08

2/05/2022

Scale: 1:500 @ A3

Attachment 5

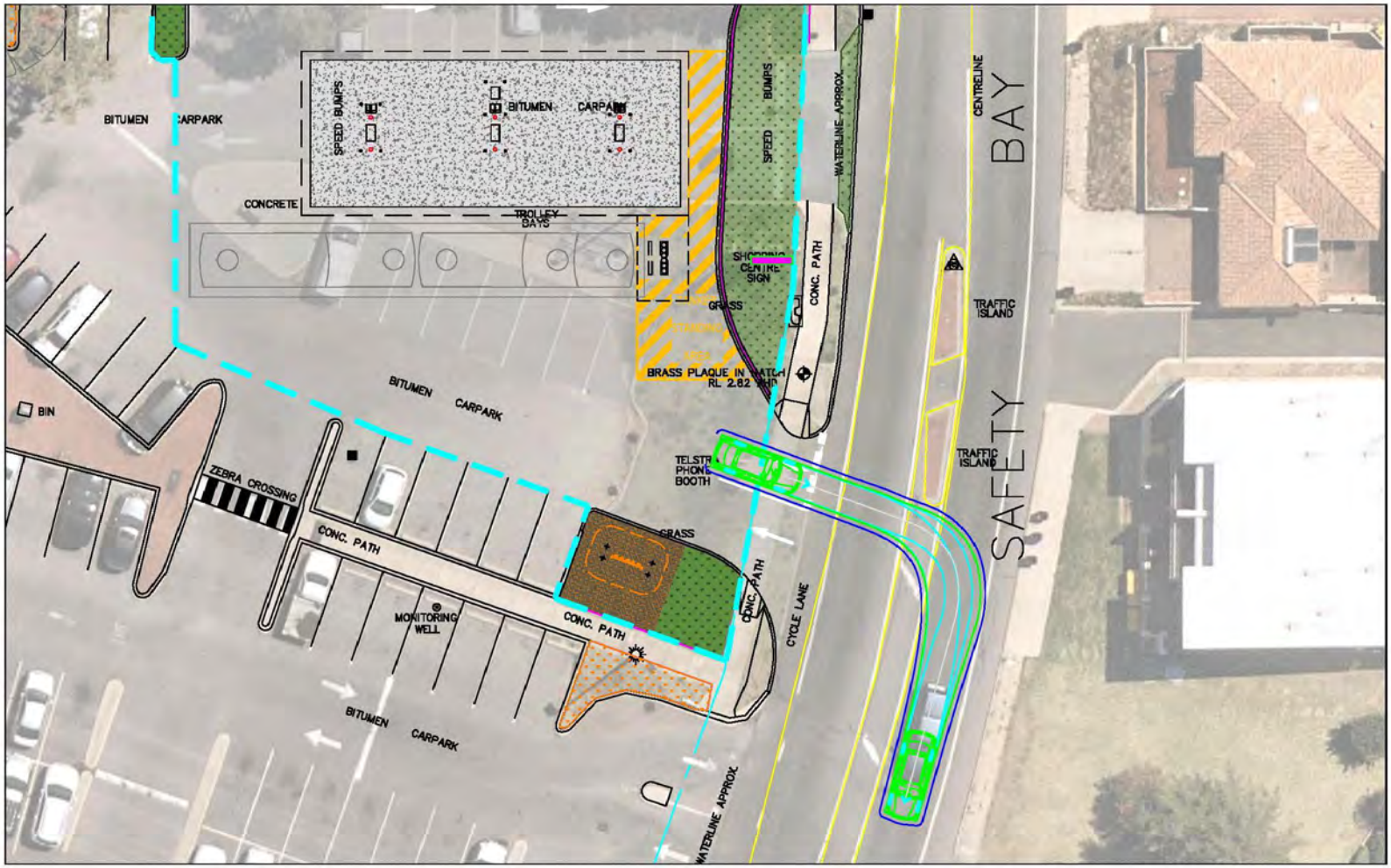
Turn Path Plans



Lot 503 (56-62) Second Avenue, Shoalwater
Austroads 2013: B99 Passenger Vehicle
Passenger vehicle turning right in from Safety Bay Road

LEGEND
Vehicle Body
Wheel Path
300mm Clearance

t20.331.sk09
2/05/2022
Scale: 1:200 @ A3



Lot 503 (56-62) Second Avenue, Shoalwater

Austroads 2013: B99 Passenger Vehicle

Passenger vehicle turning right out onto Safety Bay Road

LEGEND

Vehicle Body

Wheel Path

300mm Clearance

t20.331.sk10

2/05/2022

Scale: 1:200 @ A3

Government of **Western Australia**
Development Assessment Panels

Presentation Request Form

Regulation 40(3) and DAP Standing Orders 2020 cl. 3.5

Must be submitted at least 72 hours (3 ordinary days) before the meeting

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Please complete a separate form for each presenter and submit to daps@dplh.wa.gov.au

Presenter Details

Name	Alessandro Stagno
Company (if applicable)	Apex Planning
Please identify if you have any special requirements:	**YES ☐** **NO ☒** If yes, please state any accessibility or special requirements: Click or tap here to enter text.

Meeting Details

DAP Name	MOJDAP
Meeting Date	9 May 2022
DAP Application Number	DAP/22/02177
Property Location	Lot 503 (113-121) Safety Bay Road, Shoalwater
Agenda Item Number	8.1

Presentation Details

I have read the contents of the report contained in the Agenda and note that my presentation content will be published as part of the Agenda:	**YES ☒**
Is the presentation in support of or against the report recommendation)? *(contained within the Agenda)*	**SUPPORT ☒** **AGAINST ☐**
Is the presentation in support of or against the proposed development?	**SUPPORT ☒** **AGAINST ☐**
Will the presentation require power-point facilities?	**YES ☐** **NO ☒** **If yes, please attach**

Government of **Western Australia**
Development Assessment Panels

Presentation Content*

These details may be circulated to the local government and applicant if deemed necessary by the Presiding Member. Handouts or power points will not be accepted on the day.

Brief sentence summary for inclusion on the Agenda	*The presentation will address:* Explain the statutory planning reasons why the application should be approved.

In accordance with Clause 3.5.2 of the *DAP Standing Orders*, your presentation request must also be accompanied with a written document detailing the content of your presentation.

Please attach detailed content of presentation or provide below:

Refer to the attached submission.

apex planning

Submission to DAP

From:	Alessandro Stagno	**Date:**	5 May 2022
Subject:	Agenda item 8.1 – MOJDAP/171 – proposed service station Lot 503 (113-121) Safety Bay Road, Shoalwater		

Apex Planning is the applicant of the service station development proposed at Lot 503 (113-121) Safety Bay Road, Shoalwater (hereafter referred to as the **development site**).

From a review of the RAR, it is evident that the proposed service station development is largely supported by the responsible authority. However, the application is recommended for deferral based on traffic and access considerations (relating to the configuration/relationship of proposed and existing access points to the development site).

I will be presenting in **support** of the proposed development, in conjunction with Behnam Bordbar of Transcore. Mr Bordbar has prepared a separate submission to the DAP which comprehensively explains and justifies the suitability of the proposed access arrangements.

In addition to the above, the planning assessment contained within the RAR evidences the suitability of the proposed development for the site – having regard for:

- The appropriateness of establishing a service station on land zoned Commercial under Town Planning Scheme No.2 (**TPS2**), especially on a site which contains a shopping centre.
- Potential impacts associated with the nature of the proposed land use and 24-hour operations addressed to the satisfaction of the local authority, through the preparation of site-specific assessments which have been duly vetted and thoroughly assessed (including a peer reviewed assessment).
- The removal of parking bays to facilitate the proposed development does not create adverse impacts to the operation of the shopping centre or the service station, as verified through a survey and assessment undertaken by the City's traffic team.
- The nature/extent of freestanding signage (being three pylon signs along 130m of frontage of Safety Bay Road) not creating undue visual impacts to the locality.

With the above in mind, we respectfully request the MOJDAP resolves to **approve** the proposed development, as a deferral is clearly not necessary or warranted.

We would welcome the opportunity to review an alternate recommendation (if the Presiding Member is so minded to request one) and provide comments on conditions of planning approval at the meeting.

I look forward to presenting in support of this proposal on Monday 9th May, and will be pleased to respond to any questions from the Panel with respect to any of the matters outlined in this note.



ALESSANDRO STAGNO
APEX PLANNING

Government of **Western Australia**
Development Assessment Panels

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Presenter Details

Name	Michael Paton
Company (if applicable)	N/A
Please identify if you have any special requirements:	**YES ☒** **NO ☐** If yes, please state any accessibility or special requirements: Microsoft Project presentation

Meeting Details

DAP Name	20220509-n0 171-city of rockingham
Meeting Date	9 May 2022
DAP Application Number	DAP/No 171
Property Location	Lot 53 (No.67 Folly Road Baldivis
Agenda Item Number	No.171

Presentation Details

I have read the contents of the report contained in the Agenda and note that my presentation content will be published as part of the Agenda:	**YES ☒**
Is the presentation in support of or against the report recommendation)? *(contained within the Agenda)*	**SUPPORT ☒** **AGAINST ☐**
Is the presentation in support of or against the proposed development?	**SUPPORT ☐** **AGAINST ☒**
Will the presentation require power-point facilities?	**YES ☒** **NO ☐** **If yes, please attach**

Presentation Content*

Government of **Western Australia**
Development Assessment Panels

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Brief sentence summary for inclusion on the Agenda	*The presentation will address:* The negative impact of the visual and life style amenity of the local area

In accordance with Clause 3.5.2 of the *DAP Standing Orders*, your presentation request must also be accompanied with a written document detailing the content of your presentation.

Please attach detailed content of presentation or provide below:

We are asking you not to approve the community centre, Hindu Temple at 53 Folly Road Baldivis

As the applicant states, this is a peaceful , tranquil location, and a development of this size will not be suited in this rural setting.
How can it expected to be when there will be over 100 cars, 200 people from 7am till 9pm weekdays then over 300 on weekends, monthly festivals held twice a day from 7am till 9pm? then weddings from 6pm till 12pm? with up to 400 people.
Hire of the hall to third parties,
This development will be operating 7 days a week 365 days a year, which is clearly not in keeping with a rural life style.

A community centre would be nice but not at this location where there will be too much disruption to the immediate surrounding neighbours.
This development can easily be built elsewhere, we moved to rural Baldivis 26 years ago to avoid this sort of noise.

This development is 80m from our property we are on the north side and will have full view of the Temple.
This will have a huge effect on our amenities, our neighbours amenities and will never fit in with the Rural setting.

This application has caused me undue emotional stress and is weighing heavily on my health and wellbeing.

As I stated we have lived here for 26 years and so have many of our neighbours.
We plan to retire in 3 months hopefully to a quiet ,peaceful rural setting that we have been working towards for 26 years..

Such a development is not suited on this portion of land in Rural Baldivis.

Rural Baldivis is a lovely ,quiet, peaceful place where animals graze without fear of unexpected noise that they are not used to.

It is stated that the development is not consistent with the Rockingham City Town Planning scheme (2).
I would hope that you will take this into consideration before voting, that our own Rockingham Town Planners and our Rockingham 12 councillors all voted against this development in this location as it is not suited and is not keeping in with the Rural settings.
So please vote against this development and keep Rural Baldivis just that, RURAL

Baldivis Hindu Temple Development

- Michael and Cathy Paton
- 574 Young Road
- Baldivis



Talking Points

- Environmental Management Plan
- Visual amenity









Environmental Management Plan

- The City states if the development is approved , An environmental management plan will be required , who will review and approve this plan and will it be made publicly available for further comment prior to approval









The SP 2-5 Rural Planning guidelines section 5.11 Regional Facilities provide guidance below



Facilities should not be ***visually dominant*** within key viewsheds, and should be visually compatible with surrounding land uses and development;

Question: If Approved , the development will be totally alien to the character and amenity of the area, substantial structures, double story buildings, car parks being visually out of place in the rural environment, what justification would be deemed acceptable given the disruption it will create to the local amenity.



Visual Amenity





View from 574 Young Road Baldivis





The Attached pictures above are supplied to enforce th which are also reflected in the proposals.



Thanks and regards

Michael Paton

574 Young Road Baldivis

Government of **Western Australia**
Development Assessment Panels

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Presenter Details

Name	Gregory, Coleen & Alanda Spoonheim
Company (if applicable)	Click or tap here to enter text.
Please identify if you have any special requirements:	**YES** ☐ **NO** ☒ If yes, please state any accessibility or special requirements: Click or tap here to enter text.

Meeting Details

DAP Name	Metro Outer
Meeting Date	9 May 2022
DAP Application Number	DAP/21/02148
Property Location	Lot 53 (No.67) Folly Road, Baldivis
Agenda Item Number	8.2

Presentation Details

I have read the contents of the report contained in the Agenda and note that my presentation content will be published as part of the Agenda:	**YES** ☒
Is the presentation in support of or against the report recommendation)? *(contained within the Agenda)*	**SUPPORT** ☒ **AGAINST** ☐
Is the presentation in support of or against the proposed development?	**SUPPORT** ☐ **AGAINST** ☒
Will the presentation require power-point facilities?	**YES** ☐ **NO** ☒ **If yes, please attach**

Government of **Western Australia**
Development Assessment Panels

Presentation Content*

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Brief sentence summary for inclusion on the Agenda	*The presentation will address:* The effect the development will have on the rural environment and lifestyle and the water table.

In accordance with Clause 3.5.2 of the *DAP Standing Orders*, your presentation request must also be accompanied with a written document detailing the content of your presentation.

Please attach detailed content of presentation or provide below:

At the Ordinary Meeting of Council held on the 26th April 2022, it was resolved to recommend to the Metro Outer Joint Development Assessment Panel (JDAP) that the above application be **Refused**.

We reside directly to the west of said proposal across Young Road as identified above. Collectively we support the refusal.

Our reasons for supporting the refusal;

*Degradation and contamination of the water table.
*Raucous and frequent celebratory events creating noise pollution affecting sleep and well being, both physical and mental.
*Intrusion on the skyline with buildings uncharacteristic to the rural environment.
*Safety and traffic issues related to access and egress, extreme movement of people and vehicles.
* Potential to be a harbour for transients.
*Overall humbling of the ambiance of our rural community.

With careful consideration we are **supporting the refusal.**

Government of **Western Australia**
Development Assessment Panels

Presentation Request Form

Regulation 40(3) and DAP Standing Orders 2020 cl. 3.5

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Presenter Details

Name	Brad Woolley
Company (if applicable)	Click or tap here to enter text.
Please identify if you have any special requirements:	**YES** ☐ **NO** ☒ If yes, please state any accessibility or special requirements: Click or tap here to enter text.

Meeting Details

DAP Name	20220509-No 171 City of Rockingham
Meeting Date	May 9th 2022
DAP Application Number	DAP/No 171
Property Location	Lot 53 (No 67) Folly Road, Baldivis
Agenda Item Number	No. 171

Presentation Details

I have read the contents of the report contained in the Agenda and note that my presentation content will be published as part of the Agenda:	**YES** ☒
Is the presentation in support of or against the report recommendation)? *(contained within the Agenda)*	**SUPPORT** ☒ **AGAINST** ☐
Is the presentation in support of or against the proposed development?	**SUPPORT** ☐ **AGAINST** ☒
Will the presentation require power-point facilities?	**YES** ☐ **NO** ☒ **If yes, please attach**

Government of **Western Australia**
Development Assessment Panels

Presentation Content*

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Brief sentence summary for inclusion on the Agenda	*The presentation will address:* Click or tap here to enter text.

In accordance with Clause 3.5.2 of the *DAP Standing Orders*, your presentation request must also be accompanied with a written document detailing the content of your presentation.

Please attach detailed content of presentation or provide below:

Temple on Folly Road in Baldivis and support the recommendation for refusal of set temple.

I am totally AGAINST this proposed development in such a rural setting & in particular the current chosen location.

The development will be an eye-sore & aesthetically will not fit into such a quiet rural area. How this proposal has gotten this far is beyond me.

The location will also be dangerous to vehicles & pedestrians.
There is already a dangerous blind corner which has resulted in at least 1 fatality that I am aware of. Add to this the pedestrian traffic walking to the proposed Hindu centre & a new turn in lane & you have a recipe for disaster.
According to the documents that I have read, the traffic will be substantial at all times of the day.

There will also be a lot of delivery trucks constantly arriving due to the catering aspect of this development.

The development also is more of a 24/7 accommodation & activity centre, instead of just a simple place of worship.

The impact of the septic system on the surrounding wetlands will be horrendous & damaging to local wildlife.

The noise & light pollution is also of great concern to me & the impact has not been properly assessed in the development proposal.

I am dead set AGAINST this development & cannot understand how it even got this far through the system.
It seems to me that the entire thing was deliberately kept quiet so people would not have a chance to be against it.

I am thankful that some of my neighbours brought my attention to this & brought the community together to discuss.

Government of **Western Australia**
Development Assessment Panels

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Presenter Details

Name	Margaret Smith
Company (if applicable)	Click or tap here to enter text.
Please identify if you have any special requirements:	**YES** ☐ **NO** ☒ If yes, please state any accessibility or special requirements: Click or tap here to enter text.

Meeting Details

DAP Name	20220509-n0 171 – city of Rockingham
Meeting Date	9th May 2022
DAP Application Number	DAP/no 171
Property Location	Lot 53 (No 67 Folly Road Baldivis)
Agenda Item Number	No 171

Presentation Details

I have read the contents of the report contained in the Agenda and note that my presentation content will be published as part of the Agenda:	**YES** ☒
Is the presentation in support of or against the report recommendation)? *(contained within the Agenda)*	**SUPPORT** ☒ **AGAINST** ☐
Is the presentation in support of or against the proposed development?	**SUPPORT** ☐ **AGAINST** ☒

Will the presentation require power-point facilities?	**YES** ☐ **NO** ☒ **If yes, please attach**

Presentation Content*

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Brief sentence summary for inclusion on the Agenda	*The presentation will address:* My opposition against the Hindu Temple Development including the 89metre in length noise barrier.

In accordance with Clause 3.5.2 of the *DAP Standing Orders*, your presentation request must also be accompanied with a written document detailing the content of your presentation.

Please attach detailed content of presentation or provide below:

My name is Margaret Smith, our property is 547 (lot 923) Young Road Baldivis.

My husband and I purchased this property over 35 years ago to have a Rural Hobby farm and to build our home on it with the view to living a peaceful existence in our retirement.

Over the years we have saved and added electricity, replaced fences, gates, built a large 4 horse stable, 4 horse yards, a multi-purpose shed, bought tractors and farm equipment all to enjoy along the way and to set the property up for our retirement. Our home is to be built along side of our multi-purpose shed.

We have enjoyed this property with our children and now our grandchildren. We all spend most weekends enjoying our Rural Property. Our sons often use the shed during the week. This property is to be kept in the family for generations.

This proposed development is right next to me. We share the same fence line.

Our Rural view will be multiple buildings, a 113 space car park and an additional 89metre (in length) noise barrier.

Due to the State Planning Policy 3.7 – Planning Bushfire Prone Areas no trees can be planted on the Hindu Temple North boundary, this is our shared fence line.

None of this development can be hidden from our view. It will be clearly visible from any position on our property.

If this development is approved, how does an 89metre long man made noise barrier with a height yet to be determined, lacking any vegetation contribute to or fit in with the visual amenity of our Rural area.

Secondly, our proposed dwelling location will be severely impacted.

This 89 metre noise barrier does not fit in with the City's Town Planning Scheme No2 – which is to protect and enhance the visual character and amenities of the Rural Area.

My questions;

What is the height of this 89metre noise barrier?

How close to our shared fence line is the noise barrier going to be?

How does this development fit in with the existing Town Planning policies? Which is to protect and enhance the visual character and amenities of the Rural Area.

I am beyond shattered at the thought of this proposal.

The rural environment such as the one we live in is not suitable for a large scale multi-faceted development. We love the beautiful rural peaceful landscape.

If this goes ahead our 35 years of planning our retirement dream will be shattered.

I hope you vote against this development and let Rural Baldivis remain the tranquil Community that it is.

Regards

Margaret Smith



As lot 923 is shaped thinner at the front the proposed development will even more so visually impact our property.



The red X represents where our proposed new home will be built.

Below are images from my property of a view that will be lost.




547



Government of **Western Australia**
Development Assessment Panels

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Presenter Details

Name	Caroline Meeusen
Company (if applicable)	Click or tap here to enter text.
Please identify if you have any special requirements:	**YES** ☐ **NO** ☒ If yes, please state any accessibility or special requirements: Click or tap here to enter text.

Meeting Details

DAP Name	20220509-No 171 City of Rockingham
Meeting Date	May 9th 2022
DAP Application Number	DAP/No 171
Property Location	Lot 53 (No 67) Folly Road, Baldivis
Agenda Item Number	No. 171

Presentation Details

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Is the presentation in support of or against the report recommendation)? *(contained within the Agenda)*	**SUPPORT** ☒ **AGAINST** ☐
Is the presentation in support of or against the proposed development?	**SUPPORT** ☐ **AGAINST** ☒
Will the presentation require power-point facilities?	**YES** ☐ **NO** ☒ **If yes, please attach**

Government of **Western Australia**
Development Assessment Panels

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Brief sentence summary for inclusion on the Agenda	*The presentation will address:* The Temple development on Folly Road in Baldivis and support the recommendation for refusal of set temple.

In accordance with Clause 3.5.2 of the *DAP Standing Orders*, your presentation request must also be accompanied with a written document detailing the content of your presentation.

Please attach detailed content of presentation or provide below:

Temple on Folly Road in Baldivis and support the recommendation for refusal of set temple.

As a resident of the area since 2013 I am shocked this is even a suggestion. This is a quiet Rural area, the reason myself and my neighbours moved into this area was to get away from the hustle and bustle of the town and to live peacefully in nature. The proposed temple will certainly disrupt this quiet lifestyle. The proposed Temple isn't just a place of worship as they are trying to sell it to us, it's a full village on its own. Multi-purpose hall, green rooms, meeting rooms, audio rooms, yoga classes, dining hall, kitchens, library, storage rooms, 2x 2-story houses plus another dwelling for visiting families (up to 4 at a time)… the amount of people they cater for is enormous. They cater for more people and visitors than live in the immediate surrounding area. How does that not impact existing residents or wildlife for that matter. The number of proposed dwellings alone caters for 6x more families to live on this block at the same time than it would if it was just developed as a normal rural property. And no matter how good of a landscape architect they hire, you will always see that top of the temple above the trees. The building does not suit the landscape, plus the whole project is enormous, too big to suit the area.

The issue isn't that I'm against the temple, it's the location. There is another temple 15km from this one, why are they not looking to locate closer to Mandurah to reach a broader audience, why can't they put their temple where there is no surrounding housing yet. If people choose to build near the temple that's their choice but we chose to live away from the busy-ness, now it's being forced upon us.

The other problem with this location is the Wetlands that run right behind this block, with no town water or sewerage this is a disaster in the making for the environment and the local wildlife of which some is endangered.

And if it isn't that, there's the increase in traffic of a road that is already dangerous if you're unfamiliar with it.

Other concerns I have with this development is the noise pollution, light pollution at night from flood lights in the carparks or around the temple area and buildings, excess cars parked on the side of the road when they have big celebrations (111 carparks, what if they are full) which will not only impact the traffic safety issue but also bushfire safety,

also how do they run this as a not-for-profit venue with all those facilities.

I would like you to reconsider this Temple development, it does not suit this location at all, the impact it will have on the residents near the proposed structure, the impact on the carefully conserved wetlands and their wildlife, the rural lifestyle we all worked so hard for. I would like you all to vote against the Hindu Temple proposal as the Rockingham Council did unanimously. I am in favour of Refusing the Hindu Temple at this location.

Government of **Western Australia**
Development Assessment Panels

Presentation Request Form

Regulation 40(3) and DAP Standing Orders 2017 cl. 3.5

Must be submitted <u>at least</u> 72 hours (3 ordinary days) before the meeting

Presentation Request Guidelines

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Please complete a separate form for each presenter and submit to daps@dplh.wa.gov.au

Presenter Details

Name	Mr Geoffrey Tomlinson
Company (if applicable)	Click or tap here to enter text.
Please identify if you have any special requirements:	**YES ☐** **NO ☒** If yes, please state any accessibility or special requirements: Click or tap here to enter text.

Meeting Details

DAP Name	MOJDAP/171
Meeting Date	9 May 2022
DAP Application Number	DAP/21/02148
Property Location	Lot 53 (No 67) Folly Road, Baldivis
Agenda Item Number	Item 8.2

Presentation Details

I have read the contents of the report contained in the Agenda and note that my presentation content will be published as part of the Agenda:	**YES ☒**
Is the presentation in support of or against the <u>report recommendation</u>)? *(contained within the Agenda)*	**SUPPORT ☒** **AGAINST ☐**
Is the presentation in support of or against the <u>proposed development</u>?	**SUPPORT ☐** **AGAINST ☒**
Will the presentation require power-point facilities?	**YES ☐** **NO ☒** **If yes, please attach**

Government of **Western Australia**
Development Assessment Panels

Presentation Content*

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Brief sentence summary for inclusion on the Agenda	*The presentation will address:* Concerns for the water table and land value

In accordance with Clause 3.5.2 of the *DAP Standing Orders*, your presentation request must also be accompanied with a written document detailing the content of your presentation.

Please attach detailed content of presentation or provide below:

Having lived in and farmed the area surrounding the proposed development of the Hindu Temple development for 50 + years, Over the years I have witnessed what the Baldivis east Rural land is capable of dealing with. And what our lovable mud is capable of doing when saturation point is reached with a influx of a wet year !!I

In regards to the proposed developments double chlorinated highly rich effluent produced by the Temples visitors and live in residence of Up to 18 permanent and semi permanent residence ! Yearly 145,600 visitors ..😉

Site and Soil Investigation Report provided by the Developer by Waterinsite consulting services stated that the sewerage treatment to provide services to this proposal was too Provide for a daily system too handle a figure of

Daily 400 + worshipers !

Weekly 2800 worshipers!

Yearly. 145,600 worshipers!!!!!!😉

Effluent produced

Daily 15,300 litres

Weekly 107,100 litres

Yearly 5,569,200 million litres 😉 of double chlorinated nutrient rich salty effluent wastewater!!!!

Unbelievable amount to be soaked into the 2 to 3 metres of Bassendean soak sand topsoil where the leach drains will be placed. Which requires a leach drain of 180 metres long X 2.5 metres wide to handle this amount of effluent if on normally sandy top soil.. But here last year this area where the drains will be placed the ground water was only •6 too •8 of a metre below the grounds topsoil in places !!! Requirements from groundwater table to the base of the leach drains is a minimum of 1.5 metres !! So land fill required plus to cover drains say total fill to comply would be at the least around 2.5 metres on top of topsoil already there !!

The whole site would require land fill or the nutrient would have no where to filter too!!? 😉

The waste water produced is classified as double chlorinated nutrient rich salty effluent.! Which under no circumstances is to come in contact with people livestock native vegetations wildlife habitats waterways peel Serpentine Mundijong drains etc .

Folly Pool highly sensitive ecosystem study groups for environmental research into habits and water quality!!!

Drains down hill to Folly Pool ecosystem and waterways 😉the western end of the block is not available for the Temples use due to the highly sensitive Folly Pool ecosystem!!

All to be built on the sandy? Eastern 8 acres of this block which as stated had groundwater just below or pooling on the ground last year (in photos provided by the Site and Soil Investigation Report!!

You cannot expect 5.5 million litres of double chlorinated nutrient rich salty wastewater to be absorbed into the environment in this location , totally ridiculous expections of this mud based soil here !!

As what was allowed to occur at Pearce Airbase Bullsbrook, all their ground water is TOXIC and has to be trucked in and free to residents of the effected area of contamination !!

On this developments announcement land values in our area surrounding this development where reduced by 1/3 as the word got out about the proposal and it's placement! the other aspects of the sheer size of the residences and out buildings !

Lovely work your backside off to live the life we all came here for and shhh nobody will find out only tell the people in a 300/500 metre radius that will be good enough, hillbillies they is !!

Oh and 2 weeks later we get a rate increase of up to 65/70% because you're not rural really blokes 🤷🤔Thanks 👍but the Temple development is a registered charitable organisation so they pay no rates beauty , another kick in the wallet rate em GRV guy's! living the dream you city slickers!

Personally, that amount of effluent dumping on 53 Folly Rd Baldivis to me classifies it as a rural feed lot on the 8 acre of the eastern end!! Septic ground water in the future if passed members with the required Ya or Nay !!say !

Lot missed here but not the place and not appreciated one little bit thanking you...

From: [redacted]
To: Development Assessment Panels
Subject: Hindu Temple development on Lot 53 Folly Rd Baldivis East Precinct land zoned rural!!
Date: Saturday, 7 May 2022 3:39:58 PM

Information from their own report !! Not mine !!
2130AA_Rev2 Site and Soil Evaluation
[redacted]
Jeeyars Archarya Peettam Australia Ltd
2
Hi !
Activities within the land application area shall not interfere with the function of the current and
future land application system and people should avoid potential contact with effluent residues. !
Unless allowed for in the design, the land application area) should:
• not be built on or paved in a manner which precludes reasonable access
• not be subject to vehicular traffic (other than a pedestrian-controlled lawnmower)
• not be subject to regular foot traffic such as pathways and clothesline areas; and
• should be kept in a manner which enables servicing and maintenance of the disposal area
Land Application Area
Flatbed Leach Drains
Due to the scale of the development, flat bed leach drains are recommended to dispose of the
treated effluent as they require less space to infiltrate the effluent, when compared to surface
or sub surface irrigation!
For secondary treated effluent, the following calculation is used to determine the length of leach
drains required for both domestic and commercial applications.

The minimum length of leach drains required to dispose of the effluent via leach drains is 118 m
(15,300 l/day ÷ 50 ÷ 2.6).
A minimum of two rows of leach drains are required to allow for maintenance to be completed.
The leach drains are 2.5m wide and require 1.8m separation between each bed.
The possible configuration of leach drains would be 6 drains x 20m long. The footprint required
for installation is approximately 24m x 20m, plus setback clearances. The leach drains will need
to be semi inverted to achieve a clearance of 1.5m to the maximum groundwater level year-
round.
My final to read item !!
Finally I yet to date have had any feedbacks from the Peel Harvey Nutrient Catchment Authority or Folly Pool drain highly sensitive ecosystem study groups by 6 ..! Swan Avon valley/Serpentine/Mundijong wet land groups on any thoughts on this proposed development and their thoughts and input into this proposed development on a 18 acre Rural block uphill from a yearly input of 5.6 million litres of double chlorinated nutrient rich salty effluent produced annually for years to come ...which is a worry as they I believe have a Duty of Care interest here ??!...

... and in years too come deep sewage will run passed the gate and hookup with the system!! Problem solved ...

No the damage is done people's !!
You have the final say but if yes you have sorry destroy any faith and respect this tightly knit community have in their Local Council and finally the power you possess to override our communities thoughts on this matter for a rural family to live in peace and tranquility and retain some sense of normality in this highly stressful period of history ! This decision if the proposal is approved will absolutely destroy 15 families lives in close vicinity of the temple forever and to maintain their sanity will have to sell and move elsewhere as this is the end of their rural dream's and soul destroying !!

Thought this was a joke 3 months ago but it's turned into our rural communities worst nightmare !!

Hopefully you will read my rural outlook on this! , Which basically is a visitors list of 154,000 mates coming to visit yearly for ever, arriving at 6 am and leaving at 9pm 365 days of the year leaving donations $$$$ and 5,560,00 million litres of toxic effluent in my mates block next door and pay no rates for the the privilege of doing so!! ..
Poor buggers hope my neighbours are extremely understanding deaf and blind !
Retired anyways so doesn't matter they'll grow to love it !!
Sent with a rural sense of Aussie humour !! Ho ho ...
Yours sincerely Geoffrey Tomlinson .
Thanking you for your time!!

Government of **Western Australia**
Development Assessment Panels

Presentation Request Form

Regulation 40(3) and DAP Standing Orders 2020 cl. 3.5

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Presenter Details

Name	Michelle Harvey
Company (if applicable)	Click or tap here to enter text.
Please identify if you have any special requirements:	**YES** ☐ **NO** ☒ If yes, please state any accessibility or special requirements: Click or tap here to enter text.

Meeting Details

DAP Name	20220509-No 171-City of Rockingham
Meeting Date	9th May 2022
DAP Application Number	DAP/No 171
Property Location	LOT 53. 67 Folly Rd Baldivis
Agenda Item Number	No 171

Presentation Details

I have read the contents of the report contained in the Agenda and note that my presentation content will be published as part of the Agenda:	**YES** ☒
Is the presentation in support of or against the report recommendation)? *(contained within the Agenda)*	**SUPPORT** ☒ **AGAINST** ☐
Is the presentation in support of or against the proposed development?	**SUPPORT** ☐ **AGAINST** ☒
Will the presentation require power-point facilities?	**YES** ☐ **NO** ☒ **If yes, please attach**

Government of **Western Australia**
Development Assessment Panels

Presentation Content*

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Brief sentence summary for inclusion on the Agenda	*The presentation will address:* Click or tap here to enter text. **Support for the REFUSAL of the Hindu Temple Baldivis**

In accordance with Clause 3.5.2 of the *DAP Standing Orders,* your presentation request must also be accompanied with a written document detailing the content of your presentation.

Please attach detailed content of presentation or provide below:

Click or tap here to enter text., Hi to whom it may concern,

I am lodging my opposition to the proposed Hindu Temple being situated in Baldivis East. My family and I recently moved to rural Baldivis 1 year ago after 18 years in residential Baldivis. We absolutely love the peace and quiet that we have achieved.

I am so shocked and saddened that the Hindu temple is even being proposed to be built there! This is a RURAL area with many RURAL rules that we as a family have had to adhere to when moving here.

Why are the rules so very different for other people? Unless there is obviously major financial gain to be made by someone??!

If this venture goes ahead, the council will be inundated with requests to have the local residents RURAL rules changed too.

The fact that there will be such an dramatic environmental impact is horrendous in itself! The nearest temple is literally just minutes away? In a much more well suited spot.
It makes NO sense at all.

As a registered nurse, working providing Covid vaccinations to our community and state, I beg you to reconsider this proposal.

As a nurse working in a diverse multicultural society for the last 31 years, I have no problem at all with the Hindu religion or any religion or belief but please don't build it there! It makes no sense whatsoever,

I am very happy to see the support of our local council REFUSING the proposal, the listing of 7 different reasons WHY it should be refused is enough, but the overall impact of such a complex would be devastating to our rural setting.

The facts and figures speak for themselves as you have already seen.

Government of **Western Australia**
Development Assessment Panels

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Presenter Details

Name	Debbie MacKenzie
Company (if applicable)	Click or tap here to enter text.
Please identify if you have any special requirements:	**YES ☐** **NO ☒** If yes, please state any accessibility or special requirements: Click or tap here to enter text.

Meeting Details

DAP Name	20220509-No 171 – City of Rockingham
Meeting Date	9 th May 2022
DAP Application Number	DAP/No 171
Property Location	Lot 53 (No 67 Folly Road, Baldivis)
Agenda Item Number	Number No 171

Presentation Details

I have read the contents of the report contained in the Agenda and note that my presentation content will be published as part of the Agenda:	**YES ☒**
Is the presentation in support of or against the report recommendation)? *(contained within the Agenda)*	**SUPPORT ☒** **AGAINST ☐**
Is the presentation in support of or against the proposed development?	**SUPPORT ☐** **AGAINST ☒**
Will the presentation require power-point facilities?	**YES ☐** **NO ☒** **If yes, please attach**

Government of **Western Australia**
Development Assessment Panels

Presentation Content*

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Brief sentence summary for inclusion on the Agenda	*The presentation will address:* Support for the **REFUSAL** of the Hindu Temple Complex

In accordance with Clause 3.5.2 of the *DAP Standing Orders*, your presentation request must also be accompanied with a written document detailing the content of your presentation.

Please attach detailed content of presentation or provide below:

Hindu Temple and complex on Folly Road in Baldivis and support the recommendation for REFUSAL.

As a resident of 8 years, within the east Baldivis rural estates, I am writing to support Rockingham City Council decision to **oppose** the building of the Hindu Temple Complex , located at Lot 53, (No 67) Folly Road Baldivis.

First and foremost , I want it to be stated that I am not against any community / religious group having a place to congregate or worship – my opposition is based on the location, size of development, environmental concerns – wetlands / noise, as well as logistics with roads and traffic congestion.

This multi-faceted complex / development is in total contraction of the 'rural ' lifestyle that is identified and classified within the South Metropolitan Sub –Regional Framework and recognised by Rockingham City in the Rural Land Strategy for its environmental significance and visual amenity. The clause 4.11.1 states 'to preserve land for farming and foster semi- rural development which is sympathetic to the particular characteristics of the area in which it is located. As such, I question how the proposed Hindu Temple and Cultural Centre as described in the application and proposes to be an exceptionally large complex and living facility can possibly fall under the category of rural or semi rural.

The visual impact of the temple and buildings is at total odds with the rural amenities of Baldivis East. I call into question the authenticity of the architectural design and statements that states this entire complex will " sit comfortably within the natural landscape and align with locality builds". A two story house is reported to be approximately 5 – 6 meters in height - the temple on its own is approximately 18 m high at its tallest point , length at 46m and width at 23m and again I fail to see how something this large and imposing will 'blend and maintain the visual amenity of the landscaped area' let alone be ' obscured by trees.
This visual impact is only looking at the temple itself and not all the other buildings within this complex. I refer to photos and maps of other temples within the Perth region and it is obvious that these structures do not fit within the brief of 'blending into the natural environment'.

Based on these concerns alone, I applaud Rockingham City Council in their decision to **refuse the proposal** :- *" 5. The acoustic barrier required to mitigate noise on Lot 923 Young Road, Baldivis is considered to adversely impact visual amenity when viewed from land to the north of the site; Young Road adjoining the site to the east, and potentially from Folly Road to the south. 6. The proposed development includes 'Grouped Dwellings' which is a prohibited ('X') land use in the Rural zone, under the City's Town Planning Scheme*"

Other concerns with this proposal are:-

1. Environmental – this rural area is under the banner of 'sewerage sensitive'. My concern is for the water levels / sewerage / drainage and damage to the flora and fauna of the area. The Folly Pool area is a natural waterway which includes the link to the Alcoa wetlands is an extremely important one. The local conservation groups have for a number of years been working to ensure that this waterway and stretch of natural bush supports and homes many species, including the threatened Quenda, along with the long neck turtle, blue billed duck, frogs, snakes, and bird life. The environmental impact of over 400 people using the numerous toilets / bathrooms/ laundries and kitchens on a very regular basis is of utmost concern.

After monitoring the huge variation in the water levels on this site and area around over the last 8 years I have grave concerns over the sizes and designs of the sewerage systems and the requirements for the leach drains and treatment units.
I ask who will monitor the food and water wastage that goes into the sewerage systems as well as monitoring the impact of this on the various species of wildlife, the water and surrounding land. I ask what the recommendations will be put in place for any emergency and/ or restoration plans for the Folly Pool waterways, the land surrounding the area and wildlife (birds / animals and reptiles that inhabit the area) should any issues arise with failures of the systems. I ask what penalties would be enforced if there is a total break down of the ecological system, who will monitor this / how often and how quickly will restoration take place? With the world wide discussion on the impact of man on the environment a complex as large and imposing of this on a fragile ecosystem appears to be filled with issues.

2. I have grave concerns about the threatened species of Carnaby Cockatoos, Red Tail Parrots, Mopokes, Kookaburras, variety of duck species and numerous smaller parrot species - all of which nest and utilising the natural bushland and waterways around our area. Over the last 8 years, we have consciously and deliberately replanted trees to maintain and encourage more bird life, counting up to 15 different species that nest and / or return to this area every year. I am again concerned about the waterways, the extra noise pollution (both through extra cars but also activities on the cultural site) and how numerous visitors every day will impact the breeding / nesting and safe environment of the above mentioned birds, let alone other species of animals and reptiles.

3. Noise concerns –the Hindu faith celebrates and participate in numerous festivals each month (mostly held outside using a variety of musical instruments, singing, ringing of bells and in some instances are using bonfires, colourful powder and fireworks), as well as the daily activities of prayer groups, Yoga, children's group and providing food throughout the day all appear to be in direct opposition to the rural setting that is Baldivis East. I believe that the Acoustic report proposed is one which is highly misleading and does not present a true and clear picture of the reality of the noise / length and times of the everyday events - let alone festivals and weddings. I ask who will be monitoring the length and noise levels, as well as the number of people attending of the daily prayer groups , festivals and weddings? Again this is a huge impact on our quiet rural lifestyle – one which enjoys the peace and serenity of nature.

4. Traffic concerns :- Folly Road and the adjoining St Albans Road are not designed for the influx of traffic that it is being used for at the moment. The increase in the last 8 years, in particular with the opening of the Water Park, has seen the traffic and flow increased monumentally. The roads are narrow, have no shoulder, the current road edges crumbling, have no pedestrian or cycle paths, very poor road lighting and most importantly have two extremely unsafe and dangerous turns in the road. The bend between Folly and St Albans has had numerous incidents with minor car accidents, run offs into the bush or onto private property due to in misjudgment of speed and sharpness of the turn. The unfortunate death on the corner of Young and Folly is point in case for the poor road design. My concerns being that by adding over 100 more cars (possibly on a daily occurrence and

more on weekends) on roads that are not known to the drivers, at various times of the day and night is only a disaster waiting to happen.

For the above concerns I am delighted that the Rockingham City Councilors (12 to 0) **OBJECTED** to this proposal, (in accordance with Clause 68 of the Planning and Development (Local Planning Schemes) Regulations 2015 and the provisions of clause 68(2)(c)) of the deemed provisions of the City of Rockingham Town Planning Scheme No.2) listing 7 different reasons and recommended that MOJDAP resolve to **REFUSE** the DAP application.

I and my partner are **OPPOSED** to the building of the Hindu Temple and Cultural Centre in the proposed location Folly Road , Baldivis East.

Government of **Western Australia**
Development Assessment Panels

Presentation Request Form

Regulation 40(3) and DAP Standing Orders 2020 cl. 3.5

Must be submitted at least 72 hours (3 ordinary days) before the meeting

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Presenter Details

Name	Peta Sims
Company (if applicable)	Click or tap here to enter text.
Please identify if you have any special requirements:	**YES ☐** **NO ☒** If yes, please state any accessibility or special requirements: Click or tap here to enter text.

Meeting Details

DAP Name	20220509-No 171 – City of Rockingham
Meeting Date	9th May 2022
DAP Application Number	DAP/No 171
Property Location	Lot 53 (No 67 Folly Road, Baldivis)
Agenda Item Number	No 171

Presentation Details

I have read the contents of the report contained in the Agenda and note that my presentation content will be published as part of the Agenda:	**YES ☒**
Is the presentation in support of or against the report recommendation)? *(contained within the Agenda)*	**SUPPORT ☒** **AGAINST ☐**
Is the presentation in support of or against the proposed development?	**SUPPORT ☐** **AGAINST ☒**
Will the presentation require power-point facilities?	**YES ☐** **NO ☒** **If yes, please attach**

Government of **Western Australia**
Development Assessment Panels

Presentation Content*

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Brief sentence summary for inclusion on the Agenda	*The presentation will address:* Hindu Temple – Support for Refusal

In accordance with Clause 3.5.2 of the *DAP Standing Orders*, your presentation request must also be accompanied with a written document detailing the content of your presentation.

Please attach detailed content of presentation or provide below:

Temple on Folly Road in Baldivis and support the **recommendation for REFUSAL.**

I have been living in this rural area of Baldivis for 5 years. This is our forever home that we have worked extremely hard for. The word I would like to emphasise here is **RURAL**. A rural setting is that of nature, farming, peace, animals and tranquillity. The construction of a Hindu Temple will be an invasion of my amenities and again voice my strong objection.

The residents of Baldivis East should not have to compromise their way of life, their rural amenity, to accommodate a Hindu Temple that clearly will not fit and blend in to the Rural setting of their/our chosen life. The proposed development is not consistent with the strategic intent for Planning Precinct 2A under the City of Rockingham Planning Policy and it has not been sufficiently demonstrated that the development will protect and enhance the visual character of the rural area. The impact that this proposal will have on our visual amenity in this area will prove to be catastrophic, not to mention the stress and anxiety that has already caused by all of the implications that it will bring to the area.

The average population of Hindu in the Rockingham area is 577 according to the 2016 census report. In the 2020 report, it states that the population in Rockingham grew by 1.8% in this 4-year period, meaning that the population of people who practice Hindu in the Rockingham area would average out to 587 people. Exceedingly small in comparison to Catholic or

Christion religions which is around 62,000 in the Rockingham area.
A Hindu Temple to the value of $5 million dollars being built to cater for the surrounding Hindu population of 587 is a little excessive considering 15.2km away (11 minutes by car) there is already a Hindu Temple in Mandogalup.

The meaning of “Place of Worship” is - “A building where believers can practise their faith”. Not go to the library, go out to the eating hall, go to a concert, play on the playground, stay for a week or attend a yoga class.
The report states that the multiple of other buildings fit into the category “Place of Worship” – Multi-purpose hall, which includes green rooms, meeting rooms, audio rooms, a stage, yoga classes, library, storage rooms, a dining hall, 3 kitchens, 2 x two storey accommodations– the list goes on…
The proposed development also states that the short term accommodation on site (which can accommodate 4 families at a time) is provided for occasional guests that will stay for 1 week. – My question is – who is going to govern this? Guests can stay for up to a week, but who is going to govern that the accommodation is not going to used 52 weeks of the year? This has the capability of turning into a motel if ungoverned. (Group Dwellings are prohibited in the Rural Zone under the cities Town Planning Scheme No 2)

The proposal states that the proposed Temple is being built to maximise its connection with the surrounding natural environment to ensure a positive environmental, social and economic outcome. The shear intensity of this proposed development exceeds what could be reasonably expected within this rural area. The acoustic barrier required to mitigate noise will alone adversely impact the visual amenity. This is a rural location that caters for family living. The environment in which we chose to live will be destroyed, our rural amenity will be gone and for some, our stress free environment is in question, which is already causing mental angst. How is this

positive?
I strongly urge the council to please take into consideration the neighbouring residents, the residents in the near vicinity and the impact it will have on our rural amenity and choose to vote against the Hindu Temple proposal, just as the Rockingham Council has done 12-0.
I would like to again mention that I am in favour FOR THE <u>REFUSAL</u> for the Hindu Temple.

Government of **Western Australia**
Development Assessment Panels

Presentation Request Form

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Presenter Details

Name	Fiona Tassell
Company (if applicable)	Click or tap here to enter text.
Please identify if you have any special requirements:	**YES** ☐ **NO** ☒ If yes, please state any accessibility or special requirements: Click or tap here to enter text.

Meeting Details

DAP Name	20220509-No 171 – City of Rockingham
Meeting Date	9th May 2022
DAP Application Number	DAP/No 171
Property Location	Lot 53 (No 67 Folly Road, Baldivis)
Agenda Item Number	No 171

Presentation Details

I have read the contents of the report contained in the Agenda and note that my presentation content will be published as part of the Agenda:	**YES** ☒
Is the presentation in support of or against the report recommendation)? *(contained within the Agenda)*	**SUPPORT** ☒ **AGAINST** ☐
Is the presentation in support of or against the proposed development?	**SUPPORT** ☐ **AGAINST** ☒
Will the presentation require power-point facilities?	**YES** ☐ **NO** ☒ **If yes, please attach**

Government of **Western Australia**
Development Assessment Panels

Presentation Content*

These details may be circulated to the local government and applicant if deemed necessary by the Presiding Member. Handouts or power points will not be accepted on the day.

Brief sentence summary for inclusion on the Agenda	*The presentation will address:* Hindu Temple – Support for REFUSAL

In accordance with Clause 3.5.2 of the *DAP Standing Orders*, your presentation request must also be accompanied with a written document detailing the content of your presentation.

Please attach detailed content of presentation or provide below:

Hindu Temple on Folly Road in Baldivis and support the recommendation for REFUSAL.

As residents of 8 years within this Baldivis east rural area my husband and I would like to show our support for the Rockingham Council's decision to recommend refusal of this proposed Hindu temple complex development.

This region of Baldivis is a rural area and as such we fail to see how a complex / community center of this size would "sit comfortably within the natural landscape and align with locality builds". The development itself is far more than just a "Place of Worship" which by definition is "a building for religious services". Therefore the temple is a place of worship but a multipurpose hall with amenities, 2 commercial kitchens, a dining hall, 2 double story residences, guest residences, a library and numerous toilet facilities is not.
Might I also add that the numerous dwellings and toilet facilities proposed within this development are prohibited for all other land owners within this rural area.

The development application suggests that "The design sensitively addresses and visually connects with the surrounding natural environment through the proposed use of traditional building materials and colours for the buildings and the clustering of the built form. The design of the buildings with sweeping verandas and pitched roofs further connects the development to the semi-rural character of this location." We fail to see how the use of limestone, timber and colourbond is going to make the 20m and 18.5m Goparums as well as the 14.5m roof parapets and chariot entrances blend in to the rural setting.

Within the Accousitc Report that was submitted with the development application, there is no mention in this report of any outside noise created when open air areas are in use. On page 6 of the report it states "In addition to the above, Hindu weddings are proposed to be held on occasion. We understand these would be held within the hall on weekends, with an average of six events per year. The maximum number of attendees at weddings is 400. Further detailed consideration of these proposed events will be required so that potential noise impacts can be managed."
We find it hard to believe that a celebration with 400 people would be completely contained within a hall for the entire day/night. People would use the outdoor areas during this time and there has been no reporting made on the noise impact this would have.

My husband and I have worked extremely hard for many years to be able to purchase our land and build our semi-rural life to raise our children. We want a peaceful, rural lifestyle and the Hindu temple construction would be an incursion on our amenities. **We firmly voice our support of the Rockingham Council's decision to recommend refusal for this development.**

Government of **Western Australia**
Development Assessment Panels

Presentation Request Form

Regulation 40(3) and DAP Standing Orders 2020 cl. 3.5

Must be submitted at least 72 hours (3 ordinary days) before the meeting

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Please complete a separate form for each presenter and submit to daps@dplh.wa.gov.au

Presenter Details

Name	Bruce and Julie Davey
Company (if applicable)	N/A
Please identify if you have any special requirements:	**YES** **NO** ☐X If yes, please state any accessibility or special requirements:

Meeting Details

DAP Name	20220509-n0 171-city of rockingham
Meeting Date	9 May 2022
DAP Application Number	DAP/No 171
Property Location	Lot 53 (No.67 Folly Road Baldivis
Agenda Item Number	No.171

Presentation Details

I have read the contents of the report contained in the Agenda and note that my presentation content will be published as part of the Agenda:	**YES** ☒
Is the presentation in support of or against the report recommendation)? *(contained within the Agenda)*	**SUPPORT** ☒ **AGAINST** ☐
Is the presentation in support of or against the proposed development?	**SUPPORT** ☐ **AGAINST** ☒
Will the presentation require power-point facilities?	**YES** **NO** ☐X **If yes, please attach**

Government of **Western Australia**
Development Assessment Panels

Presentation Content*

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Brief sentence summary for inclusion on the Agenda	*The presentation will address:* Our support for the **REFUSAL** of the Hindu Temple proposal

In accordance with Clause 3.5.2 of the *DAP Standing Orders*, your presentation request must also be accompanied with a written document detailing the content of your presentation.

attach detailed content of presentation or provide below:

As a resident and rate payer in the Rockingham City Council for over 20 years we believe a complex such as the proposed Hindu temple will visually impact the rural amenity.

Its not consistent with the City's Town Planning Scheme (clause 4.11.1) which is to preserve the land for farming and foster semi-rural development.

Nor will it enhance or protect the visual character that is RURAL life.

We have been wondering how the application has got as far as it has, given the City's Town Planning Scheme prohibits "grouped dwellings". It definitely has grouped dwellings as well as a massive 110 space carpark, commercial buildings and a couple of 2 storey residence buildings to name a few.

There are way too many buildings over the scope that makes up rural life out in East Baldivis. The visual impact it would make would be detrimental for our area. We all chose rural living for a reason, one being to get away from the noise and close proximity of neighbours, yet here is a proposed development encroaching on those very values we hold dear.

Then there's the devastating effect it would have on our waterways. As a direct neighbour (66 Folly Rd Baldivis) we know the land intimately and the amount of effluent caused from the volume of people attending throughout the year with our high water table would be tremendous! We worry about our only water source (from the ground as there's no scheme water out in rural Baldivis) and the impact of the contaminates for us, our animals and the native flora and fauna.

There are so many reasons why this development should **NOT** *be approved and I implore you to read every one of the residents statements who would be impacted by a complex such as this.*

There is a reason why the Rockingham Council vote was a unanimous vote of 12-0 objecting to the development and we hope you vote against it too.

Thank you for your time,
Bruce and Julie Davey
66 Folly Rd Baldivis

Government of **Western Australia**
Development Assessment Panels

Presentation Request Form

Regulation 40(3) and DAP Standing Orders 2020 cl. 3.5

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Please complete a separate form for each presenter and submit to daps@dplh.wa.gov.au

Presenter Details

Name	Mandy Christensen
Company (if applicable)	Click or tap here to enter text.
Please identify if you have any special requirements:	**YES ☐** **NO ☒** If yes, please state any accessibility or special requirements: Click or tap here to enter text.

Meeting Details

DAP Name	20220509-No 171 – City of Rockingham
Meeting Date	9 th May 2022
DAP Application Number	DAP/No 171
Property Location	Lot 53 (No 67 Folly Road, Baldivis)
Agenda Item Number	Number No 171

Presentation Details

I have read the contents of the report contained in the Agenda and note that my presentation content will be published as part of the Agenda:	**YES ☒**
Is the presentation in support of or against the report recommendation)? *(contained within the Agenda)*	**SUPPORT ☒** **AGAINST ☐**
Is the presentation in support of or against the proposed development?	**SUPPORT ☐** **AGAINST ☒**
Will the presentation require power-point facilities?	**YES ☐** **NO ☒** **If yes, please attach**

Government of **Western Australia**
Development Assessment Panels

Presentation Content*

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Brief sentence summary for inclusion on the Agenda	*The presentation will address:* Support for the **REFUSAL** of the Hindu Temple Complex

In accordance with Clause 3.5.2 of the *DAP Standing Orders*, your presentation request must also be accompanied with a written document detailing the content of your presentation.

Please attach detailed content of presentation or provide below:

Hindu Temple and complex on Folly Road in Baldivis and support the recommendation for REFUSAL.

As a resident of 8 years, within the east Baldivis rural estates, I am writing to support Rockingham City Council decision to **oppose** the building of the Hindu Temple Complex , located at Lot 53, (No 67) Folly Road Baldivis.

Firstly, I want it to be stated that I am sending this document in to support my Baldivis East Community. I don't want to physically present this **refusal** but still need to be heard in my **opposition** of this proposed Hindu Temple Complex. I am not against any community / religious group having a place to congregate or worship – my **opposition** is based on the location, size of development, environmental concerns – wetlands / noise, as well as logistics with roads and traffic congestion.

This multiple building development is in total contraction of the 'rural ' lifestyle that is identified and classified within the South Metropolitan Sub –Regional Framework and recognised by Rockingham City in the Rural Land Strategy for its environmental significance and visual amenity. The clause 4.11.1 states 'to preserve land for farming and foster semi- rural development which is sympathetic to the particular characteristics of the area.
The visual impact of the temple and buildings is at total odds with the rural amenities of Baldivis East. I question the architectural design and documents that state this entire complex will " sit comfortably within the natural landscape and align with locality builds". A two story house is reported to be approximately 5 – 6 meters in height - the temple on its own is approximately 18 m high at its tallest point , length at 46m and width at 23m and again I fail to see how something this large and imposing will 'blend and maintain the visual amenity of the landscaped area' let alone be ' obscured by trees.
This visual impact is only looking at the temple itself and not all the other buildings within this complex. I refer to photos and maps of other temples within the Perth region and it is obvious that these structures do not fit within the brief of 'blending into the natural environment'.
Thankfully the Rockingham City Council decided to **refuse the proposal** :- *" 5. The acoustic barrier required to mitigate noise on Lot 923 Young Road, Baldivis is considered to adversely impact visual amenity when viewed from land to the north of the site; Young Road adjoining the site to the east, and potentially from Folly Road to the south. 6. The proposed development includes 'Grouped Dwellings' which is a prohibited ('X') land use in the Rural zone, under the City's Town Planning Scheme*"

Other concerns with this proposal are:-
1. Environmental – this rural area is under the banner of 'sewerage sensitive'. My concern is for the water levels / sewerage / drainage and damage to the flora and fauna of the area. The Folly Pool area is a natural waterway which includes the link to the Alcoa wetlands is an extremely important

one. The local conservation groups have for a number of years been working to ensure that this waterway and stretch of natural bush supports and homes many species, including the threatened Quenda, along with the long neck turtle, blue billed duck, frogs, snakes, and bird life. The environmental impact of over 400 people using the numerous toilets / bathrooms/ laundries and kitchens on a very regular basis is really concerning.

After monitoring the huge variation in the water levels on this site and area around over the last 8 years I have grave concerns over the sizes and designs of the sewerage systems and the requirements for the leach drains and treatment units. Waterinsite consulting services, who provided the site and soil investigation, were asked to provide sewerage treatment for a proposed daily 400+ worshipers, that is 15,3000 litres of effluent daily!
Who will monitor the food and water wastage that goes into the sewerage systems as well as monitoring the impact of this on the various species of wildlife, the water and surrounding land. What recommendations will be put in place for any emergency and/ or restoration plans for the Folly Pool waterways, the land surrounding the area and wildlife (birds / animals and reptiles that inhabit the area) should any issues arise with failures of the systems. I ask what penalties would be enforced if there is a total break down of the ecological system, who will monitor this / how often and how quickly will restoration take place(if it can be restored at all).

2. What about the threatened species of Carnaby Cockatoos, Red Tail Parrots, Mopokes, Kookaburras, variety of duck species and numerous smaller parrot species - all of which nest and utilising the natural bushland and waterways around our area. Over the last 8 years, we have consciously and deliberately replanted trees to maintain and encourage more bird life, counting up to 15 different species that nest and / or return to this area every year. I am again concerned about the waterways, the extra noise pollution (both through extra cars but also activities on the cultural site) and how numerous visitors every day will impact the breeding / nesting and safe environment of the above mentioned birds, let alone other species of animals and reptiles.

3. Noise concerns –the Hindu faith celebrates and participate in numerous festivals each month (mostly held outside using a variety of musical instruments, singing, ringing of bells and in some instances are using bonfires, colourful powder and fireworks), as well as the daily activities of prayer groups.The temple being open from 6am- 9pm 365 days a year, with up to 400 worshipers a day all appear to be in direct opposition to the rural setting that is Baldivis East. I believe that the Acoustic report proposed is one which is highly misleading and does not present a true and clear picture of the reality of the noise/ length and times of the everyday events - let alone festivals and weddings. Who will be monitoring the length and noise levels, as well as the number of people attending of the daily prayer groups , festivals and weddings? Again this is a huge impact on our quiet rural lifestyle – one which enjoys the peace and serenity of nature.

4. Traffic concerns :- Folly Road and the adjoining St Albans Road are not designed for the influx of traffic that it is being used for at the moment. The increase in the last 8 years, in particular with the opening of the Water Park, has seen the traffic and flow increased monumentally. The roads are narrow, have no shoulder, the current road edges crumbling, have no pedestrian or cycle paths, very poor road lighting and most importantly have two extremely unsafe and dangerous turns in the road. The bend between Folly and St Albans has had numerous incidents with minor car accidents, run offs into the bush or onto private property due to in misjudgment of speed and sharpness of the turn. The unfortunate death on the corner of Young and Folly is point in case for the poor road design. My concerns being that by adding over 100 more cars (possibly on a daily occurrence and more on weekends) on roads that are not known to the drivers, at various times of the day and night is only a disaster waiting to happen.

For the above concerns I am delighted that the Rockingham City Councilors (12 to 0) **OBJECTED** to this proposal, (in accordance with Clause 68 of the Planning and Development (Local Planning Schemes) Regulations 2015 and the provisions of clause 68(2)(c)) of the deemed provisions of the City of Rockingham Town Planning Scheme No.2) listing 7 different reasons and recommended that MOJDAP resolve to **REFUSE** the DAP application.

Me and my husband are absolutely **OPPOSED** to the building of the Hindu Temple and Cultural Centre in the proposed location Folly Road , Baldivis East.

Government of **Western Australia**
Development Assessment Panels

Presentation Request Form

Regulation 40(3) and DAP Standing Orders 2020 cl. 3.5

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Please complete a separate form for each presenter and submit to daps@dplh.wa.gov.au

Presenter Details

Name	Ross McCamish
Company (if applicable)	Click or tap here to enter text.
Please identify if you have any special requirements:	**YES** ☐ **NO** ☒ If yes, please state any accessibility or special requirements: Click or tap here to enter text.

Meeting Details

DAP Name	Hindu Temple
Meeting Date	09/05/2022
DAP Application Number	DAP/171
Property Location	Lot 53 Folly Road Baldivis
Agenda Item Number	171

Presentation Details

I have read the contents of the report contained in the Agenda and note that my presentation content will be published as part of the Agenda:	**YES** ☒
Is the presentation in support of or against the report recommendation)? *(contained within the Agenda)*	**SUPPORT** ☒ **AGAINST** ☐
Is the presentation in support of or against the proposed development?	**SUPPORT** ☐ **AGAINST** ☒
Will the presentation require power-point facilities?	**YES** ☐ **NO** ☒ **If yes, please attach**

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Development Assessment Panels

Presentation Content*

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Brief sentence summary for inclusion on the Agenda	*The presentation will address:* Written submission

In accordance with Clause 3.5.2 of the *DAP Standing Orders*, your presentation request must also be accompanied with a written document detailing the content of your presentation.

Please attach detailed content of presentation or provide below:

As a longtime resident of Baldivis (I have been a rate payer since 1978) I wanted to express my objection to the proposed Hindu Temple for Folly Road Baldivis, there simply to many reasons why this proposal should not go ahead on the proposed site.

From: [redacted]
To: Development Assessment Panels
Subject: The TEMPLE - please REJECT!
Date: Sunday, 8 May 2022 7:06:51 PM

Dear JDAP,

My name is Kym Robinson and ***I own a property on Young Rd, Baldivis,***
(unlike almost all of the submissions in favor of the application)
My husband and I flew in today and were without reception on site,
so am writing to you urgently to voice my huge concern.

I dont expect to be able to make a presentation at such a late hour,
but I would like to STRONGLY OBJECT to the Temple in Baldivis.

There are so many environmental reasons for the planners to reject
this proposal, including the NO deep sewage pipe line, so water waste
nutrients dumped into our community from this development equals
5.6 million litres of double chlorinated highly nutrient rich salty wastewater
YEARLY! OMG!

We are NOT a sewage dumping ground for anybody's sewage!

PLEASE DO NOT APPROVE THIS COMMERCIAL DEVELOPMENT
in our environmentally delicate, RURAL area!

regards - Kym Robinson
[redacted]

From: [redacted]
To: Development Assessment Panels
Subject: Please say NO to the Temple!
Date: Sunday, 8 May 2022 7:27:17 PM

Dear JDAP,

My name is Rob Link and ***I own a property on Young Rd, Baldivis,***
(unlike almost all of the submissions in favor of the application)
My wife and I flew in today and were without reception on site,
so am writing to you urgently to voice my OBJECTION to the Temple..

I dont expect to be able to make a presentation at such a late hour,
but I would like to STRONGLY OBJECT to the Temple in Baldivis.

As a road builder and construction specialist of 45 years, I could sit for hours and explain the many reasons this development should not proceed, however I have read the relevant reports and note our local Rockingham council has done a thorough job researching and I completely support the council in their unanimous NO vote.

The Temple application does NOT meet council rules and guidelines on many many fronts. The development will be harmful to the environment and is completely inappropriate in our quiet, rural community.

PLEASE DO NOT APPROVE THIS COMMERCIAL DEVELOPMENT in our environmentally delicate, RURAL area!

regards - Rob,

--
Rob Link

New Roads WA Pty Ltd
[redacted]

Admin - [redacted] (Kym)
Site - [redacted] (Rob)

Government of **Western Australia**
Development Assessment Panels

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Presenter Details

Name	Gorki Bogdanich
Company (if applicable)	Archetype Design Studio
Please identify if you have any special requirements:	**YES ☐** **NO ☒** If yes, please state any accessibility or special requirements: Click or tap here to enter text.

Meeting Details

DAP Name	Metro Outer JDAP
Meeting Date	9 May 2022
DAP Application Number	DAP/21/02148
Property Location	Lot 53, (67) Folly Road BALDIVIS
Agenda Item Number	8.2

Presentation Details

I have read the contents of the report contained in the Agenda and note that my presentation content will be published as part of the Agenda:	**YES ☒**
Is the presentation in support of or against the report recommendation)? *(contained within the Agenda)*	**SUPPORT ☐** **AGAINST ☒**
Is the presentation in support of or against the proposed development?	**SUPPORT ☒** **AGAINST ☐**
Will the presentation require power-point facilities?	**YES ☒** **NO ☐** **If yes, please attach**

Government of **Western Australia**
Development Assessment Panels

Presentation Content*

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Brief sentence summary for inclusion on the Agenda	*The presentation will address:* Please refer to attached letter.

In accordance with Clause 3.5.2 of the *DAP Standing Orders*, your presentation request must also be accompanied with a written document detailing the content of your presentation.

Please attach detailed content of presentation or provide below:

See attached submission and proposed revisions to plans.

archetype

| design studio |

May 2, 2022

Mr I Birch
Presiding Member
Metro Outer Joint Development Assessment Panel
email: daps@dplh.wa.gov.au

Attention: DAP Secretariat

Dear Sir
Re: Presentation to Metro Outer JDAP (Meeting No: MOJDAP/171) Lot 53 (No. 67) Folly Road, Baldivis

1. I refer to the Metro Outer *Joint Development Assessment Panel* (**JDAP**) Meeting scheduled to be held on Monday, 9 May 2022.

2. Archetype Design Studio acts for *Jeeyars Achayra Peettam Australia Limited* ***(JAPA)*** in relation to the proposed Place of Worship development on Lot 53 (No. 67) Folly Road, Baldivis. (Ref: **DAP/21/02148**)

3. This written submission and my deputation to JDAP relates to **Item 8.2** of the Meeting Agenda (No. **MOJDAP/171**).

4. The purpose of this submission is to respond to the main design issues contained in the *Responsible Authority Report* (**RAR**) for recommending refusal of this Application, and provided updated and compliant design plans and perspectives .

5. This submission is to be considered in association with the written submission and deputation by our consultant Town Planner, Ms Clare McLean of Peter Webb and Associates, which discusses the Intensity of the Development

6. The submission below provides the detail of my presentation.

Background:

The City's Responsible Authority Report, (RAR) Published on 14 April 20122 on the City's Agenda and minutes website page, highlighted a minor number of (in our opinion resolvable) non - compliance issues within the proposed design, some not previously raised with the applicant.

In subsequent verbal and email communication with the City's planning officers, the City was of the view that bringing these issues into compliance would not change the City's RAR recommendation, so the decision was made by our clients and ourselves as applicants that there was no advantage in pausing the consideration of the application for further re-design, but allowing it go straight through to JDAP with the following amendments:

We have had an opportunity to address most of these issues and concerns, and have adjusted our drawings and resubmit them as Rev2 (02May22) as follows:

00 Contents
01 Location Plan
02 Site Plan 1:100
03 Site Plan 1:500
04 Temple Plan 1:200
05 Temple Elevations 1:200
06 Multi Purpose Hall, Library and Dining Hall Plans
07 Multi Purpose Hall, Library and Dining Hall Elevations
08 Accommodation Plans and Elevations
09 Landscape Plan
10 Staging Diagram
11 Density Diagram
12 Perspective View Sheds

Letter from Acoustics consultant. 02 May 22

1. Acoustic Issues:

The design as originally submitted to the City for consideration, has been assessed by the acoustic consultant as being compliant with relevant legislation, as there is currently no residence on the adjoining property on the North.

The original acoustic report suggested an an 89m long acoustic barrier wall be built parallel to the North boundary, in order to achieve acoustic compliance, if a residence were to be built on 547 Young Road. The City objects to this acoustic barrier wall that may have to be built parallel to the North boundary, in order to achieve acoustic compliance, if a residence were to be built on 547 Young Road.

Subsequent amendments on the drawings are as follows:

- Reduction in overall number of cars, from 113 to 103 (The number actually required by TPS2)
- Re-location of car bays along 547 Young Rd boundary to reduce the noise impact on possible future residence on that lot.
- Re-location of Bin Enclosure and Water Tanks.
- Updated modelling for above changes is attached in acoustic consultants letter.

- In the event that a residence is built on the closest possible point of the adjoining lot, adjustment of the Temple operation hours for weddings and Hindu Festival Day celebrations as follows would achieve compliance:

Use	Hours for Carpark use	
Special Hindu Festivals	0700 – 2200	Monday to Saturday
	0900 – 2200	Sunday and Public Holidays
Weddings	0700 – 1900	Monday to Saturday

Consequently, we have demonstrated that should a residence be built on the adjoining lot, there is no need to build the acoustic barrier wall to achieve compliance, The problem can be solved through a simple adjustment (reduction) of operating hours.

2. Landscape and BAL Issues

The City is not confident that the proposed Landscape Plan can achieve effective visual screening of the proposed structures, and achieve compliance with Asset Protection Zone (APZ) requirements.

- The Landscape Plans have been amended to provide additional landscape and technical details which illustrate that the landscape plan can achieve APZ requirements such as tree canopies being at an adequate distance from buildings, tree canopies in excess of 5m having no more than 15% of the APZ total area when measured at maturity for the proposed species, etc. (Refer Drawing 11)

- Further, the critical view sheds contained in the original Landscape and Visual Plan have been updated to illustrate that effective visual screening can be achieved from the amended APZ Compliant Landscape Plan. (Refer Drawing 12).

- We note in particular that the largest structure being the Temple proper has been strategically sited to be behind **existing** mature trees which are already between 6m and 15m tall, and additional shrubs up to 5m tall have been proposed to screen out the views below the tree canopies.

- We also note that the staging diagram confirms that large tree planting will take place in Stage 1, immediately upon receipt of Building Permits, and this will allow some 3 to 3.5 years of tree growth before the Multi Purpose Hall is completed.

- The Landscape re-evaluation has resulted in a total of 4 trees of the (68 existing on site) having to be removed to achieve APZ compliance, a number off-set by approximately 20 new trees > 5m in height being planted on the site.

3. Right Hand Turn entry lane CHR(S)

The city has commented in its RAR that a CHR(S) is not required given the infrequency of use requiring the treatment (ie weddings).

- Consequently the Drawings have been amended to show deletion of the right hand turn into the development.

4. Priest's Residence and Ancillary Dwelling

The City's RAR has indicated that the proposed two priest's dwellings and a large ancillary dwelling do not comply with their TPS requirements, but that it would support a single house and one ancillary dwelling up to $100m^{2.}$

- The design and drawings have been amended to show a single priest's residence only (reduced from two separate dwellings) with a maximum of 6 bedrooms, and an ancillary dwelling of maximum $100m^{2.}$

5. Intensity of Use (Built up area and Number of buildings)

The City has stated in its RAR that the application proposes a number of buildings of a significant scale which gives rise to concerns about the proposed intensity of the development.

- We have prepared a 'Density Diagram' (Drawing 11), illustrating the density of the Temple and associated buildings in visual form. It shows that the density of the proposed building footprint is not out of character with adjoining Rural properties and uses, in fact it has a lower total overall built up building area than the property to the south, and a lower overall site coverage than both property to the south and east.

Property	Description	No of Buildings	Total Area Buildings	Site Coverage
Lot 537	Proposed Temple	9	2,825 sqm	3.8%
Lot 55	Commercial and Residential.	7	2,861 sqm	4.1%
Lot 103	Commercial and Residential	5	1,267 sqm	5.25%

6. Possible requirement of 'fill' on a part of the site.

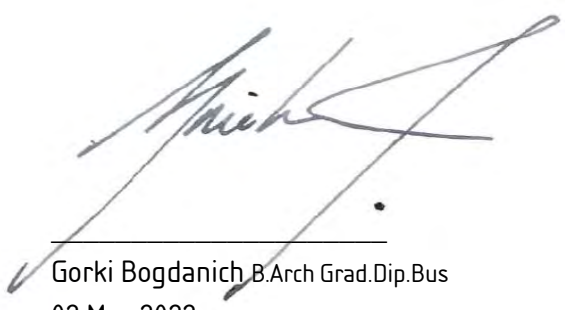
The City has stated in it's RAR that based on assumed ground water levels, up to 1m of fill may be required in effluent disposal areas, in order to achieve the required separation to high ground water levels, and that if future ground water monitoring shows a higher ground water level, alteration in excess of that may be required, and the City has amenity concerns should the extent of fill be excessive to the point of altering the landform.

- In response to this concern, we highlight that our Environmental Consultant conducted on-site soil testing in August 2021, at the peak of winter, on an above average rainfall year. The investigations indicated the highest water level at the time. The results indicated that fill between 0.7m and 0.9m may be required in part only, as identified in the environmental report, and not across the whole site.

- These areas of fill are required only on the undeveloped parts of the land. The fill required over these small areas on the land will result in insignificant ground level modifications given the size of the lot. There will be no noticeable visual impact to the landform across the lot, and the minor change in levels can be screened by landscaping..

Based on all of these amendments which demonstrate compliance with relevant requirements of a number of minor issues, and the deputation of our Town Planner, we respectfully seek the support of JDAP in approving this Application, with reasonable conditions attached.

Kindest Regards



Gorki Bogdanich B.Arch Grad.Dip.Bus
02 May 2022

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Member Level 1
Australian Institute of Architects
2016

SRI BALAJI TEMPLE DEVELOPMENT
67 FOLLY ROAD, BALDIVIS

CONTENTS

A01 LOCATION PLAN

A02 SITE PLAN 1:1000

A03 SITE PLAN 1:500

A04 TEMPLE + PRIESTS RESIDENCES
GROUND FLOOR PLAN

A05 TEMPLE + PRIESTS RESIDENCES
ELEVATIONS

A06 MULTI-PURPOSE HALL, DINING HALL + LIBRARY
GROUND FLOOR PLAN

A07 MULTI-PURPOSE HALL, DINING HALL + LIBRARY
ELEVATIONS

A08 GUEST ACCOMMODATION
GROUND FLOOR PLAN + ELEVATIONS

A09 LANDSCAPE PLAN

A10 STAGING PLAN

A11 DENSITY DIAGRAM

A12 VIEW SHEDS



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Revision	Description	Date
REV 0	DEVELOPMENT APPLICATION SUBMISSION	DEC 2021
REV 1	AMENDMENTS IN RESPONSE TO COUNCIL + PUBLIC QUERIES/COMMENTS	FEB 2022
REV 2	AMENDMENTS IN RESPONSE TO RESPONSIBLE AUTHORITY REPORT	MAY 2022

Project :
SRI BALAJI TEMPLE DEVELOPMENT

Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

Drawing Title:
CONTENTS

Scale :
Status: #Project Status

Drawing N^{0}

00

Date issued: Tuesday, 3 May 2022
Time 9:06 am Revision : 1



LOCATION PLAN 1:2000 (@ A1)

N

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REV 2	AMENDMENTS IN RESPONSE TO RESPONSIBLE AUTHORITY REPORT	MAY 2022

Project :
SRI BALAJI TEMPLE DEVELOPMENT

Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

Drawing Title:
LOCATION PLAN

Scale :
Status: #Project Status

Drawing N⁰
01

Date issued: Tuesday, 3 May 2022
Time 9:09 am Revision : 1



LEGEND

- EXISTING TREES
- NEW TREES
- FULLY ENCLOSED COVERED AREA
- VERANDAH UNDERCOVER
- EXTERNAL PAVING
- BITUMENISED ROAD/CAR PARKING
- 4m WIDE FIREBREAK

SCALE OF METERS

0 10 50 100 200

N

SITE PLAN: TOTAL LOT 1:1000 (@ A1)

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REV 2	AMENDMENTS IN RESPONSE TO RESPONSIBLE AUTHORITY REPORT	MAY 2022

Project :
SRI BALAJI TEMPLE DEVELOPMENT

Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

Drawing Title:
SITE PLAN 1.1000

Scale :
Status: #Project Status

Drawing N^{0}

02

Date issued: Tuesday, 3 May 2022
Time 9:25 am Revision : 1



PROPOSED DEVELOPMENT EAST OF MID TREE LINE 1:500 (@ A1)

LEGEND

- EXISTING TREES
- NEW TREES
- FULLY ENCLOSED COVERED AREA
- VERANDAH UNDERCOVER
- EXTERNAL PAVING
- BITUMENISED ROAD/CAR PARKING
- 4m WIDE FIREBREAK

SCALE

0m 10m 50m

N

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REV 2	AMENDMENTS IN RESPONSE TO RESPONSIBLE AUTHORITY REPORT	MAY 2022

Project :
SRI BALAJI TEMPLE DEVELOPMENT

Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

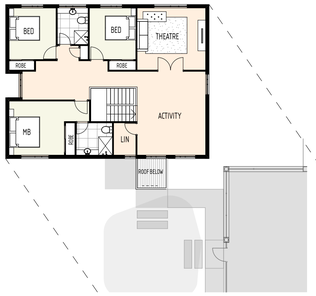
Drawing Title:
SITE PLAN 1.500

Scale :
Status: #Project Status

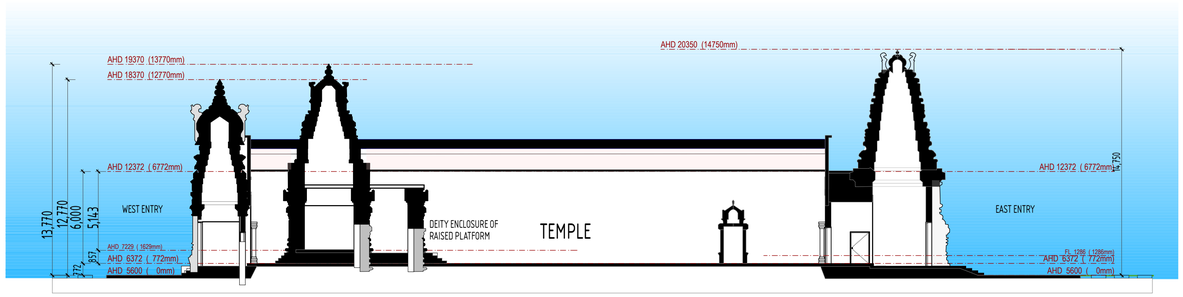
Drawing N^{0}

03

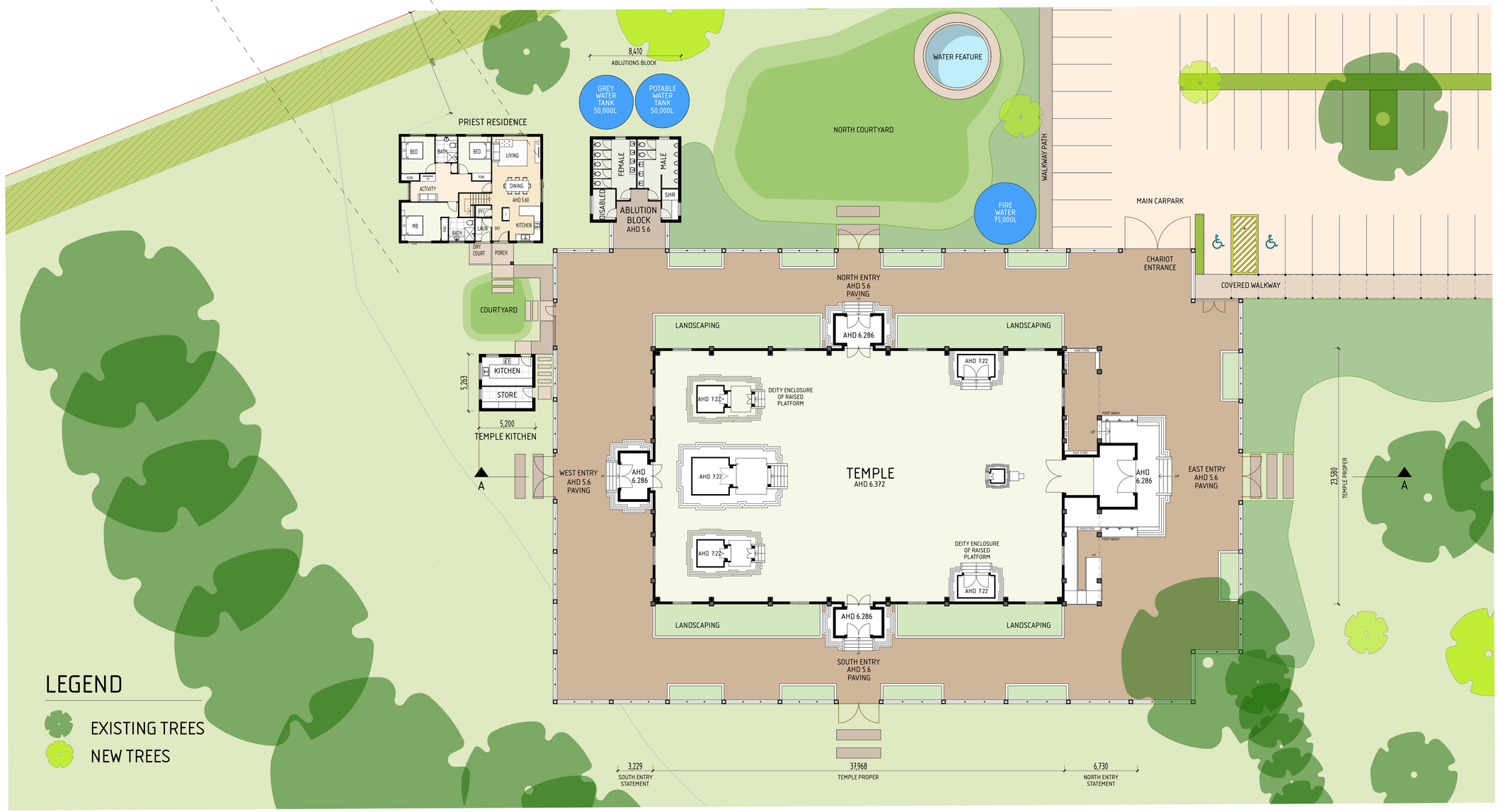
Date issued: Tuesday, 3 May 2022
Time 9:30 am Revision : 1



PRIEST RESIDENCES UPPER FLOOR PLAN 1:200



TEMPLE LONGITUDINAL SECTION AA 1:200



TEMPLE PLAN, PRIESTS QUARTERS + TOILET BLOCK 1:200 (@ A1)

SCALE
0m 5m 25m

N

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REV 2	AMENDMENTS IN RESPONSE TO RESPONSIBLE AUTHORITY REPORT	MAY 2022

Project :
SRI BALAJI TEMPLE DEVELOPMENT

Site Address :
67 FOLLY ROAD,BALDIVIS

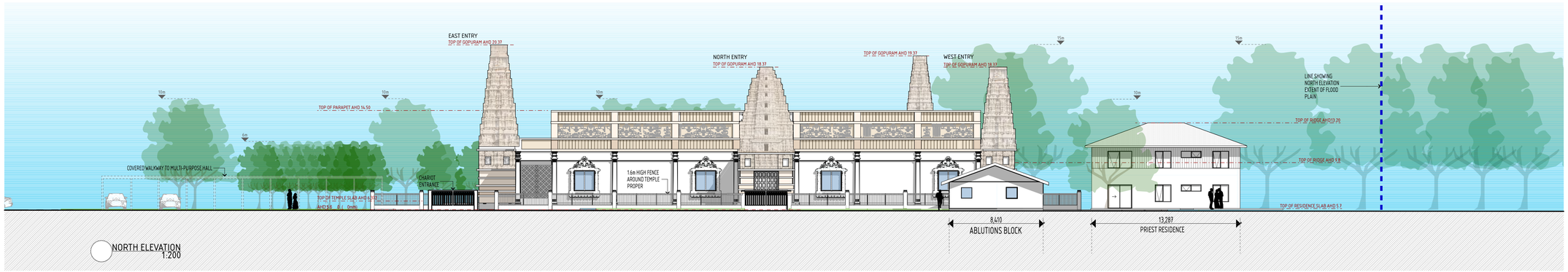
Client :
JAPA PTY LTD.

Drawing Title:
TEMPLE PLAN

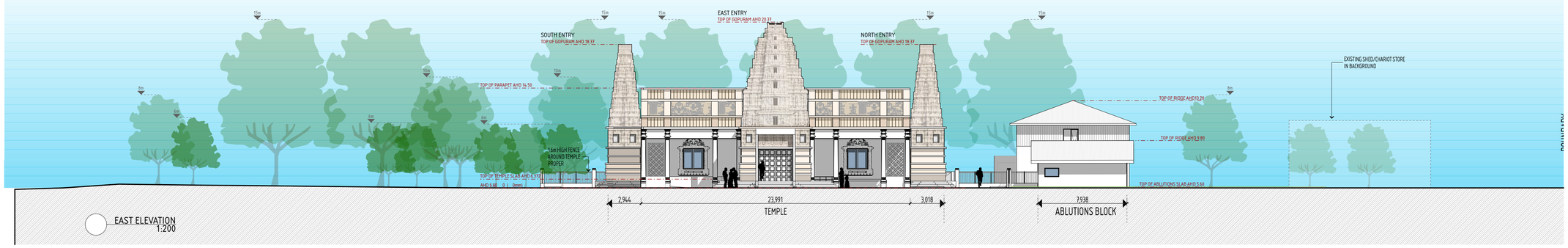
Scale :
Status: #Project Status

Drawing N^{0}
04

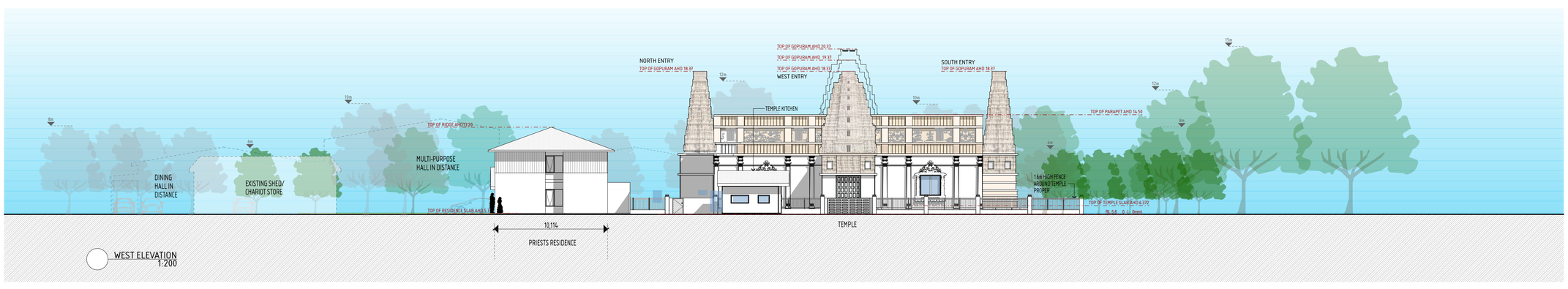
Date issued: Tuesday, 3 May 2022
Time 9:42 am Revision : 1



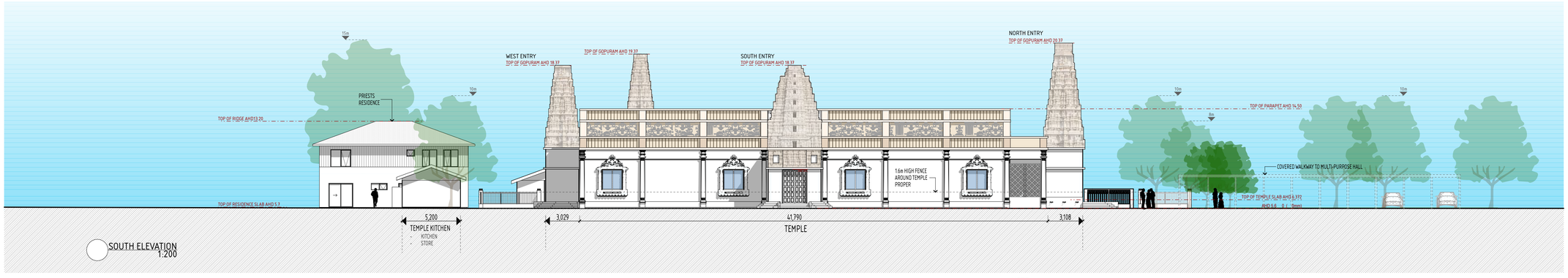
NORTH ELEVATION
1:200



EAST ELEVATION
1:200



WEST ELEVATION
1:200



SOUTH ELEVATION
1:200

ELEVATIONS 1:200 (@ A1)

NOTE:
ALL EXISTING TREES ARE DEPICTED AND DRAWN TO SCALE IN CORRECT POSITION. NEW TREES NOT SHOWN

SCALE
0m 5m 25m

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REV 2	AMENDMENTS IN RESPONSE TO RESPONSIBLE AUTHORITY REPORT	MAY 2022

Project :
SRI BALAJI TEMPLE DEVELOPMENT

Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

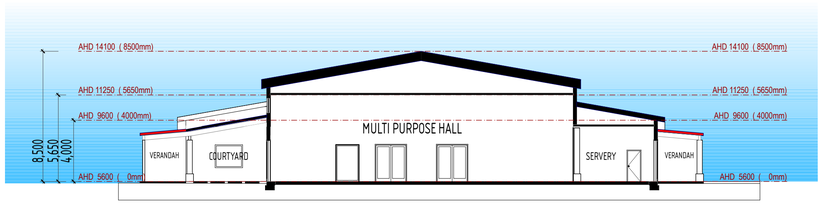
Drawing Title:
TEMPLE ELEVATIONS

Scale :
Status: #Project Status

Drawing N^{0}

05

Date issued: Tuesday, 3 May 2022
Time 9:44 am Revision : 1



MULTI-PURPOSE HALL CROSS SECTION BB 1:200

LEGEND

EXISTING TREES

NEW TREES

FIREBREAK

BIN ENCLOSURE

31 CAR PARKING BAYS
PLUS x1 REVERSING BAY
BAYS 2.5 X 5.4M, 6M WIDTH DRIVEWAY

FIRE WATER 75,000L

BUSHFIRE FIGHTING 50,000L

GREY WATER TANK 90,000L

POTABLE WATER TANK 90,000L

EXISTING SHED/ CHARIOT STORE

PRIEST'S HOUSE PARKING 4 CAR BAYS

60 CAR PARKING BAYS
INCL x 2 DISABLED BAYS
BAYS 2.5 X 5.4M, 6M WIDTH DRIVEWAY
RED BITUMEN

FIRE WATER 75,000L

COVERED WALKWAY

ZEBRA CROSSING

COURTYARD

15 CAR PARKING BAYS
INCL x1 SERVICE BAY
PLUS x1 REVERSING BAY
AHD 5.5

NORTH COURTYARD

VERANDAH

DINING HALL
AHD 5.6

SERVERY

FURNITURE STORE

DRY STORE

COOL ROOM

KITCHEN

SERVICE BAY

REVERSING BAY

B

VERANDAH

AHD 5.6

ENTRY COURTYARD
AHD
5.514

FOUNTAIN

COVERED ENTRYWAY
AHD 5.6

COOL ROOM

DRY STORE

KITCHEN

SERVERY

FURNITURE STORE

MALE

FEMALE

HANDWASH

GREEN ROOM MALE

AHD 5.6

LOBBY
AHD 5.6

MULTI PURPOSE HALL
AHD 5.6

STAGE
AHD 6.5

AHD 6.5

VERANDAH

RAMP

DISABLED

AUDIO VISUAL

FIRST AID

CHANGE ROOM

SHR

STORE

AHD 5.6

GREEN ROOM FEMALE

VERANDAH

AHD 5.6

MULTI PURPOSE LIBRARY
AHD 5.6

BOOKS

BOOKS/MOBILE SHELVING

BOOKS/MOBILE SHELVING

BOOKS

TEMPLE MEETING ROOM

TEMPLE ADMIN

COURTYARD

FURNITURE STORE

VERANDAH

B

MULTI-PURPOSE HALL, DINING + LIBRARY PLAN 1:200 (@ A1)

SCALE
0m 5m 25m

N

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architecture - interiors - feng shui
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REV 2	AMENDMENTS IN RESPONSE TO RESPONSIBLE AUTHORITY REPORT	MAY 2022

Project :
SRI BALAJI TEMPLE DEVELOPMENT

Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

Drawing Title:
MULTI PURPOSE HALL, LIBRARY + DINING HALL GF PLAN

Scale :

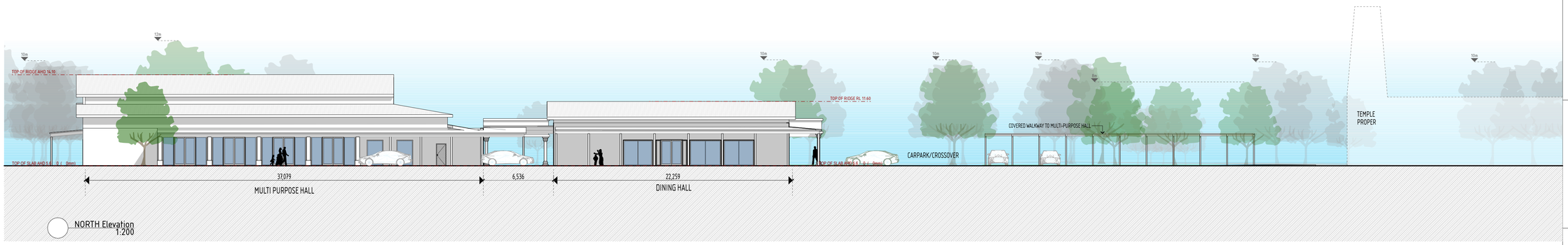
Status: #Project Status

Drawing N^{0}

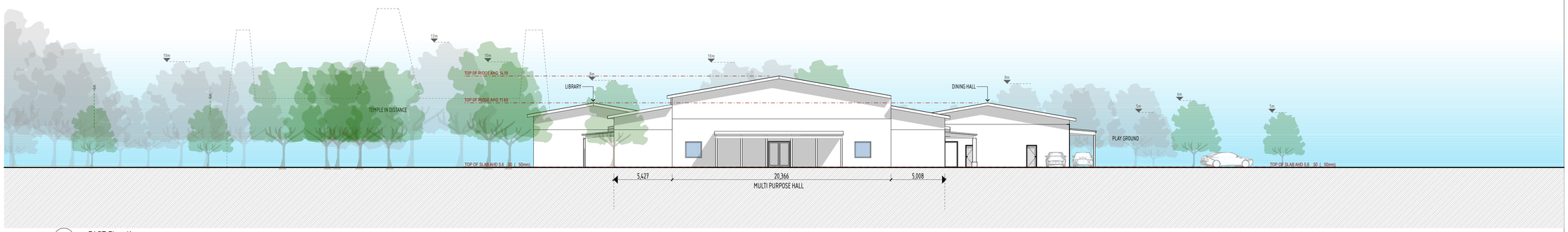
06

Date issued: Tuesday, 3 May 2022

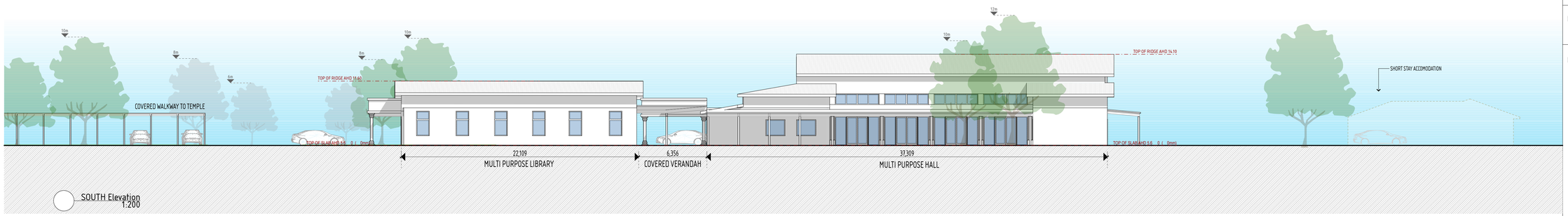
Time 9:46 am Revision : 1



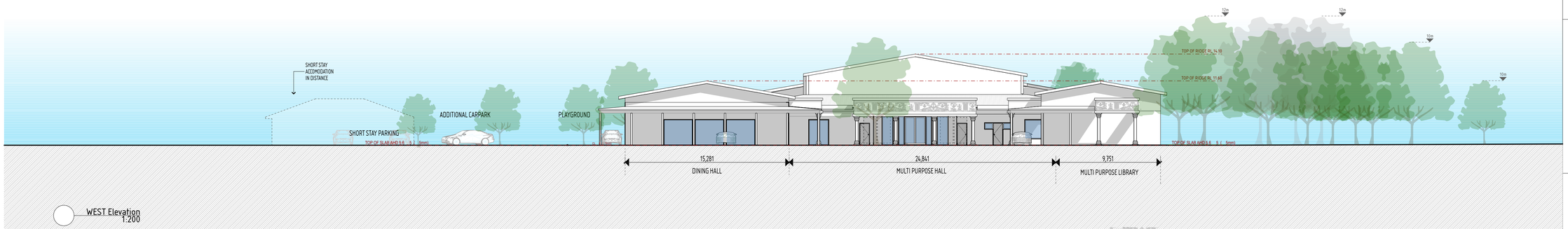
NORTH Elevation
1:200



EAST Elevation
1:200



SOUTH Elevation
1:200



WEST Elevation
1:200

MULTI-PURPOSE HALL, DINING + LIBRARY ELEVATIONS 1:200 (@ A1)

NOTE:
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SCALE
0m 5m 25m

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level 12, 68 St Georges Terrace Perth WA 6000
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Project :
SRI BALAJI TEMPLE DEVELOPMENT

Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

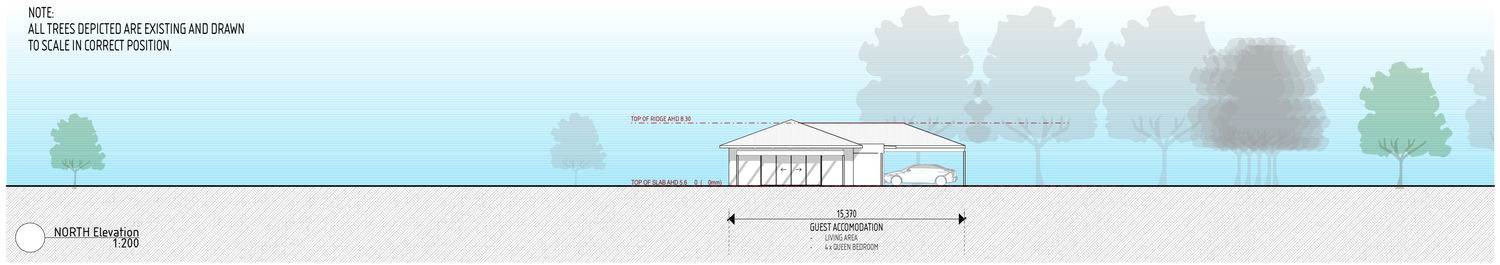
Drawing Title:
ELEVATIONS

Scale :
Status: #Project Status

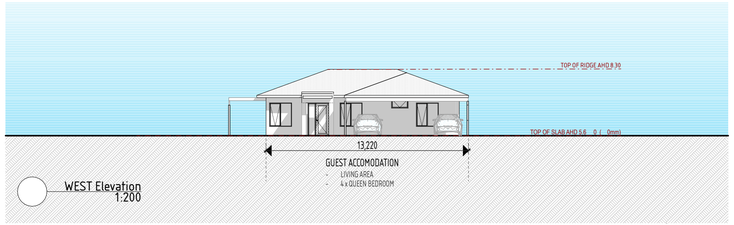
Drawing N⁰
07

Date issued: Tuesday, 3 May 2022
Time 9:48 am Revision : 1

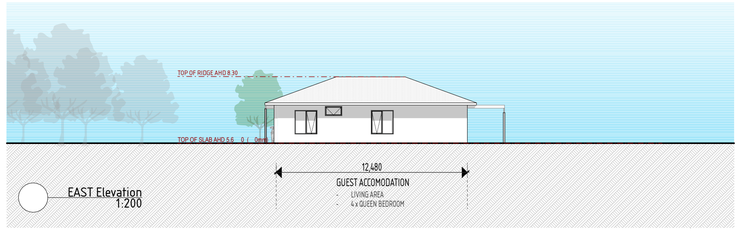
NOTE:
ALL TREES DEPICTED ARE EXISTING AND DRAWN TO SCALE IN CORRECT POSITION.



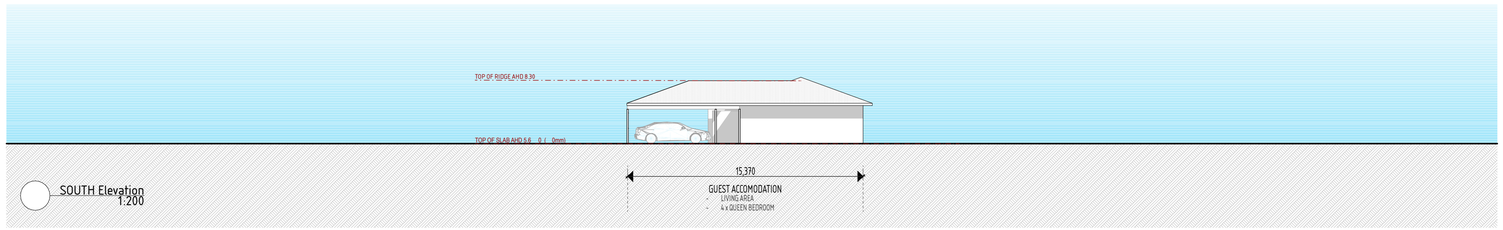
NORTH Elevation
1:200



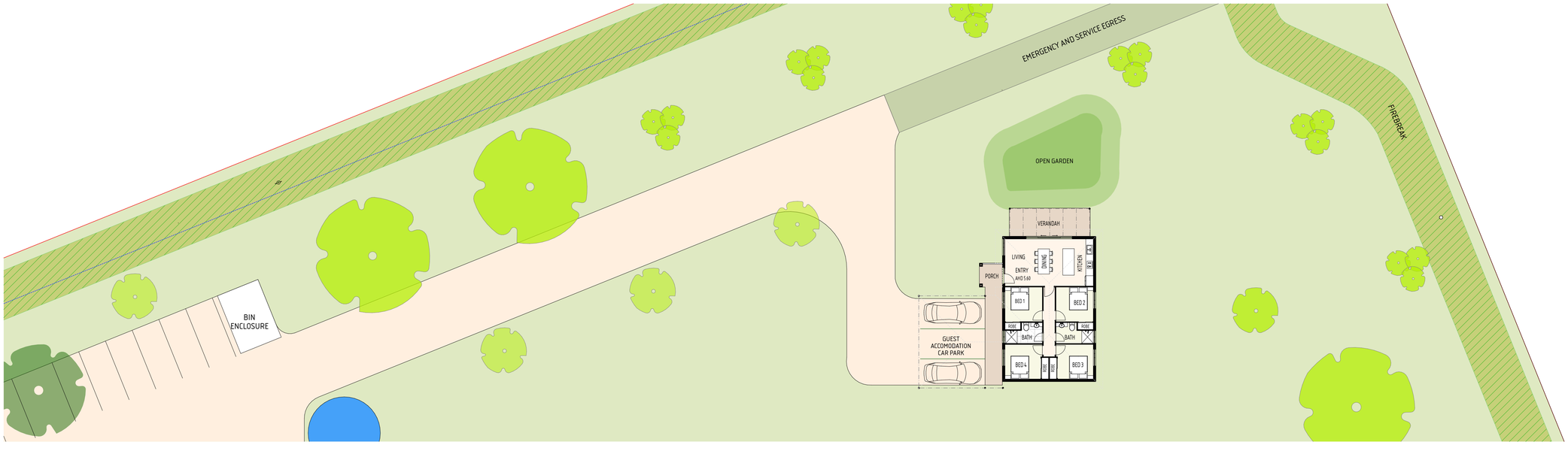
WEST Elevation
1:200



EAST Elevation
1:200



SOUTH Elevation
1:200



GUEST ACCOMMODATION PLAN + ELEVATIONS 1:200 (@ A1)

SCALE
0m 5m 25m

N

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Revision	Description	Date
REV 0	DEVELOPMENT APPLICATION SUBMISSION	DEC 2021
REV 1	AMENDMENTS IN RESPONSE TO COUNCIL + PUBLIC QUERIES/COMMENTS	FEB 2022
REV 2	AMENDMENTS IN RESPONSE TO RESPONSIBLE AUTHORITY REPORT	MAY 2022

Project :
SRI BALAJI TEMPLE DEVELOPMENT

Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

Drawing Title:
ACCOM PLANS + ELEVATIONS

Scale :
Status: #Project Status

Drawing N^{0}

08

Date issued: Tuesday, 3 May 2022
Time 9:50 am Revision : 1

LEGEND

Ai Planting along the slip lane at Folly Road, consisting of native shrubs and trees to further screen the development. The roundabout will be planted out with native shrubs.

Aii Planting of larger native trees to screen and blend the view of library and multi- purpose hall. These trees will emulate the cluster of existing trees on Folly Road and provide a continuous 'natural' flow of vegetation along the road thus enhancing the visual amenity of the site.

Aiii Planting of larger native trees to screen and blend the view of multi-purpose hall. These trees will emulate the cluster of existing trees on Folly Road and provide a continuous 'natural' flow of vegetation along the road thus enhancing the visual amenity of the site.

Aiv Planting of native trees around guest accommodation to screen the building from view lines along Folly and Young Roads

Av Planting of native trees to west of existing wind row of trees to further visually screen development from Folly Road

Avi Planting of larger native trees to screen and blend view of temple from neighbouring property

PROPOSED TREES (> 5m in height)
New tree canopies will not exceed 15% of APZ area at maturity
New tree canopies will be minimum 5m clear between each tree
Trunks will be kept at minimum 6m clearance from buildings
Branches at maturity will not reach or overhang buildings

APZ area	36,276 m²
Existing Tree Canopy Area	4,502m²
Proposed New Canopy Area	936m²
Total Tree Canopy Area at maturity	5441 m²
% Tree Canopy Cover (inside APZ)	15%

PROPOSED SHRUB (0.5m - 5m in height)
Will not be located under trees or within 3m of buildings
Will not be planted in clumps greater than 5m²
Clumps of shrubs will be 10m clear between each clump

EXISTING TREES (OVER 5m HEIGHT)

TREES TO BE REMOVED

Bi Main carpark will have central trees to provide shade over cars as well as perimeter trees to screen cars and provide further shade.

Bii Linear carpark behind Dining Hall to have further trees planted to extend the existing wind row on the north and assist shading and parking area

Biii Carpark behind Multi-purpose hall to have some trees and edge shrubs to assist in screening cars

Ci Planting around the immediate vicinity of Temple into planter beds located within the temple perimeter 'fence'. Ornamental trees with lower ornamental flowering shrubs and hedge bushes will be selected

PROPERTY BOUNDARY

EXTERNAL PAVING

VERANDAH UNDERCOVER

GRAVEL, LASERITE ASPHALT ROAD/CARPARK

FULLY ENCLOSED COVERED AREA

FIREBREAK

SWALE EDGE PLANTING NO GREATER THAN 0.5m

GROUND COVERS/GRASS

EXTENT OF ASSET PROTECTION ZONE (APZ)

GROUND COVERS (< 0.5m in height)
Will be kept 3m from windows or doors if >100mm in height

GRASS
Will be kept < 100mm in height

FUEL LOADS
Maintained at less than 2T per hectare

Ci Planting of shrubs organically at outside perimeter of East side 'fence' of Temple and wrapping around to the south of the covered walkway on main carpark. Some smaller native trees will be incorporated.

Ciii The courtyard North of the main Temple will have an organically structured planted perimeter and open space. Native grass will be explored. A large water feature is also part of this garden experience and its location and symbol holds sacred value to this development. It will be chlorinated and moving water. Native grass will be explored.

Civ The courtyard to the Priest Residences and Temple kitchen will have some native shrubs to create a sense of place, privacy, and enclosure for the occupants.

Cv Planting of the main courtyard around which the secular buildings cluster. This will consist of different layers of plants to create a sense of nurtured garden providing a tranquil entry arrival space to these buildings. A small water feature is proposed.

Civ Planting in the north aspect of the Multi-purpose hall to beautify the outlook will explore native grass and edge planting to create some sense of containment to the open space.

Cvii Planting at the entry and to the north aspect of the Guest Accommodation to create a sense of enclosure and privacy, as well as screening of their carbays.

For the duration of the development, all vegetation on site will be maintained to a low threat standard, in accordance with Section 2.2.3.2 of AS 3959.
Management should include (but is not limited to):

i. Clearing / modification of vegetation.
ii. regular removal of weeds and built up dead material (such as fallen branches, leaf litter etc).
iii. Low pruning of trees (i.e. removal of branches less than 2 metres in height).
iv. Application / re-application of ground surface cover (such as mulch or non-flammable materials as required.)
v. Where grass is present, this should be regularly cut so that grass is maintained at or below 100mm in height.

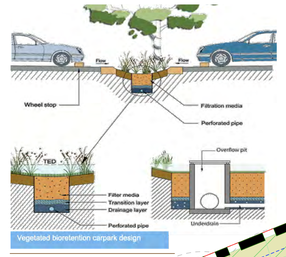

Diagram illustrating swale concept

LANDSCAPE PLAN 1:500 (@ A1)

Organically structured native garden edge to minimal contained areas of grass (native lawn to be explored) and pathways

Examples of swale landscape areas within and at edge of carpark



Tree Selections > 5m High which contribute to APZ canopy area

T1
Eucalyptus rudis
'Flooded Gum'
20m H x 8m W
Will encourage black cockatoo habitat
Evergreen

T2
Allocasuarina fraseriana
'WA sheoak'
10m H x 6m W
Evergreen

T3
Melaleuca rhaphiophylla
'Swamp Paperbark'
6-12m H x 4-8m W

T4
Banksia Mensiesii
'Firewood Banksia'
5m10m H x 5-10m W
Evergreen

Tree Selections < 5m High which do not contribute to APZ canopy area

T5
Banksia Attenuata
'Candle stick Banksia'
2m-3m H x 2m W
Evergreen

T6
Callistemon
'Kings Park Special'
Bottlebrush
4m H x 2-4m W
Evergreen

Plant selections for organically structured garden edges/swales and courtyard planting

Adenanthol Sericea
'Woolly Bush'
3.5m H 1.5m W
1-1.5mH/W

Syzygium Smithii
'Lily Pilly'
Hedgemaster
1-1.5mH/W

Boronia heterophylla, various
'Red Boronia'
1mH x 1m W

Westringia
Wyanabbie
1-1.5mH/W

Patasonia
Occidentalis
80mH x 60mW

Dianella ensiformis
Flax Lily 'Silver Streak'

Agapantha
'African Blue Lily'
1.2m

Lomandra, various
'Lime light'
'Longifolia'

Anigozanthos
'Gold Velvet Kangaroo Paw'

Anigozanthos
'Bush pearl Kangaroo Paw'

SCALE
0m 10m 50m

N

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REV 0	DEVELOPMENT APPLICATION SUBMISSION	DEC 2021
REV 1	AMENDMENTS IN RESPONSE TO COUNCIL + PUBLIC QUERIES/COMMENTS	FEB 2022
REV 2	AMENDMENTS IN RESPONSE TO RESPONSIBLE AUTHORITY REPORT	MAY 2022

Project :
SRI BALAJI TEMPLE DEVELOPMENT

Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

Drawing Title:
LANDSCAPE PLAN

Scale :
Status: #Project Status

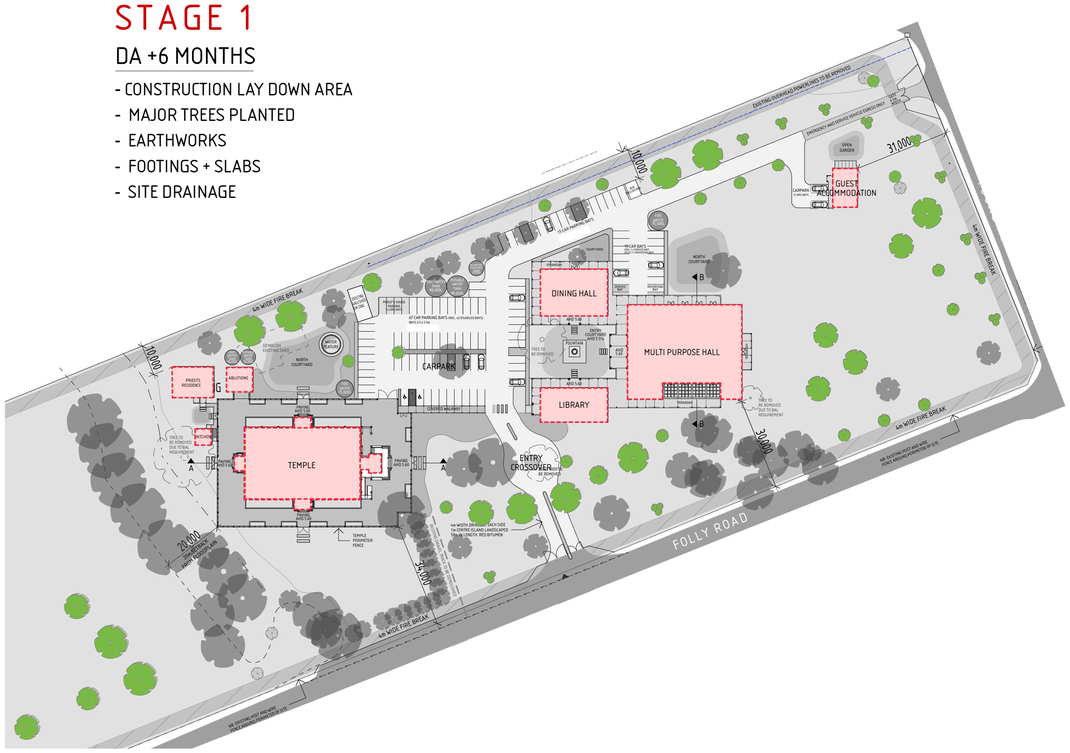
Drawing N⁰
09

Date issued: Tuesday, 3 May 2022
Time 9.53 am Revision : 1

STAGE 1

DA +6 MONTHS

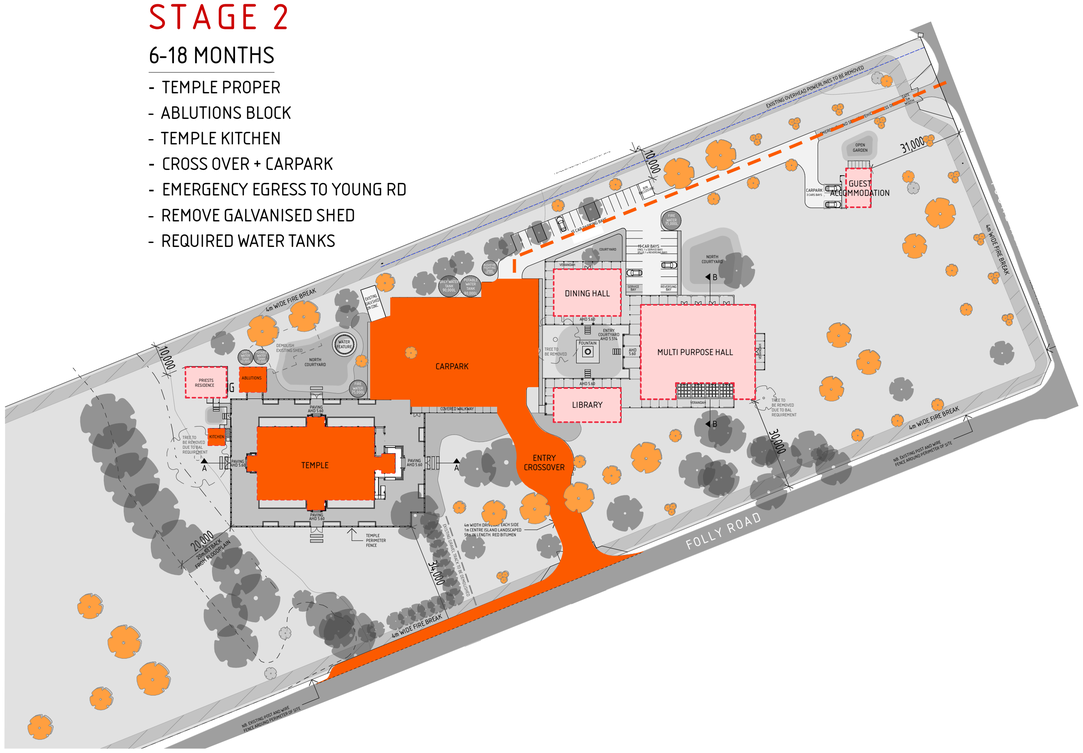
- CONSTRUCTION LAY DOWN AREA
- MAJOR TREES PLANTED
- EARTHWORKS
- FOOTINGS + SLABS
- SITE DRAINAGE



STAGE 2

6-18 MONTHS

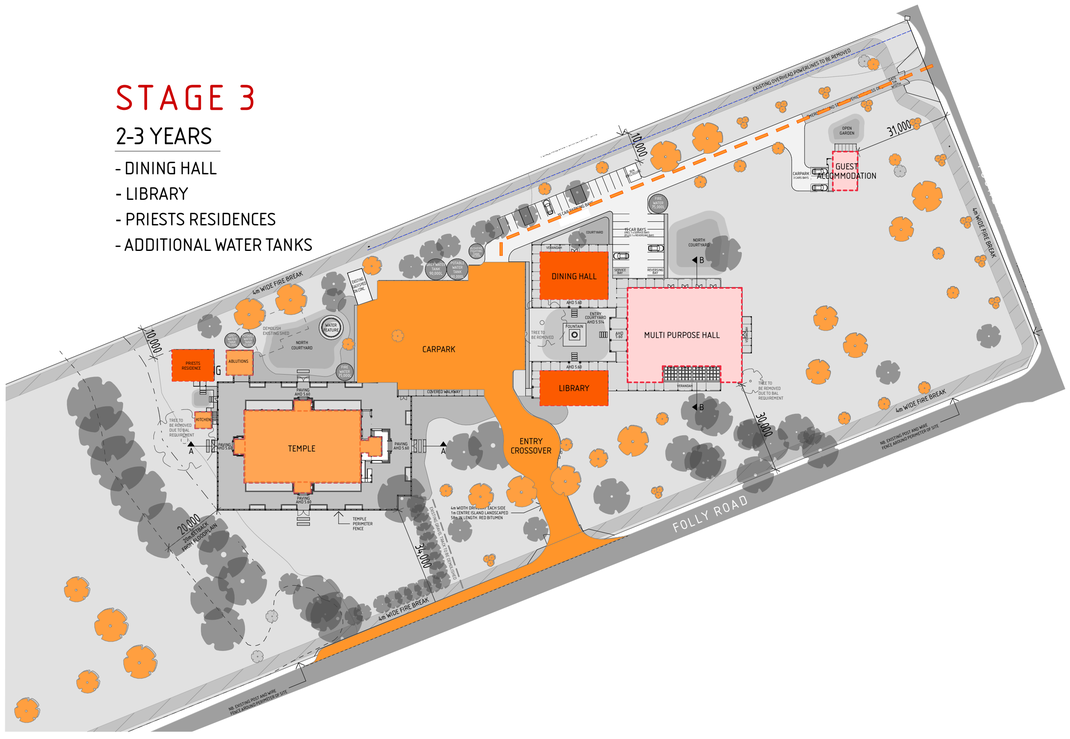
- TEMPLE PROPER
- ABLUTIONS BLOCK
- TEMPLE KITCHEN
- CROSS OVER + CARPARK
- EMERGENCY EGRESS TO YOUNG RD
- REMOVE GALVANISED SHED
- REQUIRED WATER TANKS



STAGE 3

2-3 YEARS

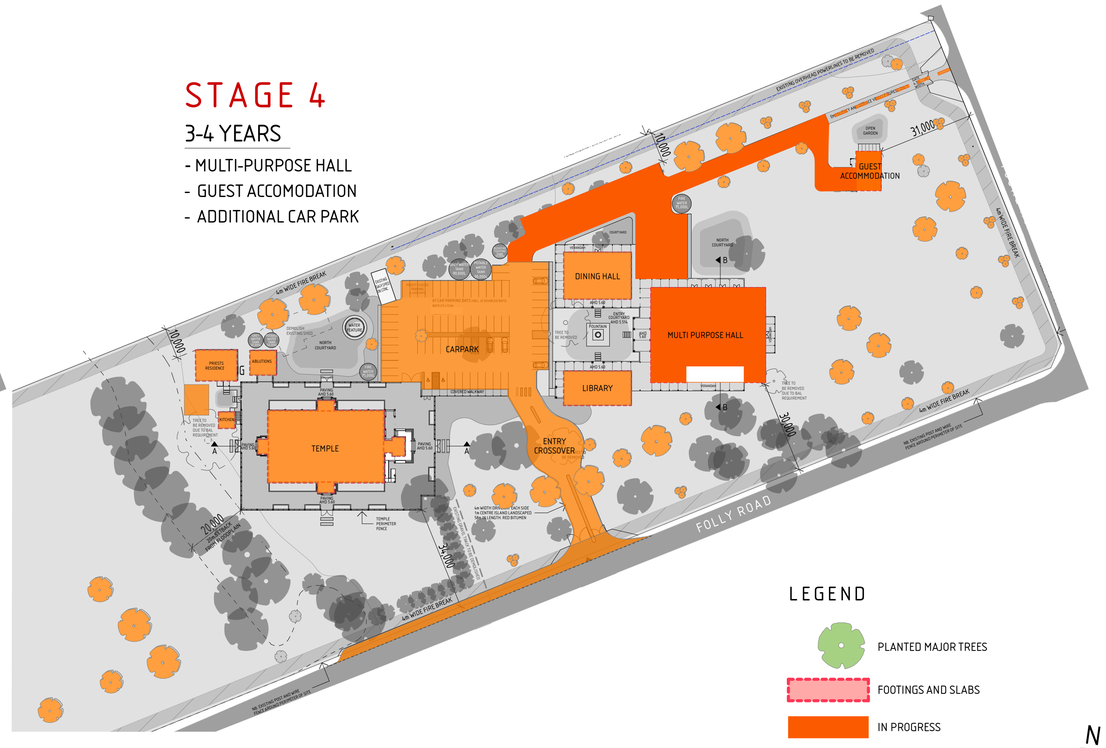
- DINING HALL
- LIBRARY
- PRIESTS RESIDENCES
- ADDITIONAL WATER TANKS



STAGE 4

3-4 YEARS

- MULTI-PURPOSE HALL
- GUEST ACCOMODATION
- ADDITIONAL CAR PARK



LEGEND

- PLANTED MAJOR TREES
- FOOTINGS AND SLABS
- IN PROGRESS
- COMPLETED WORKS
- DEMOLITION

N

STAGING DIAGRAM

archetype
|design studio|

architecture - interiors - feng shui
level 12, 68 St Georges Terrace Perth WA 6000
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email: studio@archetypedesign.com.au

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REV 0	DEVELOPMENT APPLICATION SUBMISSION	DEC 2021
REV 1	AMENDMENTS IN RESPONSE TO COUNCIL + PUBLIC QUERIES/COMMENTS	FEB 2022
REV 2	AMENDMENTS IN RESPONSE TO RESPONSIBLE AUTHORITY REPORT	MAY 2022

Project :
SRI BALAJI TEMPLE DEVELOPMENT

Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

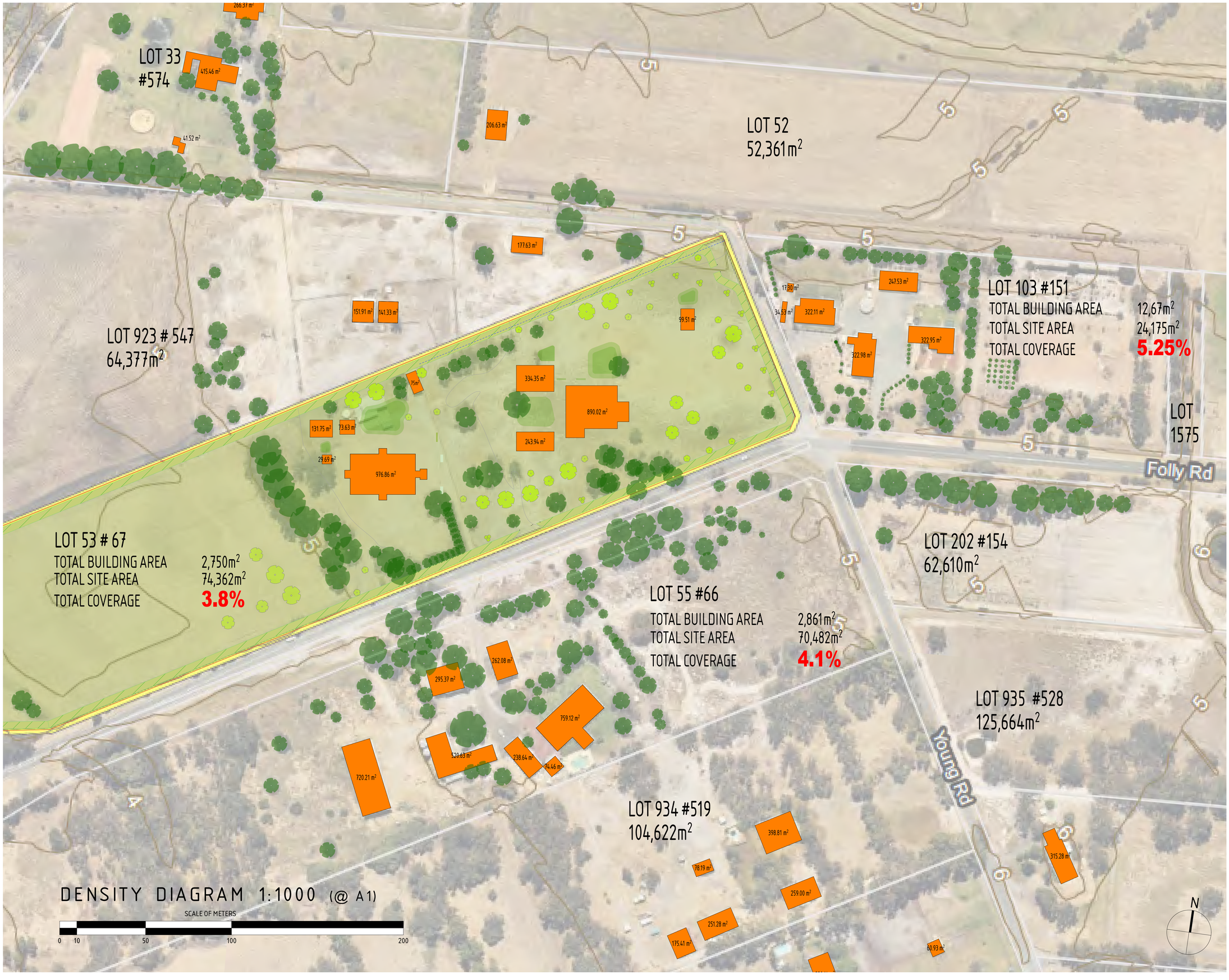
Drawing Title:
STAGING DIAGRAM

Scale :
Status: #Project Status

Drawing N^{0}

10

Date issued: Tuesday, 3 May 2022
Time 9:53 am Revision : 1



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REV 2	AMENDMENTS IN RESPONSE TO RESPONSIBLE AUTHORITY REPORT	MAY 2022

Project :
SRI BALAJI TEMPLE DEVELOPMENT

Site Address :
67 FOLLY ROAD,BALDIVIS

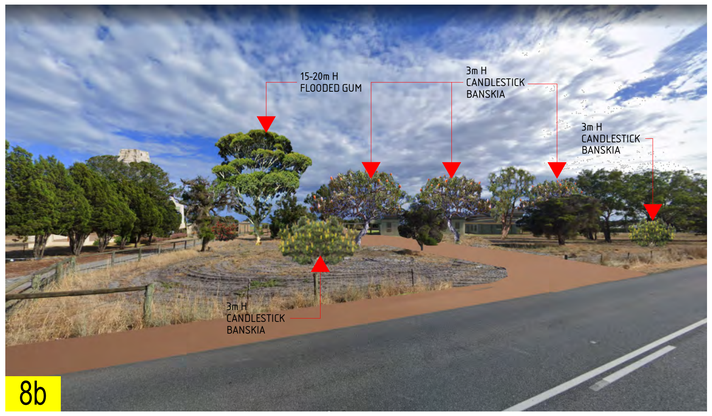
Client :
JAPA PTY LTD.

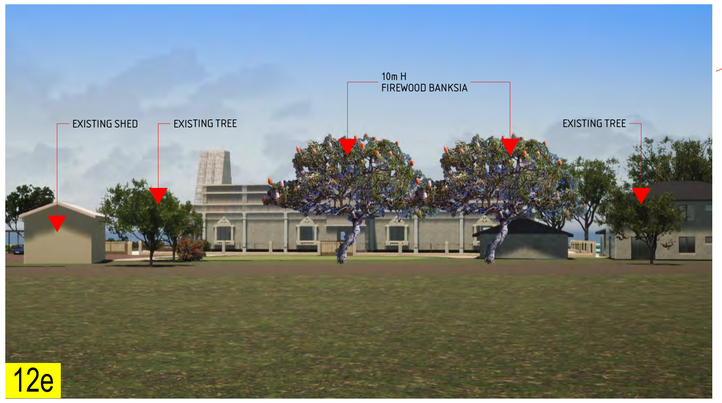
Drawing Title:
DENSITY DIAGRAM

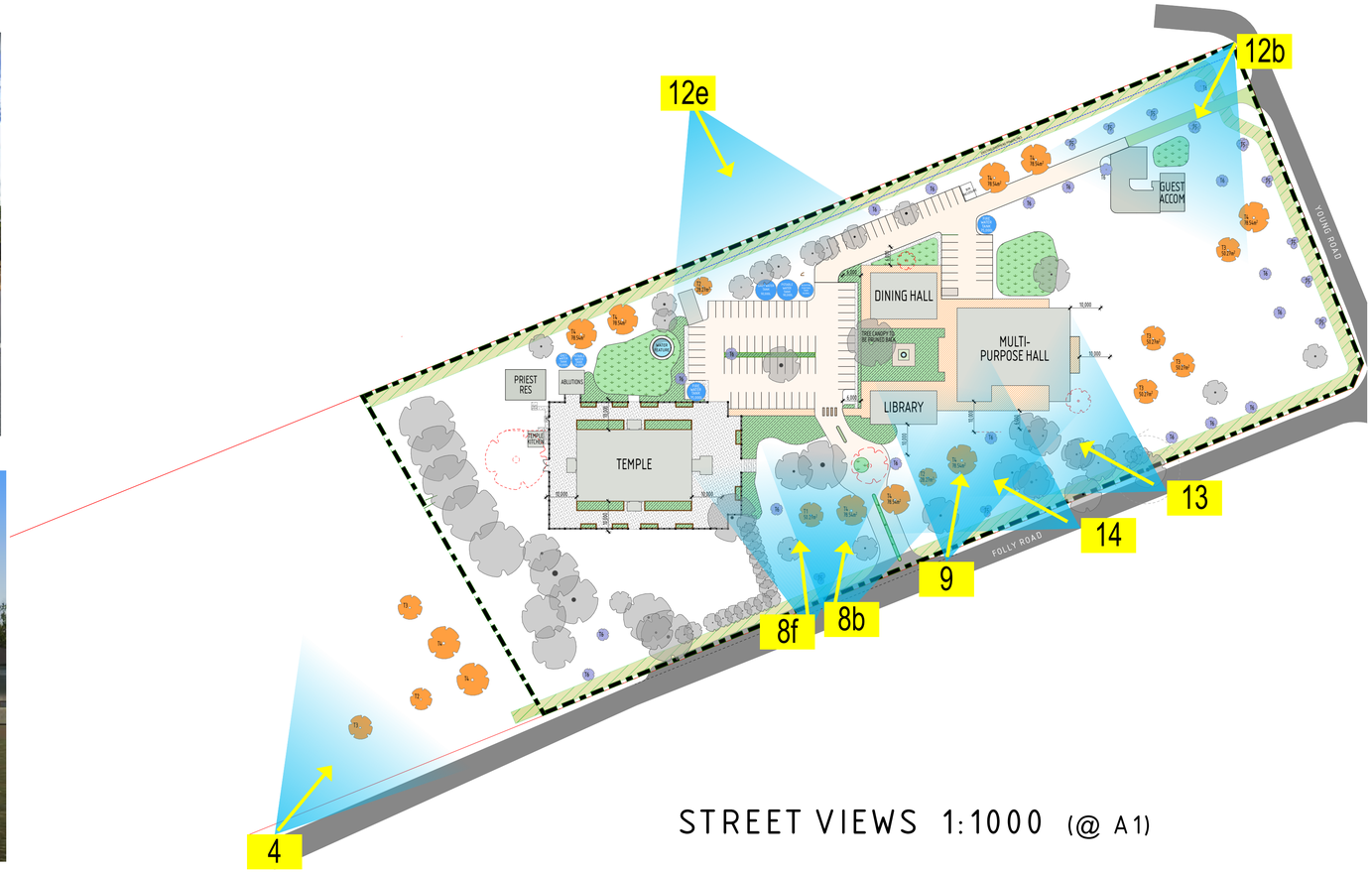
Scale :
Status: #Project Status

Drawing N⁰
11

Date issued: Tuesday, 3 May 2022
Time 9:56 am Revision : 1





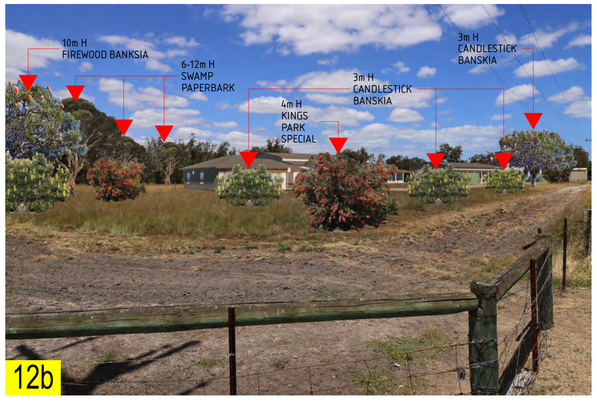


STREET VIEWS 1:1000 (@ A1)

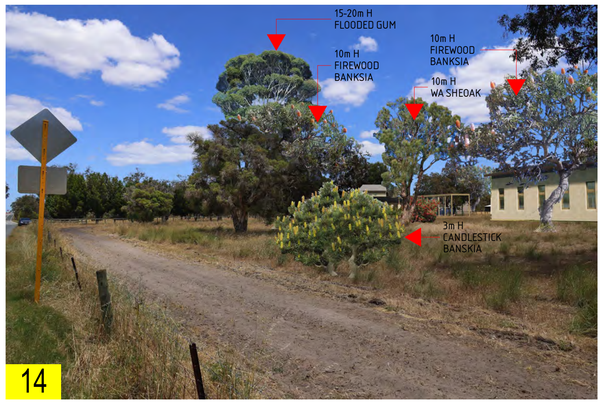


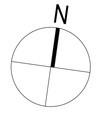












archetype
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REV 2	AMENDMENTS IN RESPONSE TO RESPONSIBLE AUTHORITY REPORT	MAY 2022

Project :
SRI BALAJI TEMPLE DEVELOPMENT

Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

Drawing Title:
VIEW SHEDS

Scale :
Status: #Project Status

Drawing N^{0}

12

Date issued: Tuesday, 3 May 2022
Time 9:55 am Revision : 1

Marshall Day Acoustics Pty Ltd
ABN: 53 470 077 191
6/448 Roberts Road
Subiaco WA 6008
Australia
T: +618 9779 9700
www.marshallday.com

2 May 2022

Jeeyars Acharya Peettam Australia Pty Ltd
C/o Archetype Design Studio
27 Watkins Road
Dalkeith WA 6009

Attention: Gorki Bogdanich

Dear Gorki,

REVISED CARPARK LAYOUT NOISE MODELLING

Marshall Day Acoustics (MDA) has been engaged to provide acoustic design input for the Balaji Temple and Cultural Centre project. A Development Application (DA) acoustic report (Rp 001 r02 20210485) was prepared by MDA, which provides an overview of the acoustic issues associated with the Project and includes noise modelling predictions for key noise sources.

A consideration for the development is that land to the north (547 Young Road) may be developed for residential use in the future. The DA Acoustic Report identifies this risk and provides noise modelling results for a scenario with a conceptual noise barrier along the northern boundary between the carpark and 547 Young Road. The scenario is provided to demonstrate that this noise can be successfully reduced, in the event that a future residential premises is developed at 547 Young Road.

We understand that a barrier would not be acceptable in this location and the Architect (Archetype Design Studio) has reconfigured the carpark layout to:

1. Reduce the overall number of cars (by 10 bays)
2. Re-position the bays closer to the centre of the car park (away from the northeast boundary)
3. Relocate the bin enclosure, which includes a 2m high wall around it

MDA has updated the noise modelling for the three carpark use scenarios presented in the DA Acoustic Report, based on the revised layout and vehicle movements.

The revised modelling scenarios are:

Scenario 1 – Morning prayer service (weekly)

- 67 vehicle movements within a 2-hour period
- Vehicles all park in the main Temple car park

Scenario 2 – Special Hindu festival days (monthly)

- 100 vehicle movements within a 2-hour period
- Vehicles using all available parking bays on site

Scenario 3 – Weddings (6 per year)

- 100 vehicle movements within a 1-hour period
- Vehicles using all available parking bays on site

Results are provided as noise contour maps in Appendix A.

Table 1 summarises the predicted outcomes for the three carpark use scenarios.

Table 1: Summary of predicted compliance outcomes

Scenario	Frequency	Compliance to existing receivers			Compliance to future receiver		
		Day	Evening	Night	Day	Evening	Night
1 – Morning prayer service	Weekly	✓	✓	✓	✓	✓	✓
2 – Special Hindu festival days	Monthly	✓	✓	✓	✓	✓	×
3 – Weddings	6 per year	✓	✓	✓	✓	×	×

Note that the "Day", "Evening" and "Night" periods are simplified references to the time periods when different assigned levels apply under the *Environmental Protection (Noise) Regulations 1997*, as shown in Table 2.

Table 2: Summary of assigned noise levels

Type of premises receiving noise		Time of day	Assigned noise level (dB)		
			L_{A10}	L_{A1}	L_{Amax}
Noise sensitive premises: highly sensitive area	"Day"	0700-1900 – Monday to Saturday	45	55	65
	"Evening"	0900-1900 – Sunday and public holidays	40	50	65
		1900-2200 – All days	40	50	55
	"Night"	2200-0700 – Monday to Saturday, or 2200-0900 – Sunday and public holidays	35	45	55

It should be noted that, as a desktop-only modelling assessment, there are various assumptions required and some of these are likely to be conservative.

Should a future noise-sensitive premises be developed at 547 Young Road, we would suggest a noise survey be undertaken to review noise from the Temple, particularly during Scenarios 2 and 3.

The following is noted:

- The receptor point for assessment will ultimately depend on where the residential premises is developed and this may differ from the point assumed in the modelling.
- The noise modelling undertaken adopts a simplified prediction method[1] that does not strictly cater for modelling of noise from this type of development. In the absence of specific noise data, the modelling uses source levels based on a typical "visitor and staff" carpark.
- There are various managerial strategies that can be used by the operator to help reduce noise from the carparks and these are not factored into the modelling.

The survey could be used to inform any operational procedures that may be required to maintain compliance with the Noise Regulations. If necessary, this could include restricting carpark use or the type of events permitted during certain hours.

Based on the assumptions and modelling undertaken in this assessment, the times shown in Table 3 below would meet the assigned levels with a receiver at 547 Young Road present.

[1] Bavarian State Agency for the Environment 2007, Parking Area Noise, 6th Edition, Bavarian State Ministry for the Environment, Germany

Table 3: Hours for carpark use (receiver present at 547 Young Road)

Use	Hours for carpark use
Special Hindu festival days	0700-2200 – Monday to Saturday 0900-2200 – Sunday and public holidays
Weddings	0700-1900 – Monday to Saturday

We trust this helps inform the project team and approval authorities on these matters.

Please let us know if any further specifics or clarifications are required to assist with the Development Application process.

Yours sincerely,

MARSHALL DAY ACOUSTICS PTY LTD

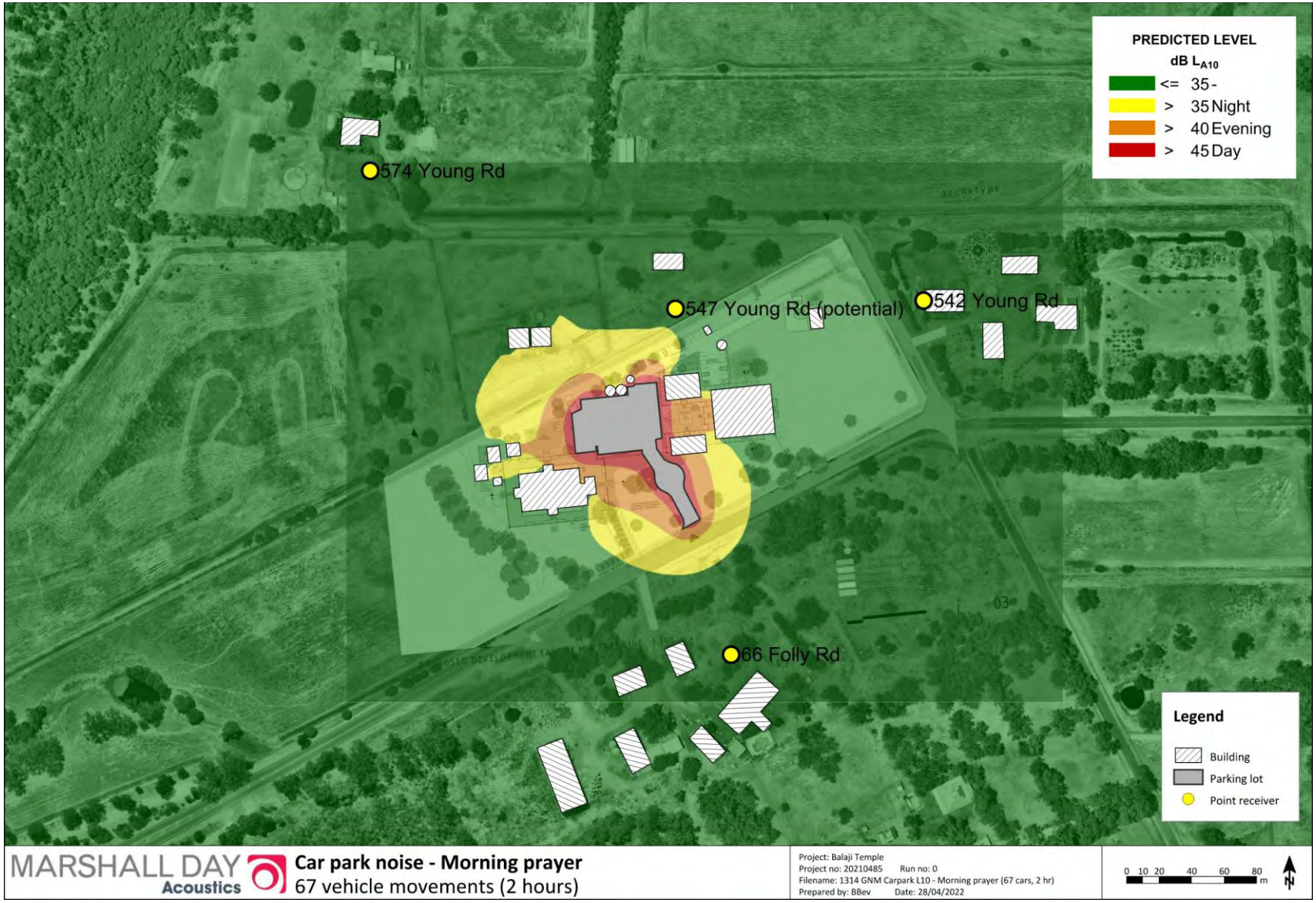


Ben Beverley

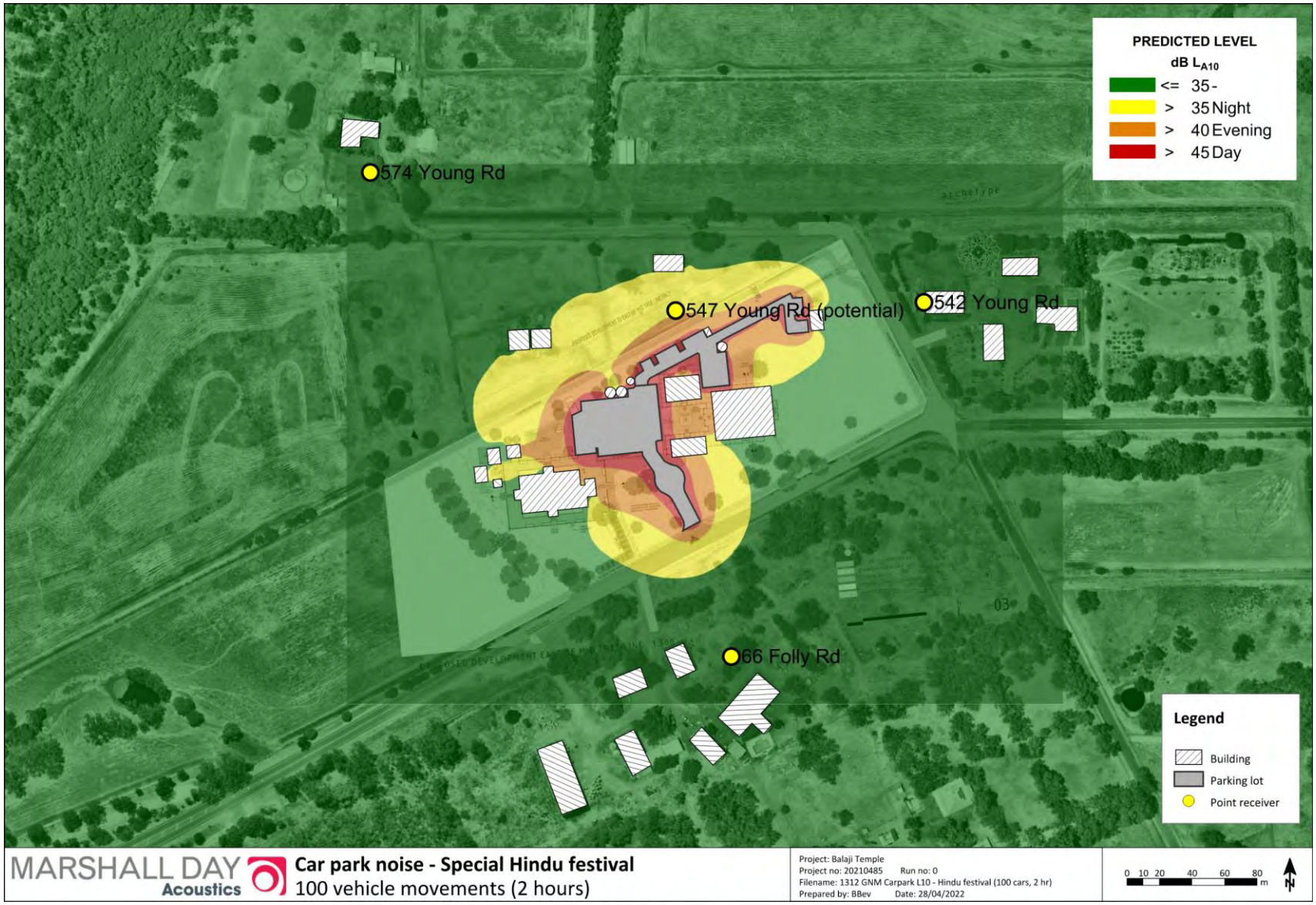
Associate

APPENDIX A NOISE CONTOUR MAPS

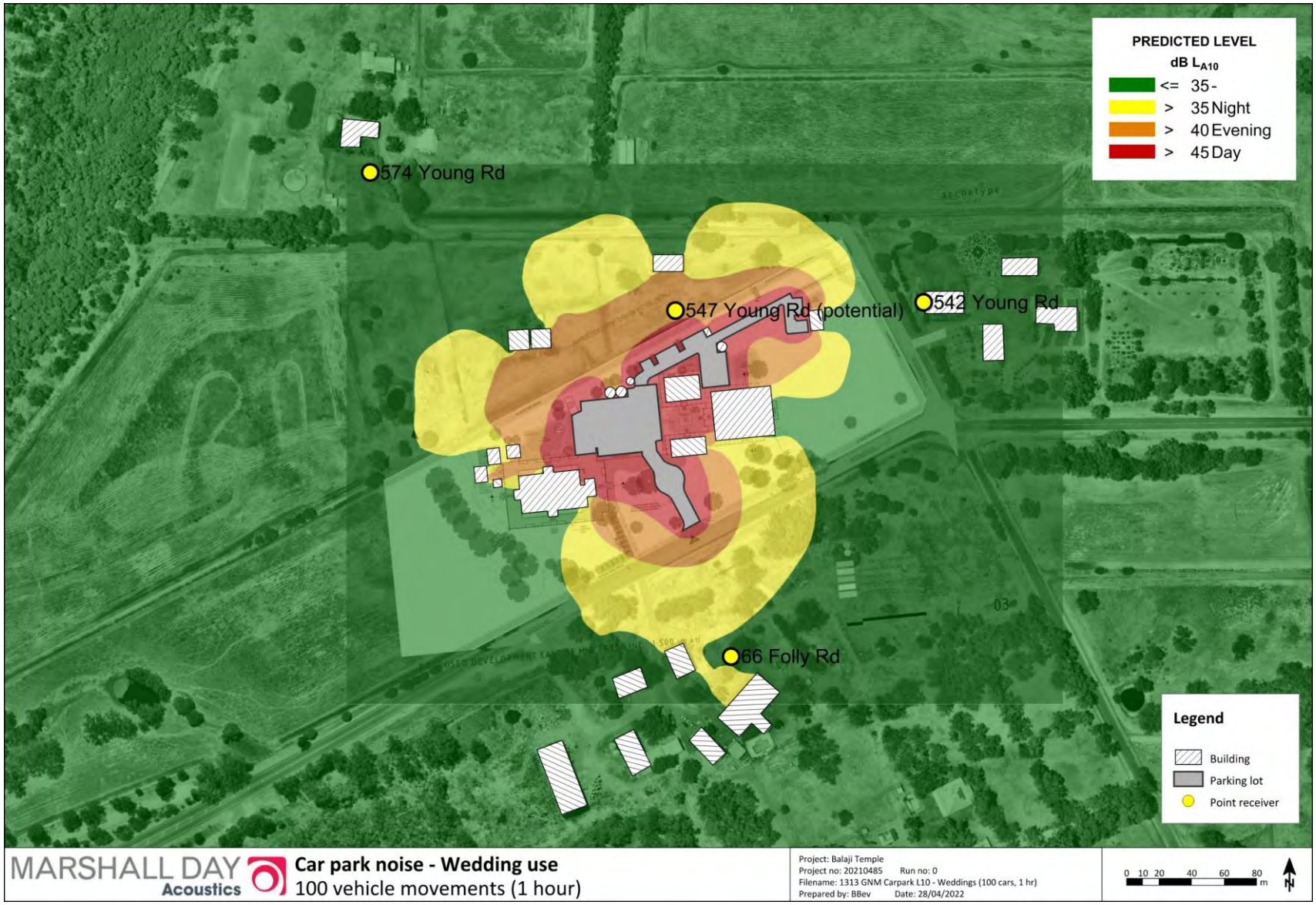
A1 Morning prayer service (weekly)



A2 Special Hindu Festival Days (monthly)



A3 Weddings (6 per year)



INTRODUCTION

THE PURPOSE OF THIS DEPUTATION IS TO RESPOND TO THE MAIN DESIGN ISSUES CONTAINED IN THE *RESPONSIBLE AUTHORITY REPORT* AND PROVIDED UPDATED AND COMPLIANT DESIGN PLANS AND PERSPECTIVES .

1. **ACOUSTIC**
2. **LANDSCAPE AND BAL ISSUES**
3. **SCREENING OF PROPOSED DEVELOPMENT**
4. **RIGHT HAND TURN INTO DEVELOPMENT**
5. **PRIESTS' RESIDENCE**
6. **ANCILLARY DWELLING**
7. **NEW DENSITY DIAGRAM**
8. **POSSIBLE REQUIREMENT OF FILL ON SITE**

COUNCIL CONCERN:
SIZE OF ACOUSTIC BARRIER WALL THAT MAY BE REQUIRED TO MEET NOISE REGULATIONS , SHOULD A RESIDENCE BE BUILT ON A PARTICULAR LOCATION ON ADJOINING LOT 547 YOUNG RD

DESIGN CHANGES MADE TO ALLEVIATE POSSIBLE ACOUSTIC IMPACT ON LOT 547 :

1. **REDUCTION IN OVERALL CAR PARKING BAYS FROM 113 TO 103 (MIN N^{O} REQUIRED)**
2. **RELOCATION OF SOME BAYS AWAY FROM LOT 547 YOUNG RD BOUNDARY.**

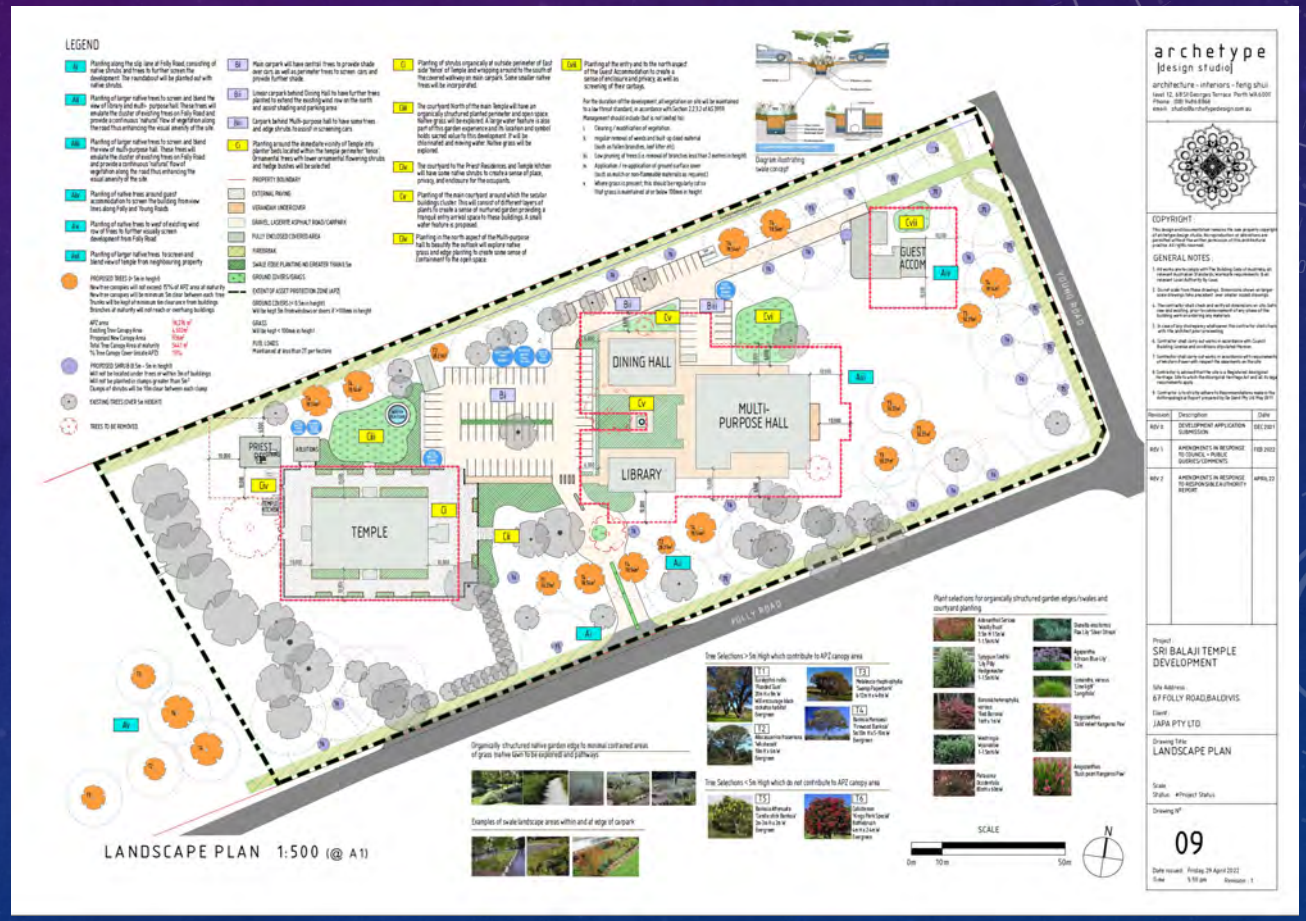
NEW ACOUSTIC MODELLING SHOWS PROPOSAL TO BE FULLY COMPLIANT WITH NOISE REGULATIONS, EXCEPT FOR DURING WEDDINGS.

ACOUSTIC CONSULTANT HAS CONFIRMED THAT AN ADJUSTMENT (REDUCTION) OF OPERATING HOURS BY A FEW HOURS IN THE EVENING / NIGHT WILL BRING THE ACOUSTICS LEVELS INTO COMPLIANCE IF A RESIDENCE IS BUILT IN THE FUTURE.

(AND THE ACOUSTIC BARRIER WALL WILL NOT BE REQUIRED)

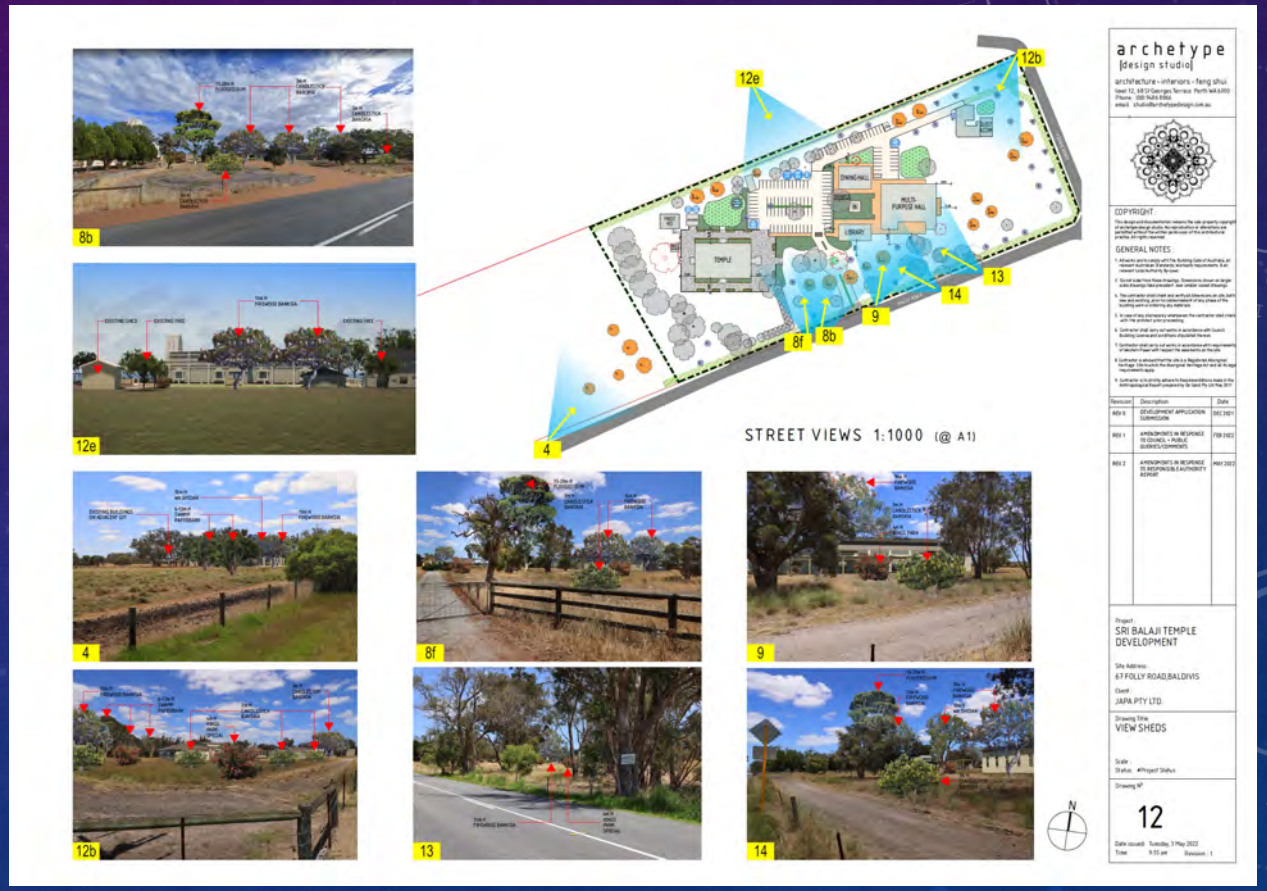
COUNCIL CONCERN:
LANDSCAPE DESIGN CANNOT ACHIEVE APZ AND EFFECTIVE SCREENING OF DEVELOPMENT FROM STREET / NEIGHBOUR VIEW

- **DESIGN CHANGES MADE TO ENSURE APZ REQUIREMENTS ARE ACHIEVED**
- **AMENDED LANDSCAPE PLAN SUBMITTED**



COUNCIL CONCERN:
LANDSCAPE DESIGN CANNOT ACHIEVE APZ COMPLIANCE AND EFFECTIVE SCREENING OF DEVELOPMENT FROM STREET / NEIGHBOUR VIEW

- **VIEW SHEDS UPDATED THAT DEMONSTRATE EFFECTIVE SCREENING CAN BE ACHIEVED WITH APZ COMPLIANT LANDSCAPING.**
- **AMENDED VIEWSHED PERSPECTIVES SUBMITTED**
- **TEMPLE IS POSITIONED STRATEGICALLY TO BE EFFECTIVELY SCREENED BY EXISTING MATURE TREES,**
- **SECULAR BUILDINGS ARE SCREENED BY NEW TREES , WHICH WILL BE PLANTED IMMEDIATELY AND HAVE YEARS OF GROWTH PRIOR COMPLETION OF MULTI FUNCTION HALL.**



COUNCIL ADVICE:
RIGHT HAND TURN INTO DEVELOPMENT NOT REQUIRED GIVEN FEW NUMBER OF TIMES WEDDINGS ARE HELD

- **RIGHT HAND TURN INTO DEVELOPMENT HAS BEEN REMOVED.**

COUNCIL CONCERN:
ONLY ONE (1) PRIESTS' RESIDENCE ON SITE PERMITTED

- **DESIGN AMENDED TO REDUCE NUMBER OF PRIESTS' RESIDENCES FROM TWO (2) TO ONE (1) RESIDENCE.**

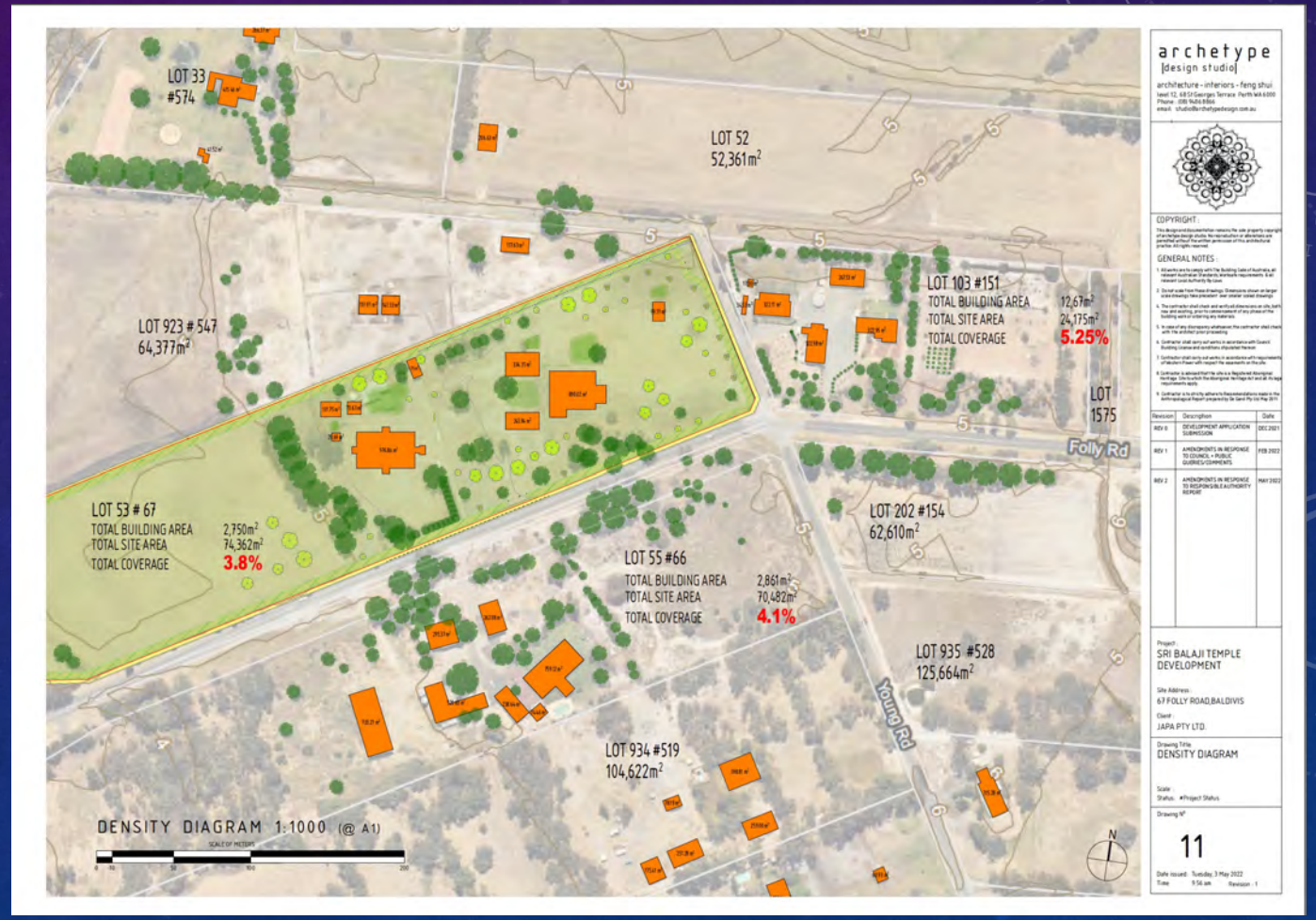
COUNCIL CONCERN:
ANCILLARY DWELLING ACCEPTABLE IF LIMITED IN SIZE TO 100 M^2

- **ANCILLARY DWELLING HAS BEEN REDUCED IN SIZE TO LESS THAN 100 m^2**

COUNCIL CONCERN:
APPLICATION PROPOSES A NUMBER OF BUILDINGS OF A SIGNIFICANT SCALE WHICH GIVES RISE TO CONCERNS ABOUT THE PROPOSED INTENSITY OF THE DEVELOPMENT

- **A DENSITY DIAGRAM HAS BEEN INCLUDED, WHICH ILLUSTRATES THAT THE DEVELOPMENT IS SIMILAR IN OVERALL BUILT UP FORM TO ADJOINING COMMERCIAL RESIDENTAIL PROPERTIES**

Property.	Description	No of Buildings.	Total Area Buildings	Site Coverage
Lot 537	Temple	9	2,825 sqm	3.8%
Lot 55	Comm / Res	7	2,861 sqm	4.1%
Lot 103	Comm / Res	5	1,267 sqm	5.25%



COUNCIL CONCERN:

AMENITY CONCERNS SHOULD THE EXTENT OF FILL TO ACHIEVE ADEQUATE DISTANCE TO GROUND HIGH WATER LEVEL BE EXCESSIVE TO THE POINT OF ALTERING THE LANDFORM.

- **WE EMPHASIZE THAT THE ENVIRONMENTAL CONSULTANT CONDUCTED ON-SITE SOIL TESTING:**
- **IN AUGUST 2O21, BEING THE PEAK OF WINTER**
- **ON AN ABOVE AVERAGE RAINFALL YEAR**
- **INVESTIGATIONS SHOWED THAT BETWEEN 0.7m and 0.9m OF FILL MAY BE REQUIRED**
- **THE AREAS OF FILL ARE OVER UNDEVELOPED, AND VERY SMALL AREAS OF THE LAND**
- **THERE WILL BE NO NOTICEABLE VISUAL IMPACT TO THE LANDFORM OR AMENITY**

- WE BELIEVE THAT ALL TECHNICAL AND DESIGN REQUIREMENTS THAT THE CITY HAD CONCERNS ABOUT HAVE BEEN RESOLVED BY THE MINOR AMENDMENTS NOW IMPLEMENTED IN THE DESIGN

- THE BUILDINGS PROPOSED ARE DEMONSTARTED TO BE SIMILAR IN TOTAL AREA TO OTHER DEVELOPMENTS IN THE AREA

- GIVEN THAT WE HAVE COMPLIED WITH ACOUSTIC, TRAFFIC, ENVIRONMENTAL, BUSHFIRE, AND VISUAL SCREENING ISSUES, ALL OF WHICH ARE INDIRECTLY BUT IN TOTALITY MEASURES OF INTENSITY OF A SITE'S USE, WE RESPECTFULLY SUBMIT THAT THE PROPOSED DEVELOPMENT IS SUITABLE FOR APPROVAL IN A RURAL AREA IMMEDIATELY ADJACENT THE FREEWAY.

- OUR TOWN PLANNER WILL FURTHER ADDRESS INTENSITY OF USE IN A SUBSEQUENT DEPOSITION.

THANK YOU FOR THIS OPPORTUNITY TO ADDRESS JDAP
GORKI BOGDANICH
ARCHETYPE DESIGN

Government of **Western Australia**
Development Assessment Panels

Presentation Request Form

Regulation 40(3) and DAP Standing Orders 2020 cl. 3.5

Must be submitted at least 72 hours (3 ordinary days) before the meeting

Presentation Request Guidelines

Persons interested in presenting to a DAP must first consider whether their concern has been adequately addressed in the responsible authority report or other submissions. Your request will be determined by the Presiding Member based on individual merit and likely contribution to assist the DAP's consideration and determination of the application.

Presentations are not to exceed **5 minutes**. It is important to note that the presentation content will be **published on the DAP website** as part of the meeting agenda.

Please complete a separate form for each presenter and submit to daps@dplh.wa.gov.au

Presenter Details

Name	Clare McLean
Company (if applicable)	Peter Webb and Associates
Please identify if you have any special requirements:	**YES ☐** **NO ☒** If yes, please state any accessibility or special requirements: Click or tap here to enter text.

Meeting Details

DAP Name	Metro Outer JDAP
Meeting Date	9 May 2022
DAP Application Number	DAP/21/02148
Property Location	Lot 53, (67) Folly Road BALDIVIS
Agenda Item Number	8.2

Presentation Details

I have read the contents of the report contained in the Agenda and note that my presentation content will be published as part of the Agenda:	**YES ☒**
Is the presentation in support of or against the report recommendation)? *(contained within the Agenda)*	**SUPPORT ☐** **AGAINST ☒**
Is the presentation in support of or against the proposed development?	**SUPPORT ☒** **AGAINST ☐**
Will the presentation require power-point facilities?	**YES ☒** **NO ☐** **If yes, please attach**

Government of **Western Australia**
Development Assessment Panels

Presentation Content*

These details may be circulated to the local government and applicant if deemed necessary by the Presiding Member. Handouts or power points will not be accepted on the day.

Brief sentence summary for inclusion on the Agenda	*The presentation will address:* Please refer to attached letter.

In accordance with Clause 3.5.2 of the *DAP Standing Orders*, your presentation request must also be accompanied with a written document detailing the content of your presentation.

Please attach detailed content of presentation or provide below:

Please refer to the attached written submission.

P E T E R D W E B B A N D A S S O C I A T E S

C O N S U L T A N T S I N T O W N P L A N N I N G A N D U R B A N D E S I G N

May 3, 2022 Our Ref: C2457-01

Mr I Birch
Presiding Member
Metro Outer Joint Development Assessment Panel
email: daps@dplh.wa.gov.au
Attention: DAP Secretariat

Dear Sir

Re: Presentation to Metro Outer JDAP (Meeting No: MOJDAP/171)
Lot 53 (No. 67) Folly Road, Baldivis

1. I refer to the Metro Outer *Joint Development Assessment Panel* (**JDAP**) Meeting scheduled to be held on Monday, 9 May 2022.

2. *Peter Webb and Associates* (**PWA**) acts for *Jeeyars Achayra Peettam Australia Ltd* (**JAPA**) in relation to the proposed Place of Worship development on Lot 53 (No. 67) Folly Road, Baldivis. (Ref: **DAP/21/02148**)

3. This written submission and my deputation to JDAP relates to **Item 8.2** of the Meeting Agenda (No. **MOJDAP/171**).

4. The purpose of this submission is to respond to the main reason contained in the *Responsible Authority Report* (**RAR**) for recommending refusal of this Application, which is described in the RAR and in subsequent communications with the *City of Rockingham* (**City**) as being primarily based on a concern regarding the overall intensity of the development.

5. This submission is to be considered in association with the written submission and deputation by the *Project Architects - Archetype* (**Applicant**), which explains the specific design measures applied to the development to ensure it complements and fits within the established amenity and character of this semi-rural environment.

6. The submission below provides the detail of my presentation.

Background:

7. To explain the site, in the context of the rural amenity and character of the surrounding environs, the land comprises of Floodplain which extends over the western half of the property and is to be protected from development. The eastern part of the land is cleared grassland, having been used historically for farming purposes. This eastern area of the site is proposed for the development of the subject of this Application.

8. The land shares its south western side boundary with the Kwinana Freeway.

Unit Two, 19 York Street Subiaco Postal: PO Box 920, Subiaco Western Australia 6904
Telephone (+61 8) 9388 7111 Facsimile (+61 8) 9388 7240 Mobile 0414 384 972
email: clare@webbplan.com.au website: www.webbplan.com.au
Trading for NL Hidding Pty Ltd ACN 610 081 724

9. The land is directly accessible from Kwinana Freeway via the Safety Bay Road Exit.

10. Its primary frontage is to Folly Road, which is classified as an Other Regional Road Reservation in the *Metropolitan Region Scheme* (**MRS**).

11. The proposed development is designed to maintain vehicle access to Folly Road, with the existing crossover being relocated 35.0 metres to the east. There will be no traffic associated with the development which accesses the local road network.

12. The existing substantial sized sheds on the land and the adjoining property to the north are visible from Folly and Young Roads. The proposed Temple and its ancillary buildings are designed to be located in this area of the site, with the built form maintaining a similar level of visibility from the road into the site.

13. The following **photographs 1 and 2** show the view of the site, looking in a north eastern and north western direction from Folly Road.



***Photograph 1**: Looking north east from Folly Road towards the existing large rural shed structures visible from the road.*



***Photograph 2**: Looking in a north west direction from Folly Road towards the existing large rural shed structures visible from the road and a section of the floodplain portion of the land which is to be protected from development and maintained in its current state.*

14. **Photograph 3** below is taken from Folly Road looking in a south eastern direction towards the property located directly opposite the subject site. The large rural shed clusters of built form and silo bins are clearly visible from Folly Road. The height of these buildings are the same height as proposed for the development and are noted as not being screened by vegetation from views of the street.



Photograph 3: *Looking south east towards the rural sheds clustered forms located directly opposite the land on Folly Road.*

15. **Photograph 4** below shows the view of the land, looking in a south eastern direction along the secondary frontage to Young Road. This area of the site will mostly remain in its grassland state, with some scattered trees proposed to be planted to enhance the rural amenity of the location. The only building proposed to be located adjacent to this frontage is the guest accommodation, which is designed as a single storey residential built form to complement the residential properties on the opposite (eastern) side of Young Road. This single storey residential accommodation is set back from Young Road at a distance of 31.0m.



Photograph 4: *Looking south east along the secondary frontage of the property to Young Road.*

16. **Photograph 5** below is a view of the land taken from the corner of Young Road, looking south west towards the rural buildings on the subject site and the adjacent landholding to the north west.



Photograph 5: *Looking south west along the common boundary shared between the subject land and 547 Young Road. This adjoining property comprises of large rural sheds.*

17. **Photograph 6** is a view taken from Young Road looking south east at the substantially sized rural sheds which are visible on the neighbouring property to the north west and those on the subject site. The design of the built from proposed in this Application is consistent with the scale of the built form which is currently visible on the land.



Photograph 6*: Standing on Young Road and looking in a south easterly direction towards the visible built form on the neighbouring lot to the north and the subject lot.*

Responsible Authority Report (RAR):

18. The formal assessment contained in the RAR overwhelmingly concludes that the development and use is compliant with the Planning Framework.

19. The RAR concludes that the development is sensitively designed to ensure it will be developed on this land to comfortably fit within and complement the existing rural amenity and character of this location.

20. The RAR prepared for JDAP however states that it is still not satisfied that the development and the use will meet the 'community expectation' as to what it views to be an appropriate 'intensity of the use' for a Place of Worship on Rural zoned land in this location.

21. The RAR states that: *'while a Place of Worship may be allowed in the Rural zone, the scale and intensity associated with this development is significant when compared to other Places of Worship in the City.'*

22. We disagree with this statement. The scale and intensity of a 'Place of Worship' for the Hindu community is no different in terms of the scale and intensity of the uses which occur at other Places of Worship in the City. The total congregation/worshipers at existing Places of Worship (the same as this proposed Place of Worship) will most likely comprise of similar numbers (i.e. 400 people). The use of the proposed Place of Worship will not involve the total number of the congregation/worshipers visiting the site on the same day at the same time, in the same way that all the congregation of say, a Catholic Church will not attend mass every Sunday or every wedding or community gathering event held. The total numbers given in this Application are based on a **maximum** capacity in order to confirm through the various technical investigations that the land can support the scale and intensity of this development, which capability is confirmed. This statement in the RAR is therefore simply inaccurate.

23. The City has advised the Applicant that regardless of whether RAR Reasons Nos. 4 to 6 of the recommendation to JDAP are able to be resolved through minor revisions to the plans, the City considers RAR Reason Nos. 1 to 3 as the main justification to JDAP for recommending refusal of this development.

24. It is therefore understood that the reason of the City for not supporting the development is based on a 'perception' of the intensity of use, rather than basing the recommendation on conclusions reached through the technical assessments and the supportive referral responses of the relevant government agencies, which all confirm the use is compliant and capable of being developed on this land, as proposed.

25. It is this perception of the intensity of the use which has driven the City to recommending to JDAP in the RAR that the Application should not be supported, stating that the Application does not satisfactorily address the following requirements of the Planning Framework.

25.1 Clause 4.11.1 - Objective of the Rural Zone of the *City of Rockingham* (**City**) *Town Planning Scheme No. 2* (**TPS 2**) stating that the development is required *'...to preserve land for farming and foster semi-rural development which is **sympathetic to the rural character** of the area.'*

25.2 The strategic intent for *Planning Precinct 2A* of *Planning Policy 3.3.1 – Rural Land Strategy* (**RLS**), stating that *'.it has not been sufficiently demonstrated that the development will **protect and enhance the visual character** of the rural area.'*

25.3 The third reason for refusal states: *'the **intensity** of the proposed development **exceeds what could reasonably be expected** within the rural area, **based on the number of people** likely to attend the site.'*

26. It is our view that the formal assessment detailed in the RAR contradicts this recommendation and position of the City as there is no evidence to support the opinion that the development is too intensive for this land.

27. I note the following conclusions reached in the RAR in support of the development and use, in accordance with the Planning Framework, which conflict with the stated opinion regarding the intensity of use being not suitable for this location.

27.1 The proposed land use of Place of Worship, together with the ancillary uses, are capable of approval in the Rural Zone, pursuant to TPS 2.

27.2 The development is confirmed in the RAR as unlikely to have an adverse impact on the ecological values of the site or locality, in accordance with the Strategic Intent for Planning Precinct 2A of the RLS. The only matter that requires further consideration is the landscaping plan to ensure it can be developed in a way which balances the bushfire risk whilst implementing rural landscaping improvements through strategic tree planting on the site. The necessary minor revisions required to address this concern have been incorporated into a revised landscaping plan, which is discussed by the Applicant in a separate submission and deputation.

27.3 The proposed strategic landscaping of the site will further improve and enhance the visual rural amenity of the area.

27.4 The proposed layout of the clustered building forms, which allows for the open fields to be maintained, together with sensitively designed buildings which complement the rural built form characteristics of this location, are consistent with the existing rural amenity and character of this location.

27.5 The car parking is compliant with *Town Planning Scheme No. 2* (**TPS 2**).

27.6 The regional road network of Folly Road can accommodate the predicted traffic volumes generated by the proposed use, with access to the site being located only 550 metres from the Freeway exit ramp. It is anticipated that the majority of traffic

will travel to the site from this direction. No traffic generated by this development will utilise the local road network.

27.7 The proposed development and use of the site achieves compliance with the *Environmental Protection (Noise) Regulations 1997* (**Noise Regulations**).

27.8 The proposed development of the site meets the requirements of *State Planning Policy 3.7 – Planning in Bushfire Prone Areas* (**SPP 3.7**).

27.9 The *Emergency Evacuation Plan* (**EEP**) is confirmed to be satisfactory.

27.10 The *Department of Health* (**DoH**) has no objection with the proposed use in regard to the *Government Sewerage Policy* (**GSP**) requirements.

27.11 The City considers the proposed development to be compliant with the GSP.

27.12 The *Department of Water and Environmental Regulation* (**DEWR**) has no objection to the development.

27.13 *Main Road WA* (**MRWA**) has no objection to the development.

27.14 The *Department of Planning Lands and Heritage* (**DPLH**) has no objection regarding the upgrading and relocation of the crossover or the predicated volumes of traffic which will access the site via Folly Road.

27.15 The *Water Corporation* has no objection to the proposed servicing of the development.

28. The development and use is confirmed in the RAR as being overwhelmingly compliant with the standards and requirements of the relevant Planning Framework.

29. As the development is compliant with the Planning Framework and noting that the RAR still considers that the Application should be refused on the grounds of the intensity of its use, the remaining section of this submission and the primary focus of my deputation to JDAP is to respond to the City's opinion that the intensity of the proposed development is considered to exceed what can reasonably be expected in the rural area, based on the numbers of people likely to attend the site.

Intensity of use: numbers of people likely to attend the site

30. The RAR comments that the range of activities are **perceived** by the community to be too intensive for the location in terms of the maximum capacity which the development is designed to accommodate. The development is specifically designed to complement the rural character of this location as well as to ensure that the development will have no adverse impact on the amenity in terms of traffic, car parking and noise. This is confirmed by the technical investigations lodged with the Application which confirm that the site can support this development and use as proposed.

31. The development is designed for use by an absolute **maximum** of 400 people and on only up to 18 days of the calendar year. It is however not anticipated that all 400 people will attend the site at the same time, or the same wedding event, nor will all 400 people attend every festival on the land. (It should also be noted that the occasional wedding held on the property will typically occur during the day time and over a period of four (4) hours.)

32. The average number of people attending the site for these purposes will be far fewer. It is anticipated that around 50 people on average are expected to attend the site for personal worship on any given day. This equates to 25 people on the land in the morning and 25 people on the land in the evening, with the possibility of up to 100 people over a single day visiting the Temple on a weekend, with approximately 25 people visiting the site in the morning and 75 visitors during the evening.

    The TIA applies a conservative average of two (2) people visiting the site in a single vehicle. (It is more likely that 3-4 people on average will visit the site in a single vehicle, as families usually visit the Temple together.) Therefore, the number of cars arriving and departing the site over the five (5) hour morning prayer session will be around half the number of people on the site (i.e. 25 people visiting the Temple in the morning, will result in say 12 cars (at the most) on the land, which vehicles will visit at different times over the five (5) hour period).

    The arrival and departure times of the visitors are staggered throughout the day, as Hindus are not called for prayer at specific times of the day (there is no formal mass service, so the Temple use is significantly less intensive in terms of use when compared to congregations which attend weekly services at set times at an existing Catholic Church in the City). As the numbers of vehicles and people visiting the site on a regular basis are not substantial in volume, there will be no adverse impact on the rural amenity in terms of numbers of people that the development is designed to accommodate.

33. The visitors travelling to the site by vehicle will enter from Folly Road, which forms part of the regional road network.

34. The site sits immediately adjacent to the Kwinana Freeway and is directly accessible via the Safety Bay Road exit ramp, which provides direct access to the land from the relocated crossover on Folly Road.

35. Folly Road is a higher order road (Other Regional Road) of the regional road network. It is ultimately designed to cater for and to be upgraded over time to allow for the efficient movement of regional traffic through this part of the state.

36. Access to the site via Folly Road ensures there will be no impact on the existing and future amenity of this area in terms of the volume of traffic predicted to enter the site, as access is contained on a road which is designed for regional traffic.

37. There will be no vehicles entering the site from the local access road network.

38. Further, the overall design of the buildings, the carpark and the vehicle access to the site is purposefully arranged to ensure that the physical presence of people on the land will not be noticeably visible from the neighbouring or nearby properties.

39. We welcome the opportunity to respond to any queries of JDAP in order to further address the operational characteristics of the use on the land in order to assure the Panel that the intensity of the use will not impact on the existing amenity of this location.

Place of Worship as a land use suitable in the Rural zone, at the intensity proposed

40. The RAR states that the rural amenity will change with the introduction of the non-traditional land uses proposed. I disagree with the statement that the development is a 'non-traditional' use in a Rural zoned area. A Place of Worship is in fact one of the earliest uses developed in Rural zoned locations throughout Western Australia, since European settlement. It is therefore a traditional development and use of a Rural area.

41. A Place of Worship is a land use which can be approved on this land zoned Rural, pursuant to Table 1 – Zoning Table of TPS 2. It is a use able to be considered in the Rural zone as it is a use which is considered compatible as it will not result in a land use conflict with the other land uses identified as able to be approved in this zone.

42. The RAR states that the number of people using the site will be greater than the people using the nearby rural properties. It is therefore concluded that the development should not be supported as the rural amenity will change as a result of the proposed development on this land in a way which does not meet community expectation.

43. Table 1 of the City's TPS 2 lists an extensive range of land uses able to be considered for approval in the Rural zone. All these uses will result in an increased number of people attending the site. Such land uses include (but are not limited to): an Abattoir, a Winery, a Veterinary Hospital, and Restaurant/Café. These uses are all listed as capable of approval in the Rural zone as they are considered appropriate land uses in rural areas.

44. In consideration of the wide variety of land uses able to be approved in the Rural zone, it is recognised that this rural zoned area is not preserved just for the range of land uses which exist on the surrounding properties, nor is the Rural zone intended for only agricultural type farming and residential use.

45. It is relevant to note that the Environmental Report submitted with the Application states that the land is **not** suitable for agricultural purposes due to its proximity to Folly Pool. It is however suitable for one of the other land uses listed in the City's Zoning Table as appropriate within the Rural zone, including the proposed Place of Worship.

46. It is ultimately the overall design of the development and the technical assessments undertaken to address the capability of the subject land to support the development and land use at the intensity proposed, which determines whether the proposal is suitable for the site.

47. The Visual Impact Assessment and the 3D Perspectives demonstrate that the built form and use of the development is designed in a way which will not adversely impact on the rural amenity and character of this location.

48. The remaining technical assessments collectively combine to confirm that the site-specific characteristics of this landholding can support the proposed maximum capacity of people that the development is designed to accommodate, therefore reaching a conclusion that the land use is suitable in this rural location.

Concluding Comments:

49. The technical investigations accompanying the Application and the formal assessment of the proposal in the RAR confirms that the development and use is capable of being managed on the land to achieve compliance with the Planning Framework.

50. The buildings are proposed in a clustered form which is confirmed in the RAR as appropriately responding to the existing rural amenity.

51. The parking area is designed to avoid the mature trees within the site and is set back from Folly and Young Roads and surrounded by the clustered building forms to ensure the car parking is screened from public view and the visual amenity of the area is not in any way adversely impacted as a result of this development.

52. Additional landscaping is to be provided for screening of this area from the street and surrounding properties, which will further enhance the rural appeal of the site and location.

53. The RAR concludes that the built form of the development complements the rural character and amenity of the area. The design does not rely heavily on the trees to achieve this level of compliance. The trees are however important in providing further opportunities to soften and enhance the existing rural amenity and character of the land and this location, when viewed from the surrounding road network. The planting of trees is identified in Stage 1 of the development to ensure the trees reach maturity as soon as possible.

54. The tree planting is strategically designed to ensure the APZ requirements can be achieved at tree maturity.

55. The site coverage of the development is consistent with the existing site coverage of buildings on the nearby lots. The Applicant has prepared a plan to demonstrate the proposed site coverage of the land and clustering of buildings in comparison to the site coverage and clustered formation of existing buildings on nearby land. The total site coverage of the built form comprises only 3.8% of the land area, which is similar to or less than the site coverage of buildings on adjacent lands. Refer to Figure 1 attached.

56. The cars and people visiting the site and activities held, will not adversely affect the amenity and semi-rural character of nearby properties, as vehicles arriving and departing will access the

Freeway without disturbing nearby properties, people on site will not be visible from the street, and all activities will be held inside buildings within reasonable hours.

It is based on all these reasons that we respectfully seek the support of JDAP in approving this Application, with reasonable conditions attached.

Yours faithfully

CLARE McLEAN
Senior Planning Consultant

cc: *Archetype*
JAPA

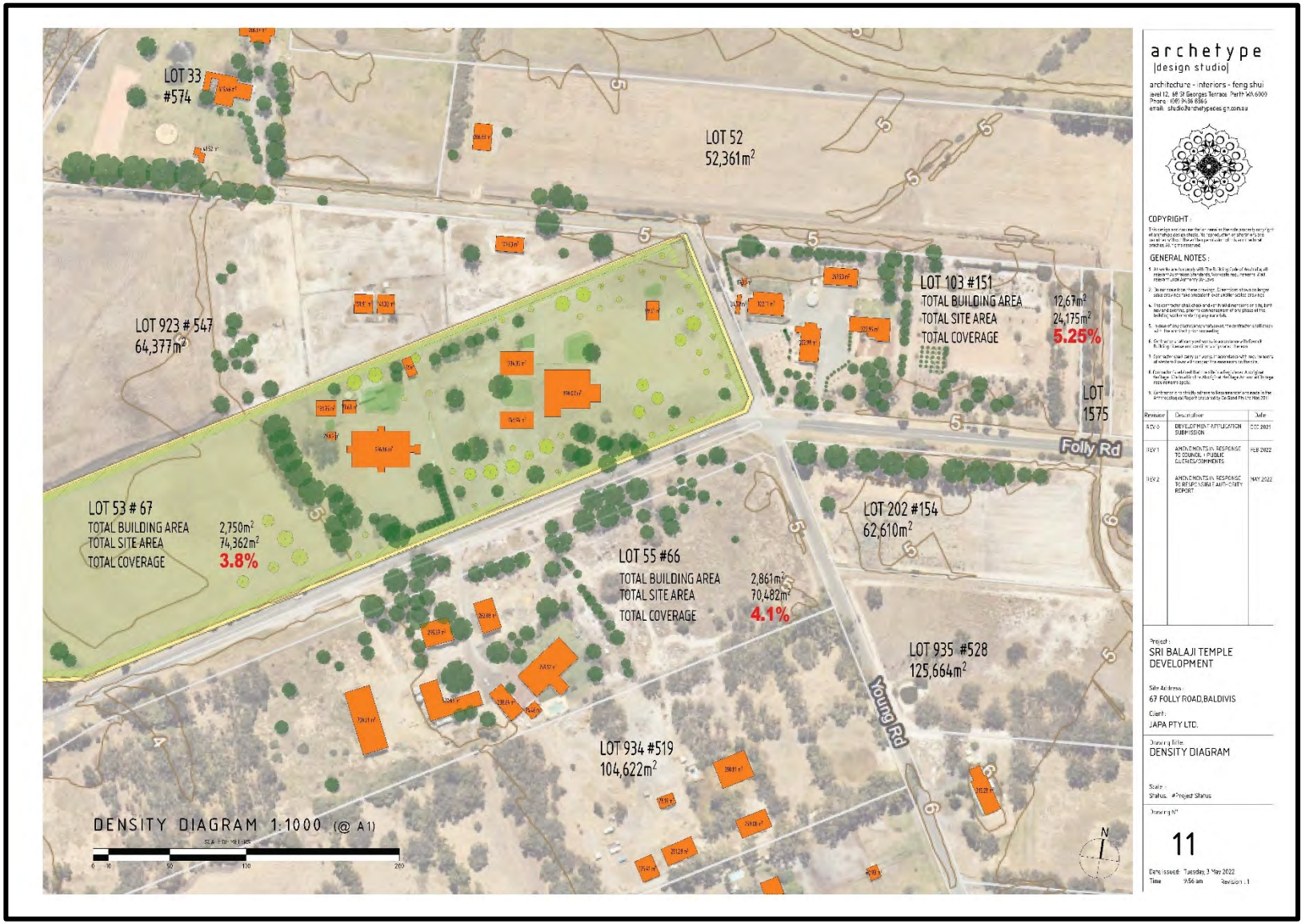
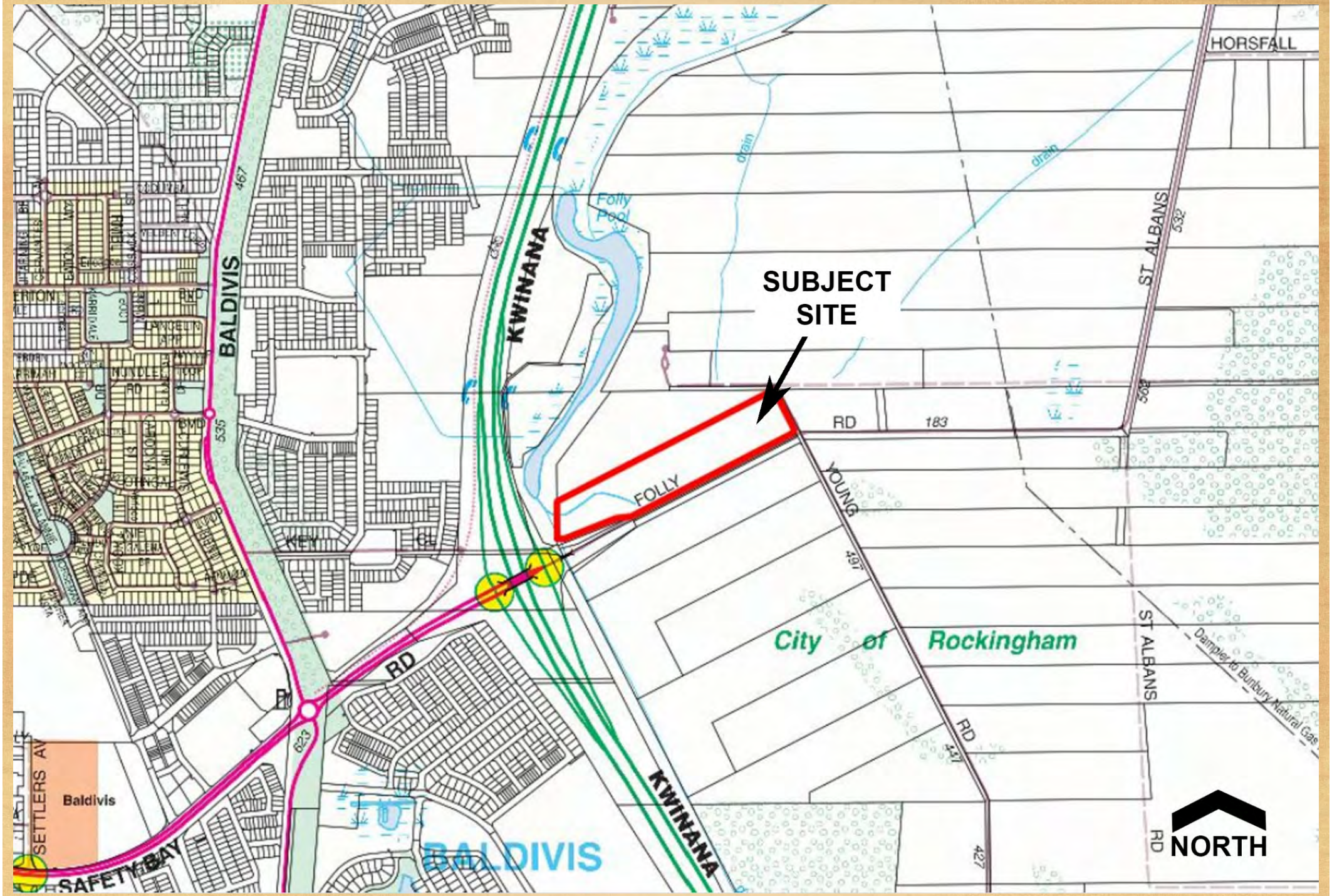


***Figure 1**: Site Coverage Comparison*

LOCATION OF SITE



SLIDE 1



***Photograph 1**: Looking north east from Folly Road towards the existing large rural shed structures on the land, which are visible from the road.*



***Photograph 2**: Looking in a north western direction from Folly Road towards the existing large rural shed structures visible from the road and a section of the floodplain portion of the land which is to be protected from development and maintained in its current state.*



***Photograph 3:** Looking south east towards the rural shed clustered forms located directly opposite the land on Folly Road.*



Photograph 4: *Looking south east along the secondary frontage of the property to Young Road. This area of the land is to remain in current open grassland state, with a single storey residential (guest accommodation) dwelling proposed to be set back from this boundary by 31.0m.*

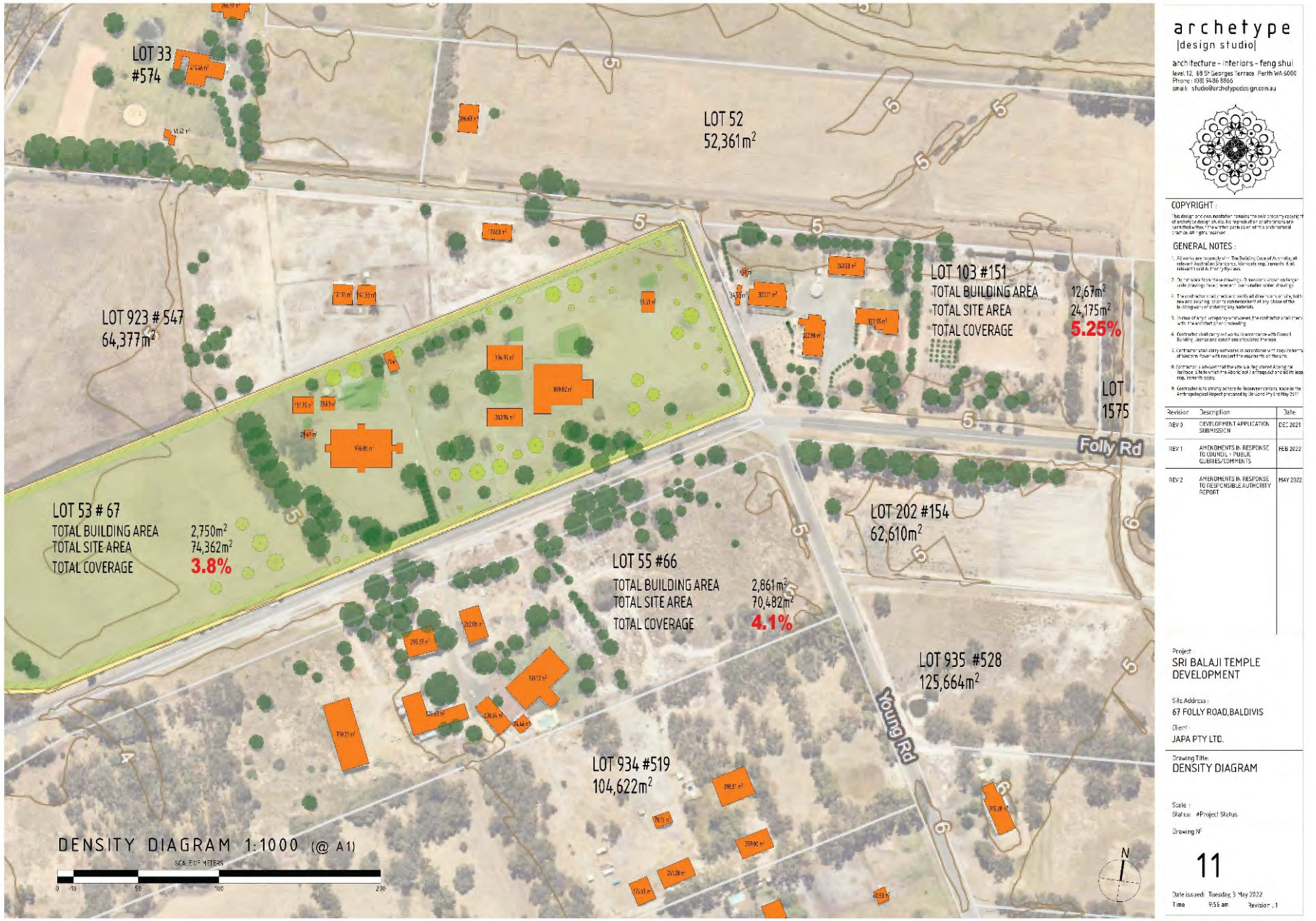


Photograph 5: *Looking south west along the common boundary shared between the subject land and 547 Young Road. This adjoining property comprises of large rural sheds.*



Photograph 6*: Standing on Young Road and looking in a south easterly direction towards the visible built form on the neighbouring lot and the subject lot.*

CLUSTERED BUILT FORM AND SITE COVERAGE IS CONSISTENT WITH RURAL CHARACTER OF THIS AREA.




Existing view – Folly Road


Artist impression of development
view from Folly Road

The conclusions reached in the Responsible Authority Report (**RAR**) confirm that:

- the development is designed to be sympathetic to the rural character of the area, which contradicts the first reason for refusal.
- The development will protect and enhance the visual character. The assessment of the development in relation to Planning Precinct 2A of Planning Policy 3.3.1 – Rural Land Strategy confirms that the development is unlikely to adversely impact the ecological values of the site, which meets the strategic intent of the stated planning precinct. The assessment conclusion therefore contradicts the second reason for refusal.
- The technical investigations and the assessment in the RAR in regard to these reports confirm that the development and use at the intensity proposed (and noting the investigations are based on the maximum capacity that the development is designed to accommodate) is capable of being supported by this land. The intensity of use is therefore confirmed through the assessment as being appropriate in terms of the total number of people, in contradiction with the third reason for refusal.

SAFETY BAY ROAD, No.113 TO 121 (LOT 503) SHOALWATER – PROPOSED SERVICE STATION

Form 1 – Responsible Authority Report
(Regulation 12)

DAP Name:	Metro Outer Joint Development Assessment Panel	
Local Government Area:	City of Rockingham	
Applicant:	APEX Planning	
Owner:	MPX Group Pty Ltd	
Value of Development:	$ 2.1 million ☐ Mandatory (Regulation 5) ☒ Opt In (Regulation 6)	
Responsible Authority:	City of Rockingham	
Authorising Officer:	Mr Peter Ricci, Acting Director Planning and Development Services	
LG Reference:	DD020.2021.00000070.001	
DAP File No:	DAP/22/02177	
Application Received Date:	15 March 2021	
Report Due Date:	27 April 2022	
Application Statutory Process Timeframe:	90 Days	
Attachment(s):	1. Development Plans 2. Schedule of Submissions 3. External Agency Comments 4. Transport Impact Assessment 5. Emissions Impact Assessment 6. City's Peer Review of Emissions Impact Assessment 7. Applicant response to matters raised by Department of Health and Department of Water and Environmental Regulations 8. Planning Report 9. Environmental Noise Report	
Is the Responsible Authority Recommendation the same as the Officer Recommendation?	☒ Yes ☐ N/A	Complete Responsible Authority Recommendation section
	☐No	Complete Responsible Authority and Officer Recommendation sections

Responsible Authority Recommendation

That the Metro Outer Joint Development Assessment Panel resolves to:

DEFER Development Assessment Panel reference DAP22/02177 and accompanying plans to give the applicant time to prepare an updated site plan which considers alternative access arrangements for Safety Bay Road:

- Overall Site Plan, dated 13.12.2021;
- Proposed Site Plan, dated 13.12.2021;
- Demolition Plan, dated 23.02.2021;
- Proposed Levels Plan, dated 13.12.2021;
- Proposed Floor Plan, dated 24.06.2021;
- Proposed Canopy Plan, dated 23.02.2021;
- Proposed Elevations Shop, dated 13.12.2021;
- Proposed Elevations Canopy, dated 23.02.2021; and
- Proposed Landscaping Plan, dated 13.12.2021.

Reason

1. There will be a traffic conflict between the proposed southern crossover for the Service Station and the existing adjoining main crossover for the Shoalwater Neighbourhood Shopping Centre, which is likely to have an unacceptable traffic safety risk and conflict with traffic entering and exiting from Safety Bay Road. The applicant must submit a revised site plan for the Service Station and the Shopping Centre to reconcile this traffic conflict between the crossovers, to the extent that the development can comply with Austroad's requirements.

Details: outline of development application

Region Scheme	Metropolitan Region Scheme
Region Scheme Zone/Reserve	Urban
Local Planning Scheme	Town Planning Scheme No.2
Local Planning Scheme Zone/Reserve	Commercial
Structure Plan/Precinct Plan	N/A
Structure Plan/Precinct Plan Land Use Designation	N/A
Use Class (proposed) and permissibility:	Service Station – “D” use
Lot Size:	7,4713ha
Number of Dwellings:	N/A
Existing Land Use:	Vacant Land
State Heritage Register	No
Local Heritage	☒ N/A

	☐ Heritage List ☐ Heritage Area
Design Review	☒ N/A ☐ Local Design Review Panel ☐ State Design Review Panel ☐ Other
Bushfire Prone Area	No
Swan River Trust Area	No

Proposal:

A Joint Development Assessment Panel (JDAP) application was lodged with the City on 15 March 2021, to construct a Service Station on the most eastern corner of the subject site.

The application was not accepted for assessment until 27 January 2022 as an Emissions Impact Assessment was not submitted with the original application.

The application seeks Development Approval for a Service Station, inclusive of the following:

- A Service Station building with a retail sales area of 200m^2, operating 24 hours/7 days a week;
- The building is proposed to be setback 2.2m from the northern property boundary and 6.5m from Safety Bay Road;
- A 5m x 9.9m bin store & deliveries area west of the building;
- A 5.5m high forecourt canopy south of the retail building, with 4.5m clearance below;
- Three (3) fuel dispensing bowsers (6 refuelling positions);
- Five (5) shop front car parking bays, including an accessible bay and an separate air/water bay;
- Two (2) underground fuel storage tanks and associated vent pipes south and south/east of the canopy;
- A number of signs attached to the retail building and a 7.2m high pylon sign to the Safety Bay Road frontage;
- Removal of 48 on-site car parking spaces and six (6) existing mature trees;
- Additional landscaping throughout the development site as offset.

In terms of access, the proposed development involves the following modifications to the subject site's existing crossovers to facilitate access to the Service Station:

- Modification to the existing north-eastern crossover by widening it to 8.9m, from 7m at the property boundary.
- Relocation of the exiting south-eastern crossover and its widening to 9.9m, from 8.3m at the property boundary.

The proposal includes approval for Stage 1 (VR1) fuel vapour recovery system which is described in detail in the Planning Assessment section of this Report.

Background:

Site and Locality

The subject site is 1.4713ha in area and is occupied by the Shoalwater Neighbourhood Shopping Centre (SNSC).

A portion of the subject site was previously developed with a Service Station circa 1970 and subsequently expanded to include the SNSC. As the SNSC expanded to accommodate additional offerings, on-site car parking continued to expand to support development.



1. Location Plan

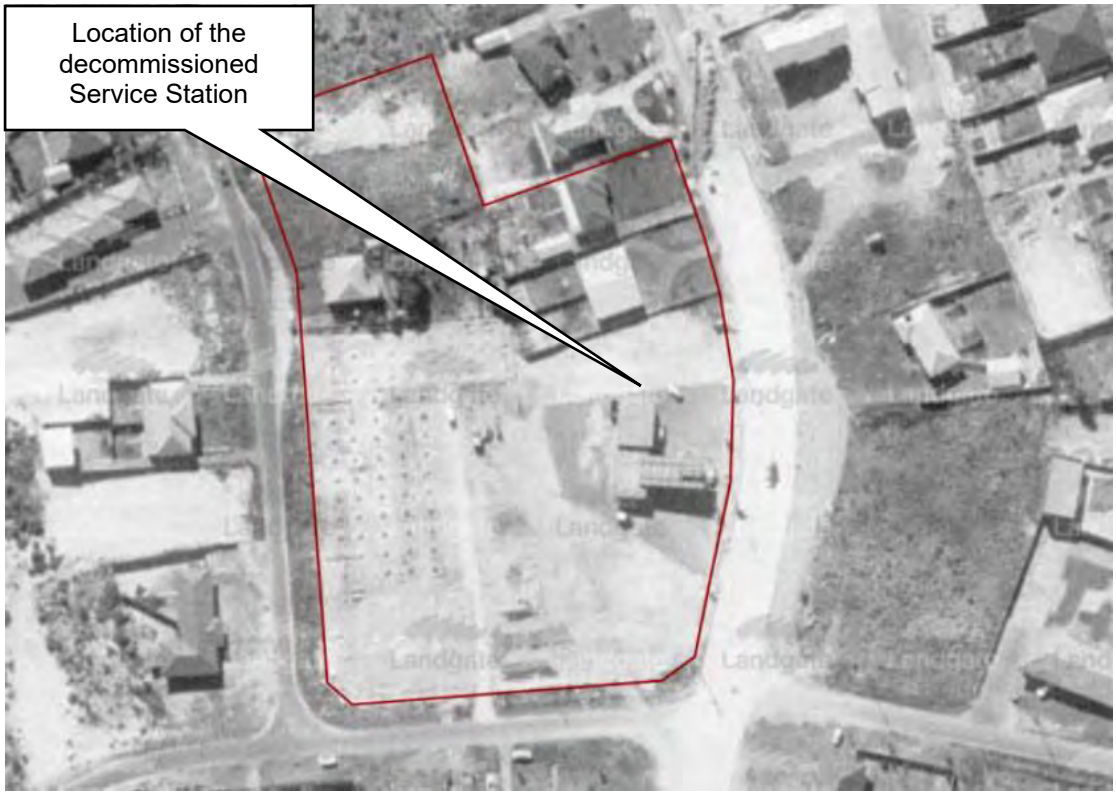
Subject Site



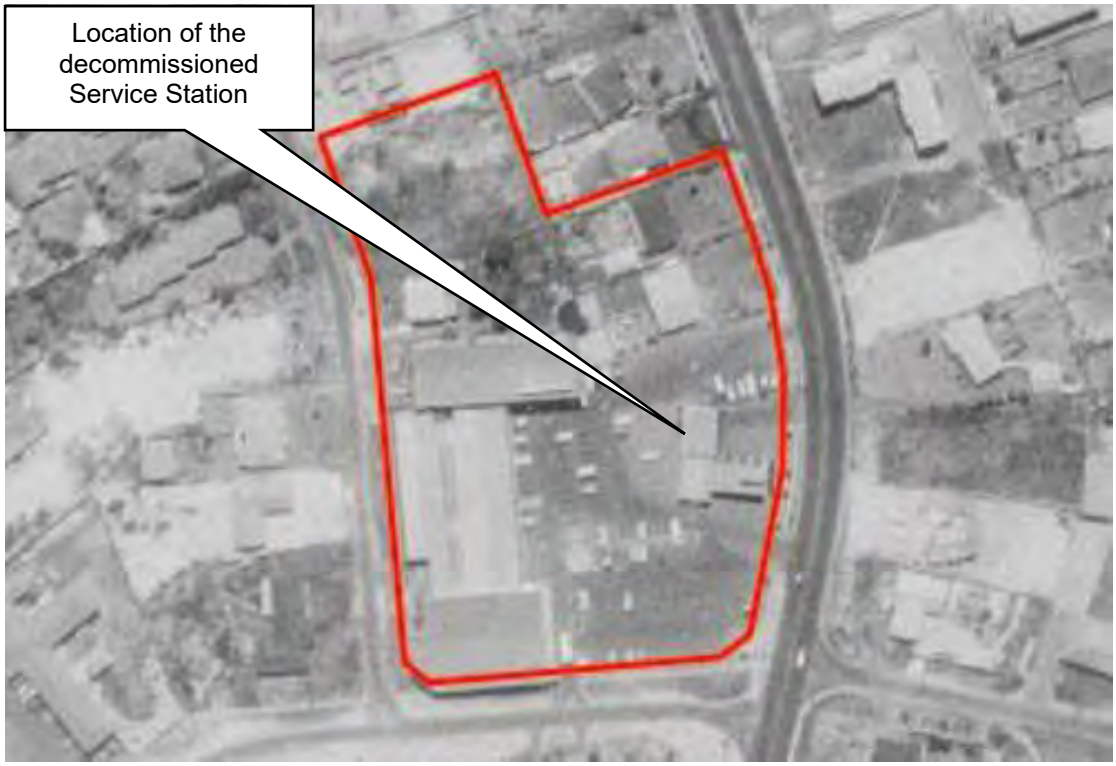
2. Aerial Photograph Showing Subject site and Surrounding Development

Between 2007 and 2009, the Service Station was decommissioned and replaced with additional car parking.

Figures 3 - 5 illustrate the history of the subject site.



3. Subject Site Aerial Photograph Circa 1970



4. Subject Site Aerial Photograph Circa 1974



5. Subject Site Aerial Photograph 2022

Beyond the subject site, the locality is characterised by a range of residential development consisting of an aged care facility, west of the SNSC on the opposite side

of Second Avenue and residential development with a variety of densities to the north, east and south.

The Sunrise Child Care Centre is also situated approximately 175m south of the SNSC.

Legislation and Policy:

Legislation

- Planning and Development Act 2005
- Metropolitan Region Scheme
- Town Planning Scheme No.2
- Planning and Development (Local Planning Schemes) Regulations 2015
- Environmental Protection Act 1986
- Environmental Protection (Noise) Regulations 1997

State Government Policies

- State Planning Policy 3.1 - Residential Design Codes Volume 1
- Environmental Protection Authority (EPA) – Separation Distance Between Industrial and Sensitive Land Uses No.3 (Guidance Statement)

Structure Plans/Activity Centre Plans

Not Applicable

Local Policies

- Planning Policy 3.3.1 – Control of Advertisements
- Planning Policy 3.3.14 Bicycle Parking and End of Trip Facilities

Other

- Austroads' Guide to Road Design Part 4: Intersections and Crossings

Consultation:

Public Consultation

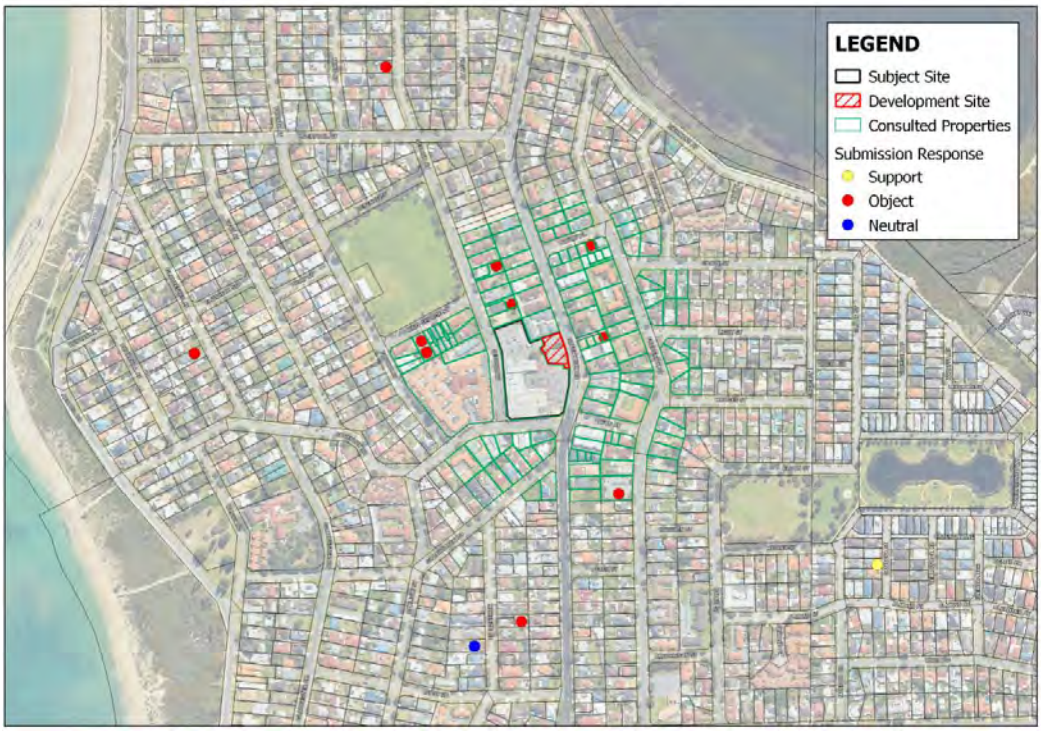
The application was advertised for public comment in the following manner:

- The landowners and occupiers identified on the Consultation Plan (Figure 6) were notified in writing of the proposed development;
- One sign was erected on the development site fronting Safety Bay Road;
- The application documents and plans of the proposal were made available for public inspection at the City's Administration Offices and placed on the City's website. and
- Submissions were requested over a 24 day period, between 8 February 2022 and 4 March 2022.

A total of 23 submissions were received, comprised of:

- Seven (7) submission supporting the proposal;
- Fifteen (15) submissions objecting the proposal and
- One neutral submission.

The locations from where the nearby submissions originated are shown on the Consultation Plan below.



6. Consultation Map

The objections have been summarised in the Table below and the City's responses to the submissions.

Issue Raised	Officer Comments
<u>Land Use and Location</u> There are already more than enough Service Stations in the area.	The perceived oversupply of a land use and economic viability considerations are not relevant planning considerations and should not be given any weight in exercising discretion on the proposal.

Issue Raised	Officer Comments
This Service Station development does not suit the area as it is too close to residential dwellings and an aged care facility. The closest dwellings with outdoor living areas are only 2.2m away from the service station.	The land use considerations are discussed in detail in the Planning Assessment section of this report, when it was concluded that Service Station as a Commercial land use is suitable in this Commercial zone, subject to reconfiguration of the access arrangements along Safety Bay Road. Matters pertaining to the proximity to the nearest existing dwellings is also discussed in the Policy section of this report.
<u>Traffic and Safety Impacts</u>	The City agrees the number of proposed crossovers along Safety Bay Road for SNSC is excessive in the context of traffic safety.

The number of crossovers on Safety Bay Road is excessive.	The City has undertaken a detailed analysis of the Transport Impact Assessment (TIA) provided by the applicant and considers that there is insufficient separation distance between the proposed southern full movement crossover for the Service Station and the existing SNSC full movement crossover south of the proposed, along Safety Bay Road. Whilst the amount of crossovers does not change for the SNSC, the proximity of the two crossovers raises a major traffic safety concern.
<u>Noise</u> Properties in proximity to the development would hear the delivery trucks coming and going at all hours of the day and night and the noise of the extra traffic at night and day, would have a negative impact, particularly on sleep during the night.	The City has reviewed the applicant's submitted Environmental Noise Assessment and is satisfied that development is unlikely to have an adverse noise impact on surrounding sensitive land uses, subject to the implementation of the recommended measures contained within the Environmental Noise Assessment. Noise is discussed in further detail within the Consultation with Government Agencies section of this Report.
<u>Health and Environment</u> Health concerns of a Service Station and storage or fuel in the area close to residential dwellings. The environmental impact on the area on fuel and oil spillages has not been considered or addressed.	Risk to human health is a matter that the Local Government is required to give regard to in its assessment of an application for Development Approval. The health impacts of the proposal are addressed within the Consultation with Government Agencies and Policy section of this Report. Commercial sites are required to treat the first 15mm of rainfall runoff from trafficable surfaces pursuant to Department of Water and Environmental Regulation's stormwater management requirements and the City's Local Planning Policy 3.4.3 - Urban Water Management. Although a SPEL Preceptor is intended to be applied, no treatment devices have been mentioned for the remaining trafficable areas within the development.

All public submissions are contained within Attachment 2.

<u>Referrals/consultation with Government/Service Agencies</u>

The following government departments and service agencies were consulted:

- Department of Communities (DoC);
- Department of Water and Environmental Regulation (DWER);
- Department of Health (DoH); and
- Department of Mines, Industry Regulations and Safety (DoMIRS).

The following summarises the comments received:

1.	Department of Communities (summarised)
Department of Communities (DoC) objects to this proposal. The DoC owns nine residential dwellings adjoining and to the north of the development site. The proposed development is within 2m from the established residences. It is noted that the anticipated noise generation will exceed the acceptable level impact on the residences. Appropriate and adequate noise attenuation measure should be introduced to reduce the noise impact on the residences. There is an established row of trees along the common boundary. The draft plans indicate that these trees will be retained, 'if possible'. Should the proposal go ahead, these trees must be retained or replaced with adequate landscape buffer to protect the amenity of the dwellings.	
City's Comment: *Noise* DoC is concerned with the proposed development's ability to maintain compliance with the Environmental Protection (Noise) Regulations 1997 (the Noise Regulations), due to its close proximity to the nine owned residential dwellings to the north of the development site. The development is required to comply with the Noise Regulations and the Applicant's Environmental Noise Assessment has indicated that compliance with the assigned levels can be achieved by virtue of incorporating the Section 5 noise control recommendations (refer to recommendation below). *Tree Protection* City Officers are unable to verify references to the established row of trees along the common boundary being identified for 'retention, if possible'. The plans identify that the subject trees will be retained. The established row of trees would provide a softer interface between the two sites and more broadly, these trees are likely to provide some visual relief of the proposed Service Station development from the public realm. Given that the development interfaces with three residential dwellings along its northern boundary, the City considers (as Development Plans include) that the established row of trees along the common boundary should be retained.	
Recommendation: Should the MOJDAP grant approval to the proposed development, conditions of Development Approval should be included to protect the established row of trees through a Landscape Management Plan. The proposal must also be consistent with the recommendations of the Applicant's Environmental Noise Assessment, which relate to implementation of building and mechanical plant post detail design, subject to verification by the City as well as refrigerated deliveries and bin service scheduling.	

2.	Department of Health (summarised)

The Department of Health (DoH) does not support the location of the service station due to proximity to sensitive receptors.

Fuel bowsers in the proposed service station are about 40m from the nearest sensitive receptors - a small group of houses to the north of the development. This is within the minimum separation distance for petrol stations, which is 50m.

An air emissions impact statement has been submitted. The conclusion of the modelling is that the concentration of air pollutants of concern are below available exposure limits. For benzene, the modelled annual ground level concentration (GLC) was about 65% of the NEPM monitoring investigation level (0.003ppm). The Department cannot comment on the robustness of this model and whether these calculations are correct.

Advice from the Department of Water and Environmental Regulation, where there is expertise in air quality dispersion modelling, is that these models have a number of areas of uncertainty and that they (Department of Water and Environmental Regulation) are generally not able to verify the assumptions made in these modelling studies. The uncertainty in the modelled GLCs are not included in the report. The level of uncertainty is likely to be high.

Given these uncertainties, the advice that has been provided to DOH is that the use of dispersion modelling to make precise judgements on separation distances is impossible. For this reason, the recommended approach is the application of separation distances within Guidance Statement - Separation Distances between Industrial and Sensitive Land Uses.

The DOH advice is that there should be at least 50m between the proposed service station and the nearest sensitive receptor.

City's Comment:

The Guidance Statement specifies that for Service Stations operating during normal hours i.e. Monday – Saturday, from 7am to 7pm, a minimum 50m separation distance should be maintained to sensitive receptors, whilst a minimum 200m separation distance applies for all 24 hour operations (outside freeway Service Stations). Thus, based on the proposed 24 hours/7 days a week nature of the proposal, a 200m buffer to sensitive land uses applies. Whilst the development site abuts the nearest sensitive receptor to the north, the closest source of offensive emission is from the fuel bowsers (south of the fuel retailing building) which are 40m away.

The gap between planning and environmental guidance in this regard via a regulatory or policy capacity from the State Government confuses the issue, considering EPA Separation Guidelines require an Emissions Impact Assessment to be provided in support of a proposal where it encroaches on sensitive receptors.

As odour emission modelling (relevant to the proposal) is outside of the expertise of the City, DoH and Department of Water and Environmental Regulations, the City engaged the services of an independent qualified Consultant to undertake a review of the applicant's submitted Emissions Impact Assessment.

The City has relied upon the advice of the EIA Peer Review to give due consideration to the matter, details of which are discussed in the Planning Assessment section of this Report.

3. Department of Water and Environmental Regulations (summarised)

The Department of Water and Environmental Regulations (DWER) does not have a regulatory role, policy position or guidance statement for fuel stations. Due to uncertainties within air dispersion modelling for this land use, resulting from an absence of standard methodology and validated data, adherence to separation distances within Guidance Statement 3 Separation Distances between Industrial and Sensitive Land Uses (GS 3) (EPA, 2005), is generally recommended to inform planning decisions.

3. Department of Water and Environmental Regulations (summarised) (cont…)
The Department notes the Odour Emission Report prepared by the Applicant's consultant proposes to employ Stage 1 Vapour Recovery system (VR1). Although it is estimated that this additional emission control would reduce the emissions, owing to the uncertainties in emission estimations there is limited ability to determine if this additional emissions control is required or, if installed, would result in acceptable impacts.
City's Comment: DWER responses to the matter are noted.
4. Department of Mines, Industry Regulations and Safety (summarised)
Based on the provided information there is no issue identified at this stage with the proposal. Before the site is used to store Dangerous Goods above manifest quantity, it will require a Dangerous Goods Site licence.
City's Comment: DMIRS considered the risk under the Dangerous Goods Safety Act 2004 and Regulations, in terms of explosive gas atmospheres and hazardous zones only (i.e. not health risks associated with gaseous emissions).

A copy of the External Agency comments are contained within Attachment 3.

Design Review Panel Advice

Not Applicable

Swan Valley Planning

Not Applicable

Planning Assessment:

The proposal has been assessed against all the relevant legislative requirements of the Scheme, State and Local Planning Policies, as outlined in the Legislation and Policy section of this report.

The following matters have been identified as key considerations for the determination of this application:

- Human Health Impacts from Benzene Exposure;
- Pylon Signage;
- Form of Development;
- Car Parking; and

- Traffic Safety.

Human Health Impacts from Benzene Exposure

The EPA Guidance Statement provides advice to proponents, responsible authorities, stakeholders and the public, on the minimum requirements for environmental management which the EPA would expect to be met when the Authority considers a development proposal. For the purpose of the Guidance Statement, “industrial land use” is used in a general way to encompass a range of industrial, commercial and rural activities, associated with off-site emissions that may affect adversely the amenity of sensitive land uses. A table of land uses is provided in the Guidance Statement, however, it is recognised that the list is not definitive. Service Station land use is identified in the table.

The generic separation distances are based on the consideration of typical emissions that may affect the amenity of nearby sensitive land uses. These include gaseous and particulate emissions, noise, dust and odour. For developments of this kind, the EPA recommends a 200m separation distance to all 24 hour Service Station operations from sensitive land uses because of gaseous, noise, odour and risk associated implications. It should be noted that the separation distance recommended by the Guidance Statement is not absolute but instead are default distances providing general guidance in the absence of a site-specific technical study.



7. Generic 200m Separation Buffer

Figure 7 above, depicts the extent of existing development within 200m generic separation distance from the two main sources of gaseous vapour at the development site. Within the 200m separation distance, a total of two (2) sensitive land uses were identified, comprising of:

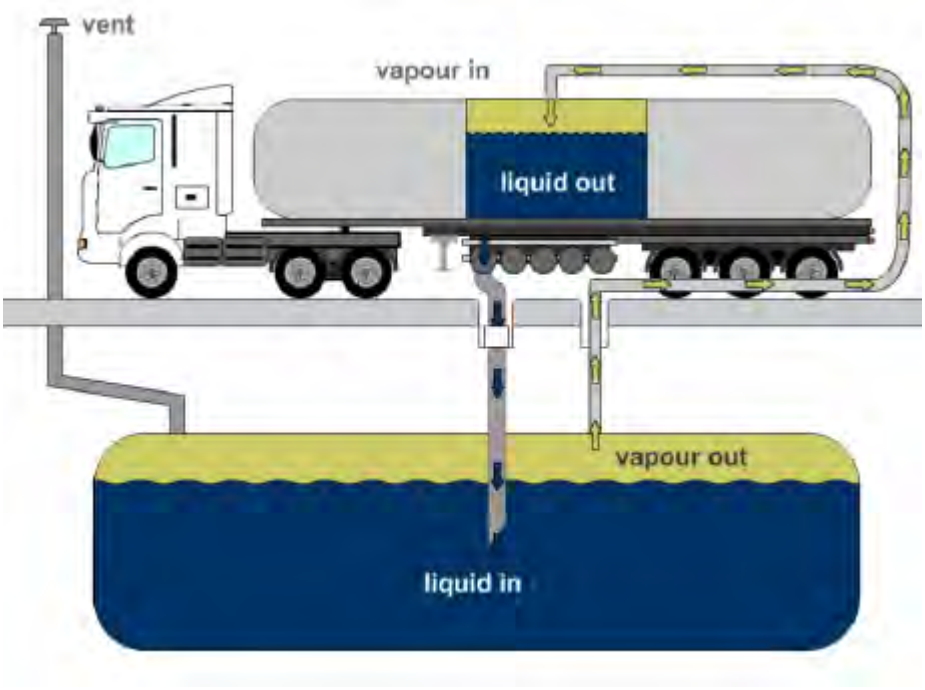
- 226 established residential dwellings / units; and
- An Aegis Nursing Home which can accommodate a total of 144 residents.

The two main sources of gaseous vapour identified as part of this Service Station development are:

1. The refilling of the underground fuel storage tanks south of the canopy and associated vent pipes connected to the underground tanks proposed to be located adjacent to Safety Bay Road, adjoining the proposed southern crossover.

2. The refuelling of vehicle beneath the fuel canopy, isolated to the petrol bowsers and nozzle.

The underground fuel storage tanks are proposed to be equipped with a VR1. It is understood VR1 captures 95% of all vapour during the refuelling process.



8. Stage 1 Vapour Recovery Process

When vehicles are refuelled at petrol stations, the vapour vehicle fuel tanks is displaced by the fuel. VR2 equipment is designed to capture the displaced vapour and then return it to the underground fuel storage tank or other appropriate vessel. It is understood that the VR2 recovers at least 85% of the displaced vapour during the customer refuelling process. VR2 is not proposed for this development.

Whilst the City's Peer Review does not concur with some of the steps within the applicant's submitted Environmental Impact Assessment, it does acknowledge that the concentration of benzene when using the metrological data files and 'correct' emission calculation methods would likely be comparable to the assumed concentration, which result in a 'pass'.

The City notes, assumed 5.3ug/m^3 concentration contour is 53% of the exposure limit for Benzene prescribed within the National Environmental Protection Measures to the most impacted sensitive receptor (from emission source) to the east. The predicated ground level concentrations within the 200m separation buffer could therefore be lower than 53%, however, the City cannot comment on the robustness of either model or how correct the calculations are.

On balance, whilst it is acknowledged that air quality dispersion modelling has a number of areas of uncertainty, the combined feedback points to the risk of benzene exposure from the Service Station in this location to be negligible. The proposed development is therefore considered acceptable with respect to the separation distances to sensitive land uses.

Pylon Signage

The following provides an assessment of signage seeking to vary the requirements of PP3.3.1.

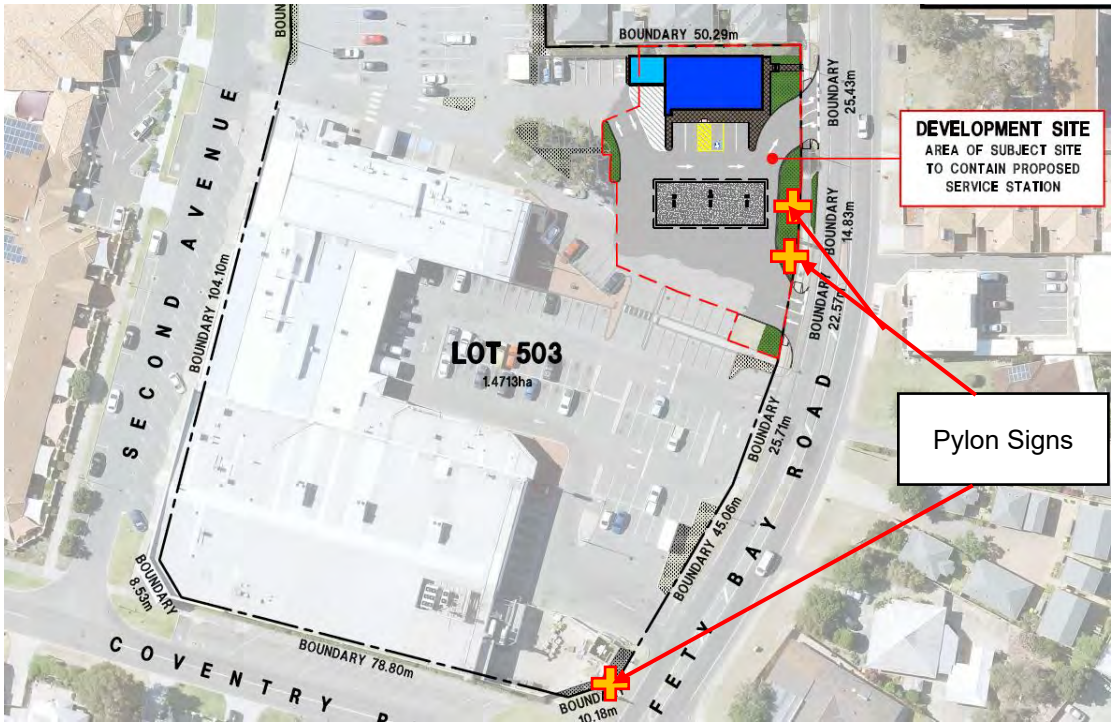
Pylon Sign must:	**Officer Comment**	**Compliance - 7.2m high Pylon Sign**
(a) shall not be located within 1.8m of a lot boundary.	The 7.2 high pylon sign associated with the Service Station has a Nil setback from Safety Bay Road.	No
(d) have a height exceeding 6.0m, unless it can be demonstrated to the Council that a greater height is warranted and it complies with the objectives of this Planning Policy. In any event, a Pylon Sign shall not exceed 9.0m in height.	A 7.2m height above natural ground level is proposed for the fuel retailing building pylon sign.	No
(f) have a face area exceeding more than 3.5m width or height	The face area of the proposed pylon signs exceed 3.5m in height.	No
(g) have a face area of more than $4m^2$ on each side (single tenancy) or $17m^2$ on each side (multiple tenancy).	The pylon signs have face areas of approximately $17m^2$ and $12m^2$ respectively.	No
Only one (1) pylon sign shall be permitted on a lot with a single tenancy. For lots with two or more tenancies, only one (1) pylon sign will be generally permitted unless the site is large and has more than one street frontage, in which case one pylon sign per street frontage may be permitted.	There are two existing pylon signs along the Safety Bay Road frontage of the SNSC site.	No

The following objectives of PP3.3.1 are relevant for the consideration of pylon signs:

"(a) Ensure that advertisements are appropriate for their location;

(b) *Minimise the proliferation of advertisements;*

(c) *Ensure that advertisements do not adversely impact on traffic circulation and management, or pedestrian safety."*



9. Approximate Location of Existing and Proposed Pylon Signs

The proposed pylon sign for the Service Station would establish a third pylon sign on the Safety Bay Road frontage. The Safety Bay Road frontage is over 130m in length, which is considered ample to accommodate three signs, however, subject to a greater separation between the existing northern and proposed pylon signs, in order to avoid signage clutter.

The 7.2m high pylon sign is associated with the fuel retailing building adjacent to Safety Bay Road frontage, which is proposed to be designed in a way which ensures vehicles are able to read the content of sign panels without any visual impact (subject to relocation of the existing northern pylon sign) to the surrounding amenity, traffic circulation or pedestrian safety.

Form of Development

In considering applications for Development Approval in the Commercial Zone, the Council shall *"ensure that the site planning scale, built form, elevations and landscaping of the development positively contribute to the streetscape, appearance and amenity of the locality".*

The proposed retail outlet building will comply with the setback and overshadowing requirements to the adjoining residential development. The retail building has been setback 6.5m from Safety Bay Road and the amount of landscaping provided on the development site is 13% which satisfies the applicable TPS2 requirements.

The built form is single-storey which is consistent with the prevailing low-rise character of the surrounding area.

The development provides a suitable built form interface to the northern boundary, retains the existing solid masonry boundary fence and vegetation to form an effective green buffer screen to the north.

The proposed development will form part of an established SNSC which is zoned Commercial under the TPS2. Whilst, there is likely to be a change to the amenity of the immediate locality, the City is satisfied that amenity related impacts have been adequately addressed by the proposal.

Car Parking

TPS2 requires the provision of on-site parking for vehicles for development on 'Commercial' zoned land in accordance with the provisions of Clause 4.15 and Table No.2. The Table below provides an assessment of the proposal against the relevant car parking requirements of TPS2.

Table No.2 - Car parking table

Use	Rate / Assessment	Required
Proposed - Service Station	1 bay for every service bay, plus 1 bay per employee and 6 bays per 100m^2 NLA of retail floors space 200m^2 NLA = 12 bays + 2 bays for employees	14 bays
Existing - Tavern	1 bay for every 5m2 of bar and public areas, including lounges, beer gardens and restaurants. 555m^2	111 bays
Existing - Medical Centre	5 bays per practitioner 13 practitioners = 65 bays	65 bays
Existing - Café/Restaurant	1 bay for every 4 persons the building is designed to accommodate 20 persons = 5 bays	5 bays
Existing - Shop/Convenience Store	6 bays per 100m^2 NLA 3,650m^2 NLA (approx.)	214 bays
Total Required		409 bays
Total Provided (on-site, post DA) *[1]		201 bays
Car Parking Shortfall (on-site) *[2]		208 bays

Note:

1. *The proposed Service Station will replace part of the existing car park within the development site. As a result of the proposal, 48 existing parking bays will be removed and replaced by the development. The proposed Service Station will provide additional six bays which will result in a net parking loss of 42 bays within the SNSC car park.*
2. *There are 53 on-street car parking bays available on Coventry Road and Second Avenue – these bays do not form part of the technical shortfall.*

Under the parking requirements of TPS2, SNSC requires the provision of a minimum 409 car parking spaces. The SNCS provides a total of 201 on-site car parking bays and therefore does not comply with the car parking requirements of Clause 4.15 of TPS2.

The Applicant's Traffic Consultant has undertaken a parking utilisation survey of the SNSC car park as well as on-street bays on the abutting roads to investigate actual

parking demand for the centre (Attachment 4). The outcome of the parking survey indicates that, although development of the proposal will result in a net parking loss of 42 bays within the SNSC car park, there still will be a significant number of available bays during the peak parking demand.

In order to verify the availability of car parking at the SNSH during business hours, City Officers undertook several visits to the centre, as follows:-

Time / Day	Date	Parking Bay Vacancy
1:40pm / Monday	17 May 2021	120 parking bays
3:00pm / Thursday	20 May 2021	146 parking bays
11:00am / Saturday	22 May 2021	146 parking bays
12:00pm / Monday	24 May 2021	122 parking bays
08.30am / Thursday	10 March 2022	132 parking bays
09:00am / Tuesday	29 March 2022	127 parking bays
5:00pm / Wednesday	30 March 2022	147 parking bays

The above observations generally corroborate the information provided to the City by the Applicant's Traffic Consultant.

Taking into account the 53 on-street car parking bays on Coventry Road and Second Avenue, the theoretical shortfall can be reduced to 155 car parking bays. Between the theoretical shortfall of 155 car parking bays and lowest observed parking bay vacancy of 120 bays, the theoretical shortfall can be further reduced to 35 car parking bays. The balance can be simply sustained on the basis of an over-conservative car parking requirement for Tavern and Service Station land uses, which do not reflect the actual parking demand at the SNSC.

Additionally, given SNSC comprises of several land uses that operate on the site, reciprocal and shared parking is considered likely to occur.

Consequently, the City is satisfied that the car parking needs of the proposed development and adjoining tenancies can be accommodated within the on-site parking areas at the SNSC. This is on the basis of 201 available on-site car parking bays at the SNSC and 53 additional on-street parking bays.

It is considered that sufficient parking is available on-site/of-site to meet the actual parking demand at the SNSC, inclusive of the Service Station development and adjoining residential development.

In light of the above reasons, the variation to Clause 4.15 of TPS2 is sufficiently addressed.

Traffic Safety

Austroad's Guide to Road Design (Part 4) recommends several matters that need to be considered when determining the minimum access spacing between vehicle crossovers along a particular road. One such matter suggests that a driver should be able to clear an access connection and have at least stopping sight distance available to react to a potential conflict and come to a stop. For a design speed of 60km/hr, the minimum stopping sight distance is 73m. The stopping sight distance does not consider that entering vehicles would be accelerating away which therefore leads to the next consideration of the "left turn conflict overlap' and for the speed of 60km/hr (speed applies to Safety Bay Road fronting development) the minimum spacing according to this criteria is 40m. This should be the minimum access spacing to be

adopted for design in this particular instance. The proposed separation distance between the subject crossovers is 18m which is not acceptable to the City.

The following traffic scenarios are of particular concern which the City considers are highly likely to increase traffic safety risk, or the performance of the adjacent existing crossover:

1. A vehicle entering Safety Bay Road from the existing vehicle crossover for the SNSC may incorrectly conclude that a vehicle indicating left on Safety Bay Road would be entering the existing vehicle crossover but in fact they are intending to enter the proposed vehicle crossover for the Service Station directly to the north.
2. There are concerns that the queues from the Service Station bowsers (i.e. located to the north of the existing vehicle crossover) would overflow onto Safety Bay Road (i.e. due to insufficient queueing space provided within the site) and impacting on the existing vehicle crossover.

Additionally, there is an increased traffic safety risks (eg. rear end crash) due to insufficient spacing provided between vehicle crossovers along Safety Bay Road (i.e. "*Left Turn Conflict Overlap*" or vehicles travelling northbound along Safety Bay Road may not have enough time to see that there are vehicles exiting from the proposed vehicle crossover for the Service Station because they are still fixated to the existing vehicle crossover for the SNSC). Locating two vehicle crossovers very close to one another also restricts sight distance.



10. Proposed Access Configuration on Safety Bay Road

The City also considers that the right in and out movements from the proposed crossover are likely to conflict with the existing central median.

In the opinion of the City, the ingress and egress arrangements are unsafe as the proposed southern crossover is located too close to the existing crossover (approximately 8.0m separation distance, however the wing for the crossover would almost be touching) and therefore it is likely to result in un-acceptable traffic safety risks.

The City has previously suggested that the plans be amended to resolve the proximity of the two crossovers and to consider an alternative design. The applicant indicated that this will have a significant impact on the parking layout and traffic circulation system of the SNSC and therefore is considered to be beyond the scope of this proposal.

The development, however, is proposed on the same consolidated lot, and as a result, a re-design is considered to be possible. Due to the potential 'knock-on' effect of a re-design of the parking reconfiguration, it is essential that a re-design be submitted prior to the application being determined. All the impacts can then be adequately addressed upfront and it will be possible for the MOJDAP to make an informed decision, giving regard to all implications resultant from a re-design.

A condition of Development Approval requiring the applicant to re-design the crossover to the satisfaction of the City is not appropriate nor practical due to the overall extent of the design implications.

Conclusion:

The Development Application is therefore recommended for deferral to afford the applicant a further opportunity to re-design the development, in order to ensure traffic safety is properly addressed.



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DEVELOPMENT APPLICATION

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A	23.02.21	DEVELOPMENT APPLICATION ISSUE	CPH	CPH
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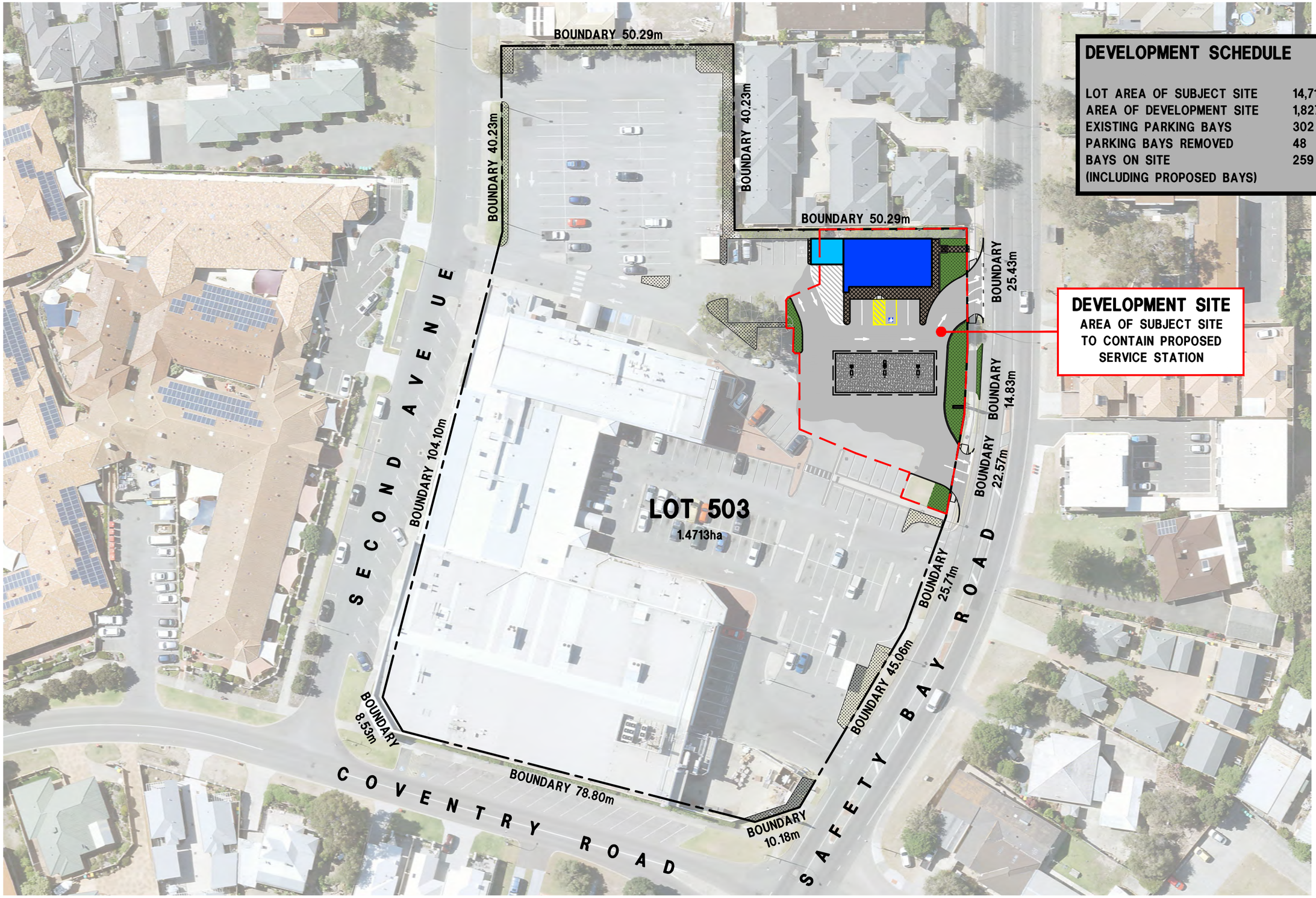
A3 SHEET

SITE LOCATION PLAN

NOT TO SCALE

PROPOSED SERVICE STATION
LOT 503 (56-62) SECOND AVENUE
SHOALWATER
for MPX GROUP Pty Ltd

Date	-	12.02.21
Design	-	CPH
Drawn	-	MDB
Checked	-	CPH
Scale	-	N.T.S
Job No.	-	0739
Dwg	-	DA01
Rev	-	A



DEVELOPMENT SCHEDULE

LOT AREA OF SUBJECT SITE	14,710m^2
AREA OF DEVELOPMENT SITE	1,827m^2
EXISTING PARKING BAYS	302
PARKING BAYS REMOVED	48
BAYS ON SITE (INCLUDING PROPOSED BAYS)	259

N

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B	13.12.21	DEVELOPMENT APPLICATION ISSUE	MDB	CPH
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-				

A3 SHEET

OVERALL SITE PLAN

SCALE 1:800

PROPOSED SERVICE STATION
LOT 503 (56-62) SECOND AVENUE
SHOALWATER
for MPX GROUP Pty Ltd

Date	13.12.21
Design	CPH
Drawn	CPH
Checked	CPH
Scale	1:800
Job No.	0739
Dwg	DA02
Rev	B

NOTES

TOTAL LOT AREA	14,710m²
DEVELOPMENT SITE AREA	1,827m²
BUILDING AREA	229m²

DEVELOPMENT SITE AREA CALCULATIONS

PLOT RATIO	0.12 : 1
SITE COVERAGE	12%
LANDSCAPED AREA	189m² = 10.3%
BUILDING HEIGHT	1 STOREY

LEGEND

- BUILDING AREA
- SERVICE/ANCILLARY AREAS
- SELECTED BRICK PAVING
- BITUMEN PAVING
- LANDSCAPED AREAS

18575 SETBACK / 5000 BIN STORE / 19172 BUILDING / 7543 SETBACK

21336 SETBACK / 22400 CANOPY / 6553 SETBACK

BDY 50.29m

EXISTING 1.8m MASONRY BOUNDARY FENCE RETAINED.

RETAIN ALL EXISTING TREES WITHIN SETBACK AREA

(REDUCED HEIGHT PARAPET)

BIN STORE G.L.A. 39m²

AIR & WATER

PROPOSED SERVICE STATION

G.L.A. 200m² (EXCL BIN STORE)

A DA12

STAIRS

BDY 25.43m

AIR & WATER BAY WITH SIGNAGE.

EXTENT OF NEW BITUMEN FORECOURT TIED INTO EXISTING BITUMEN CARPARK LEVELS.

DDA RAMP

BOL

EXISTING CROSSOVER TO BE MODIFIED TO 8.9m CROSSOVER.

C DA15

ACCESSIBLE CARBAY IN ACCORDANCE WITH AS2890.6-2009

2.6x5.5 LONG CARBAY IN ACCORDANCE WITH AS2890.1-2009.

BITUMEN PAVING WHITE LINEMARKING - TYPICAL

CANOPY LINE OVER SHOWN DASHED.

6 CAR CANOPY 3 PUMPS

LOW LEVEL POST AND PANEL RETAINING WALL.

BDY 14.83m

CLOSE CROSSOVER AND RELOCATE FURTHER SOUTH. VERGE TO BE MADE GOOD TO SATISFACTION OF THE CITY.

SAFETY BAY ROAD

2207 SETBACK / 10450 SERVICE STATION / 13886 SETBACK / 9500 FORECOURT

PROPOSED COMBINED SIGNAGE PYLON

6824 SETBACK

FILL POINTS

UNDERGROUND TANK FARM INDICATIVE LOCATION.

EXTENT OF NEW BITUMEN FORECOURT TIED INTO EXISTING BITUMEN CARPARK LEVELS.

VENT PIPE & CLEARANCE ZONE TO BE IN ACCORDANCE WITH AS.60079.10.1-2009.

EXISTING ENTRY & EXIT CROSSOVER.

RELOCATED 9.9m WIDE CROSSOVER.

VENT PIPES

BDY 22.57m

N

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B	24.06.21	REVISED DEVELOPMENT APPLICATION ISSUE	MDB	CPH
C	30.11.21	LINEMARKING UPDATED	MDB	CPH
D	13.12.21	DEVELOPMENT APPLICATION ISSUE	MDB	CPH
-				
-				
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A3 SHEET

PROPOSED SITE PLAN

SCALE: 1:300

PROPOSED SERVICE STATION
LOT 503 (56-62) SECOND AVENUE
SHOALWATER
for MPX GROUP Pty Ltd

Date	13.12.21
Design	CPH
Drawn	MDB
Checked	CPH
Scale	1:300
Job No.	0739
Dwg	DA03
Rev	D

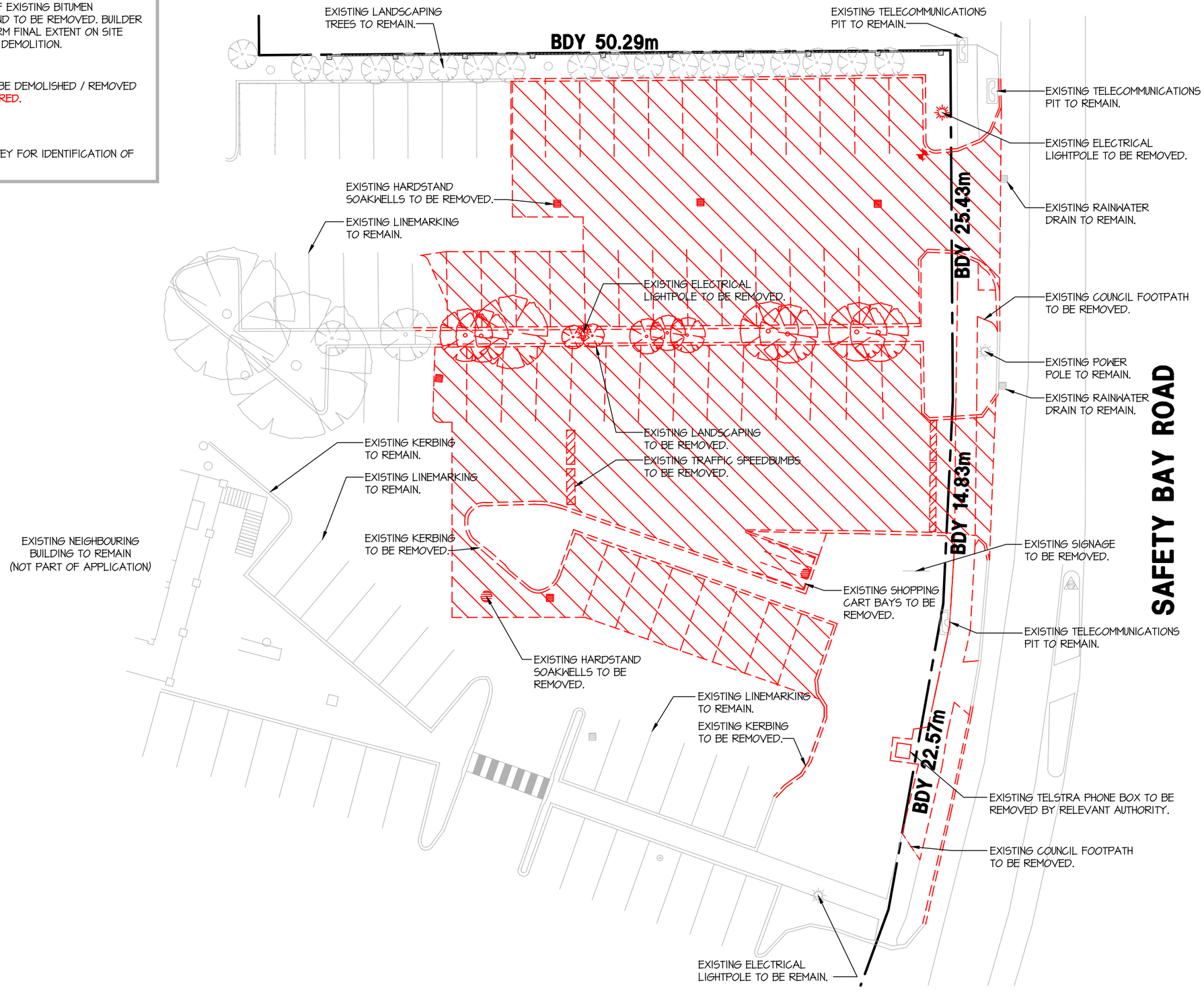
LEGEND

EXTENT OF EXISTING BITUMEN HARDSTAND TO BE REMOVED. BUILDER TO CONFIRM FINAL EXTENT ON SITE PRIOR TO DEMOLITION.

ITEMS TO BE DEMOLISHED / REMOVED SHOWN IN RED.

NOTES:

REFER TO FEATURE SURVEY FOR IDENTIFICATION OF FEATURES



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A3 SHEET

PROPOSED DEMOLITION PLAN

SCALE: 1:300

PROPOSED SERVICE STATION
LOT 503 (56-62) SECOND AVENUE
SHOALWATER
for MPX GROUP Pty Ltd

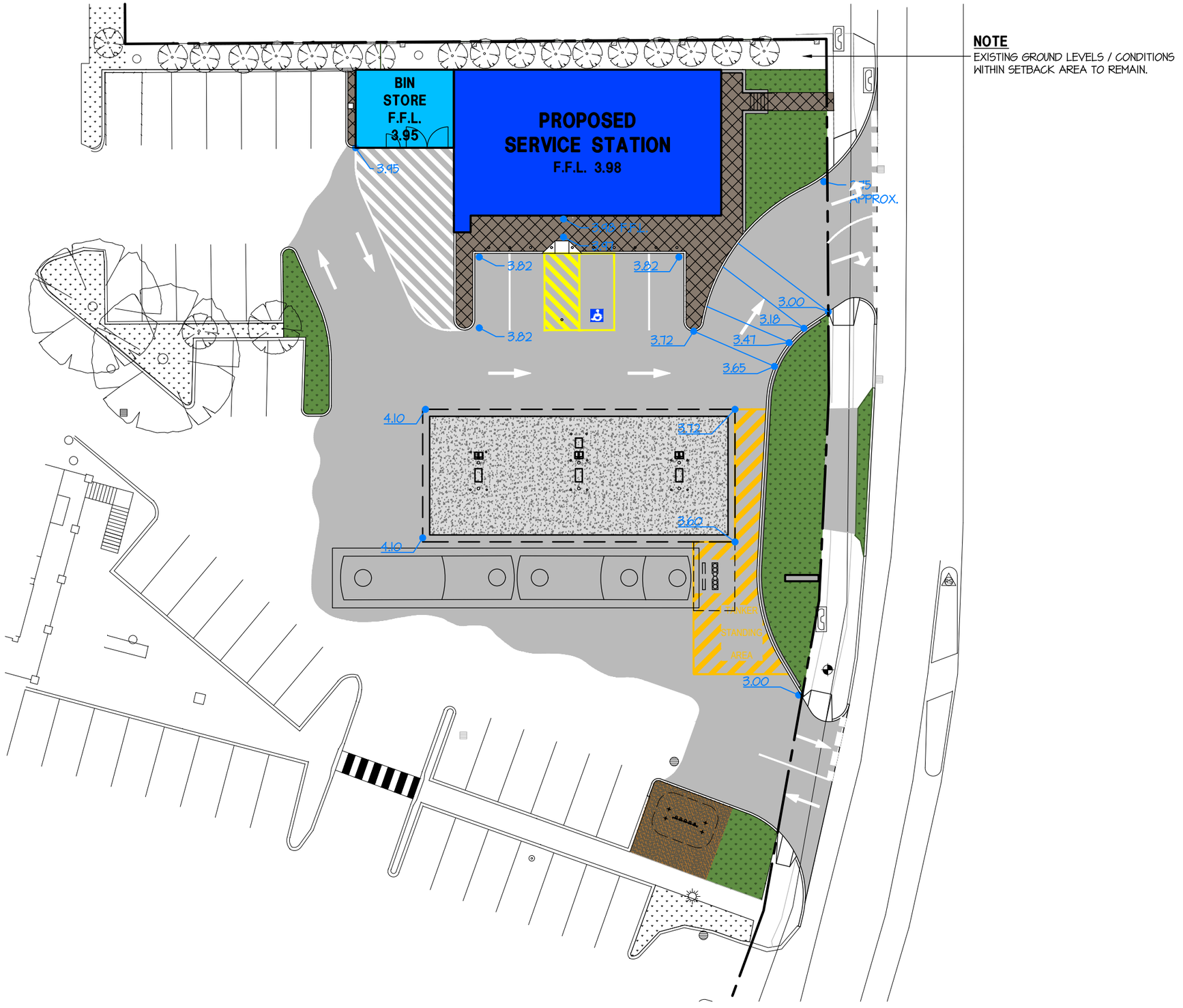
Date	12.02.21
Design	CPH
Drawn	MDB
Checked	CPH
Scale	1:300
Job No.	0739
Dwg	DA04
Rev	A

NOTES:

REFER TO DETAILED SURVEY FOR IDENTIFICATION OF ITEMS

NOTES:

1. LEVELS SHOWN ON THIS PLAN ARE INDICATIVE ONLY. FINAL FFL'S & DESIGN LEVELS TO BE DONE BY A QUALIFIED CIVIL ENGINEER AS PART OF THE BUILDING PERMIT APPLICATION.
2. SURVEY INFORMATION PROVIDED BY TUSCOM SUBDIVISION CONSULTANTS. REFER TO DETAILED SURVEY DRAWING Safety Bay 117 F;
3. INFORMATION SHOWN ON THE SURVEY IS CURRENT AT THE DATE OF THE SURVEY. CONSULTANTS ACCEPT NO RESPONSIBILITY FOR ANY CHANGES THAT HAVE OCCURRED AFTER THIS DATE TO SITE LEVELS AND FEATURES OR BUILDINGS;
4. ALL UNDERGROUND SERVICES INFORMATION HAS BEEN OBTAINED BY SURFACE INSPECTION ONLY, THEREFORE CANNOT BE GUARANTEED. SERVICES MARKED REQUIRE BUILDER TO CONFIRM POSITION & / OR AVAILABILITY ON SITE;
5. CHECK TITLE FOR ENCUMBRANCES.



NOTE
EXISTING GROUND LEVELS / CONDITIONS WITHIN SETBACK AREA TO REMAIN.

LEGEND:

51.35 PROPOSED DESIGN LEVEL.

3.0m EXISTING CONTOUR LEVEL

3.43 EXISTING SPOT LEVEL

NOTE
ALL DESIGN LEVELS ARE SHOWN INDICATIVELY. REFER TO CIVIL DRAWINGS.

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C	13.12.21	DEVELOPMENT APPLICATION ISSUE	MDB	CPH
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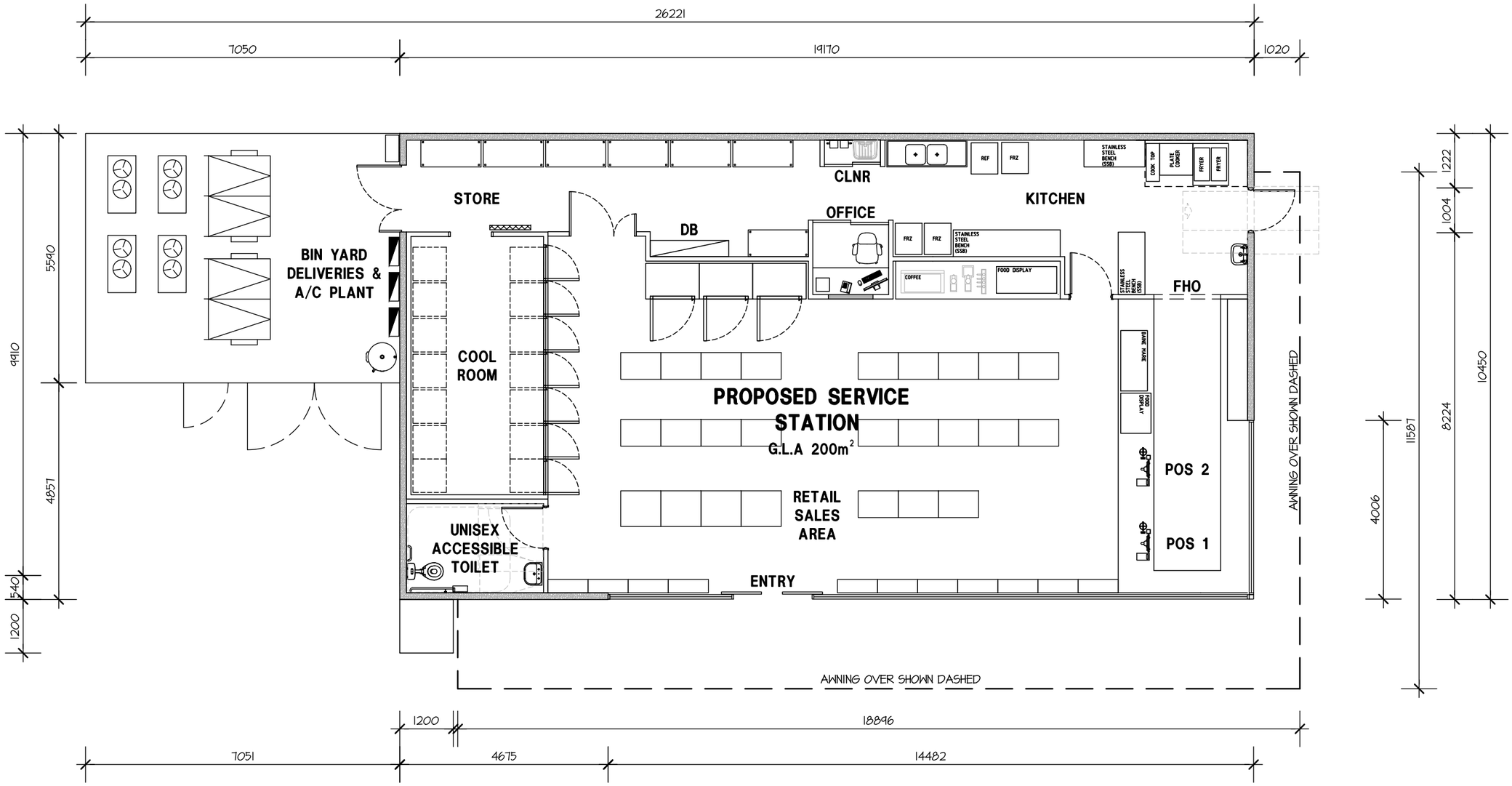
A3 SHEET

PROPOSED LEVELS PLAN

SCALE: 1:300

PROPOSED SERVICE STATION
LOT 503 (56-62) SECOND AVENUE
SHOALWATER
for MPX GROUP Pty Ltd

Date - 13.12.21
Design - CPH
Drawn - MDB
Checked - CPH
Scale - 1:300
Job No. - 0739
Dwg - DA05
Rev - C



E3

E4

E2

E1

N

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B	24.06.21	REVISED DEVELOPMENT APPLICATION	MDB	CPH

A3 SHEET

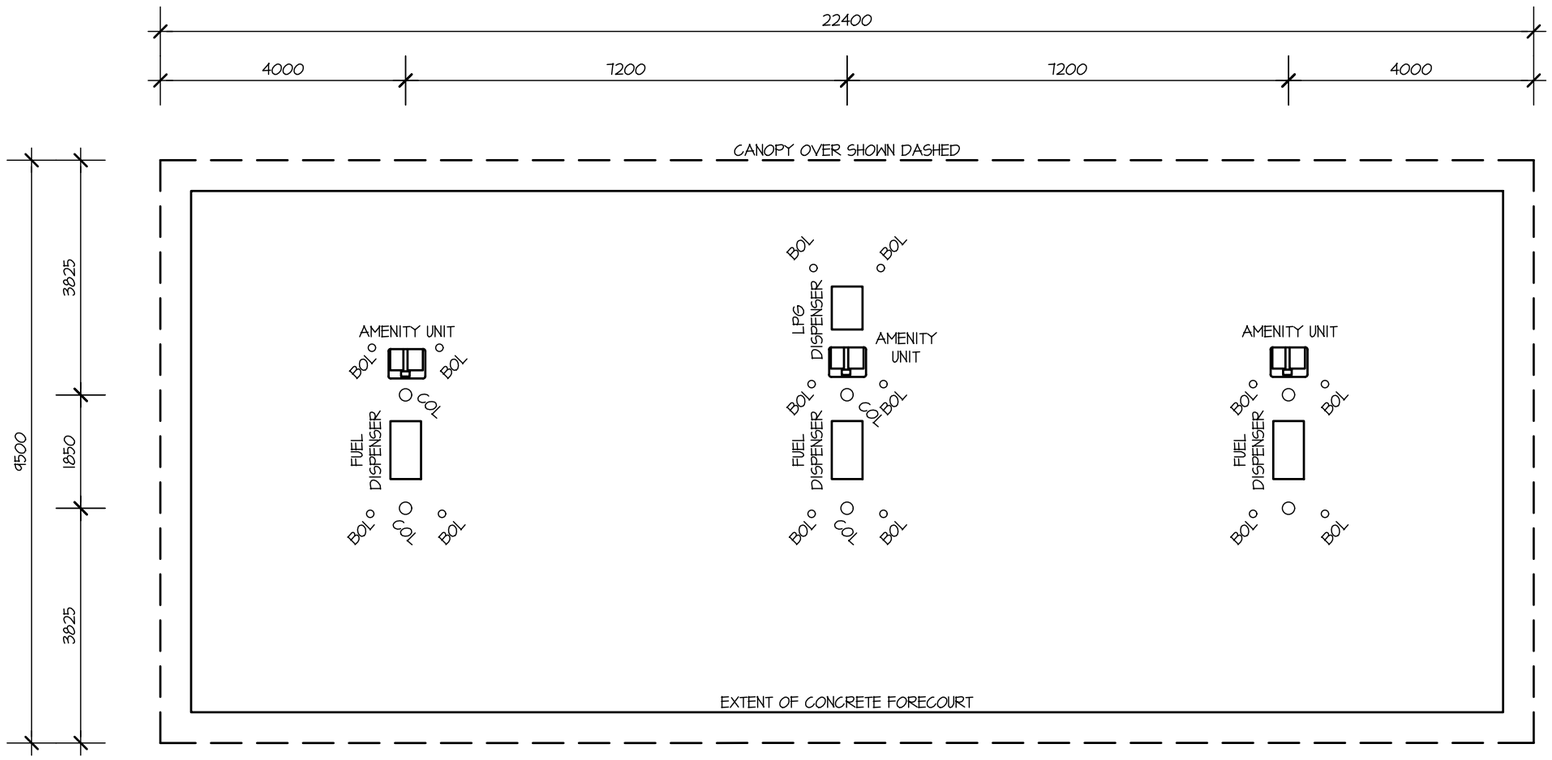
PROPOSED FLOOR PLAN

SCALE: 1:100

PROPOSED SERVICE STATION
LOT 503 (56-62) SECOND AVENUE
SHOALWATER
for MPX GROUP Pty Ltd

Date	-	24.06.21
Design	-	CPH
Drawn	-	MDB
Checked	-	CPH
Scale	-	1:100
Job No.	-	0739
Dwg -		DA06
Rev -		B

E7
E8



E6
E5

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A3 SHEET

PROPOSED CANOPY PLAN

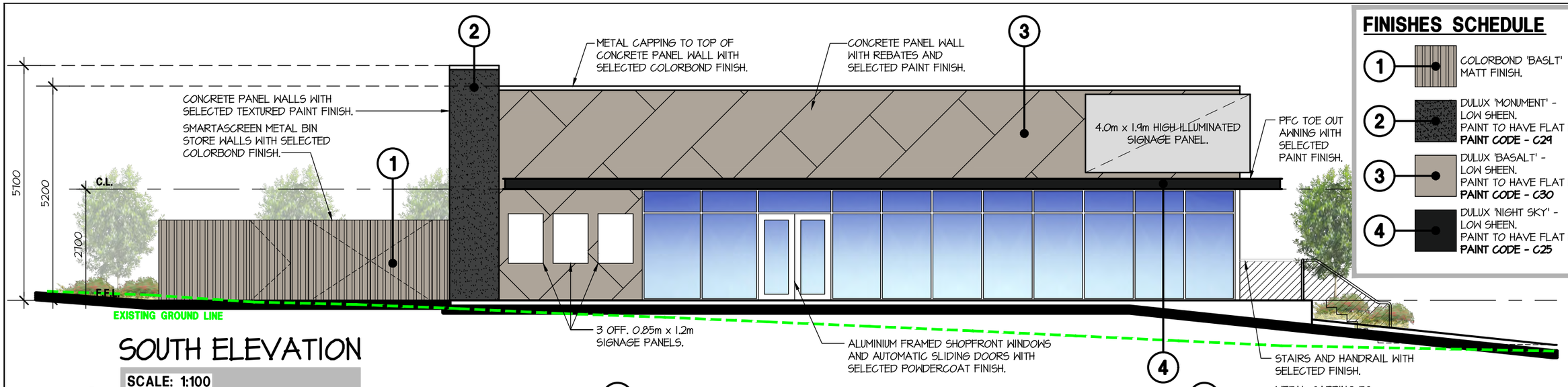
SCALE: 1:100

PROPOSED SERVICE STATION
LOT 503 (56-62) SECOND AVENUE
SHOALWATER
for MPX GROUP Pty Ltd

Date	-	12.02.21
Design	-	CPH
Drawn	-	MDB
Checked	-	CPH
Scale	-	1:100
Job No.	-	0739
Dwg	-	DA07
Rev	-	A

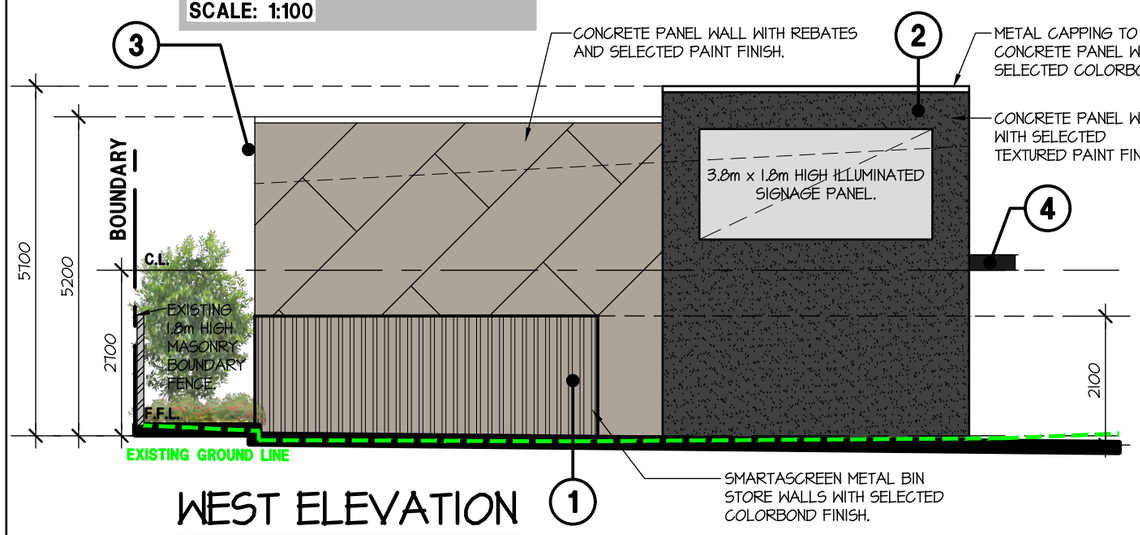
FINISHES SCHEDULE

1. COLORBOND 'BASLT' MATT FINISH.
2. DULUX 'MONUMENT' - LOW SHEEN. PAINT TO HAVE FLAT FINISH **PAINT CODE - C29**
3. DULUX 'BASALT' - LOW SHEEN. PAINT TO HAVE FLAT FINISH **PAINT CODE - C30**
4. DULUX 'NIGHT SKY' - LOW SHEEN. PAINT TO HAVE FLAT FINISH **PAINT CODE - C25**



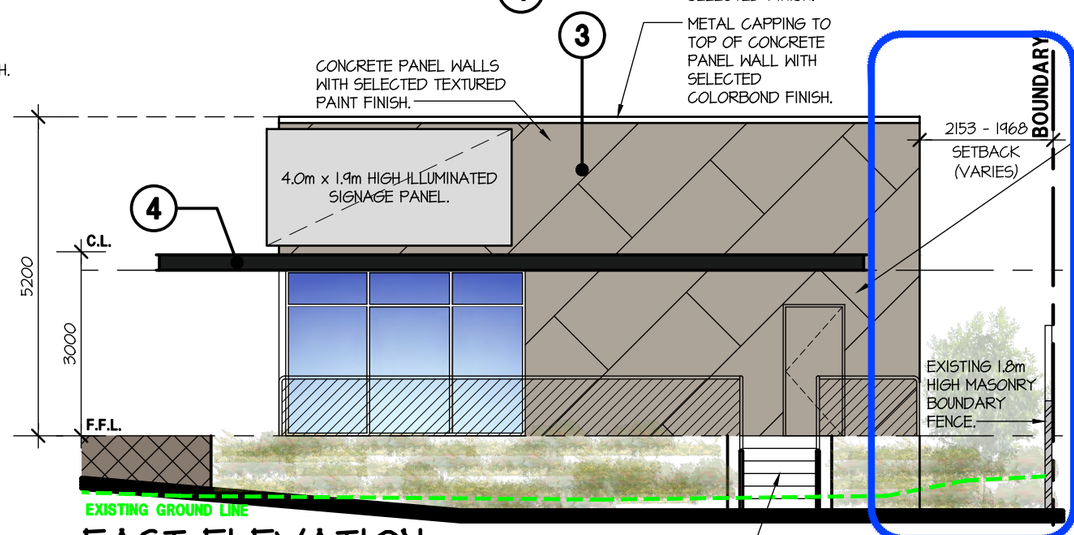
SOUTH ELEVATION

SCALE: 1:100



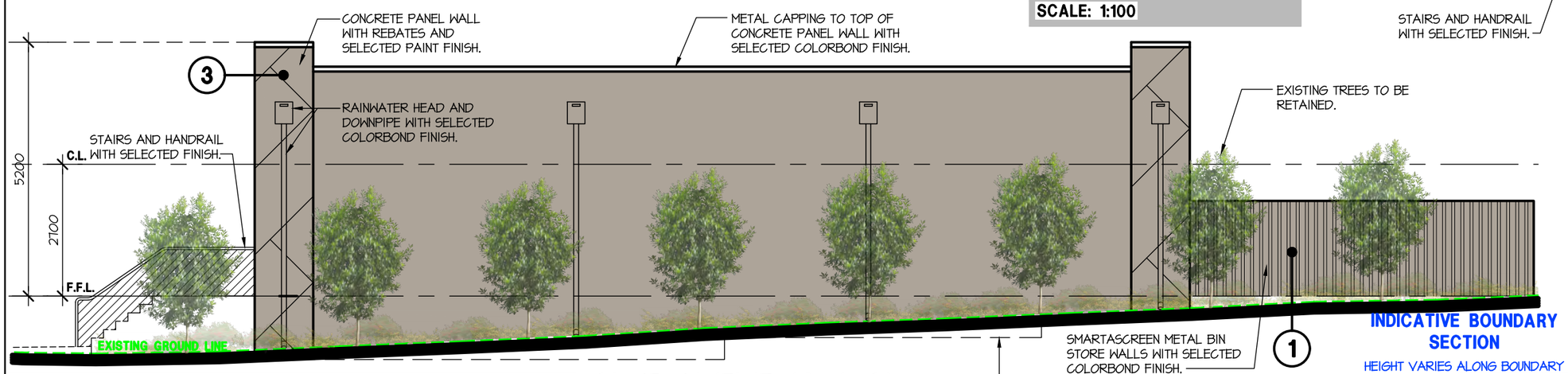
WEST ELEVATION

SCALE: 1:100



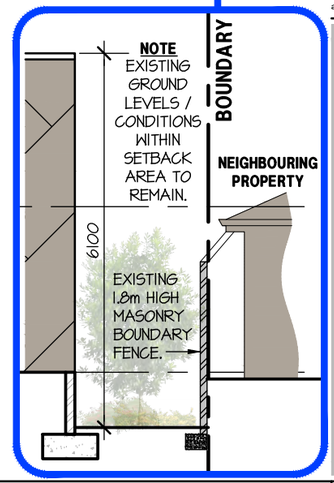
EAST ELEVATION

SCALE: 1:100



NORTH ELEVATION

SCALE: 1:100



INDICATIVE BOUNDARY SECTION

HEIGHT VARIES ALONG BOUNDARY

DEVELOPMENT APPLICATION

HINDLEY & ASSOCIATES PTY LTD
BUILDING DESIGNERS

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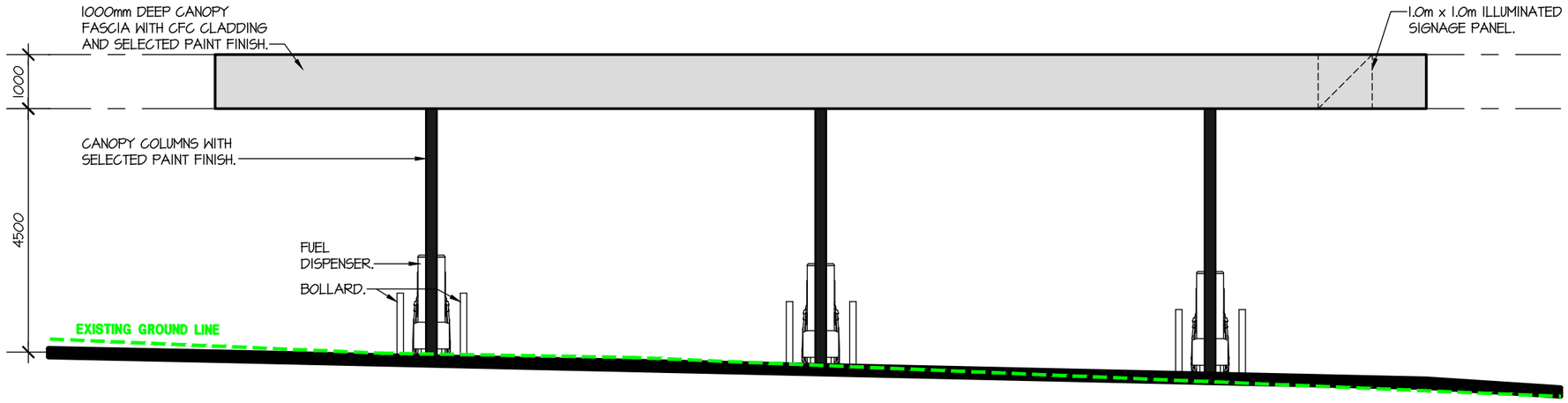
B	24.06.21	REVISED DEVELOPMENT APPLICATION	MDB	CPH
C	13.12.21	REVISED AS PER CLIENTS REVIEW	MDB	CPH

A3 SHEET

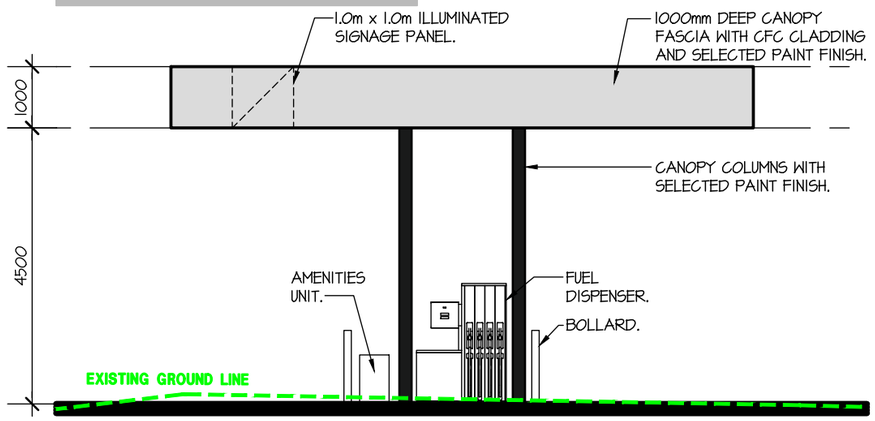
PROPOSED SERVICE STATION
LOT 503 (56-62) SECOND AVENUE
SHOALWATER
for MPX GROUP Pty Ltd

Date - 13.12.21
Design - CPH
Drawn - MDB
Checked - CPH
Scale - 1:100
Job No. - 0739
Dwg - **DA08**
Rev - **C**



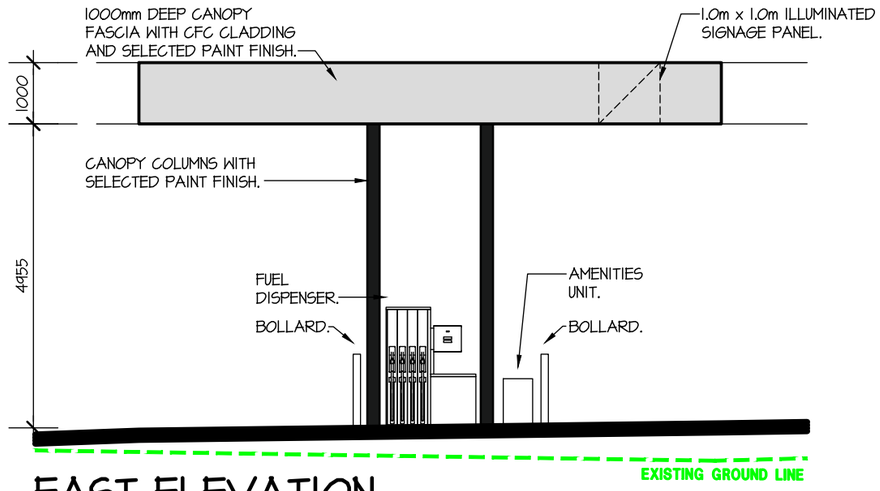
SOUTH ELEVATION

SCALE: 1:100



WEST ELEVATION

SCALE: 1:100



EAST ELEVATION

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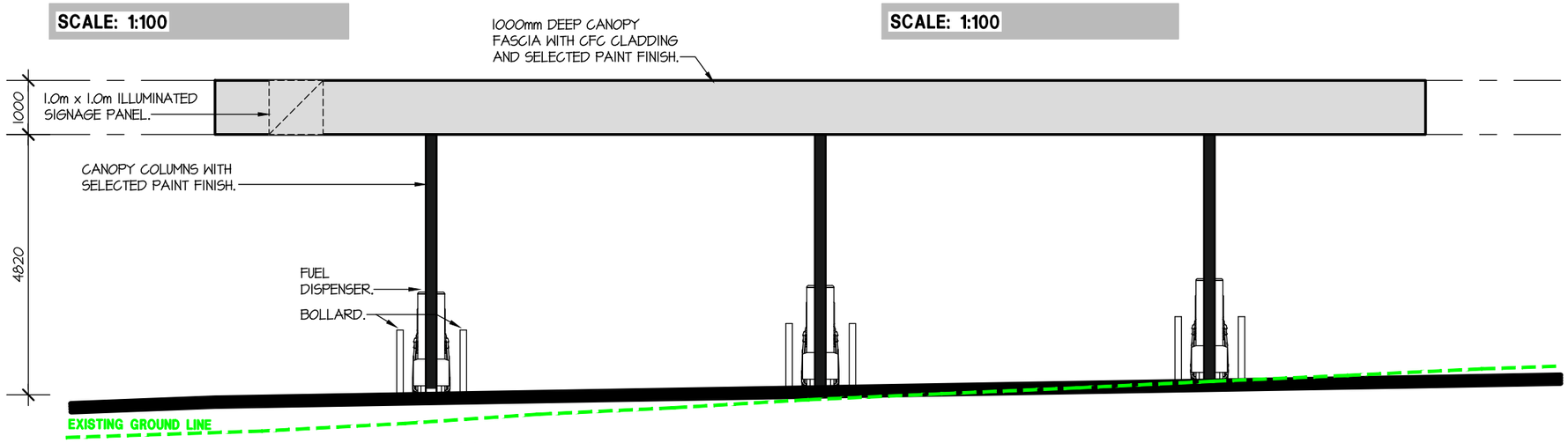

NORTH ELEVATION

SCALE: 1:100

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A	23.02.21	DEVELOPMENT APPLICATION ISSUE	CPH	CPH

A3 SHEET

HINDLEY & ASSOCIATES PTY LTD
BUILDING DESIGNERS

166 STIRLING HIGHWAY
NEDLANDS WA 6009

PO BOX 199
NEDLANDS WA 6909

PHONE - 9386 6699
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admin@hindley.com.au

DEVELOPMENT APPLICATION

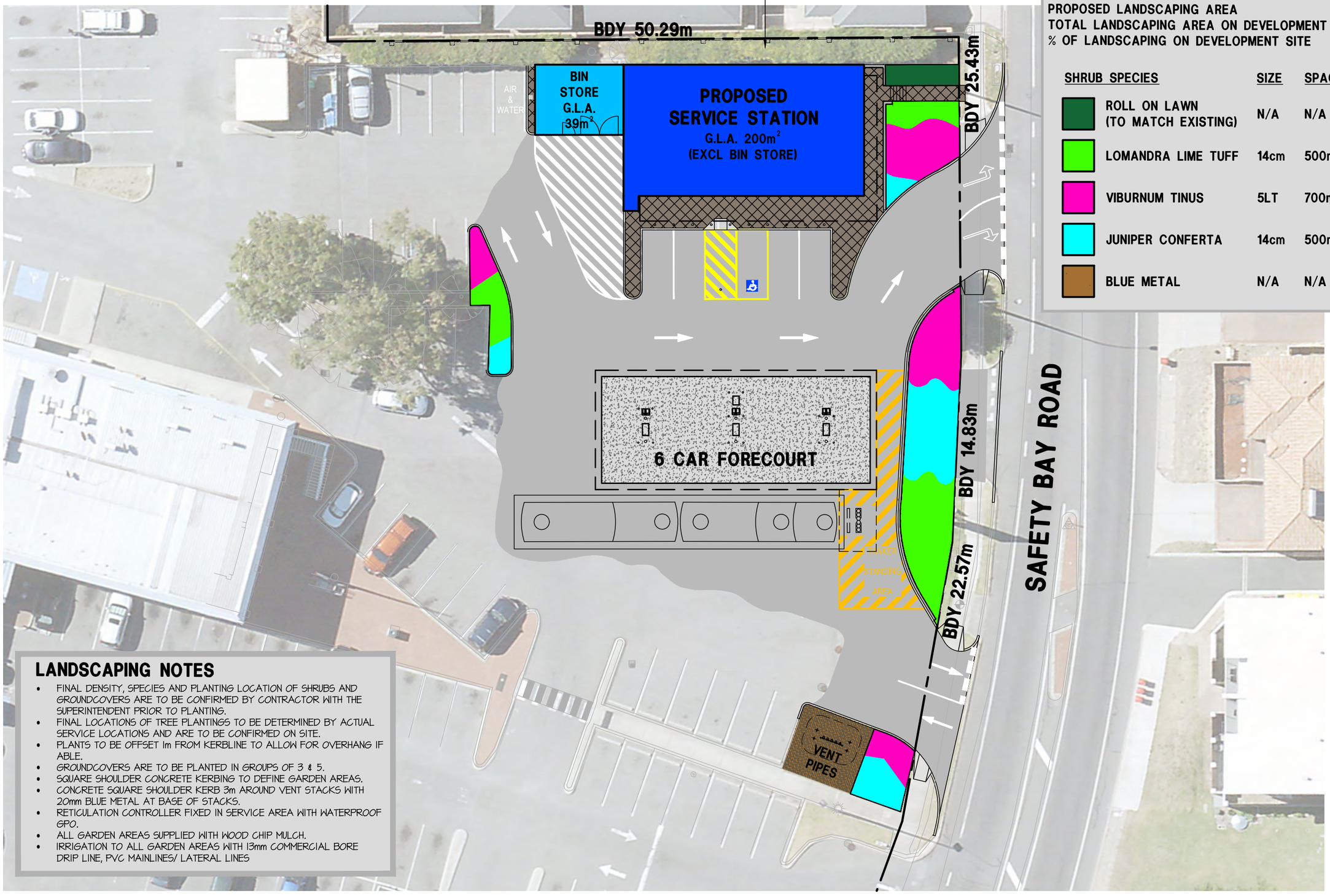
PROPOSED SERVICE STATION
LOT 503 (56-62) SECOND AVENUE
SHOALWATER
for MPX GROUP Pty Ltd

Date	-	12.02.21
Design	-	CPH
Drawn	-	CPH
Checked	-	CPH
Scale	-	1:100
Job No.	-	0739

Dwg - **DA09**

Rev - **A**

NOTE
EXISTING GROUND LEVELS / CONDITIONS WITHIN SETBACK AREA TO REMAIN.



LANDSCAPING LEGEND

DEVELOPMENT SITE AREA	1,827m²
PROPOSED LANDSCAPING AREA	189m²
TOTAL LANDSCAPING AREA ON DEVELOPMENT SITE	283m²
% OF LANDSCAPING ON DEVELOPMENT SITE	15.48%

SHRUB SPECIES	SIZE	SPACING	QTY (EST)
ROLL ON LAWN (TO MATCH EXISTING)	N/A	N/A	10m²
LOMANDRA LIME TUFF	14cm	500mm	57m²
VIBURNUM TINUS	5LT	700mm	54m²
JUNIPER CONFERTA	14cm	500mm	39m²
BLUE METAL	N/A	N/A	3.5m²

LANDSCAPING NOTES

- FINAL DENSITY, SPECIES AND PLANTING LOCATION OF SHRUBS AND GROUNDCOVERS ARE TO BE CONFIRMED BY CONTRACTOR WITH THE SUPERINTENDENT PRIOR TO PLANTING.
- FINAL LOCATIONS OF TREE PLANTINGS TO BE DETERMINED BY ACTUAL SERVICE LOCATIONS AND ARE TO BE CONFIRMED ON SITE.
- PLANTS TO BE OFFSET 1m FROM KERBLINE TO ALLOW FOR OVERHANG IF ABLE.
- GROUNDCOVERS ARE TO BE PLANTED IN GROUPS OF 3 & 5.
- SQUARE SHOULDER CONCRETE KERBING TO DEFINE GARDEN AREAS.
- CONCRETE SQUARE SHOULDER KERB 3m AROUND VENT STACKS WITH 20mm BLUE METAL AT BASE OF STACKS.
- RETICULATION CONTROLLER FIXED IN SERVICE AREA WITH WATERPROOF GPO.
- ALL GARDEN AREAS SUPPLIED WITH WOOD CHIP MULCH.
- IRRIGATION TO ALL GARDEN AREAS WITH 13mm COMMERCIAL BORE DRIP LINE, PVC MAINLINES/ LATERAL LINES

HINDLEY & ASSOCIATES PTY LTD
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B	24.06.21	REVISED DEVELOPMENT APPLICATION	MDB	CPH
C	13.12.21	DEVELOPMENT APPLICATION ISSUE	MDB	CPH
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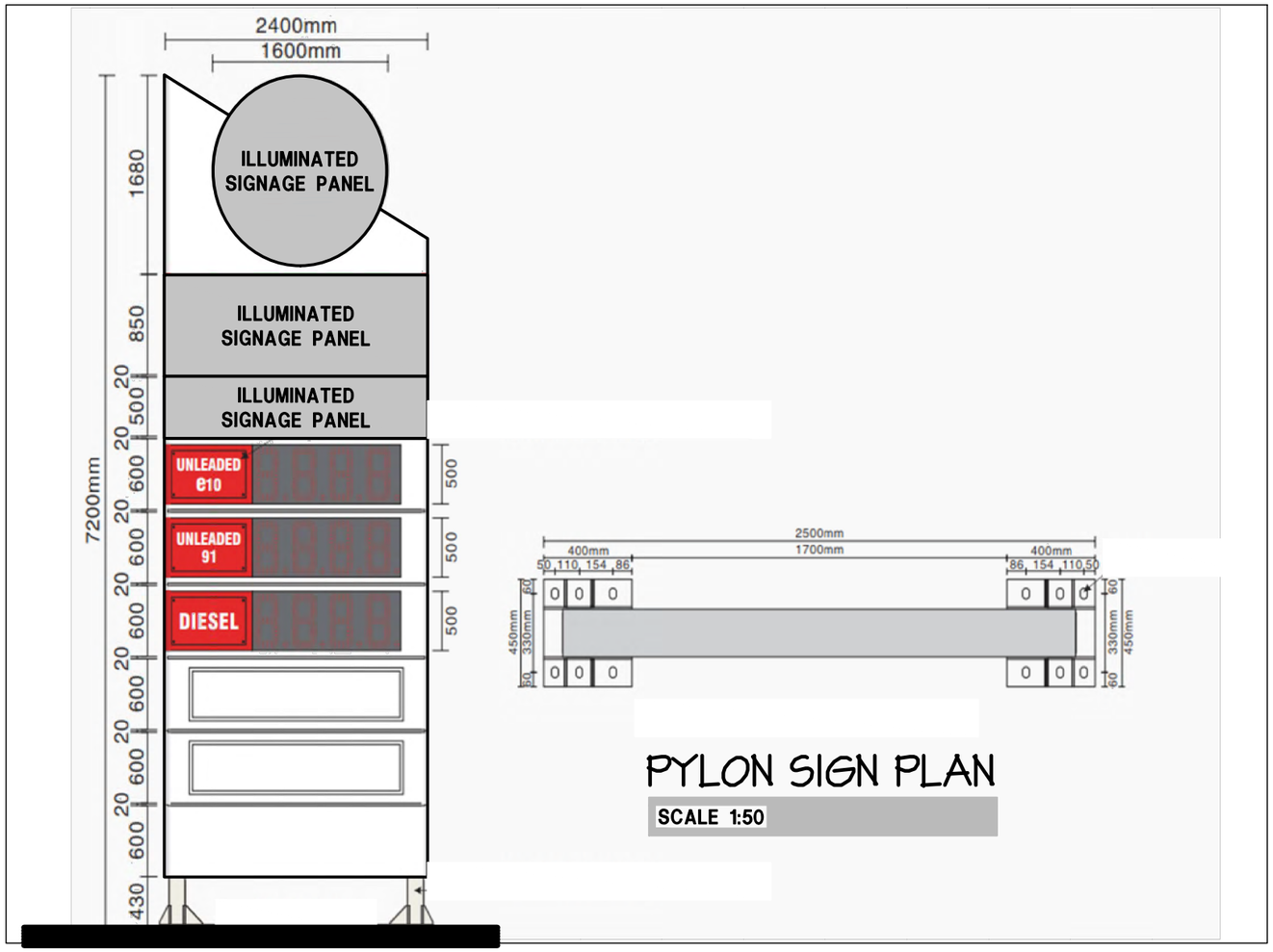
A3 SHEET

PROPOSED LANDSCAPING PLAN

SCALE: 1:300

PROPOSED SERVICE STATION
LOT 503 (56-62) SECOND AVENUE
SHOALWATER
for MPX GROUP Pty Ltd

Date	13.12.21
Design	CPH
Drawn	MDB
Checked	CPH
Scale	N.T.S
Job No.	0739
Dwg	DA10
Rev	C



PYLON SIGN PLAN

SCALE 1:50

PYLON SIGN ELEVATION

SCALE 1:50

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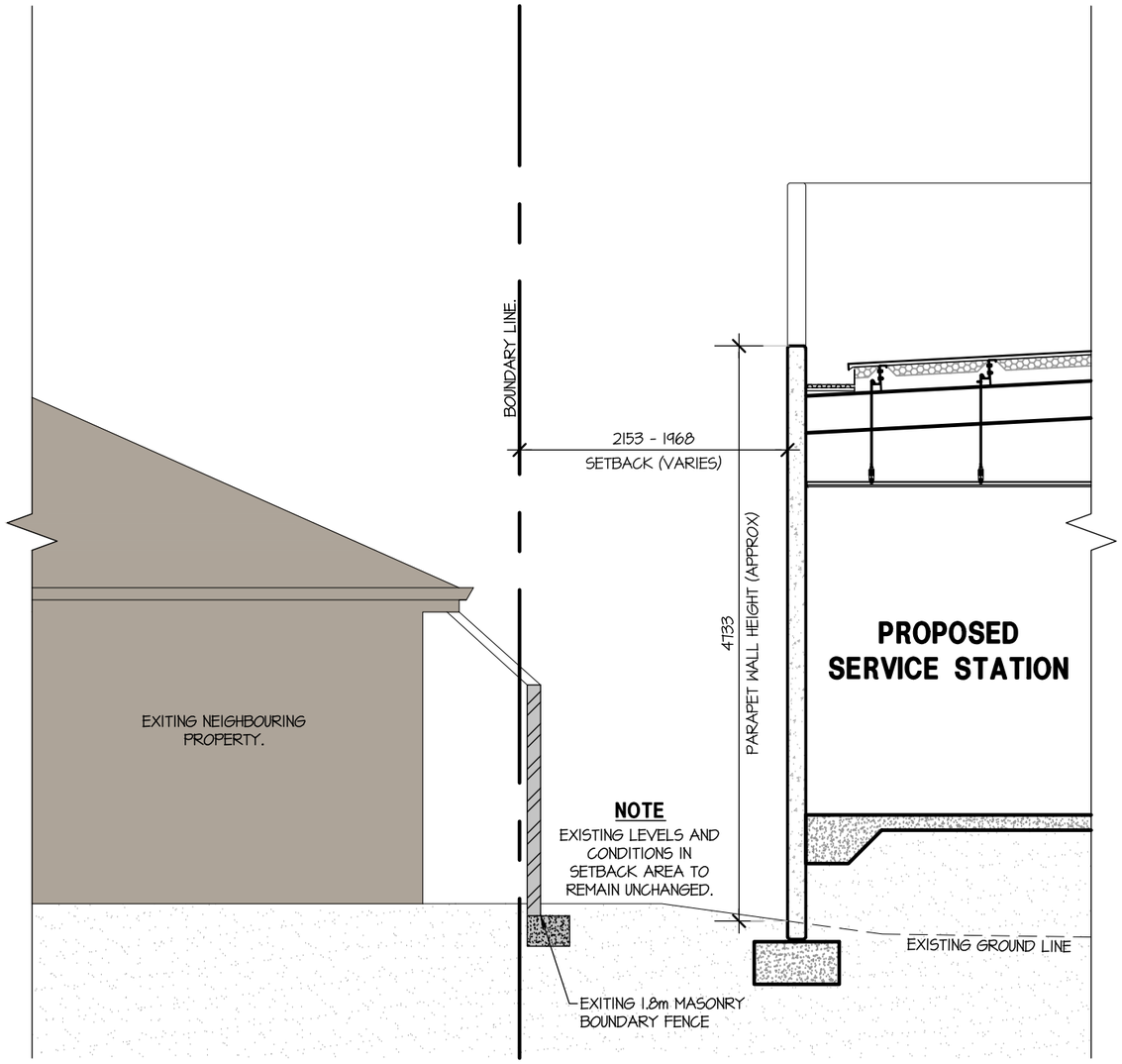
A3 SHEET

PROPOSED SERVICE STATION
LOT 503 (56-62) SECOND AVENUE
SHOALWATER
for MPX GROUP Pty Ltd

Date	-	23.02.21
Design	-	CPH
Drawn	-	CPH
Checked	-	CPH
Scale	-	1:50
Job No.	-	0739
Dwg -		DA11
Rev -		A



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PTY LTD
BUILDING DESIGNERS

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A3 SHEET

SECTION A

SCALE: 1:50

PROPOSED SERVICE STATION
LOT 503 (56-62) SECOND AVENUE
SHOALWATER
for MPX GROUP Pty Ltd

Date	-	13.12.21
Design	-	CPH
Drawn	-	MDB
Checked	-	CPH
Scale	-	1:50
Job No.	-	0739
Dwg	-	DA12
Rev	-	B

TOTAL SITE AREA: 14710m²

LEGEND:

EXTENT OF EXISTING LANDSCAPING.

EXISTING LANDSCAPING

EXISTING LANDSCAPING:
807m² (APPROX)
% OF LANDSCAPING ON OVERALL SITE:
5.48%

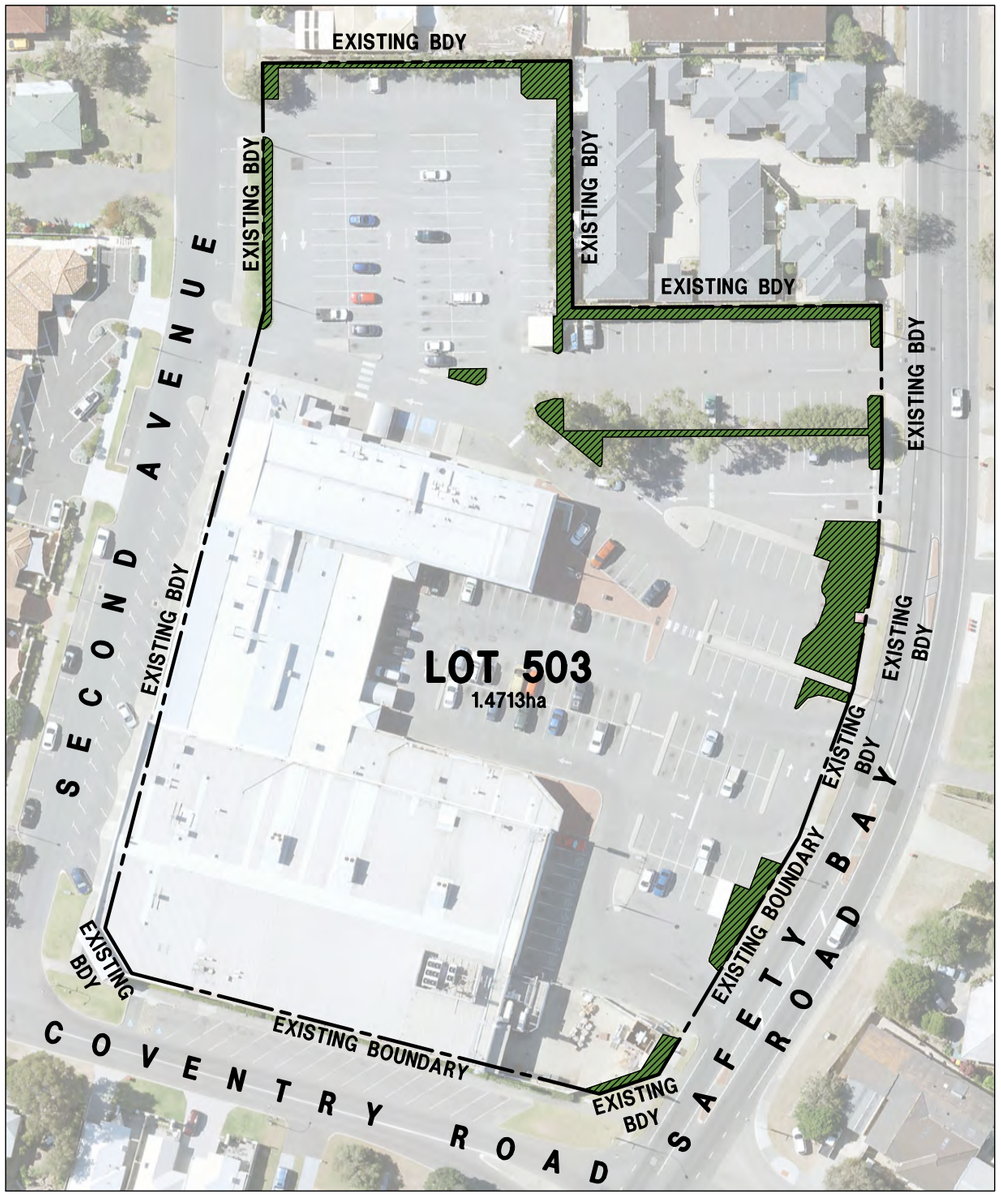
PROPOSED LANDSCAPING

PROPOSED LANDSCAPING:
743m² (APPROX)
% OF LANDSCAPING ON OVERALL SITE:
5.05%

LEGEND:

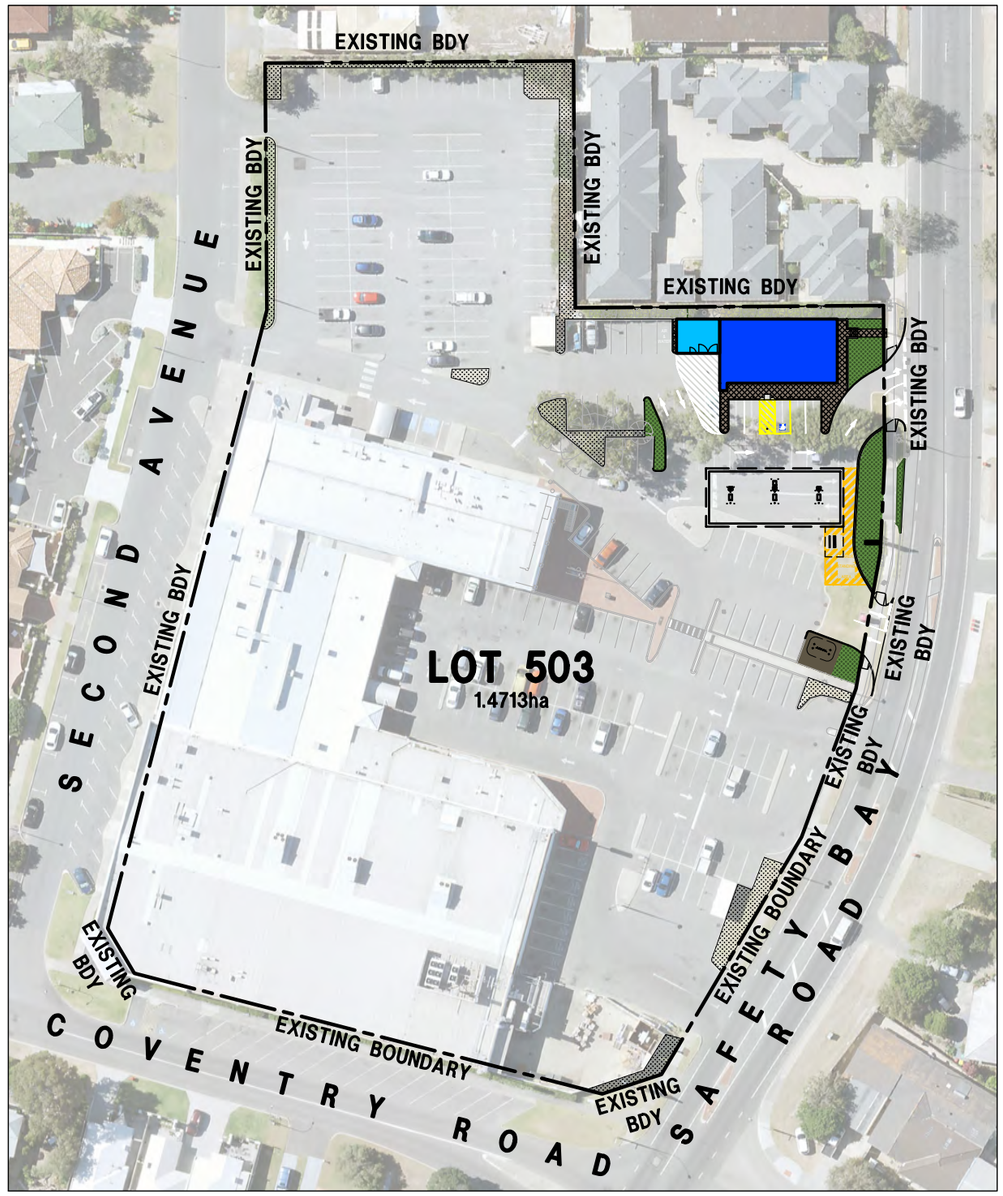
EXTENT OF NEW LANDSCAPING.

EXTENT OF EXISTING LANDSCAPING.



EXISTING LANDSCAPING LAYOUT

SCALE: 1:1000



PROPOSED LANDSCAPING LAYOUT

SCALE: 1:1000

N

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BUILDING DESIGNERS

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LANDSCAPING DIFFERENCE PLAN

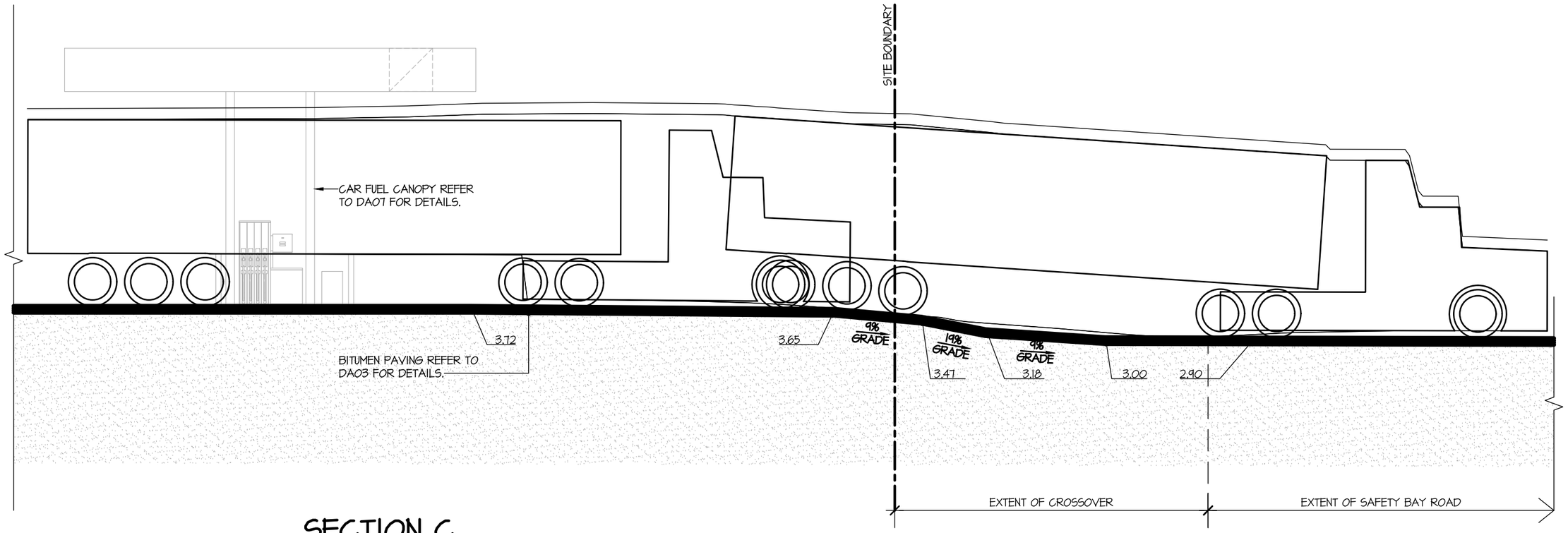
SCALE 1:1000

PROPOSED SERVICE STATION
LOT 503 (56-62) SECOND AVENUE
SHOALWATER
for MPX GROUP Pty Ltd

Date	13.12.21
Design	CPH
Drawn	MDB
Checked	CPH
Scale	1:1000
Job No.	0739
Dwg	DA13
Rev	B

NOTE:

REFER TO DA05 FOR FULL EXTENT OF SITE LEVELS.



SECTION C

SCALE: 1:100

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BUILDING DESIGNERS

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A3 SHEET

CROSSOVER GRADE SECTION

SCALE: 1:100

PROPOSED SERVICE STATION
LOT 503 (56-62) SECOND AVENUE
SHOALWATER
for MPX GROUP Pty Ltd

Date	-	13.12.21
Design	-	CPH
Drawn	-	MDB
Checked	-	CPH
Scale	-	1:100
Job No.	-	0739
Dwg	-	DA15
Rev	-	B

Schedule of Submissions –
Proposed Service Station - Lot 503 (No.113-121) Safety Bay Road, Shoalwater (20.2021.70.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
1. Mr Tony Solin	78B Carlisle Street SHOALWATER WA 6169 ceo@rkcc.org.au	Fantastic proposal - Shoalwater residents and businesses will benefit from a local service station
2. Mrs Anne M Ginbey	PO Box 5176 ROCKINGHAM BEACH WA 6969 amginbey@gmail.com	Yes, a local fuel outlet is needed.
3. Ms Rosanna O'Donnell	Unit 4, 15 Benjamin Way ROCKINGHAM WA 6168 rkbodonnell@bigpond.com	I think there are more than enough petrol stations in the area.
4. Mr Andrew Smith	9 Griggs Way ROCKINGHAM WA 6168 andysparx@hotmail.com	we really need a fuel station there is nothing around, on near the rockingham front would be good too, Rockingham front is looking a completed mess, also the decking really needs to be oiled, i got a splinter in my food the wood needs to be oiled it is so hard and even when the kids fall on it they get splinters too.
5. Mr Timothy R Lambert	12 Reflection Mews SAFETY BAY WA 6169 trl_2@bigpond.com	In the time I've lived in Safety Bay three service stations have closed in the Safety Bay/ Shoalwater area. My concern is that if those stations weren't viable and had to be closed then I'd have doubts about the viability of another service station especially heading into an era of electric cars. The era of the petrol car is over and as we head toward 2050 and net zero emissions the era of petrol stations is over. Petrol stations supplement their income by selling other goods and services but given there is a Supa IGA on the same block that will put pressure on the station's sales. I also think its location directly adjacent to a set of units isn't ideal. I realise the owners of the Shoalwater shopping centre are probably trying to derive a better return on their investment but I wouldn't support a service station on this site. Having said that, the site of the old BP service station on the corner of McLarty and Safety Bay roads has been vacant for several years and would be a much better site.
6. Mr Terry & Mrs Bridet Humble	5 Pye Place SAFETY BAY WA 6169 wdpbridget@gmail.com	The very last thing we need. Why not move with the times and have a Fast Charging Station for Electric Cars. We have lived here for over 22 years and have had no trouble getting petrol. Our next car will be Electric and the majority of our friends plan the same.
7. Mrs Elizabeth Stewart	3 King George Street SHOALWATER WA 6169 Astewart.astewart@yahoo.com.au	Thank you for your letter advising us of above proposal. As a Shoalwater resident, I wish to offer feedback on the proposal. Briefly, after reading the composition of proposed development, overall I have no major objection to a Service Station at the location EXCEPT for the potential operation of said 24/7 hours 7 days a week! No way! To this I am vehemently opposed. Shoalwater is a quiet residential area and to add a 24/7 Service Station would not at all be in keeping with the ambience of the suburb. The current and long-standing George & Dragon Tavern, 'worker pub', already has its local issues with periodic altercations and hoon behaviours, particularly on weekends.

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
No.7 cont…		I wholeheartedly am concerned what a 24/7, 7 day week business would attract in terms of increased traffic, general activity and potential undesirable activity at hours when the majority of people are in bed. My view is that 24/7 x 7 days a week operation is completely inappropriate for the location. There is an aged care facility opposite the car park and many elderly people living close by. I do not think it is at all in the best interests of local Shoalwater residents to attract more road traffic and noise. In my opinion, it's ludicrous. Put a 24/7 by Rockingham City Shops. It makes more sense. Not sense at all at above location. I can acknowledge generally its a reasonable proposal to allow a Service Station at the site from 6am - 6 pm but it would be detrimental to the area to herald the whole City of Rockingham-Shire to turn up outside those hours. I say NO to a 24/7 x 7 days outlet. Yours, incensed by the idea of 24/7 x 7.
8. Mr Jarl Andersen	19 McKenzie Road SHOALWATER WA 6169 jarl.andersen@bigpond.com	Comment on MPX Group Pty Ltd proposal for Shoalwater Shopping Centre (Lot 503 (52-62) Second Avenue) partial carpark conversion to a Petrol Station (facing Safety Bay Road). Obviously the MPX Group Pty Ltd has confidence that the electric future is not upon us, far from it. There is nothing in the proposal to cater for the electric vehicle evolution, taking place across the OECD, including Australia. The business model, as presented, shows faith in it being a viable proposition for at least the next 10 years. One would have thought that the MPX Group Pty Ltd would have smartly considered the design inclusion of electric vehicle charging bays, enabling the public to charge their electric vehicles while visiting the shopping centre. Or perhaps even better, upgrade and promote the whole shopping centre experience to something more vibrant and inviting, contrasting its current sad and downmarket ambience. Perhaps it is just a cynical observation of the surrounding demographics? The trouble is, come the day in the not so distant future, when the business model is no longer viable, the community may potentially be lumped with a pollution legacy that no-one will take responsibility/pay for. Is a bond guarantee being paid as part of the proposal? Comparatively, at least, this proposal stacks up, as opposed to the Liberty Petrol Station proposal on the cnr. of Day and Dixon Roads, approved by MOJDAP, setting aside the Rockingham City Council decision to disapprove. The Liberty Petrol Station approval did not meet the definition of critical regional infrastructure importance, especially because that end of Dixon Road already had an oversupply of petrol service stations and therefore not for MOJDAP to rule on. Personally, I am not against this proposal, but it needs updated thinking that speaks to the world we live in and face. Like hinted to earlier, the whole shopping centre needs an uplift, be refreshed and the petrol station proposal should be an integral part of this.
9. Mrs Jo Downs	81 Gloucester Crescent SHOALWATER WA 6169 81beachhouse@gmail.com	The oldies are terrible in the carpark as is, pulling out with our looking first. That bend in the road is a dangerous enough bend as it is, with people pulling out of the two entrances to the carpark & add Shoalwater Rd & Avon Rd -all in the space of a couple of 100 meters. Compete Wrong location. Put anything high traffic there & it'll be an accident waiting to happen. I'd love a fuel station close by. The carpark at the back that enters off second ave, is a much safer & practical place.

Schedule of Submissions –
Proposed Service Station - Lot 503 (No.113-121) Safety Bay Road, Shoalwater (20.2021.70.1)

SERVICINIG AUTHORITY SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
10. Mr Todd Wilkinson	44 Belgravia Terrace ROCKINGHAM WA 6168 (No email address provided)	Definitely needed in this area. No objection.
11. Mr Anson Miles	5 Santana Street SHOALWATER WA 6169 ansonmiles@gmail.com	Fantastic idea. The nearest petrol stations for shoalwater are currently Safety bay BP, which is generally the opposite direction of day to day travel. The next petrol station is BP Read street, which is terrible to gain entry due to located on the other side of the road and due to the current lay out designed for one direction of travel. A petrol station at Lot 503 would be a positive addition for the area.
12. Mr Steve & Mrs Anne Paton	aspaton@bigpond.com	We highly approve of this proposed Service Station in Shoalwater. It is a very convenient position and we are sure would be a welcome addition. The nearest stations are Malibu Road or Rockingham city Shopping Centre. This would be convenient for residents between Read Street, Arcadia Drive and The Esplanade. Look forward to a positive outcome.
13. Mr Grahame Roddis	3 King George Street SHOALWATER WA 6169 Amero62@yahoo.com.au	I wish to lodge my objection to the proposed service station - Lot 503 Safety Bay Rd , Shoalwater , in its current form on the following grounds . 1- increased foot traffic , vehicle traffic, ambient noise and airborne pollution at unsociable hours(9pm-6am) 2- subsequent increased risk to residents and others of associated antisocial behaviour during unsociable hours (9pm-6am) 3-loss of amenity , loss of safe environment and loss of market value to home owners living directly ,adjacent or close to the proposed development as a result of 1&2 above 4- no independent , objective evidence has been tendered that supports a need for a 24 hour operation at this location .
14. Mrs Roxanne Sherrell	5 Nevis Place SHOALWATER WA 6169 Roxanne_lee@outlook.com	Given that we are being encouraged to move towards electric vehicles this proposal seems outdated and a waste of time/resources. Not to mention the impact on the environment, and the neighbourhood. Rockingham seems to have allowed a lot of petrol stations to be built in recent times, are we not considering the global environmental issues? Should we not be progressive rather than time travel back? Personally I'd like to see our great city do more than just build petrol stations and work towards more environmentally friendly transportation. I know I'm not alone in feeling like we already have enough petrol stations in the city, it's a joke how many are in a row in certain areas. It's hardly encouraging us to move onto electric vehicles.
15. Mr Francis Carrano	46b Second Avenue SHOALWATER WA 6169 franinau@gmail.com	I am a local resident of Shoalwater and I am writing to object to the above proposed Project. 1.2.1 shows there was a service station back in July 1970 as per Photo 1 the population density of the area was minimal. As per photograph 3 dated Dec 2008 the area now is heavily populated with R20, R40 zones and an aged care facility close by. Why hasn't a needs analysis been done with this proposal to find out what the local residents need and want?

SERVICINIG AUTHORITY SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
No.15 – cont…		According to the Australian Bureau of Statistics census 2016 the population of Shoalwater is 4100, of which over 9% of people don't own a car, 42% of people own one car and 37% of people own two cars. In the area that I live in (west of Safety Bay Road), it is made up predominantly of retirees. The median age is 46 with 46% of the population being over 50 with minimal families in the area. The majority of the road users on safety bay road are during peak hours and are mainly Defence people going to and from work on Garden Island and the majority of them don't even live in Shoalwater and are just passing through down Safety Bay Road. We don't need a service station to service a minority who obtain their fuel from other places! 4.2.4 the car parking assessment states there is a shortfall of 150 bays. I refute their figures based on the fact that the off-street parking on Second Ave and Coventry Ave off street bays fall outside of the boundary as per diagram DA02-B so the shortfall for the existing amenities is 203 Bays. The majority of the people who park in the off-street parking areas (C, G, E and F of figure 8 Appendix A of the traffic impact statement) are staff and visitors to the 114 bed Aegis aged care facility and the medical Centre and on some days, both sides of Second Ave parking slots are full to the point that visitors park in the existing shopping Centre parking. The car parking assessment survey and the times it was carried out do not represent a true reflection of the number of cars that park to use the local facilities. 4.4.1 states that the EPA recommends that a buffer zone with a generic distance of 200mtrs is maintained between the service station and residential developments (sensitive land use). As stated by the proposer these are not absolute distances however the EPA 4.4.1 goes on to state: Where the separation distance is less than the generic distance, a scientific study based on site- and industry-specific information must be presented to demonstrate that a lesser distance will not result in unacceptable impacts. The Dept of Mines, Industry regulation and Safety in their guidance notes for Petrol Stations state: *Petrol stations are unique dangerous goods sites because the general public actively handles the dangerous goods, such as flammable liquids (petrol), liquefied petroleum gas (LP Gas) and combustible liquids (diesel), with little or no training. Refuelling a vehicle is now so commonplace in most people's lives that it is often assumed to be an entirely safe process. Although there are very few incidents at petrol stations, an accident could have serious consequences, including personal injury, property damage and even death.* Putting a service station so close to such a highly populated area is a risk. The majority of the service stations in Rockingham are in heavily commercial/retail areas. For example, every single service station down Dixon Road and Reed Street are less of a risk to people as they are not close to major residential areas and they all have a buffer zone of at least more than the 2.2 mtrs to any sensitive land use not like this proposal. 4.4.1 Table 7 mitigation assessment does not significantly reduce the impacts/risks sufficiently and lacks enough scientific study and industry specific information on how to.

SERVICINIG AUTHORITY SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
No.15 – cont…		Clause 67 assessment table 4 (s) does not make allowances for safe access to and egress of people from the building. Drawing DA08-C shows a set of stairs leading out of the side of the building, in an emergency how would someone in a wheelchair be able to egress the rear of the property if the front doors are blocked. Drawing DA05-C shows the service station forecourt has a 1.1 mtr gradient from the west forecourt to the east boundary. What risk mitigation is in place to avoid fuel and oils spills from running down into the road and into the drains becoming an environmental issue. Drawing DA06-B shows fryers and a plate cooker. The plans do not show any extraction system, if there was an extraction system there would be noise and smells emanating from it with the residential boundary only 2.2 mtrs away. Drawing DA08- and Drawing DA08-C (indicative boundary section) states that the distance from the proposed building to the boundary line varies from 1968 to 2153 which contradicts the 2200 stated on the DA report at 3.1. The proposed building height varies from 5.2 to 6.1mtrs so will lead to a loss of natural light and sunlight in the summer months into the adjoining residential properties. In summary I strongly object to the proposed service station based on what I have stated in this submission. I am not against change and if the owners really considered the needs of the community and utilizing their site more, after doing a needs analysis they should possibly look at building something like a day care centre, post office, garden centre or drive through coffee shop, something that all the community would benefit from.
16. Ms Julie Watson	114D Safety Bay Road SHOALWATER WA 6169 juliemae@bigpond.com	Please see below my comments regarding this proposal: I am one of the owners (unit 4) of 114 Safety Bay Rd. My driveway would be directly opposite this proposed service station. • Driveway access in and out: as it is now it is difficult to back out onto Safety Bay Road. Even when driving forward it can take a while because not only do we have to look left and right but also watch the exits from the carpark. • Crossing the road on foot can also be tricky at times. I am unwell and have to make sure there is plenty of time to cross. I have also observed that there are a number of aged people in the area who have trouble crossing this road. Some have frames or buggies. • Dangerous for cyclist especially if people start parking on the side of road. • Cheap fuel days will cause so much congestion in the area and inevitably result in a tragedy. • I note that there has been a count of carpark bays but some days I look down and it is nearly full. I would assume with COVID it will be busier as people will be avoiding the larger shopping centres. I feel that people will avoid using this shopping centre if it harder to get parking. I also think that the units also use the carpark for extra parking. Also will the Tavern be upgraded in the future? If it is where will the patrons park? • Ascetically this would affect my outlook and also the value of my property. This area is a residential area with a strong community spirit. • Am concerned as it would be 24hour service, it will attract more traffic and undesirables. Delivery vehicles during the night, they say they have to follow certain protocols but how is this going to be policed?

SERVICINIG AUTHORITY SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
No.16 – cont…		• Will increase litter in the area. At the moment it blows up the drive to my end unit and have to clean up on a regular basis. • Noise levels will increase • Safety Bay Road is not a wide road and this sight is also on a bend. • Apparently there was a Caltex just down the road, why cant it go there? And why was that not successful? There was also a BP down the road and the site is vacant? • You have just spent so much money on this part of the road, will it all be ripped up and redone and who pays for this? • I am aware that there was a servo on this site in the 70's but the area was a lot different then in all aspects and cannot be comparted. Thanks for reading this and please notify when shire meetings regarding this are scheduled.
17. Mr John & Mrs Jennifer Green	52B Second Avenue SHOALWATER WA 6169 jenandjohngreen@aapt.net.au	We object to the above proposal for a Service Station on the following grounds: 1 A Service Station operating 24hours a day will increase traffic noise at night for all adjoining residents who will be disturbed by this noise. 2 The loss of 48 car parking spaces on site will change the current spacious car park for Shoalwater to a situation as is experienced in the Safety Bay Shopping Centre carpark Where parking is a pain due to very narrow bays. 3 The existing Shopping Centre would be penalised by a 24hour operation such shops as the Newsagent would suffer a drop in turnover. 4 In the event of a fire at the Service Station the risk of an explosion could cause injury and property damage to the neighbouring area.
18. Ms Pauline Crozier	9 Otway Place SHOALWATER WA 6169 pcrozier@iinet.net.au	I am writing to express a desire that the above application be refused. 1. Safety Bay Road is now very busy. 2. Road traffic includes elderly on Gofers. 3. Children riding to school. 4. The Aged Care Village is the other side. The removal of car bays pushes parking towards the Village. 5. It will be on a corner — road view limited. 6. Traffic will also be arriving/leaving the shopping precinct. 7. Housing is exactly opposite. 8. A school and Child Care Centre are close by. 9. George and the Dragon Pub will be next door. Please do a camera survey of the site for a week, before allowing this application to progress through the process. I personally buy my fuel from Anketell Service Station as it is cheap there.
19. Ms Denise Beeck	7/61-63 Frederick Street SHOALWATER WA 6169 Dee.beeck@outlook.com	I am writing to you in regard to the proposed development of a Service Station at Lot 503 (No 113-121) Safety Bay Road, Shoalwater. I have reviewed the plans and documents provided and have put together the following summary of my concerns: The proposed development will increase traffic congestion due to the many intersections within the immediate area – 5 already in less than a 100 metre stretch, with another two proposed. The proposed development does not fit within the established character of the area and is considered out of context for the locality. I quote from the report:-

SERVICINIG AUTHORITY SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
No.19 - cont…		The traffic generation of the proposed development will not increase traffic on any lanes on the surrounding road network by more than 100vph, therefore the impact of the additional traffic on the surrounding road network is considered to be insignificant and acceptable. 'Insignificant' using a figure of not 'more than a 100vph', does not equate with experience in using the 'surrounding road network'. The fact that the report does not address the traffic concerns, even considers them insignificant, shows that this vital area of impact has not been researched sufficiently. As a resident in this area, I have had actual experience using the intersections of Safety Bay Road, Coventry Road, Afon Avenue, Shoalwater Road and the two exits from the Shoalwater Shops, all within less than 100 metres, and I advise this group of intersections as they stand, probably qualify as needing attention before a serious accident happens. I regularly cross Safety Bay Road from Afon Avenue to either Coventry Road or Shoalwater Road by car and as a pedestrian, also I often turn right out of Afon Avenue to visit the Shoalwater Shops and right out of the shops to home. I find them extremely busy crossings at all times of the day – on foot during early morning runs, peak hour drives to work, then daily afternoon trips to the beach, plus visits to the Shoalwater Shops. There are many occasions that crossing from Afon Avenue to Coventry Road proves dangerous, (due to it being almost a crossroads but not quite) so instead I often have to choose to turn right into Shoalwater Road then link back to Coventry Road. On meeting a vehicle turning right from Coventry Road, while I am turning left from Afon, then immediately right into Coventry, it is often unclear to the opposing vehicle that it is my intention to turn right immediately and has often resulted in confusion on the roads and possibly one day, an accident.  

SERVICINIG AUTHORITY SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
No.19 - cont…		Also, it is difficult to turn right out of Afon Avenue, then immediately left into the shops, as well as right out of the shop parking area, onto Safety Bay Road, them immediately left into Afon Avenue, due to the volume of traffic, the blind bend, two exits from the shopping centre carpark, and the three close intersections of the abovementioned roads, without adding an extra two exits from the proposed Service Station. The proposed development of a Service Station here, with the increased volume of turning vehicles, would create traffic congestion in this area of Shoalwater. I envisage this would possibly lead to traffic lights and pedestrian crossings, and would turn our peaceful, quiet, backwater, beach suburb into a chaotic and much busier thoroughfare. Not to mention the disruption that 24/7 hour trading, and the lighting disturbance will bring to those living nearby. Shoalwater is populated with many retirees, pedestrians, dog walkers and beach goers and this sort of development would detract from our peaceful suburb. Please consider carefully the application for this proposed development and take into account the disruption a Service Station would cause our small community.
20. Mr David Haggar	36 Watts Road SHOALWATER WA 6169 d_haggar@bigpond.com	Hey no problems there was a service station there previously I am surprised it closed.
21. Mr Nicholas Brent	16a McKenzie Road SHOALWATER WA 6169 Snbrent@bigpond.com	I can't see the need for a service station at this location. There are two stations within 3km and 5 km from this location. Sadly the placement of this proposed station is right next to compact groupings of residential addresses (which also includes a nursing home nearby). Further there are a significant number of stations down Read Street, and then into Warnbro Sound Ave which are main traffic routes. While I understand the need for infrastructure, I think Shoalwater is not an area that has heavy traffic passing through and has sufficient local stations for the area. I would like to think there is more consideration about placement than was given to the two service stations 280m from each other along Dixon Rd near to the caravan park.
22. Ms Julie Meehan	21 Gloucester Avenue SHOALWATER WA 6169 Julieonthemove@hotmail.com	I would not support given we have 2 old service station sites - Safety Bay Rd and Parkin st that have sat idle for years contributing nothing to the community.
Late Submission 23. Mr Vervaet	19 Second Avenue SHOALWATER WA 6169 woutervervaet@yahoo.ie	I want to object to the proposal to install a service station on the Shoalwater IGA site. There will be a significant rise in noise from a 24h service station operation. This I a quiet suburb there I no need for a 24h service station where trucks will be running 24/7, cars coming and going at all hours of the night. The increase of traffic around the area will be very dangerous for numerous children and elderly people in the area using that road going to school at Safety Bay Primary and IGA. There are hoons already going around the area and to Point Perron. That will only increase. I sincerely ask to consider the safety and peace of mind of the Shoalwater residents before letting this go ahead. The process of notification to residents needs to be looked at to. I live 500m away from the proposed site, surely something as significant as a 24h service station needs to be broadly discussed and notified. Not just the people across the street.

SERVICINIG AUTHORITY SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
No.23 – cont…		And a 2 week window to have people give there opinion hardly seems appropriate. It all feels rushed to get it to happen before anyone can say anything. Corporate gain before human respect, peace and quiet. The Shoalwater area is a tranquil place, it doesn't need to be developed like Scarborough. Leave it the way it is please. Thanks you for your time and consideration Best regards Wouter Vervaet Shoalwater resident.

Schedule of Submissions –
Proposed Service Station - Lot 503 (No.113-121) Safety Bay Road, Shoalwater (20.2021.70.1)

SERVICINIG AUTHORITY SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
1. Hannelie Evans Senior Planner **Department of Communities**	Locked Bag 22 EAST PERTH WA 6892 Hannelie.Evans@communities.wa.gov.au	Department of Communities objects to this proposal. The DoC owns 9 residential dwellings adjoining and to the north of the application site. The proposed development is within 2m from the established residences. It is noted that the anticipated noise generation will exceed the acceptable level impact on the residences. Appropriate and adequate noise attenuation measure should be introduced to reduce the noise impact on the residences. There is an established row of trees along the common boundary. The draft plans indicate that these trees will be retained, 'if possible'. Should the proposal go ahead, these trees must be retained or replaced with adequate landscape buffer to protect the amenity of the dwellings
2. Ms Jane Sturgess **Department of Water and Environmental Regulation**	PO Box 332 MANDURAH WA 6210 jane.sturgess@dwer.wa.gov.au	Thank you for providing the development application received 3 February 2022 for the Department of Water and Environmental Regulation (Department) to consider. The Department has identified that the proposed service station at Lot 503 Second Avenue in Shoalwater has the potential for impact on environment and water resource management. In principle the Department does not object to the proposal however key issues, recommendations and advice are provided below and these matters should be addressed. **Issue** Drainage Recommendation A stormwater management plan is to be prepared and approved by the City in accordance with the Stormwater Management Manual for Western Australia (DWER, 2004-2007) and Decision process for the stormwater management in Western Australia (DWER, 2017) that demonstrates the appropriate management of small, minor and major rainfall events. **Issue** Water quality protection measures **Recommendation** In accordance with Water Quality Protection Note 49: Service Stations (WQPN 49) (DWER, 2013) the following is required with regards to the service station: · A layout plan showing all key infrastructure including underground fuel storage and associated pipe-work; paved forecourts and fuel dispenser areas; tank fill point sites; car parks; wash down areas; unpaved areas; vehicle wash facilities; any waste treatment facilities; structural measures to protect the environment and any stormwater management systems. · Detailed description pertaining to infrastructure design including fuel tanks, pipe work, and any additional infrastructure ie service bays or wash facilities; details of any storage and or disposal of waste; and contingency plans for spills. · Further details in relation to design capacity requirements of the petrol and oil separators. **Issue** Air Quality **Recommendation** The Department acknowledges the inclusion of the Emissions Impact Assessment of Proposed 24hr Service Station – Lot 503, 56-62 Second Avenue, Shoalwater, Western Australia (EAQ Consulting, 2021) within the development application.

SERVICINIG AUTHORITY SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
No.2 – cont…		The Department would advise that it does not have a regulatory role, policy position or guidance statement for fuel stations. Due to uncertainties within air dispersion modelling for this land use, resulting from an absence of standard methodology and validated data, adherence to separation distances within Guidance Statement 3 Separation Distances between Industrial and Sensitive Land Uses (GS 3) (EPA, 2005), is generally recommended to inform planning decisions. The Department notes the Impact Assessment Report prepared by the applicant proposes to employ Stage 1 Vapour Recovery system (VR1). Although it is estimated that this additional emission control would reduce the emissions, owing to the uncertainties in emission estimations there is limited ability to determine if this additional emissions control is required or, if installed, would result in acceptable impacts. The management of the residual risk is an important consideration in planning decisions. In the event there are modifications to the proposal that may have implications on aspects of environment and/or water management, the Department should be notified to enable the implications to be assessed. Should you require any further information on the comments please contact the undersigned on 9550 4228.
3. Mr Eric Gruber **Department of Mines, Industry Regulation and Safety Resources Safety**	Mineral House 100 Plain Street EAST PERTH WA 6004 Eric.gruber@dmirs.wa.gov.au	A request for comment was received from the City of Rockingham in relation to the above planning application. Based on the provided information there is no issue identified at this stage with the proposal. Before the site is used to store Dangerous Goods above manifest quantity, it will require a Dangerous Goods Site licence. The storage of bulk fuel is governed by AS1940; and a Dangerous Goods Site Licence applications will be assessed against this and any other relevant Australian Standards during the application process for a Dangerous Goods Site licence. If you have any queries regarding this letter, please contact me on 9358 8037.
4. Mr Matthew Lester **Department of Health**	PO Box 8172 PERTH BUSINESS CENTRE WA 6849	Thank you for your letter of 3 February 2022 requesting comments from the Department of Health on the above proposal. The Department provides the following comment: **1. Public Health Impacts** The Department does not support the location of the service station due to proximity to sensitive receptors. Fuel bowsers in the proposed service station are about 40m from the nearest sensitive receptors — a small group of houses to the north of the development. This is within the minimum separation distance for petrol stations, which is 50m (200m for 24-hour non-Freeway stations). Separation distances are meant to be from the boundary of the development to the boundary of the receptor as the emission source could be moved in the future. An air emissions impact statement has been submitted. The conclusion of the modelling is that the concentration of air pollutants of concern are below available exposure limits. For benzene, the modelled annual ground level concentration (GLC) was about 65% of the NEPM monitoring investigation level (0.003ppm). The Department cannot comment on the robustness of this model and whether these calculations are correct.

SERVICINIG AUTHORITY SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
No.4 – cont…		Advice from the Department of Water and Environmental Regulation, where there is expertise in air quality dispersion modelling, is that these models have a number of areas of uncertainty and that they (Department of Water and Environmental Regulation) are generally not able to verify the assumptions made in these modelling studies. The uncertainty in the modelled GLCs are not included in the report. The level of uncertainty is likely to be high. Given these uncertainties, the advice that has been provided to the Department of Health is that the use of dispersion modelling to make precise judgements on separation distances is impossible. For this reason, the recommended approach is the application of separation distances within Guidance Statement 3 Separation Distances between Industrial and Sensitive Land Uses. The Department of Health advice is that there should be at least 50m between the service station and the nearest sensitive receptor 2. **Food Act Requirements** All food related areas (kitchen, preparation areas, etc.) to comply with the provisions of the Food Act 2008 and related code, regulations and guidelines. Details available for download from: https://ww2.health.wa.gov.au/Articles/ST/Startinq-a-food-business-in-WA Should you have any queries or require further information please contact Phill Oorjitham on 9222 2000 or eh.eSubmissionshealth.wa.gov.au

Neels Pretorius

From: Hannelie Evans <Hannelie.Evans@communities.wa.gov.au>
Sent: Monday, 21 February 2022 3:37 PM
To: City of Rockingham
Subject: Submission Response - Proposed Service Station - Lot 503 (No.113-121) Safety Bay Road, Shoalwater

CAUTION: This email originated from outside of the City of Rockingham. Do not click links or open attachments unless you recognise the sender and know the content is safe. If you are unsure please contact the Service Desk.

Good day,

Department of Communities objects to this proposal.

The DoC owns 9 residential dwellings adjoining and to the north of the application site. The proposed development is within 2m from the established residences. It is noted that the anticipated noise generation will exceed the acceptable level impact on the residences. Appropriate and adequate noise attenuation measure should be introduced to reduce the noise impact on the residences.

There is an established row of trees along the common boundary. The draft plans indicate that these trees will be retained, 'if possible'. Should the proposal go ahead, these trees must be retained or replaced with adequate landscape buffer to protect the amenity of the dwellings

HANNELIE EVANS
Senior Planner
Housing and Assets : Operations
Urban Planning, Design & Approval

Department of Communities
P 08 6414 1873 **M** 0430 888 631
Level 5, Boorloo Campus, 130 Stirlings Street, Northbridge
W communities.wa.gov.au

Government of **Western Australia**
Department of **Communities**

The Department of Communities acknowledges the traditional owners of country throughout Western Australia and their connection to land, waters and community. We pay our respects to them and their cultures, and to their elders past and present.

The Department of Communities (Communities) formed on 1 July 2017 and is responsible for the delivery of child protection and family support, community grants, funding and initiatives, education and care regulation, disability services, housing and regional services reform. During the transition phase emails sent from the Housing Authority domain will be converted to the Communities email address. This message may contain privileged and confidential information and is intended for the exclusive use of the addressee(s). You must not disclose this communication to anyone without the prior consent of Communities. If you have received this email in error, please notify us by return mail, delete it from your system and destroy all copies. Communities has exercised care to avoid errors in the information contained in this email but does not warrant that it is error or omission free.

Government of **Western Australia**
Department of **Health**

Your Ref:
Our Ref: F-AA 03231 D-AA-22/43015
Contact: Phill Oorjitham 9222 2000

Mr Michael Parker
Chief Executive Officer
City of Rockingham
PO Box 2142
ROCKINGHAM DC WA 6967

Attention: Neels Pretorius

Via email: customer@rockingham.wa.gov.au

Dear Mr Parker

PROPOSED SERVICE STATION LOT 503 SAFETY BAY ROAD SHOALWATER

Thank you for your letter of 3 February 2022 requesting comments from the Department of Health on the above proposal.

The Department provides the following comment:

1. Public Health Impacts

The Department does not support the location of the service station due to proximity to sensitive receptors.

Fuel bowsers in the proposed service station are about 40m from the nearest sensitive receptors – a small group of houses to the north of the development. This is within the minimum separation distance for petrol stations, which is 50m (200m for 24-hour non-Freeway stations). Separation distances are meant to be from the boundary of the development to the boundary of the receptor as the emission source could be moved in the future.

An air emissions impact statement has been submitted. The conclusion of the modelling is that the concentration of air pollutants of concern are below available exposure limits. For benzene, the modelled annual ground level concentration (GLC) was about 65% of the NEPM monitoring investigation level (0.003ppm). The Department cannot comment on the robustness of this model and whether these calculations are correct. Advice from the Department of Water and Environmental Regulation, where there is expertise in air quality dispersion modelling, is that these models have a number of areas of uncertainty and that they (Department of Water and Environmental Regulation) are generally not able to verify the assumptions made in

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www.health.wa.gov.au

these modelling studies. The uncertainty in the modelled GLCs are not included in the report. The level of uncertainty is likely to be high.

Given these uncertainties, the advice that has been provided to the Department of Health is that the use of dispersion modelling to make precise judgements on separation distances is impossible. For this reason, the recommended approach is the application of separation distances within Guidance Statement 3 Separation Distances between Industrial and Sensitive Land Uses.

The Department of Health advice is that there should be at least 50m between the service station and the nearest sensitive receptor

2. Food Act Requirements

All food related areas (kitchen, preparation areas, etc.) to comply with the provisions of the Food Act 2008 and related code, regulations and guidelines. Details available for download from: https://ww2.health.wa.gov.au/Articles/S_T/Starting-a-food-business-in-WA

Should you have any queries or require further information please contact Phill Oorjitham on 9222 2000 or eh.eSubmissions@health.wa.gov.au

Yours sincerely

Matthew Lester
A/EXECUTIVE DIRECTOR
ENVIRONMENTAL HEALTH DIRECTORATE

25 February 2022

Government of **Western Australia**
Department of **Mines, Industry Regulation and Safety**
Resources Safety

Your ref:
Our ref: X0001/201901
Enquiries: Eric Gruber - Ph 9358 8037
Email: eric.gruber@dmirs.wa.gov.au

Neels Pretorius
Planning Officer
City of Rockingham
Civic Boulevard, Rockingham, WA

Dear Eric,

DEVELOPMENT APPLICATION – PROPOSED SERVICE STATION LOT 503 56-62 SECOND AVE, SHOALWATER, WA

A request for comment was received from the City of Rockingham in relation to the above planning application.

Based on the provided information there is no issue identified at this stage with the proposal. Before the site is used to store Dangerous Goods above manifest quantity, it will require a Dangerous Goods Site licence.

The storage of bulk fuel is governed by AS1940; and a Dangerous Goods Site Licence applications will be assessed against this and any other relevant Australian Standards during the application process for a Dangerous Goods Site licence.

If you have any queries regarding this letter, please contact me on 9358 8037.

Yours faithfully,

Eric Gruber

_____
Eric Gruber
Acting Manager Dangerous Goods
Dangerous Goods and Critical Risks Directorate
14 February 2022

Mineral House 100 Plain Street East Perth Western Australia 6004
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www.dmirs.wa.gov.au
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ABN 69 410 335 356

Government of Western Australia
Department of Water and Environmental Regulation

Your ref: 20.2021.70.1
Our ref: RF2042-06, PA 047432
Enquiries: Jane Sturgess, Ph 9550 4228

City of Rockingham
PO Box 2142
Rockingham DC WA 6967

Attention: Neels Pretorius

Dear Neels

DEVELOPMENT APPLICATION – LOT 503 SECOND AVENUE, SHOALWATER

Thank you for providing the development application received 3 February 2022 for the Department of Water and Environmental Regulation (Department) to consider.

The Department has identified that the proposed service station at Lot 503 Second Avenue in Shoalwater has the potential for impact on environment and water resource management. In principle the Department does not object to the proposal however key issues, recommendations and advice are provided below and these matters should be addressed.

Issue
Drainage

Recommendation
A stormwater management plan is to be prepared and approved by the City in accordance with the *Stormwater Management Manual for Western Australia* (DWER, 2004-2007) and *Decision process for the stormwater management in Western Australia* (DWER, 2017) that demonstrates the appropriate management of small, minor and major rainfall events.

Issue
Water quality protection measures

Recommendation
In accordance with *Water Quality Protection Note 49: Service Stations (WQPN 49)* (DWER, 2013) the following is required with regards to the service station:

- A layout plan showing all key infrastructure including underground fuel storage and associated pipe-work; paved forecourts and fuel dispenser areas; tank fill point sites; car parks; wash down areas; unpaved areas; vehicle wash facilities;

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www.dwer.wa.gov.au

any waste treatment facilities; structural measures to protect the environment and any stormwater management systems.

- Detailed description pertaining to infrastructure design including fuel tanks, pipe work, and any additional infrastructure ie service bays or wash facilities; details of any storage and or disposal of waste; and contingency plans for spills.
- Further details in relation to design capacity requirements of the petrol and oil separators.

Issue
Air Quality

Recommendation
The Department acknowledges the inclusion of the *Emissions Impact Assessment of Proposed 24hr Service Station – Lot 503, 56-62 Second Avenue, Shoalwater, Western Australia* (EAQ Consulting, 2021) within the development application. The Department would advise that it does not have a regulatory role, policy position or guidance statement for fuel stations. Due to uncertainties within air dispersion modelling for this land use, resulting from an absence of standard methodology and validated data, adherence to separation distances within *Guidance Statement 3 Separation Distances between Industrial and Sensitive Land Uses* (GS 3) (EPA, 2005), is generally recommended to inform planning decisions.

The Department notes the Impact Assessment Report prepared by the applicant proposes to employ Stage 1 Vapour Recovery system (VR1). Although it is estimated that this additional emission control would reduce the emissions, owing to the uncertainties in emission estimations there is limited ability to determine if this additional emissions control is required or, if installed, would result in acceptable impacts.

The management of the residual risk is an important consideration in planning decisions.

In the event there are modifications to the proposal that may have implications on aspects of environment and/or water management, the Department should be notified to enable the implications to be assessed.

Should you require any further information on the comments please contact the undersigned on 9550 4228.

Yours sincerely



Jane Sturgess
Acting Program Manager – Planning Advice
Kwinana Peel Region

24 / 02 / 2022

Proposed Service Station Development

Lot 503 (56-62) Second Avenue, Shoalwater

Transport Impact Statement

PREPARED FOR:
MPX Group Pty Ltd

March 2021

Document history and status

Author	Revision	Approved by	Date approved	Revision type
M Rasouli	r01	B Bordbar	22/02/2021	Draft
M Rasouli	r01a	B Bordbar	25/02/2021	Final
M Rasouli	r01b	B Bordbar	26/02/2021	Minor revision
M Rasouli	r01c	B Bordbar	04/03/2021	Minor revision

File name: t20.331.mr.r01c

Author: M Rasouli

Project manager: Mohammad Rasouli

Client: MPX Group Pty Ltd

Project: Lot 503 (56-62) Second Avenue, Shoalwater

Document revision: r01c

Project number: t20.331

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TABLE OF CONTENTS

1.0 INTRODUCTION 4

2.0 PROPOSED DEVELOPMENT 6

3.0 VEHICLE ACCESS AND PARKING 7

3.1 VEHICLE ACCESS 7
3.2 PARKING 8

4.0 PROVISION FOR SERVICE VEHICLES 9

5.0 HOURS OF OPERATION 10

6.0 DAILY TRAFFIC VOLUMES AND VEHICLE TYPES 11

6.1 ASSESSMENT PERIOD 11
6.2 TRIP GENERATION AND DISTRIBUTION 11
6.2.1 EXISTING TRAFFIC GENERATION 11
6.2.2 PROPOSED DEVELOPMENT TRAFFIC GENERATION 11
6.3 IMPACT ON SURROUNDING ROADS 12

7.0 TRAFFIC MANAGEMENT ON THE FRONTAGE STREETS 13

8.0 PUBLIC TRANSPORT ACCESS 14

9.0 PEDESTRIAN ACCESS 15

10.0 SITE SPECIFIC ISSUES 16

11.0 SAFETY ISSUES 17

12.0 CONCLUSIONS 18

APPENDIX A: PARKING UTILISATION SURVEY

APPENDIX B: PROPOSED DEVELOPMENT PLAN

APPENDIX C: SWEPT PATH ASSESSMENT PLANS

REPORT FIGURES

Figure 1: Location of the subject site **4**
Figure 2: Proposed demolition plan **5**
Figure 3. Proposed development crossovers **7**
Figure 4. Northbound view along Safety Bay Road **13**
Figure 5: Southbound view along Safety Bay Road **13**
Figure 6: Existing bus routes **14**
Figure 7: Bike map (source: Department of Transport) **15**

1.0 Introduction

This Transport Impact Statement (TIS) has been prepared by Transcore on behalf of MPX Group Pty Ltd with regard to the proposed service station development to be located at Lot 503 (56-62) Second Avenue in Shoalwater. The subject site is within the north east portion of the parking area of the Shoalwater Shopping Centre. The shopping centre is located at the north west corner of the intersection of Safety Bay Road and Coventry Road in Shoalwater (refer **Figure 1**).

The Transport Impact Assessment Guidelines (WAPC, Vol 4 – Individual Developments, August 2016) states: *"A Transport Impact Statement is required for those developments that would be likely to generate moderate volumes of traffic*[1] *and therefore would have a moderate overall impact on the surrounding land uses and transport networks"*. **Section 6.0** of Transcore's report provides details of the estimated trip generation for the proposed development. Accordingly, as the estimated trip generation of the development in peak hour vehicular trips are estimated to be less than 100 trips, a TIS is deemed appropriate for this development. Also, in accordance with WAPC guidelines and because of the number of bowsers proposed, a TIS is the level reporting required for the proposed development.



Figure 1: Location of the subject site

[1] *Between 10 and 100 vehicular trips per hour*

The proposed service station will replace part of the existing car park of the shopping centre as shown in **Figure 1.** As a result of the proposal 48 existing parking bays will be removed (refer **Figure 2**) and replaced by the development. The proposed service station will provide additional five bays which will result in a net parking loss of 43 bays within the shopping centre car park.

Transcore has undertaken a comprehensive parking utilisation survey at the existing shopping centre car park as well as the on-street bays on the abutting roads to investigate the actual parking demand of the shopping centre. The outcome of the parking utilisation survey is documented in a separate technical note which is attached in Appendix A of this TIS. The outcome of the parking survey indicates that although development of the proposal will result in a net parking loss of 43 bays within the shopping centre car park, there still will be significant number of available bays during the peak parking demand and as such there will be no adverse impact on the parking demand of the shopping centre.

The other key issues that are addressed in this report include the traffic generation of the proposal, consideration of the access and egress movement pattern and assessment of fuel tanker and service vehicle operations.

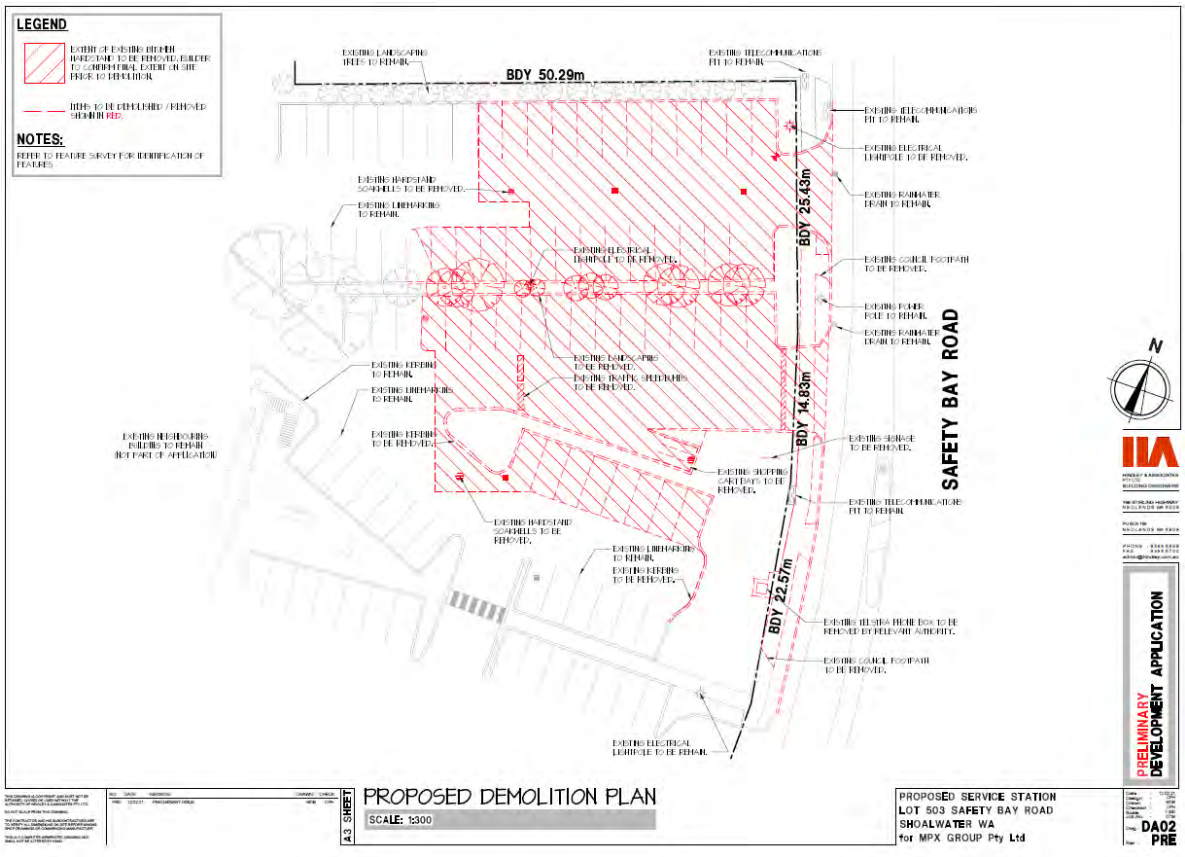


Figure 2: Proposed demolition plan

2.0 Proposed Development

According to the proposed development plan attached in **Appendix B** of this report, the proposal includes a service station comprising:

- A canopy with a total of six fuel-filling positions for light vehicles;
- A retail building of 200sqm GLA;
- Five car parking bays including one ACROD bay and one air & water bay; and,
- A designated service vehicle bay located in front of the bin storage area

The proposal will relocate and modify the existing crossovers (two crossovers) on Safety Bay Road fronting the proposed service station. No other changes to the existing crossovers of the shopping centre are proposed as part of the development.

The service vehicle bay is located at the west of the building. Turn path analysis has been undertaken for a 19.0m fuel tanker and 8.8m service vehicle to enter, circulate and exit the site. Service vehicle entry, egress and circulation are discussed further in section 4.0 of report.

3.0 Vehicle Access and Parking

3.1 Vehicle Access

Figure 3 illustrates the locations of the proposed subject site access and egress points. As evident from this figure the existing full movement crossovers on Safety Bay Road are relocated and modified to facilitate the access/ egress of the fuel tanker.

The proposed crossovers would operate as full movement crossovers. The fuel tanker would enter the site from crossover 1 and would exit in forward gear from crossover 2. The location and layout of the crossovers are satisfactorily. The proposed crossovers would accommodate the movement of all vehicles including the 19.0m fuel tanker. The 19.0m fuel tanker can park adjacent to the proposed car canopy and would not block the movement of the vehicles entering and exiting the crossovers.

The proposed crossovers will be used by the service station and shopping centre traffic.

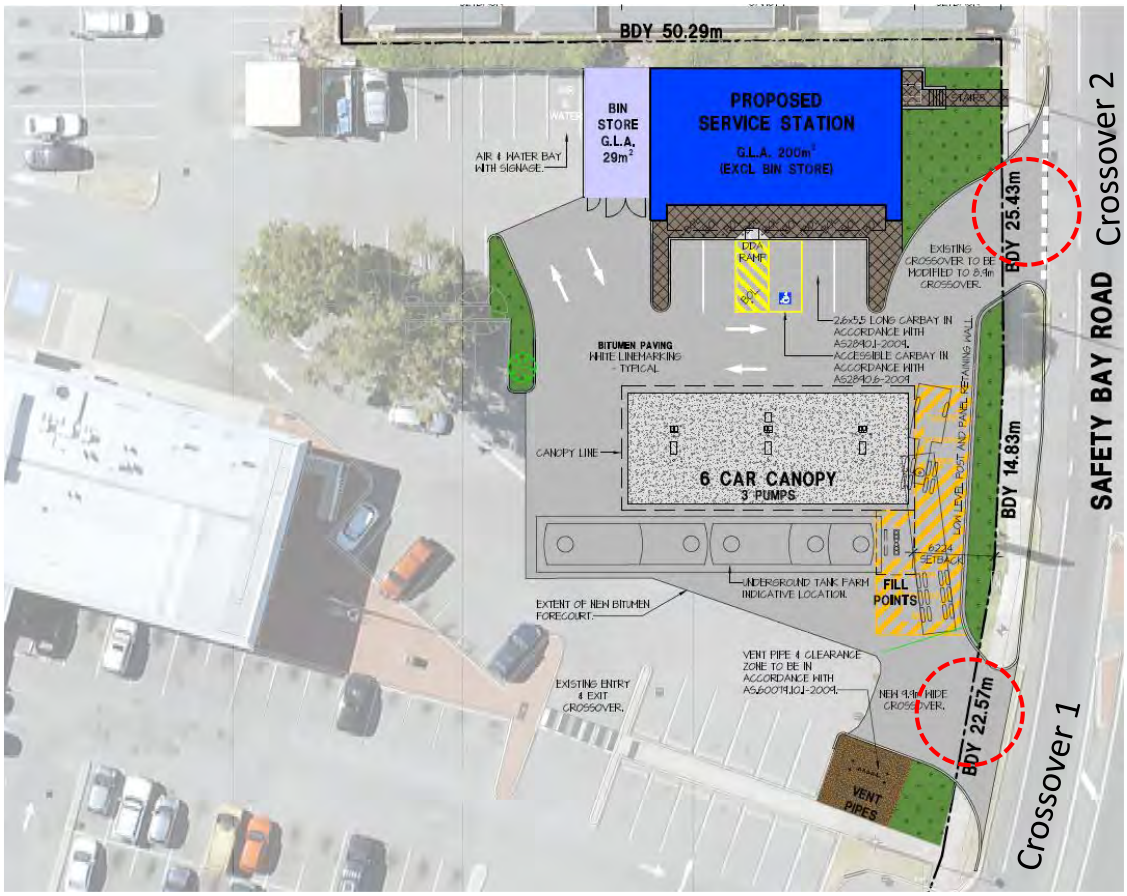


Figure 3. Proposed development crossovers

3.2 Parking

The proposed development provides five new shopfront parking bays (including an ACROD bay), in addition to at least 14 existing parking bays are available in close proximity to the service station. Based on the information provided to Transcore, it is our understanding that the proposed car parking spaces are in accordance with the relevant requirements.

Considering that the proposal will replace some of the existing parking bays of the shopping centre, Transcore undertook a parking utilisation survey to investigate the actual parking demand of the shopping centre and to assess the impact of the proposed development on the actual parking supply and demand of the shopping centre. The outcome of the parking utilisation survey and the resulting parking assessment is documented in a technical note contained in Appendix A of this TIS

Parking utilisation surveys undertaken by Transcore indicated that the existing parking bays at the shopping centre are utilised between 28% to 40% during Thursday and Saturday respectively and the loss of 43 parking bays within the shopping centre car park would result in an increase in percentage of utilisation to about 39% to 49% during Thursday and Saturday respectively.

The outcome of the parking utilisation survey also indicated that for Zone A, which is the parking area affected by the proposed service station site, on average 54 to 61 bays were available during Thursday and Saturday respectively.

Therefore, with the proposed service station development within the shopping centre car park there still be significant available bays during the typical peak parking demand for the centre.

4.0 Provision for Service Vehicles

Fuel tankers are proposed to enter the site from crossover 1 and exit in forward gear from crossover 2 (refer **Figure 3).**

A service bay is proposed at the west of the service station building. Service vehicles are anticipated to enter the site from crossover 1 and exit the site from crossover 2. Service vehicles are expected to access the site no more than 3-4 times a week and generally outside the peak road network and peak site activity periods. Therefore, traffic conflicts between customers, employees and service vehicles are not expected.

The swept path analysis undertaken for 19.0m fuel tanker and 8.8m service vehicle confirms the satisfactory movements of these vehicles within the site. Swept path analysis plans are included in **Appendix C**.

5.0 Hours of Operation

The proposed service station with convenience store is expected to operate 24 hours per day and 7 days per week.

6.0 Daily Traffic Volumes and Vehicle Types

6.1 Assessment Period

Due to the nature of the development, it is expected that distinct peak activity periods will be experienced during weekday morning and afternoon peak road network periods.

A review of the existing available traffic data for Safety Bay Road, suggests that the combination of the traffic expected to be generated by the proposed development and the peak road network traffic periods is likely to result in the greatest demand on the road network during the weekday morning and afternoon peak hours between 7:00 – 8:00AM and 3:00 – 4:00PM.

6.2 Trip Generation and Distribution

6.2.1 Existing Traffic Generation

The subject site is currently occupied by parking bays of the shopping centre (about 48 bays). According to the parking utilisation survey undertaken for these bays currently these bays are about 30% utilised during the Saturday peak hours. Assuming a trip rate of 2vph per bay would result in existing trip generation of about 28vph for a Saturday. It is assumed that for a weekday the parking area trip generation is 50% of Saturday trip generation.

6.2.2 Proposed Development Traffic Generation

Traffic generation rates for the service station were also sourced from the *Institute of Transportation Engineers – Trip Generation Manual 10th Edition* (ITE) using *"Gasoline/Service Station with Convenience Store (945)"* land use as a reference.

The trip rates which were used to estimate traffic generation for the proposed development are as follows:

<u>Service Station – Gasoline/ Service Station with Convenience Store (945)</u>

- Weekday daily: 205.36vpd per fuelling point;
- Weekday AM: 12.47vph per fuelling point; and,
- Weekday PM: 13.99vph per fuelling point.

Accordingly, it is estimated that the traffic generations for the proposed service station are:

- Weekday daily: 205.36 x 6 = 1,232 vehicles;
- Weekday AM: 12.47 x 6 = 75vph; and,
- Weekday PM: 13.99 x 6 = 84vph

Therefore, it is estimated that the proposed service station development would result in net traffic increase of approximately **61** and **70** trips during the typical weekday AM and PM peak hours respectively. These figures include both inbound and outbound vehicle movements. It should be noted that most of the additional trips would be related to the pass by trips on Safety Bay Road and cross trade between the shopping centre and service station. Therefore, the actual net additional traffic increase as a result of the proposed development is expected to be lower than the above figures.

The directional split of inbound and outbound trips for the proposed development is estimated to be about 51% entering and 49% exiting trips during the peak hours.

6.3 Impact on Surrounding Roads

The WAPC *Transport Impact Assessment Guidelines* (2016) provides the following guidance on the assessment of traffic impacts:

"As a general guide, an increase in traffic of less than 10 percent of capacity would not normally be likely to have a material impact on any particular section of road, but increases over 10 percent may. All sections of road with an increase greater than 10 percent of capacity should therefore be included in the analysis. For ease of assessment, an increase of 100 vehicles per hour for any lane can be considered as equating to around 10 percent of capacity. Therefore, any section of road where development traffic would increase flows by more than 100 vehicles per hour for any lane should be included in the analysis."

The traffic generation of the proposed development will not increase traffic on any lanes on the surrounding road network by more than 100vph, therefore the impact of the additional traffic on the surrounding road network is considered to be insignificant and acceptable.

7.0 Traffic Management on the Frontage Streets

Safety Bay Road is constructed as a two-lane road with a 5.5m wide traffic lane including cycle lanes with a posted speed limit of 60km/h. Main Roads WA road hierarchy map shows this road as a Distributor A road. Paved pedestrian footpaths are provided along both sides of the road.

Traffic count data sourced from Main Roads WA indicated that Safety Bay Road carried about 8,600vpd north of Boundary Road in 2020/2021.

Figure 4 and **Figure 5** show Safety Bay Road in the vicinity of the subject site.



Figure 4. Northbound view along Safety Bay Road



Figure 5: Southbound view along Safety Bay Road

8.0 Public Transport Access

Nearby public transport services are shown in **Figure 6**. Bus route 551 which terminates at Rockingham train station traverses on Safety Bay Road with a bus bay in front of the subject site.

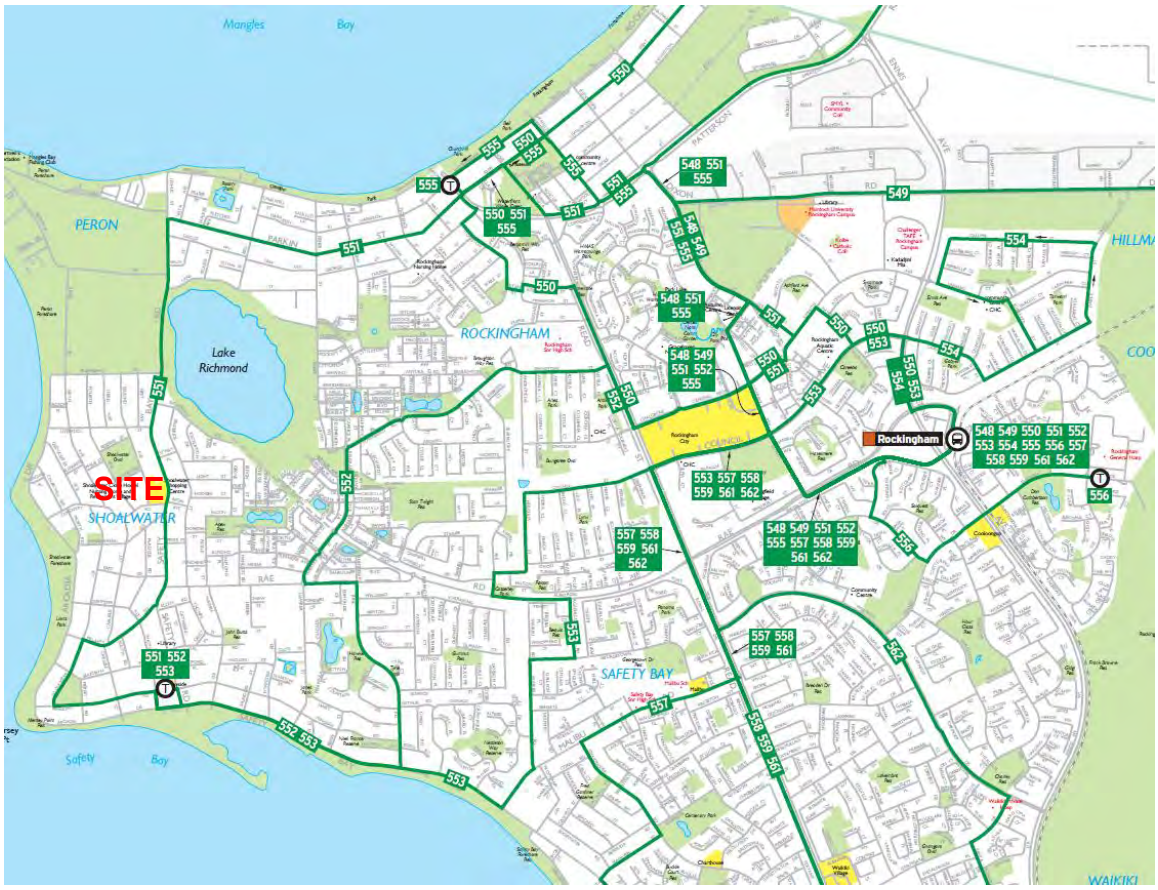


Figure 6: Existing bus routes

9.0 Pedestrian Access

Pedestrian access to the proposed development is available directly from the existing footpath network on both sides of Safety Bay Road in the vicinity of the subject site. The Perth Bicycle Network Map which indicates cyclist connectivity to the subject site is shown in **Figure 7**.



Figure 7: Bike map (source: Department of Transport)

10.0 Site Specific Issues

The proposal will replace some of the existing parking bays at the shopping centre and will result in overall parking loss of 43 bays (48 bays will be removed and five bays will be provided).

In order to accurately establish the actual existing parking demand of the shopping centre and assess the impact of the 43 parking bay loss, Transcore undertook a comprehensive parking utilisation survey in December 2020.

The outcome of the parking utilisation survey indicates that:

- The on-site shopping centre car park and the on-street bays are currently utilised between 30% to 40% during Thursday and Saturday respectively and on average about 185 to 210 bays were available during Thursday and Saturday respectively.
- The off-street parking utilisation is expected to be approximately 28% and 40% during Thursday and Saturday respectively.
- The on-street parking utilisation is expected to be approximately 42% and 33% during Thursday and Saturday respectively.
- Zone A, which is the parking area affected by the proposed for the service station site showed utilisation between 19% to 29% during Thursday and Saturday respectively and on average 54 to 61 bays during Thursday and Saturday respectively were available.

The assessment and results of the parking utilisation survey are documented in a separate technical note which is attached to this TIS and confirms that the balance of the shopping centre parking bays after development of the service station would still be sufficient to accommodate the parking demand of the shopping centre.

11.0 Safety Issues

No safety issues were identified within the scope of this assessment.

12.0 Conclusions

This Transport Impact Statement (TIS) has been prepared by Transcore on behalf of MPX Group Pty Ltd with regard to the service station development to be located at Lot 503 (56-62) Second Avenue in Shoalwater.

The proposal will replace some of the existing parking bays of the shopping centre and will result in overall parking loss of 43 bays.

The outcome of the parking utilisation survey undertaken by Transcore in December 2020 confirms that the balance of the shopping centre parking bays after development of the service station would still be sufficient to accommodate the parking demand of the shopping centre.

Five new car parking bays including one ACROD parking bay and one air & water bay are provided for the proposed service station although existing parking in close proximity to the service station will also be available.

The proposal will relocate and modify the existing crossovers (two crossovers) on Safety Bay Road fronting the propose service station. No any other changes to the existing crossovers of the shopping centre are proposed as part of the development.

The swept path analysis undertaken for 19.0m fuel tanker and 8.8m service vehicle confirms satisfactory entry and exit movements of these vehicles.

The traffic analysis undertaken in this report demonstrates that the net traffic increase as a result of the proposed development is not significant and in accordance with WAPC guidelines will not have any significant impact on the surrounding road network.

Appendix A

PARKING UTILISATION SURVEY

Technical Note: No 1
Project No: t20.331

Project: Proposed service station (56 - 62 Second Avenue, Shoalwater)

Subject: Parking utilisation survey

Introduction

A service station with convenience store is proposed within the north east portion of the parking area of the Shoalwater Shopping Centre. The shopping centre is located at the north west corner of the intersection of Safety Bay Road and Coventry Road in Shoalwater.

In order to establish the actual parking demand for the Shoalwater shopping centre and investigate the impact of the loss of parking bays as a result of the proposed service station, Transcore undertook a parking inventory and utilisation survey at the shopping centre on Thursday, 10 December 2020, between 4:00PM to 7:00PM and Saturday, 12 December 2020, between 11:00AM to 2:00PM. During the parking survey number of parked cars was recorded in 30mins time intervals for each identified parking zones. The identified and surveyed parking zones A to E are shown in **Figure 8**.

Table 1 summarises the parking inventory for each zone. As evident, the shopping centre currently entails 249 on-site parking bays. In addition, 53 on-street parking bays are available on Coventry Road and Second Avenue.

Table 1: parking inventory for each zone

Zone	Location	type of bays	Time Restriction	Total Bays
A	Shopping centre (proposed service station area)	Off street	No	76
B	shopping centre	Off street	No	87
C	Second Ave east side	On-street	No	4
D	shopping centre	Off street	No	86
E	Coventry Road	On-street	No	17
F	Second Ave east side	On-street	No	22
G	Second Ave west side	On-street	No	10
Total				**302**



Figure 8: Parking survey zones

The proposal would replace 48 parking bays within the shopping centre car park (within Zone A) and will provide additional five bays for the proposed service station which will result in a net parking loss of 43 bays within the shopping centre car park. Therefore, as a result of the proposed service station the total on-site shopping centre parking bays will reduce to 207 bays.

The result of parking surveys undertaken by Transcore are presented in **Table 2**, **Table 3**, **Figure 9** to **Figure 12**.

Table 2. Parking utilisation survey (4:00PM – 7:00PM), Thursday 10 Dec 2020

Zone	4:00-4:30	4:30-5:00	5:00-5:30	5:30-6:00	6:00-6:30	6:30-7:00	Supply
A	17	19	13	14	13	9	76
B	25	22	17	16	12	7	87
C	1	1	1	1	1	1	4
D	39	48	39	38	43	33	86
E	9	9	5	9	6	2	17
F	10	10	13	10	12	4	22
G	5	5	4	6	5	4	10
Total Occupied	106	114	92	94	92	60	302
Available Bays	196	188	210	208	210	242	

Zone	4:00-4:30	4:30-5:00	5:00-5:30	5:30-6:00	6:00-6:30	6:30-7:00	Supply	Average
A	22%	25%	17%	18%	17%	12%	76	19%
B	29%	25%	20%	18%	14%	8%	87	19%
C	25%	25%	25%	25%	25%	25%	4	25%
D	45%	56%	45%	44%	50%	38%	86	47%
E	53%	53%	29%	53%	35%	12%	17	39%
F	45%	45%	59%	45%	55%	18%	22	45%
G	50%	50%	40%	60%	50%	40%	10	48%
Total Occupancy	35%	38%	30%	31%	30%	20%	302	31%
Off Street Occupancy	33%	36%	28%	27%	27%	20%	249	28%
On Street Occupancy	47%	47%	43%	49%	45%	21%	53	42%

Table 3. Parking utilisation survey (11:00PM – 2:00PM), Saturday 12 Dec 2020

Zone	11:00-11:30	11:30-12:00	12:00-12:30	12:30-1:00	1:00-1:30	1:30-2:00	Supply
A	28	31	19	19	19	15	76
B	14	24	21	23	18	13	87
C	0	0	1	1	0	0	4
D	63	51	60	56	52	71	86
E	7	7	5	4	3	2	17
F	12	12	10	9	8	7	22
G	3	3	3	3	3	1	10
Total Occupied	127	128	119	115	103	109	302
Available Bays	175	174	183	187	199	193	

Zone	11:00-11:30	11:30-12:00	12:00-12:30	12:30-1:00	1:00-1:30	1:30-2:00	Supply	Average
A	37%	41%	25%	25%	25%	20%	76	29%
B	16%	28%	24%	26%	21%	15%	87	22%
C	0%	0%	25%	25%	0%	0%	4	8%
D	73%	59%	70%	65%	60%	83%	86	68%
E	41%	41%	29%	24%	18%	12%	17	27%
F	55%	55%	45%	41%	36%	32%	22	44%
G	30%	30%	30%	30%	30%	10%	10	27%
Total Occupancy	42%	42%	39%	38%	34%	36%	302	39%
Off Street Occupancy	42%	43%	40%	39%	36%	40%	249	40%
On Street Occupancy	42%	42%	36%	32%	26%	19%	53	33%

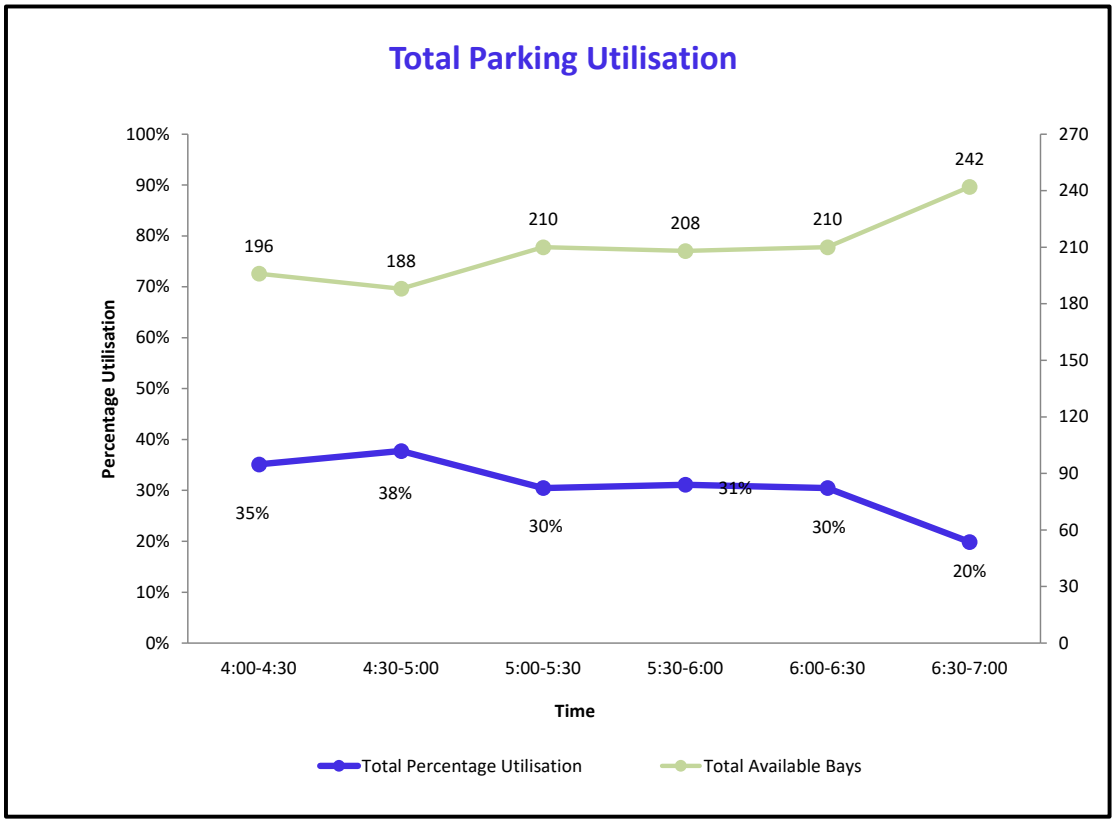


Figure 9: Parking utilisation survey – All Zones Thursday 10 Dec 2020

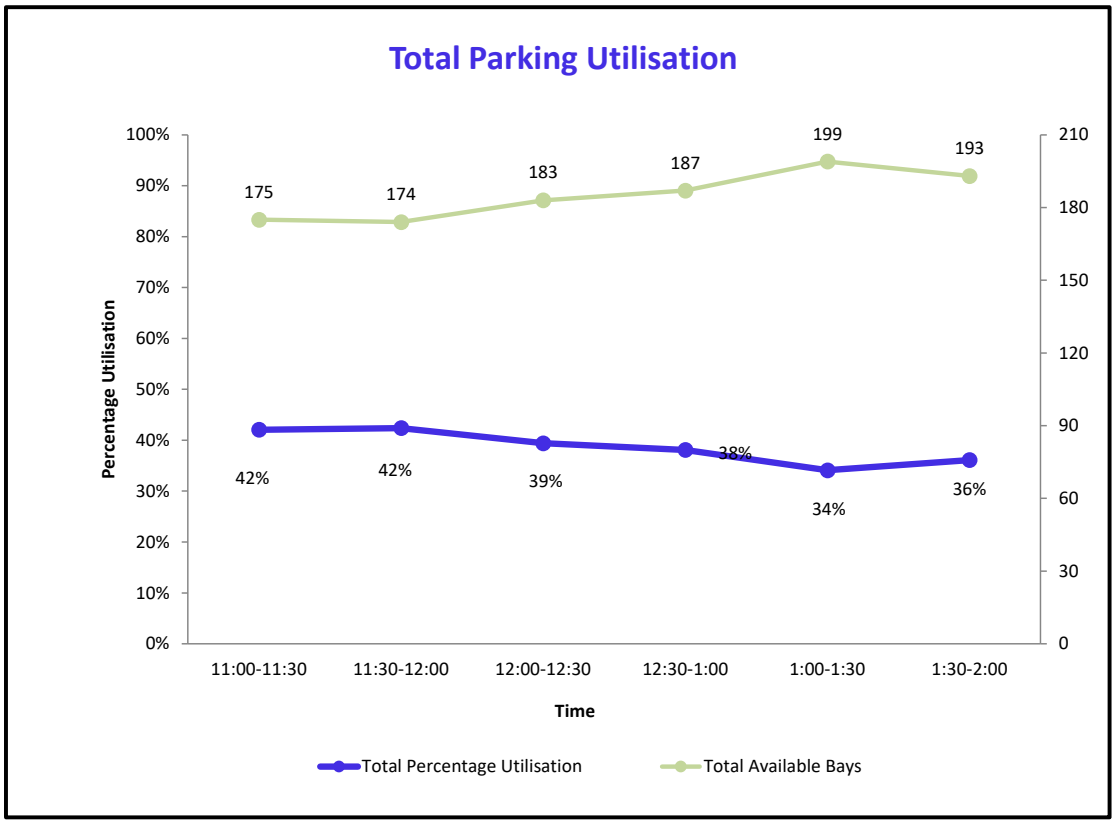


Figure 10: Parking utilisation survey – All Zones Saturday 12 Dec 2020

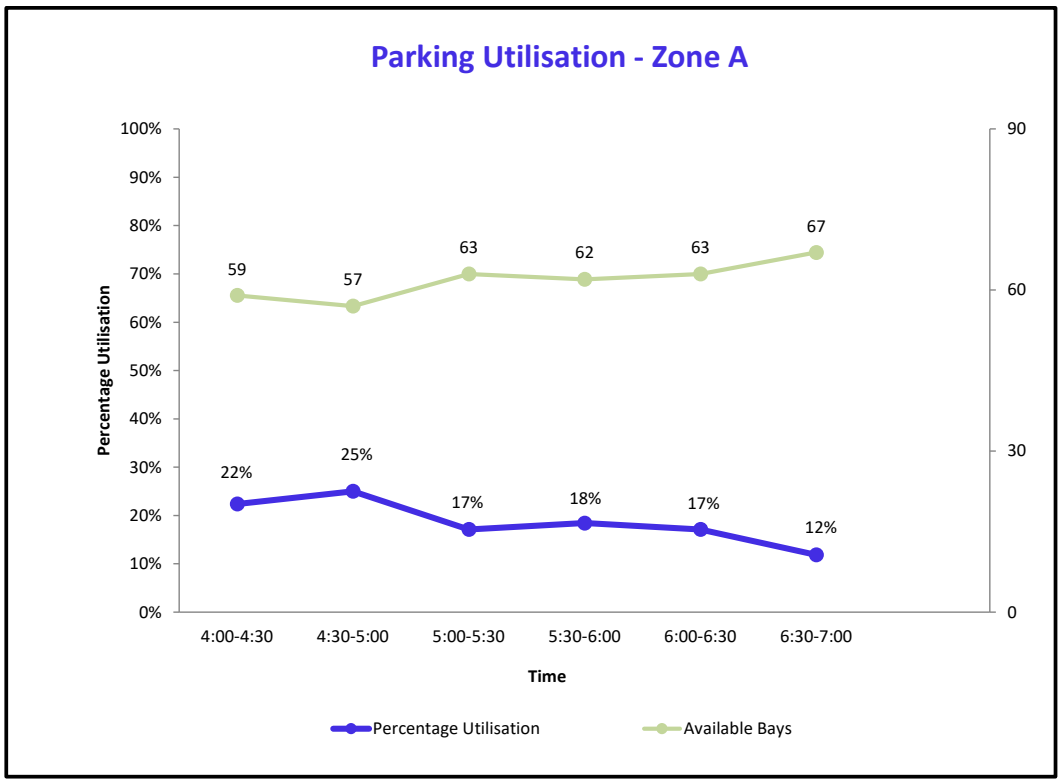


Figure 11: Parking utilisation survey – Zone A, Thursday 10 Dec 2020

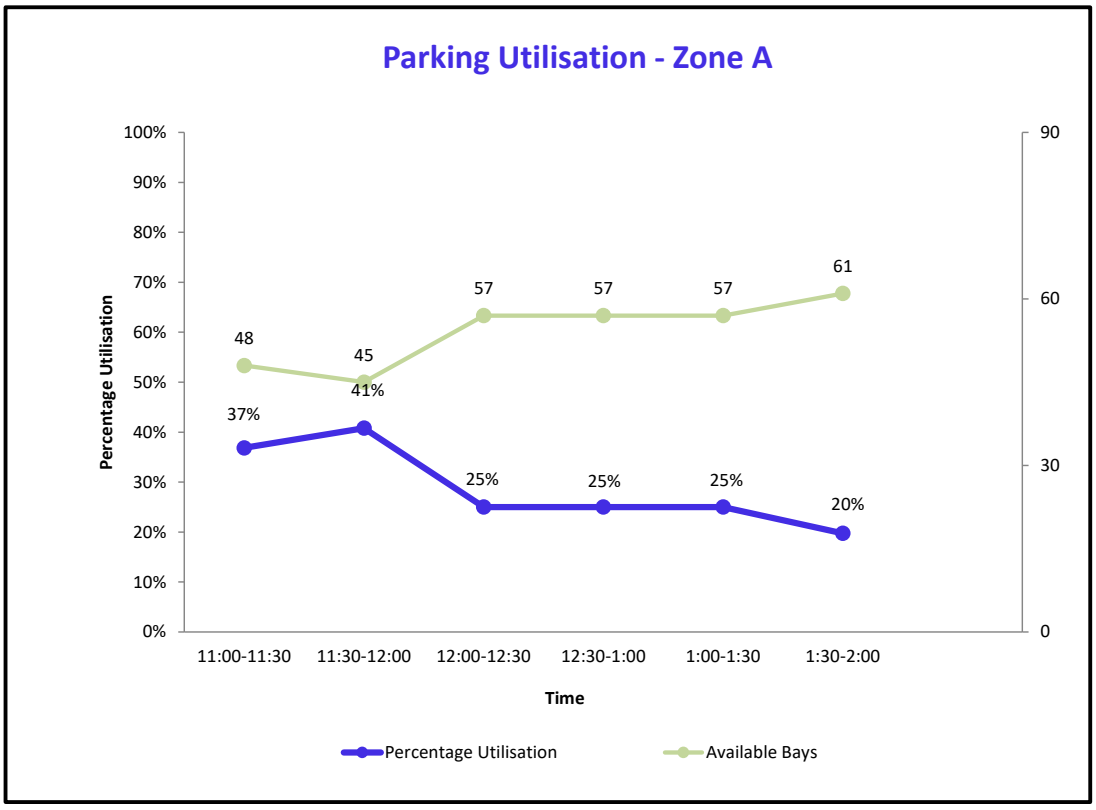


Figure 12: Parking utilisation survey – Zone A, Saturday 12 Dec 2020

The outcome of the parking utilisation survey indicates that:

- The on-site shopping centre car park and the on-street bays are currently utilised between 30% to 40% during Thursday and Saturday respectively and on average about 185 to 210 bays were available during Thursday and Saturday respectively.
- The off-street parking utilisation is expected to be approximately 28% and 40% during Thursday and Saturday respectively.
- The on-street parking utilisation is expected to be approximately 42% and 33% during Thursday and Saturday respectively.
- Zone A, which is the parking area affected by the proposed for the service station site showed utilisation between 19% to 29% during Thursday and Saturday respectively and on average 54 to 61 bays during Thursday and Saturday respectively were available.

Conclusion

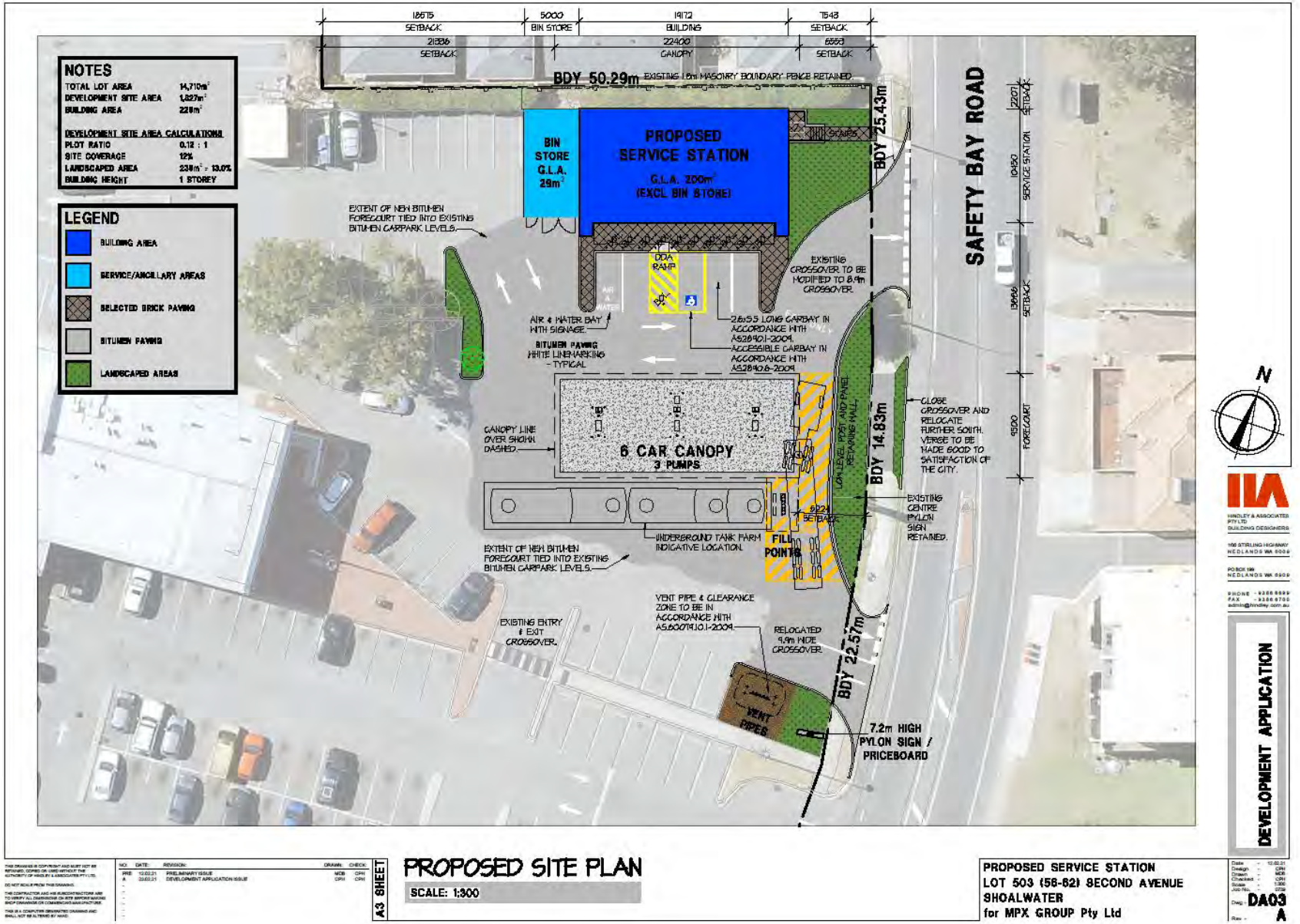
The service station and convenient store is proposed within the north eastern parking area of Shoalwater shopping centre. The proposal will result in a net parking loss of 43 bays within the shopping centre.

Parking utilisation surveys undertaken by Transcore indicated that parking utilisation within the shopping centre and for the on-street bays on abutting roads is approximately between 30% to 40% during Thursday and Saturday respectively and the loss of 43 parking bays within the shopping centre car park would result in an increase in percentage of utilisation to about 39% to 49% during Thursday and Saturday respectively.

The results of the parking surveys indicate that with the service station development within the shopping centre car park there still be significant available bays during the typical peak parking demand for the centre.

Appendix B

PROPOSED DEVELOPMENT PLAN


NOTES
TOTAL LOT AREA 14,710m²
DEVELOPMENT SITE AREA 1,827m²
BUILDING AREA 228m²
DEVELOPMENT SITE AREA CALCULATIONS
PLOT RATIO 0.12 : 1
SITE COVERAGE 12%
LANDSCAPED AREA 238m² = 13.0%
BUILDING HEIGHT 1 STOREY
LEGEND
BUILDING AREA
SERVICE/ANCILLARY AREAS
SELECTED BRICK PAVING
BITUMEN PAVING
LANDSCAPED AREAS
18575 SETBACK
5000 BIN STORE
19172 BUILDING
7543 SETBACK
21336 SETBACK
22400 CANOPY
6553 SETBACK
BDY 50.29m
EXISTING 1.8m MASONRY BOUNDARY FENCE RETAINED
BIN STORE G.L.A. 29m²
PROPOSED SERVICE STATION
G.L.A. 200m²
(EXCL BIN STORE)
SIGNS
BDY 25.43m
SAFETY BAY ROAD
10450 SERVICE STATION
2207 SETBACK
13666 SETBACK
9500 FORECOURT
EXTENT OF NEW BITUMEN FORECOURT TIED INTO EXISTING BITUMEN CARPARK LEVELS.
DDA RAMP
EXISTING CROSSOVER TO BE MODIFIED TO 8.4m CROSSOVER.
AIR & WATER BAY WITH SIGNAGE.
BITUMEN PAVING WHITE LINEMARKING - TYPICAL
2.6x5.5 LONG CARBAY IN ACCORDANCE WITH AS2890.1-2004. ACCESSIBLE CARBAY IN ACCORDANCE WITH AS2890.6-2009.
CANOPY LINE OVER SHOWN DASHED.
6 CAR CANOPY
3 PUMPS
LOW LEVEL POST AND PANEL RETAINING WALL
BDY 14.83m
CLOSE CROSSOVER AND RELOCATE FURTHER SOUTH. VERGE TO BE MADE GOOD TO SATISFACTION OF THE CITY.
EXISTING CENTRE PYLON SIGN RETAINED.
922 SETBACK
UNDERGROUND TANK FARM INDICATIVE LOCATION.
FILL POINTS
EXTENT OF NEW BITUMEN FORECOURT TIED INTO EXISTING BITUMEN CARPARK LEVELS.
VENT PIPE & CLEARANCE ZONE TO BE IN ACCORDANCE WITH AS1940/10.1-2004
EXISTING ENTRY & EXIT CROSSOVER.
RELOCATED 9.9m WIDE CROSSOVER.
BDY 22.57m
VENT PIPES
7.2m HIGH PYLON SIGN / PRICEBOARD
N
HINDLEY & ASSOCIATES PTY LTD BUILDING DESIGNERS
100 STIRLING HIGHWAY NEDLANDS WA 6009
PO BOX 199 NEDLANDS WA 6909
PHONE - 9386 6999
FAX - 9386 6700
admin@hindley.com.au
DEVELOPMENT APPLICATION
A3 SHEET
PROPOSED SITE PLAN
SCALE: 1:300
PROPOSED SERVICE STATION
LOT 503 (58-62) SECOND AVENUE
SHOALWATER
for MPX GROUP Pty Ltd
DA03
A

Appendix C

SWEPT PATH ASSESSMENT PLANS



Lot 503 (56-62) Second Avenue, Shoalwater
Austroads 2013: 19.0m Semi-Trailer
Fuel Tanker Circulation

LEGEND
Vehicle Body
Wheel Path
500mm Clearance

t20.331.sk01a
16/02/2021
Scale: 1:500 @ A3

transcore

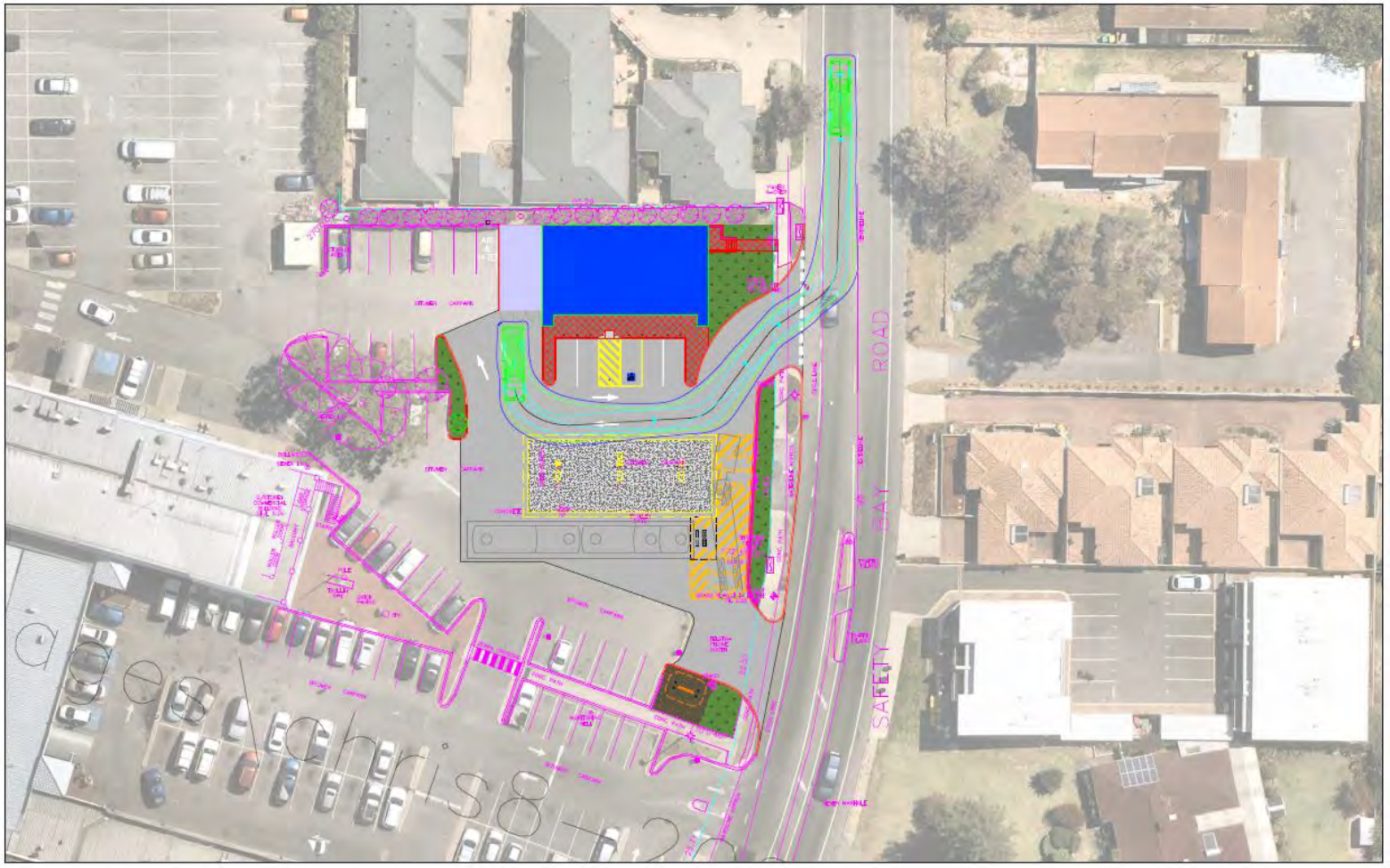


Lot 503 (56-62) Second Avenue, Shoalwater
Austroads 2013: 8.8m Service Vehicle
Service Vehicle Entry

LEGEND
Vehicle Body
Wheel Path
500mm Clearance

t20.331.sk02a
16/02/2021
Scale: 1:400 @ A3

transcore



Lot 503 (56-62) Second Avenue, Shoalwater
Austroads 2013: 8.8m Service Vehicle
Service Vehicle Exit

LEGEND
Vehicle Body
Wheel Path
500mm Clearance

t20.331.sk03a
16/02/2021
Scale: 1:400 @ A3

transcore

transport planning
traffic engineering
transport modelling

Technical Note: No 2	**Date:** 17/12/2021
Project No: t20.331	
Project: Lot 503 (56-62) Second Avenue, Shoalwater	
Subject: Response to City's Comments	

1.0 Introduction & Background

This Technical Note (TN) is prepared by Transcore on behalf of MPX Group Pty Ltd with regard to the proposed service station with convenience store to be located at Lot 503 (56-62) Second Avenue, Shoalwater in the City of Rockingham. The subject site is located within the north east portion of the parking area of Shoalwater Shopping Centre and the Shoalwater Shopping Centre is located at the north west corner of Safety Bay Road and Coventry Road intersection.

Transcore prepared a Traffic Impact Statement (hereafter TIS) for the proposed development in March 2021. Based on the information provided to Transcore, it is understood that the City of Rockingham has provided a number of preliminary comments on the traffic matters associated with the development application.

Accordingly, this technical note is prepared to provide Transcore's responses to City's traffic related comments. It should be noted that this technical note should be read in conjunction with Transcore's TIS (dated March 2021).

The revised development plan (in response to City's comments) is included in **Attachment A** and the updated turn path plans are included in **Attachment B**.

2.0 Preliminary Comments from the City's Technical Areas and Associated Responses from Transcore

The City's comments are presented with dot points and Transcore's responses are presented in "*italic*" format in this technical note.

2.1 Engineering

- Pram ramps are required at proposed crossover locations.

Pram ramps are provided in the revised site plan included in ***Attachment A***.

- The proposed footpath extensions and any pram ramp reconfigurations are to be constructed in accordance with the City of Rockingham engineering standards. All concrete shall be broom finished perpendicular to the direction of pedestrian traffic to provide a non-slip surface in accordance with AS4586. Tactile pavers to be used at pram ramps in accordance with AS1428.4.1.

This is a detailed design issue and can be a condition of approval.

2.2 Traffic

- The proposed relocation for the southern crossover is located too close to the existing crossover to the south (approximately 18.0m separation distance when measured from the centre to centre however the wing for the crossover would be literally touching) and therefore likely to increase traffic safety risks. The City recommends to combine the two crossovers and amend the design accordingly.

If the two crossovers are combined, there will be potential significant impact on parking layout and circulation system of the shopping centre and therefore is considered to be beyond the scope of the service station proposal.

<u>Australian Standard Parking facilities – Part 1: Off-street car parking (AS2890.1)</u>

- AS2890.1 requires that when one side of a car parking bay has a vertical obstruction (i.e. higher than 0.15m) that restricts door opening then the bay width shall be increased by 0.3m. The wall for the proposed bin store would restrict the door opening for the existing car bay locate directly adjacent to it therefore please provide at least 0.3m horizontal clearance to the existing car parking bay.

*The revised site plan attached in **Attachment A** shows that the wall of the bin store has moved approximately 0.7m away from this 'air & water' bay and provide a separation median between the parking bay and bin store wall.*

- AS2890.1 requires a minimum standard car parking bay dimension of 2.6m (width) by 5.4m (length) for this type of land use (i.e. high turnover). Manual measurements from the site plan suggests a proposed car bay width less than 2.6m wide bay is proposed. Please confirm and amend drawing accordingly.

*The revised site plan attached in **Attachment A** indicates that the parking bays located in front of the convenience store are designed as 2.6m (width) x 5.5m (length) in accordance with AS2890.1.*

- AS2890.2 requires a minimum service bay dimension of 3.5m (width) by 8.8m (length) for a Medium Rigid Truck (MRV). The proposed location for the MRV (i.e., in front of the bin store) is not suitable as service bay because there is insufficient space and it will block the internal traffic flow.

*The revised site plan indicates that the proposed bin store design has improved and it provides sufficient area for a Medium Rigid Truck (MRV). The turn path analysis undertaken for an 8.8m service truck (sk02b and sk03b in **Attachment B**) confirms the satisfactory movements of service truck in and out of the service bay without blocking the internal traffic circulation.*

- AS2890.1 requires a minimum gradient of 1 in 100 (1%) so that parking floors will drain adequately for car bays located outdoors. Limited spot levels suggest that the car parking bays are likely to be flat (i.e. 0% gradient) therefore do not comply with AS2890.1. Please amend design accordingly.

This is a detailed design issue and can be a condition of approval.

- AS2890.2 requires a maximum service bay gradient of 1 in 25 (4%) for commercial vehicles (i.e. MRV in this particular case). Limited spot levels suggest that the proposed service bay would have a gradient of approximately 5% therefore does not comply with AS2890.2. Please amend design accordingly.

This is a detailed design issue and can be a condition of approval.

- AS2890.2 requires a maximum driveway gradient of 1 in 20 (5%) for a distance extending from the property line for at least 6.0m or the longest wheelbase of any vehicle likely to use the driveway, whichever is greater. Limited spot levels suggest that the proposed northern crossover has a gradient of approximately 20% therefore does not comply with AS2890.2.

The City recommends that a vertical swept path be provided to assess sufficient vertical clearance to the underside of the commercial vehicles.

This is a detailed design issue and can be a condition of approval.

- The City recommends that additional information be provided regarding the gradient for the site such that a complete assessment could be made.

This is a detailed design issue and please refer to previous responses.

- The City is concerned that there is insufficient queue length provide behind the bowser location. Please provide a queue analysis taking into account random arrival of vehicles and a minimum average service time of five (5) minutes. The City has completed a preliminary queue analysis which suggests that there would be at least three (3) vehicles queuing behind the bowser during cheap fuel days (assuming scale factor of 1.5 to account for cheap fuel days). It should be noted that there is not even sufficient queue length for two (2) vehicles behind the bowser before it will impact upon internal traffic flow.

The 5 minutes average service time is excessive, particularly during the cheap fuel days.

Transcore has undertaken the queue analysis for cheap fuel day scenario and the results are provided and explained in below paragraphs. This analysis is based on the average 3 minutes service time. The 3 minutes average service time has been used by Transcore on many service station application which has been accepted by approval authorities.

The subject service station is proposed to include a total of three dispensers – six filling positions under the canopy (i.e., up to six vehicles can simultaneously refuel at any one time). The dispensers are placed in one-by-three format (one rows of three dispensers)

As discussed in Section 6.2.2 of Transcore's TIS, the highest peak hour trip generation for the fuel bowsers is estimated to be 84 (42 inbound/ outbound) trips during the weekday PM peak hour period. (overall peak fuel bowsers trip generation). In order to ensure the robust assessment, it is conservatively assumed that the trade on "cheap fuel" day would be 50% higher than the typical weekday peak hour. Accordingly, it is assumed that the proposed service station would attract about 63 vehicles during the PM peak hour. It is assumed that all bowsers will be in operation during this peak period and each patron is free to choose which queuing line to join.

Although it is understood that the City suggested to assume 5 minutes service time, the experience indicates that under normal circumstances the rate of service per fill point (time taken for a customer to park at a fill point, get fuel, pay for fuel and leave the fill point and service station site) is usually between 2-3 minutes during peak times. However, during the "higher than average" scenario due to high turnover of vehicles and "pressure" from other patrons waiting to access the

bowsers, the refuelling activity during these periods is shortened but still assumed to be at the higher end of typical range – i.e., 3 minutes service time assumed.

Accordingly, a service rate of 180 seconds (60/3 = 20 vehicles per hour per fill point) is assumed for the "cheap fuel" day peak hour. Assuming that all bowsers will be in operation during the peak period result in a service rate of (20 vehicles x 6 bowsers = 120) vehicles per hour for a "cheap fuel" day scenario. This analysis indicates that conservatively the proposed fuel bowsers can service 57 more vehicles than the highest peak hour trip rate.

As an alternative methodology to the stacking capacity analysis, Transcore has undertaken a queuing analysis modelling for "cheap fuel" day scenario. This queuing analysis was undertaken to access the provision of storage for vehicles within the service channels. For this purpose, an M/M/1 queuing model was adopted for each bowser. The M/M/q is a single-server queue model that can be used to approximate simple systems.

The queueing model adopts the following assumptions:

- *Vehicles arrive randomly following Poisson's probability distribution;*
- *Service time is exponentially distributed;*
- *There is one server per queue;*
- *The capacity of the queue in which arriving users wait before being served is infinite (for the purpose of identifying queue space requirements);*
- *The population of users (i.e., the pool of users) available to join the system is infinite; and,*
- *The queue is serviced on a first come, first served basis.*

The results of the queuing analysis are detailed in ***Figure 1****.*

M/M/s - Car Park Queuing Analysis (Poisson Arrival and Service Rates)

M/M/s	vph	vps
Arrival rate	63	0.0175
Service rate	20	0.005556
Number of servers	6	6

Utilization	52.50%		52.50%	
P(0), probability that the system is empty	0.0419		0.0419	
Lq, expected queue length	0.1323	(cars)	6.0000	(metres)
L, expected number in system	3.2823	(cars)	24.0000	(metres)
Wq, expected time in queue	0.0021	(hours)	7.5600	(seconds)
W, expected total time in system	0.0521	(hours)	187.5600	(seconds)
Probability that a customer waits	0.1197		0.1197	
95% Queue	7.0000	(cars)	42.0000	(metres)

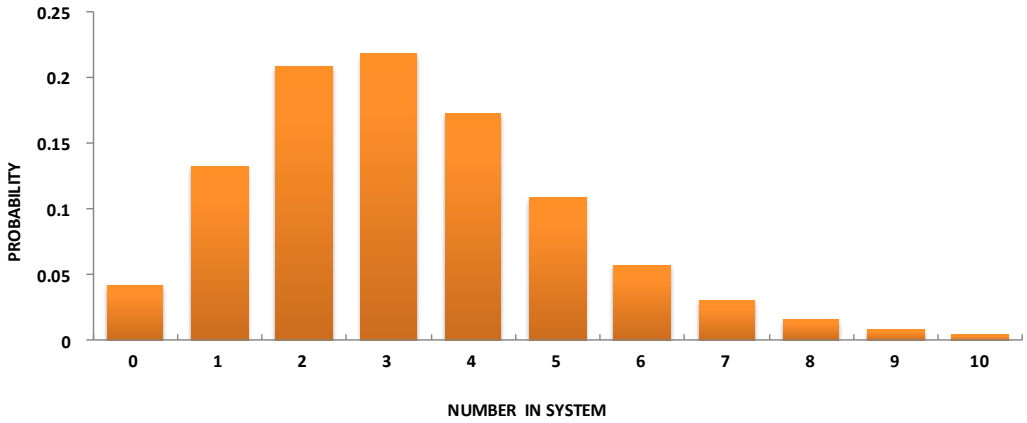


Figure 1. "Cheap fuel" PM peak hour queuing analysis

In summary, critical "cheap fuel" PM peak hour queuing analysis of the proposed fuel bowsers established the following:

- *The system utilisation rate is about 53% during the "cheap fuel" PM peak hour;*
- *The number of fill points in the system (refuelling) is 6;*
- *The expected number in the system is 3 vehicles;*
- *The expected time in the queue for a vehicle to get to a fill point is 8 seconds;*
- *The expected total time in the system is 188 seconds; and,*
- *The 95th percentile queue within the whole system is 7 vehicles during the weekday "cheap fuel" PM peak hour.*

The queuing usually adopted for robust analysis is the 95th percentile queue. Assuming equal queue distribution, it is estimated that in the PM peak hour, there will be 1 vehicle waiting behind refuelling vehicles at 6 bowsers.

However, in addition to the 6 vehicles parked at the bowsers, at least another 9 vehicles can be stacked behind the cars filling up at the bowsers without impacting the traffic circulations as shown in ***Figure 2****. This is 8 vehicles more than the 95th percentile (7 vehicles) queue reported during the "cheap fuel day" PM peak hour. Therefore, it is concluded that under typical peak conditions all queuing will be accommodated within the site and no stacking or queue backs onto Safety Bay Road are expected.*

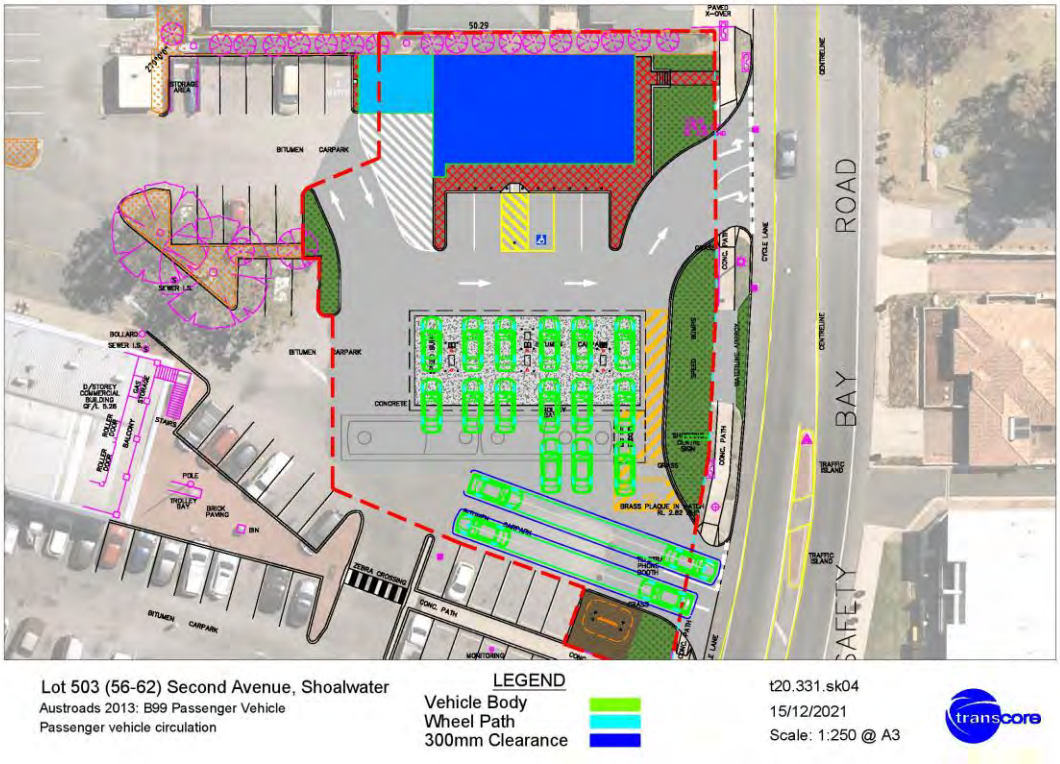


Figure 2. Queue Assessment Plan

- The existing shopping centre pylon sign is proposed to remain however with the proposed "*Tanker Standing Area*", this pylon is now located too close to the road pavement. At least 1.0m horizontal clearance is required to the road pavement.

The road pavement referred to is internal to the site as per existing situation and therefore this comment is not appropriate. Nevertheless, the revised site plan attached in ***Attachment A*** *shows that the landscape area has been widen and approximately 2.0m separation is provided between the existing shopping centre pylon sign and the internal pavement area.*

- The proposed extent of the "*New Bitumen Forecourt*" suggests that it will block some internal traffic flows within the site. Please provide more information on how the traffic would be managed during the construction stage.

This is not a matter for DA stage. A construction management plan will be prepared for the construction phase of the project.

- The City has completed a traffic analysis which suggest that turn treatments would be required at the proposed access off Safety Bay Road in accordance with Austroads' *Guide to Traffic Management Part 6 – Intersections, Interchanges and Crossings* and MRWA's Supplement to Austroads' guidelines. The required turn treatments are detailed as follows;
    - Auxiliary Right Turn (AUR)
    - Auxiliary Left Turn (AUL(S))

    The City understands that there is no turn treatments provided at the existing crossovers along Safety Bay Road however there is a central median provided directly adjacent to the shopping centre therefore this treatment should continue to the north (i.e. adjacent to the proposed service station) as a minimum.

This request is considered to be unreasonable. There are no turn lanes at all at any of the existing intersections or crossovers along this section of Safety Bay Road or for any of the intersections or crossovers on any other roads in the area. Notwithstanding the theoretical requirement in accordance with the book, the provision of turn lanes for this development are not feasible as they impact on existing crossovers and access points on both side of Safety Bay Roads.

- The City has completed a sight distance assessment at the two crossovers dedicated for the service station and found that the existing pylon (when there is non-permanent signage on the ground) and the proposed service station pylon would restrict sight distance because of the road alignment. Please relocate the signage accordingly.

*The location of the pylon sign is now changed in the latest plan. Transcore has undertaken the sight distance assessments for the proposed new location of the pylon sign for both northern and southern proposed crossovers on Safety Bay Road and the sight distance assessment plans are provided in **Figure 3** and **Figure 4**. The Australian Standard (AS2890.1 Figure 3.2) requires that the sight line to the frontage road should be measured from 2.5m back from the edge of the frontage road. As evident, the sight lines requirements of 65m for speed limit of 60km/h frontage road speed is satisfied in this instance for both northern and southern crossovers on Safety Bay Road.*

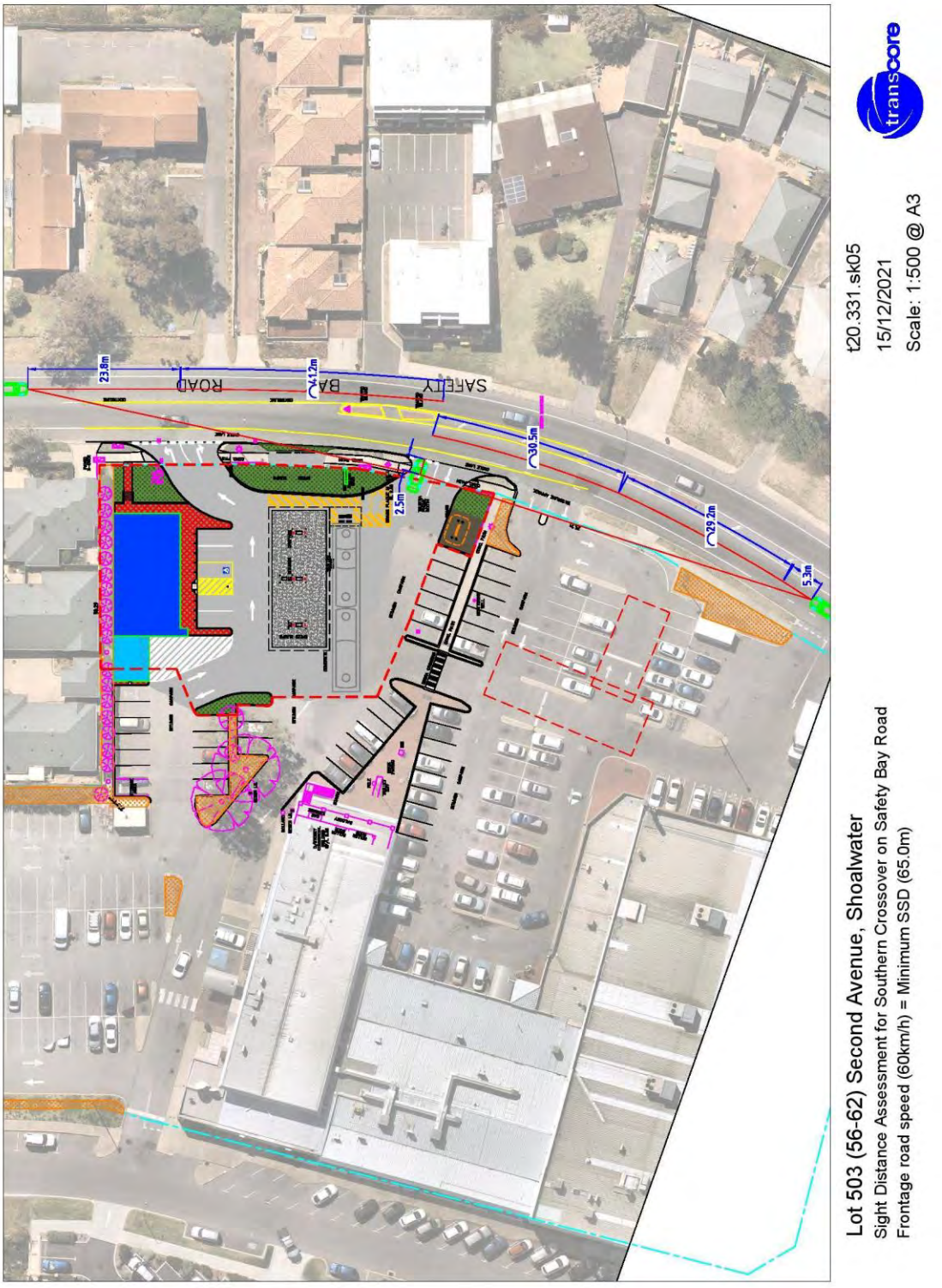


Figure 3. Sight Distance Assessment (Southern Crossover on Safety Bay Road)

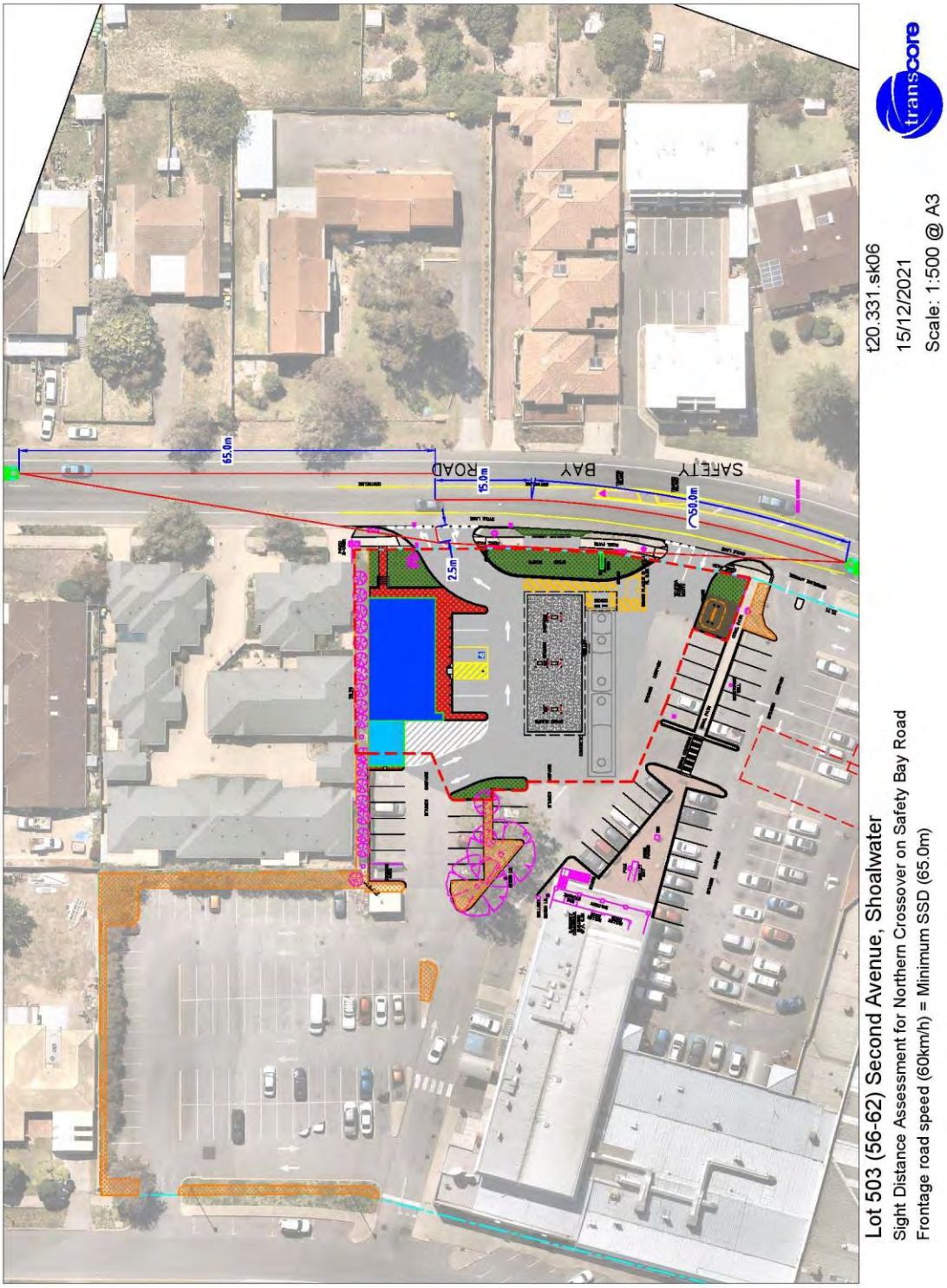


Figure 4. Sight Distance Assessment (Northern Crossover on Safety Bay Road)

- The City is concerned that vehicles may encroach significantly to the opposing traffic lane near the northern crossover, and recommends that a one-way system be adopted (i.e. entry only for the southern crossover and exit only for the northern crossover).

*One way traffic system is adopted in the revised development plan (please see **Attachment A**). Accordingly, the northern crossover on Safety Bay Road is converted to "exit only" crossover. Please note that the southern crossover on Safety Bay Road remains as "full movement" crossover as it also serves not only the proposed service station, but also the existing shopping centre.*

- Please consider providing means for universal access between the existing footpath and the proposed store for the service station.

This is a detailed design issue. However, it is understood that the revised site plan provides the universal access between the existing footpath and the proposed store for the service station.

- Please confirm the location of the "*Air & Water*" bay as the drawing suggest it is located in front of the store for the service station however in the noise report it is located adjacent to the bin store.

The revised site plan indicates that "Air & Water" bay is proposed adjacent to the bin store.

- The dimension for an "*Air & Water*" bay is normally wider than a normal bay to allow more room around the car. Please consider increasing it to be at least 3.2m wide (i.e. 2.6m standard bay with a 0.3m horizontal clearance on either side).

If deemed necessary by the operator, this can be achieved by adjusting the size of the bin store or by adjusting the shape of it.

- The dimension MRWA's Policy and Application Guidelines for Advertising Signs provides recommendations on the maximum values for luminance under varying ambient lighting conditions. Please ensure that the following maximum luminance values are adhered to; This can be achieved.

  Daytime - 6,000 cd/m2
  Dawn/Dusk - 600 cd/m2
  Night - 300 cd/m2

This can be achieved.

- Please provide a better resolution for the swept path analysis such that a more thorough assessment could be made.

Transcore will provide better resolution plans and the revised turn path plans are included in ***Attachment B****.*

- The City has some major concerns regarding the provided swept path analysis:

The following comments appears to be based on inappropriate reading of the turn path plans or lack of understanding of how commercial sites are designed and operated and the fact that how service vehicles are permitted to maneuver within a commercial site in accordance with relevant guidelines and standards.

- Potential clash with kerbing - (*Not correct*);
- Travelling across the proposed crossover (i.e., if there are vehicles waiting to exit at the crossover then the commercial vehicles would be restricted and would impact on flow along Safety Bay Road) - (*Not correct*);
- Encroaching into the fuel canopy (i.e., turning movements would be restricted if there are vehicles within the canopy) – (*Not an issue*);
- Reversing movement along a circulating roadway which increases traffic safety risks – (*Not an issue*);
- Blocking traffic flow which is not acceptable – (*Not an issue*);
- Travelling in the opposite traffic lane which increase traffic safety risks – (*Not an issue*); and,
- Encroaching into the parking bays – (*Not correct*).

<u>Transport Impact Statement (TIS)</u>

- The City provides the following comments regarding the Transport Impact Statement (TIS, dated 4th March 2021);

- Section 2 mentioned that "*A designated service vehicle bay located in front of the bin store area*". The City does not support this proposed service bay location because there is insufficient dedicated space and it will restrict the internal traffic flow.

Please refer to the previous response to the same point. There is now adequate space as demonstrated by the revised plan and revised turn paths attached.

- Section 3.1 mentioned that "*The fuel tanker would enter the site from crossover 1 and would exit in forward gear from crossover 2*". Please confirm the route for the fuel tanker would always be northbound (i.e. it will not turn right at the northern crossover).

Yes, it would be.

- Section 3.1 mentioned that "*The location and layout of the crossovers are satisfactory*". Please refer to the City's comments in the previous section because the City has concerns regarding the location and layout of the crossover.

Please refer to the previous response to the same point.

- Figure 3 suggests that the fuel tanker would be encroaching into the canopy which is not acceptable because its movement would be restricted when there is a vehicle stopping at the eastern most bowser location.

This fill point will be coned off during the fuel delivery operation. However, the fuel tanker would only service the site 2 to 3 times per week and generally outside peak operating conditions.

- Section 3.2 mentioned that "*Based on the information provided to Transcore, it is our understanding that the proposed car parking spaces are in accordance with relevant requirements*". The City disagrees with this statement because the car parking area has not been designed in accordance with AS2890. Please refer to previous section for details.

This statement by Transcore is relevant to number of parking bays and not the design of the parking bays. Further, the proposed new parking bays in front of the shop have been widened to 2.6m.

- Section 4 mentioned that "*Service vehicles are expected to access the site no more than 3-4 times a week and generally outside the peak road network and peak site activity periods*". Please note that this is difficult to manage as normally service vehicles would come at a time that suits them which could be during peak hours.

This is normal practice and service vehicle deliveries are scheduled.

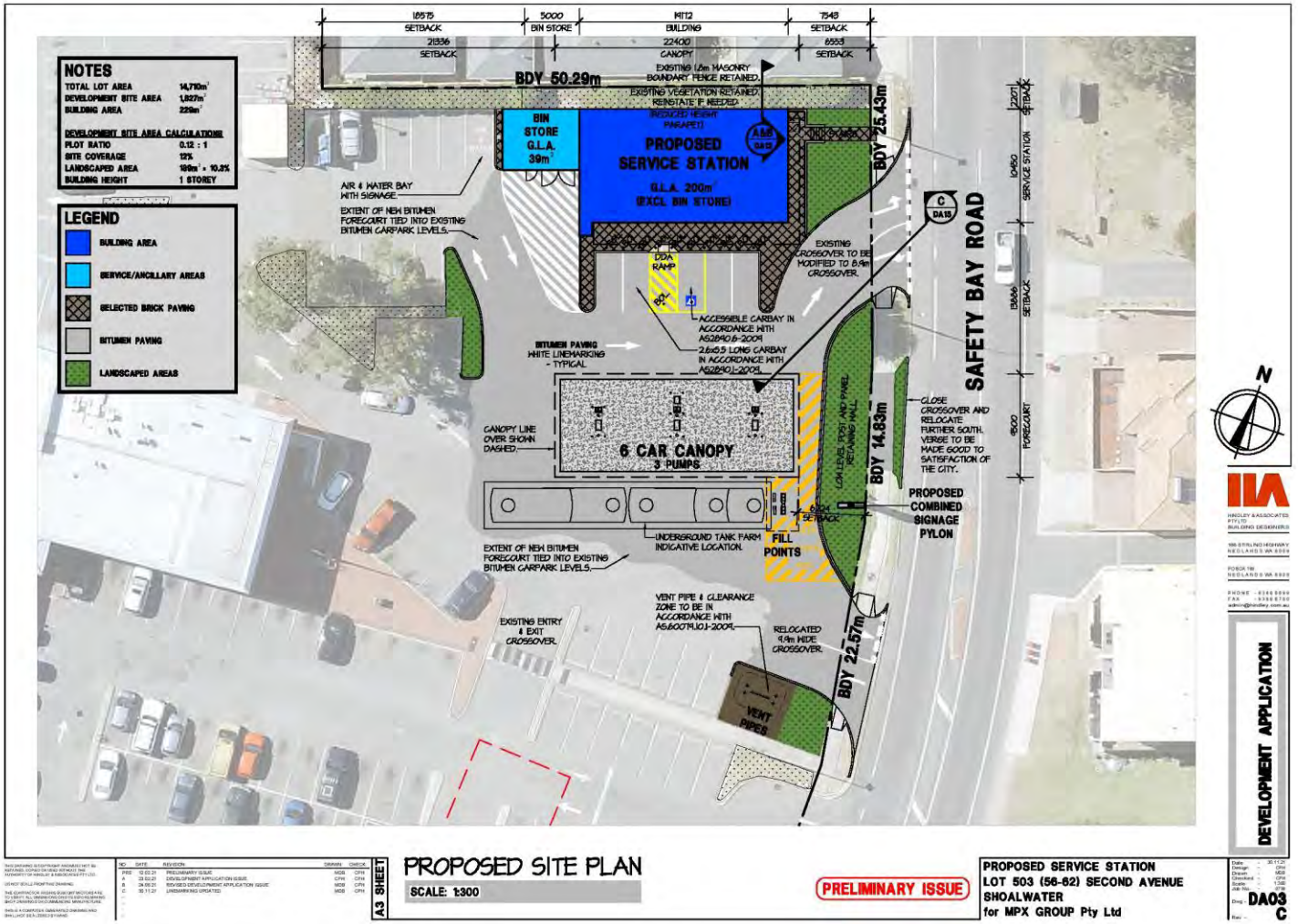
- Section 4 mentioned that "*Assuming a trip rate of 2vph per bay would result in existing trip generation of about 28vph for a Saturday. It is assumed that for a weekday the parking area trip generation is 50% of Saturday trip generation*". Please provide the reference used for these assumptions. It is noted that this is unlikely to change the outcome of the report.

This is an assumption and a very reasonable one and has been accepted for many previous projects.

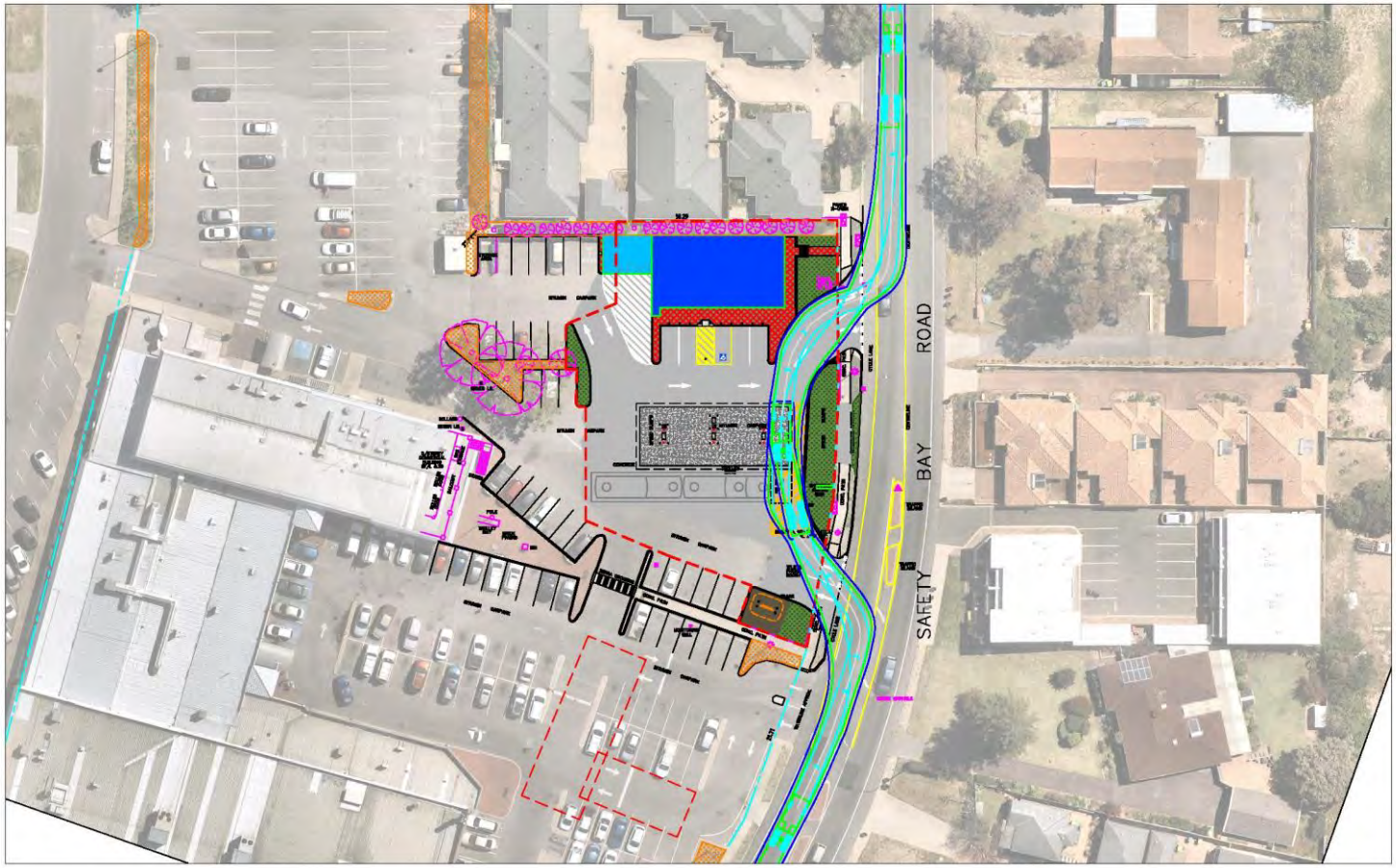
- The City has concerns regarding the provided swept path analysis. Please refer to previous sections for details.

This concern is due to misreading the turn path plans. Please refer to the higher resolution turn paths provided.

Attachment 1: Proposed Revised Development Plan



Attachment 2: Revised Turn Path Plans

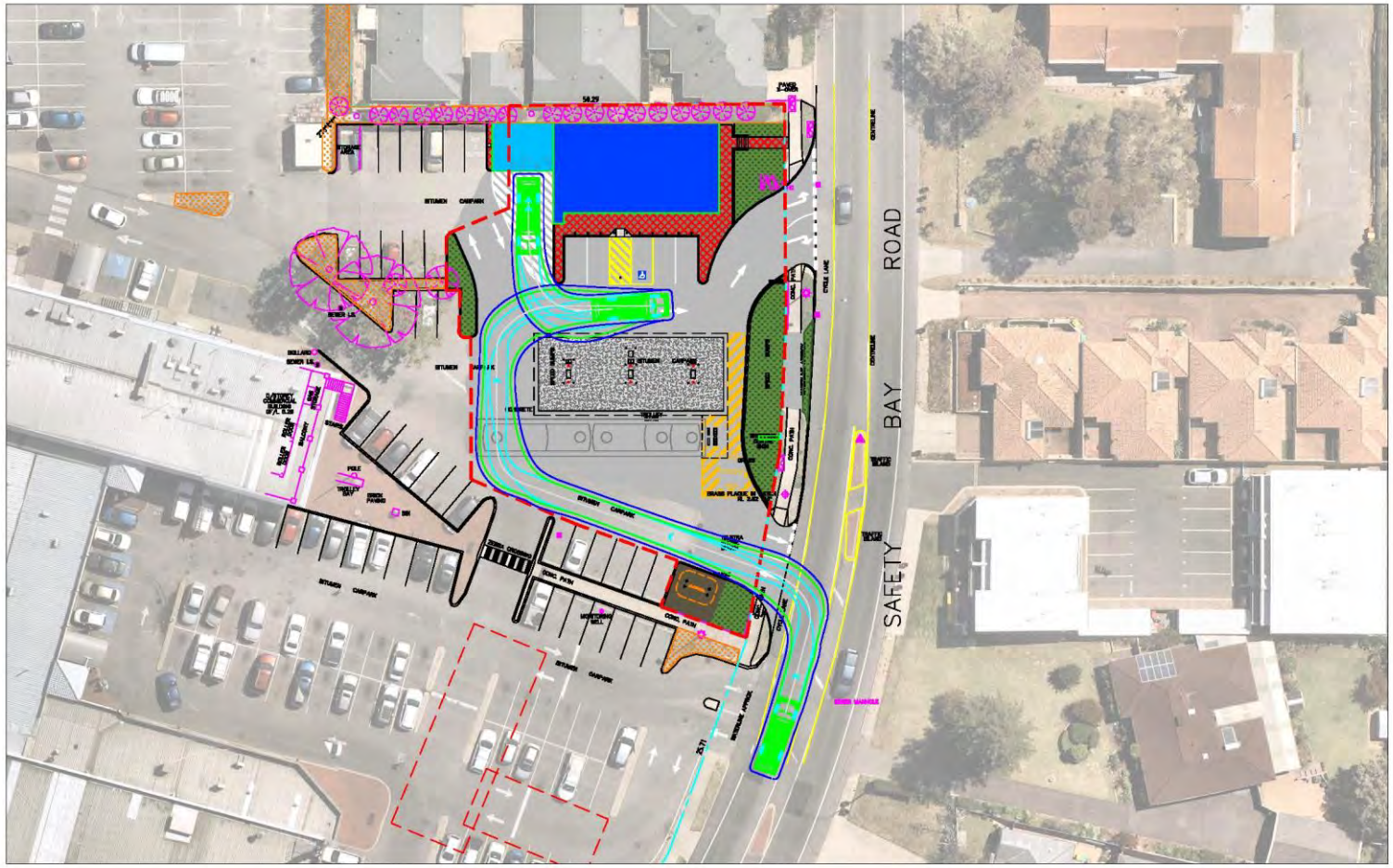


Lot 503 (56-62) Second Avenue, Shoalwater
Austroads 2013: 19.0m Semi-Trailer
Fuel Tanker Circulation

LEGEND
Vehicle Body
Wheel Path
500mm Clearance

t20.331.sk01b
15/12/2021
Scale: 1:500 @ A3

transcore

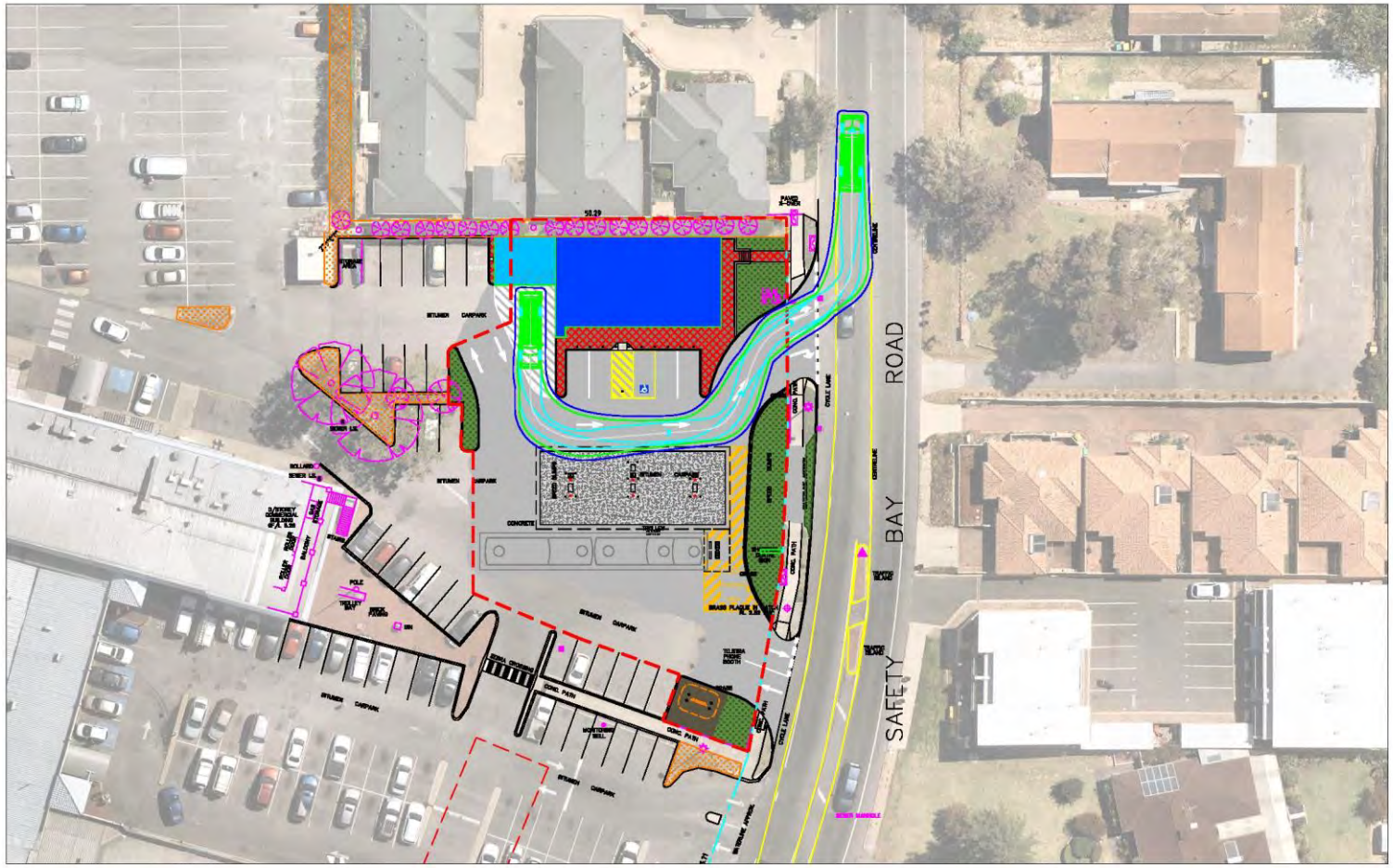


Lot 503 (56-62) Second Avenue, Shoalwater
Austroads 2013: 8.8m Service Vehicle
Service Vehicle Entry

LEGEND
Vehicle Body
Wheel Path
500mm Clearance

t20.331.sk02b
15/12/2021
Scale: 1:400 @ A3

transcore

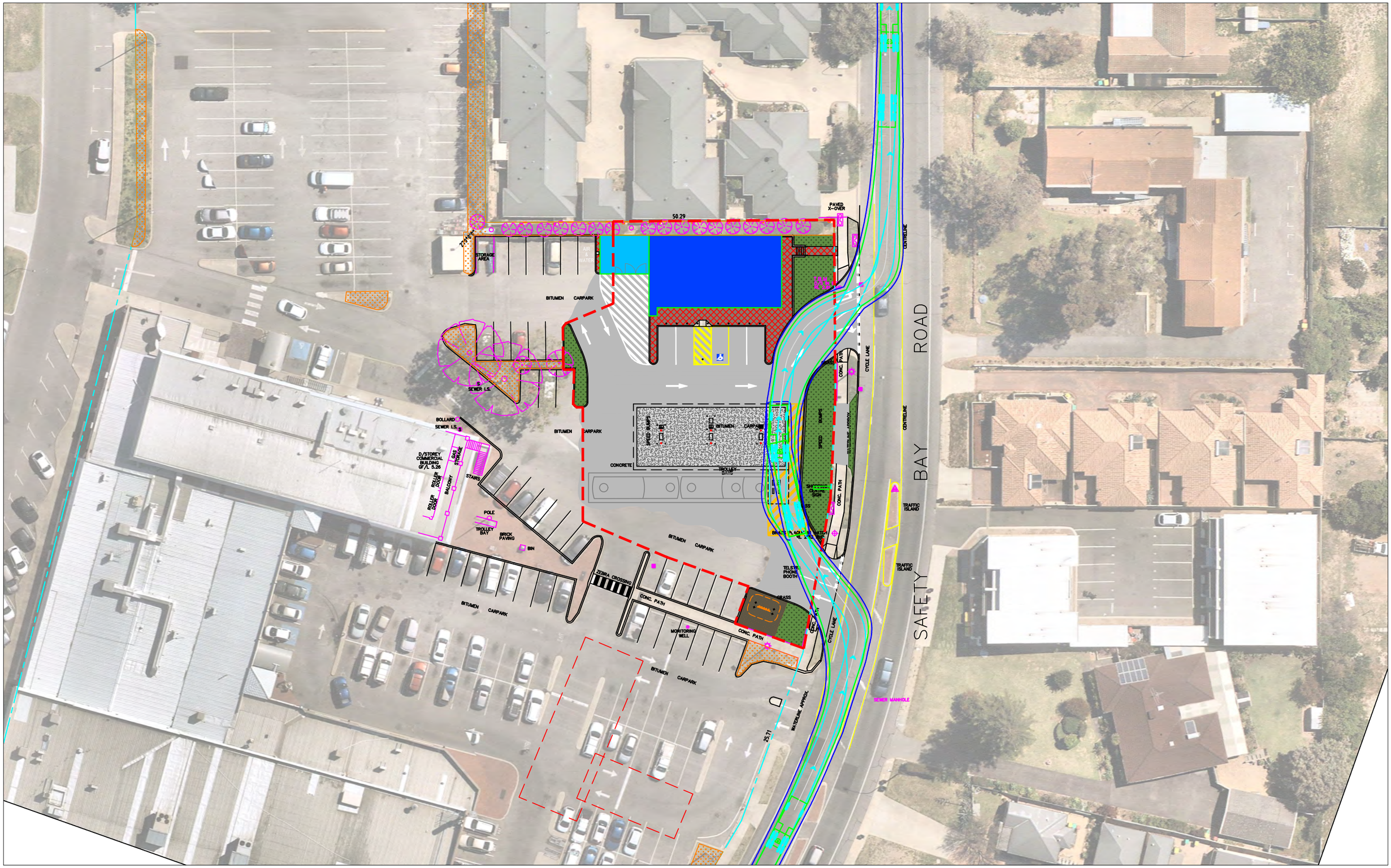


Lot 503 (56-62) Second Avenue, Shoalwater
Austroads 2013: 8.8m Service Vehicle
Service Vehicle Exit

LEGEND
Vehicle Body
Wheel Path
500mm Clearance

t20.331.sk03b
15/12/2021
Scale: 1:400 @ A3

transcore



Lot 503 (56-62) Second Avenue, Shoalwater

Austroads 2013: 19.0m Semi-Trailer

Fuel Tanker Circulation

LEGEND

Vehicle Body

Wheel Path

500mm Clearance

t20.331.sk01b

15/12/2021

Scale: 1:500 @ A3

transcore



Lot 503 (56-62) Second Avenue, Shoalwater

Austroads 2013: 8.8m Service Vehicle

Service Vehicle Entry

LEGEND

Vehicle Body

Wheel Path

500mm Clearance

t20.331.sk02b

15/12/2021

Scale: 1:400 @ A3

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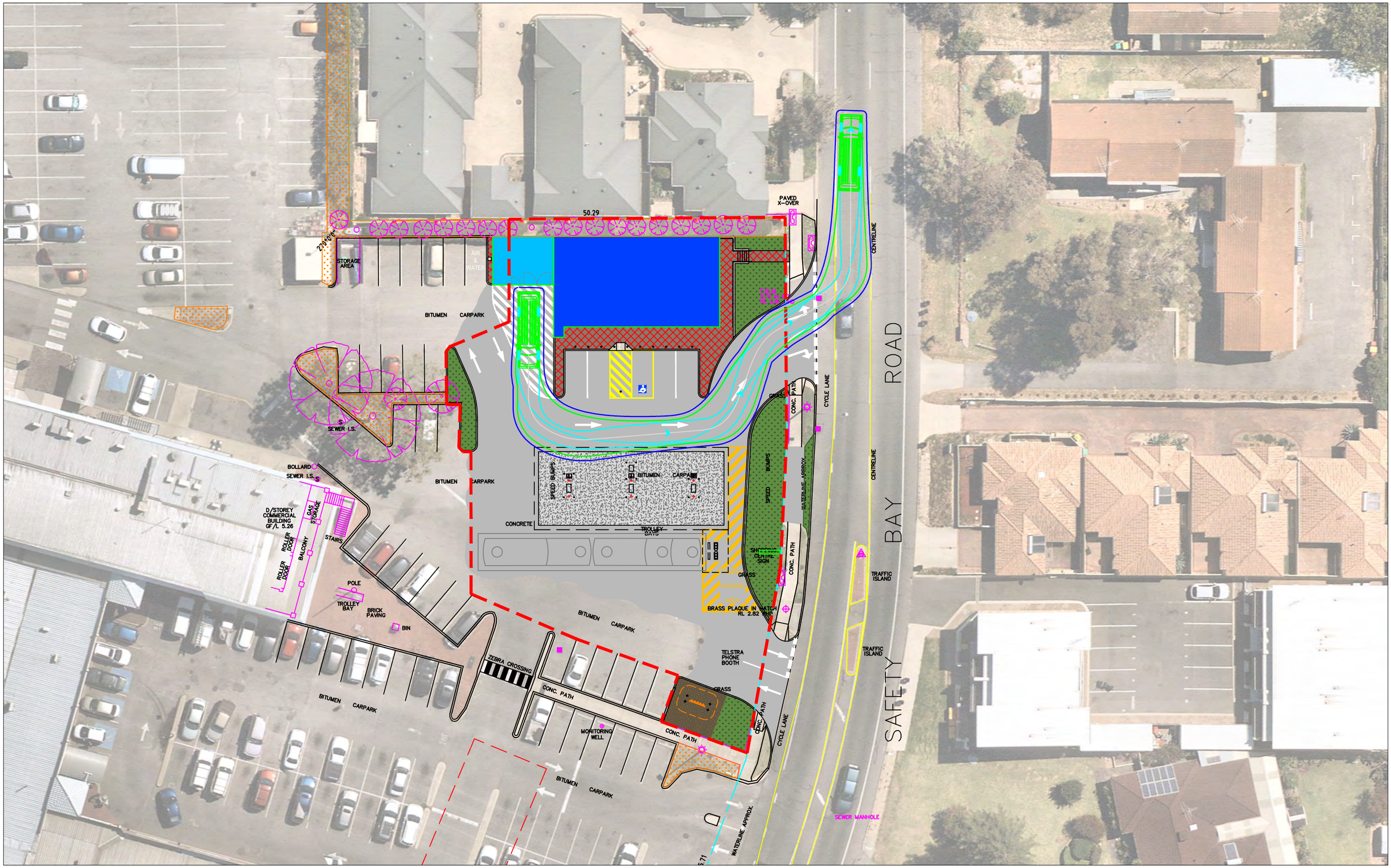

Lot 503 (56-62) Second Avenue, Shoalwater

Austroads 2013: 8.8m Service Vehicle

Service Vehicle Exit

LEGEND

Vehicle Body

Wheel Path

500mm Clearance

t20.331.sk03b

15/12/2021

Scale: 1:400 @ A3

transcore

EAQ Consulting

EMISSIONS IMPACT ASSESSMENT OF PROPOSED 24HR SERVICE STATION

LOT 503, 56-62 SECOND AVENUE, SHOALWATER, WESTERN AUSTRALIA

Emissions Impact Assessment of Proposed 24Hr Service Station

Lot 503, 56-62 Second Avenue, Shoalwater, Western Australia

Prepared for: MPX Group Pty Ltd

Project Ref: EAQ-21033

March 2022

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Draft_1.0	Released to Client	01.12.2021	J. Hurley	MPX
Final		22.12.2021		
Final	Revised due to error in bowser numbers	21.03.2022	J. Hurley	

Approved for Release		
Name	**Position**	**File Reference**
John Hurley	Principal Consultant	EAQ21033-ShoalwaterServiceStation+EmissionsImpactAssessment-FINAL

Signature



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This document presents the outcomes of a Desktop Emissions Modelling Assessment. All emissions inputs into the model were sourced from previous site-specific measurements, from peer reviewed public domain data and/or industry specific emissions' factor publications except where detailed otherwise herein. EAQ has not attempted to verify externally sourced data beyond its use herein. The modelling assessment has been prepared using the best available information provided by the Client and in conjunction with regulatory guidance from the appropriate regulatory jurisdiction(s), either State-wide or Nationally. EAQ has exercised its diligence and due-care in delivering the outcomes of the assessment according to accepted assessment practices and techniques. EAQ disclaims any and all liability and responsibilities for damages of any nature, to any party, which may be caused from misapplication or misinterpretation by third parties of this assessment

Contents

Executive Summary 6

1 Background & Scope 7

1.1 Assessment Scope 7

1.1.1 Legislative Context 7

1.1.2 Assessment Substances 8

1.2 Guidance for Assessing Impacts 9

1.3 The Site 9

2 Emission Estimation 14

2.1 Bulk Deliveries and Emissions 14

2.2 VOC Emissions 15

2.3 Site Operational Data 16

2.4 Derived Emission Factors 16

2.4.1 Fuel Throughput Trends 17

3 Aermod Dispersion Modelling Methods 20

3.1 Meteorology 20

3.2 Sensitive Receptors 20

3.3 Building Profile Input Program (BPIP) 20

3.4 Dispersion Modelling Limitations 20

4 Assessment Results & Discussion 21

Appendix A: Emissions Calculations 23

Appendix B: Meteorological Development 24

Appendix C: Example of AERMOD Input File 25

Figures

Figure 1-1: Shoalwater Locality & Proposed Service Station Site 11
Figure 1-2: Lot 503 (56-62) Second Avenue, Shoalwater 12
Figure 1-3: Lot 503 (56-62) Second Avenue, Shoalwater (Proposed Service Station) 13

Tables

Table 1-1: WA EPA Guidance for Separation Distances – Service Station 8
Table 1-2: Assessment Substances (pollutants) 8
Table 1-3: Assessment Criteria for Toxic Substances 9
Table 2-1: Example of Bulk Fuel Delivery Schedule (L/hr) 15
Table 2-2: Composition of Petrol (NPI, 1999) 15
Table 2-3: Proposed Service Station Operating Detail 16
Table 2-4: Emissions Factors for Service Stations 16
Table 2-5: Representative Service Station Fuel Throughputs (BCC, 2017) 17
Table 2-6: Factored Total VOC Emission Rates per Hour 18
Table 2-7: Summary of Service Station Emissions 19
Table 4-1: Assessment Results for GLC's of Pollutants 22

Executive Summary

Environmental and Air Quality Consulting Pty Ltd undertook an Air Emissions Assessment of a proposed service station to be located at Lot 503, 56-62 Second Avenue, Shoalwater Western Australia.

The site-specific scientific study addressed the short-term exposure and long-term health risks associated with vapour emissions from the service station.

The service station is part of a redevelopment of an existing commercial site currently occupied by the Shoalwater Super IGA and supporting shops and food outlets within the overall adjacent shopping centre.

The Site is within an urban developed area with residential properties surrounding, and adjacent to the north and east of the Site.

The Assessment utilised accepted standards for estimating pollutant emission rates of primary airborne pollutants from fuel storage and refuelling activities at the service station and assessed these pollutant emission rates utilising conventional dispersion modelling methods to predict the concentration of primary pollutants at the nearest sensitive receiver within the locality.

The outcomes of the Assessment found that the primary pollutants of Benzene, Toluene, Ethyl benzene, Xylenes, Cyclohexane, *n*-Hexane and Styrene were predicted to have ground level concentrations lower than acceptable exposure limits set by the National Environment Protection (Air Toxics) Measure and other relevant jurisdictional recommendations.

The predicted low concentrations of these primary pollutants demonstrated that the service station emissions will not have an unreasonable impact on the health of existing sensitive receptors or sensitive land uses.

1 Background & Scope

Environmental & Air Quality Consulting Pty Ltd (EAQ) was engaged by MPX Group Pty Ltd (MPX) to undertake an Air Emissions' Impact Assessment (the Assessment) of a proposed 24-Hour Service Station (the Site) to be located at Lot 503, 56-62 Second Avenue, Shoalwater Western Australia.

The Assessment addressed toxic emissions of principal chemical compounds in petrols by undertaking a site-specific scientific Assessment into the short and long-term health risks associated with vapour emissions from the Site.

Vapour emission rates assessed were developed from:

- NPI Emission Estimation Technique Manual (NPI, 1999) for Aggregated Emissions from Service Stations (Environment Australia);
- Air Toxics "Hot Spots" Program: Gasoline Service Stations Industry wide Assessment Guidelines – Toxics Committee of the California Air Pollution Control Officers Association (CAPCOA, 1997); and
- Brisbane City Council methodology for service stations (BCC, 2017).

The BCC, 2017 methodology was utilised to derive hourly throughput rates for service stations based on normal and peak traffic flows.

1.1 Assessment Scope

The Assessment was undertaken to determine the extent of offsite pollutant impacts beyond the boundary of the Site and subsequently determine the risk of health and amenity impacts for existing and future sensitive receivers and/or sensitive land uses (receptors).

The Assessment predicted ground level concentrations (GLCs) of various pollutants from vapour losses using regulatory standard dispersion modelling techniques.

The predicted GLCs were compared to the regulatory criteria for each pollutant assessed to determine if those GLCs would cause a health or amenity impact at the nearest receptor.

The model of choice was Aermod and its supporting pre- and post-processors.

1.1.1 Legislative Context

The Western Australia (WA) Environmental Protection Authority (EPA) 2005 Guidance for the Assessment of Environmental Factors document, *Separation Distances between Industrial and Sensitive Land Uses* recommends a buffer separation distance for Service Stations and the nearest sensitive receptor is as follows:

Table 1-1: WA EPA Guidance for Separation Distances – Service Station

50 m	Operating during normal business hours of Monday – Saturday from 0700 – 1900 hours
100 m	Freeway service stations
200 m	Service stations in operations for 24 hours daily

The proposed Site activity is not a Prescribed Premise with regard to the WA Department of Water and Environmental Regulation (DWER).

On this basis the EPA recommended buffer of 200 m implies that where the separation distance is not met, a further assessment of applicable emissions should be undertaken to support the application and thus inform the risk of health and amenity impacts at the nearest receptor.

"Sensitive land uses include residential development, hospitals, hotels, motels, hostels, caravan parks, schools, nursing homes, child care facilities, shopping centres, playgrounds and some public buildings. Some commercial, institutional and industrial land uses which require high levels of amenity or are sensitive to particular emissions may also be considered "sensitive land uses". Examples include some retail outlets, offices and training centres, and some types of storage and manufacturing."

The nearest existing and future sensitive receptors (urban) are approximately 40 metres (m) to the north of the proposed Site. This distance of 40 m is from the nearest emission source at the Site which is the nearest re-fueling bowser.

The emission sources at the Site comprise the ventilation of the sub-terrain fuel storage tanks, and the refuelling bowsers (3 of). Incidental spills can also be a source of vapour release, albeit minor. Emission sources are primarily passive vapour losses from refilling (storage tanks) and bowser refuelling processes.

1.1.2 Assessment Substances

Principal chemical compounds (pollutants) typically emitted from service station activities are listed below. These compounds are part of the Total VOCs emitted; which are assessed in the first instance, and those individual pollutant contributions are then derived based on the percentage contribution of those pollutants within the Total VOC emissions.

Table 1-2: Assessment Substances (pollutants)

Pollutant	
Benzene	Cyclohexane
Toluene	*n*-Hexane
Ethyl benzene	Styrene
Xylenes	

1.2 Guidance for Assessing Impacts

The National Environment Protection (Air Toxics) Measure (NEPM) prescribes ambient air emission limits for a range of air toxics' pollutants. These limits, together with other jurisdictional recommendations and those of the WA DWER have been adopted for this Assessment. These receptor exposure limits are listed in **Table 1-3** to follow.

Table 1-3: Assessment Criteria for Toxic Substances

Substance	Averaging Period	Criteria Source	Maximum (ambient) concentration	
			ppm	µg/m³ at 25°C
Benzene	Annual	NEPM 2011	0.003	9.6
Toluene	24 hour	NEPM 2011	1	3,770
	Annual		0.1	377
Ethyl benzene	1 hour	EPA NSW 2016	1.8	8,000
	Annual	Toxicos 2011		270
Xylenes	24 hours	NEPM 2011	0.25	1,080
	Annual		0.2	870
Cyclohexane	1 hour	EPA NSW 2016	5	190
***n*-Hexane**			0.9	3,200
Styrene	1 hour	Dept. of Health WA	70	64

1.3 The Site

The Assessment Site is located at Lot 503, 56-62 Second Avenue, Shoalwater Western Australia. It is bordered by Coventry Road and Safety Bay Road. Currently the Site is being utilised as parking bays for the adjoining Super IGA and associated shopping outlets within the adjacent shopping centre.

Residential receptors are adjacent to the Site on the northern boundary, across the road on the eastern boundary and approximately 100 m or more to the west and south of the Site and it's refuelling bowsers.

The proposed service station will comprise the following main features:

- 3 bowser ranks comprising a total of 6 bowser outlets at any one time;
- 5 parking bays;
- Convenience store;
- The types of fuels proposed are;
    - Diesel (40 kL),
    - Ultimate Diesel (30KL),
    - ULP 91 (40 kL),
    - ULP 95 (25 kL),
    - ULP 98 (25 kL),
- Bulk refuelling events will take place up to three times weekly, or every 2.2 days annually averaged;

    - Tanker delivery of up to 800 Litres per minute (48,000 Litres per hour).
- Average refuelling volume daily approximately 15,000 Litres; and
- The peak flow of vehicles that can be accommodated, based on a refuelling time of 5 minutes per vehicle (highly conservative) for an averaged fuel volume of 35 L is 72 per hour (6 refuelling at once),
    - However, based on the types of fuels, volumes stored and locality; the anticipated throughput of the Site is markedly overstated and will have significantly lower vehicle throughputs, where:
        - The volume of fuels stored and dispensed fuel estimate the peak is likely to be 27 per hour based on peak volume of 915 L for an average of 35 L vehicle capacity.

The Locality of the Site and the Site design are illustrated in the following Figures.



Figure 1-1: Shoalwater Locality & Proposed Service Station Site

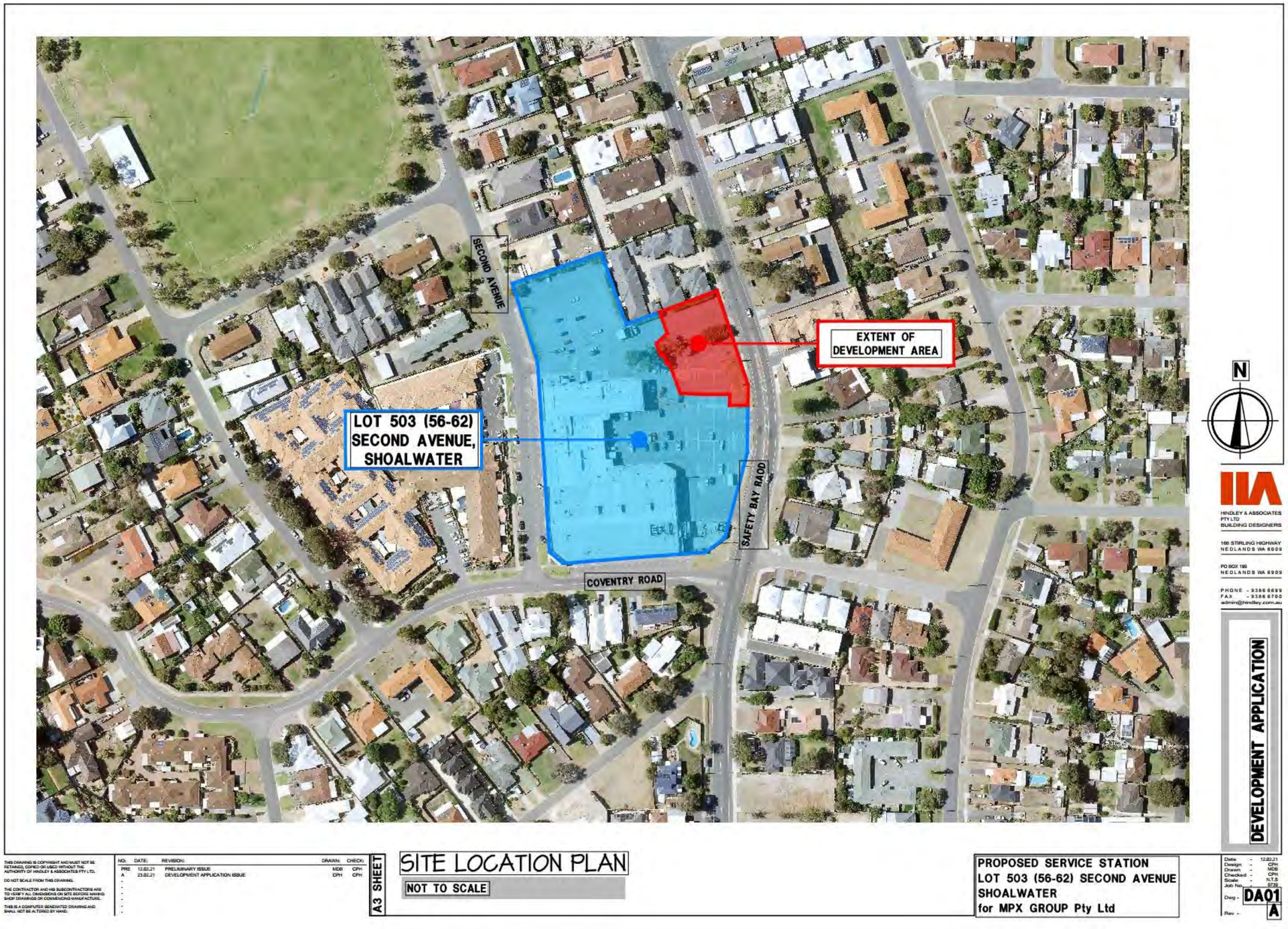


Figure 1-2: Lot 503 (56-62) Second Avenue, Shoalwater

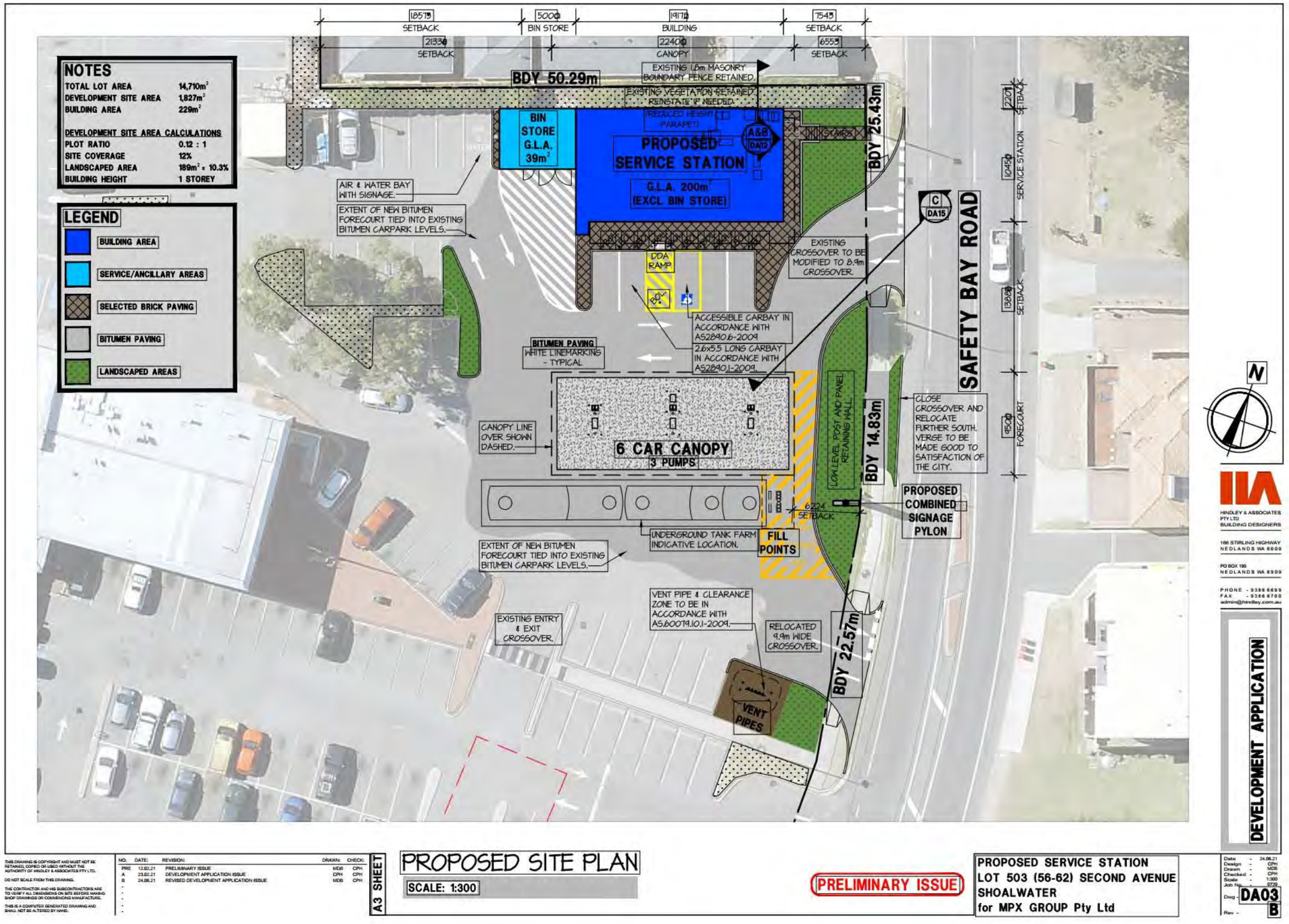


Figure 1-3: Lot 503 (56-62) Second Avenue, Shoalwater (Proposed Service Station)

2 Emission Estimation

Activities at the Site that will produce emissions are related to losses of fuels through vapourisation or spillage and subsequent vapourisation of the spill(s). These specific activities comprise:

- Submerged filling of underground storage tanks;
- Underground tank breathing losses;
- Vehicle refuelling;
- "Whoosh" emissions from removal of vehicle fuel cap; and
- Fuel spills, typically at the bowser.

The proposed Site throughputs are estimated based on the technology providers' average throughputs from similar Western Australian service stations. Precise hourly throughputs are however unknown at this stage.

There is a dearth of information within other Australian jurisdictions for estimating hourly throughputs based on typical traffic flows at metropolitan service stations, as a result the widely referenced 2017 Brisbane City Council (BCC) methodology for service stations has been used to estimate hourly emissions at the Site.

Emission estimates based on specific emission compounds **(refer Table 1-2)** were derived using the NPI, 1999 and CAPCOA, 1997 guidelines for emission estimation factors.

Vapour recovery (VR) at the Site will be in place for submerged underground storage tank(s) referred to as VR1.

2.1 Bulk Deliveries and Emissions

The maximum volume of fuel that can be dispensed into the storage tanks at the Site is approximately 48,000 L/hour. The estimated total daily sales of fuels is 15,000 Litres. The Site will receive, on average, approximately 2.2 bulk deliveries of fuels per 7 days, between the daily hours of 0700 hrs – 2200hrs.

Although there are approx., 2.2 deliveries per week of 48,000 L or less, the schedule will shift based on fuel volumes dispensed. To account for variability in daily hours where deliveries are made; the delivery of bulk fuels is modelled 1-hourly, for each day and successive hour during those delivery times.

Table 2-1 lists an example of the delivery schedule and subsequent hourly emissions trend for bulk fuel deliveries.

Table 2-1: Example of Bulk Fuel Delivery Schedule (L/hr)

Time (24 hrs)	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
0100							
0200							
0300							
0400							
0500							
0600							
0700	48,000						
0800		48,000					
0900			48,000				
1000				48,000			
1100					48,000		
1200						48,000	
1300							48,000
1400	48,000						
1500		48,000					
1600			48,000				
1700				48,000			
1800					48,000		
1900						48,000	
2000							48,000
2100	48,000						
2200		48,000					
2300							
2400							

2.2 VOC Emissions

Of the fuel types proposed, ULP emissions represent approximately 56% of total fuel storage with diesel representing approximately 44%. ULP contains the higher volatile fraction compared to diesel, as such all emissions in this Assessment have been assumed as ULP. This approach is conservative. There are no proposed Ethanol blend fuels e.g. E5, E10. The vapour composition of VOCs in petroleum fuel (NPI, 1999), are listed in **Table 2-2**. It is likely that the composition of Benzene will be lower than the NPI, 1999 recommendations given the improvements in fuel refining, however; in the absence of specific detail for the composition of fuels within the Assessment airshed, the NPI, 1999 recommendations have been adopted and assessed.

Table 2-2: Composition of Petrol (NPI, 1999)

Species	Petrol Liquid (% weight)	Petrol Vapour (% weight)
Benzene	2.9	0.950
Cyclohexane	0.2	0.06370
Ethylbenzene	2.0	0.07910
n-Hexane	3.5	1.730
Styrene	0.1	0.00282
Toluene	10.4	1.080
Xylenes	12.2	0.433

The composition percentages of the compounds listed above were applied to the modelling outcomes of the final time-averaged emission rate GLC estimates (vapour and spill vapour losses) to derive individual pollutant contributions to airborne vapour impacts at the nearest receptor.

2.3 Site Operational Data

Table 2-3: Proposed Service Station Operating Detail

Parameter	Operational Data
Operating hours	24 hours / 7 days per week
Tanker delivery	Maximum 48,000 L/hour - VR1 Vapour Recovery
Average Daily Volume	**15,000 L**
Vent stack	4.0 m high
Filling Stations/Bowsers	3 x Bowsers / 5 x Grade filling points each side of Bowser (located below full canopy)
Fuel Storage	Diesel 40 kL, Ultimate Diesel 30 kL ULP 91 40 kL, ULP 95 25 kL, ULP 25 kL

2.4 Derived Emission Factors

Emissions generated from activities at the Site have been derived based on those vapour losses published by the NPI and CAPCOA guidance. **Table 2-4** lists those emission factors that apply to those processes where vapour losses occur.

Table 2-4: Emissions Factors for Service Stations

Emission Source	NPI, 1999 Mg / L throughput	CAPCOA, 1997 Lbs / 1000 Gallons throughput
Underground Tank Filling	-	-
Submerged Filling	880	8.4
Splash Filling	1380	-
Submerged filling with vapour balance	**40**	0.42
Underground tank breathing losses	**120**	0.84
Vehicle Refuelling	-	-
Displacement Losses (uncontrolled)	1320	**8.4**
Displacement Losses (90% controlled e.g. VR 2)	132	0.74
Spillages	-	-
Uncontrolled	80	**0.61**
Controlled	-	**0.41**
"Whoosh" Emissions (fuel cap removal)	-	0.26 - **0.66**

The refuelling activities are considered to be volume emission sources. These have been assessed utilising the CAPCOA, 1997 emission factors. Vent emissions from storage tank filling has been assessed using the NPI, 1999 emission factors.

2.4.1 Fuel Throughput Trends

There are two approaches to determining the hourly throughputs of fuel dispensing for service stations in accordance with the BCC, 2017 recommendations.

Method 1 considers known daily or weekly fuel dispensing trends where an estimate of hourly dispensing volumes (L) can be derived. Where the peak hourly dispensing volume is known, the daily hourly trends can then be derived using the BCC, 2017 published profiles as listed in **Table 2-5**.

Table 2-5: Representative Service Station Fuel Throughputs (BCC, 2017)

Hour	Hourly Profile (%)
1	1.2
2	0.8
3	0.6
4	0.8
5	1.9
6	4.6
7	5.5
8	5.7
9	5.5
10	5.7
11	6
12	6
13	5.7
14	5.6
15	5.9
16	6.1
17	6
18	5.8
19	5.1
20	4
21	3.5
22	3.4
23	2.6
24	1.8

If no fuel data is available for the proposal, then Method 2 is employed; where the number of bowsers are refuelling points are counted and assuming the average dispensing rate per vehicle of 40 L, with each vehicle taking approximately 5 minutes to refuel, the hourly profile in **Table 2-5** is applied to the peak amount of fuel dispensed over 24 hours to derive those other hourly volumes.

In **Table 2-5** the peak throughput hour is at 4pm (1600 hrs).

Method 1 was employed for this Assessment and utilising the operational detail in **Table 2-3**.

Applying the Average Daily Refuelling Volume of 15,000 L, the emission factors in **Table 2-4**, and deriving hourly volumes based on **Table 2-5**, the hourly Total VOC mass emission rates in grams per second (g/s) are developed. These mass emission rates represent the combined (ALL) number of filling points (6) at any one time, and single bowser (SINGLE) operations, and are listed in **Table 2-6**.

Table 2-6: Factored Total VOC Emission Rates per Hour

Hour	Throughput % daily volume/hr	Petrol Throughput (L/hr)	% to Peak Daily Hour	ALL Bowsers Mass Emission Rate (g/s)	SINGLE Bowser Mass Emission Rate (g/s)
1	1.2	180	19.67%	0.362	0.121
2	0.8	120	13.11%	0.242	0.081
3	0.6	90	9.84%	0.181	0.060
4	0.8	120	13.11%	0.242	0.081
5	1.9	285	31.15%	0.574	0.191
6	4.6	690	75.41%	1.389	0.463
7	5.5	825	90.16%	1.661	0.554
8	5.7	855	93.44%	1.721	0.574
9	5.5	825	90.16%	1.661	0.554
10	5.7	855	93.44%	1.721	0.574
11	6	900	98.36%	1.812	0.604
12	6	900	98.36%	1.812	0.604
13	5.7	855	93.44%	1.721	0.574
14	5.6	840	91.80%	1.691	0.564
15	5.9	885	96.72%	1.782	0.594
16	**6.1**	**915**	**100.00%**	**1.842**	0.614
17	6	900	98.36%	1.812	0.604
18	5.8	870	95.08%	1.751	0.584
19	5.1	765	83.61%	1.540	0.513
20	4	600	65.57%	1.208	0.403
21	3.5	525	57.38%	1.057	0.352
22	3.4	510	55.74%	1.027	0.342
23	2.6	390	42.62%	0.785	0.262
24	1.8	270	29.51%	0.544	0.181

Table 2-7 lists the summarised maximum emission rates for the proposed Site.

Table 2-7: Summary of Service Station Emissions

Emission Source	Emission Type	Peak VOC Mass Emission Rate (g/s)	Stack Diameter (m)	Emission Velocity (m/s)	Temperature (^{0}C)
Storage Tanker Vent Stack	Bulk Filling (Vapour Balance and Breathing Losses) – **VR1**	2.134	0.1	0.1	25^{0}C
Passive Emissions from Vehicle Refuelling	Refuelling Losses (Uncontrolled), Spillages (controlled/uncontrolled), and "Whoosh" Emissions	1.842 (all 6 filling points)	-	-	

Appendix A presents the summary calculations for the derived mass emission rates.

3 Aermod Dispersion Modelling Methods

3.1 Meteorology

A site-representative annual dataset of meteorology was developed using surface observations, CSIRO's TAPM prognostic model and final Calmet hybridization of these data sets to develop a single representative meteorological dataset for the 2017 annual period. Refer Appendix B for the full meteorological development methods.

3.2 Sensitive Receptors

Four (4) discrete receptors (houses) were placed at locations closest to the Site **(refer Figure 1-1)**.

3.3 Building Profile Input Program (BPIP)

Building wake effects occur for those vertical stack emissions, in this case passive ventilation of the storage tank vent. However, the vent is located in the south-east corner of the Site and clear of any buildings or structures.

An example of the Aermod Input File is presented in Appendix C.

3.4 Dispersion Modelling Limitations

By definition, air quality models can only approximate atmospheric processes. Many assumptions and simplifications are required to describe real phenomena in mathematical equations. Model uncertainties can result from:

- Simplifications and accuracy limitations related to source data;
- Extrapolation of meteorological data from selected locations to a larger region; and
- Simplifications to model physics to replicate the random nature of atmospheric dispersion processes.

Models are reasonable and reliable in estimating the maximum concentrations occurring on an average basis. That is, the maximum concentration that may occur at a given time somewhere within the model domain, as opposed to the exact concentration at a point at a given time will usually be within the ±10% to ±40% range (US EPA, 2003).

Typically, a model is viewed as replicating dispersion processes if it can predict within a factor of two, and if it can replicate the temporal and meteorological variations associated with monitoring data. Model predictions at a specific site and for a specific hour, however, may correlate poorly with the associated observations due to the above-indicated uncertainties. For example, an uncertainty of 5° to 10° in the measured wind direction can result in concentration errors of 20% to 70% for an individual event (US EPA, 2003).

4 Assessment Results & Discussion

The Assessment of the Proposed Shoalwater Service Station has projected ground level concentrations (GLCs) for assessed pollutants of BTEX (Benzene, Toluene, Ethyl benzene, Xylenes), Cyclohexane, *n*-Hexane and Styrene that are below the guideline exposure standards.

These pollutants were assessed by firstly modelling Total VOCs as a function of emission factors for fuel storage and vehicle dispensing volumes according to those methods in Section 2.

Those Total VOC GLCs projected were then revised to determine the percentage mass emission rate contributions for these pollutants **(refer Table 2-2)**.

Table 4-1 list each predicted pollutant concentration for each averaging period. These pollutant concentrations are revised based on each compounds vapour contribution to petrol VOC emissions.

Within **Table 4-1** is each pollutants respective assessment criteria, the projected GLCs from the modelling Assessment and the revised projected GLCs at the nearest sensitive receptor with a Percentage of Exposure Limit Value (%). This value represents the percentage ratio of projected GLCs compared to the assessment criteria for each pollutant.

A % < 100 % shows that the projected concentration at the sensitive receptor location achieves less than the assessment criteria i.e PASS, whereas % ≥ 100 % shows non-compliance against the assessment criteria i.e. FAIL.

The magnitude of the compliance PASS/FAIL can be readily gauged by the size of the Percentage of Exposure Limit Value (%).

- All GLC values reported for each sensitive receptor are the maximum, Rank 1 values for all averaging periods; and
- All units of concentration are in µg/m^3 unless stated otherwise.

In reviewing the predicted GLCs for those pollutants in **Table 4-1**, within this Assessment, the pollutant emissions at the nearest sensitive receptors (houses) are less than the exposure limits in ambient air.

Based on the predicted ground level concentrations, vapours from the Site will not negatively impact the health of the nearest sensitive receptor or sensitive land use within the Locality.

Table 4-1: Assessment Results for GLC's of Pollutants

Receptor Location	Pollutant	Averaging Period	Exposure Limit µg/m^3 at 25^{0}C	Predicted GLC (µg/m^3)	Percentage of Exposure Limit	Pass/Fail	Pollutant	Averaging Period	Exposure Limit µg/m^3 at 25^{0}C	Predicted GLC (µg/m^3)	Percentage of Exposure Limit	Pass/Fail
NW Cnr	Benzene	Annual	9.6	4.86	50.61%	Pass	Toluene	Annual	377	5.52	1.47%	Pass
East House				2.85	29.68%	Pass				3.24	0.86%	Pass
SE House				1.69	17.61%	Pass				1.92	0.51%	Pass
NE Cnr				4.18	43.54%	Pass				4.75	1.26%	Pass
NW Cnr	Ethyl benzene	Annual	270	0.00	0.00%	Pass	Xylenes	Annual	870	0.00	0.00%	Pass
East House				0.40	0.15%	Pass				2.21	0.25%	Pass
SE House				0.24	0.09%	Pass				1.30	0.15%	Pass
NE Cnr				0.14	0.05%	Pass				0.77	0.09%	Pass
NW Cnr	Toluene	24-hour	3,770	0.35	0.13%	Pass	Ethyl benzene	1-hour	8,000	1.91	0.22%	Pass
East House				0.00	0.00%	Pass				0.00	0.00%	Pass
SE House				38.85	1.03%	Pass				14.72	0.18%	Pass
NE Cnr				37.86	1.00%	Pass				17.44	0.22%	Pass
NW Cnr	Xylenes	24-hour	1,080	36.09	0.96%	Pass	Cyclohexane	1-hour	190	11.14	0.14%	Pass
East House				21.04	0.56%	Pass				11.60	0.14%	Pass
SE House				0.00	0.00%	Pass				0.00	0.00%	Pass
NE Cnr				15.58	1.44%	Pass				11.85	6.24%	Pass
NW Cnr	n-Hexane	1-hour	3,200	15.18	1.41%	Pass	Styrene	1-hour	64	14.04	7.39%	Pass
East House				14.47	1.34%	Pass				8.97	4.72%	Pass
SE House				8.43	0.78%	Pass				9.34	4.92%	Pass
NE Cnr				0.00	0.00%	Pass				0.00	0.00%	Pass



Appendix A: Emissions Calculations

Bowsers -VR2			
	Number of Dispensing Nozzles	6	
	CAPCOA (Lbs/1000gallons to mg/L)	7247.102	mg/L
	CAPCOA (Lbs/1000gallons to g/L)	7.247	g/L
	Losses (g/L)	7.247	g/L/hr
	VR 2 (g/L)	7.247	g/L/hr
	ESTIMATED TOTAL DAILY (24hr) VOLUME (L)	15000	
	E10 Volatilisation	1.5	
	E10 % of T-Volumes	0%	
	E10 Fuel Ratio Factor	0	
	% of Other Fuels	100%	
	Fuel Ratio Factor	**1.000**	

Storage Tanks VR 1			
	Total Volume/hr	48000	L/hr
	NPI 1999	160	mg/L
		7680000	mg/hr
		7680.000	g/hr
		2.133	g/s
	4m High Vent Rate	0.00079	m3/s
	VR1	2.133	g/s
	Final Value	2.133	g/s
	Annually	67285333.33	grams
		67285.33333	kgs
		184.343379	kgs/day
	Deliveries weekly	16.802	kgs
	Per delivery	7.681	kg/hr
		2.134	g/s

Cars per hour	96	
L per car on average	40	
Peak Volumes Dispensed	3840	
Maximum Tanker Delivery (kL/hr)	48	
Types of Fuel	Diesel, ULT Diesel, 91, 95, 98	
Fuel Storage (kL)	Diesel	40 + 30
	ULP 91	40
	ULP 95	25
	ULP 98	25
Daily Sales	15000	
Annual Sales	5475000	
Tanker Volume	48000	
Deliveries per week	**2.2**	

hour	% daily volume/hr	Petrol Throughput (L/hr)	% to peak hr	L/hr	L/s	g/s	**Final Value**	Per Bowser
1	1.2	180	19.67%	180	0.050	0.362	0.362	0.121
2	0.8	120	13.11%	120	0.033	0.242	0.242	0.081
3	0.6	90	9.84%	90	0.025	0.181	0.181	0.060
4	0.8	120	13.11%	120	0.033	0.242	0.242	0.081
5	1.9	285	31.15%	285	0.079	0.574	0.574	0.191
6	4.6	690	75.41%	690	0.192	1.389	1.389	0.463
7	5.5	825	90.16%	825	0.229	1.661	1.661	0.554
8	5.7	855	93.44%	855	0.238	1.721	1.721	0.574
9	5.5	825	90.16%	825	0.229	1.661	1.661	0.554
10	5.7	855	93.44%	855	0.238	1.721	1.721	0.574
11	6	900	98.36%	900	0.250	1.812	1.812	0.604
12	6	900	98.36%	900	0.250	1.812	1.812	0.604
13	5.7	855	93.44%	855	0.238	1.721	1.721	0.574
14	5.6	840	91.80%	840	0.233	1.691	1.691	0.564
15	5.9	885	96.72%	885	0.246	1.782	1.782	0.594
16	**6.1**	**915**	**100.00%**	**915**	**0.254**	1.842	**1.842**	0.614
17	6	900	98.36%	900	0.250	1.812	1.812	0.604
18	5.8	870	95.08%	870	0.242	1.751	1.751	0.584
19	5.1	765	83.61%	765	0.213	1.540	1.540	0.513
20	4	600	65.57%	600	0.167	1.208	1.208	0.403
21	3.5	525	57.38%	525	0.146	1.057	1.057	0.352
22	3.4	510	55.74%	510	0.142	1.027	1.027	0.342
23	2.6	390	42.62%	390	0.108	0.785	0.785	0.262
24	1.8	270	29.51%	270	0.075	0.544	0.544	0.181
		14970				Max	1.842	0.614
						SUM	30.1359	10.0453
						Per Nozzle	5.0226	5.0226

Emission Source	NPI 1999 mg/L throughput	CAPCOA Lbs/1000 Gallons throughput	CAPCOA mg/L throughput
Underground Tank Filling			
Submerged Filling	880	8.4	1007
Splash Filling	1380		
Submerged filling with vapour balance	40	0.42	50
Underground tank breathing losses	120	0.84	101
Vehicle Refuelling			
Displacement Losses (uncontrolled)	1320	8.4	1007
Displacement Losses (90% controlled e.g VRU 2)	132	0.74	89
Spillages			
Uncontrolled	80	0.61	73
Controlled		0.41	49
"Whoosh" Emissions		0.26 - 0.66	79
"Whoosh" Emissions (averaged)		0.46	79
Diesel	176		
LPG	0.04		



Appendix B: Meteorological Development

1 Meteorology

The nearest BoM AWS's to the Baldivis locality are Garden Island (Station 009256) and Jandakot (Station 009172). These stations are approximately 6.5 kms and 28 kms from the Locality respectively.

Meteorological (met) trends at both of these stations would represent sea-breeze (Garden Island) and in general land-breeze effects (Jandakot).

Both of these met stations, although in some proximity to the Site; represent weather patterns outside of the terrain location of the Site, in particular Jandakot, although terrain at the Site is negligible (i.e. generally flat). As a result CSIRO's The Air Pollution Model (TAPM) was utilised to develop a prognostic met file.

To determine which met year (annual period) was the most representative of the locality both the Garden Island and Jandakot stations were investigated for their most recent 5-year met trends (2015-2019) based on EAQ's available data. Those nearest stations were chosen as surface observations and given the terrain of the locality would represent, in general, those met conditions most observed at the locale.

1.1 Representative Meteorological Annual Period

When undertaking dispersion modelling of air pollutants, the wind vector (speed and direction) is critical in determining the magnitude of the ground level impacts downwind of an emission source(s).

Temperature is also important within dispersion modelling for understanding vertical mixing layers, and inversion layers within the domain assessed by the dispersion model, whilst rainfall has importance with regard to dust deposition rates, and empirically when determining odour impacts at ground level.

1.1.1 Method

Five years of the latest annual met data is sourced from the nearest, or multiple, BoM AWS.

The data is arranged into annual observations and the primary *vector* of wind is sorted into "bins" of wind speed and direction, for example:

2018		CHECK #	8760			
WD↓ WS→	0	2	4	6	>6	TOTAL
0	0	0	0	0	0	0
90	0	407	457	305	136	1305
180	0	822	1560	919	152	3453
270	0	278	848	1243	527	2896
360	0	124	273	222	487	1106
TOTAL	0	1631	3138	2689	1302	8760

Each of the five years for each met station was compared to their corresponding five year trends for wind direction and speed and a statistical analysis using the *chi-squared* relationship (goodness-of-fit) was undertaken.

The statistic is a single number that shows how much difference exists between observed counts and the counts expected if there were no relationship at all in the population.

- For determining the representative met year, each of the annual period five year counts, for grouped wind speed and direction, are compared to the averaged dataset of all five years of grouped wind speed and direction, where;
    - A **low value** for *chi-squared* means there is a high correlation between two sets of data. In theory, if the observed and expected values were equal ("no difference") then chi-square would be zero — an event that is unlikely to happen in real life.

Comparing the annual periods of 2015 – 2019 inclusive for the Garden Island and Jandakot BoM AWS's and deriving the representative year based on the ***vector of wind***, the representative year derived using the *chi-squared* relationship was for each surface AWS, to include data recovery, as follows:

Table 1-1: Garden Island BoM AWS *chi-squared* Outcome

Annual Period	Wind Direction Data Recovery	Wind Speed Data Recovery	*chi-squared*
2015	95.38%	95.21%	85.1
2016	93.33%	92.96%	121.1
2017	**99.89%**	**99.89%**	**39.2**
2018	96.92%	96.92%	44.8
2019	92.04%	91.83%	60.0

Table 1-2: Jandakot BoM AWS *chi-squared* Outcome

Annual Period	Wind Direction Data Recovery	Wind Speed Data Recovery	*chi-squared*
2015	99.06%	99.05%	148.1
2016	91.93%	91.51%	29.1
2017	**98.61%**	**98.53%**	**45.8**
2018	95.05%	94.97%	92.3
2019	88.66%	88.48%	53.2

Both BoM AWS's returned *chi-squared* positive values for 2017 within the top two annual periods. Additionally, the raw met data for each AWS showed that 2017 also had the highest data recovery.

To further clarify the use of the 2017 annual period as the representative year the Mann-Whitney U-Test was used to compare the ***scalar values*** of temperature where monthly temperatures (hourly averaged) were again sorted into "bins" and the monthly trends compared using the U-Test.

The U-Test results are illustrated as follows:

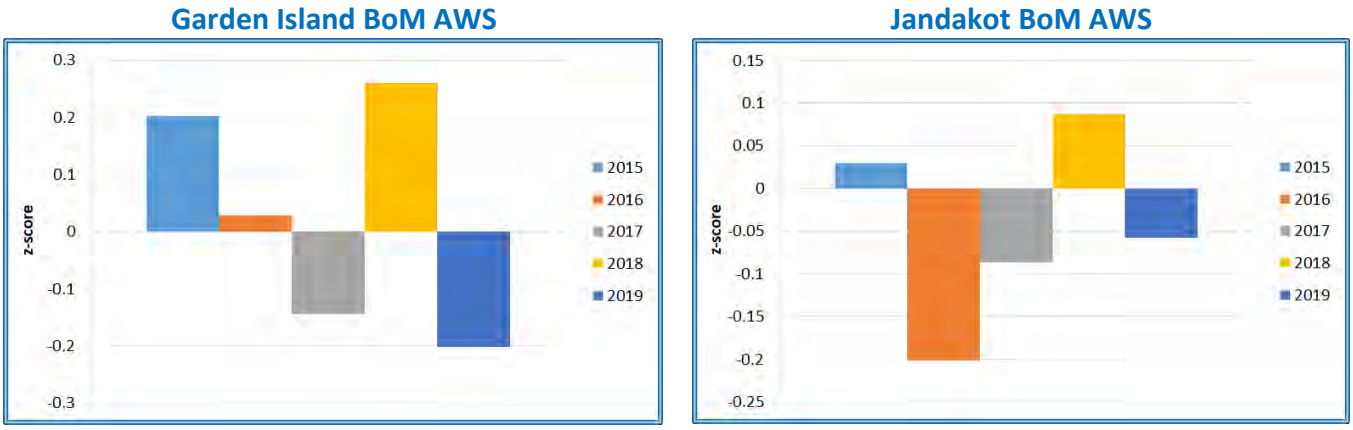


Figure 1-1: Mann Whitney U-Test for Monthly Average Temperature

- Garden Island BoM AWS: 2016, **2017**, 2015/2019, 2018; and
- Jandakot BoM AWS: 2015, 2019, **2017**/2018 and 2016.

Considering the *chi-squared* results and that of temperature using the Mann-Whitney U-Test, the 2017 annual period was determined to be the most representative met year for the Assessment. The TAPM model was then ran for the 2017 annual period.

1.2 Meteorological Configuration

The TAPM (v4.0.4) model produces a 3D data tile representative of surface and upper air met characteristics with the following setup:

- 41 grid points (nx, ny);
- Five nests with the outer grid spacing (dx1, dy1) of 30 kms and subsequent nests approximately 1/3rd of the preceding nest (30, 10, 3, 1 and 0.3 kms); and
- 25 vertical grid levels.

The innermost nest (0.3 km spacing) was extracted as a 3D tile.

Both BoM AWS's and the TAPM 3D tile were fed into the Calmet module of the Calpuff modelling suite of processors to derive a hybrid-met file representative of the Site's locality. Hybridising the output dataset was undertaken to allow the Calmet processor to incorporate those sea-breeze and land-breeze effects at the extremes of the modelling domain.

1.3 Geophysical Configuration

The geophysical data file was created using the MAKEGEO processor. Land use data from CTGPROC (Survey, 1997) and terrain data from TERREL (Gallant, Dowling, Read, Wilson, Tickle, & Inskeep, 2011) (Paul & Smith, 2015) was used as input to produce a 100 km^2 geophysical grid at 0.20 km resolution.

1.4 Calmet Meteorological Model Configuration

Calmet was run using the hybrid option that uses geophysical data, surface station data from both Garden Island and Jandakot stations and upper air data from the TAPM 3D data tile. The data was used to initialise the diagnostic functions of the Calmet module to produce a full 3D meteorology data for input into Calpuff. **Table 1-3** shows key variable fields selected.

Table 1-3: Calmet Key Variables (Grid Configuration WGS-84 UTM Zone 50S)

56						NX Cells						
45						NY Cells						
0.20						Cell Size (km)						
11						Vertical Layers						
ZFACE (m)	0	20	40	80	160	320	640	1000	1500	2000	2500	3000
LAYER	1	2	3	4	5	6	7	8	9	10	11	-

Critical Wind Field Settings			
Value	Found	Typical	Values
TERRAD	3	None	Terrain scale (km) for terrain effects
IEXTRP	-4	4,-4	Similarity extrap. of wind (-4 ignore upper stn sfc)
ICALM	0	0	Do Not extrapolate calm winds
RMAX1	5	None	MAX radius of influence over land in layer 1 (km)
RMAX2	6	None	MAX radius of influence over land aloft (km)
R1	5	None	Distance (km) where OBS wt = IGF wt in layer 1
R2	6	None	Distance (km) where OBS wt = IGF wt aloft

Data Choices			
Value	Found	Typical	Values
NOOBS	1	0,1,2	0=w/Obs; 1=Partial Obs/No-Obs; 2=No-Obs mode
ITPROG	1	0,1,2	0=Obs.; 1=Obs.Sfc/Prog.Upr; 2=Prog. temperatures
ITWPROG	1	0,1,2	0=Obs.; 1=Obs.T_Diff/Prog.Lapse; 2=Prog. Overwater T

1.5 Meteorological Data Analysis

The characteristics of the Calmet hybrid met dataset for the 2017 representative year are illustrated in **Figure 1-1.** Figure 1-1 shows the annual and seasonal met characteristics for the 2017 hybridized met file, whilst **Figure 1-2** shows the hourly met characteristics.

Other met trends, including stability class frequency, are illustrated in **Figures 1-3 to 1-6** to follow, with **Figure 1-6** showing that D and F Class Atmospheric Stability (neutral and very stable conditions) are prominent.

F Class Stability (very stable) is prominent during the hours of 5PM – 6AM inclusive i.e. during nighttime hours **(refer Figure 1-7)**.

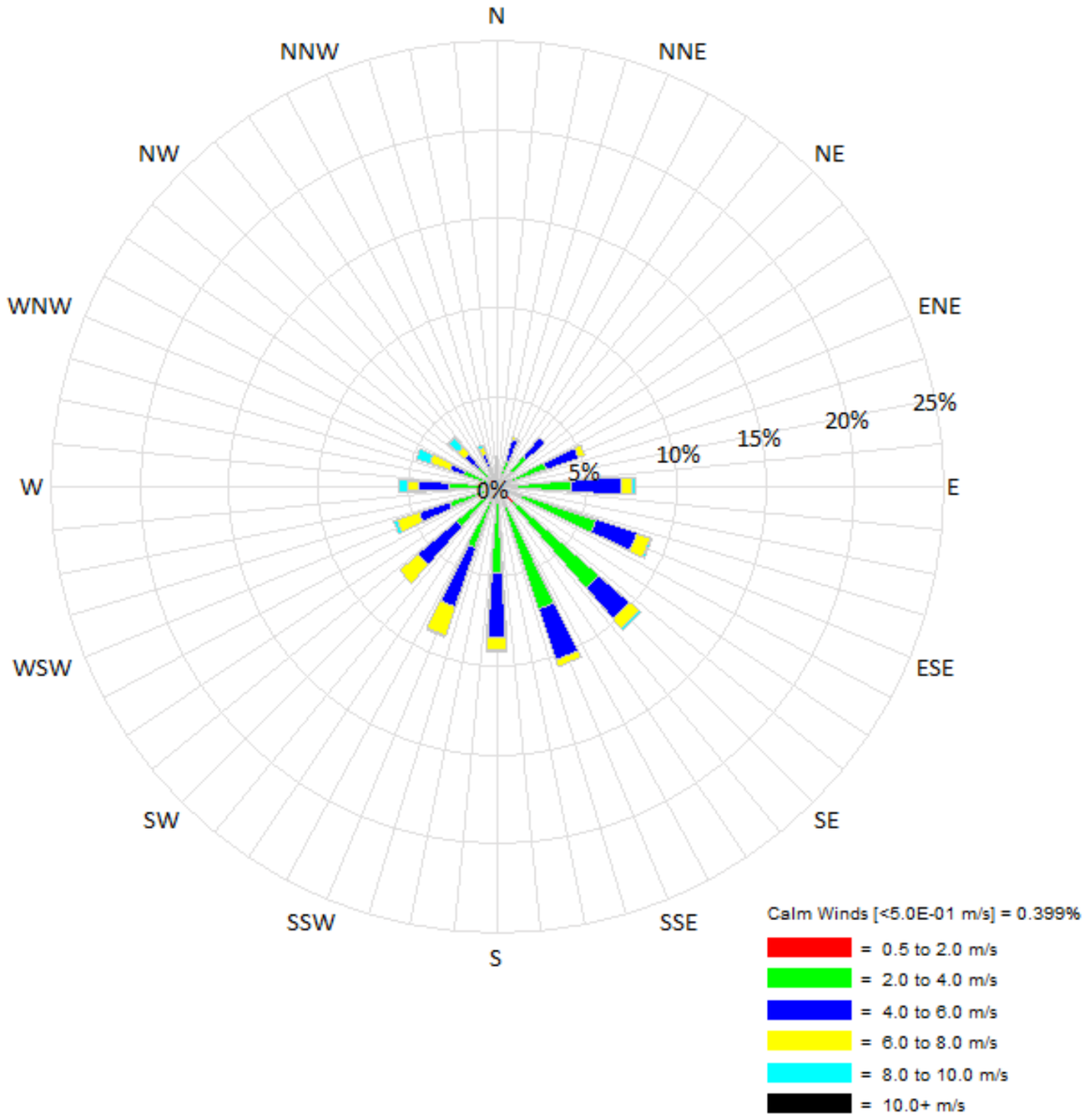
Stable and very stable atmospheric conditions typically dominant those night time meteorological characteristics within the locality.

Under stable conditions mechanical dispersion plays a larger role in dispersion and vertical mixing of emission plumes when there is complexity in the terrain and surface roughness. In low surface roughness terrain, the effects of mechanical turbulence are weakened, to include a decrease in vertical mixing, and ground level emission plumes tend to have larger impacts over longer downwind distances from the emission source.

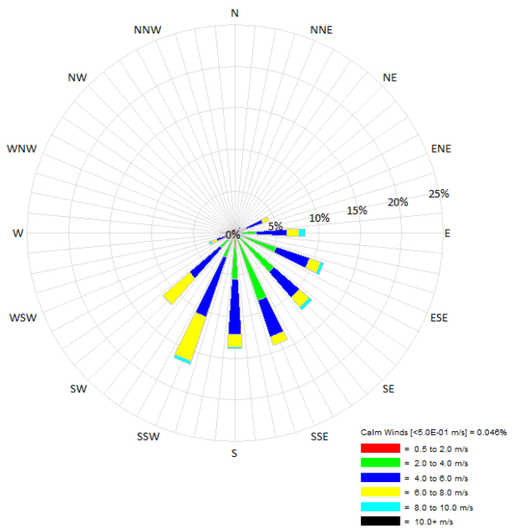
Stability refers to the atmosphere's ability to resist or enhance vertical motion resulting in turbulence. Stability encompasses (among others) temperature changes with atmospheric height (lapse rate), wind speed and surface roughness. The six classes of stability are:

A	very unstable
B	unstable
C	slightly unstable
D	neutral
E	stable
F	very stable

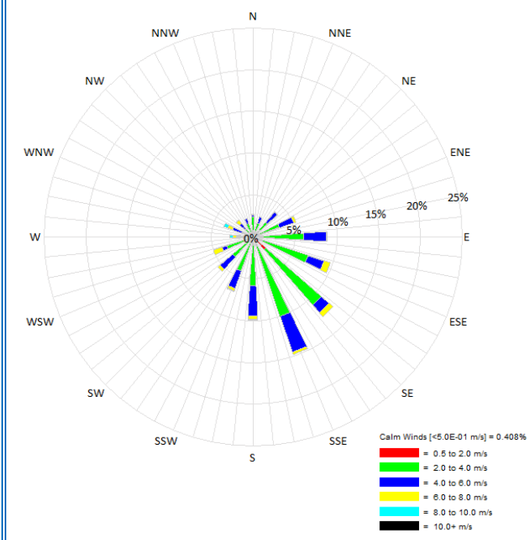
- Unstable conditions enhance turbulence and subsequent dispersion;
- Neutral stability neither enhances nor reduces turbulence; and
- Stable conditions reduce turbulence and therefore dispersion is reduced.



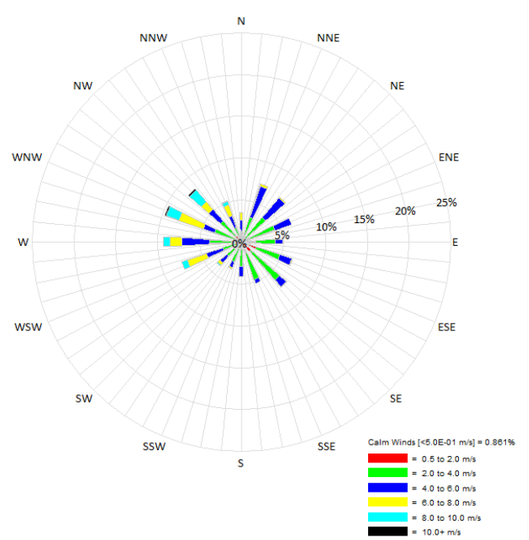
2017 **Hybridized** Annual Windrose



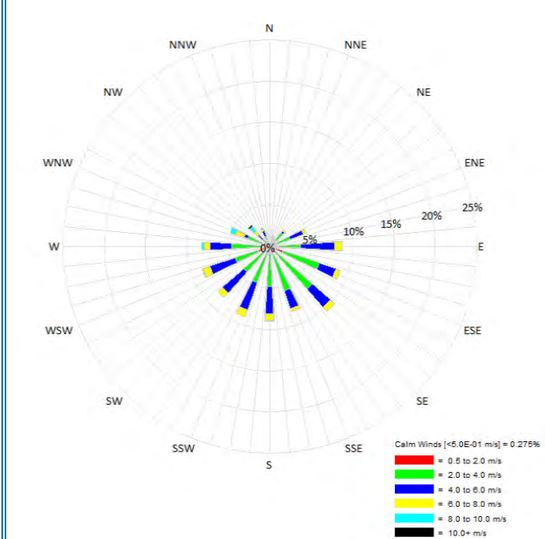
Summer



Autumn

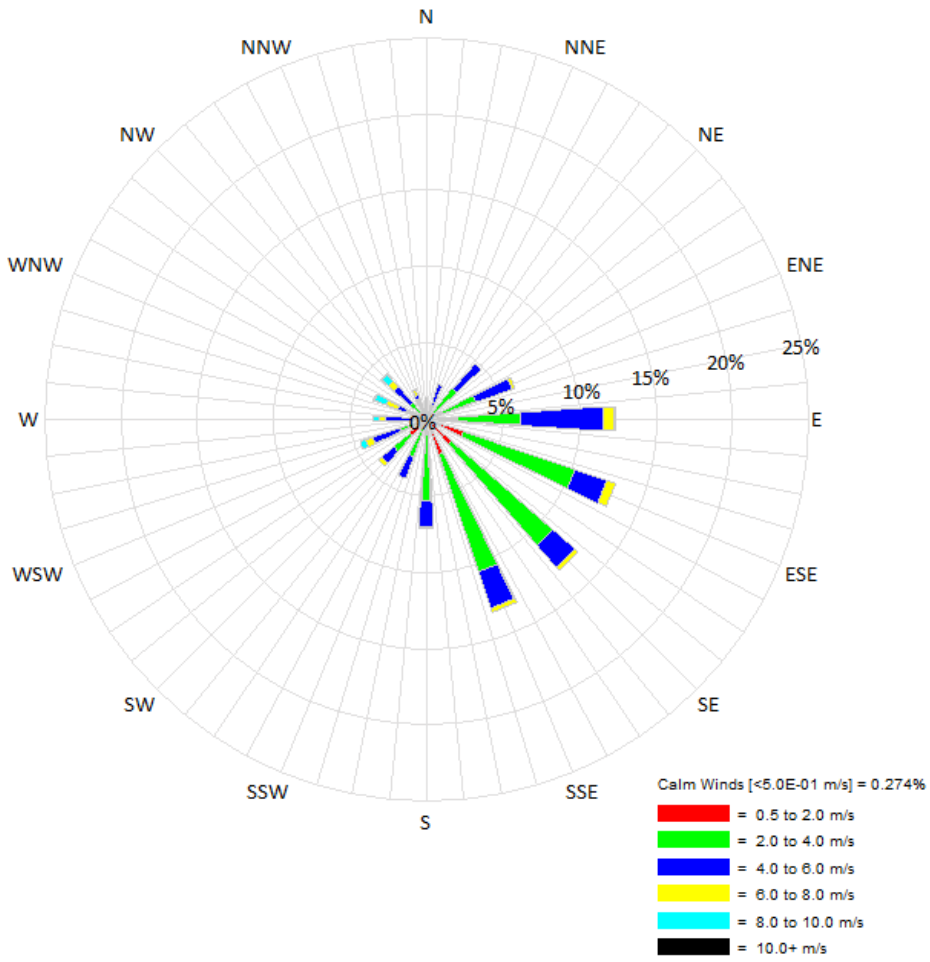


Winter

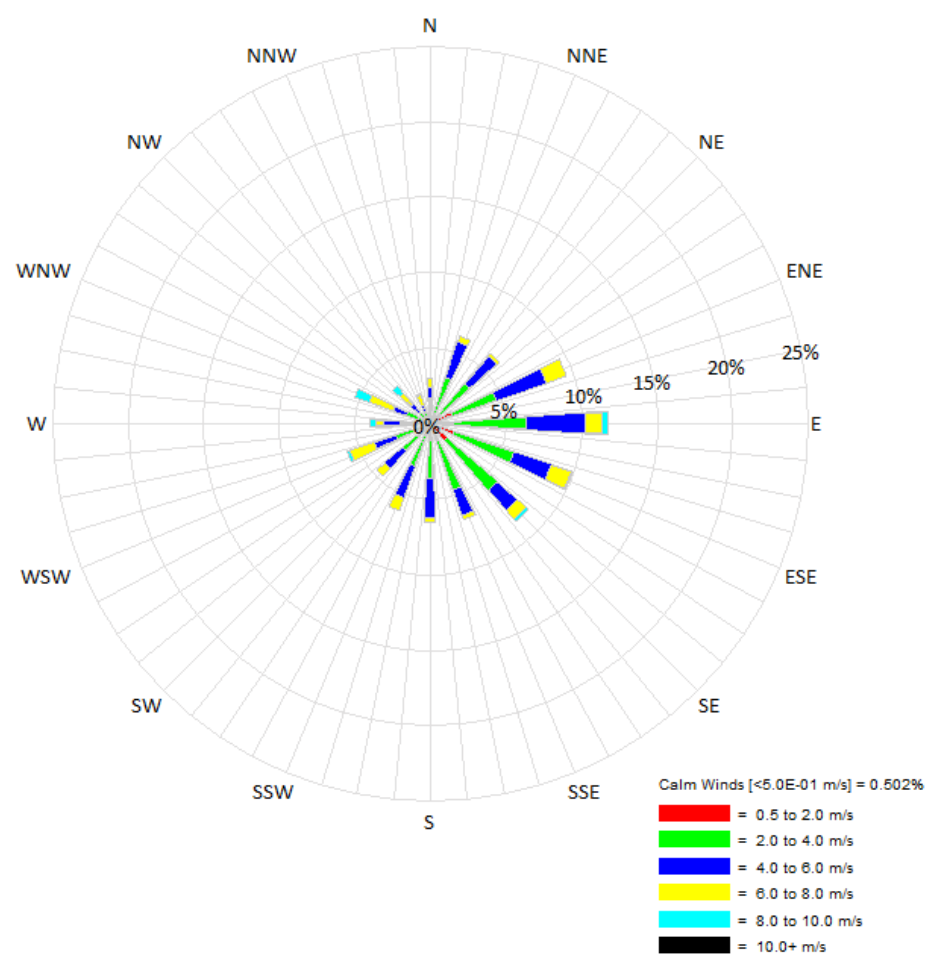


Spring

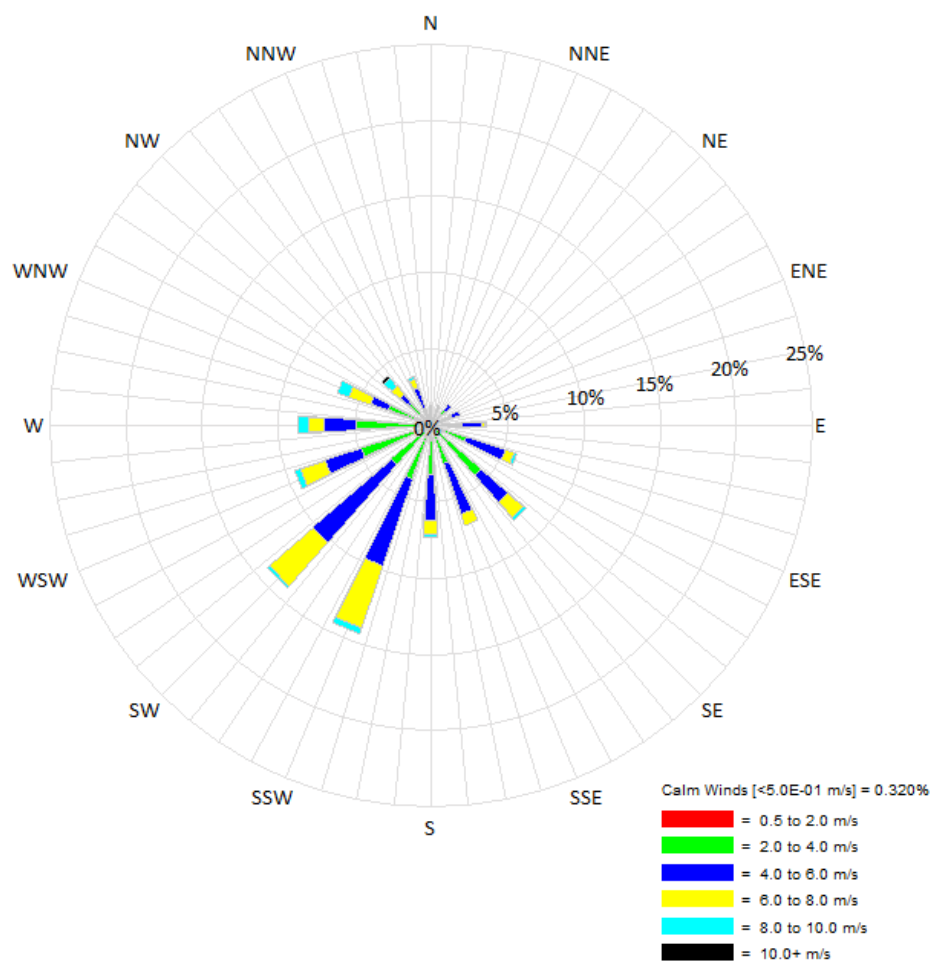
Figure 1-1: Annual and Seasonal Windroses for Hybrid derived Site-representative 2017 Meteorology (modelled)



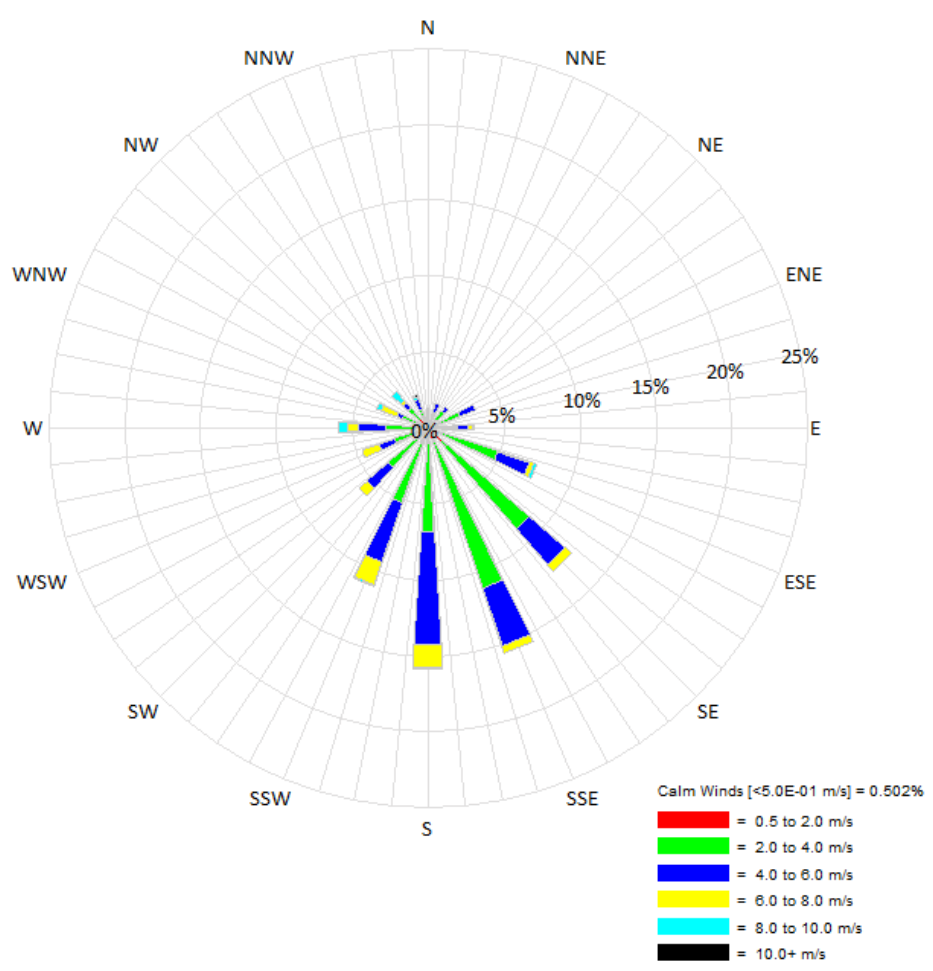
0100hrs – 0600hrs



0700hrs – 1200hrs



1300hrs – 1800hrs



1900hrs – 0000hrs

Figure 1-2: Time of Day Windroses for Hybrid derived Site-representative 2017 Meteorology (modelled)

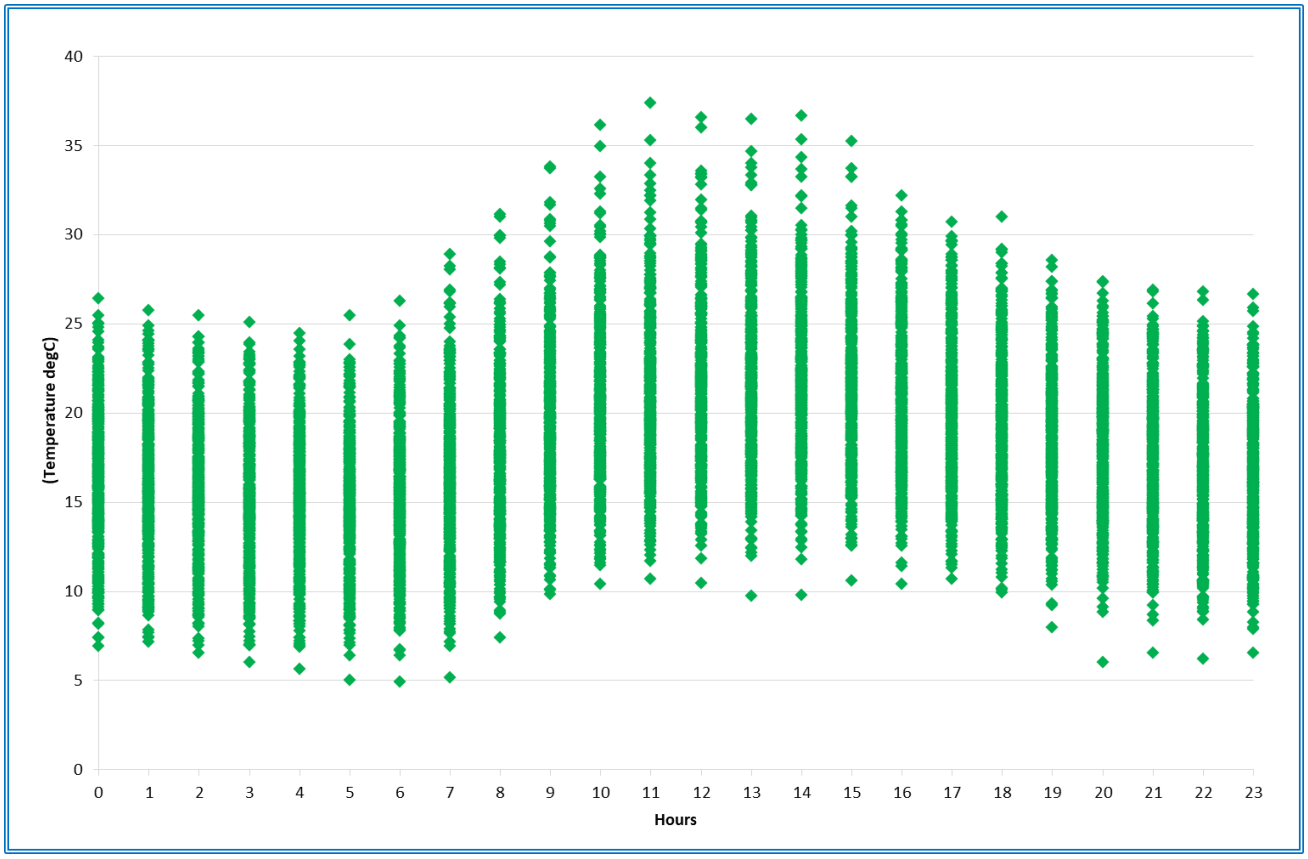


Figure 1-3: Annual X-Y scatter plot diurnal temperatures for 2017 (modelled)

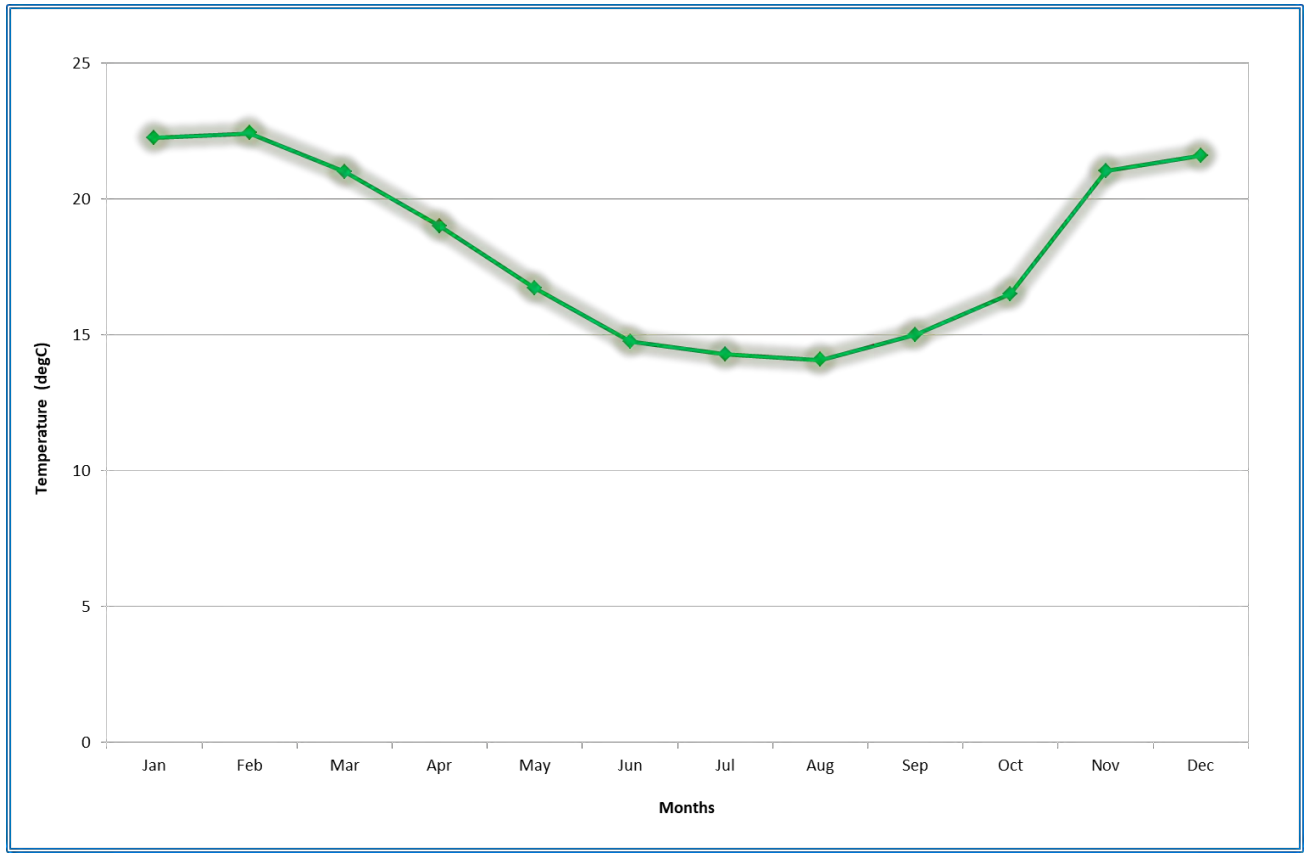


Figure 1-4: Average Monthly temperatures for 2017 (modelled)

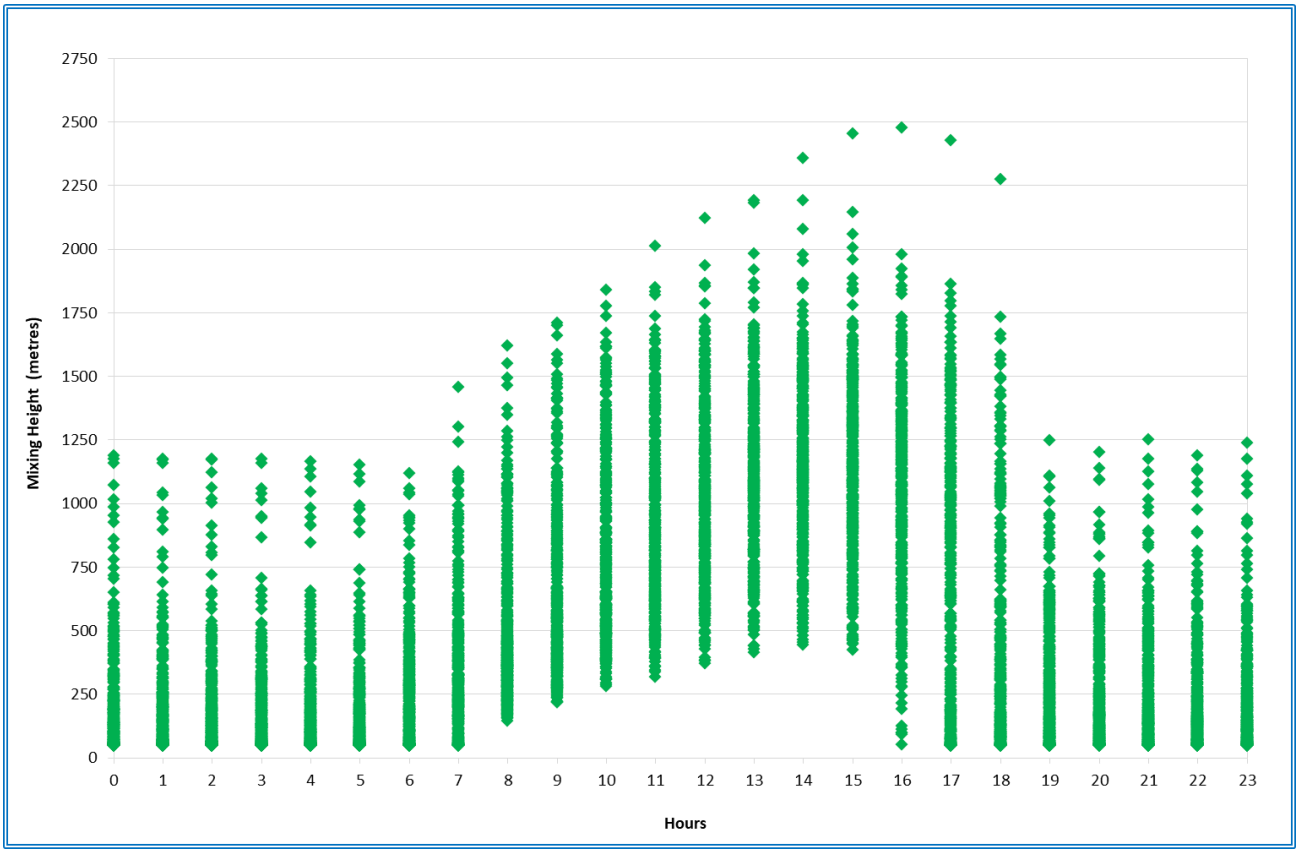


Figure 1-5: Annual X-Y scatter plot diurnal mixing height for Locality (modelled)

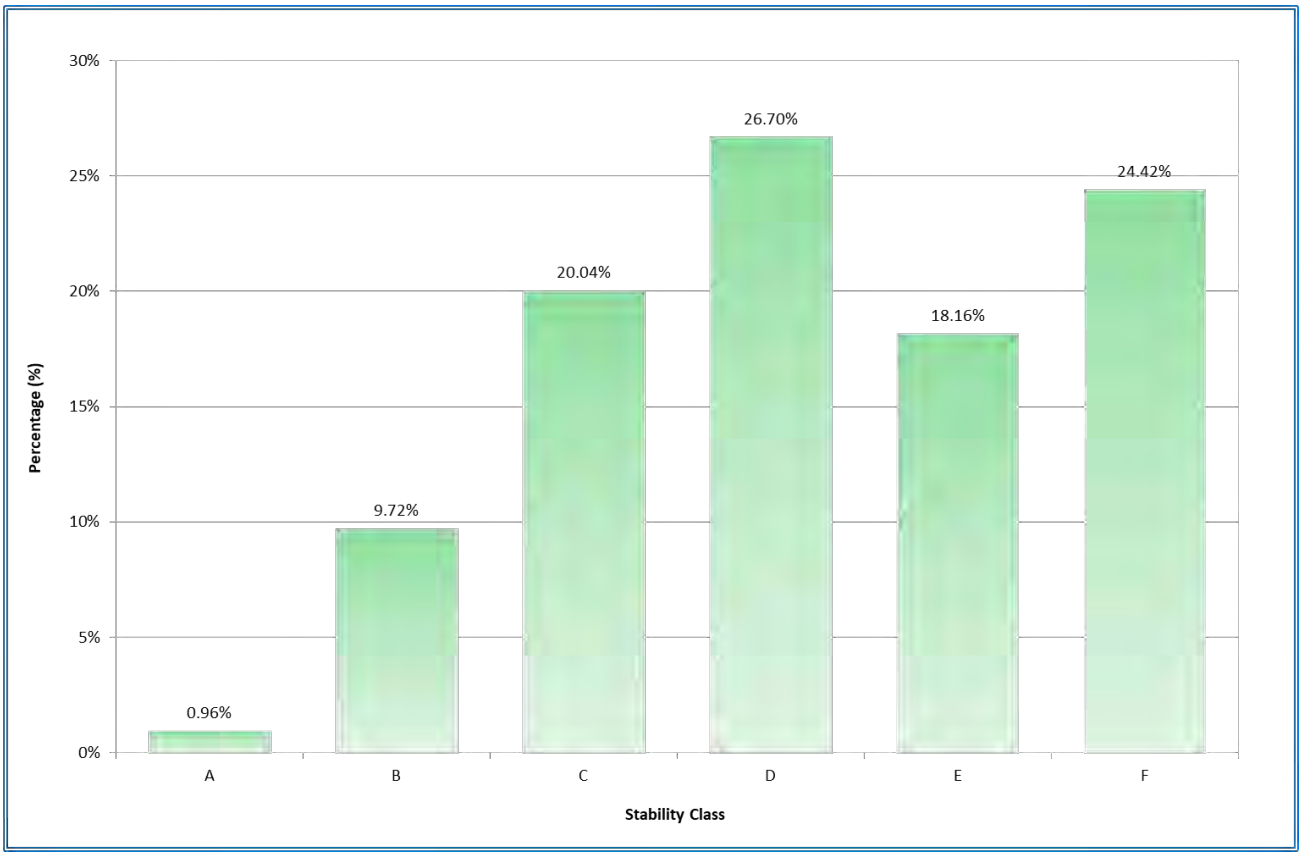


Figure 1-6: Annual stability class frequency for Locality (modelled)

Dispersive conditions based on the vertical met profile can also be illustrated using the diurnal stability relationship. **Figure 1-7** below illustrates the diurnal trends of atmospheric stability during annual wind conditions across the locality, by plotting the averaged inverse Monin-Obukhov length (m) against Stability Class for each hour of the day.

The Monin-Obukhov length describes the effects of buoyancy on turbulent flows, which can simply be defined as the height at which turbulence is generated more by buoyancy than by wind shear. In other words, the vertical dispersion of air during daytime convective conditions generates turbulence i.e. convective turbulence during unstable atmospheric conditions.

As previously discussed, stability refers to the atmosphere's ability to resist or enhance vertical motion resulting in turbulence. These trends show that unstable conditions begin around approximately 6AM and continue through until approximately 5PM.

Again, during this timeframe there is enhanced vertical mixing of airborne plumes and dispersion of odours is therefore enhanced, however; those 6AM and 5PM nexus points between stable and unstable atmospheric conditions increase the risk of odour impacts during those daytime hours, in particular during those cooler seasonal periods of late autumn, winter and early spring.

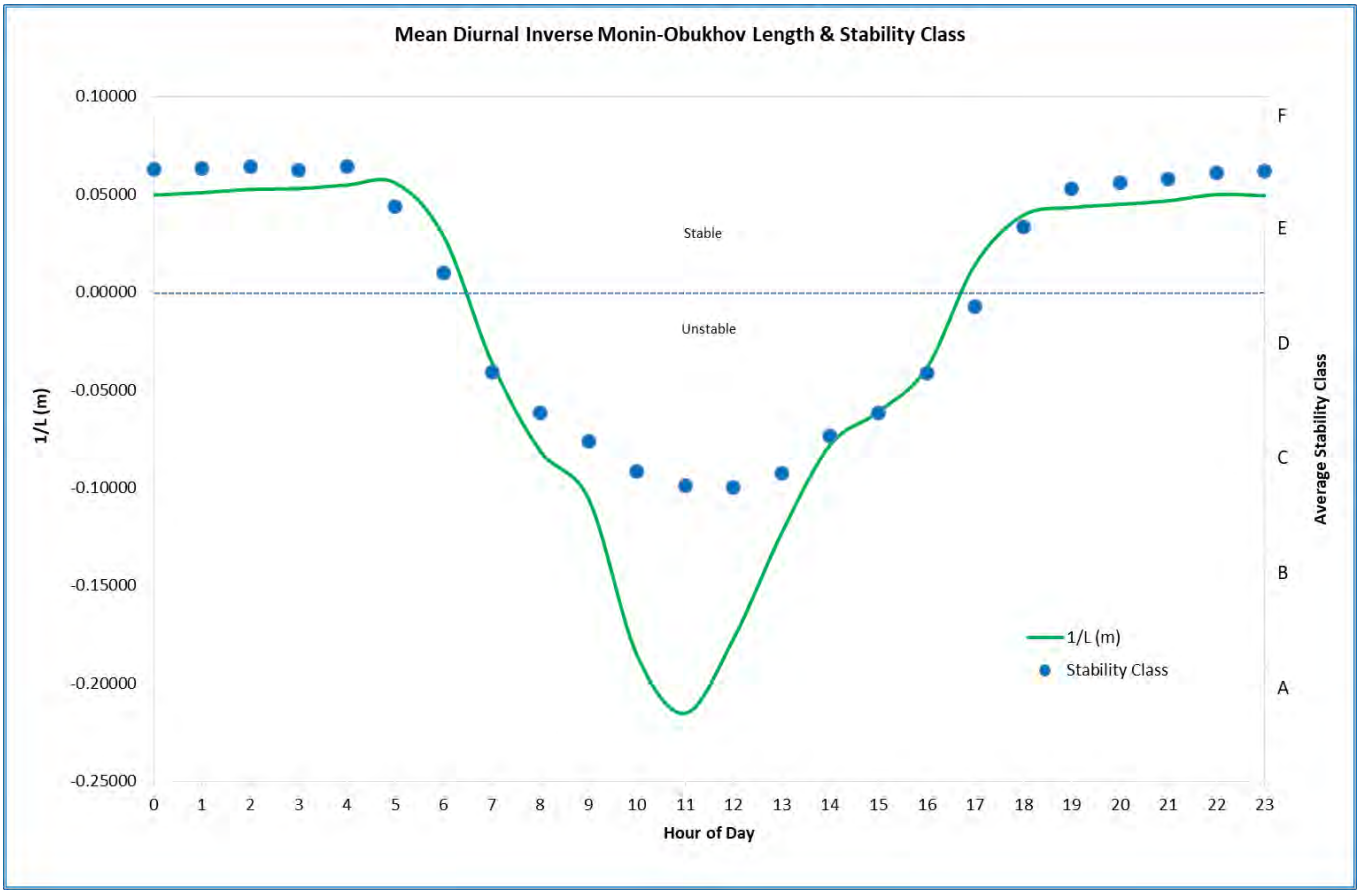


Figure 1-7: Diurnal Trends of Atmospheric Stability for Locality (modelled)



Appendix C: Example of AERMOD Input File

```
**
**************************************
**
** AERMOD Input Produced by:
** AERMOD View Ver. 10.2.1
** Lakes Environmental Software Inc.
** Date: 21/03/2022
** File: D:\MyAERMOD\21033\21033.ADI
**
**************************************
**
**
**************************************
** AERMOD Control Pathway
**************************************
**
**
CO STARTING
   TITLEONE D:\MyAERMOD\21033\21033.isc
   MODELOPT CONC FLAT ELEV
   AVERTIME 1 24 ANNUAL
   POLLUTID VOC
   RUNORNOT RUN
   ERRORFIL 21033.err
CO FINISHED
**
**************************************
** AERMOD Source Pathway
**************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION BOWS1        VOLUME     378589.422  6426416.397        8.040
** DESCRSRC Bowser 1
   LOCATION BOWS2        VOLUME     378600.204  6426420.190        7.980
** DESCRSRC Bowser 2
   LOCATION BOWS3        VOLUME     378577.936  6426412.415        8.190
** DESCRSRC Bowser 3
   LOCATION VENT         POINTCAP   378611.109  6426389.460        7.640
** DESCRSRC Tank Breather
** Source Parameters **
   SRCPARAM BOWS1              1.0     1.200     1.744     2.093
   SRCPARAM BOWS2              1.0     1.200     1.744     2.093
   SRCPARAM BOWS3              1.0     1.200     1.744     2.093
   SRCPARAM VENT               1.0     4.000   298.150   0.10000     0.100

** Building Downwash **
   BUILDHGT VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDHGT VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDHGT VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDHGT VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDHGT VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDHGT VENT            0.00     0.00     0.00     0.00     0.00     0.00

   BUILDWID VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDWID VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDWID VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDWID VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDWID VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDWID VENT            0.00     0.00     0.00     0.00     0.00     0.00

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   BUILDLEN VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDLEN VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDLEN VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDLEN VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDLEN VENT            0.00     0.00     0.00     0.00     0.00     0.00

   XBADJ    VENT            0.00     0.00     0.00     0.00     0.00     0.00
   XBADJ    VENT            0.00     0.00     0.00     0.00     0.00     0.00
   XBADJ    VENT            0.00     0.00     0.00     0.00     0.00     0.00
```

```
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   XBADJ    VENT             0.00     0.00     0.00     0.00     0.00     0.00
   XBADJ    VENT             0.00     0.00     0.00     0.00     0.00     0.00

   YBADJ    VENT             0.00     0.00     0.00     0.00     0.00     0.00
   YBADJ    VENT             0.00     0.00     0.00     0.00     0.00     0.00
   YBADJ    VENT             0.00     0.00     0.00     0.00     0.00     0.00
   YBADJ    VENT             0.00     0.00     0.00     0.00     0.00     0.00
   YBADJ    VENT             0.00     0.00     0.00     0.00     0.00     0.00
   YBADJ    VENT             0.00     0.00     0.00     0.00     0.00     0.00


** Variable Emissions Type: "By Hour-of-Day (HROFDY)"
** Variable Emission Scenario: "Scenario 1"
   EMISFACT BOWS1        HROFDY 0.121 0.081 0.06 0.081 0.191 0.463
   EMISFACT BOWS1        HROFDY 0.554 0.574 0.554 0.574 0.604 0.604
   EMISFACT BOWS1        HROFDY 0.574 0.564 0.594 0.614 0.604 0.584
   EMISFACT BOWS1        HROFDY 0.513 0.403 0.352 0.342 0.262 0.181
   EMISFACT BOWS2        HROFDY 0.121 0.081 0.06 0.081 0.191 0.463
   EMISFACT BOWS2        HROFDY 0.554 0.574 0.554 0.574 0.604 0.604
   EMISFACT BOWS2        HROFDY 0.574 0.564 0.594 0.614 0.604 0.584
   EMISFACT BOWS2        HROFDY 0.513 0.403 0.352 0.342 0.262 0.181
   EMISFACT BOWS3        HROFDY 0.121 0.081 0.06 0.081 0.191 0.463
   EMISFACT BOWS3        HROFDY 0.554 0.574 0.554 0.574 0.604 0.604
   EMISFACT BOWS3        HROFDY 0.574 0.564 0.594 0.614 0.604 0.584
   EMISFACT BOWS3        HROFDY 0.513 0.403 0.352 0.342 0.262 0.181

** Variable Emissions Type: "By Hour / Seven Days (HRDOW7)"
** Variable Emission Scenario: "Scenario 3"
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   EMISFACT VENT         HRDOW7 0.0 2.133 0.0 0.0 0.0 2.133 0.0 0.0
   EMISFACT VENT         HRDOW7 0.0 0.0 0.0 0.0 2.133 0.0 0.0 0.0
   EMISFACT VENT         HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2.133
   EMISFACT VENT         HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 2.133 0.0
   EMISFACT VENT         HRDOW7 0.0 0.0 0.0 0.0 0.0 2.133 0.0 0.0
   EMISFACT VENT         HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT VENT         HRDOW7 2.133 0.0 0.0 0.0 0.0 0.0 0.0 2.133
   EMISFACT VENT         HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT VENT         HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT VENT         HRDOW7 0.0 2.133 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT VENT         HRDOW7 2.133 0.0 0.0 0.0 0.0 0.0 0.0 0.0
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   EMISFACT VENT         HRDOW7 0.0 0.0 2.133 0.0 0.0 0.0 0.0 0.0
   EMISFACT VENT         HRDOW7 0.0 2.133 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT VENT         HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT VENT         HRDOW7 0.0 0.0 0.0 2.133 0.0 0.0 0.0 0.0
   EMISFACT VENT         HRDOW7 0.0 0.0 2.133 0.0 0.0 0.0 0.0 0.0
   EMISFACT VENT         HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT VENT         HRDOW7 0.0 0.0 0.0 0.0 2.133 0.0 0.0 0.0
   EMISFACT VENT         HRDOW7 0.0 0.0 0.0 2.133 0.0 0.0 0.0 0.0
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   SRCGROUP Vent     VENT
   SRCGROUP ALL
SO FINISHED
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** AERMOD Receptor Pathway
****************************************
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RE STARTING
   INCLUDED 21033.rou
RE FINISHED
**
****************************************
** AERMOD Meteorology Pathway
****************************************
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   PROFFILE 21033.PFL
   SURFDATA 0 2017
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   SITEDATA 0 2017
   PROFBASE 8.0 METERS
ME FINISHED
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****************************************
** AERMOD Output Pathway
****************************************
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   RECTABLE 1 1ST
   RECTABLE 24 1ST
** Auto-Generated Plotfiles
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   PLOTFILE 24 ALL 1ST 21033.AD\24H1GALL.PLT 32
   PLOTFILE 1 Bowsers 1ST 21033.AD\01H1G001.PLT 33
   PLOTFILE 24 Bowsers 1ST 21033.AD\24H1G001.PLT 34
   PLOTFILE 1 Vent 1ST 21033.AD\01H1G002.PLT 35
   PLOTFILE 24 Vent 1ST 21033.AD\24H1G002.PLT 36
   PLOTFILE ANNUAL ALL 21033.AD\AN00GALL.PLT 37
   PLOTFILE ANNUAL Bowsers 21033.AD\AN00G001.PLT 38
   PLOTFILE ANNUAL Vent 21033.AD\AN00G002.PLT 39
   SUMMFILE 21033.sum
OU FINISHED
**
****************************************
** Project Parameters
****************************************
** PROJCTN  CoordinateSystemUTM
** DESCPTN  UTM: Universal Transverse Mercator
** DATUM    World Geodetic System 1984
** DTMRGN   Global Definition
** UNITS    m
** ZONE     -50
** ZONEINX  0
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Environodour AUSTRALIA PTY LTD

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Report

on

Air Toxics Impact Assessment at Lot 503, 56-62 Second Avenue Shoalwater, Western Australia

Prepared

By

John Jiang

24 March 2022

for

The City of Rockingham Western Australia

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TABLE OF CONTENTS

1 Background 2
2 The site 2
3 Air toxics impact assessment 4
3.1 Meteorological data 4
3.1.1 EAQ meteorological data 4
3.1.2 pDs meteorological data 4
3.2 Emission rates 5
3.3 Topography 7
3.4 Receptors 7
3.5 Impact assessment criteria 7
4 AERMOD results for different scenarios 8
4.1 Scenario 1: EAQ meteorological data and method 8
4.2 Scenario 2: EAQ meteorological data and CAPCOA method 11
4.3 Scenario 3: pDs meteorological data file and CAPCOA method 11
4.4 Scenario 4: pDs meteorological data file with VR2 11
4.5 Comparison of four scenarios 16
5 Conclusions 16
6 Reference 17
Appendix 1. CAPCOA: Emission factor (6B) 18
Appendix 2. NPI emission factor 19
Appendix 3. Emission rate calculation for different scenarios 20
Appendix 4. Review of EAQ report 21
Appendix 5. AERMOD Meteorological data for EAQ data 24
Appendix 6. pDs meteorological data report 28
Appendix 7. Example of AERMOD configuration file 45

TABLE OF FIGURES

Figure 1 Aerial view of the site 3
Figure 2 The proposed site plan 3
Figure 3 Locations of sensitive receptors and emission sources 7
Figure 4 Scenario 1 9th highest Benzene concentration contours 12
Figure 5 Scenario 2 9th highest Benzene concentration contours 13
Figure 6 Scenario 3 9th highest benzene concentration contours 14
Figure 7 Scenario 4 9th highest Benzene concentration contours 15

TABLE OF TABLES

Table 1 Emission factors and annualised emission rates 5
Table 2 Hourly emission rates 6
Table 3 Comparison of GLCs at four receptors between two methods.....9
Table 4 Predicted VOCs concentrations at receptors 10
Table 5 Predicted maximum VOCs concentrations at two locations.....10
Table 6 Comparison of Benzene 9th GLC (µg/m^3) 16

Executive Summary

This report was prepared by John Jiang, the principal and managing director of EnvironOdour Australia P/L. With more than 30 years' experience working in the field of odour and VOCs sampling, measurement and assessment, the author has completed hundreds of consulting projects across different industries and jurisdictions around the states and territories of Australia.

The author has carefully reviewed the EAQ report by compiling the meteorological data files from the supplied incomplete weather information files and modelling the emission impact. The author has revealed inconsistencies and mistakes in selecting the emission factor, calculating emission rates and modelling emission sources. The report overlooked that the benzene hourly ground level concentration exceeded the benzene impact criteria. In contrast to the EAQ report finding, the impact assessment should have been reported as a 'fail'. With the correct emission calculation method, this impact assessment has also failed.

A widely accepted approach has been used by adopting the NPI emission factor, CAPCOA modelling methodology and DWER impact criteria for benzene. Fuel tank refilling and breathing with VR1 are annualised as constant point sources. Vehicle fuel refuelling and spillage are modelled as volume sources with hourly emission profile without VR2. Using alternative meteorological data files prepared by a reputable meteorologist, the assessments for the proposed station have passed under two scenarios: for VR1 only and VR1 & VR2.

The current study has provided more solid scientific evidence to assist in decision-making.

1 Background

EnvironOdour Australia (EnvironOdour) has been engaged by the City of Rockingham, Western Australia (Rockingham) to carry out a peer review of an Emission Impact Assessment, submitted in support of a proposed 24Hr Service Station Development (Lot 503, 56-62 Second Avenue Shoalwater, Western Australia, project Ref: WAQ-21033, December 2021) prepared by Environmental & Air Quality Consulting Pty Ltd (EAQ).

The Environmental Protection Authority Guidance Statement No.3 (Separation Distance between Industrial and Sensitive Land Uses 2005) recommends a buffer separation distance for 24/7 Service Stations and the nearest sensitive receptor being 200m. Sensitive land uses are located within the 200m buffer of the proposed service station.

To summarise, the applicant submits the air dispersion modelling configuration file and meteorological data files so that the assessment results can be reproduced, and the conclusions can be validated. This practical procedure can save time and money, as the responsible jurisdiction does not have to repeat the same work and can speed up the approval process. In this situation, the applicant submitted the data file which is in a non-AERMOD compatible format.

The report describes the methodology in preparing the AERMOD dispersion model and presents the conclusion on the likelihood of air toxics impacts in the vicinity of the proposed service station. Furthermore, both methods are compared and documented in the appendix.

2 The site

The subject site is Lot 503, 56-62 Second Avenue Shoalwater, Western Australia and contains an existing neighbourhood shopping centre with associated parking, both on-street and on-site. The proposed service station development will occupy a 1,827m^2 portion of the existing car parking area and fronts Safety Bay Road (See Figure 1).

As detailed in the site plan in Figure 2, the major components are a retail building of 200 m² gross floor area with a height of 5.7 m, a fuel canopy (22.5m x 9.5m x 5.5m), and two underground fuel storage tanks. The vent pipe is located in the south-east corner.

In terms of its immediate surroundings, the proposed site is surrounded by existing residential properties in a suburban setting with small commercial operations, civic/community and other uses scattered throughout.

The existing and future sensitive receptors (urban) are approximately 40 metres (m) from the refuelling bowser to the north and 30 m from the vent pipe to the east of the proposed site.



Figure 1 Aerial view of the site

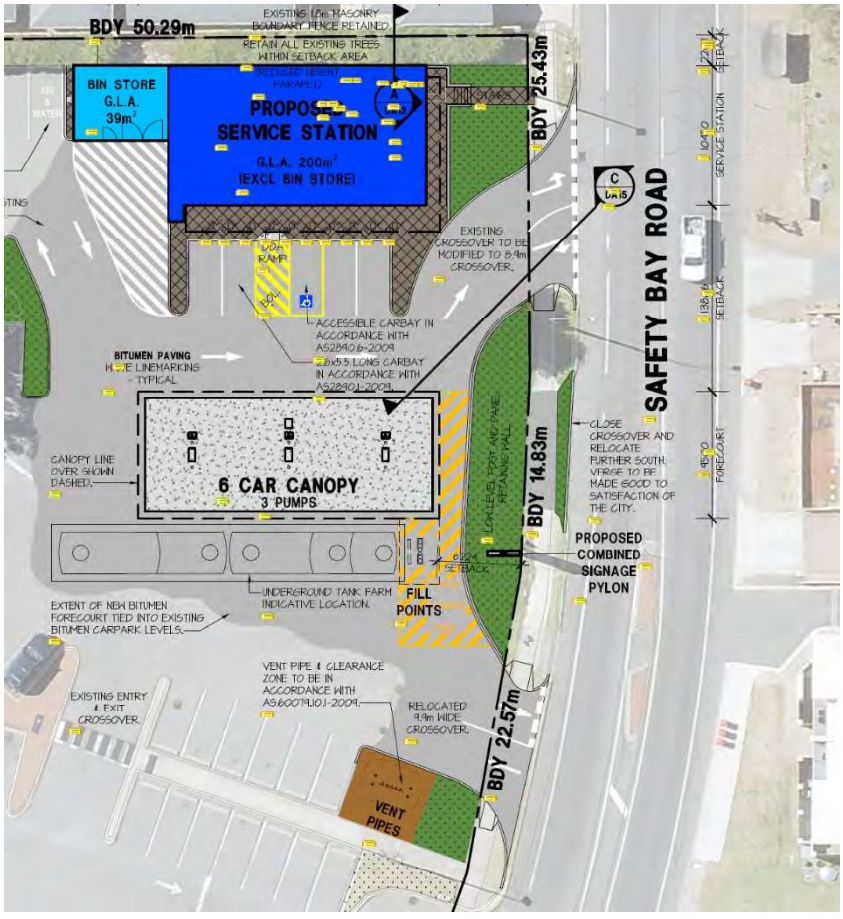


Figure 2 The proposed site plan

3 Air toxics impact assessment

As required by the Department of Water and Environmental Regulation (DWER) in Western Australia, federation and state or territory jurisdictions have the highest rank in reference hierarchy. The emission factors for service stations published by the National Pollution Inventory (NPI) will be adopted in the assessment.

Petrol and diesel contain a mixture of Volatile Organic Compounds (VOCs). NPI lists 7 principal toxic substance substances (Benzene, Cyclohexane, Ethylbenzene, n-Hexane, Styrene, Toluene and Xylenes). Benzene has a significant risk level and the lowest ambient air quality guideline value among 7 chemicals. As a result, it is appropriate that the assessment will focus on benzene as a surrogate chemical.

The Gasoline Service Station Industrywide Risk Assessment Guidelines prepared by Toxics Committee of the California Air Pollution Control Officers Association (CAPCOA, November 1997) gives a screening methodology using the USEPA ISCST3 model. This guideline suggests using two point sources representing the loading and breathing emissions of the storage tanks and two volume sources representing spillage and refuelling emissions of vehicles.

The Department of Water and Environmental Regulation (DWER) has published a set of 'Ambient Air Quality Guideline Values' (AGVs) as a tool to assess the level of risk associated with a proposed application (Guideline Air Emission October 2019). The AGV for benzene is 29 $\mu g/m^3$ (1 hour). The same value is also accepted in New South Wales (NSW) and Victoria.

3.1 Meteorological data

Two sets of meteorological data files are used in the study.

3.1.1 EAQ meteorological data

It is standard practice for the reviewer to reproduce the modelling results by requesting the electronic copies of the modelling set-up file. However, a file containing hourly weather observation records was provided instead. As a result, it was decided to convert the supplied information to an AERMOD compatible format and run the modelling as close to the methodology used in EAQ report as possible. The files are named Jandakot.sfc and Jandakot.pfl. The summary of the meteorological data can be found in Appendix 5.

3.1.2 pDs meteorological data

Furthermore, an independent meteorologist was asked to purchase the BOM weather observation records and convert them into the AERMOD meteorological data files (Shoalwater2016.sfc and Shoalwater2016.pfl). The report for the meteorological data files is prepared by pDs and listed in Appendix 6.

3.2 Emission rates

The proposed service station will have average refuelling volume of 15,000 litres a day. Two underground fuel storage tanks, and an associated filling point at the eastern side of the canopy accommodate the satisfactory/uninterrupted movements of the operator's 19m fuel tankers which deliver up to 48,000 litres of fuel.

The underground fuel storage tanks will be equipped with a Stage 1 Vapour Recovery System, which is activated during tanker refuelling of the underground storage tanks. A Stage 1 Vapour Recovery System (VR1) ensures all petrol vapours from the underground tanks are drawn back into the fuel tanker returned to the supply terminal where the vapours are recondensed into liquid.

It is expected that one fuel tank delivery every three days on normal situation. Therefore, both underground storage tank filling and underground tank breathing are annualised and treated as two separate constant emission rates at the actual vent location.

A fuel canopy, spanning a clearance of 4.5m from the forecourt's finished floor level and a total height of 5.5m, houses three bowsers which provides six refuelling positions (two per bowser).

When a vehicle is refuelled at a petrol service station, the vapour in the vehicle's fuel tank is displaced by the fuel. Stage 2 vapour recovery (VR2) equipment is designed to capture this displaced vapour and return it to the underground fuel storage tank or another appropriate vessel. For the purpose of this assessment, it is assumed that VR1 only is used in the proposed station.

There are four major processes associated with VOCs emission at the service station. Table 1 summarises the VOCs and benzene emission rates which are calculated from the NPI emission factors and annual petrol throughput.

Table 1 Emission factors and annualised emission rates

Emission sources	NPI emission factor	Annualised emission rate	
		VOCs	Benzene
	Mg / L throughput	g/s	g/s
Underground Tank Submerged filling (VR1)	40	0.007	0.000066
Underground tank breathing losses	120	0.021	0.0002
Vehicle Refuelling (uncontrolled)	1320	0.229	0.0022
Vehicle Refuelling (VR 2)*	132	0.023	0.00022
Spillages Uncontrolled (liquid)	80	0.014	0.00041

* only used in Scenario 4.

Furthermore, the vehicle refuelling can be modelled on the hourly petrol sale profile suggested by the EAQ report. However, the hourly emission rates are calculated differently from EAQ in this report. The comparison of hourly emission rates is listed in Table 2. For further information on the EAQ method, please refer to Appendix 4.

Table 2 Hourly emission rates

Hour	Hourly Throughput	Petrol Throughput	EAQ method	This report
	%	(L/hr)	g/s	g/s
1	1.2	180	0.483	0.066
2	0.8	120	0.322	0.044
3	0.6	90	0.241	0.033
4	0.8	120	0.322	0.044
5	1.9	285	0.765	0.104
6	4.6	690	1.851	0.253
7	5.5	825	2.213	0.302
8	5.7	855	2.294	0.313
9	5.5	825	2.213	0.302
10	5.7	855	2.294	0.313
11	6	900	2.415	0.330
12	6	900	2.415	0.330
13	5.7	855	2.294	0.313
14	5.6	840	2.254	0.308
15	5.9	885	2.374	0.324
16	6.1	915	2.455	0.335
17	6	900	2.415	0.330
18	5.8	870	2.334	0.319
19	5.1	765	2.052	0.280
20	4	600	1.610	0.220
21	3.5	525	1.409	0.192
22	3.4	510	1.368	0.187
23	2.6	390	1.046	0.143
24	1.8	270	0.724	0.099
Total	99.8	14970	40.165	5.485
averaged			1.674	0.229

3.3 Topography

The topography of the site is very flat. No terrain data was used. All the heights for the emission sources and receptors are set at zero meters.

3.4 Receptors

The receptor grid is defined as a regular Cartesian coordinate system expressed as local UTM coordinates at 50 metre intervals over an area of 1000 m x 1000 m.

There are four discrete receptor locations are selected on the map. Their coordinates are entered into the confabulation file. Figure 3 shows the locations of these receptors.



Figure 3 Locations of sensitive receptors and emission sources

3.5 Impact assessment criteria

Benzene has been selected as the assessment chemical for all the scenarios.

AERMOD simulations using an averaging time of 1 hour are to be reported as the 99.9th percentile (9th highest value).

AGV for benzene is 29 µg/m^3 (1 hour).

Therefore, the benzene impact criteria of the hourly averaged value of 29 µg/m^3 is used to estimate the likelihood air toxic impacts in the study.

4 AERMOD results for different scenarios

There are several modelling scenarios:

- Scenario 1: EAQ meteorological data and methodology
- Scenario 2: EAQ meteorological data and CAPCOA methodology
- Scenario 3: pDs meteorological data with VR1 only
- Scenario 4: pDs meteorological data with VR1 and VR2

If possible, VOCs emission factor in Table 1 are kept the same for all modelling scenarios. The two major differences are the meteorological data and emission rate calculation. Their calculations are also shown in Appendix 4.

For comparison purposes, only Scenario A uses total VOCs emission rates and predicted concentrations and the rest of the scenarios use benzene emission rates and predicted concentrations. The individual chemical concentrations at these receptors are then converted using the petrol composition table (Appendix 2, Table 3).

4.1 Scenario 1: EAQ meteorological data and method

In this scenario, the service station has been modelled as per EAQ report to the author's best knowledge. The direct comparison between EAQ and this report can be seen in Table 3.

In general, the predicted Ground Level Concentrations (GLCs) using two modelling methods for the same chemical pollutant are in the same order of magnitude. This confirms that meteorological data files are very close.

The minor differences in the GLCs could mainly be a result of:

- Different graphical user interfaces (unknow version, Lakes Environmental Software Inc. vs AERMOD Ver 18081 pDs AUSMOD)
- Receptor actual locations (No UTM coordinates in the report) and calculation grid size
- Base elevation for the weather station for the temperature profile
- The selection of concentration ranks (such as maximum, 99.9th percentile)

The predicted VOCs concentrations at different averaging time at these receptors are shown in Table 4. The hourly averaged concentrations are expressed as 9th highest values. Both 24 hours averaged and annual averaged concentrations are the highest vales.

Table 3 Comparison of GLCs at four receptors between two methods

Receptor Location	Pollutant	Averaging Period	Exposure Limit µg/m3	Predicted GLC (µg/m3)	
				EAQ	This report
NW Cnr	Benzene	Annual	9.6	6.24	7.43
East House				3.5	10.72
SE House				1.93	4.67
NE Cnr				5.37	5.33
NW Cnr	Ethyl benzene	Annual	270	0.52	0.62
East House				0.29	0.89
SE House				0.16	0.39
NE Cnr				0.45	0.44
NW Cnr	Toluene	24-hour	3,770	53.08	58.52
East House				50.93	109.31
SE House				48.05	81.16
NE Cnr				28.1	40.61
NW Cnr	Xylenes	24-hour	1,080	21.28	23.46
East House				20.42	43.82
SE House				19.26	32.54
NE Cnr				11.27	16.28
NW Cnr	n-Hexane	1-hour	3,200	402.51	339.53
East House				513.51	624.23
SE House				331.41	402.22
NE Cnr				344.75	339.85
NW Cnr	Toluene	Annual	377	7.09	8.44
East House				3.97	12.19
SE House				2.19	5.30
NE Cnr				6.1	6.06
NW Cnr	Xylenes	Annual	870	2.84	3.38
East House				1.59	4.89
SE House				0.88	2.13
NE Cnr				2.45	2.43
NW Cnr	Ethyl benzene	1-hour	8,000	18.4	15.52
East House				23.48	28.54
SE House				15.15	18.39
NE Cnr				15.76	15.54
NW Cnr	Cyclohexane	1-hour	190	14.82	12.50
East House				18.91	22.98
SE House				12.2	14.81
NE Cnr				12.69	12.51
NW Cnr	Styrene	1-hour	64	0.66	0.55
East House				0.84	1.02
SE House				0.54	0.66
NE Cnr				0.56	0.55

Table 4 Predicted VOCs concentrations at receptors

ID	9th highest hourly	24 hr averaged	Annual
	µg/m^3	µg/m^3	µg/m^3
NW	19626.0	5418.4	781.8
SE	23250.0	7514.8	491.1
NE	19644.4	3759.9	561.1
E	36082.9	10120.8	1128.6

Table 5 Predicted maximum VOCs concentrations at two locations

Substance	Averaging Period	Criteria Source	Maximum (ambient) concentration	Receptor NW	Receptor E
			µg/m^3	µg/m^3	µg/m^3
Benzene	Annual	NEPM 2011	9.6	7.4	**10.7**
Toluene	24 hours	NEPM 2011	3,770	59	109
Toluene	Annual	NEPM 2011	377	8.4	12.2
Ethyl benzene	1 hour	EPA NSW 2016	8,000	16	29
Ethyl benzene	Annual	Toxicos 2011	270	0.6	0.9
Xylenes	24 hours	NEPM 2011	1,080	23	44
Xylenes	Annual	NEPM 2011	870	3.4	4.9
Cyclohexane	1 hour	EPA NSW 2016	190	12.5	23.0
n-Hexane	1 hour	EPA NSW 2016	3,200	340	624
Styrene	1 hour	Dept. of Health WA	64	0.6	1.0

For each individual chemical, their predicted concentrations are calculated using the petrol composition (Table 3 in Appendix 2, NPI, 1999). These chemical substances listed in the EAQ report is extracted along with their impact assessment criteria. The predicted concentrations at NW receptor location (the lowest of the four receptors) and at E receptor (the highest of the four receptors) are listed in the last two columns. It is clear that

benzene concentration exceeds the annual impact criteria. The rest of the chemicals have a concentration much lower than the maximum ambient concentration as depicted in the 4th column. In the next scenarios, benzene is used to check the air toxic modelling results. No VOCs are modelled for the rest of scenarios.

The predicted benzene 9th highest ground level concentration contour is plotted in Figure 4. The benzene impact criteria of 29 µg/m^3 is in cyan. The assessment result is a 'fail'.

4.2 Scenario 2: EAQ meteorological data and CAPCOA method

In this case, the VOC emission factors in Table 1 are used to calculate the emission rates from the annual petrol throughput. As CAPCOA suggests that storage tank refilling and the breathing are annualised as the constant emission rates and modelled as two separate point points., the vehicle refuelling (uncontrolled) and spillage are treated as two separate volume sources. The canopy airshed is used to define the volume dimensions. Furthermore, vehicle refuelling and spillage are calculated using the hourly fuel dispensing volumes as suggested in the EAQ report. The relevant document (Brisbane City Council methodology for service stations, BCC, 2017) could not be found on the internet. As mentioned in the EAQ report: "*The BCC, 2017 methodology was utilised to derive hourly throughput rates for service stations based on normal and peak traffic flows."*

The predicted benzene 9th highest ground level concentration contour is plotted in Figure 5. The concentrations at these sensitive receptors exceeded the benzene impact criteria of 29 µg/m^3 (Table 5). The impact assessment is a 'fail'.

4.3 Scenario 3: pDs meteorological data file and CAPCOA method

The only difference between scenario 3 and scenario 2 is the meteorological file used in the AERMOD. pDs meteorological data files (Shoalwater2006) replaced EAQ meteorological data (Jandakot).

The predicted benzene 9th highest ground level concentration contour is plotted in Figure 6.

As shown in Table 4, the impact assessment is a 'pass'.

4.4 Scenario 4: pDs meteorological data file with VR2

Both Scenario 2 and Scenario 3 modelled the service station without stage 2 vapour recovery (VR2) during the vehicle fuelling.

The predicted benzene 9th highest ground level concentration contour is plotted in Figure 7.

As shown in Table 4, the impact assessment is a 'pass'.

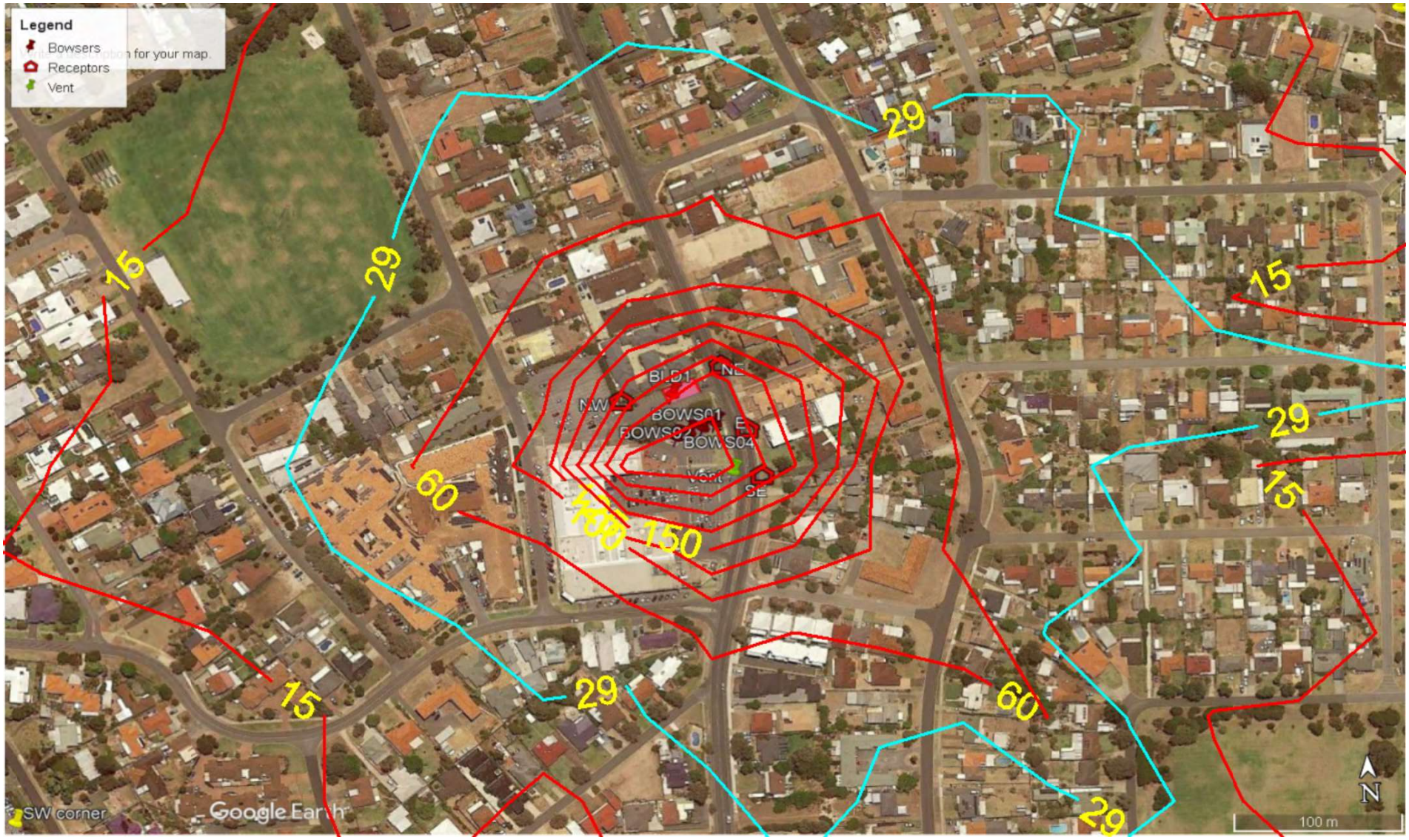


Figure 4 Scenario 1 9th highest Benzene concentration contours

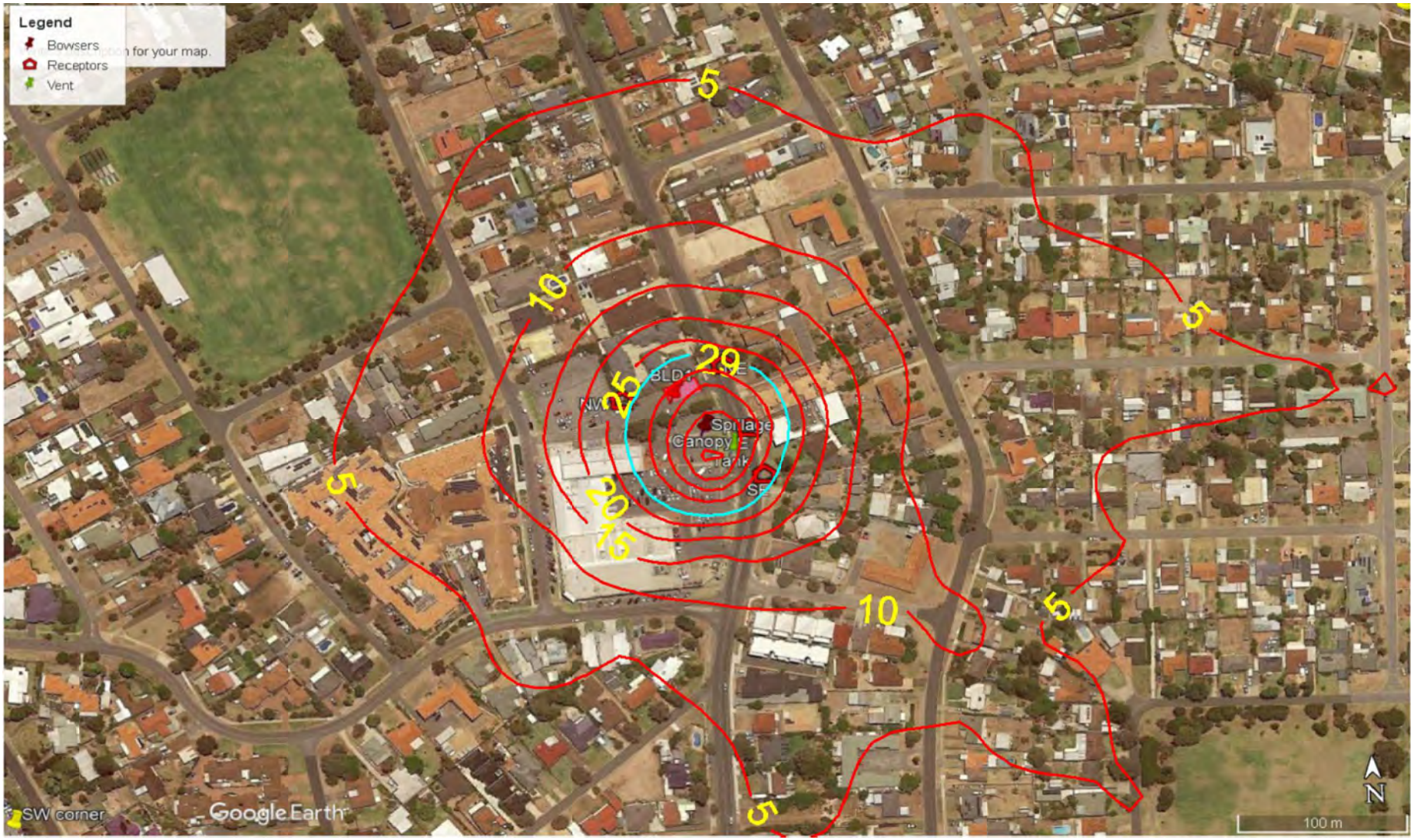


Figure 5 Scenario 2 9th highest Benzene concentration contours



Figure 6 Scenario 3 9th highest benzene concentration contours



Figure 7 Scenario 4 9th highest Benzene concentration contours

4.5 Comparison of four scenarios

The predicted 9th ground level concentrations for benzene are listed in Table 6. Both the meteorological data set and modelling methods have overestimated the benzene concentrations for scenario 1 and 2. With a different meteorological data file and the correct modelling method, the predict 9th benzene concentrations at all the receptor locations are below the AGV of 29 µg/m^3 for benzene for scenario 3 and 4. The predicted GLCs are shown in bold if they exceed benzene impact criteria.

Table 6 Comparison of Benzene 9th GLC (µg/m^3) in different scenarios

Receptor location	Jandakot		Shoalwater2016	
	Scenario 1	Scenario2	Scenario 3	Scenario 4
	EAQ	VR1	VR1	VR1 and VR2
NW	**186.4**	**32.5**	2.3	0.7
SE	**220.9**	**49.9**	3.2	1.2
NE	**186.6**	**45.9**	3.6	1.1
E	**342.8**	**64.7**	5.3	1.7

5 Conclusions

The EAQ report was reviewed (see Appendix 4 for further details). The inconsistencies in selecting emission factor, calculating emission rates and modelling emission sources resulted in an overestimation in the air toxics emission impact for the proposed service station.

Meteorological data files were formatted for AERMOD from the supplied incomplete weather information files.

Benzene was selected as a surrogate chemical for the proposed service station. The ground level concentrations were predicted using the AERMOD air dispersion model by adopting NPI emission factor, CAPCOA modelling methodology and DWER impact criteria.

The VOCs emission rates are derived from hourly petrol sale profile. Fuel tank refilling and breathing with VR1 are annualised as constant point sources. Vehicle fuel refuelling and spillage (without VR2 for scenario 1 -3) are modelled as volume sources with hourly emission profile. In comparison, scenario 4 considered the VR2 for vehicle refuelling.

An alternative meteorological data files were prepared by a reputable meteorologist and used in scenario 3 and scenario 4.

Four modelling scenarios were based on the selection of meteorological data and the emission rate calculation methods. The impact assessment using EAQ meteorological data files and emission calculation method (scenarios 1) is a ‘fail’. With the correct emission calculation method (scenario 2), the impact assessment has still failed. A more reliable meteorological data file was used to assess the proposed station. The assessments have passed for both VR1 only (scenarios 3), and VR1 and VR2 (scenario 4).

6 Reference

Development Application Proposed Service Station Lot 503 (56-62) Second Avenue, Shoalwater, Planning Solutions (Aust) Pty Ltd, March 2021

Development Plans Proposed Service Station Lot 503 No-113-121 Safety Bay Road Shoalwater

Emissions Impact Assessment of Proposed 24Hr Service Station Lot 503, 56-62 Second Avenue, Shoalwater, Western Australia, for MPX Group Pty Ltd, Environmental & Air Quality Consulting Pty Ltd, EAQ-21033, December 2021

Gasoline Service Station Industrywide Risk Assessment Guidelines, Toxics Committee of the California Air Pollution Control Officers Association (CAPCOA), November 1997

NPI Emissions Estimation Technique Manual for Aggregated Emissions from Service Stations, National Pollutant Inventory, National Environment Protection Council (NEPC), November 1999.

Construction of input meteorological data files for EPA Victoria's regulatory air pollution model (AERMOD), Publication 1550 October 2013, EPA Victoria

Guidance notes for using the regulatory air pollution model AERMOD in Victoria, Publication 1551, October 2013, EPA Victoria

User's Guide for the AERMOD Meteorological Preprocessor (AERMET), EPA-454/B-21-004 April 2021, U.S. Environmental Protection Agency Office of Air Quality Planning and Standards Air Quality Assessment Division, Air Quality Modeling Group, Research Triangle Park, North Carolina

User's Guide for the AMS/EPA Regulatory Model (AERMOD), PA-454/B-21-001 April 2021, U.S. Environmental Protection Agency Office of Air Quality Planning and Standards Air Quality Assessment Division, Air Quality Modeling Group, Research Triangle Park, North Carolina

Air Quality Modelling Guidance Notes, March 2006, Department of Environment, Western Australia

Guideline Air Emissions, October 2019 Draft for external consultation, Department of Water and Environmental Regulation

Appendix 1. CAPCOA: Emission factor (6B)

UNDERGROUND TANKS (CONT'D)

Scenario 6B - Phase I and Phase II, with Vent Valves 90% Overall Efficiency for Breathing and Refueling

Historical Emission Factors (lbs/1000 gal)	Current Emission Factors (lbs/1000 gal)	Process	Method of Derivation
	0.084	Loading	Aeroenvironment Study[4] indicated no emissions, but assumes emissions of 1% of uncontrolled emissions due to equipment failures or defects. 1% x 8.4 = 0.084
	0.025	Breathing	Even though the Aeroenvironment Study[4] was not a leak tight test, it was assumed that the reported 75% emissions reductions (0.08 down to 0.02 lbs/gal) can be used to derive the effectiveness of vent valves. Thus, the breathing loss reduced by 75% equals (0.1) (100-75%) = 0.025
	0.74	Refueling	Same as Scenario 6A
	0.42[3]	Spillage	JAWMA[3]
	1.27	**Total**	

NOTES

a) Submerged loading - Submerged loading is a type of filling method. There are two types of submerged loading methods, either the fill pipe descends almost to the bottom of the storage tank (submerged fill method) or the fill pipe enters the storage tank from the bottom (bottom loading method).

b) Phase I - Phase I refers to control methods used for reducing emissions when tank trucks unload into underground storage tanks. A Phase I vapor balance system employs a vapor return hose which returns gasoline vapor displaced from the underground storage tank to the tank truck storage compartment being emptied.

c) Phase II - Phase II refers to control methods used for reducing vehicle/equipment refueling emissions. The Phase II systems are designed to convey the vapors displaced from vehicle fuel tanks to underground storage tanks vapor space. Both balance systems and assist systems were assumed to capture 95% control of the vapors released from the vehicle fuel tank, with an overall efficiency of 90%.

A-5

Appendix 2. NPI emission factor

Table 2: Emission Factors for Service Stations[a]

Emission Source	Emission Rate (mg per litre throughput)
PETROL	
Underground tank filling	
Submerged filling	880
Splash filling	1,380
Submerged filling and vapour balance	40
Underground tank breathing/emptying	120
Vehicle refuelling	
Displacement losses (uncontrolled)	1,320
Displacement losses (controlled)	132
Spillage	80
DIESEL (includes filling underground tanks, vehicle refuelling losses, and tank breathing)	176[b]
LPG	0.04[b]

[a] USEPA (1995), unless otherwise indicated.
[b] EPAV (1996a).

Table 3: Composition of Petrol

Species	Petrol Liquid (% weight)[a]	Petrol Vapour (% weight)[b]
Benzene	2.9[c]	0.950
Cyclohexane	0.2	0.0637
Ethylbenzene	2.0	0.0791
n-Hexane	3.5	1.73
Styrene	0.1	0.00282
Toluene	10.4[c]	1.08
Xylenes	12.2	0.433

[a] Ye et al (1995) unless otherwise specified.
[b] Calculated from Equation 2, with the figure for styrene based on the boiling point of m-xylene.
[c] Octel (1994).

Appendix 3. Emission rate calculation for different scenarios

Emission sources	Emission factor	Emission rate		Comments
	CAPCOA	gasoline	benzene	
	Lbs/1000 Gallons throughput	g/s	g/s	
Scenario 1				
Underground Tank Filling (VR1)		2.133		2-3 times/day and 7 days/week
Submerged filling with vapour balance				
Underground tank breathing losses				
Vehicle Refuelling (No VR 2)	10.08	1.67		Hourly profile
Displacement Losses (uncontrolled)	8.4			
Spillages Uncontrolled (liquid)	0.61			
Spillages controlled (liquid)	0.41			
Whoosh Emissions	0.66			
	NPI, 1999			
	mg/L throughput			
Scenario 2				
Underground Tank Filling (VR1)	160	0.028		
Submerged filling with vapour balance	40	0.007	0.00007	Constant
Underground tank breathing losses	120	0.021	0.00020	Constant
Vehicle Refuelling (uncontrolled)	1320	0.229	0.0522	daily emission rate
Spillages Uncontrolled (liquid)	80	0.014	0.010	releasing height = 0.1
Scenario 3				
Underground Tank Filling (VR1)	160			
Submerged filling with vapour balance	40	0.007	0.00007	
Underground tank breathing losses	120	0.021	0.00020	
Vehicle Refuelling (uncontrolled, no VR2)	1320	0.229	0.0522	daily emission rate
Spillages Uncontrolled (liquid)	80	0.014	0.010	releasing height = 0.1
Scenario 4				
Underground Tank Filling (VR1)	160			
Submerged filling with vapour balance	40	0.007	0.00007	
Underground tank breathing losses	120	0.021	0.00020	
Vehicle Refuelling (with VR 2)	132	0.023	0.00524	daily emission rate
Spillages Uncontrolled (liquid)	80	0.014	0.105	releasing height = 0.1

Appendix 4. Review of EAQ report

AERMOD has a control file which is divided into five functional "pathways." They are:

1. SO - for specifying SOurce information;
2. RE - for specifying REceptor information;
3. ME - for specifying MEteorology information;
4. EV - for specifying EVent processing;
5. OU - for specifying OUtput options.

The review of the report will be organised in this order.

There is no literature or references cited in the report.

A5.1. SO pathway

The EAQ report has used hourly emission rates in the modelling. The following text and table have summarised the emission factor for two sources.

> The refuelling activities are considered to be volume emission sources. These have been assessed utilising the CAPCOA, 1997 emission factors. Vent emissions from storage tank filling has been assessed using the NPI, 1999 emission factors.

Table 2-7: Summary of Service Station Emissions

Emission Source	Emission Type	Peak VOC Mass Emission Rate (g/s)	Stack Diameter (m)	Emission Velocity (m/s)	Temperature (^{0}C)
Storage Tanker Vent Stack	Bulk Filling (Vapour Balance and Breathing Losses) **– VR1**	0.213	0.1	0.1	25^{0}C
Passive Emissions from Vehicle Refuelling	Refuelling Losses (Uncontrolled), Spillages (controlled/uncontrolled), and "Whoosh" Emissions	2.456 (all 8 filling points)	-	-	

For the storage tank vent stack, the report uses the fuel tank delivery volume (48000 L) and the emission factor of 160 mg/L to derive the emission rate of 0.213 g/s per delivery over 1 hour. If the emission factor of 160 mg/L cited in Appendix A (the Excel calculation sheet) is the sum of submerged filling and vapour balance (40 mg/L throughput) and underground tank breathing/emptying (120 mg/L throughput), the former should be applied only. The latter is not part of the tank delivery. Furthermore, when the actual delivery is 2.2 times a week, the weekly delivery schedule (18 times/week in Table 2-1) leads to multiplying vent emission rates by an unrealistic factor of 8 (18/2.2 = 8.2 times).

For passive emissions from vehicle refuelling, the report does not mention which CAPCOA scenario is used to estimate the emission factor.

Table 2-4: Emissions Factors for Service Stations

Emission Source	NPI, 1999 Mg / L throughput	CAPCOA, 1997 Lbs / 1000 Gallons throughput
Underground Tank Filling	-	-
Submerged Filling	880	8.4
Splash Filling	1380	-
Submerged filling with vapour balance	**40**	0.42
Underground tank breathing losses	**120**	0.84
Vehicle Refuelling	-	-
Displacement Losses (uncontrolled)	1320	**8.4**
Displacement Losses (90% controlled e.g. VR 2)	132	0.74

Table 2-7 mentioned that vehicle refuelling is “uncontrolled”. This leads to 8.4 lbs/1000 (0.1748 g/s) gallons or Scenario 5B. If we use VR2, it is 0.74 lbs/1000 gallons (0.0154 g/s) or scenario 6B.

In the report, the hourly input in Table 2-6 can be converted into the emission rate of 1.67 g/s (= 40.2 g/s (sum of 24 hours emission rates in column 5) / 24 hrs).

This is nearly 10 times more than scenario 5B or over 100 times more than scenario 6B in emission rates. The emission rates used in the report have been grossly overestimated.

The report has modelled the service station as four individual volume sources (bowsers) and one point source (vent). CAPCOA (Appendix C page C-1) mentioned:

> One of the major factors in the evaluation of risk from RGOs is the choice of source characteristics for use in the Industrial Source Complex Short Term dispersion model (ISCST3). The draft report issued by CAPCOA in May, 1996 [1] recommended that emissions be modeled as four volume sources each with dimensions 1.3 meters high by 3 meters long by 3 meters wide. These dimensions were developed based on a standardized gasoline service station plot plan and an analysis of the size of the wake cavity that will be produced as wind travels over the dispensers and the vehicles being refueled.
>
> It is WSPA’s position that the volume sources presented in the draft CAPCOA report do not adequately represent the source characteristics of emissions from a typical RGO. The presence of dispensers, standards, the canopy, nearby buildings, trees, and other objects will result in enhanced mixing of benzene vapors with air at the source thereby greatly reducing near-receptor impacts. WSPA recommends that emissions be modeled using a single volume source with dimensions roughly equivalent to the volume beneath a typical gas station canopy, i.e.: 5 meters high by 13 meters long by 13 meters wide.

It is recommended that the service station is modelled as a single building source under the canopy.

In Table 4-1 Assessment Results for GLC's of Pollutants, the author has not reported the Benzene hourly ground level concentrations at these receptor locations. DWER WA has an hourly AGV of 29 µg/m^3. CASPCAO has confirmed that *benzene is the most substance driving the risk assessment.*

A5.2. RE pathway

The receptor grid details are not supplied.

A5.3. ME pathway

Both surface and profile meteorological data file are not supplied.

A5.4. EV pathway

The control pathway has no events which lists specific combinations of receptor location, source group, and averaging period.

A5.5. OU pathway

The modelling output files includes the 100th percentile values over 1 hour averaged over 24 hours. It also includes the plot files of 1 hour, 24 hour and annual averaged values to generate the contours for vent, bowsers and both groups.

The modelling output files (VR2.sum) has a separate formatted output file containing the summary of high ranked values included. This is not provided.

It is unusual that the maximum concentration table at the sensitive receptors is not presented in the report.

It is unusual that concentration contours are not presented in the report.

A5.6. Summary

The author of the report should have included the electronic files for review.

The report has overestimated the emission rates for all emission sources.

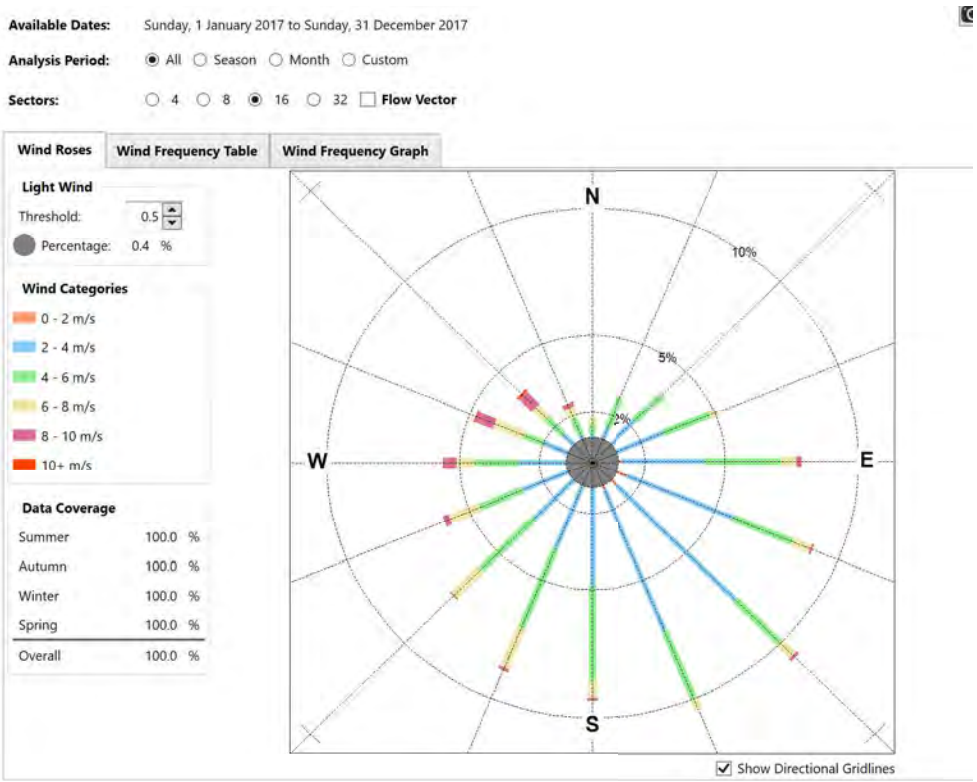
The report has modelled the bowsers as volume sources not the canopy.

Hourly GLC for benzene should be reported.

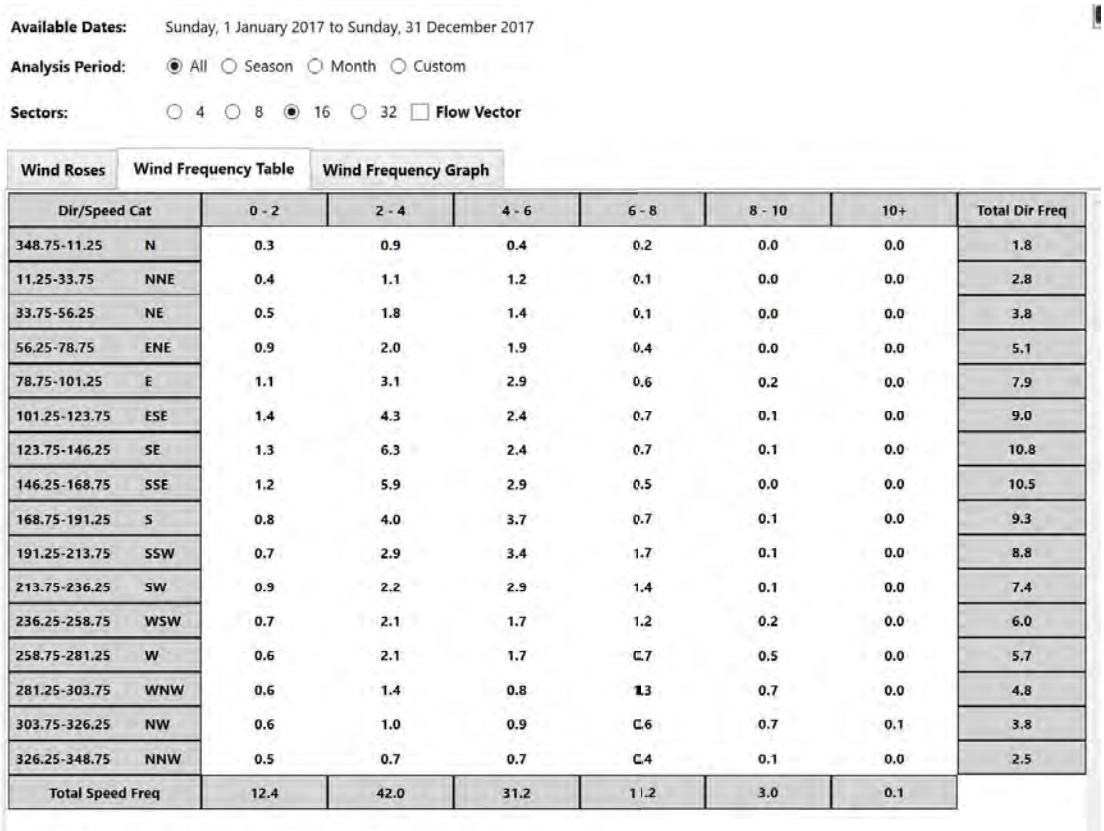
It is not possible to reproduce the maximum ground level concentrations in Table 4-1 at the receptors with the information supplied in the report.

Appendix 5. AERMOD Meteorological data for EAQ data

A5.1. Windrose

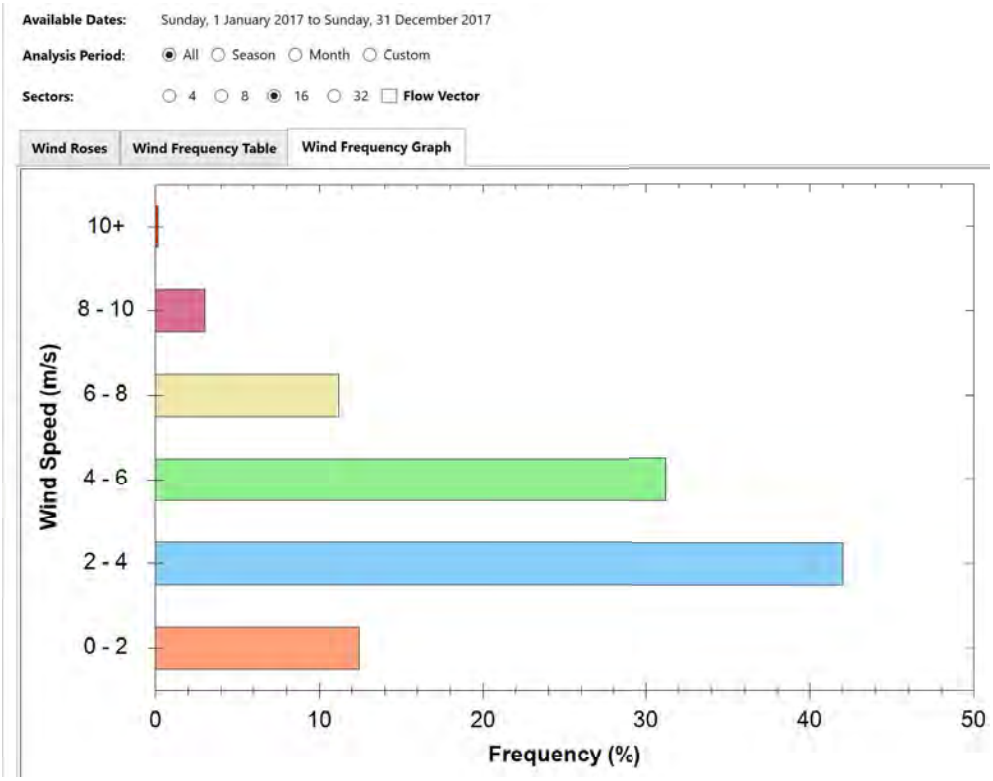


A5.2. Wind Frequency Table

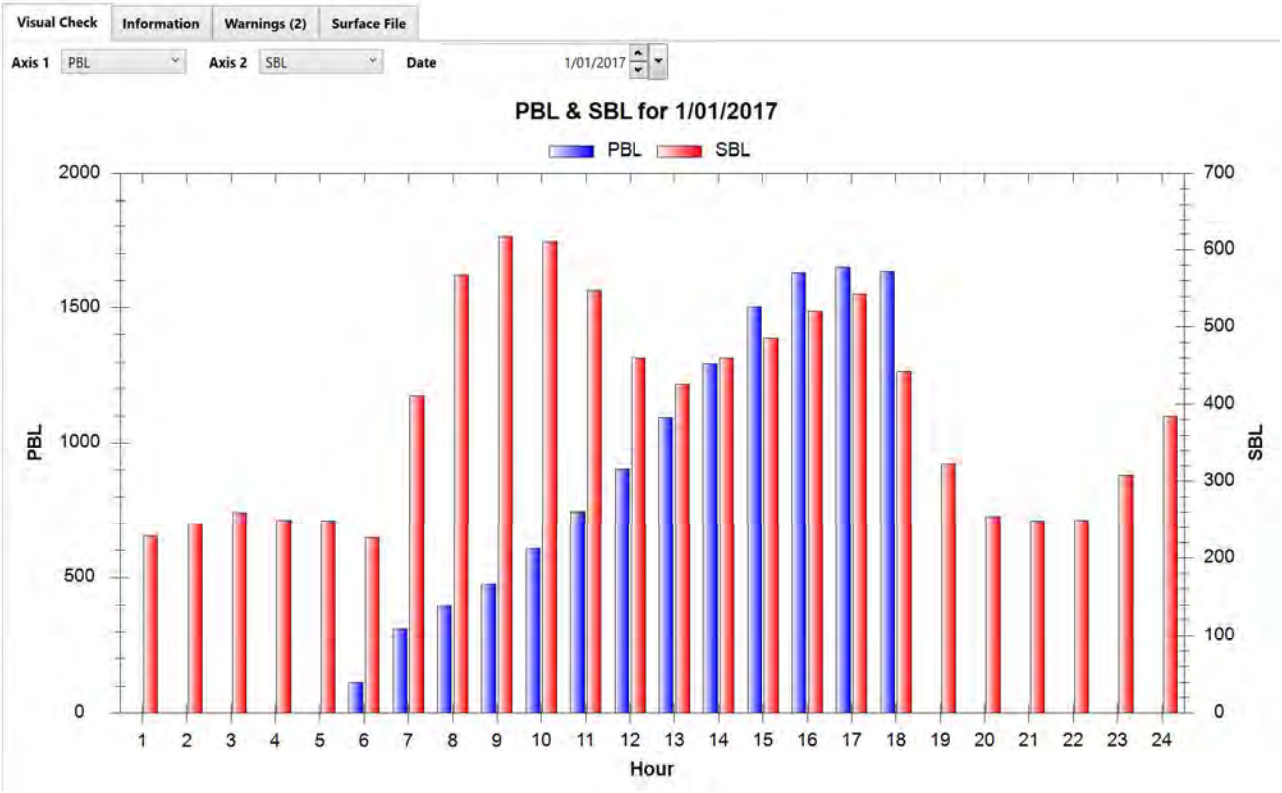


Dir/Speed Cat		0 - 2	2 - 4	4 - 6	6 - 8	8 - 10	10+	Total Dir Freq
348.75-11.25	N	0.3	0.9	0.4	0.2	0.0	0.0	1.8
11.25-33.75	NNE	0.4	1.1	1.2	0.1	0.0	0.0	2.8
33.75-56.25	NE	0.5	1.8	1.4	0.1	0.0	0.0	3.8
56.25-78.75	ENE	0.9	2.0	1.9	0.4	0.0	0.0	5.1
78.75-101.25	E	1.1	3.1	2.9	0.6	0.2	0.0	7.9
101.25-123.75	ESE	1.4	4.3	2.4	0.7	0.1	0.0	9.0
123.75-146.25	SE	1.3	6.3	2.4	0.7	0.1	0.0	10.8
146.25-168.75	SSE	1.2	5.9	2.9	0.5	0.0	0.0	10.5
168.75-191.25	S	0.8	4.0	3.7	0.7	0.1	0.0	9.3
191.25-213.75	SSW	0.7	2.9	3.4	1.7	0.1	0.0	8.8
213.75-236.25	SW	0.9	2.2	2.9	1.4	0.1	0.0	7.4
236.25-258.75	WSW	0.7	2.1	1.7	1.2	0.2	0.0	6.0
258.75-281.25	W	0.6	2.1	1.7	0.7	0.5	0.0	5.7
281.25-303.75	WNW	0.6	1.4	0.8	1.3	0.7	0.0	4.8
303.75-326.25	NW	0.6	1.0	0.9	0.6	0.7	0.1	3.8
326.25-348.75	NNW	0.5	0.7	0.7	0.4	0.1	0.0	2.5
Total Speed Freq		12.4	42.0	31.2	11.2	3.0	0.1	

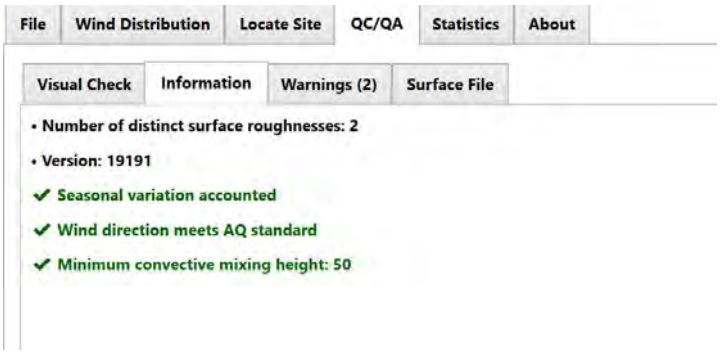
A5.3. Wind Frequency Graph



A5.4. Example of daily PBL and SBL



A5.5. QC/QA checking message



A5.6. QC/QA warning message



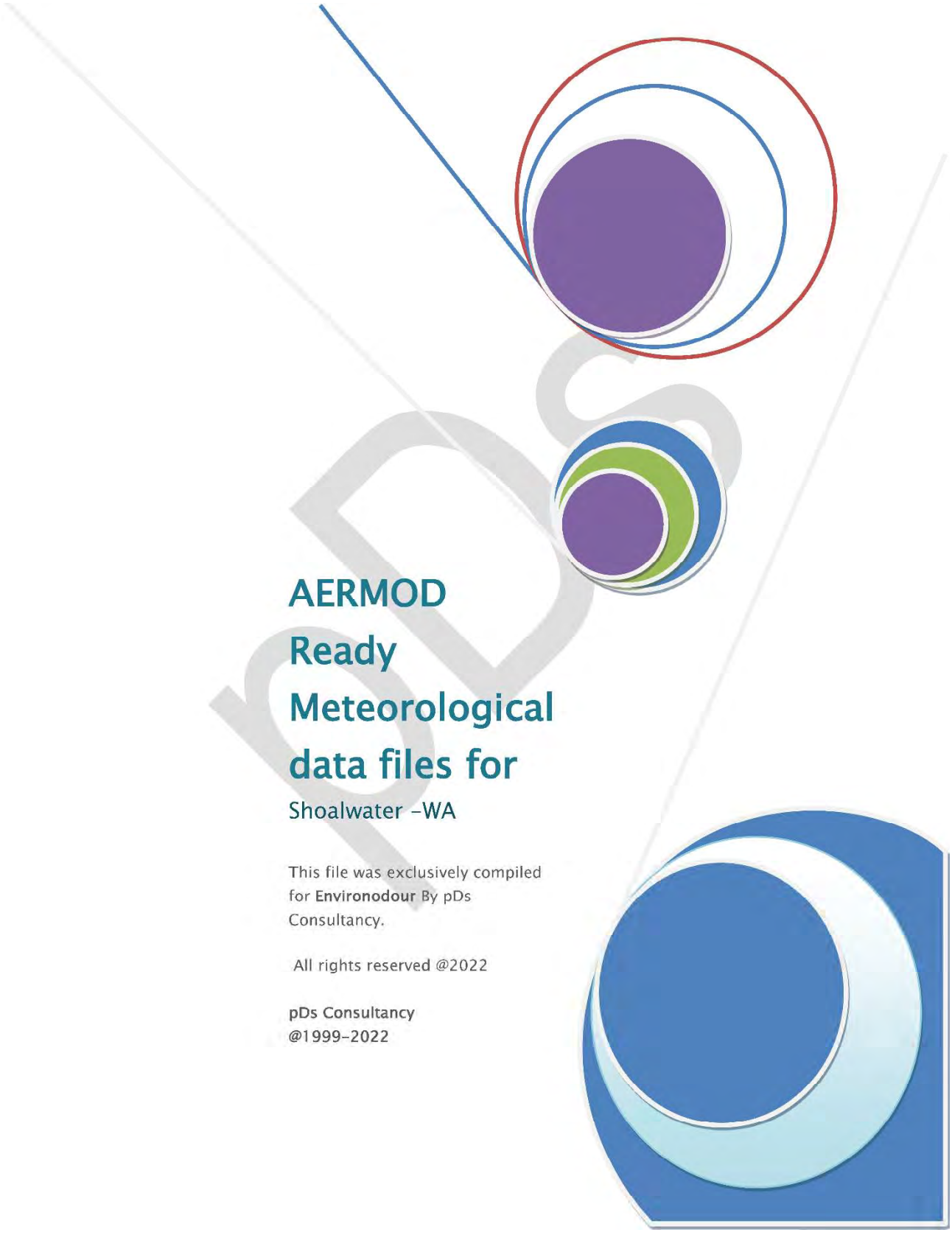
A5.7. Statistics for the parameters

Parameter		Summer	Autumn	Winter	Spring	Annual
Wind Speed	Min	0.33	0.06	0.11	0.26	0.06
	Max	9.26	9.30	10.35	10.77	10.77
	Ave	4.63	3.58	4.01	3.86	4.02
Surface Temperature	Min	12.25	8.15	4.95	6.75	4.95
	Max	37.35	30.05	23.75	33.35	37.35
	Ave	22.09	18.91	14.39	17.52	18.21
Convective Mixing Height	Min	50.00	50.00	50.00	50.00	50.00
	Max	2476.00	1738.00	1845.00	2191.00	2476.00
	2nd Highest	2455.00	1716.00	1833.00	2183.00	2455.00
	Ave	866.18	715.78	819.92	873.40	823.63
Mechanical Mixing Height	Min	26.00	26.00	26.00	26.00	26.00
	Max	1367.00	1318.00	1633.00	1730.00	1730.00
	2nd Highest	1361.00	1301.00	1557.00	1705.00	1705.00
	Ave	503.93	321.45	394.39	383.37	400.27

A5.8. Statistics for the parameters

Parameter		Summer	Autumn	Winter	Spring	Annual
Wind Speed	Min	0.60	0.60	0.60	0.60	0.60
	Max	9.61	17.69	14.06	14.44	17.69
	Ave	4.20	3.67	3.94	4.07	3.97
Surface Temperature	Min	12.25	8.35	4.75	6.35	4.75
	Max	39.35	38.45	21.95	35.65	39.35
	Ave	23.23	19.70	13.53	16.41	18.21
Convective Mixing Height	Min	207.00	214.00	203.00	209.00	203.00
	Max	2928.00	2997.00	2999.00	2999.00	2999.00
	2nd Highest	2921.00	2996.00	2998.00	2998.00	2998.00
	Ave	1520.28	1388.56	1488.92	1530.25	1485.60
Mechanical Mixing Height	Min	118.00	88.00	83.00	114.00	83.00
	Max	3000.00	3000.00	3000.00	3000.00	3000.00
	2nd Highest	2993.00	2999.00	2999.00	2982.00	2999.00
	Ave	1056.82	901.68	979.37	1027.49	991.08

Appendix 6. pDs meteorological data report





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INTRODUCTION

New generation regulatory model AERMOD requires hourly averaged meteorological data from a single site that is preferably within the model domain ('on-site' or site-specific data). However, data from the nearest 'off-site' meteorological station can be used when on-site data are not available, and the off-site data are representative of the area of concern (i.e. the meteorological parameters as well as surface characteristics characterise the transport and dispersion conditions of the location in question).

It is also preferable that:

- The compilation of the input meteorological data file is done in accordance with 'best practice', with procedures and algorithms recommended or set by environment regulators/US & VIC EPA.

pDs Consultancy has been engaged by **Environodour** to compile an 'AERMOD-ready' meteorological file for an application site 56, Second Avenue, Shoalwater, WA. Mandurah weather station which is maintained by Australian Bureau of Meteorology found be the most representative station to get raw data required.

This input meteorological data files have been compiled basically following the EPA, Victoria's draft guidelines: "Construction of input meteorological data files for EPA Victoria's regulatory air pollution model (AERMOD) (Publication No.1550)".

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LOCATION OF THE APPLICATION SITE & MET DATA SOURCE:
YELLOW PLACE MARK SHOWING THE MET SITE, GREEN PEG SHOWING THE APPLICATION SITE; SHOALWATER





Data Processing

Input Information

Data Used for the compilation

Meteorological Data

1. **Mandatory Data (Mandurah AWS)**
    i. 10m Wind Direction and Speed
    ii. Ambient Temperature (Screen Level)

2. **Supplementary data (Mandurah AWS)**

I. Surface Pressure
II. 3 Hourly Cloud observations
III. Relative Humidity
IV. Rainfall Rate

3. **Upper air Data (Perth Airport)**

I. Pressure Levels
II. Geopotential Heights
III. Temperature
IV. Dew Point

PDS

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DATA SOURCE

- National Climate Centre, Bureau of Meteorology, Melbourne:
- Mandurah AWS data + Perth Upper air data
- Period :1 Jan 2016 to 31 Dec 2016

QA/QC ON RAW DATA

I. Hourly averaged winds both direction and speed and temperature examined for gaps and wind stalls
   - Suspected wind stalls (both wind direction and speed) removed and filled appropriately preserving the temporal consistency.

II. Small gaps filled with pervious or following hour records
III. Days with big gaps removed maintaining 90% data recovery
IV. Parameters QA/QCed based on extreme values
V. Wind measurements done using Ultrasound anemometer.
VI. Gaps in vertical temperature profiles were filled with previous or following day data for the completeness.

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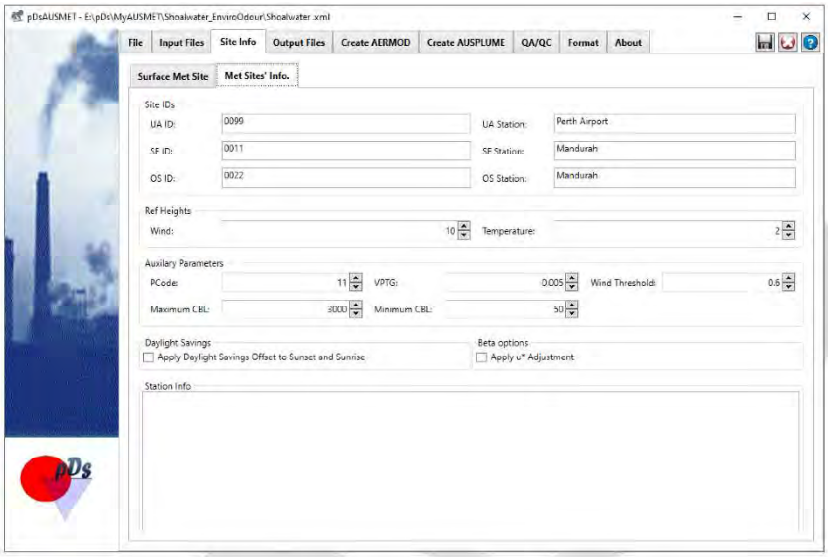
METSITE INFORMATION



DATA COVERAGE:

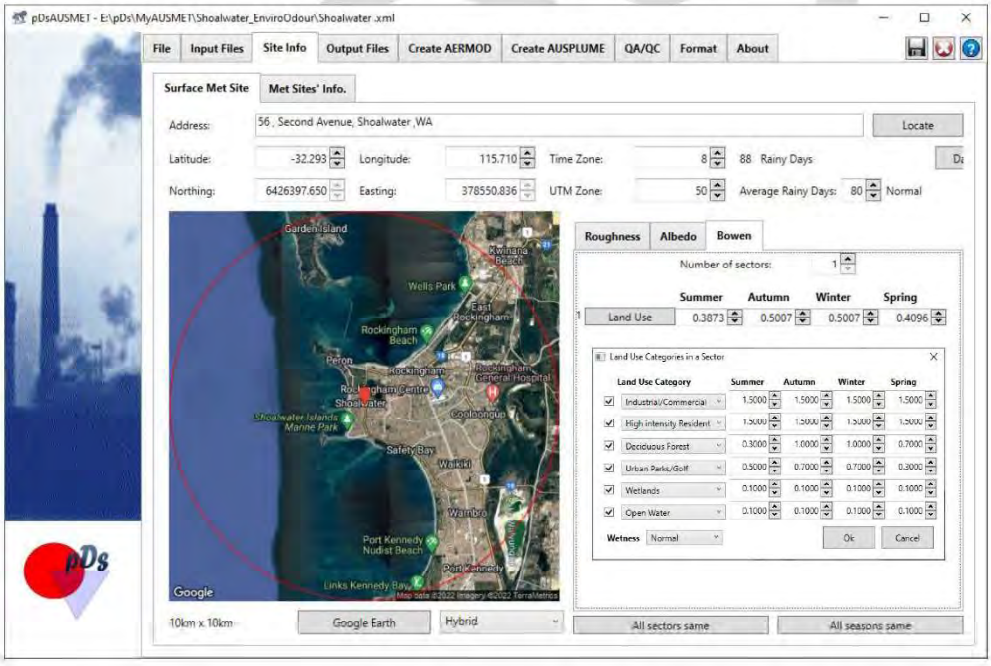
Season	Data Coverage %				
Year	2016	2017	2018	2019	2020
Summer	100				
Autumn	100				
Winter	100				
Spring	100				
Annual	100				

Annual and Seasonal data coverage are meeting regulatory requirement (90% or better).

DETERMINATION OF SURFACE CHARACTERISTICS

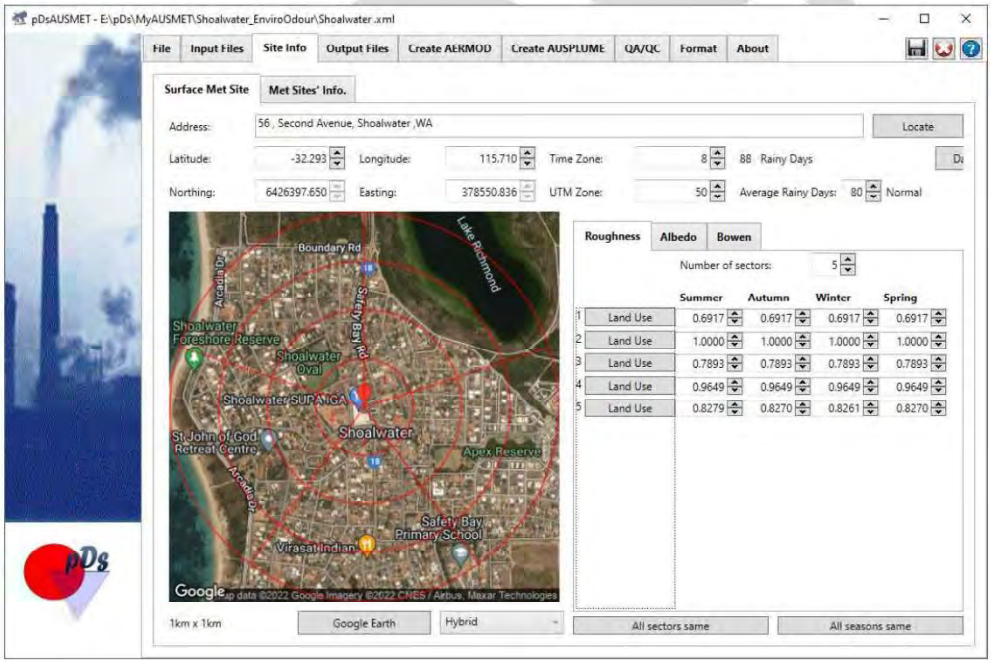
All available surface maps including google maps examined to determine correct land use categories within 10 Km by 10 KM area centring the application site.

Albedo and **Bowen ratio** were determined using land use categories shown below.



SURFACE ROUGHNESS

Sector dependent surface roughness was determined considering 05 sectors. Roughness of each sector with 4 segments (250m) was assigned carefully examining land use distribution.





The following parameters were determined/computed following EPA, VIC and US EPA guidelines.

Sensible Heat flux -Calculated based on cloud observations

I. Friction Velocity (U*)
II. Monin-Obukhov Length (L)
III. Height of the Stable Boundary Layer (SBL)
IV. Vertical Velocity Scale (W*)
V. Height of the Convective Boundary Layer (CBL)

Mixing height (Convective)-CBL

DEFINITION:

The convective mixing height, the depth of the surface mixed layer is the height of the atmosphere above the ground, which is well mixed due either to mechanical turbulence or convective turbulence. This height was determined by using the methodology of Benkley and Schulman (Journal of Applied Meteorology, Volume 18, 1979,pp 772-780). **Perth Airport** upper air observation containing temperature and moisture profiles and surface temperature (Dandenong AMS), pressure and relative humidity at **Mandurah** were used to determine daytime mixing height.

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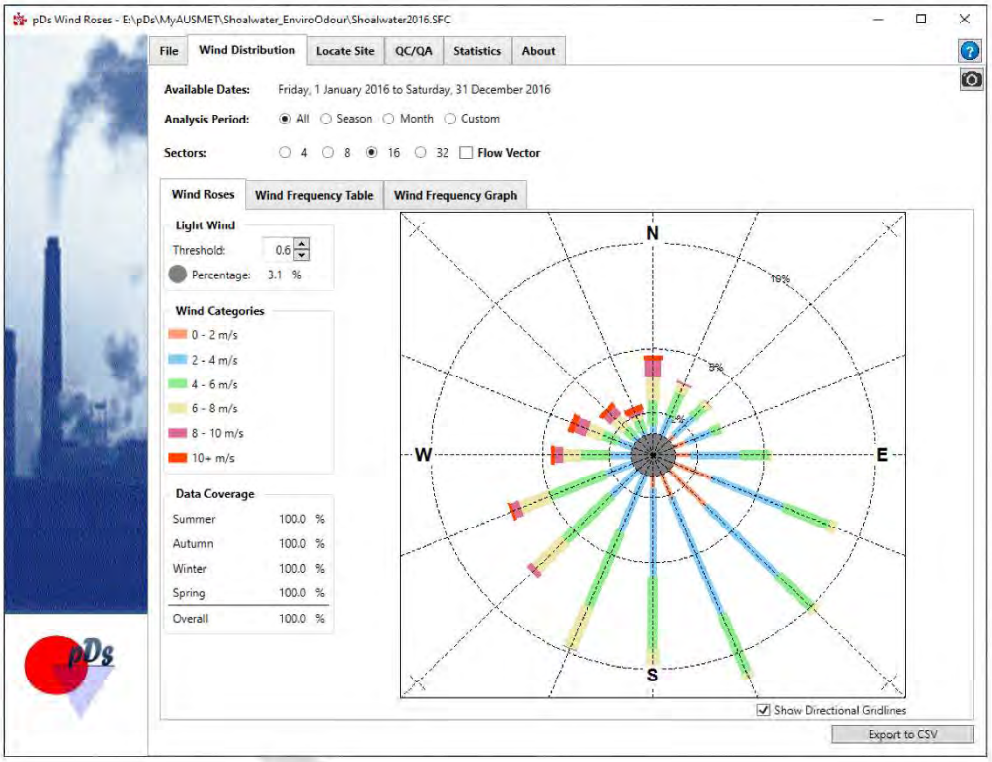
DATA ANALYSIS

ANNUAL WINDROSES FOR MANDURAH-2016



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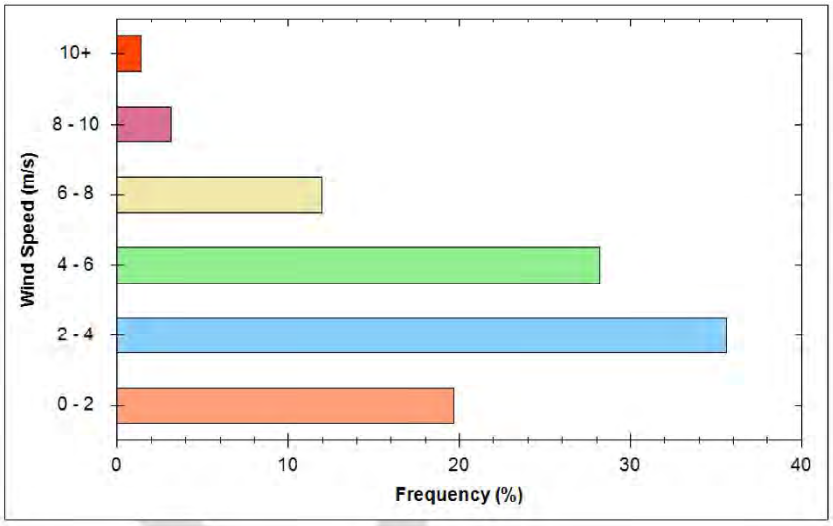
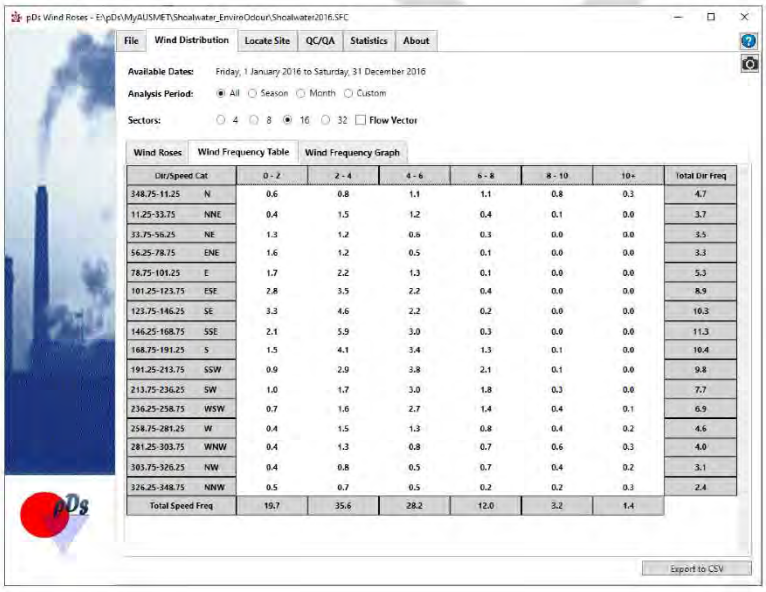
FREQUENCY OF WIND SPEED





pDs Wind Roses - E:\pDs\My AUSMET\Shoalwater_EnviroOdour\Shoalwater2016.SFC

File | Wind Distribution | Locate Site | QC/QA | Statistics | About

Available Dates: Friday, 1 January 2016 to Saturday, 31 December 2016

Analysis Period: All | Season | Month | Custom

Sectors: 4 | 8 | 16 | 32 | Flow Vector

Wind Roses | Wind Frequency Table | Wind Frequency Graph

Dir/Speed Cat		0 - 2	2 - 4	4 - 6	6 - 8	8 - 10	10+	Total Dir Freq
348.75-11.25	N	0.6	0.8	1.1	1.1	0.8	0.3	4.7
11.25-33.75	NNE	0.4	1.5	1.2	0.4	0.1	0.0	3.7
33.75-56.25	NE	1.3	1.2	0.6	0.3	0.0	0.0	3.5
56.25-78.75	ENE	1.6	1.2	0.5	0.1	0.0	0.0	3.3
78.75-101.25	E	1.7	2.2	1.3	0.1	0.0	0.0	5.3
101.25-123.75	ESE	2.8	3.5	2.2	0.4	0.0	0.0	8.9
123.75-146.25	SE	3.3	4.6	2.2	0.2	0.0	0.0	10.3
146.25-168.75	SSE	2.1	5.9	3.0	0.3	0.0	0.0	11.3
168.75-191.25	S	1.5	4.1	3.4	1.3	0.1	0.0	10.4
191.25-213.75	SSW	0.9	2.9	3.8	2.1	0.1	0.0	9.8
213.75-236.25	SW	1.0	1.7	3.0	1.8	0.3	0.0	7.7
236.25-258.75	WSW	0.7	1.6	2.7	1.4	0.4	0.1	6.9
258.75-281.25	W	0.4	1.5	1.3	0.8	0.4	0.2	4.6
281.25-303.75	WNW	0.4	1.3	0.8	0.7	0.6	0.3	4.0
303.75-326.25	NW	0.4	0.8	0.5	0.7	0.4	0.2	3.1
326.25-348.75	NNW	0.5	0.7	0.5	0.2	0.2	0.3	2.4
Total Speed Freq		19.7	35.6	28.2	12.0	3.2	1.4	

Export to CSV

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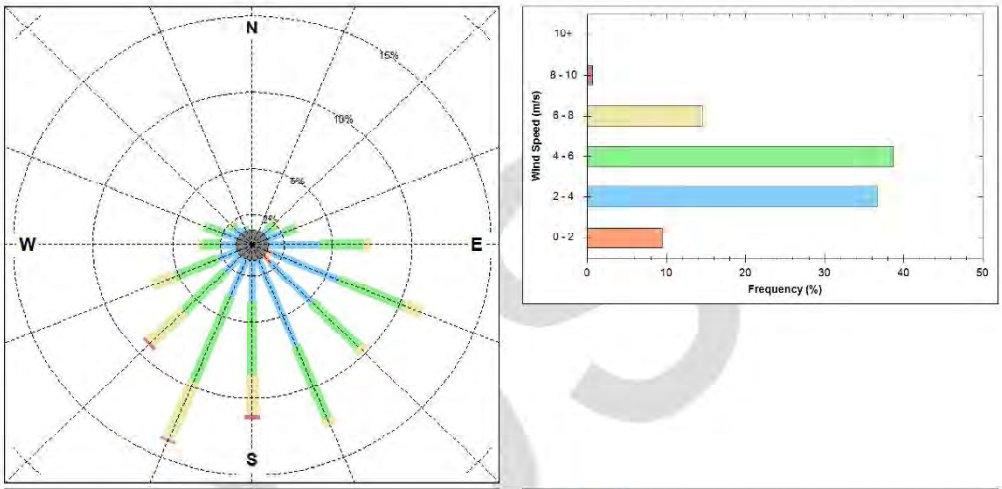
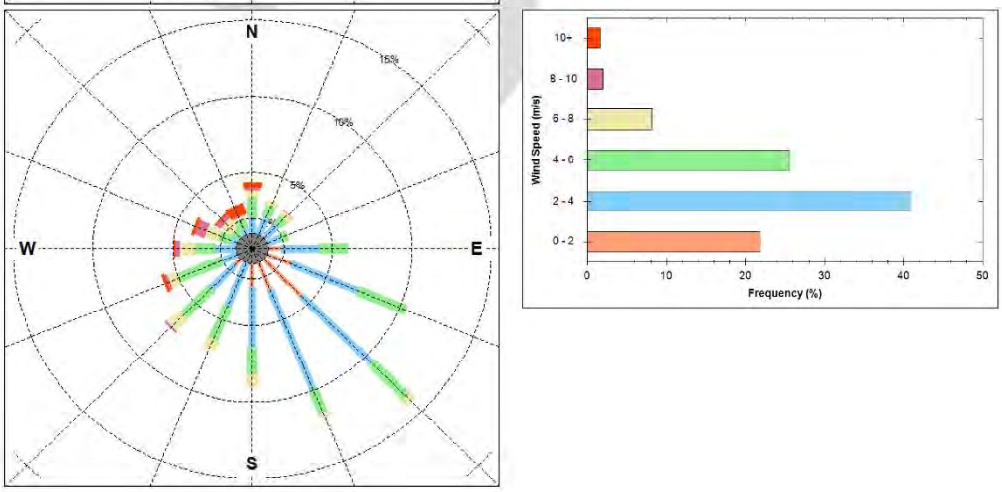
www.pdsconsultancy.com.au metfile@pdsconsultancy.com

SEASONAL WINDROSES

Summer



Autumn



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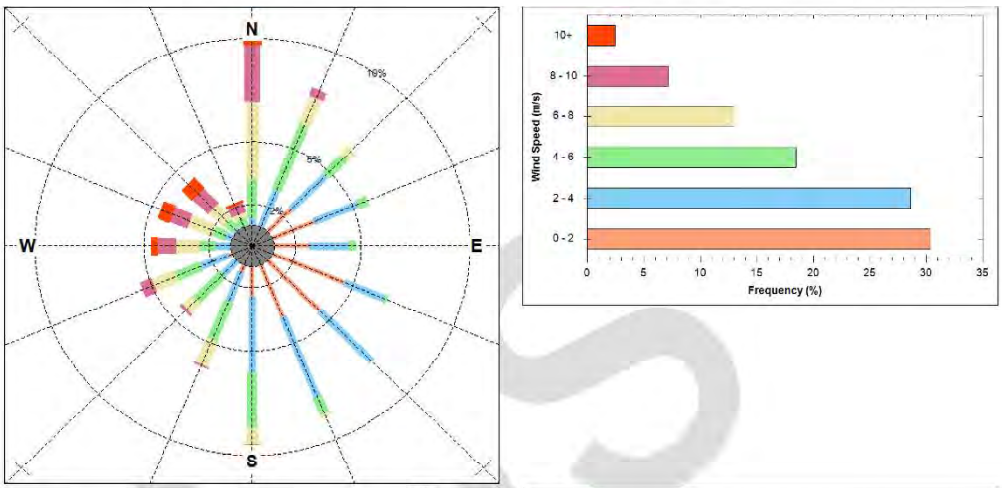
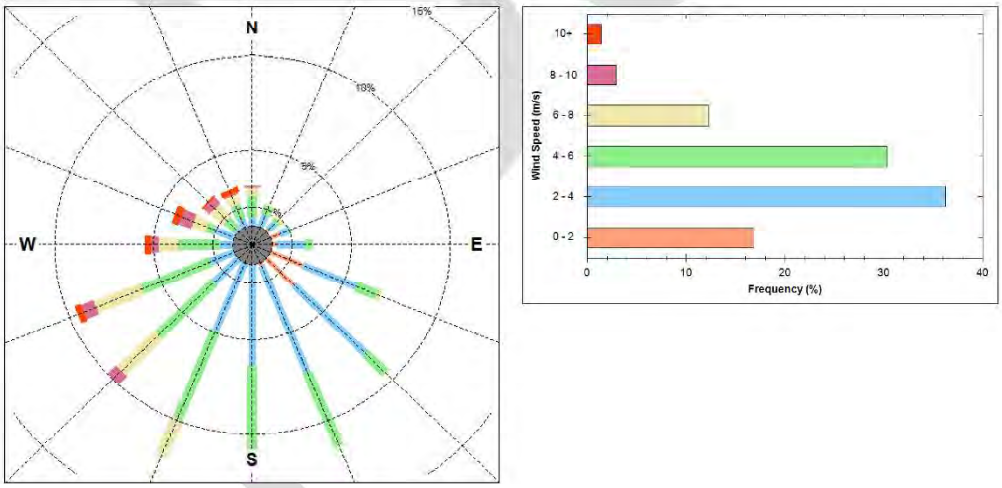
Winter



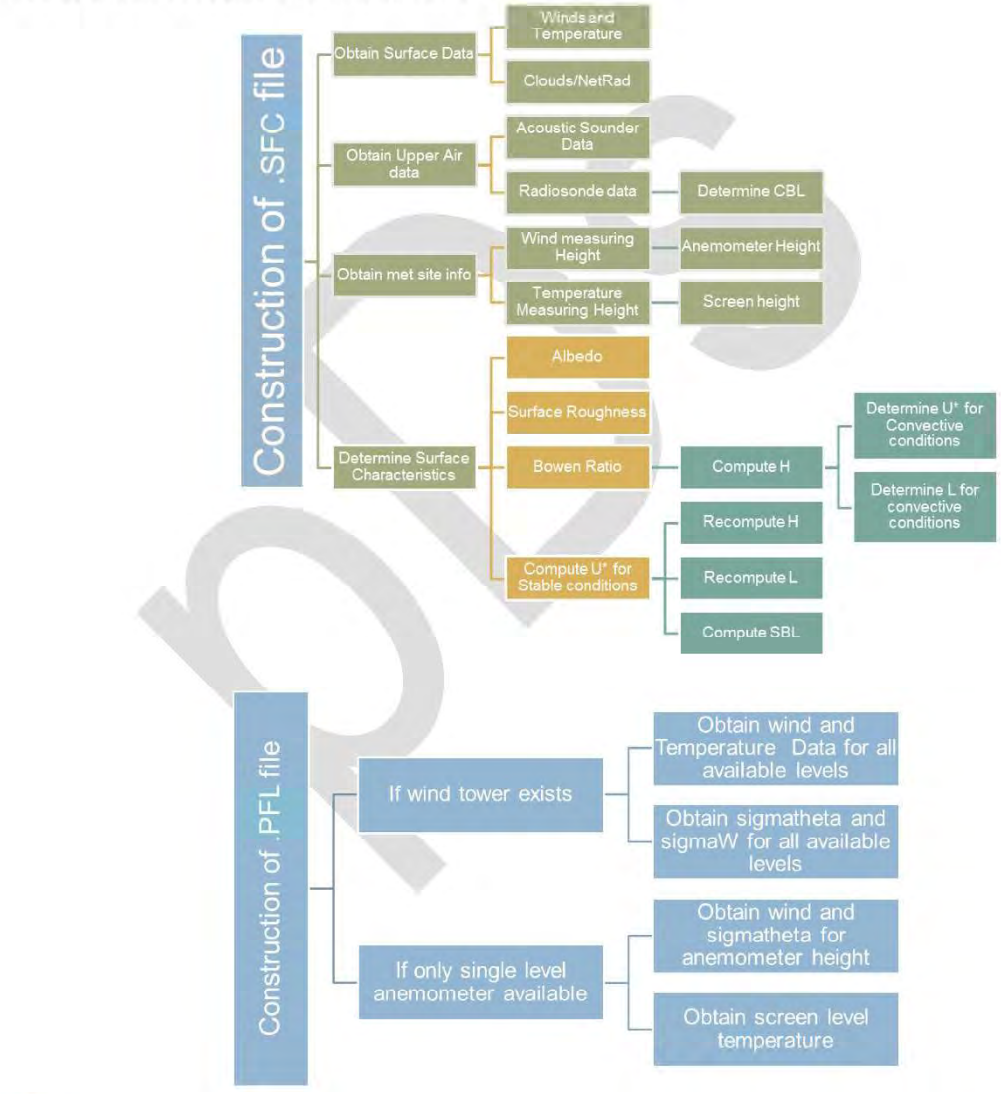
Spring



Seasonal variations are clearly depicted.

Appendix A

FLOW CHARTS - CONSTRUCTION PROCEDURE





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Appendix 7. Example of AERMOD configuration file

```
** AERMOD Input Produced by AUSMOD v6.0
** AERMOD Control Pathway
CO STARTING
   TITLEONE Lot 503(No.56 - 62) Second Avenue, Shoalwater WA 6168
   TITLETWO VOCs
   MODELOPT CONC FLAT NOCHKD
   AVERTIME 1 24 PERIOD
   POLLUTID OTHER
   RUNORNOT RUN
   ERRORFIL "Scenario1_EAQ.err"
CO FINISHED

** AERMOD Source Pathway
SO STARTING
   LOCATION Vent POINT 378611.109 6426389.460 0.000
   LOCATION BOWS01 VOLUME 378585.588 6426415.119 0.000
   LOCATION BOWS02 VOLUME 378593.574 6426418.033 0.000
   LOCATION BOWS03 VOLUME 378601.493 6426420.688 0.000
   LOCATION BOWS04 VOLUME 378577.936 6426412.415 0.000
   SRCPARAM Vent 1.00000 4.000 298.150 0.100 0.100
   SRCPARAM BOWS01 0.25000 1.200 1.500 0.600
   SRCPARAM BOWS02 0.25000 1.200 1.500 0.600
   SRCPARAM BOWS03 0.25000 1.200 1.500 0.600
   SRCPARAM BOWS04 0.25000 1.200 1.500 0.600
   EMISFACT Vent HRDOW7 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000
0.21300 0.00000
   EMISFACT Vent HRDOW7 0.00000 0.00000 0.00000 0.00000 0.00000 0.21300
0.00000 0.00000
   EMISFACT Vent HRDOW7 0.00000 0.00000 0.00000 0.00000 0.21300 0.00000
0.00000 0.00000
   EMISFACT Vent HRDOW7 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000
0.00000 0.21300
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EMISFACT Vent HRDOW7 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.21300 0.00000

EMISFACT Vent HRDOW7 0.00000 0.00000 0.00000 0.00000 0.00000 0.21300 0.00000 0.00000

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EMISFACT Vent HRDOW7 0.00000 0.00000 0.21300 0.00000 0.00000 0.00000 0.00000 0.00000

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EMISFACT Vent HRDOW7 0.00000 0.00000 0.00000 0.00000 0.21300 0.00000 0.00000 0.00000

EMISFACT Vent HRDOW7 0.00000 0.00000 0.00000 0.21300 0.00000 0.00000 0.00000 0.00000

EMISFACT BOWS01 HROFDY 0.48300 0.32200 0.24200 0.32200 0.76500 1.85200

```
   EMISFACT BOWS01 HROFDY 2.21400 2.29500 2.21400 2.29500 2.41600 2.33500
   EMISFACT BOWS01 HROFDY 2.29500 2.25500 2.37500 2.45600 2.41600 2.33500
   EMISFACT BOWS01 HROFDY 2.05300 1.61000 1.40900 1.36900 1.04700 0.72500

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   EMISFACT BOWS02 HROFDY 2.05300 1.61000 1.40900 1.36900 1.04700 0.72500

   EMISFACT BOWS03 HROFDY 0.48300 0.32200 0.24200 0.32200 0.76500 1.85200
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   EMISFACT BOWS03 HROFDY 2.29500 2.25500 2.37500 2.45600 2.41600 2.33500
   EMISFACT BOWS03 HROFDY 2.05300 1.61000 1.40900 1.36900 1.04700 0.72500

   EMISFACT BOWS04 HROFDY 0.48300 0.32200 0.24200 0.32200 0.76500 1.85200
   EMISFACT BOWS04 HROFDY 2.21400 2.29500 2.21400 2.29500 2.41600 2.33500
   EMISFACT BOWS04 HROFDY 2.29500 2.25500 2.37500 2.45600 2.41600 2.33500
   EMISFACT BOWS04 HROFDY 2.05300 1.61000 1.40900 1.36900 1.04700 0.72500

   CONCUNIT 1000000 g/s ug/m3
   SRCGROUP GP01 Vent BOWS01 BOWS02 BOWS03
   SRCGROUP ALL
SO FINISHED

** AERMOD Receptor Pathway
RE STARTING
   GRIDCART RGCART STA
                XYINC 378051.000 21 50.000 6425898.000 21 50.000
   GRIDCART RGCART END
** Discrete receptors
   DISCCART      378548.000 6426443.000
   DISCCART      378630.000 6426393.000
```

```
   DISCCART      378608.000 6426464.000
   DISCCART      378622.000 6426423.000
RE FINISHED

** AERMOD Meteorology Pathway
ME STARTING
   SURFFILE "Jandakot.SFC"
   PROFFILE "Jandakot.PFL"
   SURFDATA 94609 2017
   UAIRDATA 94609 0
   PROFBASE 0 METERS
ME FINISHED

** AERMOD Output Pathway
OU STARTING
   RECTABLE ALLAVE 1ST
   RECTABLE 1 9TH
   RECTABLE 24 1ST
   MAXTABLE ALLAVE 999
   PLOTFILE 01 ALL 9TH ALL_01_9H.PLT
   PLOTFILE 24 ALL 1ST ALL_24_1H.PLT
   PLOTFILE PERIOD ALL ALL_PERIOD.PLT
OU FINISHED
```

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21 March 2022

Mr Alessandro Stagno
Principal
APEX Planning
Osborne Park
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By email:Alessandro@apexplanning.com.au

[EAQ Project: 21033]

Letter of Response: Proposed Shoalwater Service Station

Dear Alessandro,

Environmental and Air Quality Consulting Pty Ltd (EAQ) provides the following responses in relation to recent advice (the Advice) provided by the Government of Western Australia Department of Water and Environmental Regulation (DWER) Kwinana Peel Region, and the Department of Health (DoH), for the proposed Shoalwater Service Station (the Application) to be located at Lot 503 Second Avenue, Shoalwater Western Australia.

Regarding the Advice, the DWER and DoH have commented on the applicability of EAQ's Emissions Assessment Report (the Report) that considered estimations of volatile organic compounds from fuel station activities such as refuelling of storage tanks and refuelling of cars at the bowser(s).

1. DWER Advice

The DWER Advice, as authored by the Kwinana Peel Region's Acting Program Manager – Planning Advice, Jane Sturgess; states that:

DWER does not have a *"regulatory role, policy position or guidance statement for fuel stations"…., and, "Due to uncertainties within air dispersion modelling for this land use, resulting from an absence of standard methodology and validated data, adherence to separation distances within Guidance Statement 3 Separation Distances between Industrial and Sensitive Land Uses (GS 3) (EPA, 2005), is generally recommended to inform planning decisions".*

This advice is noted, where; in the absence of a site-specific, or site-representative assessment, Guidance Statement 3 is often referred to.

However, in this case there is a site-specific assessment that considered estimations of fuel vapour emission rates and predicted impacts at the nearest existing or future sensitive receptor(s).

The fuel vapour emission rates were estimated utilising the following industry referenced methods:

1. NPI Emission Estimation Technique Manual (NPI, 1999) for Aggregated Emissions from Service Stations (Environment Australia);
2. Air Toxics "Hot Spots" Program: Gasoline Service Stations Industry wide Assessment Guidelines – Toxics Committee of the California Air Pollution Control Officers Association (CAPCOA, 1997); and
3. Brisbane City Council methodology for service stations (BCC, 2017), where:
    - The BCC, 2017 methodology was utilised to derive hourly throughput rates for service stations based on normal and peak traffic flows.

These three estimate methodologies have been extensively utilised in service station assessments throughout Australia. There are no other applicable and/or known emission estimate methods available for these types of assessments.

NPI emission estimation techniques are developed by the Australian Government Department of Agriculture, Water and the Environment, in this case for diffuse emissions, and assist governments in estimating emissions from:

- non-industrial activities such as transportation;
- domestic activities such as lawn mowing;
- commercial activities such as baking of bread in small bakeries;
- industrial activities which are not reported because the relevant thresholds are not exceeded or because the industries are exempt from reporting.

The manuals facilitate consistent reporting by jurisdictions.

The CAPCOA estimation methods considered controlled and uncontrolled vapour losses to determine emission inventories for the purposes of undertaking a risk assessment and to meet the requirements of the CAPCOA regulations within the USA.

The Brisbane methodology developed a throughput of traffic flows based on metropolitan service stations allowing for a percentage per hour of traffic flows. This accounts for those peak periods, although EAQ acknowledges there is always uncertainty in relation to peak flows depending on local demographics.

- The assessment methods used are those best available at the time of the assessment. The dispersion model utilised is a verified model as recommended within Australia and ideally suited to ground level passive emission sources.

The approach and assessment methods are the only useful methods available to an assessor and follow industry guidelines and modelling assessment methods. The modelling also considered local meteorological trends which allows the assessment to be more representative of the locality.

- The assessment determined that, at the closest sensitive receptor, the estimated ground level concentration (GLC) was 50.61% of the Annual exposure limit for Benzene. This was the highest GLC estimated at any of the nearest sensitive receptors and for all assessed toxic compounds.

In consideration of conservatising the data, this result suggests that emissions could almost double before an exposure limit was met for Benzene.

Furthermore, all other GLCs for toxic emissions other than Benzene did not exceed more than 12% of the respective exposure limits for those toxics.

- Given the assessment outcomes from this site-specific assessment, the residual risk is acceptable in the view of EAQ; and
- There is no other quantifiable method, or methods for assessment that would otherwise represent such an emission source, in particular emissions that are entirely passive.

EAQ does not support DWERs position that the application should revert to Guidance Statement No. 3 simply because the estimates cannot be verified in the opinion of DWER. IN the experience of EAQ, DWER does not typically verify any form of dispersion modelling results and this statement simply supports that fact.

Estimation techniques utilised throughout Australia and abroad rely heavily on assumptions of emissions' characteristics based on test-case and experimental data specifically designed to derive the estimation techniques.

These emission estimate techniques underpin a significant number of airborne pollutant assessments across an array of industries, to include toxics from chemical process industries, food and agriculture, solid waste disposal dust generated from grain elevators, dust emissions from mining and unsealed roads and so on. These techniques are abundant and regularly utilised in emission assessments.

EAQ does not understand why the Report has been dismissed given the Nationally accepted methods utilised.

2. DoH Advice

DoH makes commentary that air modelling approaches have a number of areas of uncertainty and that DWER is generally unable to verify the assumptions made in an assessment. As a result the uncertainty is likely to be high.

This is not the written position of the DWER advice.

The AERMOD model is a verified dispersion model and its use is not in dispute.

The modelling was not utilised to make "precise" judgements on separation distances as advised by the DoH.

DoH further asserts that "precise judgements on separation distances is impossible" when using dispersion modelling techniques. This comment is puzzling given that the EPA advice on Separation Distances (Guidance Statement No. 3 - 2005) is generic in its nature and presents generic buffer distances based on the 1997 State Industrial Buffer Policy. The derivation of generic separation distances would have included the utilisation of simplistic and/or screening modelling to inform these distances. These documents, although still officially circulated are considerably aged and do not reflect contemporary emissions' situations in some instances.

The modelling was undertaken to inform the risk. The residual risk for air toxic impacts were considered acceptable given that Benzene GLCs were estimated at approx., 50% of the exposure risk at the nearest receptor.

3. Conclusions

EAQ's Report addresses airborne pollutants and their estimated GLCs at the nearest sensitive receptor based on emission estimations from reputable sources. These emission estimate methods are widely utilised throughout Australia and abroad for these types of assessments.

The use of the AERMOD model is a suitable model for this application.

The model utilised site-representative meteorological data for the location.

EAQ notes that dispersion modelling assessments estimate resultant GLCs and the resultant GLCs are used to inform the risk of a likely impact. The results showed that the risk is acceptable based on the concentrations of toxic pollutants predicted.

EAQ does not support the view of the DoH that the Report sought to make precise judgements about separation distances. The conclusions of the Report were …..*"the pollutant emissions at the nearest sensitive receptors (houses) are less than the exposure limits in ambient air. Based on the predicted ground level concentrations, vapours from the Site will not negatively impact the health of the nearest sensitive receptor or sensitive land use within the Locality".*

Finally, the approach and methods of assessment are those available throughout Australia and abroad.

There are no known standard methods in Western Australia with respect to estimating fuel dispensing toxic emissions. The lack of a 'standardised' approach in Western Australia does in no way dismiss the Report and should not be considered as an acceptable reason to dismiss the Report.

- DWER stated that: "Due to uncertainties within air dispersion modelling for this land use, resulting from an absence of standard methodology and validated data, adherence to separation distances within *Guidance Statement 3 Separation Distances between Industrial and Sensitive Land Uses* (GS 3) (EPA, 2005), is generally recommended to inform planning decisions".

This comment trivialises the assessment methods utilised in the Report given the Report undertook a scientific assessment to demonstrate the estimation of GLCs and subsequent impacts at the nearest sensitive receptor.

Should you have any queries, clarifications or discussion points on the detail above please don't hesitate to get in touch as required.

Yours sincerely,



John Hurley **(B.Sc, CAQP)**
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Development Application

Proposed Service Station

Lot 503 (56-62) Second Avenue, Shoalwater

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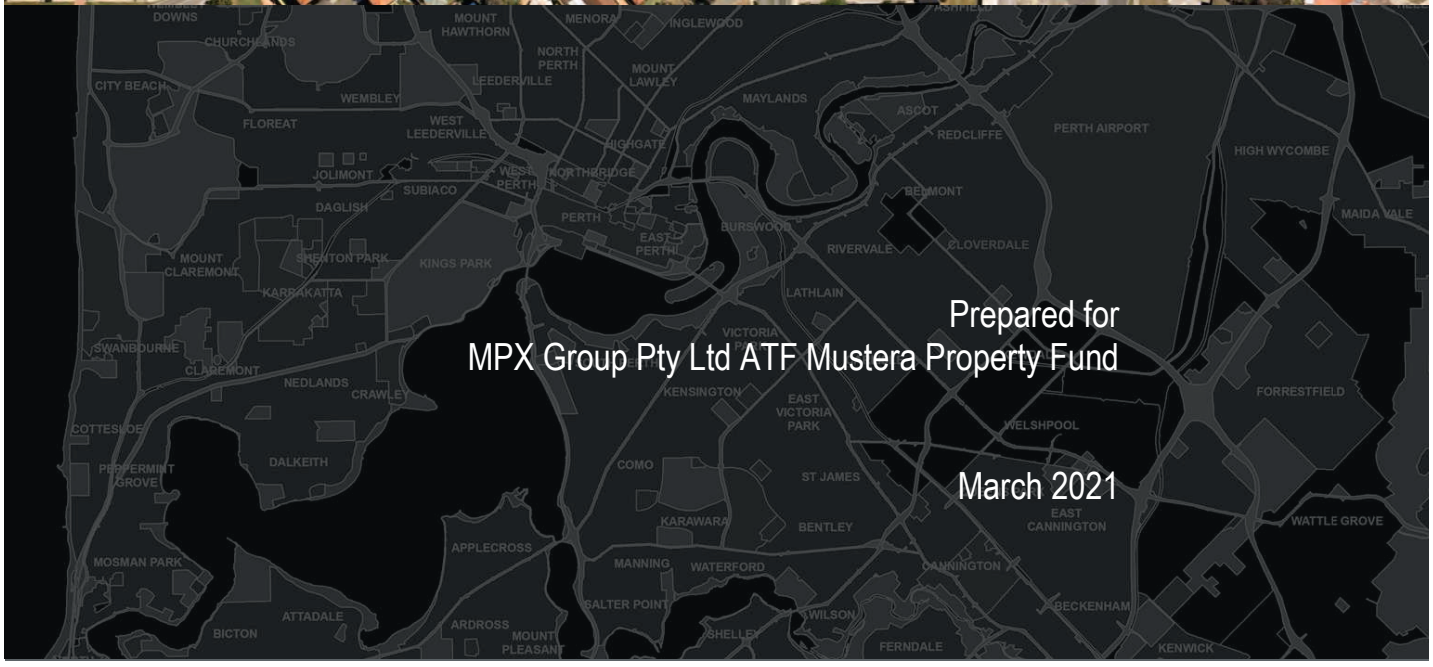

Prepared for
MPX Group Pty Ltd ATF Mustera Property Fund

March 2021

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Project Details

Job number	6903	
Client	MPX Group Pty Ltd ATF Mustera Property Fund	
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Contents

1 Preliminary 1
1.1 Introduction 1
1.2 Background 1

2 Site details 4
2.1 Land description 4
2.2 Location 4

3 Proposed development 6
3.1 Service station 6
3.2 Vehicle access, circulation and parking 7
3.3 Signage 8
3.4 Noise management 9
3.5 External lighting 9
3.6 Landscaping 9

4 Statutory planning framework 10
4.1 Metropolitan Region Scheme 10
4.2 City of Rockingham Local Planning Scheme No. 2 10
4.3 Local Planning Policies 15
4.4 State Policies and Guidance Statements 17

5 Conclusion 19

Appendices

Appendix 1: Certificate of Title 20
Appendix 2: Development plans 21
Appendix 3: Traffic Impact Statement & Parking Utilisation Survey 22
Appendix 4: Environmental Noise Assessment 23
Appendix 5: External Lighting Report 24
Appendix 6: Concept Landscaping Plan 25

1 Preliminary

1.1 Introduction

Planning Solutions acts on behalf of MPX Group Pty Ltd ATF Mustera Property Fund, the landowner of Lot 503 (56-62) Second Avenue, Shoalwater (**subject site**). The subject site contains an existing neighbourhood shopping centre with associated parking, both on-street and on-site. The proposed service station development will occupy a 1,827m^2 portion of the existing car parking area, hereafter referred to as the **development site**.

Planning Solutions has prepared the following report in support of the Application for Development Approval. This report will discuss various matters pertinent to the proposal, including:

- Site details.
- Proposed development.
- Statutory planning framework.

The application seeks approval for the use and development of a service station on the development site. The use is consistent with the objectives of the Commercial zone and the historical use of the subject site.

The proposed development will provide uninterrupted fuel retailing and associated convenience services to the locality of Shoalwater which currently lacks access to fuel retailing facilities.

The proposed development features a contemporary design, suitable access arrangements and will expand upon the services offered by the existing neighbourhood shopping centre.

We respectfully request the Metro Outer Joint Development Assessment Panel (MOJDAP) grant approval to the proposal.

1.2 Background

1.2.1 Site development history

A portion of the subject site was developed with a service station in the early 1970s and was subsequently expanded to include a neighbourhood shopping centre by the end of the decade. Over time, the shopping centre and its car park continued to expand to accommodate additional commercial tenancies. In the late 2000s, the service station was decommissioned and replaced with additional parking.

Photographs 1-3 are provided below, which illustrate the development history described above.



Photograph 1 – July 1970



Photograph 2 – June 1977



Photograph 3 – December 2008

1.2.2 Meeting with local authority

On 23 November 2019, Planning Solutions and representatives of the landowner met with senior officers of the City of Rockingham (City) to discuss the proposed development application. A summary of the key meeting outcomes is provided below:

- Parking – the actual parking demand for the subject site should be assessed, to demonstrate with evidence that the removal of parking bays and their replacement with the service station will not create parking issues. This will be addressed in the traffic assessment for the development. The landowner noted his observation that the car park is rarely at capacity.
- Acoustic – the acoustic impacts of the development will need to be assessed to demonstrate compliance with the Environmental Protection (Noise) Regulations 1997. As part of this, the City requested the parking bays along the northern boundary to be assessed.
- Landscaping – any landscaped areas removed for the service station will need to be reinstated elsewhere to maintain compliance with the minimum 10% requirement (Clause 4.6.5 of LPS2). A concept landscape plan to be provided as part of the DA to demonstrate compliance.
- Access – the crossover arrangement to Safety Bay Road is to be supported through input from the project traffic engineers (Transcore).
- Lighting – the City has requested a lighting plan be provided with the DA, demonstrating compliant outdoor luminance in accordance with relevant Australian Standards.
- EPA separation distances – the DA is to include an assessment against the relevant EPA separation standards.

The feedback received from the local authority has informed preparation of this development application.

2 Site details

2.1 Land description

Refer to Table 1 below for the lot details and a description of the subject site.

Table 1: Lot details

Lot	Deposited Plan	Volume	Folio	Area (ha)
503	57113	2749	822	1.4713

The Certificate of Title contains no encumbrances relevant to the proposed development.

Refer Appendix 2 for a copy of the Certificate of Title and Deposited Plan.

2.2 Location

2.2.1 Regional context

The subject site is located in the locality of Shoalwater, approximately 40km south of the Perth CBD and 26km north of Mandurah, within the municipal boundaries of the City of Rockingham (City). The subject site is located 3.3km east of the Rockingham district centre and 2.7km south-west of Rockingham Beach.

The subject site has frontage to roads on three sides, being Coventry Road, Second Avenue and Safety Bay Road. Safety Bay Road is a Distributor A road, and the main north-south arterial road for the Shoalwater locality. The portion of the site that is proposed to be developed has frontage to Safety Bay Road.

2.2.2 Local context, land use and topography

The subject site located in the locality of Shoalwater, and contains a longstanding neighbourhood shopping precinct which serves the surrounding community. The nearest commercial precinct is the Rockingham District Centre, located approximately 3.3km east of the site.

The Shoalwater area generally contains existing residential properties in a suburban setting with small commercial operations, civic/community and other uses scattered throughout.

In terms of its immediate surroundings, the development site on which the service station is proposed, will be adjacent:

- North – an existing grouped dwellings development which includes an existing 1.8m brickwork fence and boundary landscaping.
- East – various forms of residential development on the eastern side of Safety Bay Road.
- South – remnant car parking on the subject site.
- West - remnant car parking on the subject site.

Safety Bay Road in the vicinity of the subject site is a Distributor A road which carried approximately 8,600vpd in 2020/2021.

The portion of the subject site that is proposed to be developed is identified in Figure 1.



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SCALE	1: 1,500 @ A4
DATE	25 February 2021
FILE	210225 6903 Aerial Photograph.dwg
REVISION	1/RC/First Draft/25.02.2021

Scale Bar (m) 0 10 20 30 40 50

AERIAL PHOTOGRAPH

LOT 503 (56-62) SECOND AVENUE
SHOALWATER, WESTERN AUSTRALIA

FIGURE 01

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2.2.3 Existing development

The subject site contains the Shoalwater neighbourhood shopping centre. The shopping centre contains a supermarket, other smaller speciality shops, a medical centre, pharmacy, tavern, café and other tenancies.

The shopping centre includes 249 parking spaces on the subject site, and an additional 53 bays along Second Avenue and Coventry Road which are in immediate proximity of the centre.

The subject site takes access from six existing crossovers, four to Safety Bay Road and two to Second Avenue. All crossovers operate as full movement.

3 Proposed development

The proposal involves the removal of 48 existing parking bays on the subject site, and its replacement with a 24-hour service station, including associated parking, access, landscaping and signage.

The service station will optimise the capability of the subject site, by replacing a currently underutilised parking area.

The proposed development will provide essential fuel and convenience services to the established Shoalwater community, and will expand upon the range of commercial offerings already available at the subject site.

The service station development features a site-responsive layout which is orientated away from adjoining sensitive receivers, and integrates with the site's existing internal access system.

Supporting expert assessment and reporting demonstrates the proposal's suitability with respect to acoustic, traffic, lighting and parking.

The following sub-section provides a detailed description of the proposed development.

3.1 Service station

The proposed service station will provide for the retail sale of fuel and associated convenience goods. Specifically, the proposed development comprises:

- A retail building of 200m² gross floor area (GFA), set back 2.2m from the northern boundary of the subject site. The location of the building maintains an existing boundary landscaping strip and vegetation. The proposed retail building is orientated in a southern direction, overlooking the service station forecourt and parking area of the Shoalwater shopping centre.
- A 5m x 9.91m bin store / plant yard is located at the western side of the retail building. A loading bay associated with the bin storage area fronts the bin store for the purposes of waste collection and the temporary stopping of service vehicles (up to 8.8m).
- A fuel canopy comprising a clearance of 4.5m from the forecourt's finished floor level (FFL) and a total height of 5.5m, setback a minimum of 6.22m from the Safety Bay Road boundary. The canopy houses three bowsers which provides six refuelling positions (two per bowser).
- Five (5) shopfront car parking bays for customers and staff (including one accessible bay and one air and water bay).
- Two underground fuel storage tanks, and an associated filling point at the eastern side of the canopy to accommodate the satisfactory/uninterrupted movements of the operator's 19m fuel tankers.
- Various signage, imagery and artwork associated with the proposed redevelopment, including a 7.2m high main ID sign fronting Safety Bay Road.
- Provision of 153.3m^2 of landscaping within the development area. The landscaping takes into consideration the scale and form of the development's design, as well as local context to create a cohesive transition from the development to surrounding residences.

Refer to Appendix 2 for the development plans, which depict the proposed development.

3.2 Vehicle access, circulation and parking

The proposed traffic and access arrangements have been subject to a Transport Impact Statement (TIS) and Parking Utilisation Survey, both prepared by Transcore (refer Appendix 3).

As demonstrated by the TIS, the traffic generation associated with the development was found to have no significant impact on the surrounding road network based on the scope of the assessment.

The net increase in peak hour traffic generation is reported at up to 61 and 70 trips in the AM and PM peak hours, respectively. This level of traffic generation is minimal and entirely capable of being accommodated by the surrounding road network.

3.2.1 Parking utilisation

Transcore has conducted a parking utilisation survey to establish actual parking demand for the Shoalwater shopping centre and investigate the impact of any loss of parking bays as a result of the proposed development. The conclusions of this survey are as follows:

- The subject site currently has 249 on-site existing parking bays with an additional 53 street parking bays along Coventry Road and Second Avenue.
- Current parking demand, including both on-site and street parking averages between 28-40% during Thursday and Saturday, with an average of 185 to 210 bays available.
- Zone A, which is the parking area containing the proposed service station, showed a utilisation of 19% to 29% during Thursday and Saturday (the peak days of parking usage), with an average of 54 to 61 bays available.
- The removal of 48 parking bays to allow for the development of the service station would result in an estimated increase in parking utilisation to 39 to 49% during Thursday and Saturdays respectively.

The utilisation survey demonstrates with evidence, that the removal of 48 bays and subsequent replacement with the proposed service station will not create parking issues, as there will still be significant numbers of parking bays available during peak shopping periods.

3.2.2 Access and circulation

In terms of access, the proposed development involves the following modifications to the subject site's existing crossovers to facilitate effective access to the service station:

- Modification to existing north-eastern crossover by widening to 8.9m at the property boundary
- Relocation of existing south-eastern crossover and widening to 9.9m at the property boundary

The access points and forecourt area driveways integrate with the subject site's existing internal accessways, with linemarking and directional signage provided where necessary to facilitate safe and intuitive vehicle movements.

3.2.3 Servicing arrangements

The proposed development has also been designed to facilitate the safe and efficient movement of service vehicles, including the operator's refuelling tanker.

The configuration and siting of onsite refuelling facilities and servicing area are intended to maximise functionality through the segregated stopping of service vehicles, including 19m tankers and 8.8m delivery/waste vehicles.

Fuel tankers will approach the subject site travelling north along Safety Bay Road, enter via the south-eastern crossover and navigate to the remote fill point located on the south-eastern side of the forecourt area. The tanker stopping area is suitably linemarked.

Fuel tankers will then proceed north towards the north-eastern crossover and egress to Safety Bay Road travelling north. Fuel deliveries may occur 1-3 times per week, depending on the retail fuel consumption and general demand.

Delivery/waste vehicles will also enter via the southeastern crossover to Safety Bay Road and traverse the site in a coordinated manner to carry out servicing activities. Ample space is provided for reversing movements and egress in forward gear. Deliveries will generally take place off peak traffic periods to ensure minimal disturbance to the site operations. General stock deliveries and bin servicing will fluctuate depending on the time of year and demand for certain products.

Refer Appendix 2 for the development plans and Appendix 3 for the swept path modelling, contained within Transcore's TIS. The swept path modelling prepared by Transcore demonstrates service vehicles do not affect kerbing or structures.

3.3 Signage

The following signage is proposed as part of the development:

Pylon sign

- A 7.2m high, 2.4m wide internally illuminated pylon sign perpendicular to Safety Bay Road, visible to traffic travelling in a northern and southerly direction.
- The proposed sign displays the logo of the service station operator, two advertising panels detailing commercial/convenience offerings, and three LED digital fuel price boards as required under the *Petroleum Producing Pricing Act 1993.*

Walls signs

Retail building

- *Southern elevation*
    - 1 x illuminated fascia sign measuring 4m x 1.9m and affixed to the retail building corner.
    - 3 x signage panels measuring 0.85m x 1.2m.
- *Eastern elevation*
    - 1 x illuminated fascia sign measuring 4m x 1.9m and affixed to the retail building corner.
    - 3 x signage panels measuring 0.85 x 1.2m.
- *Western elevation*
    - One illuminated fascia sign measuring 3.8m x 1.8m and affixed to the retail building architectural feature.

Fuel canopy

- 4 x illuminated signage panel measuring 1m x 1m on the northern, southern, eastern and western elevations displaying the service station operators logo.

The content of the signs has not been included as the operator of the proposed service station has not been finalised at the time of lodgement. However, any future signage will comply with the policy objectives and reflect the branding and corporate identity of the respective service station operator. The signage locations have been carefully considered to ensure signage serves an important function, whilst integrating with the overall style of design. Refer to Appendix 2 for a copy of the elevations which depict the proposed signage.

3.4 Noise management

An Environmental Noise Assessment has been undertaken by Lloyd George Acoustics (refer to Appendix 4) for the proposed development, noting that 24-hour operation is proposed.

The assessment has modelled and assessed potential noise sources associated with the proposed development, and demonstrates the development can comply with the *Environmental Protection (Noise) Regulations 1997* at all times subject to implementation of:

- Acoustic screening of the mechanical plant with a semi-enclosed yard and roof structure that includes acoustic absorptive lining.
- Refrigerated trucks delivering at night (ie between 10pm and 7am) to switch off condensing unit immediately upon parking.

The report concludes that the potential noise impacts resulting from the proposed service station development at Lot 503 (#56-62) Second Avenue, Shoalwater can comply with the *Environmental Protection (Noise) Regulations 1997* at all times (ie 24 hours), subject to the incorporation of the noise control recommendations outlined above.

Refer to Appendix 4 for the Environmental Noise Assessment prepared by Lloyd George Acoustics.

3.5 External lighting

An external light plan has been prepared by Rubidium Lighting demonstrating external lighting will comply with AS4282: 2019 *Obtrusive effects of outdoor lighting*.

The light plan demonstrates compliant luminance levels at all areas of the development site, including along property boundaries.

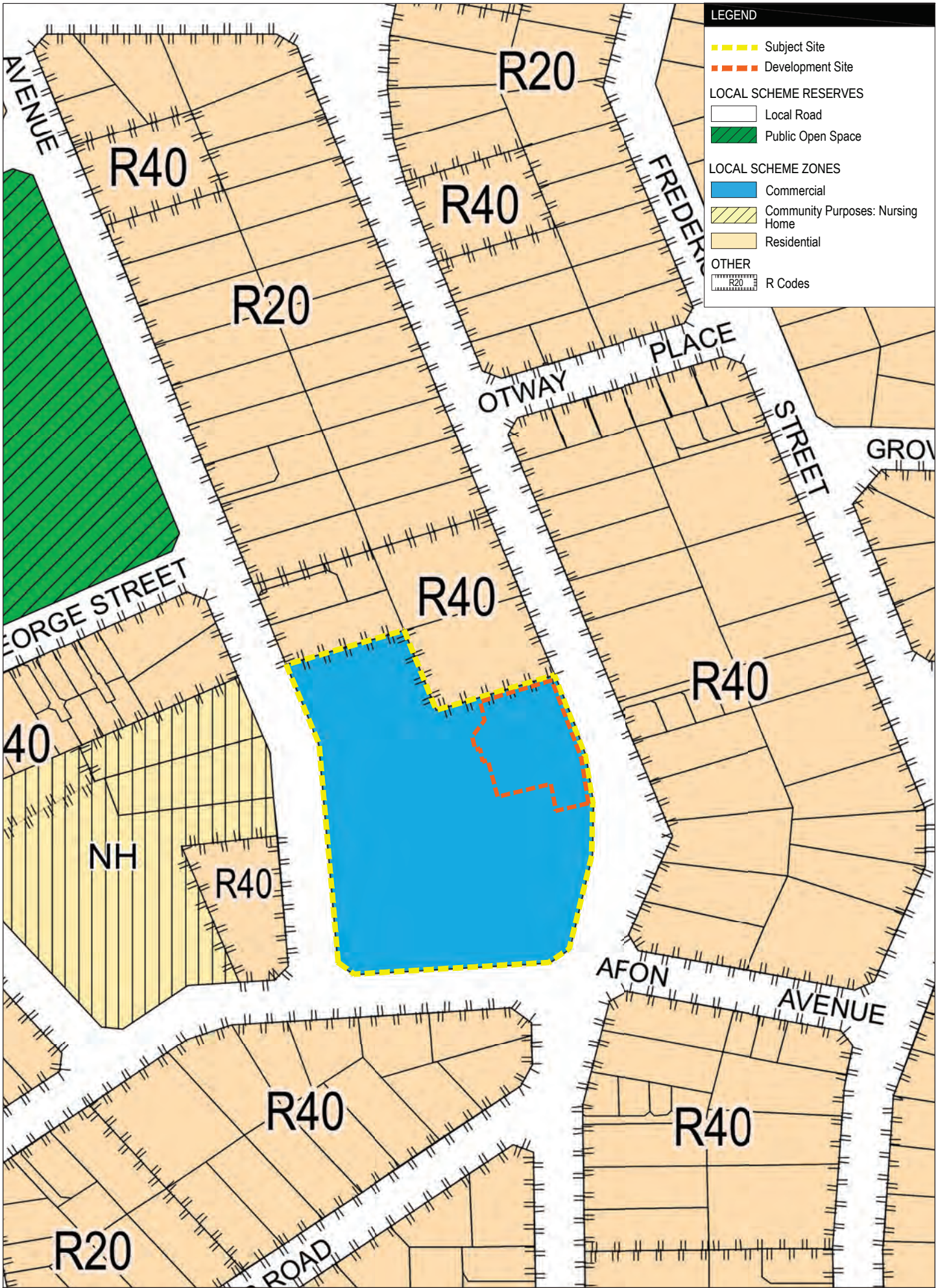
Refer to Appendix 5 for the external lighting plan.

3.6 Landscaping

The proposed development will primarily incorporate additional landscaping along the street boundary of the development site whilst retaining existing landscaping along the northern boundary. A total of approximately 154m² of landscaped area is provided and 66.5m^2 retained—resulting in total landscaping provision of 239.9m^2 representing 13% of the development site.

Landscaping will comprise a mixture of native species of low and medium scale. The proposed landscaping will enhance the overall presentation of the development and improve the visual appearance of buildings.

Refer to Appendix 6 for a concept landscaping plan.



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SCALE	1: 2,000 @ A4
DATE	25 February 2021
FILE	210225 6903 Zoning Map.dwg
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Scale Bar (m) 0 50

ZONING MAP

LOT 503 (56-62) SECOND AVENUE
SHOALWATER, WESTERN AUSTRALIA

FIGURE 02

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4 Statutory planning framework

4.1 Metropolitan Region Scheme

Under the provisions of the Metropolitan Region Scheme (MRS), the subject site and adjoining roads are zoned Urban. The proposed development is consistent with the intent of the Urban zone and may be approved accordingly.

4.2 City of Rockingham Local Planning Scheme No. 2

4.2.1 Zoning

The local planning scheme applicable to the subject site is the City of Rockingham *Local Planning Scheme No. 2* (LPS2), which zones the subject site 'Commercial'. In accordance with Clause 4.6.1 of LPS2, the objective of the Commercial zone is:

> *To provide for the development of District, Neighbourhood and Local shopping facilities to cater for the present and future residents of the City consistent with the local government's Local Commercial Strategy and supported by any other Plan or Policy that the local government from time to time may adopt as a guide for the future development within the Zone.*

The proposed development is a 24 hour service station that will provide essential fuel and convenience services to the surrounding community, expanding on the offerings already provided by the existing neighbourhood shopping centre on the subject site.

The proposal will reinstate the fuel retailing services offered by the subject site from the 1970s to the late 2000s, and ensures the service station development is designed in a manner which minimises the potential for impacts on adjoining properties.

The development will appropriately locate a commercial activity in the commercial zone, co-located with a neighbourhood shopping centre – and is therefore entirely consistent with the objective and intent of the commercial zone

Refer to Figure 2 for the zoning map.

4.2.2 Land use classification and permissibility

The proposed land use is classified as Service Station, defined by LPS2 as:

> *premises other than premises used for a transport depot, panel beating, spray painting, major repairs or wrecking, that are used for —*
>
> *(a) the retail sale of petroleum products, motor vehicle accessories and goods of an incidental or convenience nature; and/or*
>
> *(b) the carrying out of greasing, tyre repairs and minor mechanical repairs to motor vehicles.*

The proposed development provides for the retail sale of fuel and convenience goods, and will operate 24 hours per day, 7 days per week. The proposed development clearly satisfies the service station definition under LPS2.

Service station is a 'D' discretionary use in the Commercial zone, meaning it is capable of approval at the discretion of the decision-maker. The proposed use is entirely suitable for establishment on the subject site and warrants approval accordingly.

4.2.3 Development requirements

Clause 4.6 contains the development requirements applicable to the Commercial zone. An assessment against these requirements is provided in Table 2 below.

Table 2: Assessment against LPS2 development requirements

Clause/Provision		Comments/Assessment	Compliance
4.6.2	Form of Development In considering applications for development approval in the Commercial Zone, the local government shall ensure that that site planning, scale, built-form, elevations and landscaping of the development positively contribute to the streetscape, appearance and amenity of the locality.	The proposed development will activate an area of the subject site currently occupied by parking. The development is a single-storey commercial building consistent with the predominantly low-scale buildings on the site and in the surrounding area. Elevations are suitably treated and articulated, and portions of the site are to be landscaped softening the presentation to the street.	Complies
4.6.3	Parking Provision shall be made for the on-site parking of motor vehicles in all development in the Commercial Zone in accordance with the provisions of clause 4.15 and Table No.2.	A detailed assessment against the parking requirements is provided in section 4.2.4 below.	Discretion
4.6.4	Setbacks In assessing applications for development approval, the local government shall take into account the following requirements when determining the setbacks for developments in the Commercial Zone:- a) where a development is proposed to be located on a lot having a common boundary with a Residential zoned lot or residential use class, the setbacks shall not be less than those prescribed in the R-Codes for the particular density code of the adjoining residential lot;	The proposed development is located on a lot sharing a common boundary with residential zoned lots to the north. The residential lots have a density code of R40. Based on the maximum external wall height of 5.7m and wall length of 19.15m, the northern boundary setback for the proposed development under the R-Codes would be 2.2m. The retail outlet building has been set back 2.2m from the northern boundary, which is compliant. It is also important to note that the setback area contains a landscaping strip and boundary vegetation which will serve to screen the northern elevation from adjoining properties.	Complies
4.6.5	Landscaping a) Subject to b) below, within any development in a Commercial Zone a minimum of ten percent (10%) of the total site area shall be provided as landscaping in the form approved by the local government. The area of the site required to be provided under this sub-clause shall not include areas which would normally be set aside for pedestrian movement.	The subject site has been developed in accordance with historical planning requirements which presumably resulted in a total landscaping provision that falls below 10%. For this reason, we have assessed the development area as though it were a separate site. Within this area, the extent of landscaping provided is 13% and is compliant with the intent of the scheme requirements.	Complies

As demonstrated by Table 2 above, the proposed development is largely compliant with the development requirements of LPS2, subject to the following detailed assessment of parking.

4.2.4 Car parking assessment

Table 2 (Clause 4.14) – Car Parking Standards of LPS2 sets out the applicable car parking standards for various land uses. Table 3 below provides an assessment of the proposal in the context of the existing shopping centre. Some of the information in Table 3 is based on assumptions and indicative information only, due to the age of the centre and associated lack of available approvals.

Table 3 – Car parking assessment

Land use	Parking standard	Assessment	Required car bays
Shop & Convenience Store	6 bays per 100m^2 NLA.	3560m^2 NLA (approx)	213.6
Tavern	1 bay for every 5m^2 of bar and public areas, including lounges, beer gardens and restaurants.	555.10m^2 (approx, conservatively assessed based on total size of tenancy)	111.02
Medical Centre	5 bays per practitioner	13 practitioners = 65 bays	65 bays
Restaurant/Cafe	1 bay for every 4 persons the building is designed to accommodate	20 persons = 5 bays (approximate and estimated)	5 bays
Service Station	1 bay for every service bay, plus 1 bay per employee and 6 bays per 100m^2 NLA.	200m^2 NLA = 12 bays + 2 bays for employees.	14 bays
Total requirement			409 bays (rounded up from 408.62)
Onsite parking provision			206 bays
On-street bays available			53 bays
Total parking "shortfall"			150 bays

As outlined in Table 3 above, a total of 409 bays are technically required to service the proposed uses within the subject site. A total of 259 bays are provided both on-site and on-street, equating to an 'on-paper' shortfall of 150 bays.

Pursuant to clause 4.20.1 of LPS2, the local government has discretion to vary any development requirements under the scheme, subject to the proposed development meeting the criteria specified by clause 4.20.3. An assessment against these criteria is provided as follows:

a) approval of the proposed development would be appropriate having regard to the criteria set out in Clause 67 of the deemed provisions;

A detailed assessment against the relevant matters set out in Clause 67 is provided later in this report.

b) approval of the proposed development would be consistent with the orderly and proper planning of the locality and the preservation of the amenity of the locality;

The approved development is consistent with the objectives of the Commercial zone, and is supported by co-consultant reporting that considers traffic, acoustic and lighting impacts on the surrounding locality. These reports conclude that the proposed development will not result in any detrimental impacts to the surrounding area.

c) the non-compliance will not have any adverse effect upon the occupiers or users of the development, the inhabitants of the locality or the likely future development of the locality; and

Transcore has carried out a Parking Utilisation Survey (refer Appendix 3), which has surveyed the actual usage and demand of parking by the existing shopping centre. The findings of this survey clearly demonstrate (with evidence) that the existing development contains a significantly greater number of parking bays than practically required.

Based on the results of the survey, once the proposed service station commences operation, up to 51% of parking bays will continue to remain available throughout times of peak parking demand. This demonstrates that the variation to the LPS2 parking requirements would not result in any adverse impacts on the surrounding area as there is adequate parking to accommodate activity associated with the proposed service station and existing commercial uses.

Additionally, it is relevant to highlight that the various activities forming part of the neighbourhood shopping centre would generate multi-use trips and reciprocal use of parking bays. The uses forming the centre also have varying peak periods of operation, meaning the bays are used by different uses at different times. For example, the medical centre is open during normal business hours, whilst the tavern experiences peak usage after business hours. These are reduction factors typically experienced by shopping centres and other developments with multiple uses.

d) the spirit and purpose of the requirements or standards will not be unreasonably departed from.

The purpose of minimum parking requirements is to ensure that the parking demand for individual developments can be accommodated within the lots on which they are situated. The parking standards provided by a local planning scheme and/or policy represent baseline requirements which do not typically consider qualitative factors, such as multi-use trips, reciprocal parking, alternate modes of transportation, and locational criteria.

The parking arrangements for this proposal are entirely appropriate, noting the subject site will continue to provide more than sufficient parking for all uses during times of peak parking demand, as is demonstrated by the parking utilisation survey. Moreover, the reduction in the minimum parking requirements will result in improved land use efficiency and an improved neighbourhood centre that will better meet the day-to-day needs of the surrounding residents through an expanded range of commercial services.

In light of the above, the proposed variation to the development standard is acceptable and the development warrants approval accordingly.

4.2.5 Clause 67 assessment

Table 4 below provides an assessment against the relevant criteria contained in Clause 67(2) of the Deemed Provisions.

Table 4: Assessment against applicable matters of Clause 67 of the Deemed Provisions

Matter to be considered	Provided
(a) the aims and provisions of this Scheme and any other local planning scheme operating within the Scheme area;	The proposed is consistent with the objectives of the zone as set out in section 4.2.
(b) the requirements of orderly and proper planning including any proposed local planning scheme or amendment to this Scheme that has been advertised under the Planning and Development (Local Planning Schemes) Regulations 2015 or any other proposed planning instrument that the	This report demonstrates the proposed development is consistent with the local planning framework applicable to the development site. There is no known amendment to LPS2 affecting the proposed development.

Matter to be considered	Provided
local government is seriously considering adopting or approving;	
(f) any policy of the State	Refer section 4.4.
(g) any local planning policy for the Scheme area;	Refer section 4.3.
(m) the compatibility of the development with its setting including the relationship of the development to development on adjoining land or on other land in the locality including, but not limited to, the likely effect of the height, bulk, scale, orientation and appearance of the development;	The proposed development is entirely compatible with its setting for the following reasons: • The service station will form part of an established neighbourhood shopping centre and will provide a fuel retailing service that will complement the existing services available for the community's day-to-day needs. • The built form is a single-storey retail building that is consistent with the prevailing low-rise character of the surrounding area. • The service station development is responsively laid out and designed to ensure impacts on adjoining properties are minimised – in particular, the adjoining northern properties.
(n) the amenity of the locality including the following — *(i) environmental impacts of the development;* *(ii) the character of the locality;* *(iii) social impacts of the development;*	Environmental impacts The acoustic and lighting impacts of the proposed development have been considered and supported by the co-consulting reports provided (refer Appendix 4 and Appendix 5). Character of the locality The proposed development will form part of an established shopping centre which is zoned Commercial under the local planning scheme. The proposal is therefore entirely consistent with the character the site, which offers important services to the locality. Social Impacts The proposed development will not have any adverse social impacts on the surrounding locality for the following reasons: • The 24-hour operation of the service station ensures a level of surveillance of the surrounding area during all hours. • The development will activate an area of the subject site which is occupied by an underused car park, which is considered to enhance the amenity of the site and immediate surrounds. • The proposed development will allow the subject site to provided expanded range of services to patrons and the wider community. • The development will increase local employment opportunities.
(p) whether adequate provision has been made for the landscaping of the land to which the application relates and whether any trees or other vegetation on the land should be preserved;	A landscaping concept plan has been provided. Refer Appendix 6.
(s) the adequacy of — *(i) the proposed means of access to and egress from the site; and*	The supporting TIS and parking utilisation survey prepared by Transcore (refer Appendix 3) demonstrates the proposed means of access to and from the site is satisfactory, including service vehicle and fuel tanker movements.

Matter to be considered	Provided
(ii) arrangements for the loading, unloading, manoeuvring and parking of vehicles;	
(t) the amount of traffic likely to be generated by the development, particularly in relation to the capacity of the road system in the locality and the probable effect on traffic flow and safety;	The TIS prepared by Transcore demonstrates that traffic generation associated with the proposed development will not adversely impact the surrounding road network (refer Appendix 3).
(u) the availability and adequacy for the development of the following — *(i) public transport services;* *(ii) public utility services;* *(iii) storage, management and collection of waste;* *(iv) access for pedestrians and cyclists (including end of trip storage, toilet and shower facilities);* *(v) access by older people and people with disability;*	• Public transport is addressed in the TIS provided (refer Appendix 3). • The site is already serviced by public utilities. • A service yard has been provided for waste storage and management, as shown on the plans provided (refer Appendix 2). • Pedestrian access to the building entrance has been provided. • A DDA ramp provides entrance to the retail building for older people and people with disability.
(v) the potential loss of any community service or benefit resulting from the development other than potential loss that may result from economic competition between new and existing businesses;	The proposed service station will result in a net benefit to the surrounding community by provide a 24/7 fuel and convenience retailing service in a community that currently lacks one.
(w) the history of the site where the development is to be located;	The subject site was previously occupied by a service station until 2008. The proposed development will reinstate this long-standing fuel retailing service.
(x) the impact of the development on the community as a whole notwithstanding the impact of the development on particular individuals;	The development of this service station will provide notable benefits to the community based on employment generation and the services and convenience goods offered by the facility.

4.3 Local Planning Policies

4.3.1 Planning Policy 3.3.1 – Control of Advertisements

Planning Policy 3.3.1 – Control of Advertisements (LPP3.3.1) sets out the standards and objectives for commercial signage proposed within the City. The policy seeks to ensure, amongst other things, that advertisements are appropriately located and protect the amenity of the surrounding area. An assessment of the proposed signage is provided in Table 5 below:

Table 5: Assessment against LPP3.3.1

Type	Criteria	Assessment	Compliance
Pylon Signs	a) be located within 1.8m of a boundary; b) be situated within 6.0m of any other sign of the same lot; c) project over a street, walkway or any other public area by more than 1.0m; d) have a height exceeding 6.0m, unless it can be demonstrated to the Council that a greater height is warranted and it complies with the objectives of this	The proposed pylon sign does not comply with the policy criteria for the following reasons: • The sign height is 7.2m, exceeding the 6m maximum. • The sign is located within 1.8m of the property boundary.	Discretionary assessment required

Type	Criteria	Assessment	Compliance
	Planning Policy. In any event, a Pylon Sign shall not exceed 9.0m in height; e) have any part of the sign less than 2.7m from the ground level, unless the sign is designed such that the underside of the face area is located at ground level; f) have a face area exceeding more than 3.5m width or height; g) have a face area of more than 4m^2 on each side (single tenancy) or 13m^2 on each side (multiple tenancy).	Council can consider a variation to the policy requirements if the sign complies with the objectives of the policy. An assessment is provided below.	
Wall panels	Signage to demonstrate compliance with the objectives of the policy.	Southern elevation • 1 x illuminated fascia sign measuring 4m x 1.9m on the. • 3 x signage panels measuring 0.85m x 1.2m. Eastern elevation • 1 x illuminated fascia sign measuring 4m x 1.9m and affixed to the retail building corner. Southern elevation • One illuminated fascia sign measuring 3.8m x 1.8m and affixed to the retail building architectural feature. Fuel canopy • 4 x illuminated signage panel measuring 1m x 1m on the northern, southern, eastern and western elevations displaying the service station operators logo.	Discretionary assessment required

An assessment of the proposed wall panels against the applicable objectives of the policy has been provided in the following table:

Table 6: Assessment of signage against LPP3.3.1 objectives

Policy objectives		Assessment
(a)	Ensure that advertisements are appropriate for their location;	The proposed signage is located on a commercially zoned site and is intended to advertise the proposed service station to passing traffic. The advertisements are consistent with the expectations of service station branding and signage and are acceptable in the context of the site. This includes wall signs displaying the business name and branding plus products and services available, and a pylon sign that includes fuel pricing displays as required by the *Petroleum Producing Pricing Act 1993.*
(b)	Minimise the proliferation of advertisements;	The proposed signage strategy proposes a maximum of four signs on the eastern building elevation, and one sign on all other elevations. Each elevation of the fuel canopy contains a single operator logo. The development includes

Policy objectives		Assessment
		a single pylon sign containing fuel pricing—the minimum necessary to comply with the *Petroleum Producing Pricing Act 1993.* The use of a single pylon sign allows the incorporation of multiple signage panels and reduces the potential for proliferation.
(c)	Ensure that advertisements do not adversely impact on traffic circulation and management, or pedestrian safety;	All signs are simple advertisements that display either the name and branding of the service station operator or the products and services available there. They do not present any visual distraction to vehicles, do not project into pedestrian movement areas or obstruct vehicle sight lines. This includes the pylon sign which is along the property boundary but setback more than 3m from the closest vehicle crossover and does not obstruct vehicle sightlines.
(d)	Protect the amenity of residential areas, townscape areas and areas of environmental significance;	The proposed development is a high amenity commercial development and the proposed signage reflects this. The proposed walls panels are well integrated into the architectural features of the building. The pylon sign is consistent with the configuration of other freestanding signs on the site, and will not be detrimental to the amenity of locality.
(f)	Ensure that advertisements are constructed with quality materials;	The signage is constructed using materials consistent with industry standards.
(g)	Ensure advertisements are generally erected on land where the advertised business, sale of goods or service is being carried out; and	All of the proposed signs are located on the buildings and site where the advertised business and services are being undertaken.

Having regard to Table 6 above, the proposed signage meets the objectives of LPP3.3.1 and warrants approval accordingly.

4.4 State Policies and Guidance Statements

4.4.1 EPA Guidance Statement No.3 – Separation Distances Between Industrial and Sensitive Land Uses

The Environmental Protection Authority (EPA) *Guidance Statement No. 3 – Separation Distances between Industrial and Sensitive Land Uses* (EPA Guidance Statement No. 3) provides generic buffer distances intended to mitigate impacts of industrial developments on sensitive land uses.

With regard to retail fuel developments (service stations etc.) proposing 24 hour operation, the EPA Guidance Statement No. 3 identifies potential impacts as gaseous, noise, odour and risk, and recommends a generic buffer distance of 200m. The buffers recommended by EPA Guidance Statement No. 3 are not absolute separation distances, but instead are default distances providing general guidance. The recommended buffer distances are commonly reduced, as modern-day fuel retailing facilities are widely accepted to be designed to a high standard.

Table 7 below provides an assessment of the potential impacts from the operation of the proposed development, and provides justification to demonstrate the appropriateness of the development on the development site.

Table 7: assessment against EPA separation guidelines

Potential amenity or environmental impact	Mitigation methods
Noise	An Environmental Noise Assessment has been prepared for the proposal, as required by the *Environmental Protection (*Noise) Regulations 1997. Refer to Appendix 4 for a copy of the Environmental Noise Assessment. The Environmental Noise Assessment confirms that noise generated by the proposed development can comply with assigned levels at all times, subject to minor mitigation measures which are acceptable to the proponent.
Risk	As the proposed service station provides the retail sale of fuel, the proponent must obtain a Dangerous Goods Storage and Handling Licence in order to store and sell petrol on the development site (post development approval). The following is assessed and considered as part of obtaining the licence: • Separation distances to boundaries, public places, protected places and impact on adjoining properties. • Site accessibility for fuel delivery tankers and vehicles. • Spill containment. • Emergency preparedness and management. • Operator training. • Maintenance provisions. • Lighting. • Equipment to be installed. Accordingly, risk is appropriately assessed through the dangerous goods licensing process, which will follow the development approval process. The site has been purpose designed to ensure it can obtain a Dangerous Goods and Handling Licence.
Odour/Gaseous	The underground fuel storage tanks will be equipped with a Stage 1 Vapour Recovery System, which is activated during tanker refuelling of the underground storage tanks. A Stage 1 Vapour Recovery System ensures all petrol vapours from the underground tanks are drawn back into the fuel tanker returned to the supply terminal where the vapours are recondensed into liquid. The dangerous goods licensing process also assesses the likely impact from vapours/odours. Accordingly, the assessment of petrol vapours and odours is appropriately assessed and managed through the dangerous goods licensing process and will require implementation of appropriate design measures to mitigate potential risk impact.

As demonstrated in Table 7 above, the proposed development is designed and configured in a manner which significantly mitigates potential amenity impacts on nearby sensitive properties.

The development features modern day and best practice service station refuelling infrastructure which ensures the appropriate operations of the development from an environmental perspective, within the generic 200m buffer distance advised by the EPA Guidance Note No.3.

Accordingly, a lesser separation distance has been demonstrated to be acceptable for the proposed development.

5 Conclusion

This application seeks approval for the use and development of a 24/7 service station on the development site. The proposed development is appropriately located within an existing neighbourhood shopping centre site and reinstates a long-standing fuel retailing service to the benefit of the surrounding community. Specifically:

- The proposed development achieves the aim and objectives of the City of Rockingham's local planning framework
- The proposal is consistent with the prescribed requirements of the planning framework, and will activate a currently underutilised portion of the subject site for an appropriate purpose
- Access and circulation arrangements provide for a high level of functionality, convenience and safety – as demonstrated by a suitably qualified traffic engineer
- The proposal is capable of achieving compliance with the *Environmental Protection (Noise) Regulations 1997*; and
- External lighting will comply with relevant Australian Standards

Having regard to the above, the proposal clearly demonstrates the suitability of the proposed use for the subject site. Accordingly, we request the Metro Outer JDAP grant approval to the proposed development.

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Environmental Noise Assessment

Service Station Development
Lot 503 (#56-62) Second Avenue, Shoalwater

Reference: 20115960-01

Prepared for:
MPX Group Pty Ltd C/- Planning Solutions

Report: 20115960-01

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Date:	Rev	Description	Prepared By	Verified
25-Feb-21	0	Issued to Client	Matt Moyle	Terry George

Table of Contents

1 INTRODUCTION 1

2 CRITERIA 3

2.1 Waste Collection and Site Cleaning (Specified Works) 6

3 METHODOLOGY 7

3.1 Meteorological Information 7

3.2 Topographical Data 7

3.3 Ground Absorption 7

3.4 Source Sound Levels 8

4 RESULTS AND ASSESSMENT 10

4.1 Scenario 1 – Night L_{A10} 10

4.2 Scenario 2 – Cold Deliveries L_{A1} 12

4.3 Scenario 3 – Car Doors Closing and General Delivery 14

5 RECOMMENDATIONS 16

6 CONCLUSION 16

List of Tables

Table 2-1 Adjustments for Intrusive Characteristics 3

Table 2-2 Baseline Assigned Noise Levels 4

Table 2-3 Influencing Factor Calculation – Nearest Residences 4

Table 2-4 Assigned Noise Levels 5

Table 3-1 Modelling Meteorological Conditions 7

Table 3-2 Source Sound Power Levels, dB 8

Table 4-1 Predicted Noise Levels, Scenario 1: Night, L_{A10} dB 10

Table 4-2 Predicted Noise Levels, Scenario 2: L_{A1} dB 12

Table 4-3 Predicted Noise Levels, Scenario 3: Night, L_{Amax} dB 14

List of Figures

Figure 1-1 Site Locality _____ 1

Figure 1-2 Development Site Layout _____ 2

Figure 2-1 Locality of Subject Site and Nearby Receivers (DPLH Maps) _____ 5

Figure 3-1 2D Image of Noise Model _____ 9

Figure 4-1 Scenario 1: Night L_{A10} Noise Contour Plot _____ 11

Figure 4-2 Scenario 2: Cold Delivery L_{A1} Noise Contour Plot _____ 13

Figure 4-3 Scenario 3: Car Doors and Air Service Alarm L_{Amax} Noise Contour Plot _____ 15

Appendices

A Site Plans

B Zoning Map

C Terminology

1 INTRODUCTION

A service station development is proposed on Lot 503 (#56-62) Second Avenue, Shoalwater (refer *Figure 1-1*). Due to the nature of the development and the proximity to noise sensitive premises, a noise impact assessment is required. The nearest noise sensitive premises are located to the north and east of the subject site. Lot 503 is shared with a supermarket and other small commercial tenancies to the south.

Noise sources considered were those associated with mechanical plant, delivery vehicles, air servicing equipment, vehicles and fuel bowsers. Noise from these items was assessed against the prescribed standards of the *Environmental Protection (Noise) Regulations 1997* by way of noise modelling.



Figure 1-1 Site Locality

The service station is proposed to operate 24 hours a day, 7-days a week. The site layout of the service station is depicted in *Figure 1-2*.

Site drawings used in this assessment are included in *Appendix A*.

Appendix C contains a description of some of the terminology used throughout this report.



Figure 1-2 Development Site Layout

2 CRITERIA

Environmental noise in Western Australia is governed by the *Environmental Protection Act 1986*, through the *Environmental Protection (Noise) Regulations 1997* (the Regulations).

Regulation 7 defines the prescribed standard for noise emissions as follows:

"7. (1) Noise emitted from any premises or public place when received at other premises –

a) must not cause or significantly contribute to, a level of noise which exceeds the assigned level in respect of noise received at premises of that kind; and

b) Must be free of:

i. Tonality;

ii. Impulsiveness; and

iii. Modulation".

A "…noise emission is taken to *significantly contribute to* a level of noise if the noise emission exceeds a value which is 5 dB below the assigned level…"

Tonality, impulsiveness and modulation are defined in Regulation 9. Noise is to be taken to be free of these characteristics if:

a) The characteristics cannot be reasonably and practicably removed by techniques other than attenuating the overall level of noise emission; and

b) The noise emission complies with the standard after the adjustments of *Table 2-1* are made to the noise emission as measured at the point of reception.

Table 2-1 Adjustments for Intrusive Characteristics

Tonality	Modulation	Impulsiveness
+ 5 dB	+ 5 dB	+ 10 dB

Note: The above are cumulative to a maximum of 15dB.

The baseline assigned levels (prescribed standards) are specified in Regulation 8 and are shown in *Table 2-2*.

The influencing factor was calculated for the nearest noise sensitive premises based on land use and transport factors. As per the relevant Planning Scheme map (refer *Appendix B*), the subject site is amongst "commercial" zoning with commercial and residential land uses clearly identified as shown in *Figure 2-1*.

Table 2-2 Baseline Assigned Noise Levels

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		L_{A10}	L_{A1}	L_{Amax}
Noise sensitive premises: highly sensitive area	0700 to 1900 hours Monday to Saturday (Day)	45 + influencing factor	55 + influencing factor	65 + influencing factor
	0900 to 1900 hours Sunday and public holidays (Sunday)	40 + influencing factor	50 + influencing factor	65 + influencing factor
	1900 to 2200 hours all days (Evening)	40 + influencing factor	50 + influencing factor	55 + influencing factor
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays (Night)	35 + influencing factor	45 + influencing factor	55 + influencing factor
Commercial	All hours	60	75	80
Industrial	All hours	65	80	90

1. ***highly sensitive area*** means that area (if any) of noise sensitive premises comprising —
   (a) a building, or a part of a building, on the premises that is used for a noise sensitive purpose; and
   (b) any other part of the premises within 15 metres of that building or that part of the building;

The Regulations consider a major road to have more than 15,000 vehicles per day, and a secondary road to have between 6,000 and 15,000 vehicles per day. Safety Bay Road is recorded to have approximately 8,600 weekday vehicles per day (2020 vehicle count at site #0460) and is therefore considered a secondary road for noise assessment purposes. This yields a +2 dB transport factor for relevant noise sensitive receivers within 100m of the secondary road.

The combined traffic and land use influencing factors for all residences has been calculated as shown in *Table 2-3.* It was determined that all residences nearest to the development have the same influencing factor when rounding to the nearest whole number.

Table 2-3 Influencing Factor Calculation – Nearest Residences

Description	Within 100 metre Radius	Within 450 metre Radius	Total
Commercial Land	35% / 1.8 dB	2% / 0.1 dB	1.9 dB
Secondary Road	Safety Bay Road	Safety Bay Road	2 dB
Total			**4 dB**



Figure 2-1 Locality of Subject Site and Nearby Receivers (DPLH Maps)

Table 2-4 shows the relevant L_{A10}, L_{A1} and L_{Amax} assigned levels (including the influencing factors). The L_{A10} assigned level is applicable to the mechanical plant noise, while the L_{Amax} is applicable to the audible alarm and car door closing noise. L_{A1} is relevant for noise from a refrigerated delivery vehicle.

Table 2-4 Assigned Noise Levels

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		L_{A10}	L_{A1}	L_{Amax}
Nearest Residences	0700 to 1900 hours Monday to Saturday (Day)	49	59	69
	0900 to 1900 hours Sunday and public holidays (Sunday)	44	54	69
	1900 to 2200 hours all days (Evening)	44	54	59
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays (Night)	39	49	59
Commercial	All hours	60	75	80

It is noted the assigned noise levels are statistical levels and therefore the period over which they are determined is important. The Regulations define the Representative Assessment Period (RAP) as *a period of time of not less than 15 minutes, and not exceeding 4 hours*, which is determined by an *inspector* or *authorised person* to be appropriate for the assessment of a noise emission, having regard to the type and nature of the noise emission. An *inspector* or *authorised person* is a person appointed under Sections 87 & 88 of the *Environmental Protection Act 1986* and include Local Government Environmental Health Officers and Officers from the Department of Environment Regulation. Acoustic consultants or other environmental consultants are not appointed as an *inspector* or *authorised person*. Therefore, whilst this assessment is based on a 4 hours RAP, which is assumed to be appropriate given the nature of the operations, this is to be used for guidance only.

Regulation 3 states the following with regards to vehicles:

> *(1) Nothing in these regulations applies to the following noise emissions —*
>
> *(a) noise emissions from the propulsion and braking systems of motor vehicles operating on a road;*

The service station and car park are considered to be a road and therefore vehicle noise (propulsion and braking) is not strictly assessed. Noise from vehicle doors and truck mounted condensers still require assessment, as they do not form part of the propulsion or braking systems.

It is understood that bulk refuelling is done during the daytime and is gravity fed (no pump) with the tanker engine turned off. This activity is not assessed as noise impact is considered negligible.

For the proposed development operations, the following comments are provided:

- Mechanical plant such as air-conditioning, exhaust fans and refrigeration plant are to comply with the most critical night L_{A10} assigned noise level.
- Loading bay noise, specifically noise from truck mounted refrigeration units are short term, infrequent events, and are to comply with the most critical night L_{A1} assigned noise level.
- Car door noise and the air and water beeper are also short term events and are to comply with the night L_{Amax} assigned noise level.

2.1 Waste Collection and Site Cleaning (Specified Works)

Regulation 14A provides requirements for such activities as the collection of waste, landscaped area maintenance and car park cleaning. Such activities can also be exempt from having to comply with regulation 7, provided they are undertaken in accordance with regulation 14A (2) as follows:

- during daytime hours, defined as:
  - 07:00 to 19:00 Monday to Saturday (excluding public holiday), or
  - 09:00 to 19:00 on a Sunday or public holiday.
- in the quietest reasonable and practicable manner and using the quietest equipment reasonably available.

In the case where specified works are to be carried outside daytime hours and their noise emissions are likely not to comply with regulation 7, the works also need to be carried out according to a Noise Management Plan which has been approved by the local government authority CEO.

3 METHODOLOGY

Computer modelling was undertaken, using the software *SoundPLAN 8.2* with the ISO 9613 algorithms (ISO 17354 compliant) selected. These algorithms have been selected as they include the influence of wind. Input data required in the model are:

- Meteorological Information;
- Topographical data;
- Ground Absorption; and
- Source sound power levels.

3.1 Meteorological Information

Meteorological information utilised is provided in *Table 3-1* and is considered to represent worst-case conditions for noise propagation. At wind speeds greater than those shown, sound propagation may be further enhanced, however background noise from the wind itself and from local vegetation is likely to be elevated and dominate the ambient noise levels.

Table 3-1 Modelling Meteorological Conditions

Parameter	Day (0700-1900)	Night (1900-0700)
Temperature (°C)	20	15
Humidity (%)	50	50
Wind Speed (m/s)	Up to 5m/s	Up to 5m/s
Wind Direction*	All	All

* Note that the modelling package used allows for all wind directions to be modelled simultaneously.

It is generally considered that compliance with the assigned noise levels needs to be demonstrated for 98% of the time, during the day and night periods, for the month of the year in which the worst-case weather conditions prevail. In most cases, the above conditions occur for more than 2% of the time and therefore must be satisfied.

3.2 Topographical Data

Topographical data was adapted from *Google Earth*, site photographs and proposed plans. Existing buildings have also been included as these can provide barrier attenuation when located between a source and receiver, much the same as a hill as well as reflection paths. A 1.8m masonry wall exists along the north boundary and this has been included in the noise model.

3.3 Ground Absorption

Ground absorption varies from a value of 0 to 1, with 0 being for an acoustically reflective ground (e.g. water or bitumen) and 1 for acoustically absorbent ground (e.g. grass). A value of 0.1 has been used for road and service station areas, and 0.6 has been used for the remaining areas.

3.4 Source Sound Levels

Note that as the development is at DA stage, the various plant selections are of a generic nature based on similar projects. A detailed review of these elements should be carried out at building permit stage when final selection of plant is known. The sound power levels used in the modelling are provided in *Table 3-2*.

Table 3-2 Source Sound Power Levels, dB

Description	Octave Band Centre Frequency (Hz)								Overall dB(A)
	63	125	250	500	1k	2k	4k	8k	
General/Toilet Exhaust Fan (x2 on roof)	71	64	61	64	62	60	57	51	**73**
Refrigeration Condensers (x2 in yard)	-	73	70	69	66	63	55	50	**71**
AC condenser (x2 in yard)	77	75	75	70	65	61	55	55	**72**
3x Fuel Bowser, each (L_{A10})	-	65	68	65	67	65	59	50	**71**
Air-Service Alarm (L_{max})	-	-	-	-	-	91	96	92	**99**
Small Truck Refrigeration Unit (L_{A1})	100	91	87	88	83	81	79	75	**91**
Car Door Closings (L_{Amax})	71	74	77	81	80	78	72	61	**84**

With regard to the above noise sources, please note the following:

- Service station sound levels have been sourced from file data for previous similar projects;
- The small delivery truck refrigeration unit was modelled in the designated loading area;
- Mechanical plant including compressors and condensers, were modelled at 1.2m above ground level, nominally positioned on the indicated plant/service yard area;
- Exhaust Fans were modelled at 0.5m above roof level
- All other sources were modelled at 1m above ground.
- The majority of noise sources are assumed to be present for more than 10% of the time and are therefore assessed against the L_{A10} parameter. The exception is noise from car door closings and the air service alarm, which are assessed against the L_{Amax} level as well as noise from the refrigerated truck, assessed against the L_{A1};

Three assessment scenarios are considered as follows:

1. Night L_{A10} Noise – All service station plant running including all bowsers, simultaneously.
2. Night L_{A1} Noise – A refrigerated truck at idle in the loading area (Cold deliveries).
3. Night L_{Amax} Noise – All plant from Scenario 1 and with car door and air service alarm noise sources.

An image of the noise model overview is shown in *Figure 3-1*. Receivers have been identified and noise sensitive premises labelled with a yellow box.

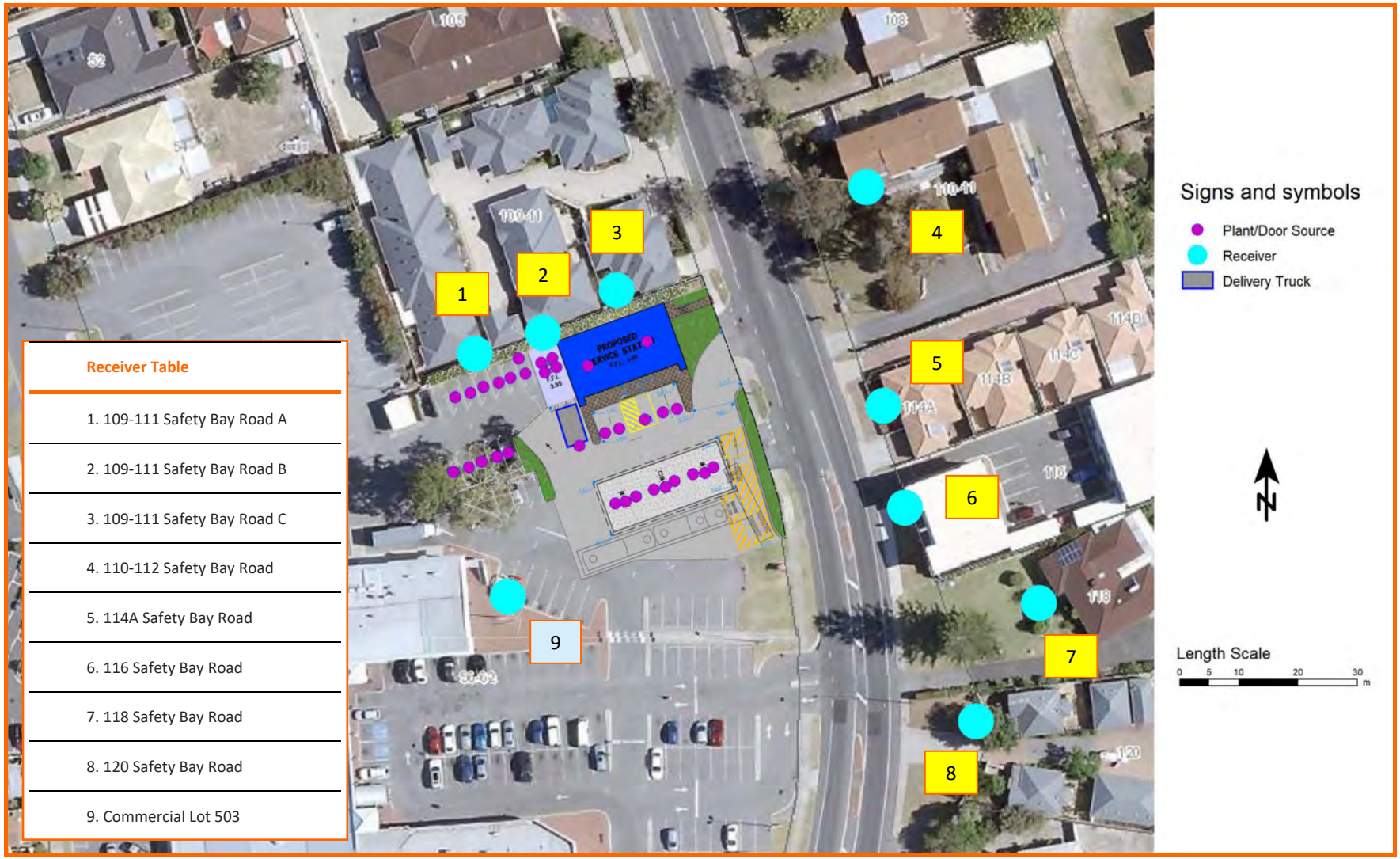

Figure 3-1 2D Image of Noise Model

4 RESULTS AND ASSESSMENT

4.1 Scenario 1 – Night L_{A10}

Table 4-1 provides the results for the night time L_{A10} scenario with all mechanical plant and all fuel bowsers in use. *Figure 4-1* provides the noise contour plots for the Night L_{A10} Scenario. It should be noted that the assessment has assumed all fuel bowsers will be used simultaneously during the night, which is conservative as in reality, they will be used more intermittently at such a time.

Table 4-1 Predicted Noise Levels, Scenario 1: Night, L_{A10} dB

Location	Predicted Noise Level Worst-Case Downwind			Critical Assigned Level	Calculated Exceedence
	Mechanical Plant	Fuel Bowsers	Combined[1]		
1. 109-111 Safety Bay Road A	36	21	36 + 5 = 41	39	*+2*
2. 109-111 Safety Bay Road B	41	18	41 + 5 = 46	39	*+7*
3. 109-111 Safety Bay Road C	26	13	26 + 5 = 31	39	*Complies*
4. 110-112 Safety Bay Road (GF)	19	30	30 + 5 = 35	39	*Complies*
4. 110-112 Safety Bay Road (1F)	22	31	31 + 5 = 36	39	*Complies*
5. 114A Safety Bay Road	20	33	33 + 5 = 38	39	*Complies*
6. 116 Safety Bay Road (GF)	24	33	33 + 5 = 38	39	*Complies*
6. 116 Safety Bay Road (1F)	24	34	34 + 5 = 39	39	*Complies*
7. 118 Safety Bay Road	21	25	27 + 5 = 32	39	*Complies*
8. 120 Safety Bay Road	26	31	32 + 5 = 37	39	*Complies*
9. Commercial South Boundary	37	36	40 + 5 = 45	60	*Complies*

1. Includes + 5 dB adjustment for tonality.

The most critical receiving premises is at 109-111 Safety Bay Road, to the immediate north, with a predicted level of 41 dB L_{A10}. The mechanical plant noise during the night period, when background noise is lowest, may be considered to have tonal characteristics, attracting a +5 dB adjustment. Therefore, the assigned level is exceeded at the worst-case location by a factor of 7 dB. This exceedence is caused by mechanical plant noise, with the fuel bowsers demonstrated to comply and not contribute significantly to the noise levels.

It is recommended that a follow up verification of mechanical plant selections be carried out at detailed design by a suitably qualified acoustical consultant. Effective screening of the plant yard using a semi-enclosed solid fence with roof (can be open to the south) should be allowed for in the final design.



Figure 4-1

Predicted Noise level L_{A10} dB

- = 30
- = 35
- = 40
- = 45
- = 50

N

Signs and symbols

- Receiver
- Mech Plant Source

Length Scale

0 4 8 16 24 m

Lot 503 (#56-62) Second Avenue, Shoalwater - Service Station - Predicted Noise Levels

L_{A10} Ground Floor Noise Level Contours - Mechanical Plant Noise

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4.2 Scenario 2 – Cold Deliveries L_{A1}

Table 4-2 provides the results for the Refrigerated Deliveries L_{A1} scenario. *Figure 4-2* displays the noise contour plot for this scenario.

Table 4-2 Predicted Noise Levels, Scenario 2: L_{A1} dB

Location	Refrigerated Delivery Truck[1]	Night Assigned Level	Evening/Sunday Assigned Level	Day Assigned Level	Calculated Exceedence
1. 109-111 Safety Bay Road A	34 + 5 = 39	49	54	59	*Complies*
2. 109-111 Safety Bay Road B	37 + 5 = 42	49	54	59	*Complies*
3. 109-111 Safety Bay Road C	32 + 5 = 37	49	54	59	*Complies*
4. 110-112 Safety Bay Road (GF)	35 + 5 = 40	49	54	59	*Complies*
4. 110-112 Safety Bay Road (1F)	37 + 5 = 42	49	54	59	*Complies*
5. 114A Safety Bay Road	44 + 5 = 49	49	54	59	*Complies*
6. 116 Safety Bay Road (GF)	45 + 5 = 50	49	54	59	*+1/Complies*
6. 116 Safety Bay Road (1F)	42 + 5 = 47	49	54	59	*Complies*
7. 118 Safety Bay Road	36 + 5 = 41	49	54	59	*Complies*
8. 120 Safety Bay Road	42 + 5 = 47	49	54	59	*Complies*
9. Commercial South Boundary	53 + 5 = 58	75	75	75	*Complies*

1. Includes + 5 dB adjustment for tonality.

The plans indicate a designated loading bay on the west side of the convenience store building. The critical assessable noise source is a refrigerated truck parked in this area for a short time whilst unloading stock. Given the intermittency of this activity and short duration (less than 10% of a RAP), the noise is assessed against the L_{A1} criteria. Note that this assumes deliveries will take less than 24 minutes at a time, which is considered more than sufficient for a small scale store.

The worst case noise sensitive receiver is at 116 Safety Bay Road, with a predicted level of 45 dB(A). Noise from these refrigeration units may be considered tonal and therefore the level for assessment purposes is 50 dB(A), which marginally exceeds the night-time assigned level of 49 dB(A). All other times are demonstrated to be compliant.



Figure 4-2

Predicted Noise level L_{A1} dB

- = 40
- = 45
- = 50
- = 55
- = 60

N

Signs and symbols

- Receiver
- Mech Plant/Cold Truck
- Delivery Truck

Length Scale

0 4 8 16 24 m

Lot 503 (#56-62) Second Avenue, Shoalwater - Service Station - Predicted Noise Levels

L_{A1} Ground Floor Noise Level Contours - Cold Delivery Truck Noise

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4.3 Scenario 3 – Car Doors Closing and Air Service Alarm

Table 4-3 presents and assesses the predicted noise levels of car doors and the air service beeper. *Figure 4-3* presents the predicted noise levels from this scenario as noise contours (non-cumulative).

The most critical time period is considered to be the night-time, noting this period extends to 9am on Sundays and public holidays. As these noise sources are intermittent in nature, they are assessable against the night L_{Amax} criteria of 59 dB at residences.

Table 4-3 Predicted Noise Levels, Scenario 3: Night, L_{Amax} dB

Location	Predicted Noise Level Worst-Case Downwind[2]		Maximum[1]	Night/Evening Assigned Level	Calculated Exceedence
	Air-Service Alarm	Car Doors			
1. 109-111 Safety Bay Road A	52 + 5	43 + 10	57	59	*Complies*
2. 109-111 Safety Bay Road B	53 + 5	40 + 10	58	59	*Complies*
3. 109-111 Safety Bay Road C	47 + 5	34 + 10	52	59	*Complies*
4. 110-112 Safety Bay Road (GF)	36 + 5	38 + 10	48	59	*Complies*
4. 110-112 Safety Bay Road (1F)	43 + 5	39 + 10	49	59	*Complies*
5. 114A Safety Bay Road	28 + 5	43 + 10	53	59	*Complies*
6. 116 Safety Bay Road (GF)	33 + 5	43 + 10	53	59	*Complies*
6. 116 Safety Bay Road (1F)	27 + 5	43 + 10	53	59	*Complies*
7. 118 Safety Bay Road	39 + 5	35 + 10	45	59	*Complies*
8. 120 Safety Bay Road	40 + 5	40 + 10	50	59	*Complies*
9. Commercial South Boundary	57 + 5	49 + 10	62	80	*Complies*

1. "+ 5" in the table has been assumed for potential tonal penalty and "+ 10" for impulsive penalty and included in the maximum.
2. The maximum noise source is identified with a highlighted cell in the table.

Noise levels are highest at 109-111 Safety Bay Road to the north, with a predicted level of 58 dB L_{Amax}, inclusive of the impulsiveness adjustment. The highest noise contributor is the air-service alarm although it marginally complies with the night-time assigned level. Furthermore, the car door noise is predicted to comply at the nearest receivers. It is recommended that a non-beeping alarm unit be installed to reduce impact to the amenity.



Figure 4-3

Predicted Noise level L_{Amax} dB

- = 50
- = 55
- = 60
- = 65
- = 70

N

Signs and symbols

- Receiver
- Car Door/Air Alarm

Length Scale

0 4 8 16 24 m

Lot 503 (#56-62) Second Avenue, Shoalwater - Service Station - Predicted Noise Levels

L_{Amax} Ground Floor Noise Level Contours - Car Doors and Air Service Alarm

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5 RECOMMENDATIONS

To comply with the *Environmental Protection (Noise) Regulations 1997,* noise controls are required to the following:

- Mechanical Plant noise is predicted to potentially exceed based on file specifications. This should be verified at detailed design stage once plant locations and selections are known. Acoustic screening (enclosed yard) may be required for service yard based plant items. Such an enclosure should include a roof and acoustic absorptive lining internally, to be designed in detail during the design phase.
- Refrigerated deliveries to the loading area occurring at night exceed the assigned level by 1 dB. This is considered marginal, however to ensure compliance, mitigation in the form of scheduling deliveries to occur between 7.00am to 10.00pm Monday to Saturday, or 9.00am to 10.00pm Sundays and public holidays. Alternatively, truck drivers may be permitted to deliver at night but must turn off the condensing unit immediately upon parking.
- Bin servicing shall occur between 7am and 7pm Mondays to Saturdays. The servicing of bins would fall under Regulation 14A and provided it is carried out within the stipulated hours and undertaken as quietly as reasonably practicable, the 'normal' assigned levels do not apply. Where possible, bins shall be located in areas away from and/or screened from residences. Where this activity also includes truck reversing alarm noise, this would be considered exempt under Regulation 14A within the stipulated hours.

Non-refrigerated trucks are not considered an issue, although to minimise impacts, these should not be left to idle at night as part of good practice.

Some best practice recommendations have been included below – to be implemented in the design and operation where practicable:

- All delivery vehicles are to be encouraged to have broadband type reversing alarms fitted rather than standard tonal alarms.
- Air-service alarm sound power level to be no more than specified in *Table 3-2*.
- Mechanical plant to be maintained to ensure noise levels do not increase over time;
- Mechanical plant to be installed using vibration isolation mounts;
- Mechanical plant to be in line with those assumed in the modelling – refer *Table 3-2*;
- Any external music or the like shall be low level and inaudible at residences;
- Access grates shall be seated in position and fitted with rubber gaskets to avoid excess banging.

6 CONCLUSION

The potential noise impacts resulting from the proposed service station development at Lot 503 (#56-62) Second Avenue, Shoalwater have been assessed in accordance with the *Environmental Protection (Noise) Regulations 1997*. Compliance with the assigned levels is considered practicably achievable incorporating the *Section 5* noise control recommendations.

Appendix A

Site Plans



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BUILDING DESIGNERS

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PRELIMINARY DEVELOPMENT APPLICATION

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PRE	12.02.21	PRELIMINARY ISSUE	MDB	CPH

A3 SHEET

PROPOSED SITE PLAN

SCALE: 1:300

PROPOSED SERVICE STATION
LOT 503 SAFETY BAY ROAD
SHOALWATER WA
for MPX GROUP Pty Ltd

Date	-	12.02.21
Design	-	CPH
Drawn	-	MDB
Checked	-	CPH
Scale	-	1:300
Job No.	-	0739
Dwg -		DA01
Rev -		PRE

NOTES:

REFER TO DETAILED SURVEY FOR IDENTIFICATION OF ITEMS

NOTES:

1. LEVELS SHOWN ON THIS PLAN ARE INDICATIVE ONLY. FINAL FFL'S & DESIGN LEVELS TO BE DONE BY A QUALIFIED CIVIL ENGINEER AS PART OF THE BUILDING PERMIT APPLICATION.
2. SURVEY INFORMATION PROVIDED BY TUSCOM SUBDIVISION CONSULTANTS. REFER TO DETAILED SURVEY DRAWING Safety Bay 117 F;
3. INFORMATION SHOWN ON THE SURVEY IS CURRENT AT THE DATE OF THE SURVEY. CONSULTANTS ACCEPT NO RESPONSIBILITY FOR ANY CHANGES THAT HAVE OCCURRED AFTER THIS DATE TO SITE LEVELS AND FEATURES OR BUILDINGS;
4. ALL UNDERGROUND SERVICES INFORMATION HAS BEEN OBTAINED BY SURFACE INSPECTION ONLY, THEREFORE CANNOT BE GUARANTEED. SERVICES MARKED REQUIRE BUILDER TO CONFIRM POSITION & / OR AVAILABILITY ON SITE;
5. CHECK TITLE FOR ENCUMBRANCES.



LEGEND:

51.35 PROPOSED DESIGN LEVEL.

NOTE
ALL DESIGN LEVELS ARE SHOWN INDICATIVELY. REFER TO CIVIL DRAWINGS.

N

HINDLEY & ASSOCIATES PTY LTD
BUILDING DESIGNERS

166 STIRLING HIGHWAY
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PRELIMINARY DEVELOPMENT APPLICATION

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PRE	12.02.21	PRELIMINARY ISSUE	CPH	CPH

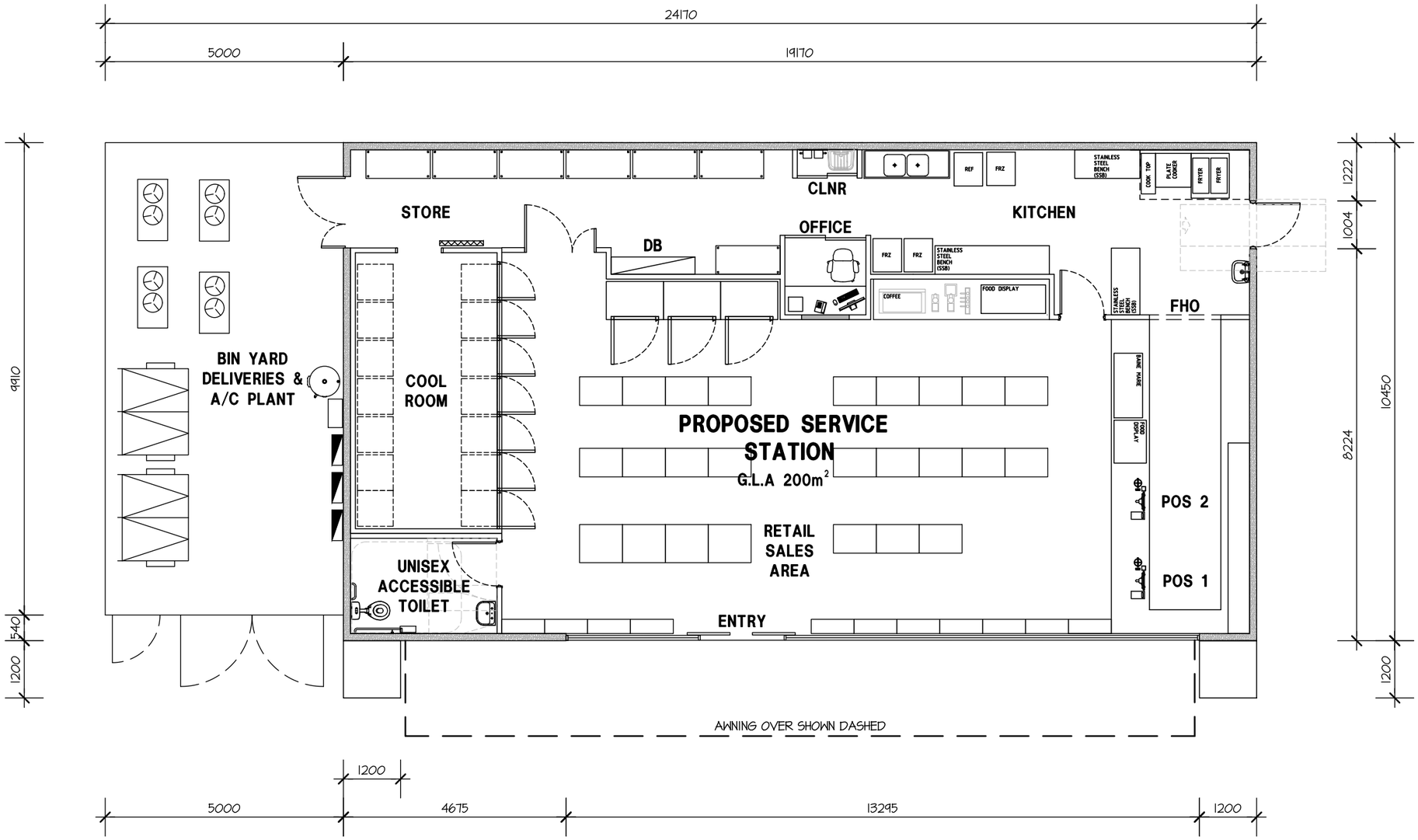
A3 SHEET

PROPOSED LEVELS PLAN

SCALE: 1:300

PROPOSED SERVICE STATION
LOT 503 SAFETY BAY ROAD
SHOALWATER WA
for MPX GROUP Pty Ltd

Date	-	12.02.21
Design	-	CPH
Drawn	-	MDB
Checked	-	CPH
Scale	-	1:300
Job No.	-	0739
Dwg	-	DA03
Rev	-	PRE



E3

E4

N

E2

E1

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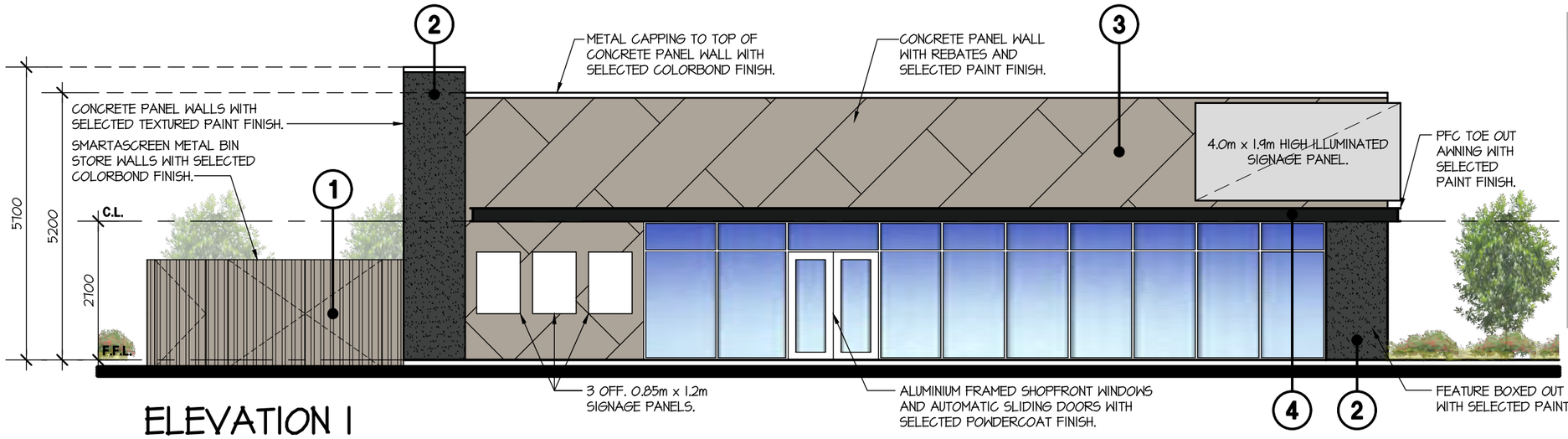
A3 SHEET

PROPOSED FLOOR PLAN

SCALE: 1:100

PROPOSED SERVICE STATION
LOT 503 SAFETY BAY ROAD
SHOALWATER WA
for MPX GROUP Pty Ltd

Date	-	12.02.21
Design	-	CPH
Drawn	-	MDB
Checked	-	CPH
Scale	-	1:100
Job No.	-	0739
Dwg	-	DA04
Rev	-	PRE

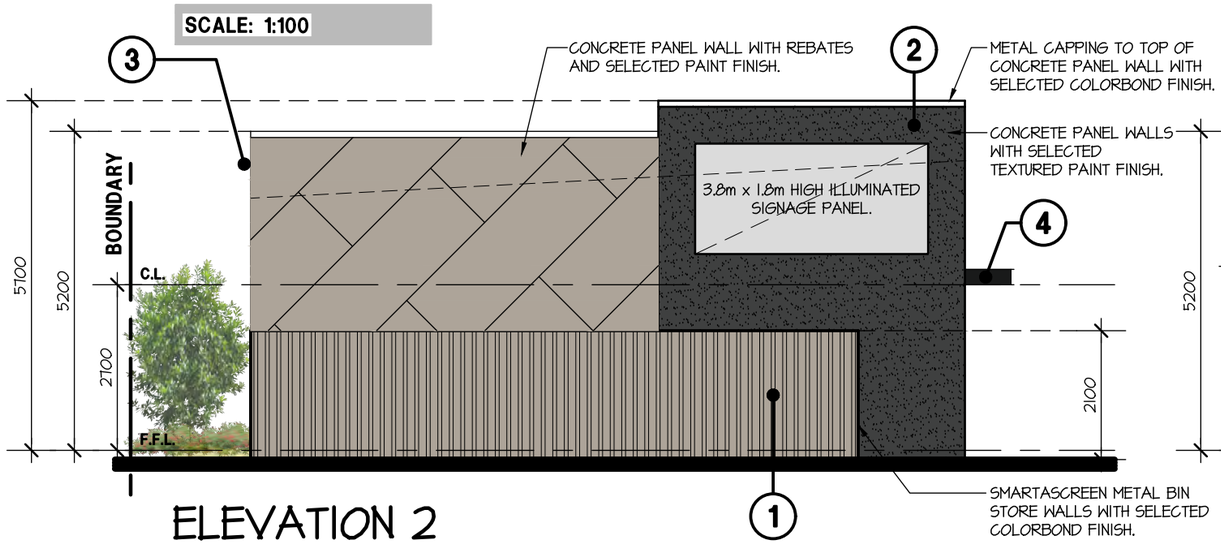


ELEVATION 1

SCALE: 1:100

FINISHES SCHEDULE

1	COLORBOND 'BASLT' MATT FINISH.
2	DULUX 'MONUMENT' - LOW SHEEN. PAINT TO HAVE FLAT FINISH **PAINT CODE - C24**
3	DULUX 'BASALT' - LOW SHEEN. PAINT TO HAVE FLAT FINISH **PAINT CODE - C30**
4	DULUX 'NIGHT SKY' - LOW SHEEN. PAINT TO HAVE FLAT FINISH **PAINT CODE - C25**



ELEVATION 2

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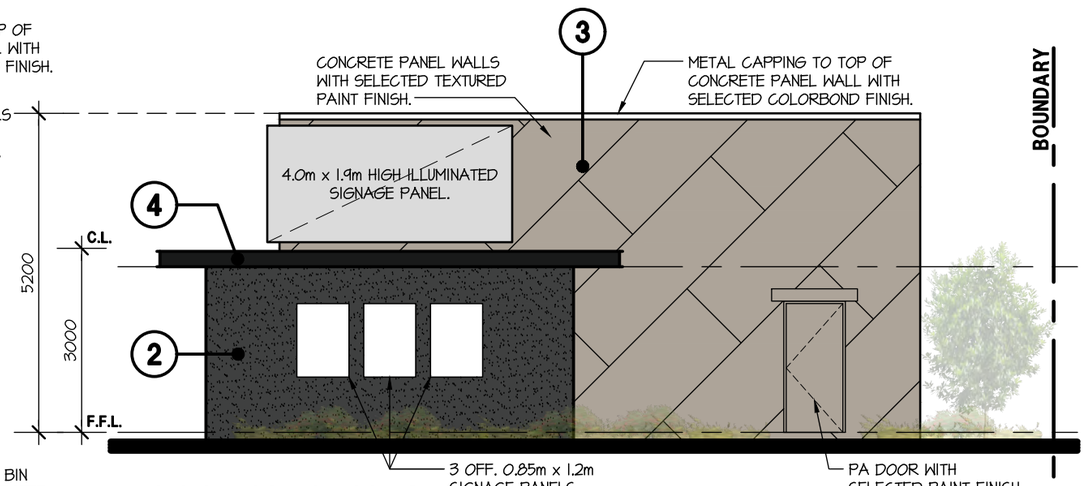

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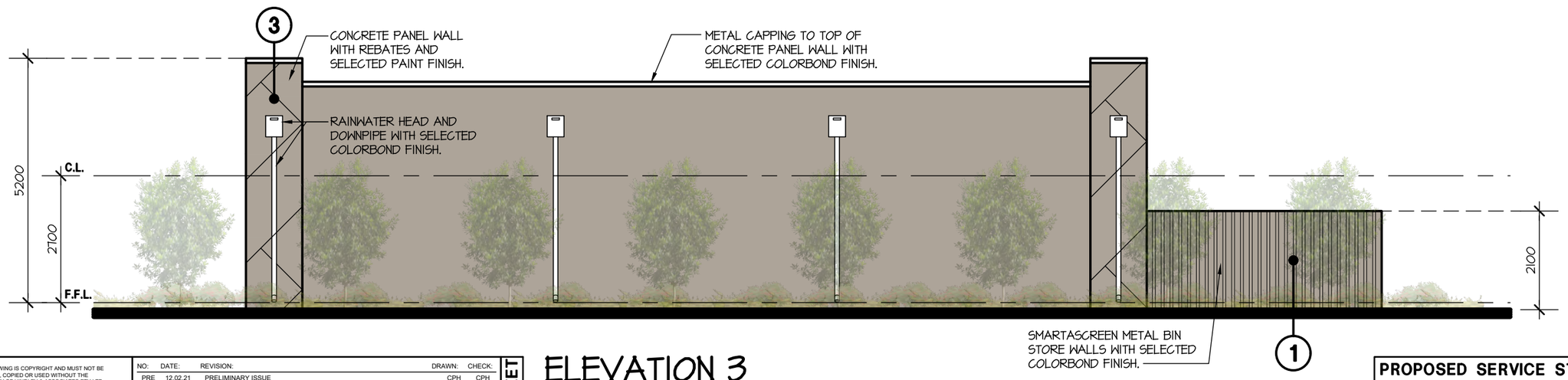

ELEVATION 3

SCALE: 1:100

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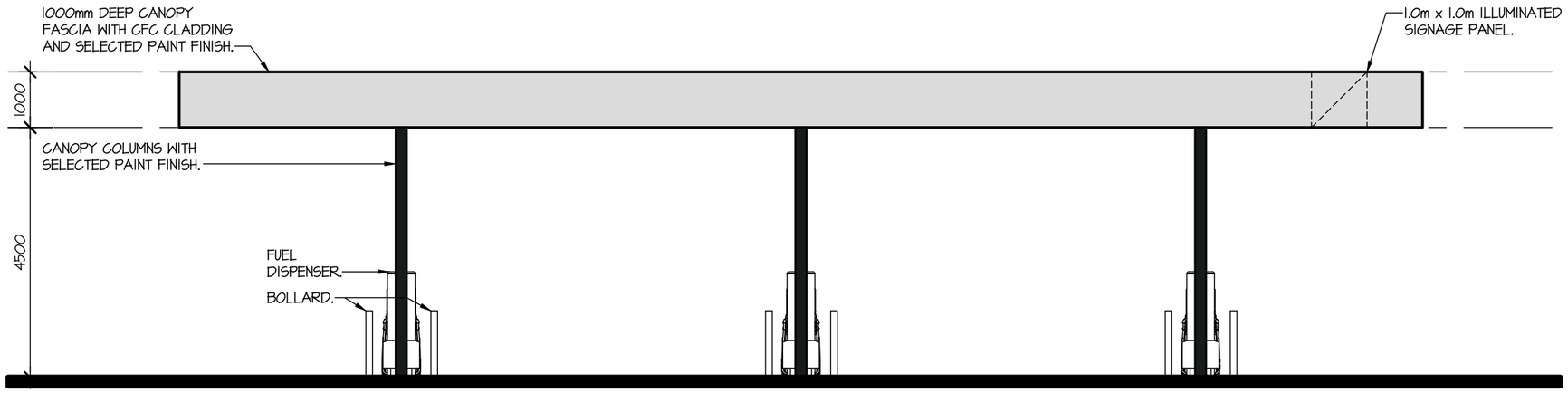
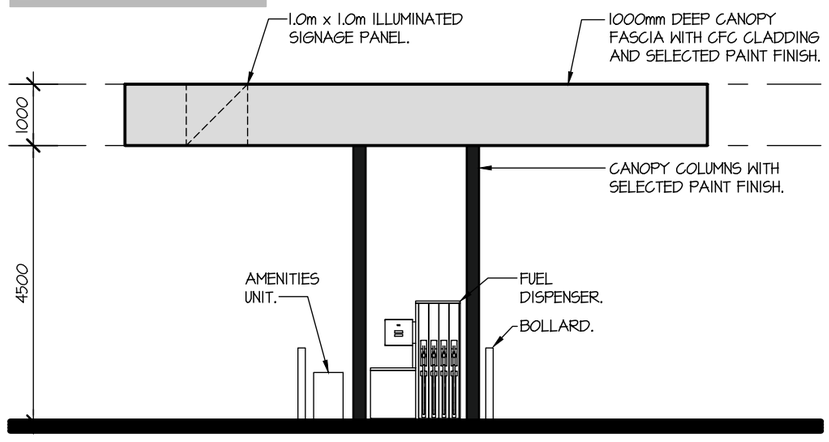
Rev	PRE



ELEVATION 5

SCALE: 1:100



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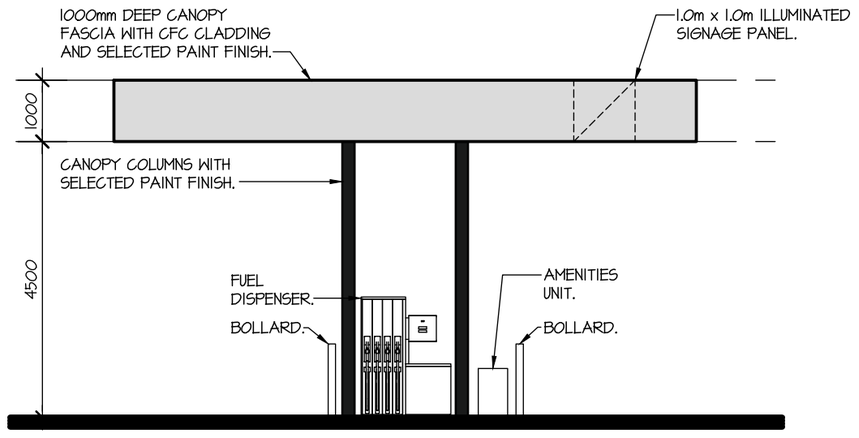
SCALE: 1:100



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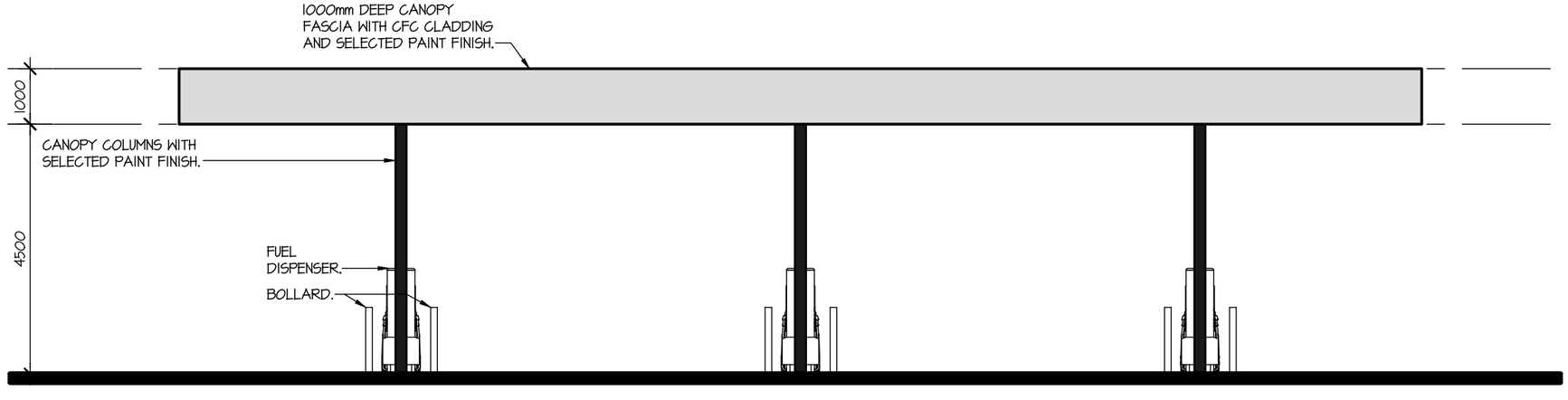
SCALE: 1:100



ELEVATION 7

SCALE: 1:100

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for MPX GROUP Pty Ltd

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Checked	-	CPH
Scale	-	1:100
Job No.	-	0739
Dwg -		DA07
Rev -		PRE

Appendix B

Zoning Map



Richmond Ave
Liverpool St
Fourth Ave
Second Ave
First Ave
Reserve St
Frederick St
Recreation Dr
Pape Pl
Otway Pl
Grove St
Light St
Hodges St
Eldon St
Hadley St
Dowden St
Peter St
Payne St
Afon Ave
Coventry Rd
Shoalwater Rd
Carlisle St
Gloucester Ave
Elizabeth St
Philip St
King George St
Fifth Ave
North Rd
Waterfront Pkwy
Almond Ave
Vineta Tn
Lexar
Shoalwater
City of Rockingham LPS No
DCA2
NH/AP
NH
100m

Appendix C

Terminology

The following is an explanation of the terminology used throughout this report.

Decibel (dB)
The decibel is the unit that describes the sound pressure and sound power levels of a noise source. It is a logarithmic scale referenced to the threshold of hearing.

A-Weighting
An A-weighted noise level has been filtered in such a way as to represent the way in which the human ear perceives sound. This weighting reflects the fact that the human ear is not as sensitive to lower frequencies as it is to higher frequencies. An A-weighted sound level is described as L_A dB.

Sound Power Level (L_w)
Under normal conditions, a given sound source will radiate the same amount of energy, irrespective of its surroundings, being the sound power level. This is similar to a 1kW electric heater always radiating 1kW of heat. The sound power level of a noise source cannot be directly measured using a sound level meter but is calculated based on measured sound pressure levels at known distances. Noise modelling incorporates source sound power levels as part of the input data.

Sound Pressure Level (L_p)
The sound pressure level of a noise source is dependent upon its surroundings, being influenced by distance, ground absorption, topography, meteorological conditions etc and is what the human ear actually hears. Using the electric heater analogy above, the heat will vary depending upon where the heater is located, just as the sound pressure level will vary depending on the surroundings. Noise modelling predicts the sound pressure level from the sound power levels taking into account ground absorption, barrier effects, distance etc.

L_{ASlow}
This is the noise level in decibels, obtained using the A frequency weighting and the S time weighting as specified in AS1259.1-1990. Unless assessing modulation, all measurements use the slow time weighting characteristic.

L_{AFast}
This is the noise level in decibels, obtained using the A frequency weighting and the F time weighting as specified in AS1259.1-1990. This is used when assessing the presence of modulation only.

L_{APeak}
This is the maximum reading in decibels using the A frequency weighting and P time weighting AS1259.1-1990.

L_{Amax}
An L_{Amax} level is the maximum A-weighted noise level during a particular measurement.

L_{A1}
An L_{A1} level is the A-weighted noise level which is exceeded for one percent of the measurement period and is considered to represent the average of the maximum noise levels measured.

L_{A10}
An L_{A10} level is the A-weighted noise level which is exceeded for 10 percent of the measurement period and is considered to represent the "*intrusive*" noise level.

L_{Aeq}
The equivalent steady state A-weighted sound level ("equal energy") in decibels which, in a specified time period, contains the same acoustic energy as the time-varying level during the same period. It is considered to represent the "average" noise level.

L_{A90}
An L_{A90} level is the A-weighted noise level which is exceeded for 90 percent of the measurement period and is considered to represent the "*background*" noise level.

One-Third-Octave Band
Means a band of frequencies spanning one-third of an octave and having a centre frequency between 25 Hz and 20 000 Hz inclusive.

L_{Amax} assigned level
Means an assigned level which, measured as a $L_{A\ Slow}$ value, is not to be exceeded at any time.

L_{A1} assigned level
Means an assigned level which, measured as a $L_{A\ Slow}$ value, is not to be exceeded for more than 1% of the representative assessment period.

L_{A10} assigned level
Means an assigned level which, measured as a $L_{A\ Slow}$ value, is not to be exceeded for more than 10% of the representative assessment period.

Tonal Noise
A tonal noise source can be described as a source that has a distinctive noise emission in one or more frequencies. An example would be whining or droning. The quantitative definition of tonality is:

the presence in the noise emission of tonal characteristics where the difference between -

(a) the A-weighted sound pressure level in any one-third octave band; and

(b) the arithmetic average of the A-weighted sound pressure levels in the 2 adjacent one-third octave bands,

is greater than 3 dB when the sound pressure levels are determined as $L_{Aeq,T}$ levels where the time period T is greater than 10% of the representative assessment period, or greater than 8 dB at any time when the sound pressure levels are determined as $L_{A\ Slow}$ levels.

This is relatively common in most noise sources.

Modulating Noise
A modulating source is regular, cyclic and audible and is present for at least 10% of the measurement period. The quantitative definition of modulation is:

a variation in the emission of noise that —

(a) is more than 3 dB $L_{A\ Fast}$ or is more than 3 dB $L_{A\ Fast}$ in any one-third octave band;

(b) is present for at least 10% of the representative.

Impulsive Noise
An impulsive noise source has a short-term banging, clunking or explosive sound. The quantitative definition of impulsiveness is:

a variation in the emission of a noise where the difference between $L_{A\ peak}$ and $L_{A\ Max\ slow}$ is more than 15 dB when determined for a single representative event;

Major Road
Is a road with an estimated average daily traffic count of more than 15,000 vehicles.

Secondary / Minor Road
Is a road with an estimated average daily traffic count of between 6,000 and 15,000 vehicles.

Influencing Factor (IF)

$$= \frac{1}{10}(\%\ \text{Type A}_{100} + \%\ \text{Type A}_{450}) + \frac{1}{20}(\%\ \text{Type B}_{100} + \%\ \text{Type B}_{450})$$

where :

$\%\ \text{Type A}_{100}$ = the percentage of industrial land within a100m radius of the premises receiving the noise

$\%\text{TypeA}_{450}$ = the percentage of industrial land within a 450m radius of the premises receiving the noise

$\%\ \text{Type B}_{100}$ = the percentage of commercial land within a100m radius of the premises receiving the noise

$\%\text{TypeB}_{450}$ = the percentage of commercial land within a 450m radius of the premises receiving the noise

+ Traffic Factor (maximum of 6 dB)

= 2 for each secondary road within 100m

= 2 for each major road within 450m

= 6 for each major road within 100m

Representative Assessment Period
Means a period of time not less than 15 minutes, and not exceeding four hours, determined by an inspector or authorised person to be appropriate for the assessment of a noise emission, having regard to the type and nature of the noise emission.

Background Noise
Background noise or residual noise is the noise level from sources other than the source of concern. When measuring environmental noise, residual sound is often a problem. One reason is that regulations often require that the noise from different types of sources be dealt with separately. This separation, e.g. of traffic noise from industrial noise, is often difficult to accomplish in practice. Another reason is that the measurements are normally carried out outdoors. Wind-induced noise, directly on the microphone and indirectly on trees, buildings, etc., may also affect the result. The character of these noise sources can make it difficult or even impossible to carry out any corrections.

Ambient Noise
Means the level of noise from all sources, including background noise from near and far and the source of interest.

Specific Noise
Relates to the component of the ambient noise that is of interest. This can be referred to as the noise of concern or the noise of interest.

Peak Component Particle Velocity (PCPV)

The maximum instantaneous velocity in mm/s of a particle at a point during a given time interval and in one of the three orthogonal directions (x, y or z) measured as a peak response. Peak velocity is normally used for the assessment of structural damage from vibration.

Peak Particle Velocity (PPV)

The maximum instantaneous velocity in mm/s of a particle at a point during a given time interval and is the vector sum of the PCPV for the x, y and z directions measured as a peak response. Peak velocity is normally used for the assessment of structural damage from vibration.

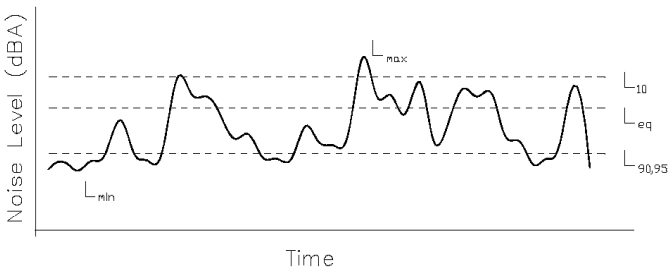
RMS Component Particle Velocity (PCPV)

The maximum instantaneous velocity in mm/s of a particle at a point during a given time interval and in one of the three orthogonal directions (x, y or z) measured as a root mean square (rms) response. RMS velocity is normally used for the assessment of human annoyance from vibration.

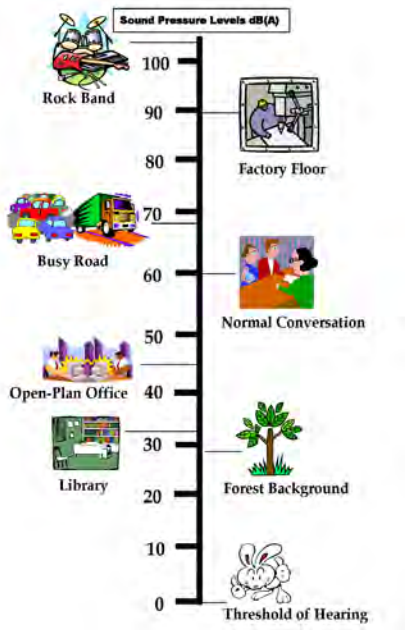
Peak Particle Velocity (PPV)

The maximum instantaneous velocity in mm/s of a particle at a point during a given time interval and is the vector sum of the PCPV for the x, y and z directions measured as a root mean square (rms) response. RMS velocity is normally used for the assessment of human annoyance from vibration.

Chart of Noise Level Descriptors



Typical Noise Levels



LOT 53 (No.67) FOLLY ROAD, BALDIVIS - PROPOSED PLACE OF WORSHIP (HINDU TEMPLE)

Form 1 – Responsible Authority Report
(Regulation 12)

DAP Name:	Metro Outer Joint Development Assessment Panel	
Local Government Area:	City of Rockingham	
Applicant:	Archetype Design Studio	
Owner:	Ms A P Byers	
Value of Development:	$5million ☐ Mandatory (Regulation 5) ☒ Opt In (Regulation 6)	
Responsible Authority:	City of Rockingham	
Authorising Officer:	Mr Peter Ricci, Acting Director Planning and Development Services	
LG Reference:	DD020.2021.00000340.001	
DAP File No:	DAP/21/02148	
Application Received Date:	9 December 2021	
Report Due Date:	27 April 2022	
Application Statutory Process Timeframe:	+90 Days with Applicant's consent	
Attachment(s):	**Attachment 1** Original Development Application **Attachment 2** Additional Information and Amended Development Plans **Attachment 3** Submission Schedule **Attachment 4** External Agency Comments **Attachment 5** Applicant's Responses to External Agency Comments	
Is the Responsible Authority Recommendation the same as the Officer Recommendation?	☒ Yes ☐ N/A	Complete Responsible Authority Recommendation section
	☐ No	Complete Responsible Authority and Officer Recommendation sections

Responsible Authority Recommendation

That the Metro Outer Joint Development Assessment Panel resolves to:

Refuse DAP Application reference DAP/21/02148 and the accompanying plans:

- Location Plan, Drawing No. 01, Revision 1, dated 2 March 2022;
- Site Plan: Total Lot, Drawing No. 02, Revision 1, dated 2 March 2022;
- Proposed Development East of Mid Tree Line, Drawing No.3, Revision 1, dated 2 March 2022;
- Temple Plan, Priests Quarters & Toilet Block, Drawing No.4, Revision 1, dated 2 March 2022;
- Elevations, Drawing No.5, Revision 1, dated 2 March 2022;
- Multi-Purpose Hall, Dining & Library Plan, Drawing No.6, Revision 1, dated 2 March 2022;
- Multi-Purpose Hall, Dining & Library Elevations, Drawing No.7, Revision 1, dated 2 March 2022;
- Guests Accommodation Plan & Elevations, Drawing No.8, Revision 1, dated 2 March 2022;
- Landscape Plan, Drawing No.9, Revision 1, dated 2 March 2022;
- Staging Diagram, Drawing No.10, Revision 1, dated 2 March 2022;
- Perspective Renders, Drawing No.11, Revision 1, dated 2 March 2022.

In accordance with Clause 68 of the Planning and Development (Local Planning Schemes) Regulations 2015 and the provisions of clause 68(2)(c) of the deemed provisions of the City of Rockingham Town Planning Scheme No. 2, for the following reasons:

1. The proposed development is not consistent with the City's Town Planning Scheme No.2 Objective of the Rural Zone (Clause 4.11.1), which is to preserve land for farming and foster semi-rural development which is sympathetic to the rural character of the area.

2. The proposed development is not consistent with the strategic intent for Planning Precinct 2A under the City of Rockingham Planning Policy 3.3.1 – Rural Land Strategy, as it has not been sufficiently demonstrated that the development will protect and enhance the visual character of the rural area.

3. The intensity of the proposed development exceeds what could reasonably be expected within this rural area, based on the number of people likely to attend the site.

4. The proposed development has not demonstrated that the existing or proposed landscaping treatments, intended to visually screen the development, can be retained in its entirety and maintain compliance with State Planning Policy 3.7 - Planning Bushfire Prone Areas.

5. The acoustic barrier required to mitigate noise on Lot 923 Young Road, Baldivis is considered to adversely impact visual amenity when viewed from land to the north of the site; Young Road adjoining the site to the east, and potentially from Folly Road to the south.

6. The proposed development includes 'Grouped Dwellings' which is a prohibited ('X') land use in the Rural zone, under the City's Town Planning Scheme No.2.

7. The proposed development is contrary to orderly and proper planning principles.

Background:



1. Location Map



2. Aerial Photograph of the Subject Site

Site Context

The subject land is located on the northern side of Folly Road, west of Young Road, Baldivis and comprises of the following characteristics:

- Two (2) rural outbuildings that obtain vehicular access from the existing crossover on Folly Road;
- Predominantly in open grassland, with pockets of established trees located at the western end of the property and within the central-eastern portion of the site; and
- The land is generally flat and low lying, with the western portion (approximately 4ha) affected by the 1 in 100 year floodplain.

The surrounding land comprises:

- West of the site is the southern extent of Folly Pool and the Peel Main Drain. Folly Pool is a Conservation Category Wetland (CCW) and Bush Forever Site. Immediately west of Folly Pool is the Kwinana Freeway and the Baldivis urban area;
- Lot 923 (No.547) Young Road adjoins the site to the north-west, which is a triangular shaped 6.4ha rural property containing three (3) rural sheds;
- Lot 33 (No.574) Young Road is approximately 80m north of the site, which is a 2.98ha property containing a dwelling, outbuildings and paddocks used for the keeping of horses;
- Lot 52 Young Road is located immediately north of the site across Young Road, which is a 5.2ha vacant rural property;
- Lot 103 (No.151) Folly Road is a 2.4ha property located directly opposite the site on the eastern side of Young Road, and contains two dwellings and rural outbuildings;
- Lot 202 (No. 154) Folly Road is diagonally opposite the site, east of Young Road and south of Folly Road. This is a 6.2ha property containing a commercial fruit orchard business and an outbuilding at the eastern end; and
- Lot 55 (No.66) Folly Road is a 7ha property opposite the site on the southern side of Folly Road, containing a dwelling and several rural outbuildings. A rural business operates on this land.

Figure 3 depicts the properties referenced above.



3. Map of the Surrounding Locality

Details: Outline of Development Application

Region Scheme	Metropolitan Region Scheme
Region Scheme - Zone/Reserve	Rural
Local Planning Scheme	Town Planning Scheme No.2
Local Planning Scheme - Zone/Reserve	Rural
Structure Plan/Precinct Plan	N/A
Structure Plan/Precinct Plan - Land Use Designation	N/A
Use Class and permissibility:	'A' Discretionary Place of Worship 'X' Prohibited Grouped Dwellings
Lot Size:	7.4362ha
Existing Land Use:	N/A
State Heritage Register	No
Local Heritage	☑ N/A ☐ Heritage List ☐ Heritage Area
Design Review	☑ N/A ☐ Local Design Review Panel ☐ State Design Review Panel ☐ Other
Bushfire Prone Area	Yes
Swan River Trust Area	No

Proposal:

Background

On 9 December 2021, an application seeking Development Approval was lodged with the City of Rockingham (City) for a proposed Place of Worship (Hindu Temple) on the subject land.

The application was accompanied by the following information:

- Development Application Report (Peter Webb Associates, dated 9 December 2021);
- Architectural Plans (Archetype Design Studio, Rev 0, 9 December 2021);
- Transport Impact Assessment (Shawmac, Version A, dated 6 December 2021);
- Acoustic Report (Marshall Day Acoustics, Rev 0, dated 29 November 2021);
- Architectural and Visual Landscape Report (Archetype Design Studio, Version 1, dated 9 December 2021);
- Environmental Assessment Report (Coterra Environment, Rev 0, November 2021);
- Site and Soil Investigation Report (Waterinsight; Rev 2, December 2021);
- Water Management Strategy (Waterinsight, Rev 2, December 2021);
- Bushfire Management Plan (Envision, Version 2, dated 29 November 2021);
- Site Survey (Cottage Surveys, dated 18 August 2021).

On 10 February 2022, following public consultation, additional information was requested from the Applicant in response to various matters identified in the City's assessment and in the submissions received.

Subsequently, the applicant submitted the following revised plans and reports, and amended the application to change the commencement time of morning prayer sessions and special Hindu Festivals from 6am to 7am:

- Architectural Plans (Archetype Design Studio, Rev 1, 2 March 2022);
- Transport Impact Assessment (Shawmac, Rev C, dated 25 March 2022);
- Acoustic Report (Marshall Day Acoustics, Rev 2, dated 24 March 2022);
- Architectural and Visual Landscape Report (Archetype Design Studio, Version 3, dated 23 March 2022);
- Environmental Assessment Report (Coterra Environment, Rev 1, February 2022);
- Site and Soil Investigation Report (Waterinsight; Rev 3, February 2022);
- Water Management Strategy (Waterinsight, Rev 3, February 2022);
- Bushfire Management Plan (Envision, Version 3, dated 22 February 2022).

The following sections of the report are based on the application information, as amended.

Details

This application seeks JDAP Approval for the following:

- A Hindu Temple building (975m²), Kitchen (27m²) and Toilet buildings (66m²);
- A Chariot Store (an existing shed 55m²):

- A Multipurpose Hall (1,046m²);
- A Dining Hall (334m²);
- A Library Building (243m²);
- An Ancillary Guests Accommodation Dwelling (169m²);
- Two (2) Priest's dwellings (160m² each);
- 113 On-site car parking bays;
- A relocated crossover on Folly Road provides primary vehicle access to the site, while a new secondary access point for service and emergency vehicles is proposed on Young Road;
- Seven (7) water tanks are provided for potable water, grey water and water for firefighting purposes;
- A 4m wide fire break is proposed around the property boundaries; and
- Site landscaping is proposed utilising strategic tree planting in an attempt to screen the development.

Activities

Daily Prayers

The main activity at the site will be two daily prayer sessions held in the Temple building, Monday to Sunday, with morning prayer sessions commencing at 7am, and evening prayer sessions finishing at 9pm. The highest attendence days are Saturdays and Sundays where 150 worshippers are expected to attend each session, with a total of 300 worshippers expected to attend the site over the entire day.

On other days of the week, a total of 50 worshippers are expected to visit the site each session (100 per day).

Special Hindu Fesitival Days

Special Hindu Festival days will be held once a month on average in two sessions per day, with morning sessions comencing at 7am and evening sessions finishing at 9pm.

For the Hindu Festival days that are held during weekdays, 75 worshippers are expected to attend the morning sessions, while up to 250 worshippers are expected attend the evening sessions.

For Hindu Festival days that are held during the weekends, up to 200 worshippers are expected for the morning sessions and 250 for the evening sessions. On these days, approxinmalty 450 worshippers are expected to attend the site over the entire day.

Hindu Weddings

Hindu weddings will be held on Friday nights or weekends, six (6) times a year on average, catering for up to 400 attendees between 6pm and 12am.

Other activities

Additional activities consist of weekday yoga classes, weekend scripture classes generally following or held in conjunction with daily prayer sessions.

Two proposed dwellings will be used for the accommodation of Priest's and their families, whilest up to eight (8) visiting guests will reside in a third proposed Guest Accommodation dwelling.

The proposed activity times and attendence numbers are summarised as follows:

Day	Activity	Number of Persons	Time
Weekdays Monday - Friday	Prayers Morning session	25-50	7am - 12pm
	Prayers Evening session	25-50	5pm - 9pm
	Yoga Classes (2 per week)	20	6pm-7pm
Weekend days Saturday - Sunday	Prayers Morning session	100 - 150	7am - 12pm
	Prayers Evening session	100 - 150	5pm - 9pm
	Scripture Classes	50 - 75 (included in the above)	3pm - 6pm
If on a weekday Once per month (on average)	Special Hindu Festival days Morning session	50 - 75	7am - 12pm
	Special Hindu Festival days Evening session	200 - 250	5pm - 9pm
If on a weekend day Once per month	Special Hindu Festival days Morning session	200	7am - 12pm
	Special Hindu Festival days Evening session	200 - 250	5pm - 9pm
Friday nights or weekends 6 times per year (on average)	Hindu Weddings	300 - 400	6pm - 12am

Legislation and Policy:

Legislation

- Planning and Development Act 2005
- Metropolitan Region Scheme
- Planning and Development (Local Planning Schemes) Regulations 2015 (the Regulations)
- Town Planning Scheme No.2 (TPS2)
- Environmental Protection (Noise) Regulations 1997

State Government Policies

- State Planning Policy 2.1 Peel-Harvey Coastal Plain Catchment (SPP2.1)
- State Planning Policy 3.7 - Planning in Bushfire Prone Areas (SPP3.7)
- Development Control Policy 5.1 Regional Roads (Draft) (DC5.1)

- Guidelines for Planning in Bushfire Prone Areas (Version 1.3)
- Government Sewerage Policy (September 2019)

Local Policies

- Planning Policy 3.1.1 - Rural Land Strategy (PP3.1.1)

Consultation:

Public Consultation

The City advertised the application for public comment in accordance with clause 64 of the deemed provisions of Town Planning Scheme No.2 (TPS2), which included the following:

- The application was advertised for a 28 day period (until 4 February 2022);
- Two signs were erected by the applicant along the property frontages inviting comment;
- The application and supporting information was placed on the City's website;
- A hard copy of the application and all supporting technical reports were available for public inspection at the City Administration Offices; and
- The City sent out 229 letters to all owners and occupiers within 500m of the subject site, as indicated in the Consultation Map below.



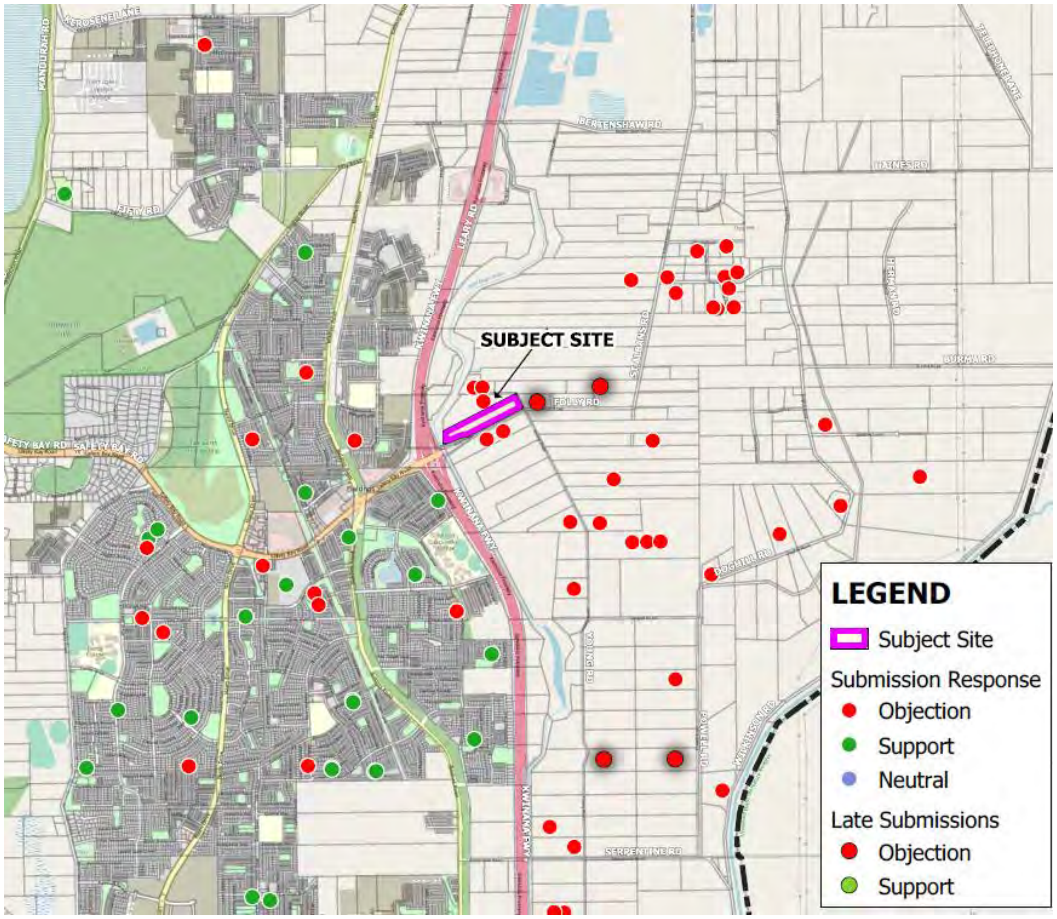
4. Consultation Map

A total of 255 submissions were received during the submission period, as follows:

- 183 submissions in support of the application;
- 72 submissions objected or raised concerns. Some objectors lodged several submissions each, which are recorded in the Submission Schedule contained in Attachment 3 to this report.

There were four (4) late submissions received. Of the submissions received, 145 supporters and three (3) objectors submissions did not originate from within the municipality of the City of Rockingham.

The locations from where the relevant submission originated within the City are identified on Figure 5.



5. Submission Map

A summary of submissioner concerns is provided below, which contains the applicant's and the City's responses to the matters raised.

Submission: **Concerns the development will adversely affect the peaceful lifestyle of surrounding properties, which is the reason people purchased land in the Rural zone.**
Applicant's Comment: *"The property currently comprises of vacant unused Rural zoned land. The Rural zone provides the opportunity for a wide range of different land uses to be considered for approval under the Rural zoning, being land uses which are considered most suitably located on larger landholdings, such as this semi-rural setting. It is not a zone which is designed specifically for residential purposes.* *The validity of this reason to objecting to the proposal on planning grounds is therefore questioned.* *A 'Place of Worship' is just one of many land uses capable of being considered for approval within the Rural zone, pursuant to Local Planning Scheme No. 2. Other uses which can also be considered for approval in the Rural zone on this landholding include (but are not limited to): Caravan Park, Brewery, Restaurant/Café, Abattoir, Agriculture – Extensive, Agriculture – Intensive, and Animal Husbandry.* *A Temple for the Hindu community to visit, pray and engage in peaceful quiet practices such as yoga and scripture reading in a semi-rural environment such as this site is an essential aspect of the Hindu faith and worship.*

The very nature of this proposed development and use seeks to encourage peaceful reflection and engagement with the surrounding semi-rural setting.

The proposed use of the land as a Place of Worship by the Hindu community is therefore a use which complements the peaceful lifestyle noted by this submitter, as living peacefully in balance with the natural environment is central to its own philosophy.

Further, it is worthwhile noting that the ancillary activities proposed to occur on the land, such as the Hindu festivals and occasional weddings do not involve any amplified music or bell ringing. Further, these events will be alcohol free. (Noting that Hindus do not drink alcohol.)

There will be no impact on the peaceful lifestyle enjoyed by the submitter, other than the obvious fact that this vacant rural zoned land will be developed and used".

City Comment:

TPS2 provides for a range of discretionary land uses within the Rural zone, which includes a Place of Worship.

Each application is considered on planning merit and due regard given to a range of considerations, including any impact on the amenity of the locality.

Land use permissibility is considered in this Report, and the amenity impact of the application is discussed in the Planning Assessment section below.

Submission:

Concerns about the impact on 547 Young Road (adjoining the site to the north) given the proposed location of the car parking area; proposed buildings and the intensity of use.

Applicant's Comment:

"The property the subject of this Application currently comprises of vacant unused 'Rural' zoned land.

The land identified in this submission at 547 Young Road is also vacant Rural zoned land.

As the City is aware, the Rural zone provides the opportunity for a wide range of different land uses to be considered for approval in this location, being land uses which are considered most suitably located on larger landholdings in such semi-rural settings, as the property the subject of this Application. It is not a zone which is designed to accommodate only residential land use.

A 'Place of Worship' is just one of many land use categories capable of being considered by the City for approval within the Rural zone, subject to the provisions of Local Planning Scheme No. 2. Other uses which can also be considered for approval in the Rural zone on this landholding include (but are not limited to): Caravan Park, Brewery, Restaurant/Café, Abattoir, Agriculture – Extensive, Agriculture – Intensive, and Animal Husbandry.

The proposed use of the land as a Place of Worship by the Hindu community will complement the rural setting in the manner sought by the submitter, as living peacefully in balance with the natural environment is central to the Hindu philosophy.

Further, it is worthwhile noting that the ancillary activities proposed to occur on the land, such as the Hindu festivals and occasional weddings do not involve any amplified music or belling ringing. Further, these events will be alcohol free. (Noting that Hindus do not drink alcohol.)

The Acoustic Assessment demonstrates that the Application can satisfy all relevant requirements of the Environmental Protection (Noise) Regulations 1997".

City Comment:

The City's assessment of the impact on No.547 Young Road is discussed in the Planning Assessment section below.

Submission:

The buildings, given the proposed building height are not in keeping and will adversely affect the visual amenity, which the proposed landscape screening will not adequately mitigate.

Applicant's Comment:

"The subject site is currently vacant, rural zoned land. It is therefore relevant to note that any built form proposed on this land will be adding to the existing built form and visual amenity of this location. The fundamental element of the design has therefore been to ensure that this additional built form and the use of the site by the Hindu community is undertaken in a manner which respects the existing rural character and visual amenity of this location in a manner which will ensure that the built form and height of the development complements and positively contributes to the semi-rural character and amenity of this location.

The design and layout of the buildings are purposefully proposed in a cluster formation with open fields and additional landscaping designed between the buildings and around the periphery of the site to ensure that the built form absorbs into the land, to a similar extent that the existing rural structures on the land blend with this semi-rural setting.

The arrangement of the built form on the land specifically addresses the surrounding existing amenity and character:

- *The Temple is proposed to be located at the further possible distance from the residential properties located to the east of Young Road.*
- *The ancillary accommodation for guests is designed to front onto Young Road, which residential use complements the existing residential dwellings on the eastern side of Young Road.*
- *The multipurpose hall, dining hall and library are located in the more central location of the site and designed with a frontage to Folly Road, which building scale is similar to the large rural shed forms visible directly opposite at the West Coast Chaff operation at 66 Folly Road.*

The building forms are to be constructed using traditional rural building materials of limestone and timber posts with colorbond roofing material, which together with the sweeping verandahs and pitched roofs of the traditional rural architectural form assist in ensuring the Temple and the associated buildings complement the existing character and amenity of this semi-rural location.

The updated Visual Assessment submitted as part of Applicant's response to the outcome of the advertising referral process demonstrates that the built form and scale of the development will sufficiently absorb into the site to ensure the visual amenity of this semi-rural location is maintained and improved".

City Comment:

The City considers that the proposed building heights are acceptable, as they are generally consistent with the prevailing height of structures (up to approximately 8m high) in the surrounding area.

The religious buildings are clustered and set back from Folly Road and are intended to be potentially screened from view by existing and proposed trees. The Temple 'Gopuram' (vertical structures above the roof of the temple building) elements are not inconsistent with the steeple structures associated with traditional Places of Worship.

The secular buildings have more traditional appearances, consistent with the design of dwellings and rural outbuildings in the surrounding locality.

While building height maybe acceptable, the City does have genuine concerns about the potential visual impact of development, in the event the intended landscape screening outcomes cannot be delivered up front, or achieved. These concerns are discussed in the Planning Assessment section below.

Submission:

Concerns that the night time lighting, or proposed event lighting will adversely affect surrounding properties.

Applicant's Comment:

"This Application does not propose to host external events.

The Temple and parking area will be provided with internal lighting for the safety of patrons but so as not to result in light spill outside of the property boundaries. The lighting will only be used during the hours of operation".

City Comment:

The City understands that the main entry of the Temple building will be illuminated at night, however, this building element is likely to be generally screened by vegetation, once it reaches a mature state.

The pathways surrounding the Temple are proposed to be illuminated with low level lighting, however, the extent of illumination proposed is not what would typically be applied to a Rural zoned property.

Submission:

The Gopuram structures and the brightly coloured architectural adornments typical of a Hindu Temple will be visually obtrusive.

Applicant's Comment:

"The Gopuram structures are neutral limestone coloured, which is a base natural tone. The coloured adornments comprising of a neutral pallets (such as the photo attached) which are not obtrusive within a natural rural setting characterised by blue sky, greenery, and the various colours of the nearby rural sheds, will be hidden behind existing and proposed planting of mature vegetation.

The entire Temple and entry statements have been positioned on a portion of the property which is set as far away from the intersection as possible, and out of sight lines of the intersection and approaching roads. The proposed landscaping has carefully considered all sightlines, and proposed trees in key locations to screen the building, and the impact on the environment will not be visually obtrusive".



City Comment:

The Gopuram structures could be substantially screened from the public domain by the existing and proposed trees, and are not considered likely to be visually obtrusive from this perspective once the proposed trees reach maturity.

For reasons explained in the Planning Assessment section of this Report, the effectiveness of the proposed landscaping will be compromised by bushfire protection requirements applicable to the development.
Submission: **The Visual Assessment report does not contain accurate montages representing views from all angles, including from the north.**
Applicant's Comment: *"All perspectives views have been double checked, and one was found to be inaccurate and has been corrected.* *New perspectives from the north and north east have been provided in the amended plans".*
City Comment: The visual montages are considered sufficient and suitable.
Submission: **Concerns Folly Road is not able to cope with the volume of traffic (including construction traffic), given it's existing condition and there being no plans to upgrade it. Will road upgrading be necessary?**
Applicant's Comment: *"The Traffic Impact Assessment prepared by Shawmac confirms that the traffic generated by the proposed development will not result in traffic capacity or road safety issues. The conclusion being that no upgrading to Folly Road is required to support this development, other than providing turning lanes to accommodate vehicles entering the site.* *The TIA recommends that turning treatments be constructed at the access to the site on Folly Road, including an auxiliary left turn lane and an auxiliary right turn lane. This will facilitate safe turning movements into the development in order to remove any perceived, possible impact on through traffic along Folly Road".*
City Comment: The City has assessed the applicant's TIA and considers Folly Road can accommodate with additional traffic flows, subject to the provision of a left turn lane (i.e. a short Auxiliary left, or 'AUL(S)'). Traffic and safety is discussed in detail in the Planning Assessment section of this Report.
Submission: **Concern there is inadequate on site car parking for the development, when Hindu festivals occur.**
Applicant's Comment: "*The Traffic Impact Assessment prepared by Shawmac confirms that the proposed on-site parking is sufficient to support the development and use of this site, including the use of the site on Festival days".*
City Comment: The car parking proposed complies with the TPS2 requirements.
Submission: **The Traffic report does not adequately address:** • **The long term capacity of the network, taking account of vehicles coming to the site from the east, or from Mundijong Road through to Folly Road travelling west;**

- **The accident history. The intersection of Folly Road/Young Road claimed the life of a young girl a few years ago;**
- **In respect to safety, weekend cyclists using Folly Road; and**
- **The effect of recent travel and Covid restrictions when reporting the traffic counts.**

Applicant's Comment

"*The Amended TIA addresses the long-term capacity of the road network.*

We assume the crash mentioned relates to the crash occurring in December 2012. Reports on the crash indicate that the driver crossed onto the wrong side of the road and hit a truck. We couldn't find any further details on the cause of the crash.

Whilst any fatality is a tragic outcome, the lack of recent crash history suggests that this was an isolated incident and does not indicate a major safety issue with the road network .The development itself will not generate a significant amount of traffic through the intersection.

Weekend use on a regular basis and for Special Hindu Festival days will generate traffic that is spread out over the day and will not impede safe travel for cyclists. On wedding days, traffic will be limited to short discrete periods during the day and there will be no traffic outside of these periods.

Traffic counts used in assessment were from June 2021 and August 2021. There were little or no cases of community spread during this period. Historical counts show that pre-COVID traffic volumes along Folly Road were much lower than those in 2021".

City Comment:

The City has assessed the TIA provided by the applicant and considers that while there would be an increase in traffic in the vicinity of the proposed development, it adequately addresses traffic generation. The City is also satisfied the surrounding road network can accommodate the generated traffic.

Submission:

Concerns the Acoustic report is misleading and does not account for:

- **outdoor noise associated with the proposed uses;**
- **noise impact on the adjoining property at 547 Young Road;**
- **noise associated with bell ringing, instruments and chanting associated with Hindu events, including early and late in the day. What can be expected?**

Applicant's Comment:

*"**Outdoor noise associated with the proposed uses;***

The Acoustic Assessment confirms that the Application is compliant with the relevant requirements of the Environmental Protection (Noise) Regulations 1997.

Noise associated with bell ringing, instruments and chanting associated with Hindu events, including early and late in the day. What can be expected?

There will be no outdoor activities occurring around the Temple or the Multi Purpose Hall.

The few religious requirements such as circum-navigation of the temple twice a year do not involve any amplified noise or chanting, bell ringing or drumming.

Noise impact on the adjoining property at Lot 923 (547) Young Road;

547 Young Road is currently vacant farming land. The Acoustic Assessment has been updated to consider the adjoining owner's stated intended location of a future residential dwelling on this property. This updated Assessment confirms that the Application is compliant with the relevant requirements of the Environmental Protection (Noise) Regulations 1997".

City Comment:

The City has reviewed the Acoustic Report, and is satisfied that the development can achieve compliance with the Noise Regulations. This is subject to implementing the recommended noise measures which includes a noise barrier, discussed later in this report.

Submission:

Concerns that the impacts of noise from the development cannot be effectively managed or enforced, and will adversely affect surrounding properties.

Applicant's Comment:

"*Our Acoustic Consultant has recommended various treatments for the architectural design, which we are including in our design so that we can contain noise when required.*

We understand that noise is an important consideration for the surrounding community and our noise management procedures will be based on continuously satisfying all relevant requirements of the Environmental Protection (Noise) Regulations 1997, as well as maintaining good relationships with our neighbours".

City Comment:

The Acoustic Report indicates that noise exceedances can be managed by virtue of a Noise Management Plan and by erecting a noise barrier wall parallel to the northern boundary to mitigate noise impact on Lot 923 Young Road.

The noise barrier presents a separate concern from a visual / amenity perspective, which is discussed in the Planning Assessment of this Report.

Submission:

Concern about noise (including chanting/bell ringing/traffic noise) affecting the quiet rural amenity, on a daily basis from 6am.

Applicant's Comment:

"*The proposed development and use does **not** involve outdoor activities around the Temple or the Multi-Purpose Hall, and the daily opening times have been pushed back from 6.00am to 7.00 am.*

The few religious requirements such as circum-navigation of the temple twice a year do not involve any amplified noise or chanting, bell ringing or drumming.

Noise emanating from inside the Temple and Multi Purpose Hall has been modelled by the Acoustic Consultant and shown to be within acceptable limits for a rural area at the relevant times of day.

Traffic noise, including noise from vehicles accessing the car park on the land has been modelled by the Acoustic Consultant and shown to be within acceptable limits for a rural area at the relevant times of day."

City Comment:

The application has been amended to ensure no activity commences prior to 7am.

The applicant's comments are noted above, which indicate there is no outdoor activity proposed other than circum-navigation of the temple twice a year, and that this does not involve any amplified noise or chanting, bell ringing or drumming.

Submission:

Concerns that noise from the development will impact on horses (grazing on nearby land being spooked), wildlife or pets.

Applicant's Comment:

"*Same as above, no noise other than that generated by vehicles and worshippers accessing Temple will be emanating from the development.*

The Acoustic Assessment confirms that the Application can satisfy all relevant requirements of the Environmental Protection (Noise) Regulations 1997.

The use of this land on land zoned for agricultural use and being located immediately abutting the Kwinana Freeway will not result in noise being emitted at a level which would have any impact on domestic or wild animals. Further, there is no state or federal regulation which can be applied to an assessment to determine the impact of noise on animals. Researchers of noise impact on animals is limited and inconclusive. Further, this Application does not propose a development which involves any loud piercing type noise level which might be considered to potentially startle and impact the wellbeing of an animal. On this basis, we do not consider this to be a valid planning reason for objecting to this proposal".

City Comment:

It is considered unlikely that the proposed development noise will adversely impact on animals or livestock, as noise can potentially be contained on site or mitigated, to comply with the Noise Regulations.

Submission:

There are concerns the development will adversely affect:

- **The quality of ground and surface water resources through the disposal of effluent, noting there are properties nearby with drinking water bores;**
- **Folly Pool which is an environmentally sensitive wetland; Bush Forever Sites and the Peel Main Drain; and**
- **Flora and fauna (including Black Cockatoo habitat) on and surrounding the site.**

Applicant's Comment:

"There are concerns the development will adversely affect:

Folly Pool which is an environmentally sensitive wetland; Bush Forever Sites and the Peel Main Drain;

Folly Pool

It is acknowledged that Folly Pool is a conservation category wetland (CCW).

The proposed development footprint is located, at its closest point, 200 metres (m) from the mapped boundary of the CCW (across the neighbouring property). Onsite, the proposed development is located approximately 360 m from the CCW (within the site boundary). It is acknowledged that Folly Pool supports a high diversity of fauna and flora and that local conservation groups assist in the management and maintenance of the area.

In accordance with Guidance Statement No. 33 (EPA, 2008), wetlands that are to be protected typically require a minimum 50 m buffer distance, based on the wetland's values, and development proposed near the wetland. In addition, the Guideline for the Determination of Wetland Buffer Requirements (WAPC, 2005) suggest that buffers for highly important wetlands maintain a distance of up to 100 m for weed infestation and protection of bird habitat, and at least a 100 m buffer to minimise edge effects. The proposed develop exceeds both these separation distances, so from an environmental perspective, the development is not likely to impact Folly Pool flora and fauna attributes.

The Water Management Strategy has included the results of stormwater modelling and storage volumes required to maintain existing hydrological conditions, as required by the Better Urban water Management Guidelines and Stormwater Management Manual for Western Australia. It indicates there is more than enough space available to construct the required drainage areas.

Bush Forever Sites

Folly Pool is identified as part of Bush Forever (BF) Site 418. No development is proposed within approximately 360 m of the boundary of BF Site 418 (within the site boundary), and as such, the development is not likely to impact function or attributes of flora and fauna within BF Site 418 itself.

BF Site 369 is located approximately 1 km east of the site. BF Site 419 is located approximately 1.5 km south of the site. Both of these sites are beyond the area of development impact.

Flora and fauna (including Black Cockatoo habitat) on and surrounding the site.

Vegetation and Flora

Although the site has historically been used for rural purposes since 1953, and that the site was largely cleared in 1970, the existing vegetation could be considered as remnant vegetation. No understorey is present beneath paddock trees, and sheep have been grazing on the crop-sewn land.

The majority of sparsely-remaining paddock trees are representative of the historical Serpentine River Complex (Heddle et al, 1980) which is described as "closed scrub of Melaleuca species and fringing woodland of Eucalyptus rudis – Melaleuca rhaphiophylla along streams". Planted conifer trees are also present on site.

No further assessment was made of vegetation on site on this basis.

It is important to note that remnant vegetation on this site was never representative of Banksia Woodland, as identified in numerous project objections.

Black Cockatoo Habitat

An assessment was made to determine the suitability of black cockatoo breeding/nesting habitat (Harewood, 2021).

An assessment of existing trees was made in response to potential black cockatoo habitat; however, no trees were determined to be suitable for nesting/breeding (Harewood, 2021).

The existing trees (Eucalyptus rudis and Melaleuca rhaphiophylla) are typically not representative of foraging species for Carnaby's Black Cockatoos (Groom, 2011). Eucalyptus rudis can be used for roosting (Groom, 2011), however no evidence of use was recorded on site (Coterra, 2021). Conifer trees (unidentified species) can potentially be used for foraging; however, no evidence of use was recorded on site (Coterra, 2021).

In addition, the existing vegetation is not known to be used Baudin's Black Cockatoo or the Forest Red-tailed Black Cockatoo for nesting or foraging (DEWHA, 2009, TSSC, 2018).

Landscaping and Fauna Habitat Considerations

It is noted that the development is proposing to retain trees, where feasible to do so. The Visual Landscape Report details landscaping plans relevant to the proposed development.

In addition, black cockatoo habitat trees are proposed to be planted to provide future black cockatoo habitat

- *Eucalyptus rudis*
- *Melaleuca rhaphiophylla*
- *Banksia attenuata*
- *Banskia litoralis*
- *Banksia menziesii*
- *Allocasuarina fraseriana*
- *Eucalyptus marginata*
- *Eucalyptus gomphocephala.*

Note: Banksia litoralis has been included as it is known to grow on soils representative of the Serpentine River Complex".

City Comment:

Vegetation

The vegetation on the eastern portion of the site comprises predominantly grass, with some scattered remnant trees (Melaleuca species) and Conifers. The applicant proposes to retain these trees except for two, as one is diseased, and the other is to be removed for bushfire mitigation reasons. The removal of these two trees is intended to be offset by tree plantings outlined on the proposed Landscaping Plan.

The list of proposed revegetation species is supported by the City as it comprises of species endemic to the Rockingham area and capable of growing in low lying sites. As for the tree species selected for the car park, it is suggested that the two species proposed, *Eucalyptus erythronema* and *Fraxinus raywoodii,* are replaced with trees from the native species selection list.

The western portion of the site contains grassland, scattered Melaleuca trees and dense vegetation adjacent to Folly Pool. No development is proposed on the western portion of the site, and these trees will not be impacted.

Fauna

The fauna habitat on the site is limited due to the limited amount of vegetation. The Environmental Assessment Report (EEA) submitted indicates that with the exception of migratory species, fauna species are more likely to be present in areas of better quality vegetation, such as the adjacent Bush Forever Site 418. The City considers this is likely to be the case.

The *Eucalyptus rudis* (Flooded Gum) trees at the western end of the site are considered potential roosting trees for Black Cockatoo species. These trees will be retained and will not be impacted by the development.

Wetlands

Folly Pool adjacent the site is a CCW. Potential threats to the wetland include:

- Increased nutrient loading to surface and groundwater;
- Vegetation clearing associated with the wetland or buffer may potentially impact on wetland values;
- There is potential risk of Acid Sulfate Soils (ASS) impacting the groundwater regime, if not managed appropriately.

It is noted that all construction and development is located on the eastern portion of the site, outside of the 50m CCW buffer. No vegetation will be removed from the western portion of the site.

Waste Water Disposal

The proposal can comply with the Government Sewerage Policy, and as such, it is unlikely that the proposal will detrimentally impact the environmental values of the site or surrounding wetlands.

Conclusion

On balance, these environmental impacts are considered to be manageable.

Submission:

The environmental reports don't acknowledge the presence of fauna such as long neck turtles which have been found on an adjoining property.

Applicant's Comment:

"A Level 1 Fauna Survey was not undertaken as part of the scope of this development, based on the separation distance between Folly Pool and the proposed development. Whilst it is acknowledged that a long neck turtle (identified as Chelodina colliei in Schedule of Submissions), this species is not currently a protected species under the Biodiversity Conservation Act 2016 or the Environment Protection and Biodiversity Conservation Act 1999.

Despite this, it is acknowledged that this species is locally endemic and exists in low populations (DWER, 2022). This species typically lives in a range of seasonal and permanent freshwater habitats including wetlands, lakes and rivers (DWER, 2022). This species spends the majority of its life in water. Female turtles can search for nesting sites up to 800 metres from the water's edge, but generally within 500 m (DWER, 2022).

The proposed development is located approximately 250 m from Folly Pool at its closest point, and whilst possible, it is unlikely that this species would utilise the site for nesting once developed.

If required, a Fauna Relocation and Management Plan could be prepared as a condition of Development Approval, to appropriately manage this species, and other fauna species that potentially utilise the site".

City Comment:

The applicant's response is noted.

Submission:

Concerns that extra traffic from the proposal will create congestion on Folly Road while evacuating during a fire event.

Applicant's Comment:

"The area east of the freeway is a low density residential area – few people over a large catchment. Proportionately there are fewer people evacuating within the distance between the fire and the site.

The expected flow rate of a single lane is 1800 vehicles per hour. The BMP has been adjusted to include a Hindu wedding 200 vehicle, extending the evacuation RSET to 50 minutes (to make the right hand turn onto Folly Road). A broader analysis of the traffic catchment may be required by the City.

The BMP has identified that evacuation is the preferred approach following DFES policy, but the temple itself can provide refuge. It is within a moderate BHL [sic] level area (predominantly grassland) and the expected BAL at the building (both the temple and multi-purpose hall) is less than BAL 10 (refuge standard).

Evacuation should take place if it is safe to do so, but if it was apparent that the evacuation route was not safe, and evacuation could not be completed before the fire's arrival, then refuge on site can be taken".

City Comment:

Traffic evacuating from the development can be adequately managed to minimise any congestion on Folly Road. Should evacuation not be possible, the arrangements are in place to shelter on site.

Submission:

Concern over how the additional uses outside of normal worship times will be managed, in particular:

- **managing noise related to large functions and weddings etc;**
- **relating to third party hire/use of facilities. What is proposed?**

• **what complaints mechanisms exist should residents experience excessive noise or other problems from the development?**
Applicant's Comment: *"Managing noise related to large functions and weddings etc;* *The Temple will have a Management Committee that is responsible for the operations and functioning of the Temple and associated facilities. This will include a noise management plan, and strict terms for the use of the Multifunction Hall, including hours of operation, hours that amplified / loud music must be turned off, operation of doors / windows etc.* *The noise management plan will be a live document that is updated as required in order to maintain ongoing compliance with the Noise Regulations.* *Relating to third party hire/use of facilities. What is proposed?* *The Multi Purpose Hall and Short stay accommodation will not be hired out to third parties, and will only be available for the use of Temple Community members, under terms and conditions to be stipulated, including Noise management.* *What complaints mechanisms exist should residents experience excessive noise or other problems from the development?* *As part of our noise management plan, we intend to develop community engagement procedures. These will include:* • *Contact details that are provided to residents so that they can address any complaints to the responsible person on site* • *Process for managing and registering noise complaints* • *Process for reviewing any complaints received and updating the noise management plan if necessary.* *Any excessive noise concerns can also be reported to the Police and the local government authority and action will be undertaken accordingly".*
City Comment: The proposal has been assessed on planning merit against what was proposed within the Development Application.
Submission: **An alternative site has been suggested, on the corner of the Kwinana Freeway on the north side of Mundijong Road.**
Applicant's Comment: *"No comment in response to this Planning Application is considered necessary in regard to this submission".*
City Comment: This matter is not a relevant planning consideration, as the City must consider the application on its planning merit.
Submission: **There is inconsistency within the bushfire management plan regarding water tank requirements, which should be rectified.**
Applicant's Comment: *"Other than for the DFES comment, (which is addressed elsewhere), there is no inconsistency within the bushfire management plan requiring any change".*

City Comment:

The BMP adequately addresses the bushfire criteria of the Guidelines with respect to water.

Submission:

Concerns the development will adversely affect surrounding property values.

Applicant's Comment:

“Property value is not a valid Planning reason for objecting to a development proposal".

City Comment:

The effect of the proposal on property values is not a relevant planning consideration.

Submission:

Submitters consider the proposed development more akin to Commercial development than Place of Worship. How can the proposal be considered a Place of Worship, given the range of activities proposed?

Applicant's Comment:

"A Place of Worship is a community land use.

The Primary function of the development is that of a Hindu Temple ie a Place of Worship.

The Secondary function is that of a Multifunction Hall, ie a space to support other religious activities of the Hindu faith, including Religious wedding ceremonies, meditation and yoga, and the Library, a space to facilitate instructions in Hindu Vedic texts (ancient religious texts).

Other functions such as the Dining Hall, Priest’s quarters, short stay accommodation and car park are ancillary and incidental uses required in the day to day proper functioning of the Temple.

The Temple is a non-for profit organisation, and there will be no commercial activity on the site, other than fund raising to support the maintenance costs of the Temple".

City Comment:

Land use is discussed in Planning Assessment section of this Report.

Submission:

Concerns that the current electricity infrastructure cannot cope with the existing community needs (give the outages over Christmas) let alone cater for the proposed development as well.

Applicant's Comment:

“Preliminary Investigation reveals that there is a High-Voltage distribution power line (Blue Line) feeding the property from a 25kVa Transformer on the edge of the property on Young St. This transformer only feeds 4 properties, and should be sufficient to cater for the proposed development.

A power failure over Christmas does not necessarily indicate inadequate power supply to the area, and may be caused by numerous other reasons.

Should the voltage supply be inadequate, as determined by future investigation and design by an electrical consultant and Western Power, the developer will bear the cost of a transformer upgrade".

City Comment:

The applicant would be required to provide electricity to the development in accordance with the requirements of the supply authority.

Submission: **There is concern the development may impact Aboriginal heritage, as not all significant sites are known. Concerns the development will conflict with the indigenous significance of Folly Pool.**
Applicant's Comment: *"As detailed in the Town Planning Report, there are no Aboriginal sites or European Heritage sites listed within the boundaries of the site. The proposed Development is situated on the far eastern side of the block, with no community access permitted by the Temple to the Folly Pool area, in order to ensure the protection of the sensitive environment surrounding it".*
City Comment: It is the developers and owners responsibility to ensure that there is no disturbance to any Aboriginal sites.

Referrals/consultation with Government/Service Agencies

The following Government departments and service agencies were consulted:

- Department of Health (DoH);
- Department of Fire and Emergency Services (DFES);
- Department of Planning, Lands and Heritage (DPLH);
- Department of Water and Environmental Regulation (DWER);
- Main Roads Western Australia (MRWA); and
- Water Corporation.

The comments received include:

1. Department of Health (DOH)
Water Supply The drinking water supply must be suitably disinfected and fit for purpose, and deliver safe drinking water that complies with the health-related microbiological and chemical health criteria set out in the *Australian Drinking Water Guidelines* and also be compatible with https://www.healthywa.wa.gov.au/Articles/U_Z/Water-tanks-on-your-property It is recommended that the facility have a drinking water management plan that is approved by the City of Rockingham to ensure that risks associated with drinking water are adequately addressed and mitigated. Should any nasal irrigation practices be carried out consideration should be given to the information contained at - https://www.healthywa.wa.gov.au/Articles/N_RNasal-irrigation-is-it-safe Drinking water infrastructure to comply with all relevant aspects of the BCA. Any food premises on site is to be supplied with potable drinking water to the satisfaction of the City of Rockingham under the food safety regulatory framework. Any non-drinking water on site must be suitably labelled to ensure it cannot be reasonably mistaken for drinking water.
City Comment: Noted.

1. Department of Health (DOH) (cont…)

Wastewater Disposal

In relation to the management of sewage, the DoH has no objection to the proposed, subject to the following:

- Compliance with the Government Sewerage Policy (2019). It is noted the land is subject to high seasonal water tables and the proposal refers to using leach drains. Considering this, up to 2 metres of fill may be required to ensure the 1.5 metre separation from the water table is achieved to the base of the disposal area, including the depth of the leach drain and soil cover;
- A secondary wastewater treatment system should comply with and demonstrate meeting WA health legislation water volumes, water quality and disposal criteria;
- Submission of a plan detailing the proposed building envelopes, land application area/s, all parking bays, setbacks and exclusion zones for the proposal;
- Submission of a formal application for an onsite wastewater treatment system to the City of Rockingham for assessment prior to submission to the DOH.

City Comment:

As the site is located in a Sewerage Sensitive Area, a secondary treatment system with nutrient removal capability is proposed, in accordance with the Government Sewerage Policy.

The City has assessed the proposal against the applicable policy provisions and considers that the development can comply with the Government Sewerage Policy. It is noted however, that there is potential for significant filling being required to achieve the necessary vertical separation, in the event maximum groundwater levels are higher than observed in the applicant's SSE report. This is detailed in the Planning Assessment section of this Report.

2. Department of Fire and Emergency Services

1. Policy measure 6.5 c) Compliance with the Bushfire Protection Criteria

Element	Assessment	Action
Water	A4.2 - not demonstrated It has not been demonstrated that the proposed 50,000 litre water tank dedicated for fire-fighting purposes and adjacent hard-standing can achieve BAL-29 or below and is accessible to a type 3.4 appliance.	Modification to the Bushfire Management Plan (BMP) is required.

City Comment:

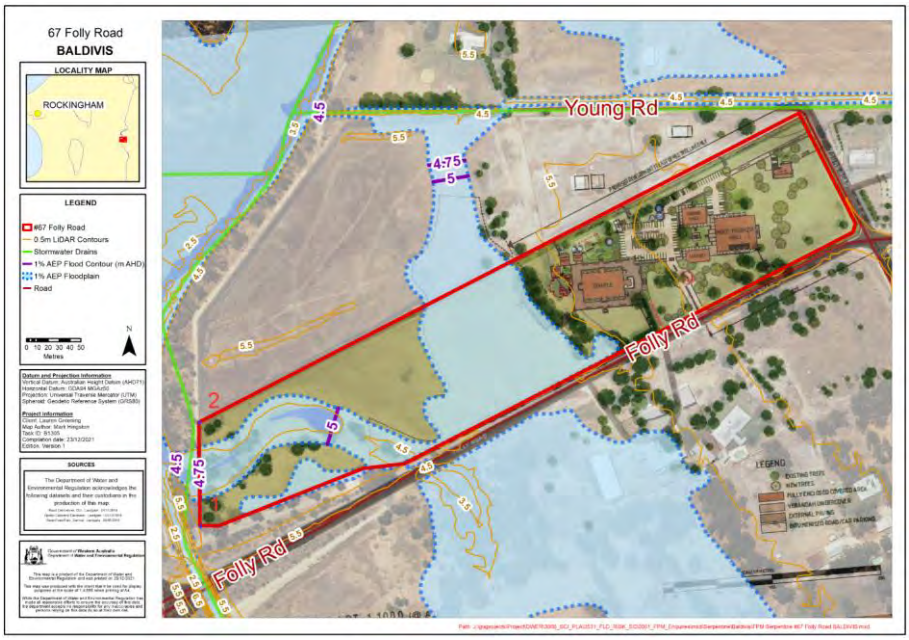
The BMP was amended to address the matter. The water tank, post-development, will be located within BAL-29. There is sufficient hardstand proposed for a type 3.4 appliance.

3. Department of Planning, Lands and Heritage (DPLH)

Access

The site currently has one access point onto Folly Road. Access to Folly Road and a secondary access (for service and emergency vehicles) to Young Road are proposed. This is in accordance with the Commission's Regional Roads (Vehicular Access) Policy D.C. 5.1, which seeks to minimise the number of new access points to regional roads.

3. Department of Planning, Lands and Heritage (DPLH) (cont…)
Transport Impact Assessment The supporting transport report by Shawmac (December 2021) indicated that once a month, the site may generate the up to 450 attendees. Recommendation The DPLH has no objection to the proposal on ORR planning grounds.
City Comment: Noted.
4. Department of Water and Environmental Regulation (DWER)
The Department has identified that the proposed Hindu Temple at Lot 53 Folly Road, Baldivis has the potential for impact on water resource values and/or management. In principle the Department does not object to the proposal however key issues, recommendations and advice are provided below and these matters should be addressed.
Issue: Flood Management **Advice** The North-East Baldivis Flood Study shows that a proportion of the lot is subject to flooding during major events with the 1% AEP flood level expected to vary from 4.75 m AHD to 5.0 m AHD (refer to the attached plan). Based on DWER's floodplain management strategy for the area: • It is recommended that any proposed development (i.e. filling, building, etc) be located outside of the 1% AEP floodplain and at a minimum habitable floor level of 500 mm above the estimated flood level (eg, 5.5 m AHD) to ensure adequate flood protection. • Proposed development (i.e. filling, building, etc) that is located within the floodplain (blue shaded area on the plan) will be assessed on its merits on a case-by-case basis. Based on the plan sent through the buildings have been located outside of the floodplain (see attached). The finished floor levels are provided in a relative level, so it's not clear if the buildings are built above 5.5mAHD. Please note that this advice is related to major flooding only and other planning issues such as local stormwater drainage and environmental and ecological considerations may also need to be addressed.

4. Department of Water and Environmental Regulation (DWER) (cont…)

City Comments: The proposed building slab levels are set at least 5.6mAHD, providing at least 0.5 separation above the estimated 1 in 100 year flood level, which addresses the flood mitigation advice.
Issue: Sewage Sensitive Area Advice In accordance with the Government Sewerage Policy (Government of Western Australia, 2019), the subject land is located within a sewage sensitive area. As this land is not connected to the reticulated sewerage infrastructure, future development of the proposed lot must adhere to the Policy including the requirement for a secondary treatment system with nutrient removal as well as setback requirements from waterways, the maximum groundwater level and areas likely to be flooded in a 10% AEP flood and 1% AEP flood events.
City Comments: The development can comply with the requirements of the Government Sewerage Policy.
Issue: Peel Harvey Coastal Plain Catchment **Advice** The proponent is to be advised that the proposal is located within the Peel-Harvey catchment and the provision of the Environmental Protection (Peel Inlet – Harvey Estuary) Policy 1992 and the Statement of Planning Policy No 2.1, Peel-Harvey Coastal Plain Catchment (SPP 2.1) shall apply.
City Comments: Noted.
5. Main Roads WA (MRWA)
Main Roads WA does not object to the proposal subject to the following condition: 1. Attendance and times of operation for worship are to be limited to the following:

Weekday Prayers (Mon-Fri)	25-50 people (morning session)	7:00am to 12:00pm
	25-50 people (evening session)	5:00pm to 9:00pm

5. Main Roads WA (cont…)

Weekday Yoga Classes (2 per week)	20 people (evening session)	6:00pm to 7:00pm
Saturday/Sunday Prayers	100-150 people (morning session)	7:00am to 12:00pm
	100-150 people (evening session)	5:00pm to 9:00pm
Saturday/Sunday Scripture Classes	50-75 people	3:00pm to 6:00pm
Special Hindu Festival Days occurring on average once per month		
Weekday	50-75 people (morning session)	7:00am to 12:00pm
	200-250 people (evening session)	5:00pm to 9:00pm
Weekend	200 people (morning session)	7:00am to 12:00pm
	200-250 people (evening session)	5:00pm to 9:00pm
Hindu Weddings up to a maximum 6 times per year on weekends only		
Weekend	300-400 people	6:00pm to 12:00am

City Comment:

Noted.

6. Water Corporation

Drainage:

The subject area falls within the Peel Drainage Catchment in the Mundijong Drainage District, a rural drainage system. The Peel Main Drain and the Peel Sub G Drain are in close proximity to the subject site to the West and North respectfully.

Rural drains are not designed to give flood protection at all times and some inundation of land can be expected. Water Corporation maintains its existing rural drains to ensure they are capable of clearing water from adjacent rural properties within three days of a storm event, where contours and internal drainage make this physically possible.

Developments within this catchment are required to contain the flows from a one in one-hundred-year storm event on site. Discharge to Water Corporation drains must be compensated to pre-development levels.

Please note the following points regarding the Water Management Strategy provided with the Development Application:

6. Water Corporation (cont…)
Section 2.9 • The developer needs to discuss the North East Baldivis Flood Study with the Department of Environmental Regulations (DWER) and the City of Rockingham to agree fill levels, existing regional flood storage volumes to be retained on site plus compensating basin sizes required to detain additional post development runoff on site. Section 2.10 Refer to DWER regarding regional groundwater modelling and the limited use of infiltration available on site due to the high winter groundwater levels. Section 4.1.1 • The saturated hydraulic conductivity of 3m/day is considered high and does not allow for clogging and poor maintenance of the proposed drainage swales. • Table 8 needs to include the regional flood storage volume that exists on eastern portion of the site and this needs to be discussed and agreed with DWER.
City Comment: The proximity of Water Corporation assets is noted. The applicant's Water Management Strategy (WMS) involves maintaining pre-development flow paths and peak flow rates leaving the site consistent with pre-development conditions.
Water The subject area falls outside a planned water scheme area and therefore a reticulated potable water supply is not immediately available. If a reticulated water connection is required, the development should arrange for water planning to be undertaken. Water Corporation normally schedules areas in the Statewide Planning Program for review when amendments to the Metropolitan Region Scheme indicate servicing is required. If the resulting planning indicates water is feasible then the development may require headworks infrastructure to be constructed.
City Comment: Noted. The applicant's proposed potable water supply includes capturing roof runoff and supplementing needs with imported water by trucks. The DOH has provided comment on this.
Wastewater The subject area falls outside a planned sewerage catchment. If a reticulated sewerage connection is required, the development should arrange for wastewater planning to be undertaken. Water Corporation normally schedules areas in the Statewide Planning Program for review when amendments to the Metropolitan Region Scheme indicate servicing is required. If the resulting planning indicates water is feasible then the development may require headworks infrastructure to be constructed.
City Comment: Noted. This advice has been provided to the applicant.

A copy of the external comments provided by the consulted Government Agencies forms part of Attachment 4.

Design Review Panel Advice

Not Applicable

Swan Valley Planning

Not Applicable

Planning Assessment:

The proposal has been assessed against the requirements of all relevant Legislation; the Scheme, State and Local Planning Policies, as previously outlined in the Legislation and Policy section of this report. The following matters have been identified as key considerations for the determination of this application:

Environmental Protection (Noise) Regulations 1997 (Noise Regulations)

The development is required to comply with the Noise Regulations.

The Applicant's Acoustic Report indicates various off site noise exceedances for the modelled scenarios, which the report submits can be managed.

The main sources of noise generated by proposed development are considered to relate to:

- Noise from the Multi-purpose Hall;
- Noise from cars and patrons using the car parks at night.

Regarding the Multi-purpose Hall the acoustic report modelled noise relating to:

- Weddings (occasional use); and
- General activity – presented as the likely range of regular hall use.

For Weddings (held between 6pm and 12am), breakout noise was assessed to comply with the Noise Regulations with sufficient margin at the existing dwellings on surrounding land at:

- Lot 33 Young Road;
- Lot 103 Folly Road; and
- Lot 55 Folly Road.

To ensure compliance when a dwelling is constructed on Lot 923 Young Road in the future, in order to deal with any 'annoying characteristics' from audible music, the Report indicates that noise management and mitigation would be required.

The report noted:

- Music levels would need to be carefully managed to meet the assigned levels, particularly after 10pm;
- Windows and doors will likely need to be closed at times to contain noise;
- The building envelope will require careful consideration during the detailed design, so that the building is capable of sufficiently containing noise when required; and
- Should a future receiver (dwelling) be introduced at Lot 923 Young Road, additional noise management measures may be required if the music was found to be audible.

For general activity noise, internal noise levels in the Multi–purpose hall are considered to be below that of a wedding, but will vary depending on the activity and number of patrons.

The report considers that with doors and windows opened (natural ventilation mode) there is potential for noise to exceed assigned levels either during evening or night time hours at:

- Lot 103 Folly Road;

- Lot 55 Folly Road; and
- Lot 923 Young Road.

In this regard, the Report recommends the following management measures to reduce noise in order for the venue to successfully operate:

- Hall timetabling - schedule nosier activities for day time hours;
- Reducing sound levels at the source (lower music levels at night or if in natural ventilation mode);
- Closing windows and doors during sensitive periods.

Regarding noise from carparks, the Acoustic report found:

- In terms of *maximum* noise levels, carpark noise would comply with the assigned noise levels when measured at the existing surrounding dwellings, however suggests that a noise barrier would be required to mitigate the noise from car doors slamming when a dwelling is constructed on the adjoining property at Lot 923 Young Road.
- the noise related to weekend morning prayers on Sunday's (ie commencing 7am, which under the Noise Regulations is night time) would comply at all existing and future receiver locations;
- Noise from Special Hindu festivals and Weddings would comply with the assigned levels at all existing surrounding dwellings, but not when a dwelling is constructed on Lot 923 (No. 547) Young Road. To mitigate this, the report recommends a noise barrier to be constructed in the form of a noise wall approximately 89m long, between the car park and the northern property boundary.



6. Proposed Noise Mitigation Barrier

Recommendations in the Acoustic report include:

- Addressing noise when designing the development during the detailed design stage, when the building materials and specifications are known. This includes developing a mechanical services strategy to mitigate noise from mechanical services;

- Developing a Noise Management Plan to outline the management measures required for the use to operate successfully in compliance with the Noise Regulations;
- Installing noise mitigation in the form of a noise barrier to mitigate the noise impact on No. 547 Young Road, for when a dwelling is constructed on this land.

The City considers that management measures included in a Noise Management Plan can address the noise generated from the majority of activities, however, it is concerned that measures required to address the noise impacting on the property at No.547 Young Road include a large noise barrier, which is not in keeping with the surrounding rural context.

The City considers that construction of a noise barrier 89m long will adversely impact the visual amenity, as it is not a rural fencing form expected in the Rural zone.

State Planning Policy 2.1 Peel-Harvey Coastal Plain Catchment (SPP2.1)

SPP2.1 aims to ensure that land use changes within the Peel-Harvey Estuarine System likely to cause environmental damage to the estuary are brought under planning control and prevented.

The objectives of this policy include:

- *"To improve the social, economic, ecological, aesthetic, and recreational potential of the Peel-Harvey Coastal Plain Catchment.*
- *To ensure that changes to land use within the Catchment to the Peel-Harvey Estuarine system are controlled so as to avoid and minimise environmental damage.*
- *To balance environmental protection with the economic viability of the primary sector.*
- *To increase high water-using vegetation cover within the Peel-Harvey Coastal Plain Catchment.*
- *To reflect the environmental objectives in the Draft Environmental Protection Policy (Peel-Harvey Estuarine System) 1992.*
- *To prevent land uses likely to result in excessive nutrient export into the drainage system*".

The City considers that the information submitted with the application demonstrates that the development can be effectively managed to protect local and regional water resources. It is considered therefore that the policy objectives of SPP2.1 can be achieved.

State Planning Policy 3.7 - *Planning in Bushfire Prone Areas* (SPP3.7)

The site is identified as 'bushfire prone' land, and the proposed land use is considered a 'vulnerable' land use, as defined in the policy Guidelines. As such, a Bushfire Management Plan and an Emergency Evacuation Plan have been submitted with the application.

SPP3.7 seeks to guide the implementation of effective risk-based land use planning and development to preserve life and reduce the impact of bushfire on property and infrastructure.

The objectives of SPP3.7 are to:

"5.1 Avoid any increase in the threat of bushfire to people, property and infrastructure. The preservation of life and the management of bushfire impact are paramount.

5.2 Reduce vulnerability to bushfire through the identification and consideration of bushfire risks in decision-making at all stages of the planning and development process.

5.3 Ensure that higher order strategic planning documents, strategic planning proposals, subdivision and development applications take into account bushfire protection requirements and include specified bushfire protection measures.

5.4 Achieve an appropriate balance between bushfire risk management measures and, biodiversity conservation values, environmental protection and biodiversity management and landscape amenity, with consideration of the potential impacts of climate change."

The application complies with the relevant policy measures, which ensure that:

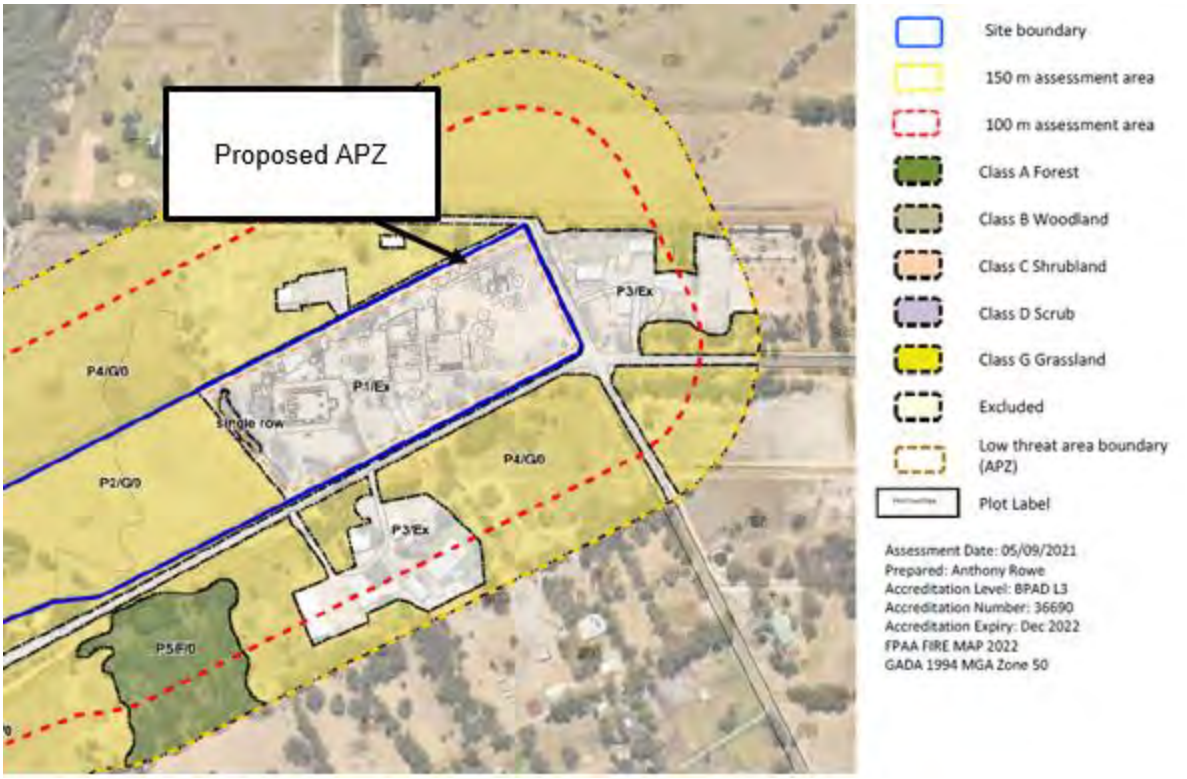
- the development, on completion, will not exceed BAL29; and
- being a vulnerable land use, an Emergency Evacuation Plan has been prepared to the satisfaction of the City.

The application complies with the objectives of SPP3.7, with the exception of policy objective 5.4 in so far as the development is not considered to "*Achieve an appropriate balance between bushfire risk management measures and, …. landscape amenity".*

This is because an APZ has been designated across the entire developable portion of the site, rather than increasing the BAL to reduce the APZ around habitable buildings to the minimum (8m) necessary as suggested to the applicant by the City. The City's approach is consistent with the following policy measure from *Planning Policy 3.1.1 – Rural Land Strategy:*

"*That building construction to BAL-29 be required to limit clearing associated with bushfire risk mitigation*".

The City considers that the maintenance requirements for an APZ are likely to impact strategic tree planting on the site, which could compromise the effectiveness of the proposed landscape screening of the development. Without effective landscaping to screen the buildings, the proposed development may become more visible in the rural landscape, and impact on the rural character of the locality.



7. Proposed APZ Extent

Guidelines for Planning in Bushfire Prone Areas (the 'Guidelines')

The application addresses the bushfire protection criteria in Appendix 4 of the Guidelines as follows:

Element 1 Location:

The development will, on completion, be subject to a low or moderate bushfire hazard level (BAL-29 or below).

Element 2 Siting and design of development

An APZ around all habitable buildings is required to ensure that potential radiant heat impact of a bushfire does not exceed 29kW/m² (BAL-29). The BMP proposes to achieve this through delineating an APZ that includes the entire developable portion of the site.

The City, however, notes:

- The BMP contradicts itself as it also delineates the entire proposed APZ area as Low-Threat vegetation (to maintain a low bushfire fuel condition) and does not make a distinction between low threat vegetation and the proposed APZ, and as such, is impossible to implement.
- The BMP's commitment to a 15% canopy cover within the APZ contradicts the extent of canopy cover for the existing and proposed trees shown in the Architectural and Landscape Plans, which when mature, the City considers will exceed 15%.

The City is concerned the APZ will compromise proposed tree planting that is shown on the plans which is intended to provide visual screening to the development, as within an APZ, the Guidelines require:

- lower branches on trees to be removed to a height of 2m;

- tree canopy cover to be less than 15%; and
- tree canopies well spread at least 5m apart so as not to form a continuous canopy.

The City is not satisfied with the proposed outcome, as it does not adequately consider the balance between bushfire risk and landscape amenity.

Element 3 Vehicular access

The site has at least two different vehicle access/ destination options along Folly Road (being a through road).

The internal private driveway is greater than 50m long, and services a number of buildings via a centralised main car park. An emergency vehicle access/egress track is proposed in the north eastern corner of the site, which in effect makes the internal driveway a through road, and is supported.

Element 4 Water

As the site is not connected to reticulated water, the provision of a 50,000 litre water tank is required for this development for bush firefighting purposes.

The application proposes two (2) 75,000 litre water tanks and a 50,000 litre water tank. The 75,000 litre water tanks would also be used to provide water for fighting structural fires, as required by the Construction Code.

Emergency Evacuation Plan (EEP)

Given the nature of the bushfire threat, the EEP strategy promotes evacuation to the west via the Kwinana Freeway and/or Safety Bay Road, although evacuation to the east is also possible should a fire approach from the west. The EEP defines roles; includes evacuation triggers and defines routes to two community evacuation centres located in the urban area of Rockingham to the west. Guidance is also provided in the EEP in the event evacuation is not possible and sheltering on site is required.

The City considers that the EEP is compliant with clause 5.5.2 of the Guidelines.

<u>Government Sewerage Policy (September 2019)</u>

The Government Sewerage Policy (GSP) applies as the site is not connected to reticulated sewerage and is located within a Sewerage Sensitive Area (SSA).

The GSP includes specific requirements for on-site effluent disposal systems in a SSA, including:

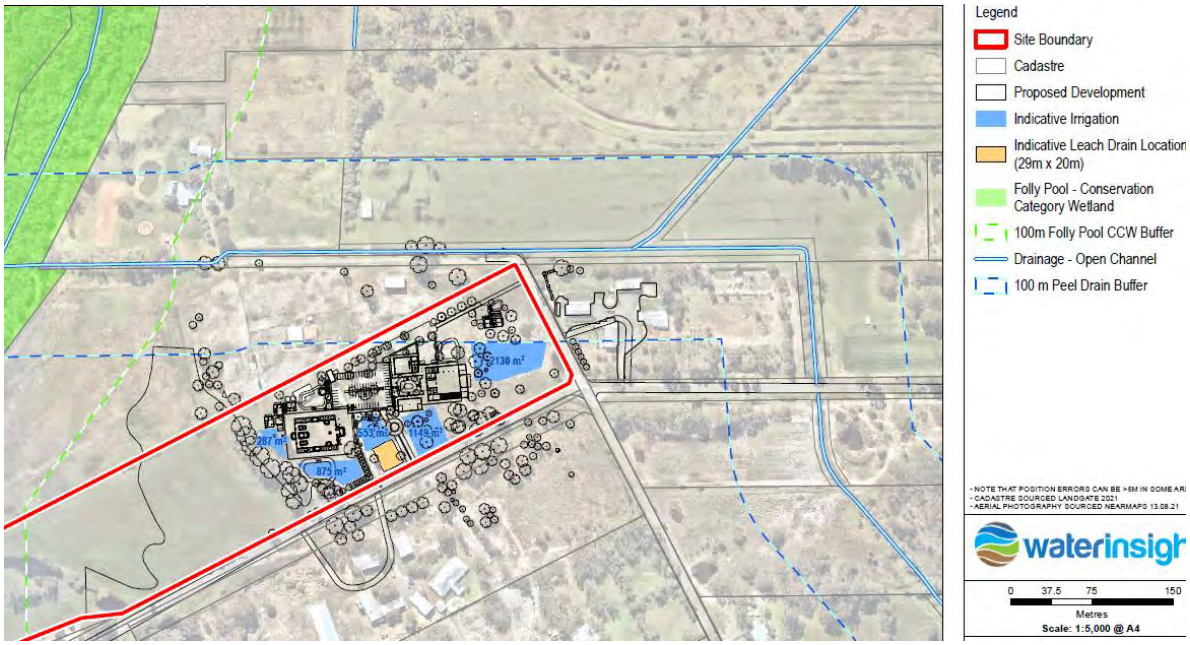
- A minimum lot size of 1ha is required in a SSA;
- Having the following separation from water resources:
  - At least 100m of a significant wetland (and not within a wetland buffer);
  - At least 100m from a drainage system that drains into a significant wetland;
  - Not be located in an area subject to inundation;
  - Not be within 30m of a private bore used for household drinking water purposes.
- The discharge point of the on-site system should have at least 1.5m separation above the highest groundwater level;
- The land application area shall be unencumbered land, in accordance with Schedule 2 of the Policy;
- Secondary treatment systems with nutrient removal are required in SSA's.

A Site and Soil Evaluation report (SSE) was submitted by the applicant, which describes the site, the soils and proposed a secondary treatment system with nutrient removal capabilities, which confirms the site's suitability for on-site waste water management.

Following secondary treatment of waste water, the application proposes the following disposal options:

- Using flat bed semi-inverted leach drains within a 580m² disposal area; or
- Using a combination of leach drains (requiring 136m² disposal area) and sub-surface irrigation (requiring 3,540m² area), to provide irrigated water for the proposed landscaping.

The indicative effluent disposal areas are identified below.



8. Indicative Effluent Disposal Areas

The City considers that the development can comply with the Government Sewerage Policy, but notes that if geotechnical investigation (post approval) report higher groundwater levels than assumed in the SSE report, then additional fill will be required to achieve 1.5m separation between the invert levels of the drainage system and the maximum groundwater levels.

It is estimated that based on the assumed maximum ground water levels, up to 1m of filling in places may be required in the effluent disposal area locations to achieve 1.5m separation (plus additional fill for soil cover). In the event the maximum groundwater levels are observed to be higher than assumed, then additional filling will be necessary.

While the extent of filling the land may satisfy health requirements, the City, from a planning perspective, has amenity concerns if the extent of filling required is excessive to the point of altering the landform. Unfortunately, this cannot be reconciled until the required groundwater monitoring has been completed, to identify peak groundwater levels.

Development Control Policy 5.1 Regional Roads (Draft) (DC5.1)

A portion of Folly Road is reserved as an Other Regional Road (ORR) in the Metropolitan Region Scheme. As the development gains access from Folly Road, the provisions of DC5.1 apply.

DC5.1 seeks to manage vehicle access and improve traffic flow and safety on regional roads by minimising the number of intersections or driveways. There is a general presumption against the creation of new driveways or increased use of existing accesses to these roads.

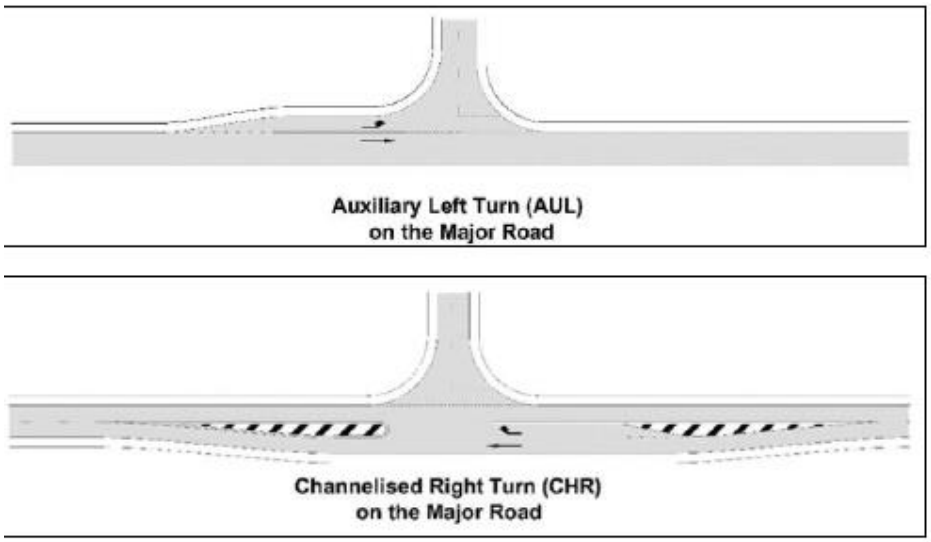
In the context of the current application, the following is noted:

- The application seeks to minimise access onto Folly Road through the provision of a single entry/exit point, relocated 35m east of the existing crossover.
- Folly Road is unlikely to be upgraded to a regional road standard in the foreseeable future.
- In response to concerns of the community about traffic safety, the applicant proposes to install sealed turning lanes (Auxiliary Left Turn and a Channelized Right Turn) adjacent the new crossover.
- The application was referred to DPLH for transport related comment, which in response, indicated no objection to the proposal on ORR planning grounds.
- The TIA indicates that the volume of traffic generated by the proposed development is capable of being accommodated within the capacity on the surrounding road network, and adequate sight distance is achieved.
- While submissions raise concerns about traffic safety on Folly Road, the reporting does not indicate any major road safety issues with the road network, or that the proposed development would increase the risk of crashes.

Overall the City concurs with the applicant's Transport Impact Assessment (TIA), which indicates the surrounding road network has the capacity to accommodate the proposed traffic generation.

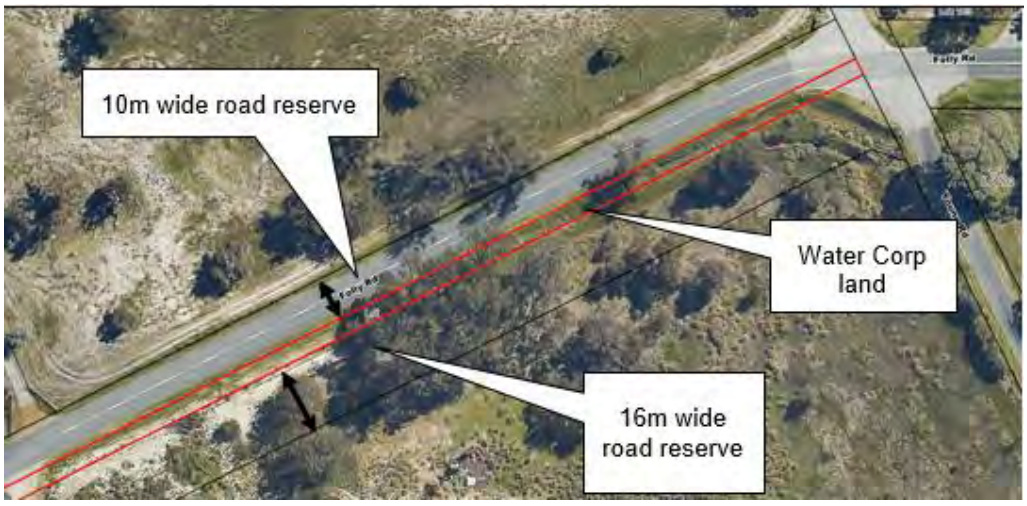
The City, however, has concerns about the proposed vehicle slip lanes along Folly Road, which include:

- a short Auxiliary Left Turn (AUL(S) treatment, and
- a short Channelized Right Turn (CHR(S)) treatment.



9. AUL and CHR Layouts

While the City supports the intended treatments, insufficient space exists within the existing Folly Road reserve (10m wide) to undertake the upgrades. Combined, an AUL(S) and CHR(S) treatment would require approximately 16m of land.



10. Folly Road Reserve

The applicant has proposed the AUL(S) and CHR(S) treatments in response to City comments and community concerns about traffic safety. As the Water Corporation (which in part is the owner of a portion of the adjoining drainage reserve) has not been consulted on the matter, in order to accommodate the proposed slip lanes Folly Road would require realignment northwards onto the subject site, which is a matter that has not been investigated.

It is noted, however, that the trigger for providing the CHR(S) is the Hindu weddings aspect, which are relatively infrequent events proposed to be held six times per year. Further, it is noted that the majority of traffic to the site will arrive from the west. It is considered that there is insufficient nexus for requiring a CHR(S) right turning lane to cater for six weddings per year.

Subject to appropriate road upgrading to install the proposed AUL(S) turning treatment, the application is considered consistent with DC5.1.

Local Planning Policies

PP3.1.1 Rural Land Strategy

The City's Rural Land Strategy (RLS) provides the basis for land use planning in the rural area of the City. In particular, it provides Council with a framework for the assessment of proposals to rezone, subdivide, manage and develop rural land in the City.

The RLS considers the City's rural land in terms of 'Policy Areas' which are further divided into Planning Precincts. The subject land is situated in Policy Area 2 - Baldivis East, which is described as:

"*The Baldivis (east) precinct is located on the eastern side of the Kwinana Freeway generally between Mundijong Road to the north and Karnup Road to the south, extending eastward to the municipal boundary. The precinct is predominantly zoned Rural, with some Special Rural zoned land in the vicinity of Doghill Road*".

The primary objective for this Planning Unit is to protect the multiple overlapping ecological values and linkages from the adverse impacts of development. These areas of environmental significance are fundamental to the remaining visual character and amenity of the area and their ongoing preservation is a key strategic objective of the RLS.

The Strategic Intent for Planning Precinct 2A is as follows:

- *"To minimise the loss of remnant vegetation associated with development and bushfire risk mitigation; particularly the Guildford and Dardanup Complexes.*
- *To avoid potential adverse impacts upon CCWs, REWs, PECs, associated vegetation and buffers.*
- *To avoid potential adverse impacts upon the Bush Forever sites, the Peel Main Drain and Serpentine River.*
- *To protect and enhance visual character and amenity.*
- *To prevent land use planning proposals which will result in an extreme Bushfire Hazard Level (BHL) and/or BAL-40 (very high risk) or BAL-Flame Zone (extreme risk)".*

The application is considered unlikely to adversely impact the ecological values of the site or locality, as discussed earlier in this Report.

The Policy performance standards are generally complied with, except for the following:

1. *"That building construction to BAL-29 be required to limit clearing associated with bushfire risk mitigation",* and
2. *"All buildings and outbuildings shall be sympathetic in design, materials and colour to compliment the surrounding landscape elements and be sited away from focal points and located where screening vegetation and landform can be utilised*".

The City considers that the proposed religious buildings (i.e. the Temple buildings and Priest's dwellings) have been located on the site to maximise screening from the existing trees and proposed tree plantings. The majority of the building form could largely be screened once the proposed tree planting has matured, however, this results in a direct conflict between the tree planting and Bushfire Management Plan requirements for the APZ, which are considered likely to compromise the tree planting effectiveness.

The secular buildings (ie Multi-purpose Hall, Dining Hall, Library and Guest Accommodation dwelling) which are located on the more visually exposed eastern portion of the site, are designed to complement the prevailing architectural form of rural buildings in the area, with pitched roofing, single storey structures with veranda's and conventional cladding.

The City considers that the effectiveness of the design strategy relies heavily on the presence of mature trees to provide visual screening. The City is concerned that:

- The intention for the bushfire APZ to encompass the majority of the developable area of the site, which due to APZ management requirements, is likely to diminish the effectiveness of the proposed landscape screening to mitigate the visual impact of the development. The APZ would impact on views of the development from Folly Road, Young Road and from the north, in particular from Lot 923 Young Road.
- The proposed tree planting will take time (potentially years) to establish to a sufficient size to maximise the screening effect.
- The existing trees and proposed strategic landscaping is insufficient to effectively screen the proposed development when viewing the site from the north. The proposed buildings and car parking will be clearly visible from Lot 923 Young Road, due to the setbacks proposed and the limited scope for tree planting, noting the vegetation will need to be managed in accordance with APZ standards.

- An acoustic barrier required for noise mitigation will utilise a form of solid fencing that is not a form of rural fencing. Although a noise barrier would not be proposed for the purpose of fencing, its size and form is considered inappropriate in this context. It would be difficult to screen this barrier with vegetation if located within an APZ.

As such, the proposed development is not considered consistent with the above policy measures.

3. "*Bushfire management to be addressed in accordance with WAPC Guidelines for Planning in Bushfire Prone Areas."*

As mentioned above, the City considers that the APZ proposed over the entire developable portion of the land will not achieve an appropriate balance between bushfire mitigation and landscape amenity, as maintaining the site to an APZ standard will open up views of the development from the public and private domain.

Overall, the proposal is considered to be inconsistent with the above policy provisions and the strategic intent for Planning Precinct 2A, as it has not been sufficiently demonstrated that the development will protect and enhance the visual character of the rural area, east of the Kwinana Freeway.

Town Planning Scheme No.2 (TPS2)

Zoning:

The subject land is zoned Rural in TPS2.

Rural Zone Objective:

The objective for the Rural zone is "…*to preserve land for farming and foster semi-rural development which is sympathetic to the particular characteristics of the area in which it is located, having due regard to the objectives and principles outlined in the Rural Land Strategy and supported by any other Plan or Policy that the Local Government may adopt from time to time as a guide to future development within the zone*".

A Place of Worship is not considered a traditional rural land use, however, this in itself is not fatal to the application, as it is a discretionary use in the zone and the application must be considered on its planning merit, which is discussed further below.

The City considers that the development is inconsistent with this objective due to the overall prominent scale of the development and the impact this has on the visual landscape character of the site and surrounding land.

As discussed under the heading of the Rural Land Strategy, the City is concerned about the effectiveness of the proposed strategic landscaping to screen the development from surrounding land, due to the:

- Proposed APZ extent;
- Time required for planted trees to mature;
- Inability to effectively screen development from the north; and
- The acoustic barrier, being not a form of structure reasonably expected in the Rural zone.

The number of buildings proposed collectively is considered beyond that which can be reasonably expected in the Rural context (ie the three dwellings in addition to the Place of Worship and other various incidental uses).

Land Uses

Due to the range of buildings and uses proposed, the proposal overall does not fit neatly into one particular land use classification provided in TPS2.

The Predominant Use

The application seeks approval for the development of a Hindu Temple as a 'Place of Worship', being the predominant land use.

A 'Place of Worship', is defined in TPS2 to mean "*premises used for religious activities such as a chapel, church, mosque, synagogue or temple*".

Within the Rural Zone a Place of Worship is a potentially permissible use as it is an 'A' use, meaning that it is a use that is not permitted ('A') unless the local government has exercised its discretion by granting development approval after advertising the proposal.

The Incidental uses

Various aspects of the proposed development are submitted as 'Incidental uses' to the predominant use.

TPS2 defines Incidental Use to mean "*a use of a premises which is consequent on, or naturally attaching, appertaining or relating to, the predominant use*".

In terms of the Religious Buildings (i.e. Temple proper, the Temple Kitchen, Toilet, Chariot Store and Priest's dwellings) the following is noted:

The Temple Kitchen, Toilet buildings and the Chariot Store building:

These are clearly incidental to the use of the Temple, and are able to be considered as such.

Two Priest' Dwellings

These two dwellings are submitted as 'Caretakers Dwellings', incidental to the predominant use. These cannot be approved as Caretakers dwellings as only one dwelling can be considered. Further, the Priest's dwellings do not relate to an industry related activity.

A Caretakers Dwelling is defined in TPS2 as meaning *"a dwelling on the same site as a building, operation or plant used for industry, and occupied by a supervisor of that building, operation or plant*".

The City considers that the Priest's dwellings are best described as a 'Dwelling' in their own right, where a dwelling is defined: "*means a building or portion of a building being used or intended, adapted or designed to be used for the purpose of human habitation on a permanent basis by:*

(a) A single person;

(b) A single family; or

(c) *No more than six persons who do not comprise a single family*".

Within the Rural zone, (apart from a Caretakers Dwelling) only a Single House (ie a dwelling) and an "Ancillary Accommodation" dwelling are permitted.

Ancillary Accommodation is an 'IP' use in the rural zone, which means "*a use that is not permitted unless the use is incidental to the predominant use of the land as determined by the local government*".

The Priest's dwellings are too large to be considered Ancillary Accommodation (being 160m² each), meaning the only other logical option is to treat these two dwellings as "Grouped Dwellings".

Grouped Dwellings are defined to mean: "*A dwelling that is one of a group of two or more dwellings on the same lot such that no dwelling is placed wholly or partly vertically above or below another, except where special conditions of landscape or topography dictate otherwise, and includes a dwelling on a survey strata with common property*".

Grouped Dwellings however, are a prohibited use (an 'X' use) in the Rural Zone, and which are not capable of approval.

In terms of the Secular Buildings (ie the Multi-purpose Hall, Dining Hall, Library building and Guests Accommodation dwelling), the following is noted:

The Multi-purpose Hall, Dining Hall and Library buildings

These buildings will be used for a variety of activities, including teaching and reading Vedas literacy, meditation classes, dancing, yoga and self-development. These uses are all religious activities and relate to the use of the Temple. As such they are also considered incidental uses to the Place of Worship (predominant use).

Special Hindu festivals and Hindu weddings also propose to use the Multi-purpose hall, as a Reception Centre (incidental use).

A Reception Centre is defined to mean: "*premises used to hosted functions on formal or ceremonial occasions*". In the Rural zone a 'Reception Centre' is a use that is not permitted ('A') unless the local government has exercised its discretion by granting development approval after advertising the proposal.

The use of these buildings for Hindu Festivals and Hindu weddings is consistent with this definition, and such, are considered to be permissible incidental uses.

Guests Accommodation dwelling

This is submitted as Ancillary Accommodation, however, the dwelling is too large (eg 169m²) and it is the City's practices to only approve one Ancillary Dwelling up to 100m² area.

Under State Planning Policy 7.3 - Residential Design Codes Volume 1, the Ancillary Dwelling is limited to 70m^2 area.

For the reasons above, the City is only prepared to support one "Single House" and one "Ancillary Dwelling" up to 100m² area.

Clause 4.15.1.3 - Parking

Onsite car parking is required to be provided in accordance with Table No.2 of TPS2.

The provision of car parking is summarised as follows:

Use	Rate	Required	Provided
Place of Worship	1 bay per 4 persons accommodated (based on 400 persons)	100 bays	105 (including 2 accessible bays and 1 service bay)
Reception Centre	As above - the Reception Centre is not to be used at the same time as the Temple	100 bays	
Guest dwelling (1)	1 bay, as per Ancillary Dwelling, R Codes Vol 1	1 bay	4
Priest's dwellings (2)	1 bay, as per Ancillary Dwelling, R Codes Vol 1	2 bays	4
Total		**103**	**113**

Comments

Intensity of Use

The application proposes a number of buildings of a significant scale which gives rise to concerns about the proposed intensity of the development.

The intensity of the land use will vary, being moderate most of the time (typically up to 100 worshippers per day during the week, and up to 300 per day in the weekends), but increases significantly with the festivals (up to 450 people per day on a weekend) and wedding events (400 people). While festivals and weddings are less frequent events, being monthly and bi-monthly respectively, every second month there will be a special Hindu festival day as well as a Hindu wedding held on the property.

As a result of the range of activities, the potential noise impact is a concern, as the proposed uses will operate within night time noise hours in addition to day time hours. As mentioned, in order to mitigate activity noise, careful management is required as well as a structural response in the form of a noise barrier. While it may be possible to prepare a Noise Management Plan to address some of the noise concerns, an 89m long noise barrier is not supported from a rural amenity perspective.

Amenity

Amenity is defined in the Deemed Provisions as '*all those factors which combine to form the character of an area and include the present and likely future amenity*'.

For the purpose of this assessment, the 'locality' is considered to include the surrounding properties from the south across Folly Road though to the east and as far north of the site so as to include lots on Young Road, as it is this land that the application has the potential to impact the greatest due to its operation and visual impact.

The properties within the locality are small scale rural and semi-rural land uses, that include a range of uses such as hobby farming and rural–residential development, some small scale rural industry and commercial horticultural uses. Buildings on the land in the locality are often clustered and well screened by remnant vegetation.

It can be expected that the rural amenity will change with the introduction of the non-traditional land uses provided as part of this application. The volume of traffic entering and leaving the site, and the increase in the number of people utilising the site is considered to be significantly greater than the surrounding rural properties and what is to be expected in a rural context. The operation of the development is considered to be out of context for the area and is likely to impact the existing amenity of the locality.

The amenity of the adjacent owners is likely to be impacted by a lack of effective screening, (both across the site as a result of the APZ, and along the northern boundary where there is limited space for screen planting) and location of the proposed buildings relative to the northern property boundary.

In essence, the narrow width of the property being 114m, means that there is limited opportunity to effectively place the buildings on site in a way that will not adversely affect the amenity of the adjoining owners.

Visual Impact

It is proposed to mitigate the visual impact of the development by clustering the religious buildings and screening them behind the existing trees on the site, and supplementing this with additional tree planting to substantially screen views of the buildings from Folly Road.

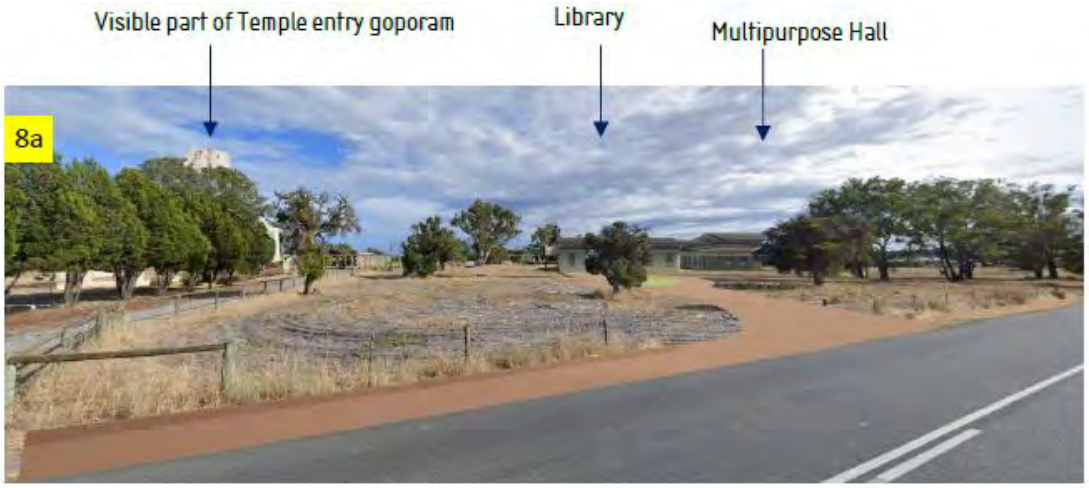
Building height across the development is predominantly two storey scale or less, which is consistent with the prevailing built form in rural areas.

The religious buildings (Temple, Kitchen, Toilet and Priests dwellings) will be mostly screened from the surrounding streets by vegetation (existing and proposed), when the proposed tree plantings mature.

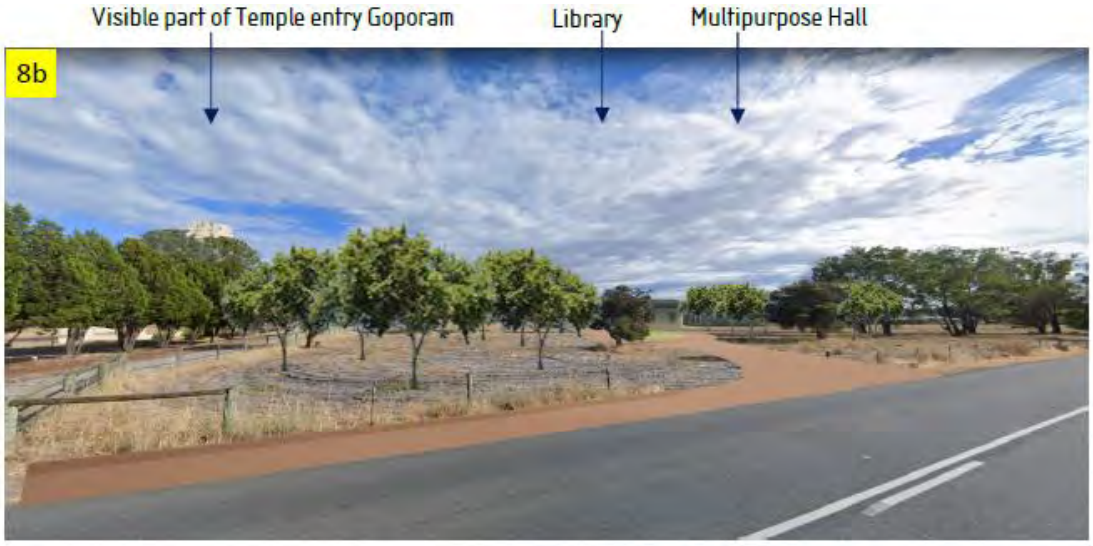
The Temple facades and entry 'Gopurams' (of which there are five, up to 14.77m high on the Temple building) will be clad in part with rendered limestone, and the sculptural carvings will be painted in monotone colours to match the limestone. The roof will be concealed behind parapets, and doors ornately framed in timber, giving a rustic look.

The vertical 'Gopuram' elements on the Temple are architectural features that are generally consistent in scale with existing structures in the Rural zone, however, they are not typical building forms in this rural area, and therefore are in contrast.

The secular buildings (ie Multi-purpose Hall, Dining Hall, Library and Guest Accommodation dwelling) are proposed of a more traditional architectural vernacular, consistent with the prevailing surrounding rural building form.



11. Photo Montage - View from Folly Road without Landscape Plantings



12. Photo Montage - View from Folly Road with Landscape Plantings

While the City generally supports these design principles, it also has concerns that relate to:

- The APZ requirements to manage the screening vegetation, as this would open up the development to views from the public domain and from the land to the north, and increase the visual impact accordingly. This is unresolved.
- The set back of the buildings from the northern boundary, as the landscape screening on the northern side of the site is considered unlikely to be effective due to spatial constraints, fire break and APZ requirements.
- The installation of an acoustic barrier 89m long is inconsistent with the expectations for structures the Rural zone. The acoustic barrier required to mitigate noise on Lot 923 Young Road, Baldivis, is considered to adversely impact visual amenity when viewed from land to the north of the site; Young Road adjoining the site to the east, and potentially from Folly Road to the south.
- The extent of filling is currently unknown but is assumed to be up 1m above ground level to provided adequate separation from the base of the waste water system to maximum ground water level. In the event groundwater levels are observed to be higher when the geotechnical investigations are undertaken in the future, then additional filling will be required, which may significantly impact on the landform, and consequently, visual amenity.



View from possible future dwelling towards Temple and car park

13. Photo Montage - View from Lot 923 Young Road with Landscape Plantings



View from possible future dwelling towards Multi Purpose Hall and Dining Hal

14. Photo Montage - View from Lot 923 Young Road with Landscape Plantings

Conclusion

The application is considered to be inconsistent with the objective of the Rural zone and inconsistent with the City's Rural Land Strategy.

While the majority of the buildings can be entertained, the three proposed dwellings are prohibited in the Rural zone.

The extent of the proposed development is not considered to be in keeping with the reasonable community expectations for a Place of Worship the Rural zone.

While a Place of Worship may be allowed in the Rural zone, the scale and activity associated with this development is significant compared to other Places of Worship in the City.

The scale of the development is considered to be out of context for the area and is likely to impact the existing amenity of the locality by virtue of the proposed operational arrangements and visual implications.

It is considered that the application is unlikely to provide effective screening of the development, given the size of the proposed APZ; time required for planted trees to mature, and limited screening opportunity along the northern property boundary.

The proposed acoustic wall recommended for noise mitigation is considered to adversely impact visual amenity as it is not a rural fencing form expected in a Rural zone, and generally, the structure in itself is not akin to a rural setting.

Having due regard to the relevant planning considerations, including public submissions raising amenity concerns, and the objective for the Rural zone, this proposal is not considered to be compliant with TPS2 and refusal is recommended.

SRI BALAJI TEMPLE DEVELOPMENT
67 FOLLY ROAD, BALDIVIS

CONTENTS

A01 LOCATION PLAN

A02 SITE PLAN 1:1000

A03 SITE PLAN 1:500

A04 TEMPLE + PRIESTS RESIDENCES GROUND FLOOR PLAN

A05 TEMPLE + PRIESTS RESIDENCES ELEVATIONS

A06 MULTI-PURPOSE HALL, DINING HALL + LIBRARY GROUND FLOOR PLAN

A07 MULTI-PURPOSE HALL, DINING HALL + LIBRARY ELEVATIONS

A08 GUEST ACCOMMODATION GROUND FLOOR PLAN + ELEVATIONS

A09 LANDSCAPE PLAN

A10 STAGING PLAN

A11 PERSPECTIVE RENDERS

Superseded



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6. Contractor shall carry out works in accordance with Council Building License and conditions stipulated thereon
7. Contractor shall carry out works in accordance with requirements of Western Power with respect the easements on the site.
8. Contractor is advised that the site is a Registered Aboriginal Heritage Site to which the Aboriginal Heritage Act and all its lega requirements apply.
9. Contractor is to strictly adhere to Recommendations made in the Anthropological Report prepared by De Gand Pty Ltd May 2011

Revision	Description	Date

Project :
SRI BALAJI TEMPLE DEVELOPMENT

Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

Drawing Title:
CONTENTS

Scale :
Status: #Project Status

Drawing N^{0}

00

Date issued: Thursday, 9 December 2021
Time 12:33 pm
Revision



LOCATION PLAN 1:2000 (@ A1)

N

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Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

Drawing Title:
LOCATION PLAN

Scale :
Status: #Project Status

Drawing N⁰
01

Date issued: Thursday, 9 December 2021
Time 12:33 pm
Revision



SITE PLAN: TOTAL LOT 1:1000 (@ A1)

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Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

Drawing Title:
SITE PLAN 1.1000

Scale :
Status: #Project Status

Drawing N^{0}
02

Date issued: Thursday, 9 December 2021
Time 12:33 pm
Revision



PROPOSED DEVELOPMENT EAST OF MID TREE LINE 1:500 (@ A1)

LEGEND

- EXISTING TREES
- NEW TREES
- FULLY ENCLOSED COVERED AREA
- VERANDAH UNDERCOVER
- EXTERNAL PAVING
- BITUMENISED ROAD/CAR PARKING

SCALE

0m 10m 50m

N

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Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

Drawing Title:
SITE PLAN 1.500

Scale :
Status: #Project Status

Drawing N⁰
03

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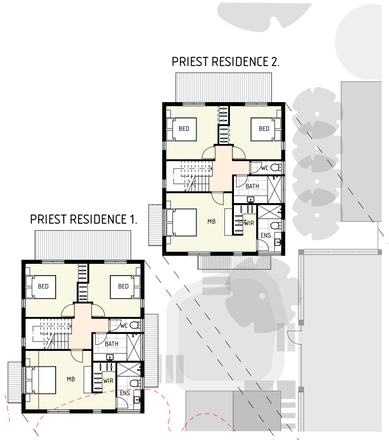
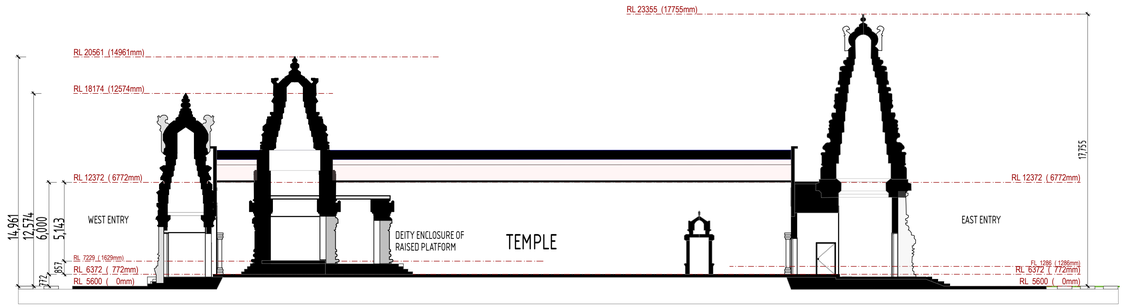
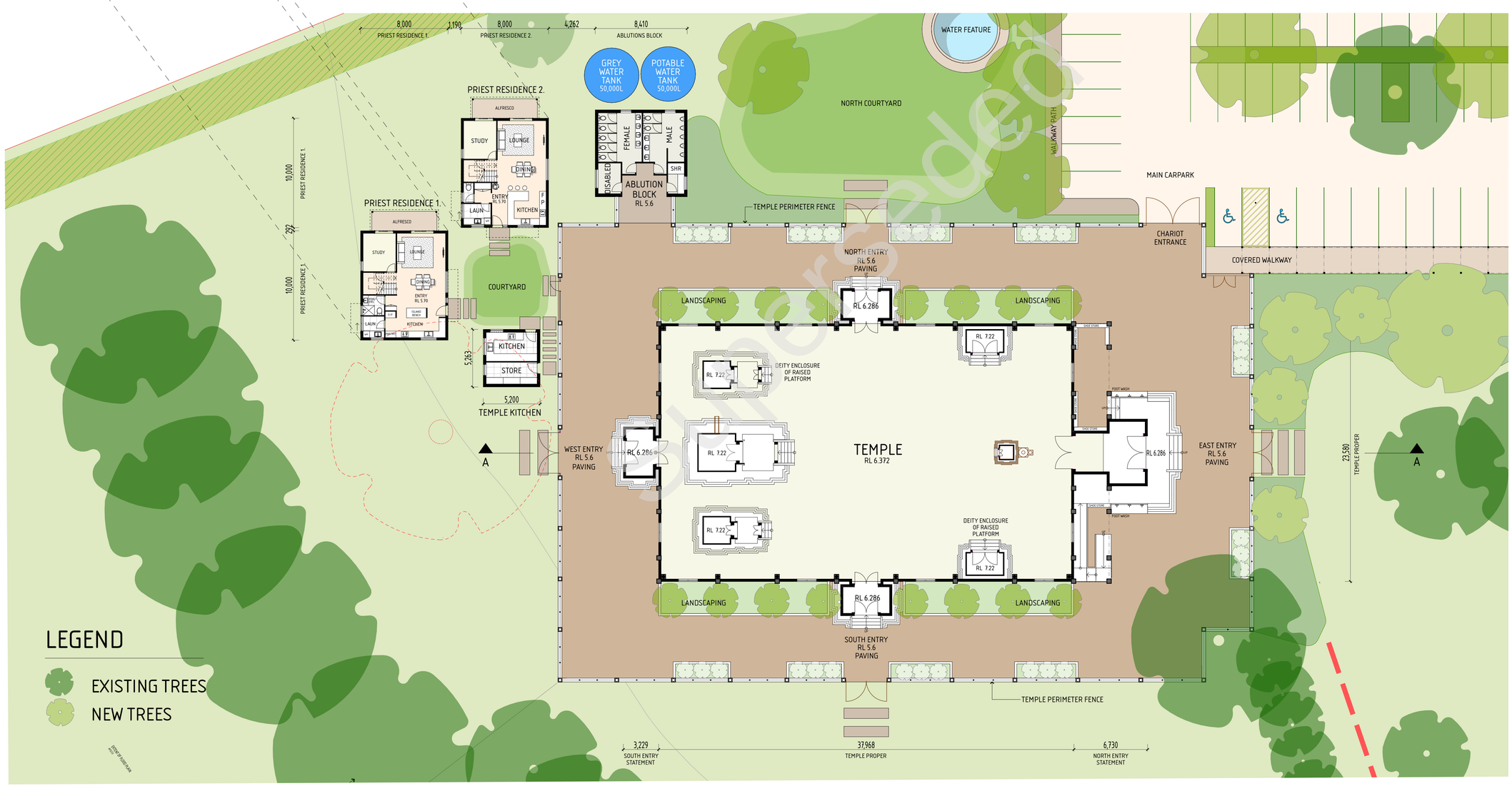
Revision



PRIEST RESIDENCES UPPER FLOOR PLAN 1:200



TEMPLE LONGITUDINAL SECTION AA 1:200



TEMPLE PLAN, PRIESTS QUARTERS + TOILET BLOCK 1:200 (@ A1)

SCALE
0m 5m 25m

N

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Project :
SRI BALAJI TEMPLE DEVELOPMENT

Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

Drawing Title:
TEMPLE PLAN

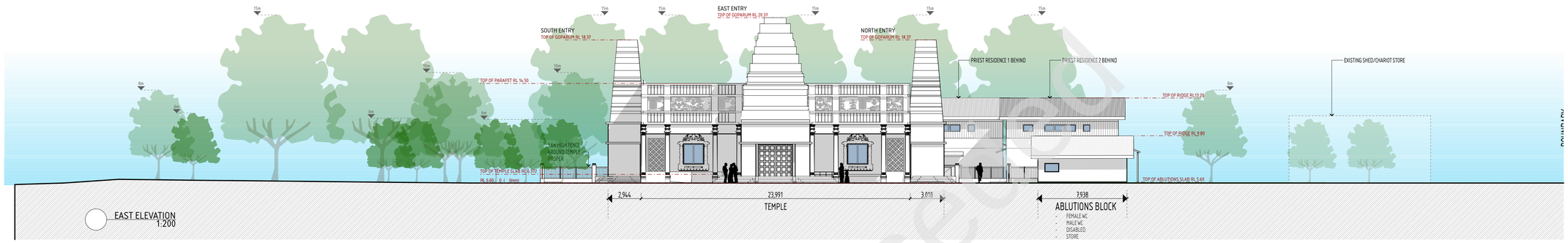
Scale :
Status: #Project Status

Drawing N°
04

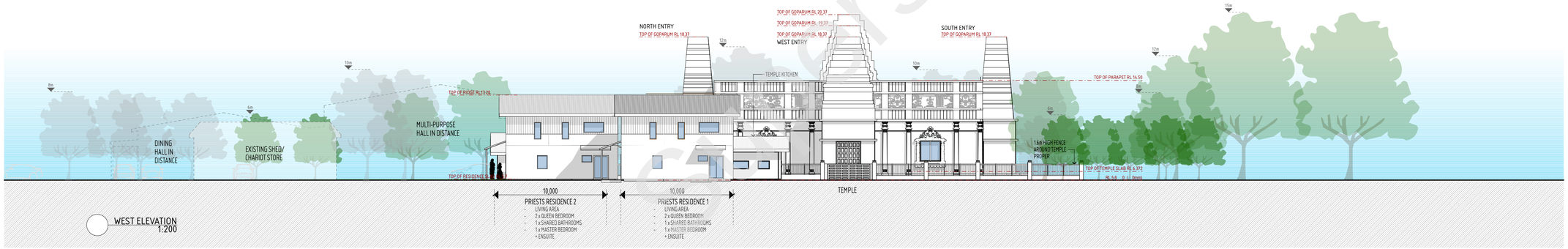
Date issued: Thursday, 9 December 2021
Time 12:33 pm
Revision



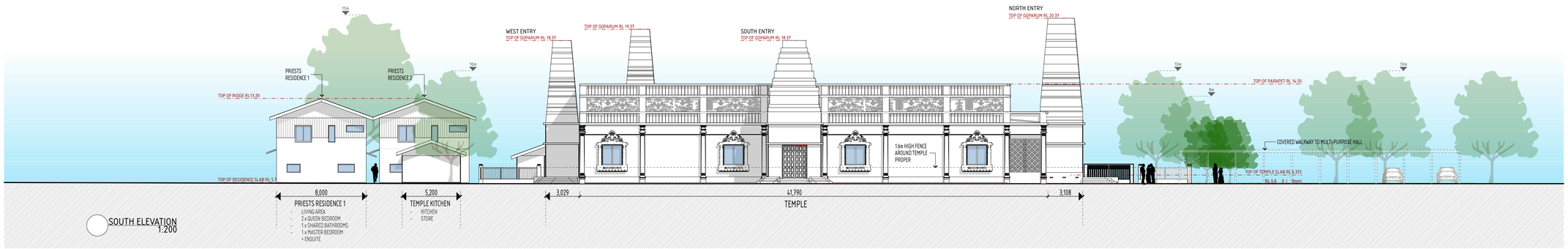
NORTH ELEVATION
1:200



EAST ELEVATION
1:200



WEST ELEVATION
1:200



SOUTH ELEVATION
1:200

ELEVATIONS 1:200 (@ A1)

NOTE:
ALL TREES DEPICTED ARE EXISTING AND DRAWN TO SCALE IN CORRECT POSITION.

SCALE
0m 5m 25m

archetype
|design studio|
architecture - interiors - feng shui
level 12, 68 St Georges Terrace Perth WA 6000
Phone : (08) 9486 8866
email: studio@archetypedesign.com.au

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Revision	Description	Date

Project :
SRI BALAJI TEMPLE DEVELOPMENT

Site Address :
67 FOLLY ROAD,BALDIVIS

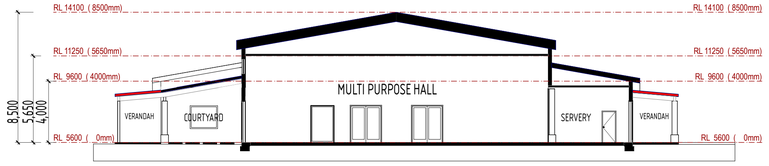
Client :
JAPA PTY LTD.

Drawing Title:
TEMPLE ELEVATIONS

Scale :
Status: #Project Status

Drawing N⁰
05

Date issued: Thursday, 9 December 2021
Time 12:33 pm
Revision



MULTI-PURPOSE HALL CROSS SECTION BB 1:200

FIREBREAK

15 CAR PARKING BAYS
BAYS 2.5 X 5.4M, 6M WIDTH DRIVEWAY

CHILDRENS PLAYGROUND

GREY WATER TANK 90,000L

FIRE WATER TANK 90,000L

POTABLE WATER TANK 90,000L

BIN ENCLOSURE

EXISTING SHED/ CHARIOT STORE

PRIEST'S HOUSE PARKING 4 CAR BAYS

65 CRAR PARKING BAYS (INCL x2 DISABLED BAYS)
BAYS 2.5 X 5.4M, 6M WIDTH DRIVEWAY

16 CAR PARKING BAYS
(INCL x2 SERVICE BAYS)
RL 5.5

NORTH COURTYARD

VERANDAH

FURNITURE STORE

DINING HALL
RL 5.6

SERVERY

DRY STORE

COOL ROOM

KITCHEN

SERVICE BAY

SERVICE BAY

VERANDAH
RL 5.6

ENTRY COURTYARD
RL 5.514

FOUNTAIN

COVERED ENTRYWAY
RL 5.6

LOBBY
RL 5.6

MULTI PURPOSE HALL
RL 5.6

COOL ROOM

DRY STORE

KITCHEN

SERVERY

FURNITURE STORE

GREEN ROOM MALE

MALE

FEMALE

HANDWASH

RL 5.6

UP

STAGE
RL 6.5

RL 6.5

VERANDAH

RAMP

UP

RL 5.6

DISABLED

AUDIO VISUAL

EXTERNAL CHANGE FACILITY

CHANGE ROOM

SHR

FIRST AID STORE

GREEN ROOM FEMALE

FURNITURE STORE

MEETING ROOM

TEMPLE ADMIN

COURTYARD

VERANDAH

B

VERANDAH
RL 5.6

MULTI PURPOSE LIBRARY
RL 5.6

BOOKS

BOOKS/MOBILE SHELVING

BOOKS/MOBILE SHELVING

BOOKS

ZEBRA CROSSING

COVERED WALKWAY

SOUTH COURTYARD

B

Superseded

LEGEND

EXISTING TREES

NEW TREES

MULTI-PURPOSE HALL, DINING + LIBRARY PLAN 1:200 (@ A1)

SCALE
0m 5m 25m

N

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Revision	Description	Date

Project :
SRI BALAJI TEMPLE DEVELOPMENT

Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

Drawing Title:
MULTI PURPOSE HALL, LIBRARY + DINING HALL GF PLAN

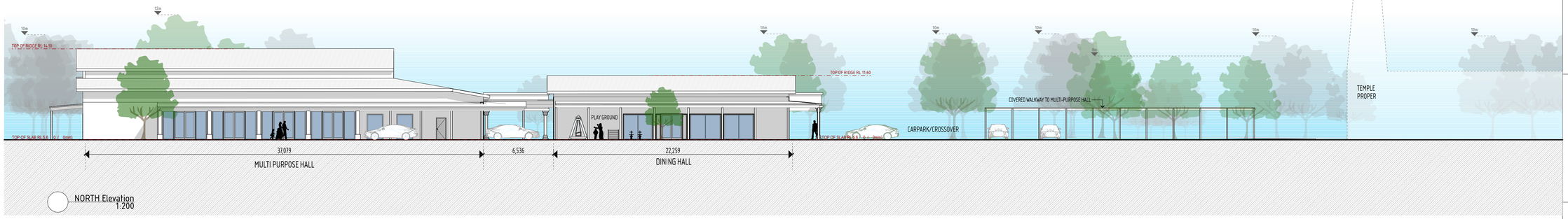
Scale :

Status: #Project Status

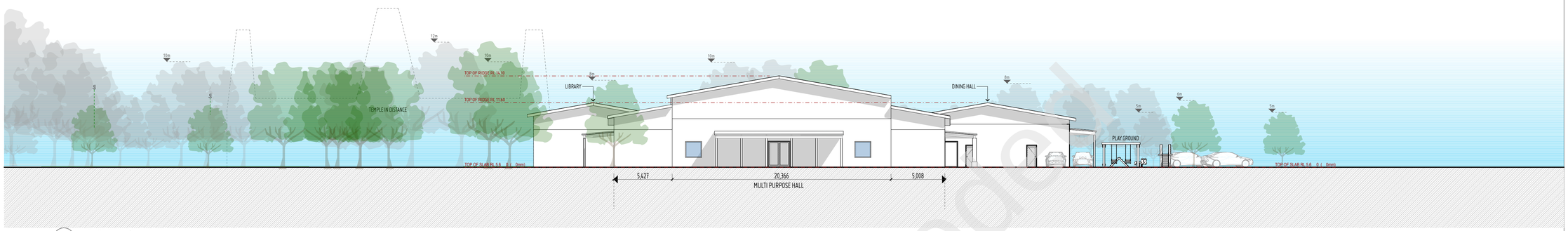
Drawing N^{0}

06

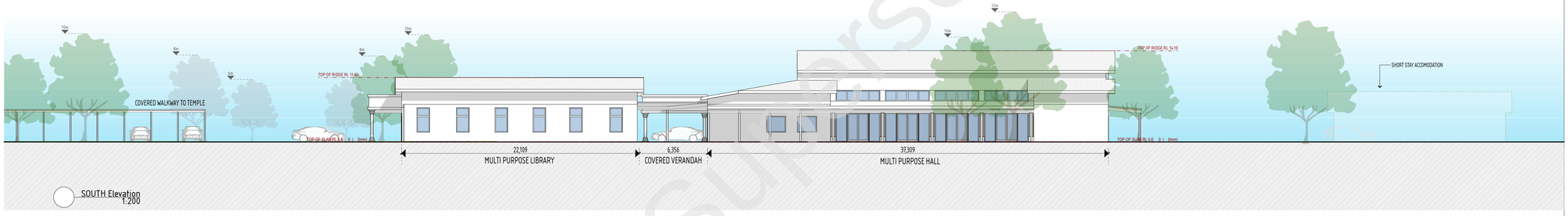
Date issued: Thursday, 9 December 2021
Time 12:33 pm
Revision



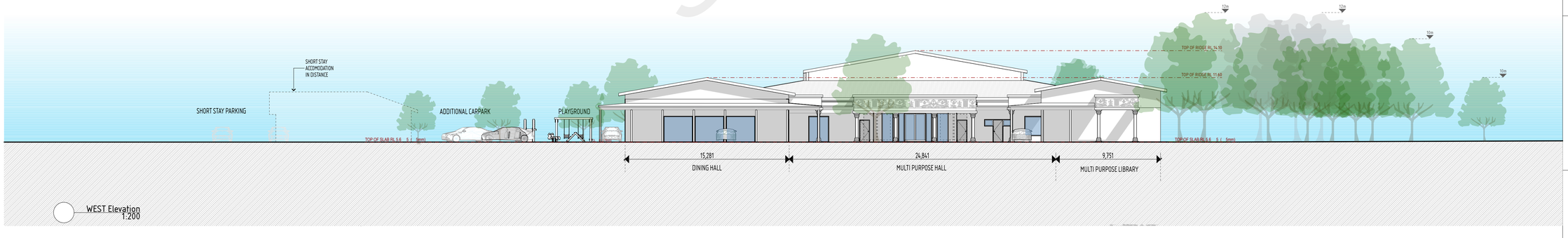
NORTH Elevation
1:200



EAST Elevation
1:200



SOUTH Elevation
1:200



WEST Elevation
1:200

MULTI-PURPOSE HALL, DINING + LIBRARY ELEVATIONS 1:200 (@ A1)

NOTE:
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SCALE
0m 5m 25m

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Revision	Description	Date

Project :
SRI BALAJI TEMPLE DEVELOPMENT

Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

Drawing Title:
ELEVATIONS

Scale :
Status: #Project Status

Drawing N⁰
07

Date issued: Thursday, 9 December 2021
Time 12:33 pm
Revision

SUPERSEDED

NOTE:
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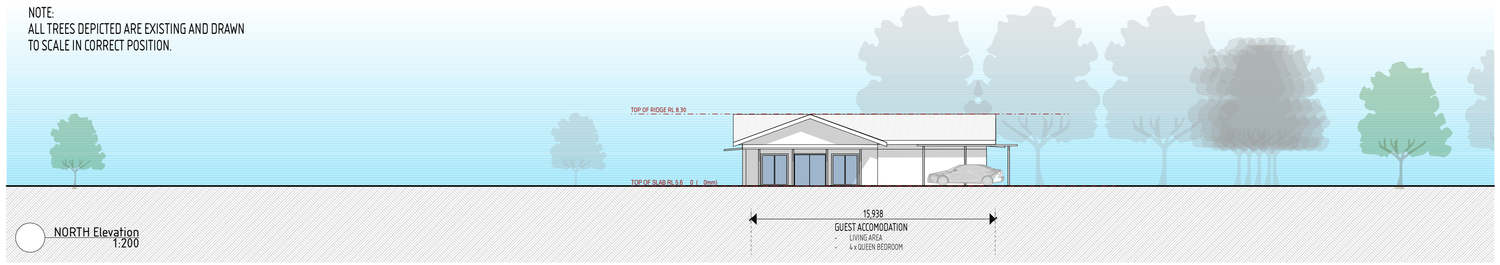
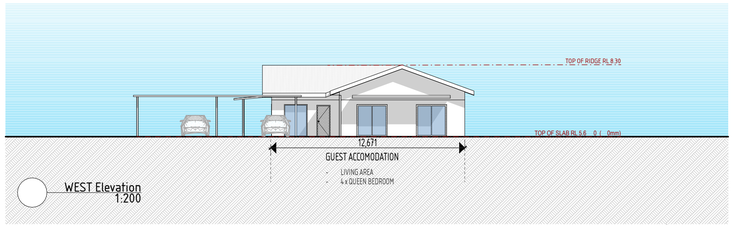
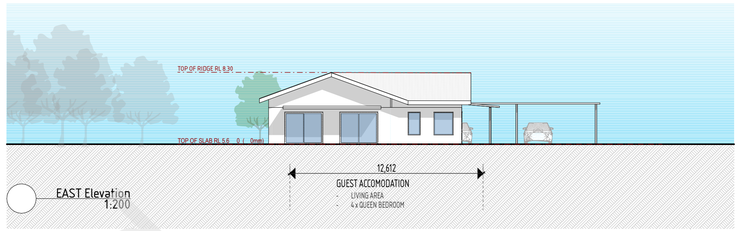


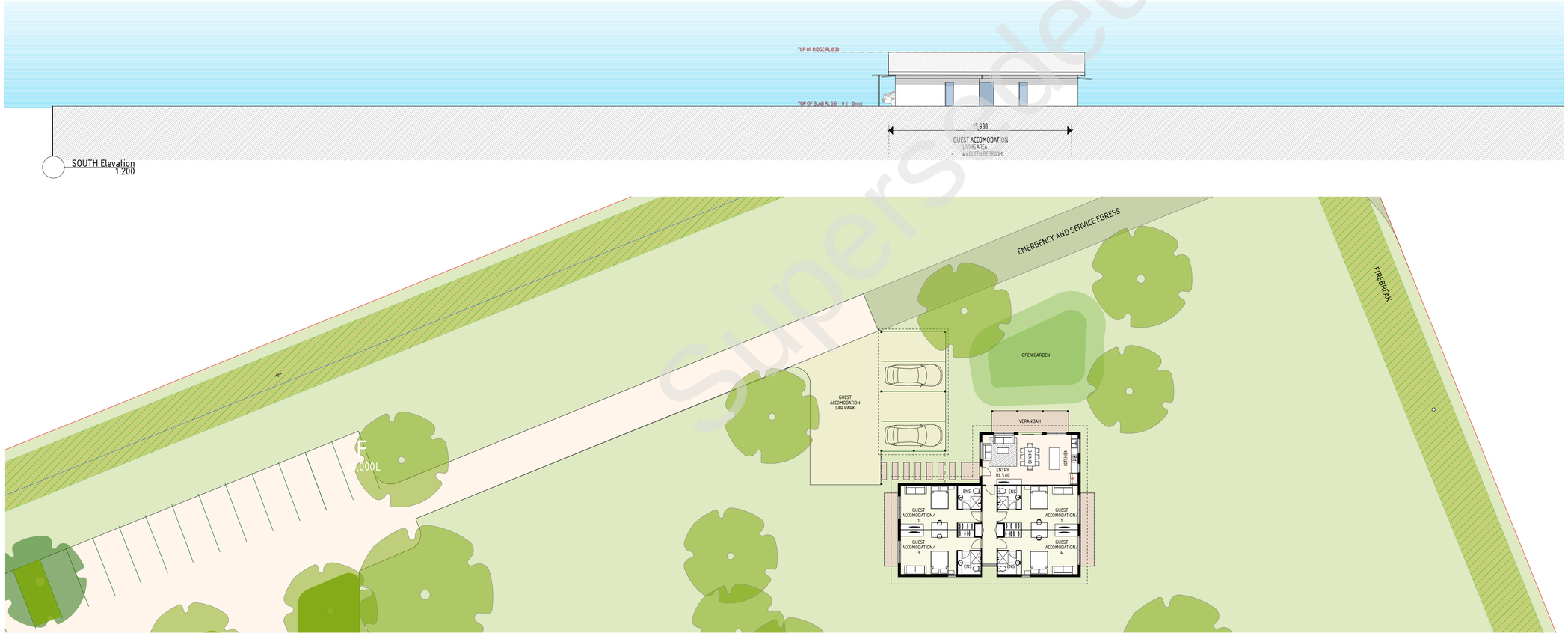
NORTH Elevation
1:200



WEST Elevation
1:200



EAST Elevation
1:200



SOUTH Elevation
1:200

Superseded

GUEST ACCOMMODATION PLAN + ELEVATIONS 1:200 (@ A1)

SCALE
0m 5m 25m

N

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Revision	Description	Date

Project :
SRI BALAJI TEMPLE DEVELOPMENT

Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

Drawing Title:
ACCOM PLANS + ELEVATIONS

Scale :
Status: #Project Status

Drawing N^{0}
08

Date issued: Thursday, 9 December 2021
Time 12:33 pm
Revision

LEGEND

Ai Planting along the slip lane at Folly Road, consisting of native shrubs and trees to further screen the development. The roundabout will be planted out with native shrubs.

Aii Planting of larger native trees to screen and blend the view of library and multi- purpose hall. These trees will emulate the cluster of existing trees on Folly Road and provide a continuous 'natural' flow of vegetation along the road thus enhancing the visual amenity of the site.

Aiii Planting of larger native trees to screen and blend the view of mulfi-purpose hall. These trees will emulate the cluster of existing trees on Folly Road and provide a continuous 'natural' flow of vegetation along the road thus enhancing the visual amenity of the site.

Aiv Planting of native trees around guest accommodation to screen the building from view lines along Folly and Young Roads

PROPERTY BOUNDARY

EXTENT OF WORKS

SWALE EDGE PLANTING

GROUND COVERS/GRASS

FIREBREAK

EXTERNAL PAVING

VERANDAH UNDERCOVER

GRAVEL, LASERITE ASPHALT ROAD/CARPARK

FULLY ENCLOSED COVERED AREA

Bi Main carpark will have central trees to provide shade over cars as well as perimeter trees to screen cars and provide further shade.

Bii Linear carpark behind Dining Hall to have further trees planted to extend the existing wind row on the north and assist shading and parking area

Biii Carpark behind Multi-purpose hall to have some trees and edge shrubs to assist in screening cars

Ci Planting around the immediate vicinity of Temple into planter beds located within the temple perimeter 'fence'. Ornamental trees with lower ornamental flowering shrubs and hedge bushes will be selected

Ci Planting of shrubs organically at outside perimeter of East side 'fence' of Temple and wrapping around to the south of the covered walkway on main carpark. Some smaller native trees will be incorporated.

TREES - RETAINED

CLUSTER TREES TO SCREEN BUILDINGS

TREES TO SCREEN AND SHADE CARPARK AND WALKWAY

NEW TREES TO TEMPLE

TREES TO BE REMOVED

Ciii The courtyard North of the main Temple will have an organically structured planted perimeter and open space. Native grass will be explored. A large water feature is also part of this garden experience and its location and symbol holds sacred value to this development. It will be chlorinated and moving water. Native grass will be explored.

Civ The courtyard to the Priest Residences and Temple kitchen will have some native shrubs to create a sense of place, privacy, and enclosure for the occupants.

Cv Planting of the main courtyard around which the secular buildings cluster. This will consist of different layers of plants to create a sense of nurtured garden providing a tranquil entry arrival space to these buildings. A small water feature is proposed.

Civ Planting in the north aspect of the Multi-purpose hall to beautify the outlook will explore native grass and edge planting to create some sense of containment to the open space.

Cvii Planting at the entry and to the north aspect of the Guest Accommodation to create a sense of enclosure and privacy, as well as screening of their carbays.

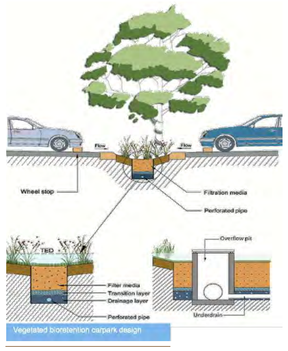

Diagram illustrating swale concept

LANDSCAPE PLAN 1:500 (@ A1)

Organically structured native garden edge to minimal contained areas of grass (native lawn to be explored) and pathways

Examples of swale landscape areas within and at edge of carpark



Tree Selections in carpark and closer to building courtyards

Eucalyptus Erythronema
Red Flowering Mallee
3-6m H

Fraxinus Raywoodii
Claret Ash
15m H 10m W

Tree Selections at Folly Road and Young Road perimeters

Eucalyptus rudis
'Flooded Gum'
6-20 H
Will encourage black cockatoo habitat
Evergreen

Banksia Attenuata
'Candle stick Banksia'
2m-3m H x 2m W
Evergreen

Allocasuarina fraseriana
'WA sheoak'
10m H x 6m W
Evergreen

Banksia Mensiesii
'Firewood Banksia'
5m10m H x 5-10m W
Evergreen



Melaleura rhaphiophylla
'Swamp Paperbark'
6m H x 3m W

Plant selections for organically structured garden edges/swales and courtyard planting

Adenanthol Sericea
'Woolly Bush'
3.5m H 1.5m W
1-1.5mH/W

Syzygium Smithii
'Lilly Pilly'
Hedgemaster
1-1.5mH/W

Boronia heterophylla, various
'Red Boronia'
1mH x 1m W

Westringia
Wyanabbie
1-1.5mH/W

Patasonia
Occidentalis
80mH x 60mW

Dianella ensiformis
Flax Lily 'Silver Streak'

Agapantha
'African Blue Lily'
1.2m

Lomandra, various
'Lime light'
'Longifolia'

Anigozanthos
'Gold Velvet Kangaroo Paw'

Anigozanthos
'Bush pearl Kangaroo Paw'

SCALE

0m 10m 50m

N

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Revision	Description	Date

Project :
SRI BALAJI TEMPLE DEVELOPMENT

Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

Drawing Title:
LANDSCAPE PLAN

Scale :
Status: #Project Status

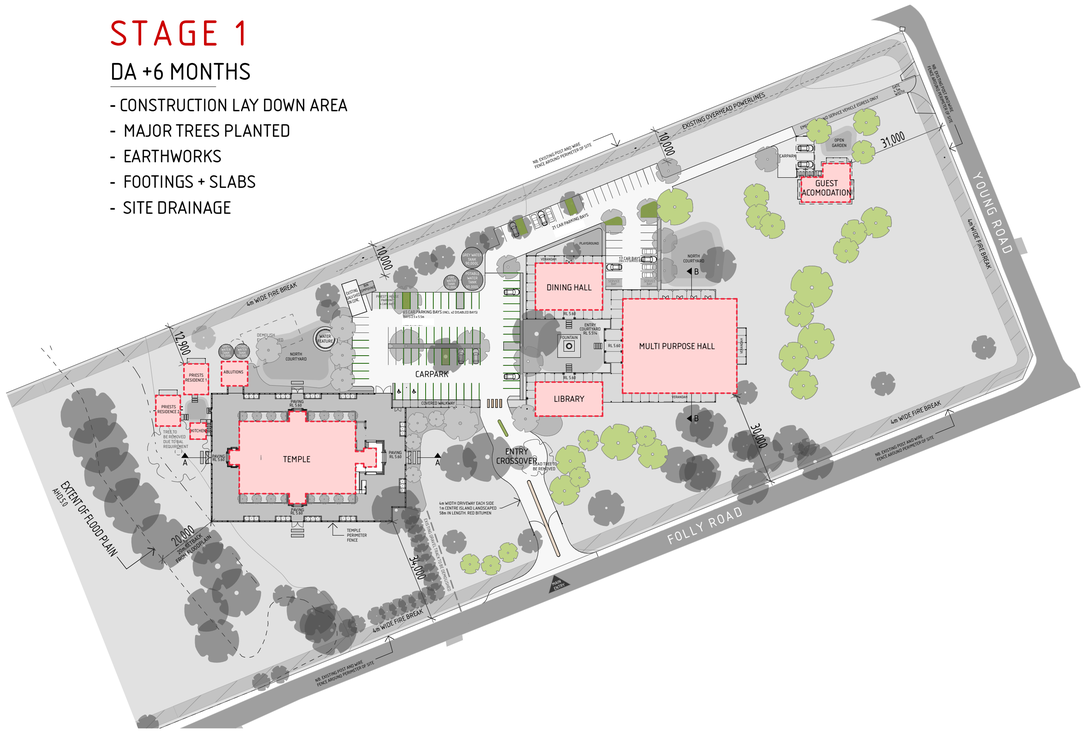
Drawing N⁰
09

Date issued: Thursday, 9 December 2021
Time 12:33 pm
Revision

STAGE 1

DA +6 MONTHS

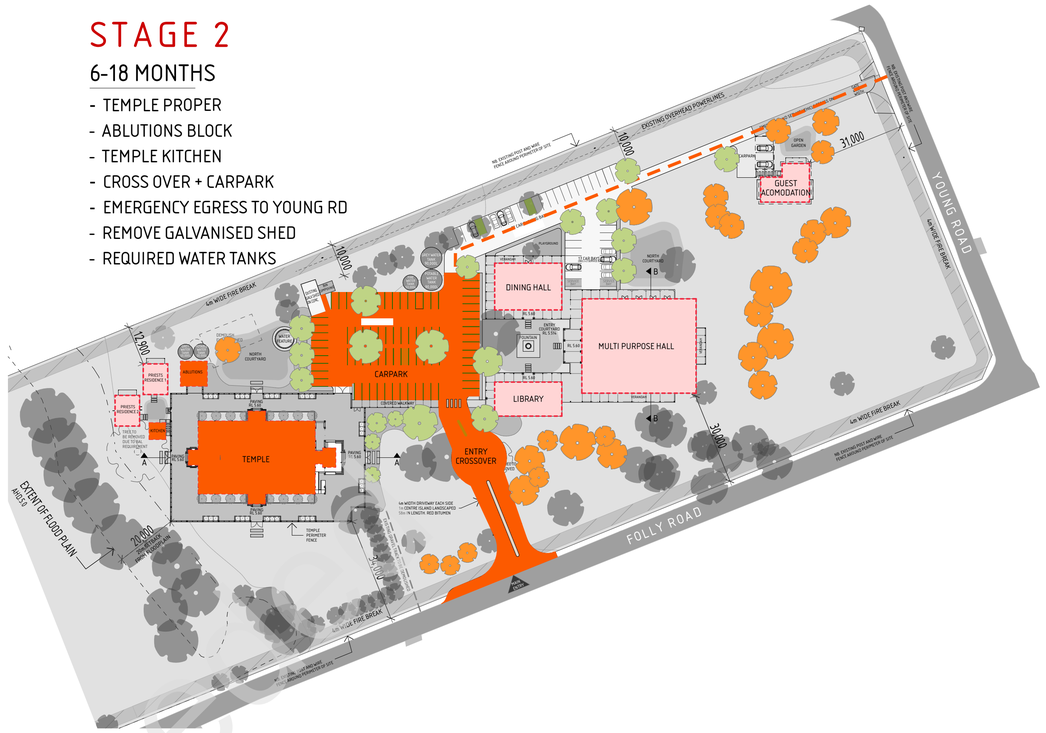
- CONSTRUCTION LAY DOWN AREA
- MAJOR TREES PLANTED
- EARTHWORKS
- FOOTINGS + SLABS
- SITE DRAINAGE



STAGE 2

6-18 MONTHS

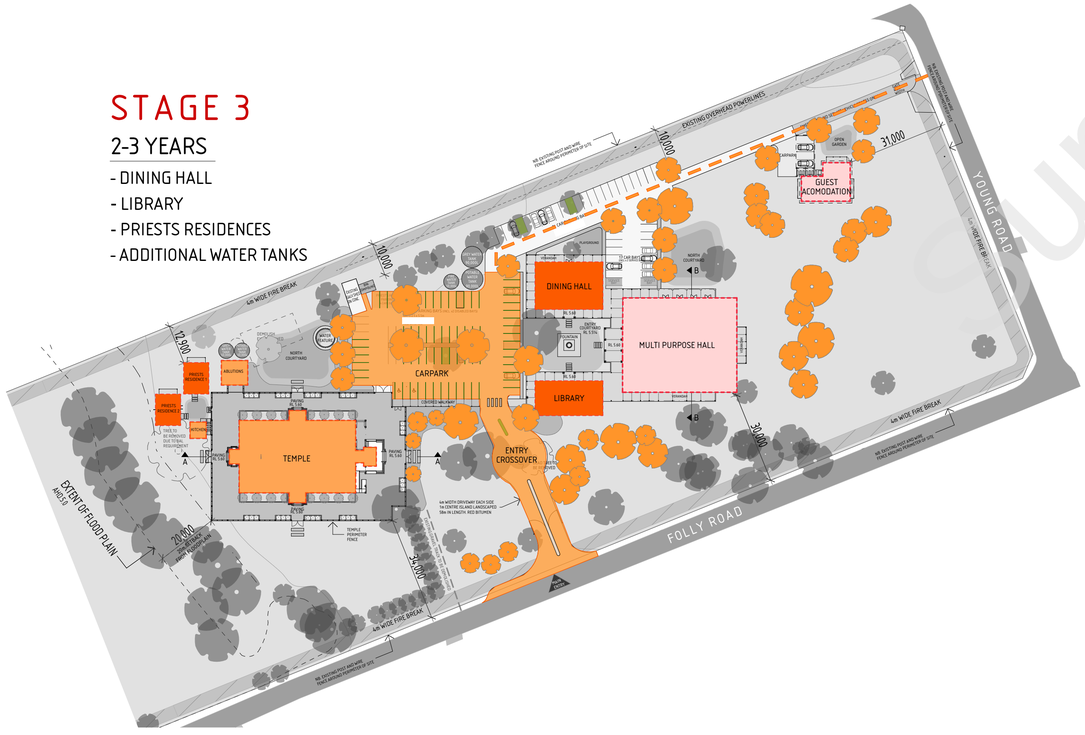
- TEMPLE PROPER
- ABLUTIONS BLOCK
- TEMPLE KITCHEN
- CROSS OVER + CARPARK
- EMERGENCY EGRESS TO YOUNG RD
- REMOVE GALVANISED SHED
- REQUIRED WATER TANKS



STAGE 3

2-3 YEARS

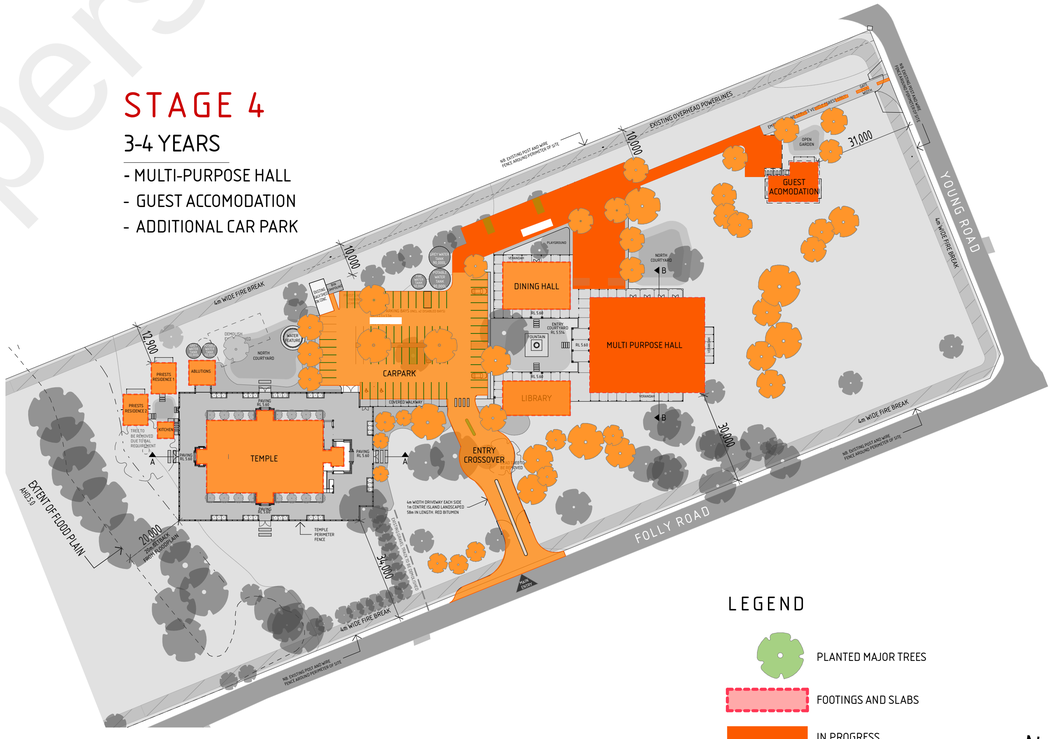
- DINING HALL
- LIBRARY
- PRIESTS RESIDENCES
- ADDITIONAL WATER TANKS



STAGE 4

3-4 YEARS

- MULTI-PURPOSE HALL
- GUEST ACCOMODATION
- ADDITIONAL CAR PARK



LEGEND

- PLANTED MAJOR TREES
- FOOTINGS AND SLABS
- IN PROGRESS
- COMPLETED WORKS
- DEMOLITION

N

STAGING DIAGRAM

Superseded

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Revision	Description	Date

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SRI BALAJI TEMPLE DEVELOPMENT

Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

Drawing Title:
STAGING DIAGRAM

Scale :
Status: #Project Status

Drawing N^{0}
10

Date issued: Thursday, 9 December 2021
Time 12:33 pm
Revision



VIEW OF TEMPLE FROM WITHIN PROPERTY (EAST ENTRY)



VIEW TO TEMPLE FROM SECULAR BUILDINGS



VIEW INTO COURTYARD OF SECULAR BUILDINGS



AERIAL VIEW OF SRI BALAJI TEMPLE GROUNDS FROM FOLLY ROAD

PERSPECTIVE RENDERS

Superseded

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Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

Drawing Title:
RENDERS

Scale :
Status: #Project Status

Drawing N⁰
11

Date issued: Thursday, 9 December 2021
Time 12:33 pm
Revision

PLANNING REPORT

DEVELOPMENT APPLICATION

PROPOSED SRI BALAJI (HINDU) TEMPLE DEVELOPMENT

Lot 53 (No. 67) Folly Road, Baldivis

PLANNING REPORT

Lot 53 (No. 67) Folly Road, Baldivis

Proposed Sri Balaji (Hindu) Temple Development

Prepared by:

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Prepared for:

JEEYARS ACHARYA PEETTAM AUSTRALIA (**JAPA LTD**)
ABN: 648 960 874

EXECUTIVE SUMMARY

This is to advise that *Peter Webb and Associates* (PWA) acts in association with *Archetype Design Studio* (**Project Architect**) for the *Jeeyars Acharya Peettam Australia Ltd* (**JAPA Ltd**) in regard to the proposed development of the Sri Balaji Temple and Cultural Centre at 67 Folly Road, Baldivis.

JAPA Ltd is a Non-Profit Organisation. It is a religious multicultural organisation of the Hindu community, which provides a place for spiritual worship; spaces for religious education and guidance in the learning of the Ancient Vedic Scriptures; for celebration; and outdoor space for peaceful reflection.

This Planning Report is prepared in support of the Development Application which seeks approval to commence the development of a Place of Worship on the subject site.

The proposed development has an estimated construction cost of $5 million and is elected to be determined by JDAP. Accordingly, the Application package includes the completed and signed Development Application Form, MRS Form 1 and DAP Application From.

The land and project details for this Application are described in the following Summary Table (**Table 1**). The following report details the relevant background, design, and planning justification in support of this development proposal.

TABLE 1: SUMMARY TABLE	
Landowner:	Patricia Annette Byers (Under contract for sale to JAPA LTD)
Property Description:	Lot 53 (No. 67) Folly Road, Baldivis
Area:	7.4362 ha
Certificate of Title:	Volume 2793, Folio 800
Local Authority:	City of Rockingham
Local Planning Scheme:	Town Planning Scheme No. 2
Zoning:	Rural
Proposal:	This Application seeks approval for the development of a Place of Worship, together with incidental land uses, and the associated on-site car parking facility required to support the development. The development is contained to the eastern portion of the site, being sufficiently setback from the western portion of the land, which area forms part of a floodplain.
Vehicle Access:	*Existing crossover to be relocated and upgraded:* The existing crossover on Folly Road is proposed to be relocated 35m to the east of the existing crossover and upgraded to provide the main vehicle entrance to the Temple. The new access will include the construction of a slip lane on Folly Road. *New crossover proposed:* A new crossover for emergency and service access purposes only is proposed on Young Road.

1.0 LOCATION AND SITE PARTICULARS

The landholding the subject of this Application is listed in the following Table 2: Land Details, together with the current Certificate of Title Volume and Folio details and approximate land area. (Refer to **Annexure 1**: Certificate of Title.)

TABLE 2: LAND DETAILS		
LAND DESCRIPTION	**CERTIFICATE OF TITLE**	**LAND AREA**
Lot 53 (No. 67) Folly Road, Baldivis	Volume 2793, Folio 800	7.4362 ha

The subject site is located on the northern side of Folly Road and to the east of the Safety Bay Exit Ramp of the Kwinana Freeway. The land has a southern primary frontage to Folly Road of 645.08 metres; and a secondary eastern frontage to Young Road of 114.16 metres. The rear northern boundary has a width of 621.11 metres, which boundary is shared with a rural property comprising of rural farming sheds and open fields. Its western side boundary has a length of 94.68 metres, which it shares with land reserved as 'Parks and Recreation' under the *Metropolitan Region Scheme* (**MRS**) (and preserved as a Bush Forever site). Folly Pool is contained within this adjacent reservation, which extends along the eastern side boundary of the Kwinana Freeway and to the immediate west of the land. (Refer to **Figure 1: Location Plan**.)

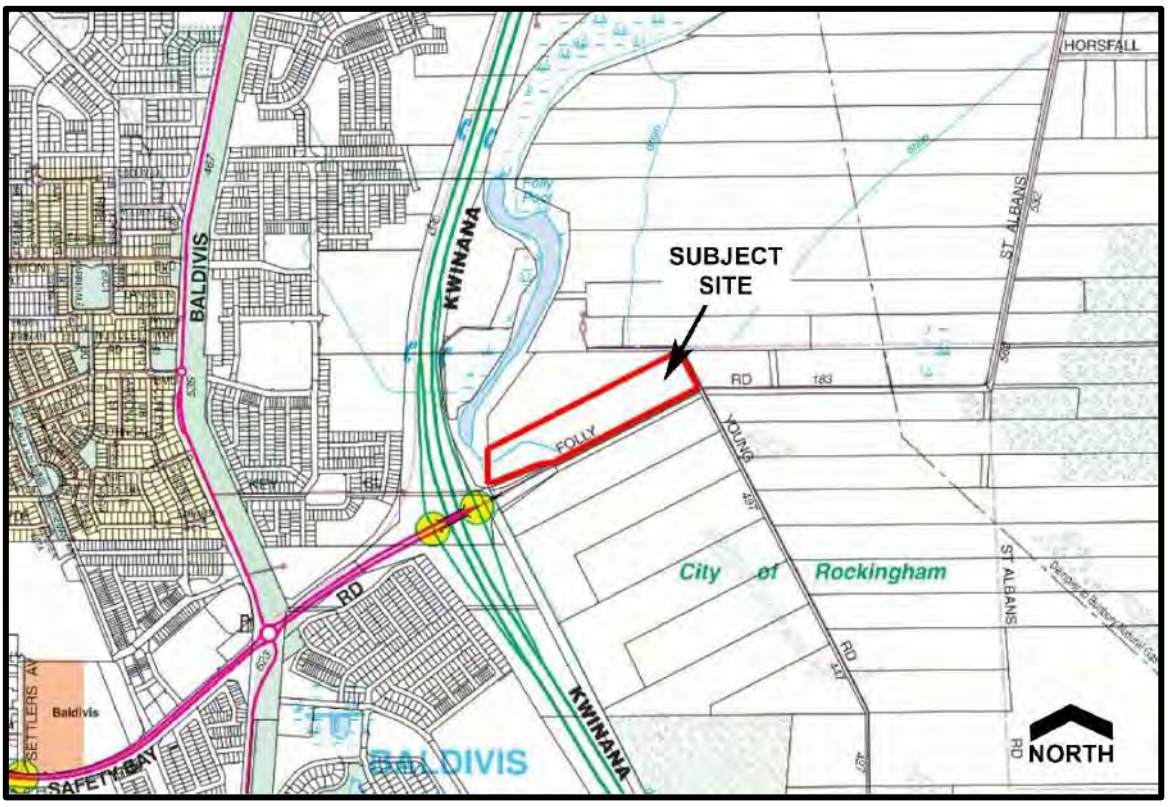

Figure 1: Location Plan *(source: intramaps)*

The topography of the land comprises of a relatively consistent ground level. It is low lying and subject to inundation, with levels rising from 4.8m AHD at the eastern extent of the Floodplain to 5.37m AHD adjacent to the boundary of the secondary frontage of the land to Young Road. The

existing sheds are situated at the highest ground level on the land, being 6.1m AHD. This is the proposed site for the building footprint for the Temple and Caretakers Dwellings.



Figure 2: Aerial Photograph *(source: slip, 2021)*

The site is accessed by an existing pea gravel crossover from its primary frontage to Folly Road. (Refer to **Figure 2: Aerial Photograph**.)

The subject land shares only a single boundary with privately owned rural land. The remaining boundaries of the site are bound by the regional, local road network and parks and recreation reservation adjacent to the Kwinana Freeway. The physical separation of the land by the bounding road and freeway network coupled with its severely limited capability for productive agricultural pursuits makes it well suited for the proposed Temple. (Refer to **Photographs 1, 2** and **3**.)



Photograph 1: Standing on the southern side of Folly Road, looking west towards the Kwinana Freeway and western end of subject site. (Note: all vegetation shown is to be retained.)



Photograph 2: Standing on Young Road, looking south towards intersection with Folly Road. Subject site is to the right of the photograph.

Existing improvements on the land include two (2) rural sheds, together with a septic tank and a water tank. (Refer below to **Photographs 3 and 4**.)



Photograph 3: Standing on the southern side of Folly Road, looking in a north easterly direction towards area proposed for the development footprint. (Note existing substantially sized rural sheds and associated structures on the land are clearly visible from this main view point on Folly Road.



Photograph 4: Standing on the southern side of Folly Road, directly opposite subject site, looking in a northern direction across the floodplain portion of the land. (Note clear visibility of large rural sheds from view point on Folly Road.)

The rural property to the north of the site at Lot 923 (No. 547) Young Road also contains rural sheds. No residential dwelling is located on this adjacent landholding. Overhead power lines run within the subject property along this northern common boundary shared with the neighbouring property. (Refer below to **Photograph 5**.)



Photograph 5: Standing on Young Road, looking in a western direction towards the common boundary of the land shared with the adjacent rural property.

A residential property which contains two (2) residential dwellings and substantially sized outbuildings is situated to the east of the subject land on the opposite (eastern) side of Young Road. These dwellings have a primary crossover to Folly Road and a secondary crossover on Young Road. (Refer to **Photographs 6 and 7**.)



Photograph 6: Standing at the road bend on Young Road looking in an eastern direction towards rural property containing two (2) residential dwellings located on the opposite site of the road to the subject land.



Photograph 7: Looking in a southern direction across secondary frontage of site to Young Road. A rural property with residential dwellings and an operating business (RCT Haulage) is located to the left of the property, on the eastern side of Young Road.

Other land uses located in the immediate vicinity include a variety of rural and semi-rural type uses, including West Coast Chaff (Stockfeed, Fodder & Supplements) which is directly opposite the subject site on the southern side of Folly Road. It is relevant to note that the substantially sized rural sheds and silo bins of West Coast Chaff are also clearly visible from Folly Road, as shown in **Photograph 8**.



Photograph 8: Standing on Folly Road, looking south towards visible built form on land located directly opposite the subject site.

2.0 PLANNING FRAMEWORK

The subject lot is zoned 'Rural' under the *Metropolitan Region Scheme* (**MRS**); and 'Rural' pursuant to the *City of Rockingham* (**City**) *Town Planning Scheme No. 2* (**TPS 2**).

The land has a primary frontage to Folly Road, which is subject to a resolution under **Clause 32** of the MRS. This means that this Application, which abuts land reserved in the MRS for the purpose of a regional road (which is subject to Clause 32), is required to be referred to the WAPC for transport related comments and recommendations. The (western) section of Folly Road adjacent to the subject site is identified in the MRS as being within the Primary Regional Road Reservation. The remaining majority of Folly Road which extends along most of the frontage of the property is identified in the MRS as being within the Other Regional Road Reservation (classified as a category 2). A category 2 road classification means that frontage access from the Other Regional Road Reservation may be allowed subject to approval. As the development proposal seeks to retain the existing crossover to Folly Road as the main vehicle entrance to the Temple, referral to the WAPC is required in accordance with *Del 2017/02 – Powers of Local Governments and Department of Transport MRS.*

2.1 STATE PLANNING FRAMEWORK

Perth and Peel @3.5million - South Metropolitan Sub-Regional Framework

The subject land is identified in the *Perth and Peel @3.5million* as part of an area identified for rural purposes.

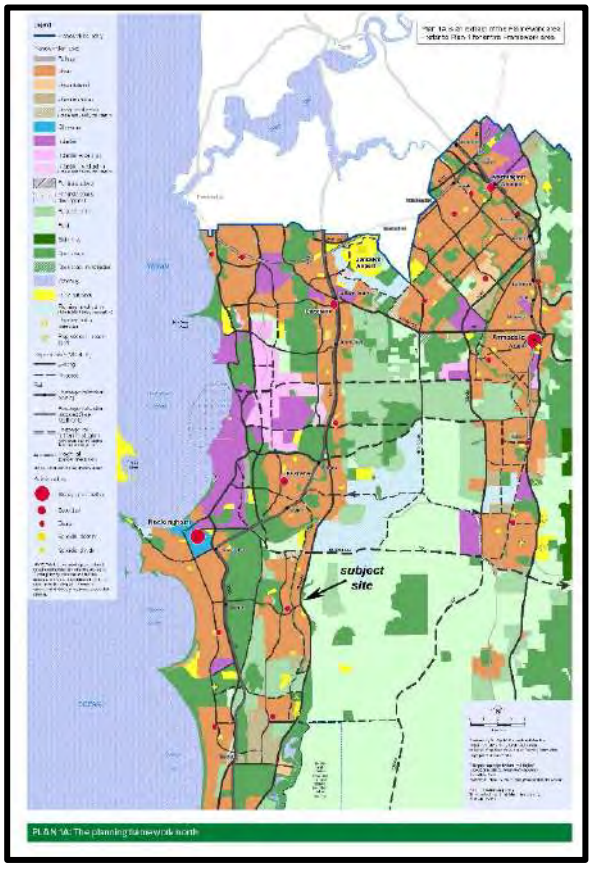

Figure 3:
Sub-Regional Planning Framework

The *South Metropolitan Sub-Regional Framework* further refines the strategic direction for this location, identifying the area and the subject land for rural land use type purposes. The classification of this area east of the Freeway was determined based on the land size characteristics of the general location.

More detailed strategic studies were then undertaken by the City to determine whether any of the rural classified land located within its local government boundaries should be identified and protected as 'priority agricultural land'. This included an assessment of the land identified as Rural to the east of the Kwinana Freeway, including the subject land. The outcome of the investigation by the City determined there was no land suitable for priority agricultural pursuits in this locality due to the low land capabilities of the area.

This area (including the subject land) is instead recognised in the City's *Rural Land Strategy* for its environmental significance and visual amenity. Alternative development and land use in this area is therefore able to be considered for approval in accordance with the requirements of the City's Local Planning Framework in a manner which ensures the environmental qualities of the area are protected and the visual amenity is maintained and enhanced.

This development proposal meets with this objective. The proposed Temple and Cultural Centre is an alternative development and use proposal capable of being considered for approval in the Rural zone (pursuant to TPS 2). This development is sensitively designed to ensure the ecological values of the site and the wider area are protected and that the built form outcome visually absorbs into the site in a manner which does not detract from the semi-rural character of this location.

STATE PLANNING POLICIES (SPP):

SPP 2.1: Peel-Harvey Coastal Plain Catchment

The subject land is located within the catchment area of the Peel-Harvey Estuarine System and is therefore subject to the policy requirements of SPP 2.1. It is recognised that the WAPC has prepared a new water planning policy (*draft SPP 2.9 – Planning for Water and Planning for Water Guidelines)*, which is currently out for advertising. Once gazetted, this new SPP 2.9 will replace SP 2.1. Further detail relating to SPP 2.9 and the specific requirements relating the development proposal the subject of this Application are provided below at **Table 4**.

In regard to the currently operative SPP 2.1, the proposed development is designed in a manner which ensures it will not result in any environmental damage to the Peel-Harvey Estuarine System. In addition to this, the environmental qualities of the land will be protected and nurtured by the Hindu community, as it is a fundamental value and teaching of the Hindu faith.

The compliance of the development with the operative SPP 2.1 is detailed below at **Table 3**.

TABLE 3: COMPLIANCE WITH POLICY MEASURES of SPP 2.1	
SPP 2.1 REQUIREMENT	***PLANNING JUSTIFICATION***
5.1 *Except in accordance with this policy, land shall not be rezoned for urban purposes (which includes special residential but not rural residential or special or special rural) unless certification is received from the Water Authority that arrangements have been made so that connection to an adequate sewerage service, or alternative system satisfactory to the EPA and Health Department, will be available to all lots in the subdivision.*	The proposed development and land use does not require the land to be rezoned. The proposed land use of Place of Worship is capable of being considered for approval in the 'Rural' zone, following completion of the advertising process, in accordance with the requirements of TPS 2. **Requirement is therefore not applicable.**
5.2 *Proponents shall ensure that proposed changes to land zonings take account of land capability/suitability criteria with regard to the net effect that such changes are likely to have on the nutrient load discharging from that catchment into the Peel-Harvey Estuarine System.*	The proposed development and land use does not require the land to be rezoned. **Requirement is therefore not applicable.**
5.3 *Land used for intensive agriculture, which is likely to drain towards the Peel-Harvey Estuarine System shall be managed to reduce or eliminate nutrient export from the land.*	This Application does not propose to use the land for intensive agriculture. The proposed development and land use as a Place of Worship provides a suitable development alternative for this ecologically sensitive site which will result in no nutrient runoff into the Peel-Harvey Estuarine System. **Requirement is therefore not applicable.**
5.4 *The retention and rehabilitation of existing remnant vegetation is to be encouraged.* *A catchment target of 50% of land area established to deep rooted perennial plants, preferably local indigenous species but including high water using and suitable exotic species, shall be attempted. Remnant vegetation shall be retained along watercourses, or the margins shall be replanted to higher water-using vegetation, to maintain the stability of banks and exert some control on sediment and nutrient movement.*	The proposed development retains and rehabilitates the existing remnant vegetation on the land. The existing vegetation located within the western (floodplain) portion of the site is to be retained, which area sits outside the development footprint. The few remnant trees scattered around the eastern portion of the site (the area proposed for the development) are to be retained with additional vegetation proposed. A Landscape Master Plan prepared by the Project Architect is included with the Application which identifies the existing vegetation to be retained and the proposed vegetation to be planted, together with the identification of the selection of native and waterwise species. **Compliance achieved.**
5.5 *Subdivision proposals shall make provision for a drainage system, which maximises the consumption and retention of drainage on site. Biological wetland filters, or other means of drainage water retention or treatment approved by the EPA, will need to be incorporated into the drainage design possibly by amendment of the soils in drainage basins or by the provision of wetland filters with nutrient retentive soil amendments in accordance with drainage management to the satisfaction of the State Planning Commission and EPDA. Conservation reserves are not appropriate as biological wetland filters. Development near conservation reserves may require special constraints to protect and preserve them.*	This Application does not propose the subdivision of the property. **Requirement is therefore not applicable.**

***(cont.)* TABLE 3: COMPLIANCE WITH POLICY MEASURES of SPP 2.1**	
SPP 2.1 REQUIREMENT	***PLANNING JUSTIFICATION***
***5.6** Open space recreation areas should be carefully designed to retain native vegetation and water, and plant with water using vegetation to minimise the need to apply fertilizer and water. The treatment of open space soils with nutrient retentive soil amendment should be undertaken where phosphorus retention is low and the necessity for this soil amendment should be identified in nutrient management plans prepared by developers. Drainage should be designed to retain nutrients on site in most years; direct drainage off-site will not be permitted unless to the satisfaction of local government.*	The open space areas of the land are designed to retain the remaining native vegetation. The *Water Management Strategy* (**WMS**) prepared by *Waterinsights* details the proposal to retain as much stormwater on site as possible to ensure stormwater is managed to pre-development flow conditions. This is described in the WMS as a 'disconnected' drainage network which minimises the use of pipes and underground infiltration. The design is to rely on source surface infiltration and storage. This will involve (*inter* alia): the use of rainwater tanks to capture roof runoff for potable water supply and plumbing to toilet facilities; the use of greywater; raingardens; landscaped treatments; open swales; and tree pits. The plant species introduced to the eastern part of the site (outside of the floodplain area) will comprise of native and waterwise plant types in order to reduce irrigation demands and remove the need for fertiliser and pesticide use. **Compliance is achieved.**
***5.7** The Commission may consider upon the advice of the Water Authority, the Health Department and the EPA, small-scale subdivisional developments with alternative wastewater treatment and effluent disposal systems for evaluative purposes. The onus of proof will rest with the subdivider to provide sufficient technical and engineering evidence that alternative systems or site modifications remove any adverse effects on public health, water resources or the environment while not detrimentally impacting on the character of the area.*	This Application does not propose the subdivision of the property. **Not applicable.**
***5.8** Local Government is responsible for the supervision and management of alternative effluent systems, particularly Aerated Treatment Units (ATUs).*	This development proposal will be serviced by ATUs (now termed: secondary treatment units with nutrient removal system) on site, as reticulated sewer has not yet been extended to service this location. **Compliance is achieved.**
***5.9** Approvals will be required from the Water Authority with regard to water supply from bores, wells, rivers in proclaimed water management areas and WAWA drains and for connection of private and local authority drains to WAWA drains. The limited availability of water may constrain some types of development.*	An unlicenced bore exists on the land. There are no available licences in the area. The bore is therefore limited for use to irrigate an area of 2000m^2 only, until such time that a licence becomes available. The bore is also capable of providing additional provision for firefighting purposes. **Compliance is achieved.**

SPP 2.8: Bush forever

The subject land is not identified as being within a Bush Forever site.

It is situated to the immediate east of Bush Forever Site 418. (Refer to **Figure 4**: Adjacent Bush Forever Site 418.)

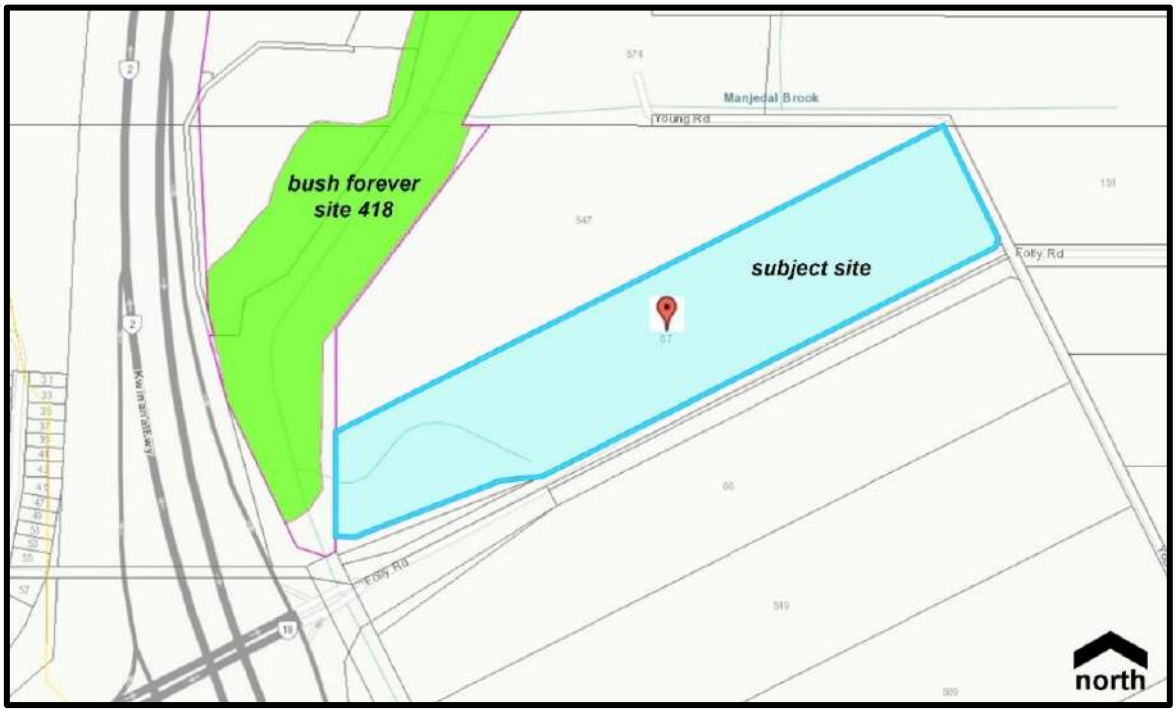

Figure 4: Proximity of subject land in relation to Bush Forever Site 418 *(source: PlanWA)*

The development proposal is therefore not subject to the requirements of SPP 2.8.

It is however acknowledged that the subject land shares its western side boundary with the Bush Forever Site 418, which boundary has formed part of the early design considerations for the proposed development. In this regard, the substantial set back of the development footprint to the area outside of the Floodplain ensures the protected vegetation of the Bush Forever Site will not be in any way impacted by the proposed development and use on the eastern part of the land.

SPP 2.9: Draft Planning for Water

In the event that SPP 2.9 is gazetted in accordance with the advertised version of the document, the development and use have been considered and appropriately designed to meet with each of the overarching requirements. The compliance of the development with the draft SPP 2.9 is detailed at **Table 4**.

TABLE 4: COMPLIANCE WITH REQUIREMENTS OF SPP 2.9	
SPP REQUIREMENT	***PLANNING JUSTIFICATION***
7.1 General measures *a) Water resources should be considered at the earliest possible stage of the planning process and all subsequent stages in accordance with the Guidelines.* *b) Proposals are to be accompanied by sufficient information to demonstrate appropriate protection and management of water resources relating to relevant policy outcomes. The information provided should be in accordance with the Guidelines, which specify instances where a Water Management Report is required and what it must contain.* *c) Proposals and supporting information should be referred to relevant agencies and licensed water service providers in accordance with the Guidelines.* *d) Proposals should consider water resource related issues associated with climate change.* *e) Planning decisions (except development applications) should consider cumulative impacts on water resources. Where the cumulative impact is considered significantly detrimental, the proposal should not be supported.*	The WMS provides the necessary information which confirms compliance is able to be achieved with the general requirements of SPP 2.9. The WMS has been prepared in accordance with best management practice as defined in *Better Urban Water Management Guidelines.* It incorporates a range of water management strategies which ensure the water resources of the locality are protected, including water conservation and the effective management of stormwater on site. The outcome being that the land being used for this purpose will have no detrimental impact on the environment. **Compliance is achieved.**
7.2 Environmental, social and cultural values ***Wetlands and waterways*** *Proposals should, in accordance with the Guidelines:* *a) identify wetlands and their buffers and waterways and their foreshore areas and/or reserves;* *b) facilitate the transfer of wetland buffers and waterway foreshore areas to public ownership, where appropriate;* *c) retain and/or restore vegetation important for the long-term health of water resources within wetlands buffers and waterway foreshore areas with the restoration of vegetation should preferably using endemic species;* *d) where possible, maintain and restore ecological linkages;* *e) identity appropriate wetland buffers and foreshore areas to protect public health from mosquito borne diseases;* *f) identify and protect sensitive water resources;* *g) where possible, protect and enhance vegetation within sensitive water resource areas deep-rooted native and endemic species; and* *h) ensure that land uses that have the potential to significantly alter the hydrological regime are managed to protect water resources and associated ecological and aquatic values.* ***Water quality*** *Proposals should, in accordance with the Guidelines:* *i) minimise export of nutrient and non-nutrient*	An *Environmental Assessment Report* (**EAR**) has been prepared by *Coterra Environment* in support of the proposed development. The EAR provides the following information to achieve compliance with Section 7.2 of SPP 2.9. a) The ERA identifies the location of the adjacent Folly Pool *Conservation Category Wetland* (**CCW**). The ERA identifies the location of the Floodplain. b) The CCW is not located within the boundaries of the subject land. No wetland buffers are required to be transferred to public ownership. c) The existing vegetation is to be retained, expect for two (2) trees. One (1) of the trees has been identified as being unhealthy and poses a risk to human safety. This tree is identified on the plan for removal. The other tree is to be removed for bushfire safety purposes. Recommendations for the native tree species to be planted around the boundaries of the site are provided in the EAR. d) No ecological linkages are required to be restored or maintained within the boundaries of the site. e) Mosquito management recommendations are contained in the EAR. f) The Folly Pool CCW is identified and it is confirmed in the EAR that the

contaminants entering water resources *j) avoid adverse effects on the natural and built environment and/or human health when undertaking subdivision and development of land containing acid sulfate soils or contaminated sites;* *k) be located on land where nutrient export to sensitive water resources can be effectively managed, when they involve:* *- agriculture-intensive (particularly annual horticulture)* *- animal husbandry - intensive* *- animal establishments or rural pursuits involving stocking rates that exceed recommended stocking rates* *Flexibility to this measure may be applied where the proposal is located within priority agricultural land. In areas where nutrient export cannot be effectively managed, closed agricultural systems are encouraged; and* *l) demonstrate that infrastructure and site management practices are in place to manage contaminants, particularly within sensitive water resource areas and public drinking water source areas.* *Local planning schemes and local planning policies should, in accordance with the Guidelines:* *m) include site-specific measures where relevant to manage the potential impacts on water quality and protect water resources.* ***Social*** *Proposals should, in accordance with the Guidelines:* *n) maintain or enhance safe public access to water resources, except where at the detriment of ecosystem health and/or public drinking water source protection; and* *o) maximise opportunities for water in the landscape to enhance amenity, senses of place, liveability and contribute to urban greening and mitigation of urban heat.* ***Cultural*** *Proposal should, in accordance with the Guidelines:* *p) identify, protect and, where appropriate, promote Aboriginal and other historic cultural heritage places and values.*	development is sufficiently set back and outside of the floodplain area to ensure the protection of the wetland and its buffer. g) The EAR provides suitable recommendations for the proposed planting of native vegetation species. h) The WMS ensures that the natural hydrological regime is maintained with minor and major rainfall events managed on-site, with no flooding caused by the development as a result of the strategy measures. ***Water quality*** i) The WMS proposes management of the development to ensure no contaminants are exported from the site. j) The subject site is identified on the *Acid Sulfate Soils* (**ASS**) Risk Mapping prepared by DWER as being located within 'Category 2', being that the site has a *'moderate to low risk of ASS occurring within 3.0m of the natural soil surface but 'high to moderate' risk of ASS beyond 3.0m of the natural soil surface.'* An ASS self-assessment form will be completed and an ASS investigation undertaken, should it be determined through that process that there is potential for ASS to be impacted. These processes are confirmed in the SSE as being able to be satisfactorily addressed as conditional requirements of the development approval. k) The development proposal does not involve any of the land uses identified. l) The WMS and the *Site and Soil Evaluation* (**SSE**) prepared by *Waterinsight* demonstrates that water is able to be appropriately managed to ensure the development will not result in any adverse impact on the nearby water resources and the ecological values. m) The Application accords with the relevant requirements of the Local Planning Scheme and Local Planning Policies, as demonstrated in the technical investigations prepared in support of this development proposal and this Planning Report. ***Social*** n) The proposal does not include any community access to the Floodplain area. This section of the site is to be protected from development and no entry into this area will be permitted by the Temple community to ensure the sensitive environment surrounding Folly Pool is protected. o) The proposed development and use ensure the protection of Folly Pool and the

	associated floodplain. Additional features of the design also provide opportunities for water in the landscape, including the proposed fresh water (chlorinated) water feature. p) The subject land is located within the Gnaala Karla Booja country. There are no Aboriginal sites recorded on the subject land. The natural environmental values of the site are protected. There are no listed European Heritage sites within the boundaries of the site. **Compliance is achieved.**
7.3 Riverine flooding *The following measures apply to flood prone areas that are dominated by riverine processes. Coastal storm surge and other inundation associated with water bodies dominated by tidal processes is to be addressed in accordance with State Planning Policy 2.6 State Coastal Planning. Where there are any inconsistencies between this policy and the flood measures in Section 5.2 of State Planning Policy 3.4 Natural Hazards and Disasters, this policy shall prevail.* *Proposals should, in accordance with the Guidelines:* *a) identify flood prone areas;* *b) not rezone, subdivide, or propose additional development that intensifies land use within a defined floodway;* *c) maintain the free passage and temporary storage of floodwaters;* *d) incorporate minimum habitable floor level of 0.5 metres above the expected 1 percent annual exceedance probability flood event (or alternative height above the defined flood event as defined in an endorsed floodplain development strategy);* *e) consider the flood risk management principles when replacing existing development within a floodway; and* *f) be informed by advice from the Department of Water and Environmental Regulation, if flooding is likely and no flood mapping exists.*	a) The portion of the land contained within the Floodplain is identified on the Site Plan. b) The development is setback from the 1 in 100-year flood line by 20 metres. The proposed development therefore does not propose any land use within the floodplain area. c) The area within the floodplain is maintained in its natural state to ensure it continues to function as the floodplain associated with Folly Pool CCW. d) The development is proposed to meet the required 0.5m separation distance between the finished floor level and the defined 1:100 year flood level identified in the *North-East Baldivis Flood Modelling and Drainage Studies* (DoW 2015). e) No development exists or is proposed within the floodplain area. f) The flood mapping for the area is defined in the *North-East Baldivis Flood Modelling and Drainage Studies* (DoW 2015). **Compliance is achieved.**
7.4 Infrastructure and supply ***Water demand and supply*** *Proposal should, in accordance with the Guidelines:* *a) minimise future water demand by ensuring that development is designed to conserve and use water efficiently; and* *b) demonstrate secure, sustainable, and fit-for-purpose drinking and non-drinking water supply for domestic consumption, public open space irrigation and industry. This should include consideration of future rainfall projections that incorporate climate change and, where a licence is required, within water allocation limits.*	***Water demand and supply*** a) The WMS includes a water conservation strategy which is designed to ensure the site conserves both potable water and groundwater. b) The development proposes water conservation measures such as rainwater tanks to reduce the amount of potable water carted to the site, the use of water efficient fixtures and fittings; rainwater tanks are to be plumbed to the toilet facilities, the use of waterwise landscaping and efficient subsoil drip irrigation design, the use of greywater, and signage being posted around the

	development to remind guests to conserve water.
Dams, crossings, and rural drains	***Dams, crossings and rural drains***
	This section is not applicable. The proposal does not propose the construction of a dam, crossing or rural drain on the property.
Stormwater and groundwater	***Stormwater and groundwater***
Proposals should, in accordance with the Guidelines: *f) ensure stormwater and groundwater management systems are designed and constructed in accordance with the Decision process for stormwater management in Western Australia, Stormwater Management Manual for Western Australia and the Australian Rainfall and Runoff Guidelines, and in consultation with the relevant water management agency and/or infrastructure manager(s).* *g) provide for the retention, detention, conveyance, and treatment (where required) of stormwater and manage groundwater inundation, including treatment of groundwater discharges, which also protecting and enhancing environmental functionality, local amenity, and liveability: and* *h) incorporate water sensitive design, in the early stages of the planning process. This should include setting aside sufficient land for drainage areas as part of an integrated stormwater drainage system.*	f) The development proposal is supported by the WMS, which is designed in accordance with established practices as detailed in *Better Urban Water Management Guidelines* (WAPC, 2008); *Floodplain Management Water Facts 14* (Water and Rivers Commission, 2000); Government Sewerage Policy (WAPC, 2019); and *Stormwater Management Manual for Western Australia* (DoW 2004 – 2007). g) The WMS describes the objectives for stormwater and groundwater management to ensure that the development does not result in flooding or increase the risk of flooding to external properties. This management involves a proposal to create a 'disconnected' drainage network which minimises the use of pipes and underground infiltration. The strategy is to create surface infiltration and storage at the source in order to replicate the current hydrological regime. The other management strategies described in the WMS include the retention of the existing vegetation and ensuring the development achieves the required clearance from the natural surface to the groundwater levels is achieved (i.e., a minimum clearance of 0.5m). h) The MWS provides a conceptual strategy which focuses on water sensitive design, as required.
Wastewater *i) Proposals are required to connect to or provide for reticulated sewerage where:* *i. Deemed reasonable;* *ii. Required on planning grounds; or* *iii. The decision maker determines that the absence of reticulated sewerage will pose an unacceptable risk to public health, the environment or water resources.* *Refer to the Guidelines for details on the assessment of these criteria;* *j) Proposals for on-site wastewater disposal may be considered where the decision maker is satisfied that:* *i. Reticulated sewerage is not required in accordance with measure 7.4(l) of this policy;* *ii. The highest groundwater level is greater than 0.5m from the natural ground surface for rezoning proposals to create unsewered lots less than 1 hectare in size;* *iii. Each lot can accommodate on-site wastewater disposal in accordance with AS/NZS 1547:2012 On-site domestic wastewater management where relevant;*	***Wastewater*** i) This development seeks approval for the site to utilise on-site wastewater disposal. The attached SSE report has determined that the proposed development is capable of servicing with a secondary treatment system with nutrient removal in order to treat wastewater prior to being disposed via leach drains. j) The following justification is provided in support of the development being capable of servicing via an on-site disposal system. i. The City's TPS 2 does not mandate the requirement for the site to be connected to reticulated sewerage. ii. The development does not propose rezoning or the creation of unsewered lots less than 1 hectare. This requirement is therefore not applicable. It should however be noted that the

iv. The site requirements for on-site wastewater disposal outlined in the Guidelines can be met; and *v. Development will be serviced by an appropriate on-site wastewater system that will manage risk to the environment and public health were relevant.* *k) Proposals are, in accordance with the Guidelines, encouraged to incorporate the beneficial use and re-use of wastewater; and* *l) Local planning schemes should in accordance with the Guidelines require the provision of reticulated sewerage where appropriate.*	treated wastewater is to be disposed in an area with at least 1.5m separation to the maximum groundwater levels. The WMS states that a slightly raised (less than 0.5m) effluent disposal area will be required to provide adequate clearance to groundwater from the natural surface. iii. This proposal does not involve the creation of new lots. This requirement is therefore not applicable. iv. The WMS confirms that the site requirements for on-site wastewater disposal in the Guidelines are achieved. v. A secondary treatment system with nutrient removal capabilities is to be used on site. The effluent land application areas are to be located east of the existing driveway to ensure adequate buffers are maintained to the Water Corporation drains, flood plain area as well as the groundwater levels. k) The WMS proposes the inclusion of a greywater recycling system as part of the water conservation strategy. l) The City's TPS 2 does not require reticulated sewerage for this site. **Compliance is achieved.**
7.6 Specific area measures: Peel-Harvey coastal plain catchment *In addition to all other measures contained in this policy, specifically 7.2 water quality, the following measures apply to planning proposals in the Peel-Harvey coastal plain catchment (identified on the policy map of Peel-Harvey Coastal Plain Catchment). Proposals should, in accordance with the Guidelines:* *a) have regard to the water quality objectives contained in Environmental Protection (Peel Inlet – Harvey Estuary) Policy Approval Order 1992 for the Peel Harvey estuarine system;* *b) protect remnant vegetation and maintain or increase deep-rooted perennial vegetation coverage to improve water quality;* *c) protect and revegetate waterways and drains with endemic plant species to improve the values to the Peel-Harvey estuarine system and/or engineer and manage rural drains to reduce nutrient export; and* *d) manage nutrient export when they involve:* *– agriculture – intensive* *– animal husbandry – intensive* *– animal establishments or rural pursuits that exceed recommended stocking rates*	***7.6 Specific area measures: Peel-Harvey coastal plain catchment*** a) The proposal includes a SSE and WMS which recommends strategies to ensure the development adheres with the water quality objectives of the Peel Harvey Catchment. b) The proposal seeks to retain the remnant vegetation on the land and increase the deep-rooted perennial vegetation coverage to ensure the water quality is protected and improved. c) No waterways exist within the development area. No agricultural use is proposed as part of this proposal. **Compliance is achieved.**

SPP 3.7: Planning in Bushfire Prone Areas

The subject land is designated within an area identified as bushfire prone by the *Fire and Emergency Services Commissioner*. Refer below to **Figure 5** which illustrates the extent to which the Map of Bush Fire Prone Area covers this location.



Figure 5: Map of Bush Fire Prone Area, FESA *(source: SLIP, 2021)*

Accordingly, the Application is supported by a comprehensive *Bushfire Management Plan* (**BMP**) and *Emergency Evacuation Plan* (**EEP**) prepared by *envision*.

The BMP confirms that the development satisfies the relevant requirements of SPP 3.7. The proposal demonstrates that the habitable buildings are located with a BAL level no greater than BAL 12.5; and that the site provides main access to the primary street (Folly Road) and an emergency services and service vehicles (including, the water truck) access only road and crossover from the secondary road frontage of Young Road.

The BMP includes specific requirements to meet the requirements of SPP 3.7, which are to be addressed as conditional requirements:

1. A minimum 50,000L water tank is to be maintained on site for exclusive fire fighting purposes. This tank is to be made accessible to the emergency access road and appropriately sign posted.
2. Firebreaks are to be installed around the periphery of the site and maintained to the standards and specifications of the City.
3. An emergency access service road is to be constructed and maintained in accordance with the SPP 3.7 Guidelines.
4. The adoption of the EEP, which plan is attached to the BMP submitted with this Application.

SPP 5.4: Road and Rail Noise (September 2019)

The subject land is partly located within the specified trigger distances of the Kwinana Freeway (classified as a 'strategic freight or major traffic route') and Safety Bay Road (classified as an 'other significant freight/traffic route'), as defined by SPP 5.4. (Refer to **Figure 6**.)

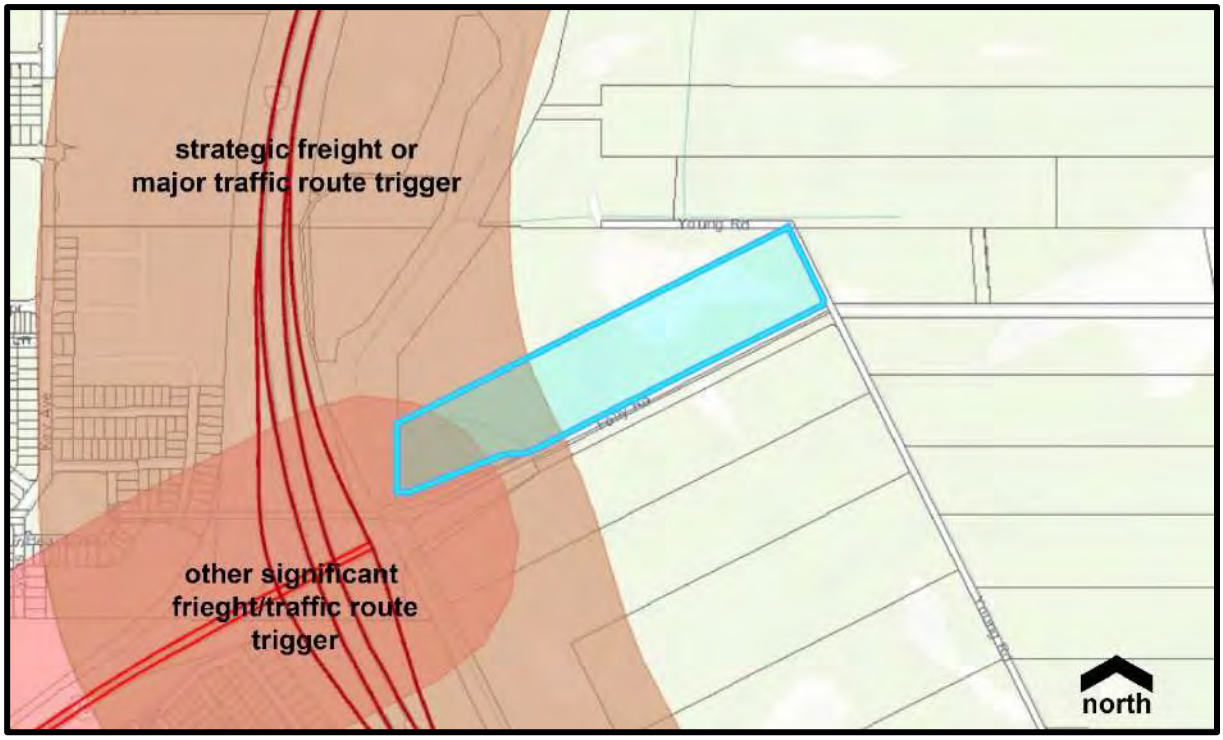

Figure 6: Road and Rail Noise Trigger Distance *(source: PlanWA, 2021)*

At clause 4.1.2 of SPP 5.4, it is stated that any lot which is partly affected by a trigger distance is required to be assessed against the requirements of the policy to determine the extent to which the land might be affected by traffic generated noise and whether any form of mitigation is required.

In accordance with the requirements of SPP 5.4, an initial screen assessment has been undertaken by PWA in accordance with *Table 2: Noise Exposure Forecast* of the associated SPP 5.4 Guidelines. The outcome of this assessment is detailed below in **Table 5**.

TABLE 5: SPP 5.4 – NOISE EXPOSURE FORECAST

TRANSPORT CORRIDOR CLASSIFICATION	**NUMBER OF LANES** *(Both directions, including bus/priority lanes and entrance/exit ramps.)*	**FORECAST NOISE EXPOSURE CATEGORY** *(Based on lot distance(m) from edge of nearest main road carriageway (not entrance/exit ramps.)*	**FORECAST EXCESS NOISE LEVEL, dB/ POLICY REQUIREMENTS**
Strategic freight/major traffic route (Kwinana Freeway)	9 to 10 lanes	Distance from edge of main road carriageway of Freeway to edge of Floodplain and nearest edge of the development footprint: 460m	0 or less/No further measures.
Other significant freight/traffic routes (Safety Bay Road)	Urban Region Scheme areas 60-80 km/hr: 1 to 2 lanes	Distance from the nearest edge of Safety Bay Road to the edge of Floodplain on the property: 430m	0 or less/No further measures.

This assessment confirms that the development area of the site, which is proposed to the east of the floodplain, will not be impacted by traffic noise from the Freeway or Safety Bay Road to the extent that mitigation is necessary.

Government Sewerage Policy (September 2019)

The subject site is identified as being within a 'sewerage sensitive area' due to its location being within the Estuary catchments of the Swan and Scott Coastal Plains and being within 1 kilometre of a significant wetland.

The site is **not** located within a public drinking water source area.

The following **Table 6** confirms the compliance of the development with the relevant requirements of the *Government Sewerage Policy* (**GSP**).

TABLE 6: COMPLIANCE WITH POLICY MEASURES OF THE GSP

REQUIREMENT	***PLANNING JUSTIFICATION***
5.1 – Reticulated sewerage *Requirement to connect to reticulated sewerage* *Planning proposals are required to connect to or provide for reticulated sewerage:* *1. Where the provision of reticulated sewerage is required by a local planning scheme or a policy, strategy or plan endorsed by the Western Australian Planning Commission;* *2. When any stage or part of any future or proposed subdivision or development is already connected to reticulated sewerage;* *3. Where the responsible authority determines any future or proposed subdivision or development can be reasonably connected to reticulated sewerage;* *4. Where the responsible authority determines that the absence of reticulated sewerage will jeopardise future land uses provided for in:* *a. A proposed or approved local planning scheme or scheme amendment; or* *b. In a proposed or endorsed Western Australian Planning Commission policy, strategy, or plan;* *5. Where the responsible authority determines that the absence of reticulated sewerage will prejudice, physically or financially, the ability to provide sewerage to the local area; or* *6. Where the responsible authority determines that the absence of reticulated sewerage will pose an unacceptable risk to public health, the environment or water resources. This includes instances where:* *a. The minimum site requirements for on-site sewage systems (as defined in section 5.2) cannot be reasonably met;* *b. The impact of on-site sewage disposal is deemed likely to have a detrimental impact on the water quality of public drinking water source area, sewage sensitive area or other waterway or wetland. Where approval of any*	The SSE and the WMS confirm that the site can support the proposed development with effluent disposal being managed by an on-site waste disposal system in accordance with the requirements of the GSP. As the site is located within the Peel-Harvey Catchment and is identified as being within a Sewerage Sensitive Area, the site is required to be serviced by a secondary treatment unit with nutrient removal system prior to disposal via leach drains. The site-specific requirements for this system is detailed in the *Waterinsight* reports submitted with this Application. Further reference to the findings of these technical investigations in support of on-site effluent disposal systems for this development is provided below in response to 5.2. **Compliance is achieved.**

future or proposed application without connection to reticulated sewerage is likely to set a precedent for similar proposal in the local water catchment, the cumulative impact will be considered; and *c. Urban, industrial, or commercial subdivision is proposed in Priority 3 public drinking water source areas; or* *7. Where land is being rezoned for the creation of lots less than one hectare and the highest groundwater level is less than 0.5m below the natural ground level.*	
5.2 – On-site sewage disposal *Where the provisions of 5.1.1 do not apply, on-site sewage disposal may be considered where the responsible authority is satisfied that:* • *Each lot is capable of accommodating on-site sewage disposal without endangering public health or the environment; and* • *The minimum site requirements for on-site sewage disposal outlined in this section and Schedule 2 can be met.* ***5.2.1 Lot sizes*** *The provisions of this part of the Policy relate to minimum site requirements for on-site sewerage disposal.* *In sewage sensitive areas, the minimum lot size requirement is one (1) hectare. It is noted that smaller lot sizes in sewage sensitive areas can be considered for non-residential, commercial, and industrial subdivision on a case-by-case basis.* ***5.2.2 Separation from water resources*** *An on-site sewage system is not to be located within:* • *A wellhead protection zone or on Crown land within a reservoir protection zone;* • *100 metres of the high water mark of a reservoir or 100 metres of any bore used for public drinking water supply where:* – *A wellhead protection zone or reservoir protection zone has not been assigned; or* – *Where existing lots would be rendered undevelopable by the wellhead protection zone;* • *30 metres of a private bore used for household/drinking water purposes;* • *100 metres of a waterway or significant wetland and not within a waterway foreshore area or wetland buffer. The separation distance should be measured outwards from the outer edge of riparian or wetland vegetation;* • *100 metres of a drainage system that discharges directly into a waterway or significant wetland without treatment; or*	***5.2 – On-site sewage disposal*** The technical investigations undertaken by *Waterinsight* confirm that the proposed development is capable of being serviced by on-site sewage disposal without endangering public health or the environment. Further, the proposal meets the minimum site requirements for this method of sewage disposal in accordance with this section of the GSP and Schedule 2. ***5.2.1 Lot sizes*** The proposal meets with the minimum lot size requirement defined at 5.2.1 of the GSP as being 1.0 hectare. The subject land has a total area of 7.4361ha. The development footprint is contained within the eastern portion of the site, being setback approximately 20.0m from the defined floodplain. The portion of the site proposed for the development has a total approximate area of 3.2 hectares. ***5.2.2 Separation from water resources*** The attached WMS and SSE confirms that: 1. The effluent disposal system is **not** located within a wellhead protection zone or on Crown land. 2. The proposed system is **not** located within 100 metres of the high water mark of a reservoir or 100 metres of any bore used for public drinking water supply. 3. The system is **not** to be located within 30 metres of a private bore used for household/drinking water purposes. 4. The systems are to be located at least 100 metres from the nearest waterbody. 5. The systems are to be located at least 100 metres from the drainage system that discharges into the nearest waterbody. 6. The systems are to be located outside of the area subject to inundation.

• *Any area subject to inundation and/or flooding in a 10 percent Annual Exceedance Probability (AEP) rainfall event.* ***5.2.3 Separation from groundwater*** *The discharge point of the on-site sewage system should be at least the following distances above the highest groundwater level, taking into account the range of seasonal groundwater conditions in the context of long term variability and possible groundwater rise following development:* • *Two metres in public drinking water source areas;* • *1.5 metres in sewage sensitive areas; and* *Where the use of fill is proposed to achieve separation distances, proponents may be required to provide additional information to demonstrate that solutions are effective, do not impact on other lots through water diversion, are not cost prohibitive and will not compromise amenity or landscape values.* ***5.2.5 Type of on-site treatment system required*** *Secondary treatment systems with nutrient removal will generally be required in public drinking water source areas and sewage sensitive areas.* *In all other instances, secondary treatment systems should only be required to address site-specific physical or environmental constraints (refer to Schedule 2).* *In rural and remote areas, determination of the type of treatment system required should consider the availability of maintenance personnel required to service secondary treatment systems in accordance with Department of Health requirements.*	***5.2.3 Separation from groundwater*** The WMS confirms that the treated wastewater is able to be disposed in an area on the land with at least 1.5m separation distance to the maximum groundwater levels. Further, it is indicated that slightly raised (less than 0.5m) disposal areas will be required to provide the adequate clearance to groundwater from the natural surface. ***5.2.5 Type of on-site treatment system required*** The SSE and WMS recommend the use of secondary treatment systems with nutrient removal, in accordance with the Department of Health requirements. **Compliance is achieved.**
5.3 – Information to support planning proposals *The method of sewage disposal should be determined at the earliest opportunity in the planning process.* *Information outlined in Schedule 1 should be provided in support of a planning proposal to demonstrate that the long-term sustainable sewerage servicing needs of the area and possible future intensification of development have been taken into consideration. The information required is to be commensurate to the scale and nature of the proposal.* ***5.3.1 Site and soil evaluations*** *Where required, site and soil evaluations should be provided in accordance with AS/NZS 1547 On-site domestic wastewater management. The requirements of the site and soil evaluation may be varied, based on existing site information or where health or environmental impacts are considered minimal.*	This proposal includes the necessary information required to consider the sewage disposal method. The SSE and the WMS attached to this Application provide this information to achieve compliance with this specific requirement. **Compliance is achieved.**

SPP 7.0: Design of the Built Environment

The proposed development form is highly articulated, incorporating detailed design features and materials which ensure the built form fits within and connects to the surrounding rural amenity.

The design comfortably meets with each of the overarching Design Principles of SPP 7.0, as detailed below at **Table 7**.

TABLE 7: COMPLIANCE WITH DESIGN PRINCIPLES OF SPP 7.0

DESIGN PRINCIPLE	***PLANNING JUSTIFICATION***
1. Context and character *Good design responds to and enhances the distinctive characteristics of a local area, contributing to a sense of place.*	The design sensitively addresses and visually connects with the surrounding natural environment through the proposed use of traditional building materials and colours for the buildings and the clustering of the built form. The design of the buildings with sweeping verandahs and pitched roofs further connects the development to the semi-rural character of this location.
2. Landscape quality *Good design recognises that together landscape and buildings operate as an integrated and sustainable system, within a broader ecological context.*	A Landscape Master Plan has been prepared, which is designed to strengthen the connection of the community with the surrounding environmental features of the rural landscape.
3. Built form and scale *Good design ensures that the massing and height of development is appropriate to its setting and successfully negotiates between existing built form and the intended future character of the local area.*	The built form and scale of the Temple and its associated structures are appropriate to its function and minimised in form and scale to ensure the important environment values of the setting are protected and enhanced.
4. Functionality and build quality *Good design meets the needs of users efficiently and effectively, balancing functional requirements to perform well and deliver optimum benefit over the full life-cycle.*	The building is to be constructed using the traditional materials comprising of rendered walls with limestone cladding, timber framing for the interconnected verandahs and colorbond roof sheeting. These durable materials and finishes will ensure the built form is resilient to wear and tear and is climate responsive.
5. Sustainability *Good design optimises the sustainability of the built environment, delivering positive environmental, social, and economic outcomes.*	The design of the built form maximises its connection with the surrounding natural environment to ensure a positive environmental, social, and economic outcome. The measures include: restoring the vegetation, incorporating water as a feature of the design, protecting the floodplain and removing the risk of nutrient loads to nearby water resources.
6. Amenity *Good design provides successful places that offer a variety of uses and activities while optimising internal and external amenity for occupants, visitors, and neighbours, providing environments that are comfortable, productive, and healthy.*	The design of the Temple includes a range of supporting religious activities, which encourages a multipurpose use of the site which extends beyond worship practices. This ensures that the internal and external amenity is optimised for the Hindu community as well as the nearby residents.

***(cont.)* TABLE 7: COMPLIANCE WITH DESIGN PRINCIPLES OF SPP 7.0**	
DESIGN PRINCIPLE	***PLANNING JUSTIFICATION***
7. Legibility *Good design results in buildings and places that are legible, with clear connections and easily identifiable elements to help people find their way around.*	The buildings incorporate clear connections and identifiable external elements to provide external and internal direction.
8. Safety *Good design optimises safety and security, minimising the risk of personal harm and supporting safe behaviour and use.*	The design of the land maximises opportunities for casual surveillance over the site.
9. Community *Good design responds to local community needs as well as the wider social context, providing environments that support a diverse range of people and facilitate social interaction.*	The Temple and its associated activities are specifically designed to cater for the new and existing members of the local community who practice the Hindu faith. The design aims to encourage the community to visit for worship at the Temple as well as engage in other religious activities and celebrations; as well as informal gatherings within the open space areas.
10. Aesthetics *Good design is the product of a skilled, judicious design process that results in attractive and inviting buildings and places that engage the senses.*	The Temple Proper and the associated buildings are architecturally designed. The proposed development is the result of a detailed design process which has created a high-quality design of the individual buildings on the land as well as the connecting spaces between these forms. The site is carefully arranged and linked in a manner which encourages movement and connection between the Temple Proper and the cultural spaces as well as ensuring the environmental qualities of this location and the communities engagement with it remains an important sensory link and focus for the built form outcome.

DEVELOPMENT CONTROL (DC) POLICIES:

DC Policy 5.1: Regional Roads (Draft, January 2018)

The frontage of the subject site to Folly Road is described in the draft DC Policy 5.1 as a 'Regional Road', as this section of Folly Road is partly reserved under the MRS as a 'Primary Regional Road', with the remaining section being reserved as 'Other Regional Roads'.

The compliance of the vehicle access proposal for the development to and from the Regional Road network is detailed in the following **Table 8**.

TABLE 8: COMPLIANCE WITH *draft* DEVELOPMENT REQUIREMENTS OF DC POLICY 5.1	
REQUIREMENT	***PLANNING JUSTIFICATION***
3.3.1 *– In considering applications for access on regional roads, the effects of the land development proposals on* ***traffic flow*** *and* ***road safety*** *will be the primary consideration. The more important the regional road in the road hierarchy, the greater the importance attached to these factors. In general, the WAPC will seek to minimise the creation of new driveways on regional roads and rationalise existing access arrangements.*	The land has a primary frontage to Folly Road, which is subject to a resolution under **Clause 32** of the MRS. The section of Folly Road which extends along most of the frontage of the subject property is identified in the MRS as being within the 'Other Regional Road' Reservation (classified as a category 2 road). A category 2 road classification means that frontage access from the Other Regional Road Reservation may be allowed subject to approval (following referral to the WAPC for transport related comments and recommendations). The existing crossover to Folly Road is positioned in the area identified as forming part of the 'Other Regional Road' Reservation. This crossover is to be rationalised with it being proposed to be shifted further east and upgraded as the primary vehicle access and exit point for the Temple. The relocated crossover remains within the section of Folly Road identified as an 'Other Regional Road'. **This approach is consistent with the requirements of draft DC Policy 5.1**.
3.3.2 *- Where regional roads are constructed or planned to freeway standards, no access to frontage development is permitted. On regional roads not constructed or planned to freeway standards, there is a general presumption on traffic and safety grounds against the creation of new driveways or increased use of existing accesses to these roads. Where alternative access is or could be made available from side or rear streets or from rights-of-way or laneways, no access shall be permitted to the regional road unless special circumstances apply.*	The *Traffic Impact Assessment* (**TIA**) prepared by *Shawmac* concludes that the volume of traffic generated by the proposed development is capable of being accommodated within the capacity of the road network. The TIA also confirms that the crash history for Folly and Young Roads does not indicate any major road safety issues with the road network. Further, there is no indication that the proposed development would increase the risk of crashes. **Compliance is achieved.**
3.3.3 *- An arrangement whereby adjoining owners enter into cross-easement agreements to provide reciprocal rights of access across adjacent lots may be required as a means of rationalising access to the regional roads.*	**Not applicable.**
3.3.4 *- The types of development that would be allowed access to a regional road include large traffic generators such as major shopping, recreation, or community centres. These would justify either a neighbourhood connector or access road, leading from an intersection with the regional road to car parks servicing the centre.*	The proposed development of the Temple and Cultural Centre is consistent with the land use definition of a community centre, being a larger traffic generator. The access road leading to the carpark to service the Temple and the Cultural Centre, from an intersection with Folly Road, is therefore capable of approval. **Compliance is achieved.**

***(cont.)* TABLE 8: COMPLIANCE WITH *draft* DC POLICY 5.1**	
REQUIREMENT	***PLANNING JUSTIFICATION***
3.3.5 *- In determining applications for development involving the formation, laying out or alteration of a means of access to regional roads, the following must be considered:* *i) the effects of the development on traffic flow and safety, the character and function of the road, the volume and speed of traffic, the width of the carriageway and visibility; and* *ii) the ultimate volume and type of traffic generated by the development.*	The TIA confirms that the volume of traffic generated by the development is capable of being accommodated within the capacity of the road network; adequate site distance is achieved; and that there is no risk to traffic flow or safety. The attached TIA contains the details of the traffic generation. **Compliance is achieved.**
3.3.6 *- Where access is permitted, conditions may be imposed prescribing the location and width of the intersection or driveway to ensure adequate visibility and to provide for the safe and convenient movement of vehicles both entering and leaving the traffic stream. In determining design requirements for junctions and driveways, the WAPC has regard to standards recommended by both the AUSTROADS and Main Roads Western Australia.*	The TIA recommends the provision of a Basic Left (BAL) turn treatment which is a widened shoulder. **Compliance is achieved.**

DC Policy 4.3: Planning for High-Pressure Gas Pipelines (Draft)

The eastern portion of the subject site is located within the trigger distance of the Dampier Bunbury Pipeline. (Refer to **Figure 7**: DBP-A616 Trigger Distance)

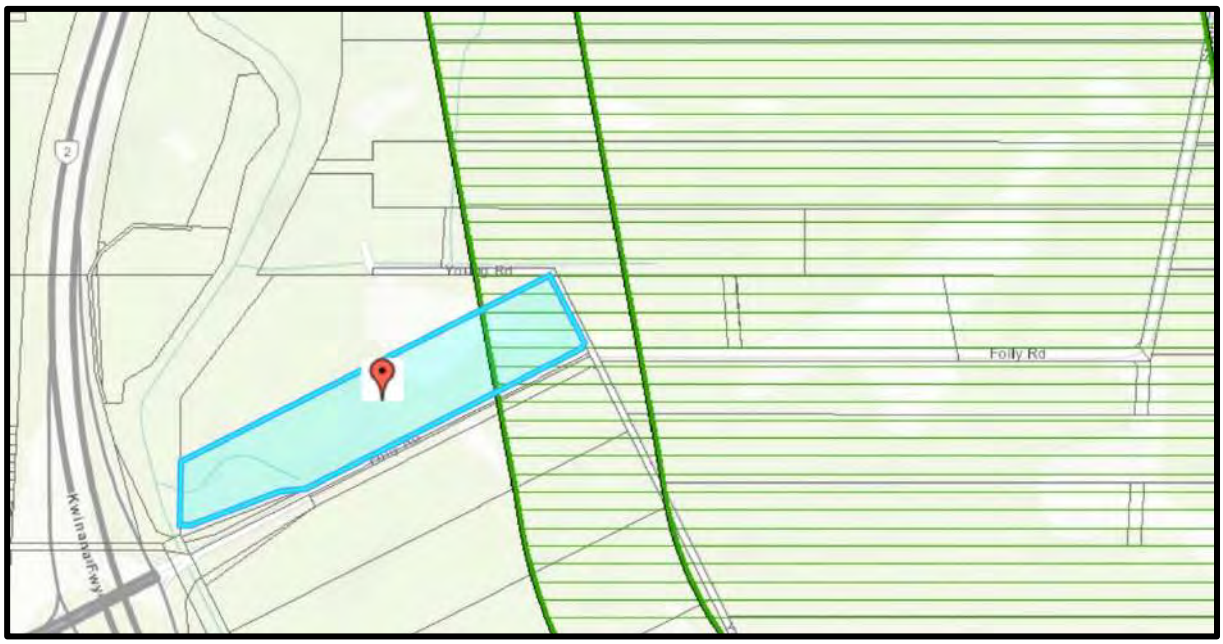

Figure 7: Dampier Bunbury Pipeline – Trigger Distance *(source: PlanWA, 2021)*

The design of the development includes a 30m setback to Young Road. Most of the development is situated outside the setback area of the pipeline. The ancillary accommodation for guests of the Temple (which is accommodation is provided for occasional use only) is located within the defined trigger distance area of DC Policy 4.3.

At section 3.2 – Exemptions of this draft DC Policy 4.3, it is stated that the policy requirements do not apply to development on land that is not intersected by a pipeline and not zoned for a 'Sensitive', 'Industrial', 'Heavy Industrial' or 'Common Infrastructure Corridor' purpose. The term 'Sensitive' is defined in the Guidelines of DC Policy 4.3 as meaning: *'development for which the consequences of a pipeline failure may be increased because its purpose is for parts of the community who may be unable to protect themselves from the consequences of a pipeline failure. Sensitive development includes schools, hospitals, aged-care facilities and persons, but* ***not residential*** *development.'* (Our emphasis.)

The portion of the development included within the trigger distance of the Pipeline is the single storey ancillary accommodation. This accommodation is provided for occasional guests of the Priest and the Temple. These visitors stay for up to one (1) week and are no different to guests visiting and temporarily staying at a typical private residential property on a Rural zoned property. It is therefore considered that the proposal is exempt from the requirements of DC Policy 4.3.

2.2 LOCAL PLANNING FRAMEWORK

CITY OF ROCKINGHAM TOWN PLANNING SCHEME NO. 2 (TPS 2)

The subject site is zoned 'Rural' pursuant to the provisions of the City's TPS 2.

Rural Zone

At clause 4.11.1, the objective of the Rural zone under TPS 2 is:

> '*to preserve land for farming and foster semi-rural development which is sympathetic to the particular characteristics of the area in which it is located, having due regard to the objectives and principles outlined in the Rural Land Strategy and supported by any other Plan or Policy that the local government may adopt from time to time as a guide to future development within the Zone*.'

The proposed development meets with the overarching objective and general intent of the Rural zone. This landholding is identified in the *Rural Land Strategy* as being an area which is not suitable for priority agricultural use. The land is identified as containing sensitive environmental attributes which must be protected as part of any future development. The proposed development ensures that the environmental values of the land are protected and that the development footprint is separated and dispersed over the eastern portion of the land. In this way, the visual impact of the development form is minimised and the open field landscape of the land is maintained and improved.

The proposed development is compliant with the relevant general provisions of the Rural zone, which compliance is detailed at **Table 9.**

TABLE 9: COMPLIANCE WITH GENERAL PROVISIONS OF RURAL ZONE

PROVISION	***PLANNING JUSTIFICATION***
4.11.2 General Provisions *On all land zoned Rural in the Scheme Area, unless otherwise recommended in the Rural Land Strategy: -*	
a) Setbacks: All development, including the clearing of land, shall be setback a minimum of 30 metres from the primary street and 10 metres from all other boundaries, other than for the purpose of providing a fire break or vehicular accessway.	The development and clearing on the land is setback as follows: Primary Street (Folly Road): 30m Secondary Street (Young Road): 30m Rear Boundary (East): 10m Side (West) boundary: 20m from the edge of the floodplain and 300m from the boundary. **Compliance is achieved.**
b) Clearing of Vegetation: No native or remnant vegetation shall be removed or cleared unless approved by the local government, and other than for the purpose of a fire break, fire protection within an asset protection zone, dwelling, outbuilding, fence, and vehicular access or where such vegetation is dead, diseased, or dangerous.	Most of the native remnant vegetation on the land is to be retained. Only two existing (2) trees on the land are required to be removed. One (1) of these trees is unhealthy and a potential hazard) is required to be removed. The second tree is to be removed from behind the Temple in order to achieve compliance with the bushfire management requirements. Extensive planting of native plant species is proposed around the site to assist in providing further softening of the built form and to improve the overall rural character of this setting. **Compliance is achieved.**

***(CONT.)* TABLE 9: COMPLIANCE WITH GENERAL PROVISIONS OF RURAL ZONE**	
PROVISION	***PLANNING JUSTIFICATION***
c) Agricultural Pursuits: Agriculture - intensive or rural pursuits, and the breeding and keeping of animals for commercial gain, shall not be permitted without the prior approval of the local government. The local government will only grant approval after being satisfied that the character and amenity of the site will not be adversely affected and the land is capable of supporting the activities when the land management practices to be implemented by the applicant will be considered. *The local government may, in granting approval, impose limits on stocking, having due regard to the Stocking Rate Guidelines provided by the Department of Agriculture and Food, and any other condition it sees fit to maintain the environmental quality, landscape character and amenity of the site and locality.*	**Not applicable.**
d) Rural Subdivision: The subdivision of rural land will only be supported by the local government where the subdivision does not result in an increase in lot density in the case of a boundary realignment. Such subdivision shall not impinge on the ability of adjacent lots to achieve further subdivision.	**Not applicable.**
e) Peel Harvey Coastal Plain Catchment: In accordance with the provisions of clause 5.1, the local government shall be guided by the objectives and provisions of the policy statement contained in the Environmental Protection Policy (Peel-Harvey Estuarine System) 1991 and the State Local Planning Policy No. 2.1 - Peel-Harvey Coastal Plain Catchment, in determining applications within the subject area.	Refer to **Table 3** of this report, which details the compliance of the proposed development with the SPP 2.1. **Compliance is achieved.**
f) Serpentine River and Peel Drains: The local government shall be guided by the recommendations of the Serpentine River Flood Study, administered by the Department of Water and Environmental Regulation, in determining applications adjacent to the Serpentine River or the network of secondary Peel Drains.	The WMS confirms that there are no waterways or drains located on the site. The southern extent of Folly Pool and the Peel Main Drain are located adjacent to the western side boundary of the land. The WMS notes that the Peel Main Drain flows in a southerly direction and discharges into the Serpentine River at Keralup Pool, approximately 10km south of the site. The development of the site is contained within the eastern part of the site, approximately 350m from Folly Pool and setback 20m from the floodplain. This ensures that the development is restricted to the area of the land which does not flood. **Compliance is achieved.**
g) Swan Coastal Plain Lakes: In accordance with the provisions of clause 5.2, the local government shall be guided by the objectives of the Policy Statements contained in the Environmental Protection (Swan Coastal Plain Lakes) Policy 1992, in determining applications within the subject area.	Not applicable. This policy has been repealed. **Compliance is achieved.**

Proposed Land Uses

Place of Worship (Predominant Land Use)

The proposed development comprises of a temple for religious worship (Hindu faith) purposes as its primary use, which use fits within the land use category of 'Place of Worship', which is described as meaning:

> *'a premises used for religious activities such as a chapel, church, mosque, synagogue or temple.'*

At Table 1 – Zoning Table of TPS 2, the land use permissibility of a 'Place of Worship' is identified as being an 'A' use on land which is zoned Rural.

This means that the development and land use can be considered for approval by the City following the outcome of the public consultation period in accordance with Clause 64 of the *Planning and Development (Local Planning Schemes) Regulations 2015*.

The development includes a range of ancillary uses to the Temple proper for use by the Hindu community, including: a **multipurpose hall**, **dining hall** and **library**. These ancillary buildings provide space for a variety of activities, including teaching and reading of Vedas literacy, meditation classes, dancing, yoga, and self-development. These buildings are best described as religious activities associated with the Temple and therefore also fit within the land use category of a 'Place of Worship'.

Reception Centre (Incidental Land Use)

The main hall is proposed to be used occasionally for wedding celebrations for members of the Temple community. These wedding are religious ceremonies, conducted by the Temple Priest. The occasional nature of the use of the facilities as a 'Reception Centre' is proposed as incidental to the predominant use of Place of Worship.

Priest Accommodation – Two (2) double storey Caretaker's Dwellings (Incidental Land Use)

Two (2) double storey dwellings are proposed on the land to provide accommodation for the two (2) Temple Priests and their families.

These dwellings provide permanent living accommodation for the Priests, who provide caretaker roles associated with the Temple.

These dwellings are therefore best categorised under the land use of Caretakers Dwellings. The use of these dwellings are incidental to the predominant land use, as the housing is specifically provided and necessary as part of the overall functioning of the Temple.

The land use category of a 'Caretaker's Dwelling' is classified as a permitted 'IP' land use within the Rural zoning of the land. This means that the land use is capable of being considered on the land, should it be deemed to be incidental to the predominant use of the land.

Ancillary Accommodation – Occasional Visitors (Incidental Land Use)

A separate single storey dwelling is proposed adjacent to the Young Road frontage of the land, which offers short term accommodation for occasional visitors to the Temple. These guests of the Temple include international visitors and specialist Priests invited to stay in order to attend specific Hindu ceremonies. The guests also provide other volunteer services to the Temple, including (but not limited to): distributing food (free of charge) to the community prepared in the kitchen on site; giving presentations to the community; gardening; and general grounds maintenance.

This accommodation is incidental to the predominant use of Place of Worship, as the accommodation is offered to members of the religious community who provide volunteer services to the Temple on the land for short period of time. The typical length of stay for a guest is around five (5) days.

It is considered that this particular use is best described under the land use category of 'Ancillary Accommodation', which is identified as an 'IP' use in the Rural zone. This means that the land use is capable of being considered on the land, should it be deemed to be incidental to the predominant use of the land.

Car Parking Requirements

At Table 2 – Car Parking Table of TPS 2, the minimum parking requirements are specified. The following **Table 10** details the parking provisions required for the proposed uses on the site.

TABLE 10: COMPLIANCE WITH CAR PARKING REQUIREMENTS			
		Required	**Provided**
Place of Worship	1 bay per 4 persons accommodated	100 (based on maximum capacity of 400 persons)	101, including two (2) accessible bays.
Reception Centre	1 bay per 4 persons accommodated	As above. The reception centre is not to be used at the same time as the Temple.	As above. The reception centre is not to be used at the same time as the Temple.
Service/loading bays (kitchen use)	-	-	2
Ancillary Accommodation	*1 bay, in accordance with C3.1 – Location B, SPP 7.3 - Residential Design Codes Volume 1.*	1	4
Caretaker's Dwellings (x2)	*1 bay for each dwelling, in accordance with C3.1 – 1 bedroom dwelling, Location B, SPP 7.3 - Residential Design Codes Volume 1.*	2	4
TOTAL		**103**	**111**

Notwithstanding that the required number of car bays are provided on site to support this use, it is important to highlight that the Temple will **not** utilise the full capacity of the car park on a regular basis. This is because there are no set days or times for worship at a temple in the Hindu faith.

The Temple proper is a spiritual place for the Hindus. Worship mostly takes place in the domestic home. Hindus are not called to prayer. Hindus instead visit the Temple of their own accord to make offerings to the murti (shrine).

The only occasions whereby the car parking bays provided on site are anticipated to be utilised close to capacity are during the Ghindu festival and in association with the occasional wedding. These occasions are likely to occur on 12 days in a calendar year.

PLANNING POLICY 3.1.1 - RURAL LAND STRATEGY

The subject site is located within Policy Area 2 of the City's Planning Policy No. 3.1.1 – *Rural Land Strategy* (**RLS**). The following **Table 11** details the requirements and the compliance with the proposed development with the requirements of the RLS.

TABLE 11: COMPLIANCE WITH GENERAL STANDARDS of RLS

REQUIREMENT	***PLANNING JUSTIFICATION***
Where no building envelopes are required, all development, including the clearing of land, (except for firebreaks), shall comply with the following setbacks, unless otherwise specified in TPS No.2: - *50 metres from the Kwinana Freeway reservation.* - *30 metres from other subdivisional roads (primary setback).* - *10 metres from all other boundaries.*	The development footprint is fully compliant with the setback requirements of the RLS: - The nearest building (the Temple proper) is setback approximately 450m from the Kwinana Freeway reservation. - The nearest building (multipurpose hall) to Folly Road (Primary Setback) is setback a distance of 30m. - The nearest building (ancillary accommodation) to Young Road is setback at a distance of 30m. - No development is located within 10m from the shared boundary (to the north), being the rear boundary of the land. The development is set back further than the two (2) existing rural sheds on the land, which are set back at a distance of 8.0m from the common boundary. One (1) of these sheds is proposed to be demolished as part of this Application. The other shed will be retained. **Compliance is achieved.**

***(cont.)* TABLE 11: COMPLIANCE WITH GENERAL STANDARDS of RLS**	
REQUIREMENT	***PLANNING JUSTIFICATION***
No clearing being permitted without the specific approval of the City.	The land is not required to be cleared. The EAR describes the site as comprising of grazed land with some scattered mature trees. The mature trees are to be retained, expect for two (2) trees. One (1) of the trees is required to be removed as it is not in good health and is therefore deemed too dangerous to retain. The other tree is required to be removed to achieve compliance with the bushfire management requirements. Both trees to be removed are identified on the attached plan and proposed to be removed as part of this Application. **Compliance is achieved.**
On-site effluent disposal servicing development on the lots shall be to the satisfaction of the City.	The proposed secondary treatment system with nutrient removal capacity is detailed in the attached WMS.
All buildings and outbuildings are to be sympathetic in design, materials, and colour to compliment surrounding landscape elements and be sited away from focal points and located where screening vegetation or landform can be utilised.	The buildings are specifically designed to fit within and maximise connection with the surrounding rural environment. The buildings are positioned in a cluster formation with open fields and additional landscaping being proposed between the buildings on the land and around the periphery of the site to ensure the built form absorbs into the land, to a similar extent that the existing rural structures on the land blend with the rural setting. The use of traditional rural building materials of limestone and timber posts with colorbond roofing material further assists in ensuring the built form of the Temple and the associated buildings complement within the rural character of this semi-rural location. **Compliance is achieved.**
Strategic revegetation priority areas along Millar Road, Doghill Road, St. Albans Road, Telephone Lane, Folly Pool, Maramanup Pool and the Serpentine Main Drain and the Peel Drain.	The development is not located within a revegetation priority area. **Compliance is achieved.**
A 50m landscaped buffer is required along the Kwinana Freeway reservation.	The land is buffered to the Kwinana Freeway Reservation by a Parks and Recreation Reserve which contains a Bush Forever Site and the Folly Pool CCW. Therefore, this requirement for a landscape buffer is not applicable, nor required, given the parks and recreation reservation provides a substantial buffer of protected vegetation between the land and the Freeway. **Compliance is achieved.**

***(cont.)* TABLE 11: COMPLIANCE WITH GENERAL STANDARDS of RLS**	
REQUIREMENT	***PLANNING JUSTIFICATION***
Compliance with State Planning Policy No.2.1 - Peel-Harvey Coastal Plain Catchment.	Refer to **Table 3** of this report, which details the compliance of the proposed development with the SPP 2.1. **Compliance is achieved.**
The City shall be guided by the recommendations of the Department of Water report, 'Hydrological and Nutrient Modelling of the Peel-Harvey Catchment' (February, 2011), in determining suitable land uses (and soil types) within the Peel-Harvey Environmental Protection Policy area.	Refer to **Table 3** of this report, which details the compliance of the proposed development with the SPP 2.1. **Compliance is achieved.**
Bushfire Management to be addressed in accordance with the WAPC Guidelines for Planning in Bushfire Prone Areas.	Refer to Section 2.1 of this report, SPP 3.7 which details the BMP and bushfire management requirements. **Compliance is achieved.**
Assessment of planning proposals (except for conventional agricultural or rural pursuits) in the vicinity of the Dampier to Bunbury Natural Gas Pipeline and the Parmelia Gas Pipeline to be guided by WAPC Planning Bulletin 87 - High Pressure Gas Transmission Pipelines in the Perth Metropolitan Region and any relevant provision in TPS No.2.	The proposal has been considered against the requirements of draft DC Policy 4.3. The section of the development which is located within the trigger distance of the Pipeline is the residential component. This land use (residential) is identified as being exempt from the requirements of this policy. **Compliance is achieved.**
Buffer requirements to sensitive uses to be guided by State Planning Policy No.2.5 – Rural Planning and/or the Department of Health Guidelines for Separation of Agricultural and Residential Land Uses (2012).	The land is sufficiently separated from agricultural land uses to ensure there will be no land use conflict as a result of the proposed use. The residential component of the land use is classed as a 'sensitive land use' in accordance with the EPA Guidance Note No. 3 – Separation Distances between Industrial and Sensitive Land Uses (2005). In regard to nearby agricultural uses, the nearest land use is the West Coast Chaff which is a stock feed, fodder and supplement provider. The generic buffer distance stated in Table 1 of the EPA Guidance Note indicates a generic buffer distance of 500 metres for 'animal feed manufacturing' industry uses. The proposed guest accommodation is located in the north eastern corner of the site, adjacent to Young Road. This location is adjacent to the residential dwellings located on the eastern side of Young Road, which when measured from the frontage of West Coast Chaff to Young Road are situated closer to the agricultural use than the proposed dwellings included with this Application. The proposed separation distance to this business is adequate to comply with this requirement. **Compliance is achieved.**

***(cont.)* TABLE 11: COMPLIANCE WITH GENERAL STANDARDS of RLS**	
REQUIREMENT	***PLANNING JUSTIFICATION***
With respect to Precinct 2A, to ensure adequate flood protection for dwellings: *(a) A minimum building floor level of 0.5 metres above the 1:100 year flood level in areas of inundation is required and sand pads shall be graded and landscaped to the City's satisfaction; and* *(b) No development is permitted within 20 metres of the 1:100 floodway.*	The proposed finished floor levels of the individual buildings are identified on the attached plans as: Temple: RL 6.37 Priest Dwellings: RL 5.70 Hall, Dining and Library: RL 5.60 Ancillary Accommodation: RL 5.60 These levels ensure the floor level of each building achieves the required 0.5m separation distance to the groundwater level. The development is set back a minimum of 20m from the 1:100 year flood line. **Compliance is achieved.**
Within Precinct 2A land uses other than a single house that are permitted or may be permitted by the City pursuant to TPS No.2 shall only be permitted when the City is satisfied following consultation with the Department of Water and Environmental Regulation that the land use does not involve excessive nutrient application or the clearing of the land.	The proposed development of the land as a Place of Worship is capable of being considered for approval pursuant to TPS 2. The proposed development will not result in excessive nutrient application nor will it result in clearing of the land. The design is environmentally friendly with a focus on sustainability through water conservation and revegetation. **Compliance is achieved.**
With respect to Precinct 2A, refer to TPS No.2, Schedule No.4 for standards relating to the following: - *Potable water.* - *Stocking rates.* - *Fencing.* - *Stormwater.* - *Groundwater extraction.*	The subject land is not identified as being within a Special Rural area. **This requirement is therefore not applicable.**

The key elements of *Precinct 2A - Baldivis (East)* are identified in the RLS. These elements highlight the environmental significance of the location and the need to ensure that it is preserved.

The desired future character for this area further demonstrates the need to support development and land use in this location which by its nature will nurture and protect this sensitive natural environment from further damage, as stated below:

> *Notwithstanding the flat, low-lying nature of the area, the Baldivis (East) precinct contains multiple overlapping ecological values and linkages that need to be protected from the adverse impacts of development. These areas of environmental significance are fundamental to the remaining visual character and amenity of the area and their ongoing preservation is a key strategic objective of the RLS.*

The key elements vulnerable to development pressures are identified in this Policy, which are listed below.

- ***Clearing of remnant vegetation would have a major detrimental impact upon areas of environmental and landscape significance with resultant adverse impacts upon the visual character and amenity of the area.***

The proposed development will not result in the clearing of any remnant vegetation.

- ***Clearing along road frontages would have a major detrimental impact upon the visual character and amenity of the area.***

The development does not propose to clear vegetation along the road frontages. The Landscape Master Plan included with this Application illustrates the proposal to plant additional native vegetation along the boundaries of the land in order to improve and enhance the existing rural character and semi-rural amenity of this location.

- ***Loss of Banksia woodland.***

The proposal does not result in the loss of banksia woodland.

- ***Loss of Carnaby's Cockatoo habitat.***

A tree survey was undertaken for the land in order to identify any habitat trees suitable for use by the endangered Carnaby's Black Cockatoo, as detailed in the EAR. Of the seven (7) trees observed as containing hollows, the EAR determined that none of these hollows were suitable for use by the Black Cockatoo species for nesting.

- ***Loss of LNAs.***

The proposed development does not result in the loss of an LNA.

- ***Loss of ecological linkages.***

The proposed development does not result in the loss of any ecological linkage.

- ***Potential for CCWs, REWs, PECs, associated vegetation, and buffers to be compromised by development.***

The proposed development will not in any way compromise the CCW or the associated vegetation and buffer. The development is set back approximately 250m from the Folly Pool CCW.

- ***Potential for the Bush Forever sites, Peel Main Drain and Serpentine River to be compromised by development.***

The development is sufficiently setback from the adjacent Bush Forever site and Peel Main Drain to ensure these environmental elements are protected and in no way compromised.

The Hindu community seeks to manage this property for its religious purposes in a manner which nurtures the natural environment. The development ensures the remnant vegetation on the land is retained and proposes to plant additional native species in order to enhance the visual character and amenity of this semi-rural location. The care and management of the land by the Temple and its community will ensure the land is protected from environmental damage into perpetuity.

3.0 PROJECT DESCRIPTION

The proposed development is illustrated on the attached architectural drawings prepared by the Project Architect. Further detailed description of the architectural design (to the summary provided below) is contained in the separate document titled *Architectural and Visual Landscape Report* prepared by the Project Architect and submitted with this Application.

The proposal seeks approval for a Sri Balaji Temple together with the associated uses on the land for worship and other related religious activities.

The following land use categories are relevant to the consideration of this Application:

1. Place of Worship (Predominant)
2. Reception Centre (Incidental)
3. Caretaker's Dwellings for Priests (Incidental)
4. Ancillary Accommodation for Temple Guests (Incidental)

The design of the development involves the clustering of the built form with vast areas of open field between each grouping of built form. A primary focus of the design is to preserve the natural beauty and ecological value of this site. It proposes to retain the native vegetation on the land and introduce additional native plant species to the site as a way of enhancing the visual amenity of the rural location and to ensure the built form visually absorbs into the site, when viewed from the bounding road network.

The design seeks to ensure that the post-development drainage is retained to pre-development levels, with NIL nutrient runoff to the Folly Pool wetland or swale drains occurring from this development operating on the land.

The development is proposed to utilise secondary treatment systems with nutrient removal capabilities. The treated wastewater is to be disposed in an area with at least 1.5m separation to the maximum groundwater levels. The design and location of the disposal area is detailed in the WMS.

The development and land uses proposed for this site present the City with an opportunity to support, and JDAP to ultimately grant approval for a land use and development which will protect the ecologically sensitive values of this land and maintain these qualities into perpetuity.

The architectural and operational details of the development and the use of each of building are described in the following sub-sections.

3.1 Architectural Considerations

The intrinsic, essential design details of the Sri Balaji Temple

The subject land proposed for the Sri Balaji Temple development has been specifically selected for its location.

The site is ideally located on the fringe of a semi-rural area with direct vehicle access to the site from the Kwinana Freeway and the regional road network, so as not to cause any traffic impact on the local road network.

The site retains a strong connection to nature and is valued for its ecological importance.

The semi-rural setting and the desire to nurture and protect the ecological values of the site are some of the key elements of design for a Hindu temple.

The architectural design focuses on the Hindu philosophy of combining the essential energies of water, air, fire, earth, and space in order to create harmony and balance in life.

A connection to the natural environmental as well as providing the community with a strong ecological connection to the land within which the Temple suits is essential aspect of the Hindu faith and worship.

Fencing:

The development proposes traditional timber post and wire fencing around the periphery of the land.

An internal (permeable) fence is proposed to surround the Temple proper, it is to be constructed of limestone pillars and infill panels. The height and materials of the fencing is detailed in the attached Elevations.

Temple Proper

The Temple is a highly articulated built form which incorporates the key elements of nature in its architecture to provide a connection between the physical world of man and the divine world of God.

The Temple is situated to the west of the main entrance driveway and setback approximately 45m from Folly Road.

The Temple is proposed to be constructed of masonry building materials, rendered and clad in traditional materials of local limestones and timber post details.

The Temple comprises of a single storey built form (it does not contain a second floor level) with an approximate wall height of 8.9m above NGL.

The total floor area of the Temple is approximately 975m^2. A significant portion of the floor space comprises of the entry lobbies, internal permanent deity enclosures and areas reserved for use only by the Priests. The total useable floor area for worship in the Temple is therefore considerably less than the total floor area, arriving at a net area of 550m^2.

The main entrance to the Temple has a decorative statement which extends to a height of 14.8m above NGL.

The remaining three (3) entrance ways are framed with limestone detailing with heights of 12.8m above NGL.

Multi-Purpose Hall, Library and Dining Hall

The multi-purpose hall, library and dining hall are also proposed as single storey built forms.

The proposed hall, library and dining hall are sought for ancillary use by worshipers during their visits to the Temple proper. It is anticipated that worshipers will visit the Temple for prayer and following that, will move to the hall to further develop and engage in the various practices of Hinduism. Such practices include: Vedic chanting, reading of Vedas and Hindu literature, Bhajans, Indian dancing, and Sanskrit communications and yoga.

These incidental uses are not proposed to operate independently to the Temple proper.

The hall and dining hall are also proposed to be used for cultural functions, including use during the festival days.

The three (3) buildings are clustered together and separated from the Temple Proper. These buildings are surrounded with landscaping and open fields, and set back a minimum of 30.0m from Folly Road and a minimum of 8.3m from Young Road. This design is specifically proposed to ensure the bulk of the individual components of the development remain low impact and consistent with the rural setting.

The buildings are proposed to be constructed using the same range of traditional building materials as the Temple Proper. The design is reflective of the rural character of the locality, through its use of limestone blocks for the building form, together with timber framing and verandah posts and colorbond sheeting for the roofing. The roof pitch of these buildings is proposed at 10 degrees, which together with the materials, single storey format and surrounding external verandahs, is reminiscent of the rural homestead architectural characteristics and entirely appropriate as a built form outcome within this semi-rural setting.

The toilets for the Temple community are contained within the multi-purpose building, together with the other back of house rooms required for the use. In addition to this, toilet facilities are provided adjacent to the north of the Temple.

The internal layout of the three buildings and the interconnecting verandahs are illustrated on the attached plans.

Caretaker's Dwellings (Priests' Residences)

The two (2) Caretaker's Dwellings are proposed to the north of the Temple. These dwellings are proposed to be two (2) storeys in height.

The dwellings are to be constructed using traditional building materials, comprising of limestone construction, timber framework and colorbond roof sheeting.

The wall height of the dwellings is 5.8m above NGL.

Ancillary (Guest) Accommodation

The proposed ancillary accommodation is proposed to be setback 30m from Young Road.

This accommodation is proposed for occasional use by guests to the Temple.

The dwelling is proposed to be single storey in form and is designed to complement the surrounding rural character of this location.

Colours and Materials:

A schedule of colours and materials is attached to the Application.

3.2 Operational Considerations

On-site Parking

A total of 101 car bays are provided for the Temple use, including two (2) disabled bays.

In addition, two (2) bays are provided for delivery services associated with the dining hall; four (4) bays are provided for the priest dwellings; and four (4) bays are provided for the ancillary (guest) accommodation. A total of 111 bays are provided, which exceeds the required 103 bays. (Refer to **Table 10**: Car Parking Requirements.)

The car parking areas are separated to reduce the visual impact and for functionality reasons.

Opening Hours

The Temple and its associated uses are open throughout the week, with the community able to visit the Temple for worship between the hours of 6:00am to 12 noon and 5:00pm to 8:00pm. Other activities available at the Temple will occur on specific days during certain times. These activities might include yoga classes, scripture classes, the occasional wedding and Hindu festivals.

Acoustics

An Acoustic Report prepared by *Marshall Day Acoustics* has been prepared in support of the proposed development and range of uses.

The Acoustic Report provides a range of noise management measures to ensure the use on the land can operate in a manner which will have no adverse impact on the surrounding rural environment.

4.0 CONCLUSION

This Application seeks approval for the Sri Balaji Temple Development at 67 Folly Road, Baldivis.

The proposed development and land use is consistent with the State and Local Planning Framework.

The proposed development and range of incidental land uses are capable of approval under the Rural zoning of the land, pursuant to the City's *Town Planning Scheme No. 2*.

Further, the development as proposed meets with the overarching objectives and general intent of the Rural zone, as described in *Town Planning Scheme No. 2*.

The land is identified in the *Rural Land Strategy* of the City as containing sensitive environmental qualities. It is also recognised in the Strategy as being unsuitable for priority agricultural use.

An alternative, environmentally sensitive development and land use proposal is therefore identified as the preferred outcome for this landholding.

The proposed Temple and its associated uses are carefully designed to specifically ensure the protection of the natural environment, in accordance with the policy requirements of this Strategy.

In this regard, it is noted that the land is not yet able to be connected to the reticulated water and sewer infrastructure system, as it has not yet extended to east of the Kwinana Freeway in this location. This development proposes to adopt specific measures to protect the sensitive environmental qualities of the land and in doing so proposes on-site environmentally sensitive servicing methods to adopt until such time that the servicing infrastructure is extended to this location to enable the development the ability to connect to it.

The approval of this development and land use will remove the current environmental risks associated with the range of agricultural land uses capable of utilising the land and the inevitable nutrient runoff into the surrounding waterways caused by those uses. The development protects the remaining (albeit sparse) remnant vegetation on the land; avoids any adverse impact occurring on the nearby Folly Pool CCW and its associated vegetation; will have NIL adverse impact on the adjacent Bush Forever site, the Peel Main Drain and the Serpentine River; protects the visual character and amenity; and is not a land use proposal resulting in an unacceptable bushfire risk. The proposal is therefore entirely complaint with the strategic intent of the future character sought for the Baldivis (East) Precinct.

This development is a proposal which presents an excellent opportunity for the City to support an environmentally sustainable development outcome on this ecologically sensitive site in a manner which satisfies the key strategic objective of the *Rural Land Strategy*, being to preserve the visual character and amenity of the location.

Accordingly, we respectfully seek the support of the City and the approval of JDAP, with any reasonable conditional requirements which might be attached.

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Architectural and Visual Landscape Report

Proposal: **Sri Balaji Temple Development**
67 Folly Road Baldivis WA

Client: **Jeeyars Acharya Peettam Australia Ltd (JAPA)**
58b First Avenue, Claremont, WA

Prepared By: **Archetype Design Studio**
041 236 9191

Date: 09 December 2021
Issue: 01 FINAL

Superseded

We acknowledge the Traditional owners and Custodians of this land, the Binjareb and Whadjuk, Nyoongar peoples and their Elders, present, past and emerging. We wish to acknowledge and respect their continuing cultures and connection to the land, waters and community, as well as the contribution they make to the life of this city and this region.



CONTENTS

1.0	INTRODUCTION	3
2.0	ARCHITECTURAL OUTLINE OF THE PROPOSED DEVELOPMENT	5
2.0	Proposed Development Plan	
2.1	Facilities of the Proposed Development	
2.2	Access	
2.3	Parking	
2.4	Times of Use	
2.5	Water tanks	
2.6	Lighting	
2.7	Staging of the Development	
2.8	Staging of the Development Plan	
2.9	Materials and Colours	
2.10	Landscaping	
2.11	Landscaping Concept Plan	
3.0	VISUAL LANDSCAPE EVALUATION	19
3.1	Scope of Evaluation and Context	
3.2	Regional Context	
3.3	Local Context	
3.4	Site Context	
4.0	VISUAL LANDSCAPE ASSESSMENT AND VIEWS	32
4.1	Existing Site: Visual Landscape Views, Experience and Values	
4.2	Proposed Development and Impact on Visual Landscape Views, Experience and Values	
4.3	View sheds	
5.0	STRATEGIES FOR MANAGING VISUAL LANDSCAPE CHARACTER	50
5.1	The Temple	
5.2	The Priest Residences, Temple Kitchen and Ablutions	
5.3	The Secular Buildings	
5.4	Access Crossover and Road	
5.5	Parking	
5.6	Existing Remnant Vegetation	
5.7	New Landscaping	
5.8	Staging of the Development/ Plan	
5.9	Materials and Colours	
5.10	Lighting	
6.0	CONCLUSION	52

Superseded

1.0 INTRODUCTION

This Architectural and Visual Landscape Report has been prepared by Archetype Design as part of a Development Application for a new proposed Sri Balaji (Hindu) Temple Development located at 67 Folly Road, Baldivis in the City of Rockingham.

Rockingham Council Planners have requested a *Visual Landscape Evaluation and Assessment* as a component of this development application to consider how the proposal will be seen and its character consistency with the local area.

1.1 Jeeyar Educational Trust (JET) Australia Foundation

The Jeeyar Educational Trust (**JET**) Australian Foundation has purchased this plot of land on the eastern side of the freeway at Baldivis, through JAPA Ltd.

A summary of the **JET** community principles and activities are as follows:

- An Australian not for profit and Hindu religious organisation registered in Australia in 2008 with Centres in Brisbane, Sydney, Melbourne, Adelaide and Perth
- Key Principles of JET : Worship Your Own and Respect All
  Serve All Beings As Service To God
- Community based with dedicated volunteers young and experienced people, both professional and non-professional, motivated to serve the community and promoting equality, gratitude, harmony and peace through various activities such as:
  Social : Blood Donation, Covid relief activities, Health Awareness
  Religious : Universal peace and harmony through individual and community practices
  Educational: Structured value based Scripture education for children
  Environmental: Tree Planting, Recycling plant visits
- Perth JET Community has 500 + families with 900 subscribed members in database since 2010.

Most of the families in the JET community live south of the river, in Baldivis, Rockingham and nearby suburbs and therefore have identified the proposed site as ideal for their development. The JET community are proposing a development that can provide the following amenity for their families:

- Place of worship of Lord Venkateshwara, otherwise known as Lord Balaji.
  As such this will be a Hindu Temple.
  One of the oldest and holiest Hindu Temples dedicated to Lord Balaji is situated in the country side at the foot of a range of hills in the state of Andhra Pradesh in India. It is traditional for Temples around the world dedicated to Lord Balaji to be situated in a rural context facing the hills towards the East. For this reason, the property situated at 67 Folly Road in Baldivis represents an ideal site for the first Balaji Temple in Perth, being located on the Eastern side

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of the freeway, where the site is bordered by rural landscapes and is facing the eastern foothills.

- Place to teach human value- based education classes to uphold the Vedic traditions
- Place to practice and teach yoga and meditation
- Establish a community kitchen to prepare food for distribution to the needy
- Place to gather as families to support each other, especially after prayer
- Place to be able to hold Hindu traditional weddings and gatherings
- Library for holding spiritual texts and resources
- Place offered to stay for visiting guests of the Temple
- Place to practice environmental preservation, tree planting and land sustenance activities

The JET community are proposing to develop a cultural centre alongside the Temple on this site, to provide the above amenities for its community including a Multipurpose Hall, A Dining Hall, Library and Guest Accommodation. The Temple will also have some ancillary buildings including Priest Residences, a small Temple Kitchen and an Ablutions building. All necessary practises of best design have been incorporated to ensure the Temple building and its supporting secular buildings are absorbed and blended into the site so as not to disrupt the visual amenity of this rural area, but in fact enhance the site by way of new landscaping and architectural typology that is familiar and characteristic of the region.

The subject site and proposed development is immediately situated on the freeway 'off ramp' on Folly Road and as such affords convenient immediate access for JET community members without commuting throughout the adjacent rural neighbourhood.

The Report that follows describes the new development proposal in terms of the architectural elements of building, use, and staging followed by the more specific Visual Landscape Evaluation and Assessment, which highlights further the strategies used to both absorb and blend the development into the site.

Superseded



2.0 ARCHITECTURAL OUTLINE OF THE PROPOSED DEVELOPMENT

See Architectural Drawings A01 to A11 for full description of the development

01 Location Plan
02 Site Plan 1:1000
03 Site Plan 1:500
04 Temple Plan
05 Temple Elevations
06 Multipurpose Hall, Library and Dining Hall Plan
07 Multipurpose Hall, Library and Dining Hall Elevations
08 Accommodation Guest Plans and Elevations
09 Landscaping Concept
10 Staging Plan
11 Perspectives



PROPOSED DEVELOPMENT SOUTH ELEVATION



PROPOSED DEVELOPMENT EAST OF MID TREE LINE 1:500 (@ A1)

Superseded

2.1 Facilities of proposed Development

Facilities proposed in the development are 'divided' into 2 types:

a) **Religious buildings** being the main Temple, with the ancillary buildings of Temple Kitchen, Priest Residences and Ablutions

The main Temple will serve the JET community as a place of prayer and worship.
The form of this building reflects an architecture typology typical of Indian Temples. This main building is essentially a large rectangular prayer hall with sculptured 'Goporams' (entry 'gateway' features) at the four cardinal entry points into the building.

The Temple Architecture is designed according to the principles of Vastu Shastra, an ancient Indian body of knowledge which provides guidance on siting and design. The Temple entry must face East and preferably be sited parallel to cardinal directions. The decoration of the Temple building will be provided by professional artisans who richly and sacredly adorn the Goporams and façades with sculptural relief and motifs.

The Temple, with a recognisable Hindu Temple aesthetic, has been purposefully located at a cleared area of the site that is surrounded by existing tree lines and hedges thus obscuring it from people that are driving past the site on Folly Road, or approaching the site from Young Road.

As will be shown in the Visual Management Strategy, the Temple building has been sited strategically to be mostly 'non evident'. Materials and colours of the Temple will be selected to enhance the 'blending' aspect of the building into the rural landscape, such as with the use of locally resourced limestone cladding, bronze and timber details and earthy limestone renders together with a corrugated roof.

The Temple requires an important independent boundary fence to establish the energy rectilinearly around this sacred building. As the Temple is sited back from the road, out of public view, this fence is proposed as a series of decorated columns 1.6m high with discreet infill panels that will be very visually permeable. There is a 5m paved perimeter around the Temple building which allows a 'chariot' to be wheeled around the Temple on particular festival days.

ii) The Temple Kitchen is a small ancillary building that has a kitchen used only by the Priests of the Temple to make food offerings used in the ceremonies. These food offerings are for the deities in the Temple and are very low in volume. The kitchen is located close to the Temple for practical reasons. A store area for pantry goods and Temple ceremonial items is also included in this building.

Superseded

iii) The Ablution block is located close to the Temple for functional practicality. Male, Female and Disabled toilets are included as well as a shower and change room, which is often used as part of religious ceremonial washing.

iv) The Priests' Residences are located close to the Temple in order that the Priest can have ease of access. Two double storey houses have been planned, given that there are at least 2 Priests in attendance at the Temple. Often the Priest has a family as well, so the residences have been designed to cater for 2 x families at a minimum.

The above ancillary buildings to the Temple are located as a small **cluster** of buildings on the North West corner of the Temple, generally 'not evident' from Folly Road. A Courtyard entry to this hub affords a sense of both connection and separation for the Priests who will reside there. The living areas of the residences face North for better living amenity.

The form of the ancillary Temple buildings are simple rectilinear masonry construction, lightweight panel second storey and colourbond pitched gable roofs. Simple awning structures provide shade to the windows. A lean-to verandah gives shade to the living areas. This simple aesthetic is characteristic of other rural homesteads in the area.

v) The Chariot Store is an existing smaller shed structure on the northern boundary. This will house a small 'chariot', a wheeled cart used in the religious festivals and is wheeled around the Temple.

b) **Secular buildings** including a Multipurpose Hall, Dining Hall, Library and Guest Accommodation

i) The Multipurpose Hall can facilitate gatherings of up to 400 people seated at tables, designed primarily for cultural performances, weddings and other activities for the JET community.
The Hall has a commercial kitchen that can prepare food for patrons as well as cater for Hindu weddings from a servery area within the hall. A raised stage is provided for cultural performances and for staging the bridal party in weddings. Green rooms and storage space adjoin the stage. Male, Female and Disabled toilet facilities are provided within the building for convenience, but can be also accessed from the covered walkway from the Dining Hall and the Library. A northern garden is proposed for the Hall.

ii) The Dining Hall operates during lunch and dinner on Fridays and the weekend to serve those in the community that wish to stay for a meal after attending worship at the Temple. It is café style, where food is prepared in a commercial standard kitchen. A children's playground is in close proximity in north courtyard. The dining hall can serve about 80 people seated.

iii) The Library is a space where structured value based scripture education for children can be taught in flexible sized spaces. Room dividers will be used to allow the space to be opened up

Superseded

for larger group learning. The JET community will hold a collection of religious texts and resources to be kept in the library and available for loan or use in the space. The library will also cater for small group learning of yoga classes, Sanskrit language and other cultural learnings.

The **Multipurpose Hall, Dining Hall and Library** are clustered around a large entry courtyard and are in close proximity to the parking area. A covered walkway connects these secular buildings to the Temple building. The architectural forms of these building are designed to blend into the rural character of the immediate surrounds. Designed as simple rectangular buildings arranged around a courtyard reflect the clustering of buildings in the neighbouring properties. Colourbond pitched gable roof forms, post and beam verandah systems and a general linearity of building expression are highlighted in these secular buildings which are the visible aspect of the development. The scale of each of the buildings is also akin to the large shed structures on other rural properties in the area. Colours and materials will be a combination of mass wall (limestone and rendered brick), limestone cladding and render, timber post and beam, painted Hardie panel gable ends and dark colourbond roof to enhance the blending of the buildings into the landscape.

viii) Guest Accommodation is located closer to Young Road. A simple 'homestead' with 4 rooms to accommodate up to 8 people, this will provide short stay accommodation for visiting religious speakers and extended overseas community members. The rooms each have their own ensuite to be private and a communal kitchen and living space allows for visitors to relax and connect with each other. Covered parking for 4 cars is proposed access from the main car entry off Folly Road. This building being visible to both Folly Road and Young Road is designed to 'blend' architecturally into the landscape.

2.2 Access

The existing entry road and cross over will *not* be retained for the development.

A *new* crossover and entry road, including slip lane access, is proposed for the development, located further East on Folly Road, where it does not interfere with the access crossovers to the opposite neighbouring property on Folly Road. It is also proposed to have a low key roundabout at the entry road which is setback 30m from Folly Road boundary.

An emergency and service vehicles egress road is proposed for exit onto Young Road. This exit will only be utilised by FESA and Water Delivery trucks when necessary.

Superseded

2.3 Parking

Onsite parking providing bays for are based on a maximum of 400 people on site at any one time. Wedding or cultural functions in the Multi Purpose Hall will not be held concurrently with Temple functions.

General Bays	101 x car bays including 2 disabled parking bays
	2 x service bays for Multipurpose hall
2 Priest Residences	4 x covered car bays
Short Stay Accommodation	4 x covered car bays

Conceptually, the main parking area (65 bays + 4 Priest residence bays) are located between the Temple and the secular buildings, very well set back from Folly Road (average 62m). Existing trees together with new planting, and a walkway from the Temple to secular buildings will blend vision of the car park even more. Additional parking is located behind the Dining Hall and Multipurpose Hall out of lines of site from main view sheds along Folly and Young Roads.

2.4 Times of use and Activities

The main activity at the site will be morning and evening prayer sessions. Other activities include weekday yoga classes, weekend scripture classes, special Hindu Festival Days and Hindu Weddings.
Hindu prayer sessions are relatively unstructured and so attendance is generally spread out over the session.

Note 1: Hindu weddings *will not* occur on the same day as a special Hindu festival day so the maximum numbers of people at any one time would be 400 people on the development site.

Note 2: Strictly *no alcohol* will be consumed on site at any time being a religious requirement.

A summary of the expected activities, hours and attendance numbers are outlined below:

• Weekday Prayers (Mon-Fri)	25 - 50 people (morning session)	6am - 12pm
	25 -50 people (evening session)	5pm - 9 pm
Weekday Yoga Classes (2 per week)	20 people	6pm - 7pm
• Saturday/ Sunday Prayers	100 - 150 people (morning session)	6am - 12pm
	100 -150 people (evening session)	5pm - 9pm
Saturday/Sunday Scripture Classes	50 - 75 people(included in the above)	3pm - 6pm
• Special Hindu Festival Days occurring on average once per month		
If on a weekday	50 - 75 people (morning session)	6am - 12 pm
	200 - 250people (evening session)	5pm - 6pm
If on a weekend day	200 people (morning session)	6am - 12pm
	200 - 250 people (evening session)	5pm - 9pm
• Hindu Weddings occurring on average 6 times per year only on Friday nights or weekends		
	300 - 400 people	6pm - 12 am

Superseded

2.5 Water Tanks

Watertanks providing water for the site will use neutral colour bond colours and be landscaped to blend the tanks into the site. These tanks are located at northern boundary and mostly out of view of passing traffic.

2.6 Lighting

Lighting of the builldings will be sensitive and architectural to articulate way finding around the development. Lighting of the carpark area will be low level sensitively located so as to not spill onto adjoining properties or draw attention to the development from the roads. Uplighting to trees in surrounding gardens close to the buildings will be employed. The Temple will be architecturally up lit, however the entry statements will remain obscured from Folly and Young Roads.

2.7 Staging of the Development

See also Staging Plan below.

Stage 1 **DA +6 Months**
Earthworks (slabs for all buildings) and Landscaping
Footings and slabs of all buildings
Site Drainage
Major trees planted to allow established growth of large trees at outset

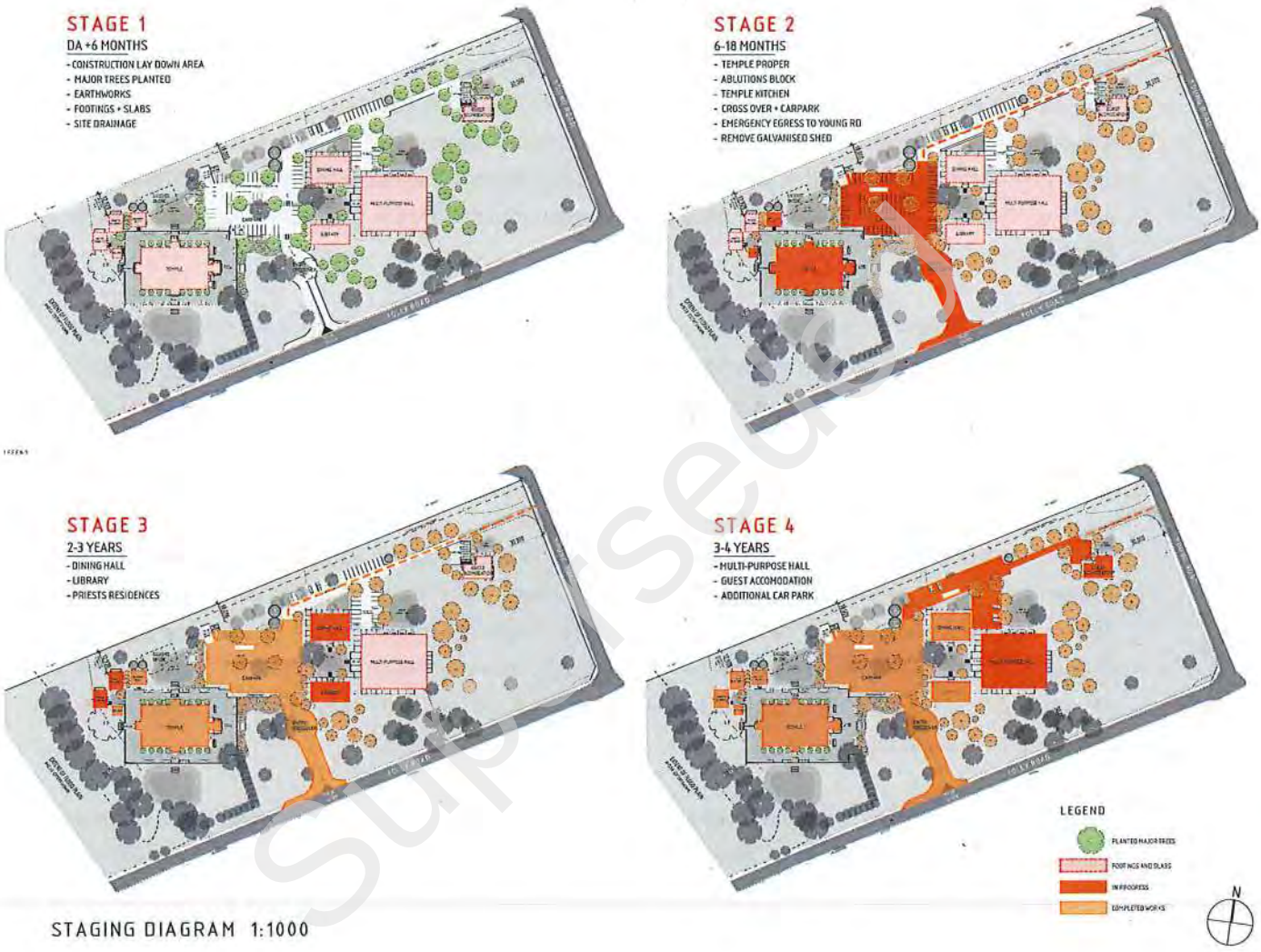
Stage 2 **6 – 18 months**
Main Temple Proper (Note this building is predominantly non evident)
Ablutions block
Temple kitchen
Cross over and Carpark
Emergency egress to Young Road
Remove Galvanised Shed

Stage 3 **2 – 3 Years**
Dining Hall
Library
Priests' Residences

Stage 4 **3 – 4 Years**
Multipurpose Hall
Guest Accommodation
Additional Carpark

Superseded

2.8 STAGING OF THE DEVELOPMENT PLAN



STAGING DIAGRAM 1:1000

Supplied

2.9 Materials and Colours

All selections of the proposed buildings will be sensitively chosen to ensure that the buildings will blend into the surrounding natural and built character of the locality.

The **religious buildings** are screened by existing mature trees and so mostly non-evident. The mass elements of facades and entry gopoprams of the Temple will be clad in part by limestone facings as well as rendered to match. Limestone is a locally acquired material of this Baldivis area. The sculptural carvings will be painted in monotones to match the neutral and natural colours of limestone. Windows will be dark bronze powdercoat aluminium and Roof will not be visible, behind a decorative parapet. Timber detail will be incorporated on the large entry doors which will enhance the rustic feel. At the main entry on the east, large powdercoat aluminium screens in dark bronze colours will screen the shoe storage area.

The perimeter fence to the Temple building will be as discreet as possible, given the functional requirement to the Vastu Shastra tradition. It is proposed to render the columns of the localised fence dark so as to recede their appearance. The infill panels will be very visually permeable and are a simple vertical wrought iron fenestration which will not be obtrusive from a distance especially through the dense existing hedging.

The **secular buildings** are conventional in construction: rendered masonry walls, lightweight custom orb pitched roof, sheet panelled gables and lightweight post verandahs. These buildings will adopt a palette of both limestone cladding and render to tonally match in with neutral stone colours and contrast with dark gables, and roof colours used to 'sit' the buildings into the site. Timber posts of the verandah walkways and timber decorative door details will bring a connection to the Temple building and a rustic rural feel to these buildings.

The **road and carparks** are proposed in a gravel/ laterite asphalt that will blend in with the natural surrounding of the bush becoming eventually a dark brown colour. No kerbing is proposed to maintain the low key appearance of the entry. Edge planting and the median strip will form a swale in the carparks.

Example palette of proposed materials and finishes



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2.10 Landscaping

The proposed development is located such that all remnant vegetation is retained, other than x 2 trees, one of which is in poor health and largely dead, and the other which will be too close to the new Temple for safe fire distances.

The Landscape concept proposed for the development has been developed as part of the Visual Management Strategy to both reduce the impact of the built forms on the natural landscape as well as enhance the experience and amenity for both the public, who will see the development and those that visit and use the facilities at the site.

New native landscaping is strategically located to assist in screening the buildings and carpark from view. Local native trees are proposed for biodiversity. The proposed landscape also enhances attractive outlook and extension from the buildings or courtyards with native garden edging proposed to the northern sides of the buildings and to act as paving and carpark swales. The concept of large open spaces with some protected, natural and organically defined edges where the community can enjoy nature and the landscape are envisaged.

The attached landscaping plans are conceptual and specific selections will be developed as the design development progresses. In concept, plant will comprise native and or waterwise species to reduce irrigation demand as well as fertiliser and pesticide use. The landscaping plans consists of the following areas (Refer also **Landscape Concept Plan** p16)

2.9.1 A. Landscape to South and East sides of buildings (along Folly and Young Roads)

Native trees and shrubs are proposed to further screen and blend the buildings into the natural landscape. These areas will emulate planting in a natural unstructured way and predominantly follow the building forms along Folly Road and Young Road. The site corner at Young Road and Folly Road has been left as the existing large grassy clearing to maintain the openness of the site and locality. (See Figure 1 below for selections)

i) Planting along the slip lane at Folly Road, consisting of native shrubs and trees to further screen the development.(*Melaleuca rhaphiophylla*)

ii) Planting of larger native trees to screen and blend the view of library and multi-purpose hall. These trees will emulate the cluster of existing trees on Folly Road and provide a continuous 'natural' flow of vegetation along the road thus enhancing the visual amenity of the site. Trees will include *Eucalyptus rudis and Melaleuca rhaphiophylla* which are both native to this area and already growing on site.

iii) Planting of larger native trees to screen and blend the view of multi-purpose hall. These trees will emulate the cluster of existing trees on Folly Road and provide a continuous 'natural' flow of vegetation along the road thus enhancing the visual amenity of the site. Trees will include *Eucalyptus rudis and melaleuca rhaphiophylla* which are native to this area and already growing on site.

Superseded

iv) Planting of native trees around guest accommodation to screen the building from view lines along Folly and Young Roads

Figure 1: Native tree selections for Area A around the site boundary providing fauna habitat opportunities in addition to screening the buildings and enhancing the visual amenity of the area.



Eucalyptus rudis
'Flooded Gum'
6-20m H
Will encourage black cockatoo habitat
Evergreen



Allocasuarina fraseriana
'WA Sheoak'
10m H x 6m W
Evergreen



Melaleuca rhaphiophylla
'Swamp Paperbark'
6m H x 3m W



Banksia Attenuata
'Candle stick Banksia'
2m-3m H x 2W
Evergreen



Banksia Menziesii
'Firewood Banksia'
5 – 10 m H x 5-10m W
Evergreen

Superseded

2.9.2 B. Landscape to Carparks

i) Main Carpark will have central trees to provide shade over cars as well as perimeter trees to screen cars and provide further shade.

ii) Linear carpark behind Dining Hall to have further trees planted to extend the existing wind row on the north and assist shading cars and parking area

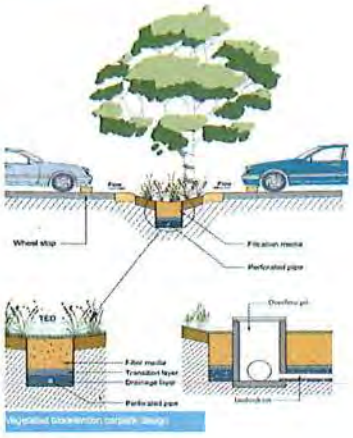
iii) Carpark behind Multi-purpose hall to have some trees and edge shrubs to assist in screening cars

The use of strategic landscaped swales areas to hold and infiltrate the larger rainfall events will be proposed to collect and infiltrate the stormwater at the surface. Garden edge swales at the carpark will serve this function. Examples of swale carpark edging and median strips below. (Fig 1)



Fig 1: Examples of Swale landscape areas within and at edge of carpark

Fig 2: Carpark and paved areas and diagram showing swale concept



The selection of trees for the Carpark areas are proposed as a combination of the Red flowering Mallee and the deciduous Claret Ash which can provide a large tree canopy for shade, and is a South Australian cultivar adapted to Australian conditions, has non invasive shallow roots and doesn't naturalise. It is also good to have some deciduous trees with higher water content in their leaves which will provide some protection to the buildings in the event of a bushfire.

Fig 3: Tree Selections in carpark and closer to building courtyards:



Eucalyptus Erythronema
Red Flowering Mallee
3-6m H



Fraxinus Raywoodii
Claret Ash
15m H 10mW

Superseded

2.9.3 C. Landscape to Courtyards

Native trees and shrubs are proposed to beautify and enhance courtyard areas and perimeters close to buildings.
See Fig. 4 + 5 for example selections and concepts.

i) Planting around the immediate vicinity of the Temple in planter beds located within the temple perimeter 'fence'. Feature trees with lower ornamental flowering shrubs and hedge bushes will be selected

ii) Planting of shrubs organically at outside perimeter of East side 'fence' of Temple and wrapping around to the south of the covered walkway on main carpark. Some smaller native trees will be incorporated.

iii) The courtyard North of the main Temple will have an organically structured planted perimeter and open space. Native grass will be explored. A large water feature is also part of this garden experience and its location and symbol holds sacred value to this development. It will be chlorinated and moving water. Native grass will be explored.

iv) The courtyard to the Priest Residences and Temple kitchen will have some native shrubs to create a sense of place, privacy, and enclosure for the occupants.

v) Planting of the main courtyard around which the secular buildings cluster. This will consist of different layers of plants to create a sense of nurtured garden providing a tranquil entry arrival space to these buildings. A small water feature is proposed to the central paved area. A shaded playground will be located north of the Dining Hall.

vi) Planting in the north aspect of the Multi-purpose hall to beautify the outlook will explore native grass and edge planting to create some sense of containment to the open space.

vii) Planting at the entry and to the north aspect of the Guest Accommodation to create a sense of enclosure and privacy, as well as screening of their car bays.

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Fig. 4 Organically structured native garden edge to minimal contained areas of grass (native lawn to be explored) and pathways











Fig. 5 Plant Selections for organically structured garden edges/ swales and courtyard planting.



Adenanthol Sericea
'Woolly Bush'
3.5m H 1.5m W
1-1.5mH/W



Syzygium Smithii
'Lily Pilly' Hedgemaster
1-1.5mH/W



Boronia heterophylla, various
'Red Boronia'
1mH x 1m W



Westringia Wyanabbie
1-1.5mH/W



Patasonia Occidentalis
80mH x 60mW



Dianella ensiformis, various
flax lily 'Silver Streak'



Agapantha
African Blue Lily
1.2M



Lomandra, various
'majestic pal'/Lime Light
'longifolia'



Anigozanthos
'Gold Velvet Kangaroo Paw'



Anigozanthos
'Bush pearl Kangaroo Paw'

Superseded

2.9.4 Hydrozoning

The planting zones and layers will utilize hydrozoning to maximize watering efficiency.

Area A: Native trees to Folly Road and Young Road elevations See Fig 1

Minimal watering zone requiring only hand watering in the hotter months as the young trees becomes established. The intention is to engage the community in a service activity whereby more established natives will be donated by each family and then a roster system will be established to hand water the trees when first planted. This activity will happen in Stage 1 to establish the trees along the road elevations of the development which will assist in blending the buildings as they are constructed. It is intended to time the planting of the young trees close to the winter months so as to require less hand watering.

Area B: Carpark Planting

Minimal watering zone requiring only hand watering in the hotter months as the young trees become established. The community will be engaged in the process as above. The carpark trees will be established after the carpark asphalt is put down in each stage. Planting in stages will be undertaken in order to strategically establish trees prior to the building stage.

Area C: Courtyard and Close to Building Planting

Secondary zone gardens requiring moderate watering will happen in Area C and will be sub surface drip irrigation connected to Water tank.

2.10 Landscape Concept Plan



LANDSCAPE PLAN 1:500 (@ A1)

3.0 VISUAL LANDSCAPE EVALUATION

3.1 Scope and Context of Evaluation

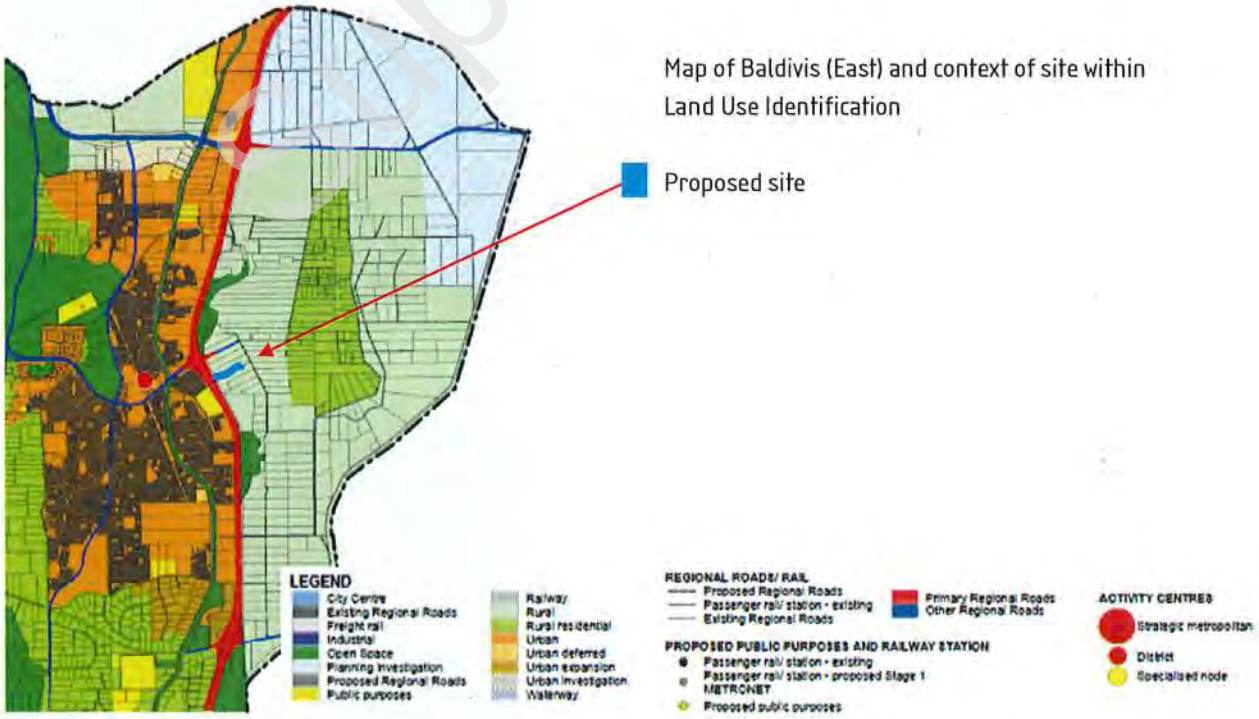
Guidance for undertaking a Visual Landscape Evaluation and Assessment is provided by the State Planning Authority, Department of Planning and Western Australian Planning Commission within the published manual *Visual Landscape Planning in Western Australia: A Manual for Evaluation, Asssessment, Siting and Design*; 2007 (VLPWA)

The Visual Landscape Evaluation has been an important tool used to understand what gives the landscape in the vicinity of the site its particular character and what forms the visual amenity experienced by those living and working in the area. The Visual Landscape assessment has become a useful tool in viewing and assessing the impact of this development on the landscape and to ensure that the development is sympathetic to the overall landscape, its character and values.

This report has been undertaken in accordance with the principles set out in the VLPWA including:

- Site Survey and analysis by a team of experienced professional consultants
- Desktop study of cartographic and photographic material
- Analysis of photographs of approaches to the subject site along the road corridors

The image locations selected within this report are views taken from the public realm and represent generally the possible viewpoints of the development site. These locations serve as a general statement of the site, its surrounds and their associated character and potential views offered.



Map of Baldivis (East) and context of site within Land Use Identification

Proposed site

Superseded

3.2 Regional Context Evaluation

Refer **Planning Report** prepared by Peter Webb & Associates,
2.1 State Planning Framework, p7-10 and
2.2 Local Planning Framework, p26

The Visual Landscape of the regional context of the subject site can be understood in terms of its location with respect to the Kwinana Freeway.

Land **west** of the freeway comprises medium density residential suburbs with single housing subdivisions, schools and infrastructure for suburban life. **See Figure 1 + 2.**

Figure 2: Regional Context Aerial Photo

- Subject site is adjacent Freeway, and located immediately in vicinity of urban development on other side of freeway.
- Subject site is located on Freeway off ramp into the Rural district East being Folly Road, a transport corridor extension of Safety Bay Road
- Subject site is located on 'fringe' of the Rural district, which has broad pattern of land use, tenure and settlement.




VIEW NORTH


VIEW EAST


VIEW WEST

Superseded

Adjacent to the freeway **east** is the Peel Main drain and the Conservation Wetlands including Folly Pool. The visual experience of the region east of the freeway is a view of large rural properties of open pastures and grasslands dotted with remnant native vegetation consisting of trees and bushes. The built forms in the landscape conjure rural land type uses, farming sheds and homesteads.
See Figure 2 + 3

Strategic studies prepared by City of Rockingham on and in the vicinity of the proposed site determined there was no land suitable for *priority agricultural pursuits* in this locality due to the low land capabilities of the area. This area (including the subject land) is instead recognised in the City's Rural Land Strategy for its environmental significance and visual amenity.

As can be seen on the **Regional context aerial photograph between freeway, Mundijong and Karnup Roads** and the **Regional context of the proposed site (Figure 2 + 3),** land clearing and buildings clearly follow the road network, which is distinctly along Folly Rd, Young Rd and St Albans Rd. Cleared areas of land have more built up combinations of dwellings and outbuilding sheds. Many shed structures throughout this region are significantly sizable. Dwellings and sheds can often be seen clearly from the road or may be obscured by remnant native tree and bush vegetation.

*The visual management strategy adopted for siting the development can be seen in **Figure 4**, where the buildings are being proposed to the East of the property such that they are located in the cleared and filled area of the site and as such also locate within the similarly developed areas of the region along the road network.*

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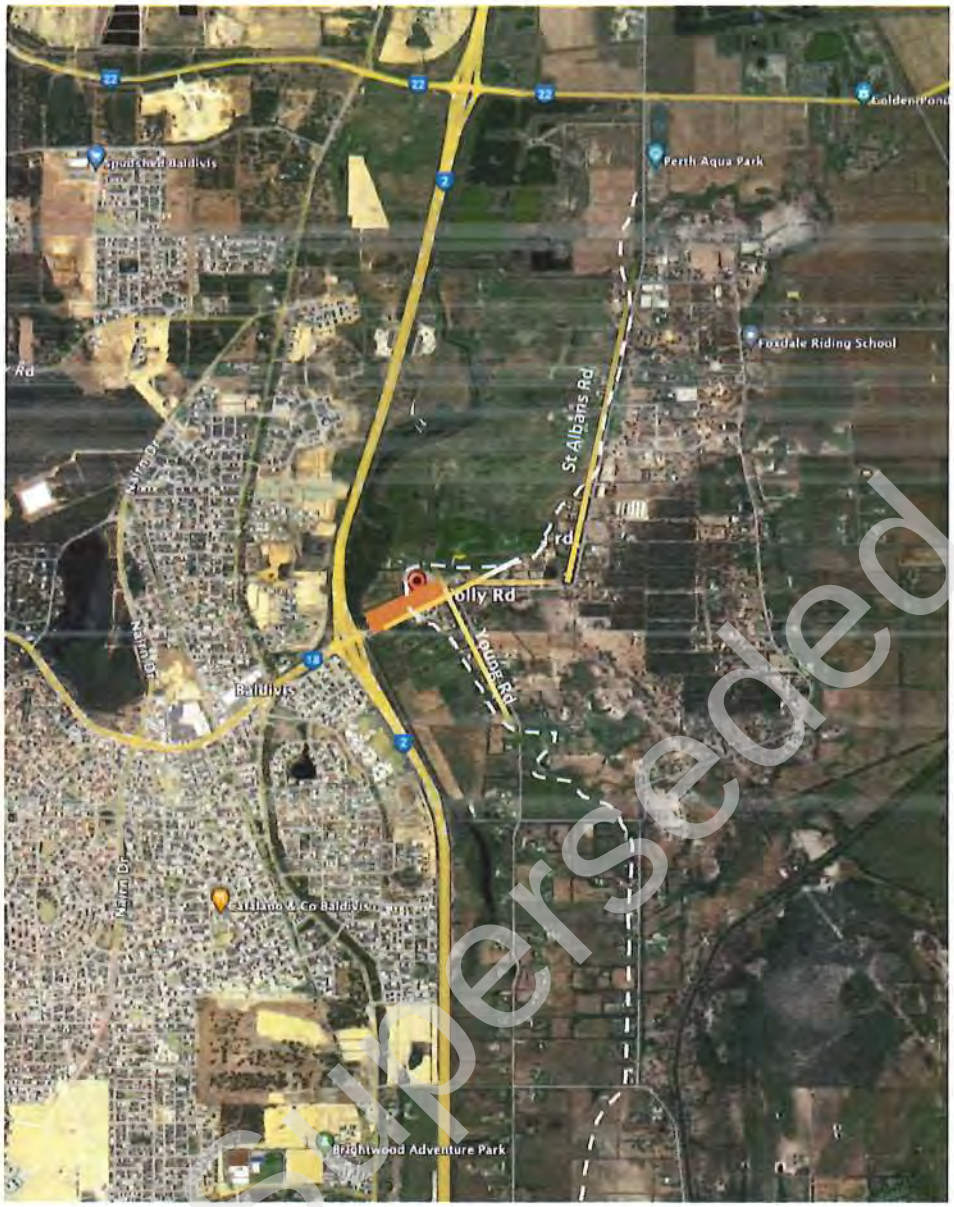

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Figure 3 **Regional Context between Freeway, Mundijong and Karnup Roads**

Proposed Site:

Located on Folly Road at Freeway Entry/ Exit, the property being on the physical 'fringe' of this rural area, but still within the 'cleared' area of the region which follows the road network of Folly, Young and St Albans roads indicated east of the dotted line

Area to east of dotted line is where cleared areas are and where buildings and remnant vegetation are located. Note how the cleared area follows the road network.



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Figure 4 **Regional Context of Proposed Site**

Proposed Site: Development Area
This part of the proposed site is already cleared and filled to above the flood plain level with scant remnant vegetation. This is the area within where the buildings of the development are proposed.

Proposed Site: Flood Plain Area
This part of the proposed site is also flat, subject to flooding and the western end (close to Freeway) adjoins a conservation wetland.
No development is proposed on this part of the site.

Area to East of Dotted line is where cleared areas within this region now exist within which buildings and remnant vegetation are located. Note how the cleared area follows the road network.

3.3 Local Context Evaluation

The rural character of the surrounding properties of the proposed site can be evaluated in terms of built forms and vegetation of the neighbouring properties both adjacent and in the immediate vicinity.
*The following descriptions can be correlated with the **Aerial Photo** below.*

3.3.1 Built Forms

Generally, on any typical property, the neighbouring buildings are clustered into hubs consisting of one or two homesteads and a few sheds. The hub is located around car movement and access from the street, and many of these clusters have large expanses of bitumen or gravel around which the buildings sit.

i) Sheds
Buildings on the surrounding properties are predominantly rectangular sheds, mostly very large, and built of custom orb sheeting. They are used for storage and utility functions of rural industry and farm use. Many are plain metallic zincalume, others colourbond sheeting in wheat and beige colours, a few in 'green' to 'blend' the shed into the landscape.

ii) Homesteads
Neighbouring properties A, B and C have combinations of homestead buildings and sheds on the property with people living on the property.
Properties D and E do *not* have any residential homestead buildings at present.
As described below, the homestead buildings are typically lightweight framed walls with painted 'Hardie' cement sheet panel cladding. Roofs are colourbond sheeting with gable end or hip pitched roofs of about 10 degrees.

3.3.2 Vegetation

i) Remnant Vegetation
All properties neighbouring the proposed site have been cleared of remnant vegetation where the buildings have been located. Clumpings of natural remnant vegetation still exists along Folly and Young Road and throughout the properties typically away from buildings. Remnant vegetation is also located at entry points on some of the properties.

ii) New Landscaping
Typically, new trees and landscaping have been planted around neighbouring building hubs to create protection, shade, screening and enhancement of the properties. A combination of native trees/ bushes as well as introduced species of plants have been used.

Superseded

3.3.3 Neighbouring Properties

Aerial Photograph

Below is an Aerial Photograph of the proposed site in context with the immediate neighbouring properties.
A description of each property in terms of its built form and vegetation follows.



Superseded

3.3.3 Local Context Evaluation: Neighbouring Properties

A **66 Folly Road**
(Opposite Site on Folly Road)



1. Aerial photo

This property has a hub of buildings consisting of large sheds of various sizes together with a rural homestead.
There are 2 x Entry points from Folly Road, and the buildings are located around the driveway network.



2 **Large visible Shed from Folly Road.**

The largest shed on this property and in complete view of Folly Road is located about 61m from the road and is approx. 17m width x 42m length x 6-8m height.
Colourbond (Green) clads walls and roof.
The adjacent shed is 14m width x 20m length x 6-8m in height. It is zincalume metal sheeting. Large visible watertanks/ silos sit alongside the shed.



3 **The first entry from Folly Road**

is low key although a large kerbside gravel/ bitumen crossover/ turning circle is prominent on Folly Road outside the property fenceline, The fence is simple timber post and wire.



4 **The second entry from Folly Road**

is more established with bitumen driveway and crossover, and timber fencing.

Superseded

3.3.3 Local Context Evaluation: Neighbouring Properties

B **151 Folly Road**
(Opposite Site on Young Road)



1. Aerial photo

This property has a hub of buildings consisting of large sheds of various sizes together with rural homesteads.
There are 2 x Entry points to the property, one from Folly Road, and one from Young Road. The buildings are located around the large area of bitumen driveway.



2 Homesteads seen from intersection of Folly and Young Roads

The homestead which can be seen is about 12m from road edge and measures about
12m x 24m.
A large shed measuring 13m x 24m is also seen closer to the intersection, about 28m from Young Road



3 Main Entry from Young Road

shows extensive loose bitumen driveway and wire gate.
The residence has a colourbond roof with lightweight cement sheet panels for walls.
A 'typical' verandah with steel posts surrounds the home, the roof of the verandah being continuous to main roof but changed into a lesser pitch.
The adjacent shed is 14m width x 20m length x 6-8m in height. It is zincalume metal sheeting. Large visible water tanks sit alongside the shed.



4 Second Entry from Folly Road

is also well established with a wide entry bitumen crossover and simple painted timber fence.
Palm trees form the landscaped entry statement.

Superseded

3.3.3 Local Context Evaluation: Neighbouring Properties

C

574 Young Road
(Behind Proposed Site on Young Road)

1. Aerial photo

This property has a hub of buildings out of view consisting of sheds of various sizes together with a rural homestead.

The buildings are located around a gravel driveway which is interspersed with landscape and trees.



2

Entry from end of Young Road

The homestead is not visible from the road, screened by established trees. A small lean to shed is visible. The gate and entry fencing is a simple cross member style timber fence. Other post and wire fencing is can be seen marked throughout the property.





D

Lot 52 Young Road + 547 Young Road
(Property behind and immediately adjacent north of proposed site)

A beige colourbond shed on left and Large rectangular beige container shed located on right.



3

Visible Shed

No residential on this property, only highly visible sheds such as this large colourbond container shed, 20m x 5m, located 10m from road edge.



4

Visible Shed

No residential on this property, only highly visible sheds such as this open post and metal roof shed,.



Superseded

3.4 SITE CONTEXT EVALUATION

The subject site is located in Baldivis, in the City of Rockingham.
The property is located on Folly Road which begins as a primary regional road into this sector of Baldivis from the Kwinana Freeway. Folly Road then becomes an 'Other regional road' as it runs along the length of the site. The clients have selected this site with the view that whilst it is at the entry to the Baldivis (east) Rural district, it is also on the 'fringe', and not deeply established in the rural area.

The *land use* for this area is primarily rural dwellings and sheds, both large and small with acreage for small agricultural and livestock farming, although the City of Rockingham in it's Rural Strategy have identified that there was no land suitable for *priority agricultural pursuits* in this locality due to the low land capabilities of the area.

The landscape of the area is of a rural scene with remnant mature trees, planted wind rows of trees, bush clumpings and non-native plantings by local property owners.

The built characteristics of the area are rural dwellings and buildings clustered together around driveway access. Large shed structures also characterise the area.

3.4.1 Topography

For a more detailed site description see the Environmental Consultant's Report
The total land area of the site is 74,362m2, (7.4Ha) which includes more than half the site being open field adjacent to the Conservation Wetland.
The site has a primary southern frontage to Folly Road of approximately 664m and a frontage to the side street Young Road of 114m. The proposed 'development' area of the site, from the mid wind row of trees on the site has a length along Folly Road of 270m which is less than half the length of the entire site.
The northern boundary of the site abuts another private property (547 Young road) on which some outbuilding sheds are located.
The land is relatively flat, with a gradual fall towards the western conservation wetlands. (See Survey)
The site has an existing crossover and access road which will not be retained as a new main entry is being proposed.

Superseded

3.4.2 Visual Landscape Character of the Site

See Aerial Photo Description of Site (Figure 4) and accompanying character unit list to follow.

3.4.3 Natural Landscape Character of the Existing Site

Also Refer Figure 5

a) The subject site is located immediately East of a Bush Forever site.

b) The freeway and its buffer vegetation is located to the west end of the site. Views across to the site from the freeway are very limited to a driver concentrating on the road.ie. The site is protected from view of approaching drivers from the Freeway

c) A conservation wetland comprising Folly Pool as part of Manjedal Brook comprise the western end of the site. These areas are largely untouched by any previous development.

d) A large grassy open flat field of flood plain lies between Folly Pool and the dividing mid line of trees which would have been planted as a wind row. This large part of the site is often under water in winter.

e) This mid site wind row of trees naturally divides the site into the 'developed area' and the floodplain area. This wind row consists of melaluka ranging in height between 8m and 10m. There are no nesting tree hollows in the trees. Vison through these trees is moderate.

f) The land to the east of these trees has effectively been cleared and filled over time, leaving remnant vegetation clusters, single mature trees and planted wind rows which intersperse larger areas of grassy open clearings.

g) A strong wind row of 6m trees form a strong hedge at the existing entry of the site. Vision through the hedge is minimal.

h) A large clump of 10-12m high trees are located on Folly Road, providing a vegetation feature on Folly Road.

i) An established wind row of trees of about 5-8m height has been planted on part of the northern boundary, just in from the firebreak.

j) Individual remnant trees are in varying states of health.

k) Sandy, filled and compacted clearings are already completed to achieve the minimum RL above the 100 year Floodplain level

3.4.4 Built Landscape Character of Existing Site

l) A couple of large sheds exist on the northern boundary of the site, set well back from Folly Road.

m) They reflect the same structure and materials of other sheds on adjacent properties, with roof and wall construction in metal colour bond and have attached flat roof awning structures. Only the smaller shed is intended to be retained for use in the development.

n) The site has a timber post and wire perimeter fence (approx. 1.0 m high) running along the entire length of Folly Road boundary, Young Road boundary and northern boundary to neighbouring property.

o) A firebreak runs along the entire perimeter of the site

p) A straight crushed limestone/ bluemetal access way strongly divides the property into East and West sides. The crossover itself is unsealed pea gravel.

Superseded



P A straight crushed limestone/blue metal access way strongly divides the property into east and west sides

F All land east of the mid wind row of trees has been cleared and filled over time, leaving remnant vegetation clusters, single mature trees and planted wind rows which intersect larger areas of grassy open clearings

D A large grassy open field of flood plain lies between folly pool and the dividing midline of trees, often underwater in winter

I Wind row of existing trees about 6m in height planted on part of the northern boundary, in front of the firebreak

H Large clump of trees 10-12m high located on southern site boundary, providing a vegetation feature on Folly road

C Conservation wetland comprise the western end of site. This area is largely untouched.

L Existing shed on northern boundary are well set back from Folly road

M 151 Young road - built characteristics of area are rural dwelling, buildings + shed with buildings clustered together around driveway access

K Sandy compacted clearings indicate historical car access to existing site

A Subject site situated to the immediate east of bush forever site

M Folly road - Built characteristics of area are rural dwelling, buildings = shed with buildings clustered together around driveway access

B Entry into Baldivis east onto Folly road from freeway. Buffer vegetation protects site from views. Approaching drivers on freeway and off ramp at Folly road are unable to see into site at all.

J Individual remnant trees are in varying states of health

E Mid site wind row of trees 13-15m high naturally divides site into 'developed area' and flood plain area

G Strong wind row of 6m trees form dense hedge at existing entry of site. Vision through hedge is minimal

Deposited Plan

Figure 5: VISUAL LANDSCAPE CHARACTER OF SITE

4.0 VISUAL ASSESSMENT AND VIEWS

The following assessment describes how the visual landscape character of the existing site is viewed, experienced and valued and then describes the impact that the proposed development will have on that visual landscape character.

The landscape character of the site is predominately experienced by the public from Folly Road driving East and West. Another view shed is experienced from Young Road travelling towards the site from South to North.

Generally, the road and traffic conditions in the greater area allow speeds of 70km per hour. There is no footpath and pedestrian access along these roads does not happen.

4.1 Existing Site Visual Landscape Views, Experience and Value

The visual experience of the **existing site** arriving into the area from the Freeway onto Folly Road is a view shed of large open grassy clearing of the lower lying land adjacent to the conservation wetland, followed by views of the densely planted mid area of existing mature wind rows of 12-15m trees and 6m trees that obscures vision into the site in that area, followed again by a view shed across the site of open grassy clearings interspersed by mature trees and bushes. A large clustering of mature trees is located along Folly Road mid-way between the dense hedge of 6m trees and Young Road which again distracts the view line from going deep into the site. The eastern end of the site is very open and clear.

The visual experience going westwards back to the freeway along Folly Road is of a site that is quite exposed, open and grassy at the eastern end with little tree cover and unoccupied paddocks. The informal firebreaks are clearly visible and simple post and wire fencing are in close proximity to Folly and Young Roads given very little verge depths.

The visual experience along Young Road north towards the site and intersection of Folly Road is of a significantly large sized area of cleared, open grassy site. The property across the road from the site on 151 Young Road exhibits a vegetative density along Young Rd with non-native palms and bushes obscuring the homestead clustering on that property which is only 10m set back from the Young Road boundary.

4.2 Proposed Development and Impact on Visual Landscape Views, Experience and Value

The visual experience of the **proposed development** is intended to use elements of design and siting to both *absorb* the buildings into the site as well as *blend* the buildings, and can be described as follows:

4.2.1 View 1-7

Arrival from the freeway along Folly road preserves the view of low lying open grassy clearing adjacent the wetland (which forms more that half the site), as there is no development proposed on this area.

Superseded

The main Temple (which is 'different' and 'unfamiliar' in aesthetic to a rural setting in Baldivis) has been located behind the mid site wind row of trees and dense hedge along Folly Road, such that the impact of this building is 'non evident'. The heights of the existing trees obscure the taller sculptured Temple Goporam entry statements, via their density of tree canopy, heights and the perspective of a person viewing the site in the car.

4.2.2 View 8 + 9

As the traveller proceeds along Folly Road beyond the tree hedge, the view deep into the site is of the secular building cluster. The forms, colours and materials of these buildings reflect the typology of typical rural buildings in this area. A walkway structure that connects the Halls to the Temple is of low scale, open with post/ beam/ simple roof and together with new planting screens vision through to the proposed carpark area, which is very well set back from Folly Road. Location of the second extended carpark is 'hidden' behind the secular buildings. The large clustering of mature trees on Folly Road further distracts the view of the secular buildings.

4.2.3 View 10

The view experience along Folly Road towards the Eastern end of the site as approach is made to Young Road has been maintained as the existing open clearing thereby not impacting the experience of the traveller or viewer of this significantly portioned corner of the site on the intersection of Young and Folly Roads.

Towards the northern end of the site, a single dwelling for guest accommodation is proposed with carport attached. This has been located more than 30m from Young Rd (secondary street) and the proposed building forms are similar to those dwellings on the neighbouring property (151 Young Road). As such, this proposed 'homestead' type building maintains the visual landscape character of the area and with the addition of proposed native planting to further screen the guest accommodation, the impact will be a further blending and enhancement of the visual landscape.

4.2.4 View 11

The view experienced along Young Road towards the site travelling north is again of the large existing open grassy corner of the site. Deep into the sightline is the guest accommodation as also described in View 10. The impact of the development from the main part of Young Road is that of a blended development.

4.2.5 View 12

The view experience on Young Road 'behind' the proposed site looking directly at the site (as a passenger in a car)

4.2.6 View 13 + 14

The view experience driving west along Folly Road back towards the freeway. The Temple building is seen in the deep distance. The Temple Goporam structure is obscured and mostly non-evident behind existing tall mature trees.

The main view sheds of the development as described above are pictured in the following pages.

Superseded

4.3 VIEWSHEDS - PHOTOGRAPHS

There are essentially 6 view sheds that characterise the experience of the proposed site within the rural context of this site.

4.3.1 VIEWSHED 1: FOLLY ROAD TRAVELLING EAST VIEWS 1-7



a) View 1+2: Approach from Freeway off ramp along Folly Road Eastwards. Proposed site on LHS in both images. Roadside remnant vegetation and the protected wetland vegetation alongside the freeway obscures view completely of the site for the traveller on the road that is entering into this rural region









Superseded

b) View 3: Approach along Folly Road Eastwards. View into clearing of Floodplain area of site (LHS of road)

i) View of existing site with evidence of water from winter rains on site. Wind row 15m trees in view shed in distance.



ii) View of proposed development behind existing row of 15 m trees. Both the Temple and Priests' residences are heavily screened from view. The Temple Goporams are non-evident given the density and height of the existing trees.



c) View 4: Approach East along Folly Road.

i) Closer view looking across open grassy clearing of site with mid-line wind row of trees in view line. Existing shed structures on site screened by wind row (centre of photo). Shed structures of adjacent property also in view behind trees at LHS

Superseded

4



ii) View of site with proposed Temple and Priest residences heavily screened and highly absorbed into site (non- evident), screened by dense wind row of existing trees. Temple Goporams non- evident in view screened by existing tree canopy.

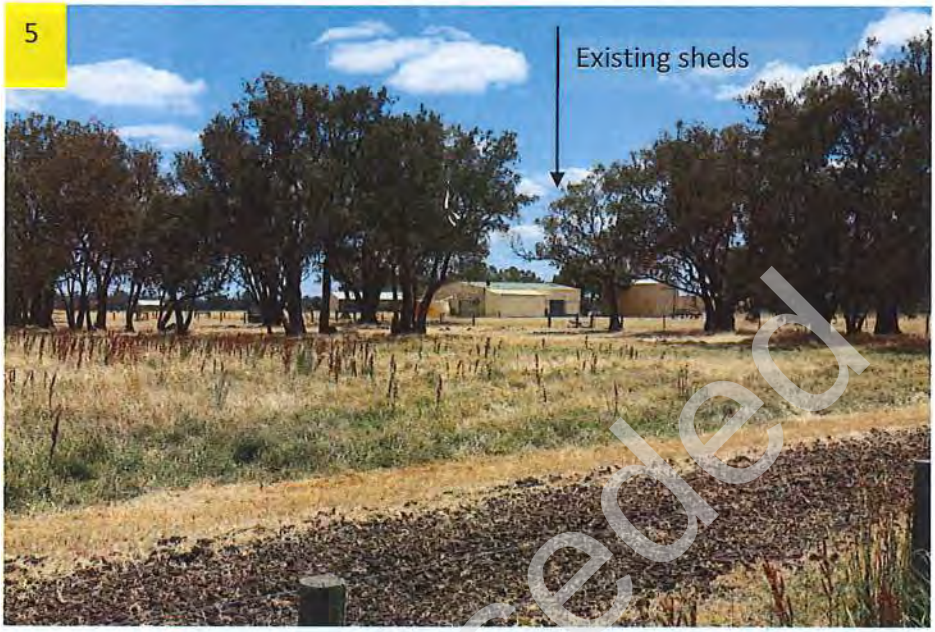
4a



Superseded

c) View 5 Approach east along Folly Road

i) View of site with proposed Temple and Priest residences non evident in viewshed, screened by dense wind row of existing trees. Opening in wind row of trees allows vision through to existing shed structures and water tank. Fire break along perimeter in foreground.



ii) View of development with proposed Priest residences, Temple kitchen and ablutions seen intermittently through largest gap in wind row of established trees. The large tree which will be removed in development has been cut from this image as well. Note the west Goporam of Temple is screened and mostly non-evident in view, as is most of the Temple building.



Superseded

d) View 6: Approach east along Folly Road. Development site on LHS in both images
View of dense established tree hedge which obscures view of site.

i) View of existing site looking into established trees from corner of 'development area'



ii) View of site showing proposed Temple mostly screened behind existing trees of 'development area'



Superseded

Note: Photo 6d taken of shed structure across the road at 66 Folly Road from same location



e) View 7 View of site showing proposed development along Folly Road screened by existing wind row of trees.

i) View of existing site looking through mature trees and dense hedge on Folly Road. Existing shed structure can be seen on site on north boundary.



ii) View of proposed Temple through trees along Folly Road. South and West Goporum non-evident in view.



Superseded

4.3.2 VIEWSHED 2: FOLLY ROAD STILL TRAVELLING EAST VIEWS 8 + 9

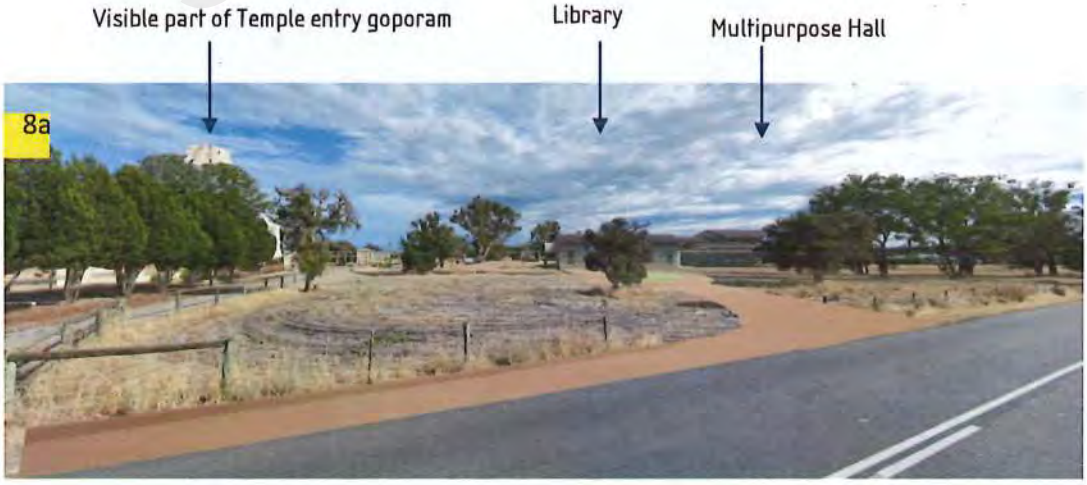


View 8: Looking towards development area at first clearing along Folly Road near proposed entry (Wide angle lens)

i) Existing Site from Folly Road

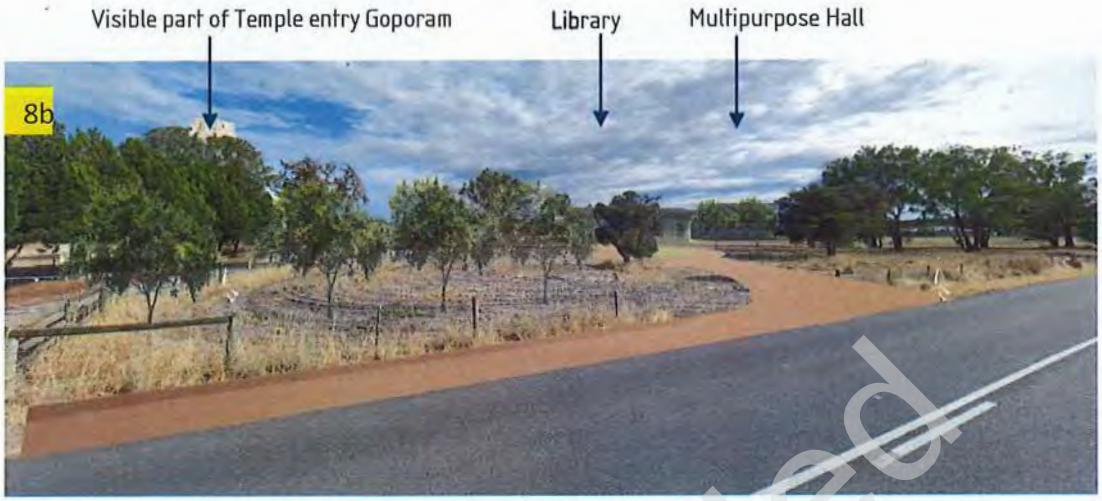


ii) Site showing proposed development, Temple is mostly 'non evident' on LHS screened behind existing wind row of trees, and secular library and multipurpose hall 'blended' as characteristic 'rural' buildings on RHS



Superseded

iii) Site showing proposed development *with the addition of new proposed landscape* which enhances the development and further absorbs the development into t



iv) Looking towards existing site at first clearing along Folly Road at existing entry (51 deg angle of view) and then at 8c with proposed walkway and new fence structure around Temple (RHS) (Note: Wire front gate and timber fence will be demolished and not visible in 8d)





v) View of existing site (8e) and View from Folly Road looking across to library and distant Multipurpose Hall (8f) which includes proposed planting to further blend the building





Superseded

vi) View from Folly Road (back to freeway) looking at dense hedge corner of existing entry (8g)
Proposed Temple non- evident and set back and behind trees (8f)





Top of Entry
Goporam visible only

View 9: View from Folly Road travelling east after existing entry

i) Existing Site from Folly Road



ii) Proposed Multipurpose Hall in view from Folly Road (no added landscape)



Superseded

iii) Site showing proposed development *with the addition of new proposed landscape* which enhances the development and further blends the development into the site.



Superseded

4.3.3 VIEWSHED 3: FOLLY ROAD TRAVELLING WEST TOWARDS SITE AND YOUNG ROAD INTERSECTION

VIEW 10



i) View travelling west along Folly Road approaching Young Road and existing site. The existing storage shed (to be used as Chariot store in proposed development) can be seen central in view.10



ii) View travelling west along Folly Road approaching Young Road and proposed site with east end of Multipurpose Hall in view. Image has no proposed additional landscape shown.10a



iii) View travelling west along Folly Road approaching site with Multipurpose Hall in view. Proposed additional landscape shown to further blend and enhance the visual amenity of the area.10b



Superseded

4.3.4 VIEWSHED 4: YOUNG ROAD TRAVELLING NORTH TOWARDS SITE AND FOLLY ROAD INTERSECTION

VIEW 11



a) View 11

i) View travelling north along Young Road approaching existing site and Folly Road intersection. Note the large brown shed of property behind proposed site is in view on LHS



ii) View travelling west along Folly Road approaching site with Guest accommodation in view line. Large brown shed of neighbouring property behind proposed site is still in view. (No additional landscaping shown)



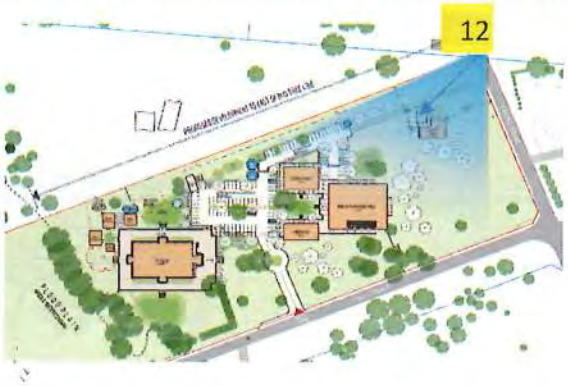
iii) View travelling west along Folly Road approaching site with Guest accommodation in view line *but with proposed landscaping shown in view.* Large brown shed of neighbouring property behind proposed site is still in view. (No additional landscaping shown)



Superseded

4.3.4 VIEWSHED 5: YOUNG ROAD AT NORTHERN BEND LOOKING AT THE SITE (AS CAR PASSENGER)

VIEW 12



a) View 12

i) View from north bend in Young Road. Only 3 x properties are in this area, with only 1 residence. The storage shed on RHS will be retained for proposed Chariot store. A building on property across Folly Road can seen.



ii) View with proposed the proposed guest accommodation front in view (12a) and landscape enhancing and blending the development with trees to carpark and around accommodation (12b)

Temple in distance visible when no landscaping in place





Superseded

4.3.4 VIEWSHED 6: DRIVING ALONG FOLLY ROAD BACK TOWARDS FREEWAY VIEWS 13 + 14



i) View from Folly Road travelling West back to freeway. Remnant vegetation and large mature trees obscure vision into site. The second existing shed can`be seen in view.



ii) View with proposed library in view . Remnant vegetation and large mature trees obscure vision of the multi-purpose hall and assists to maintain the visual amenity of the area.

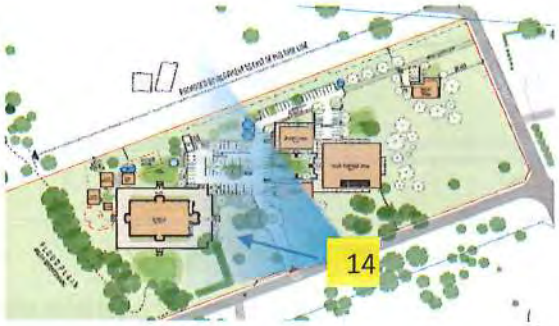


ii) View with proposed multipurpose hall and library in view *with proposed new landscaping* which assists in blending and screening the secular buildings more from street view. Remnant vegetation and large mature trees obscure vision and maintain the visual amenity of the area.

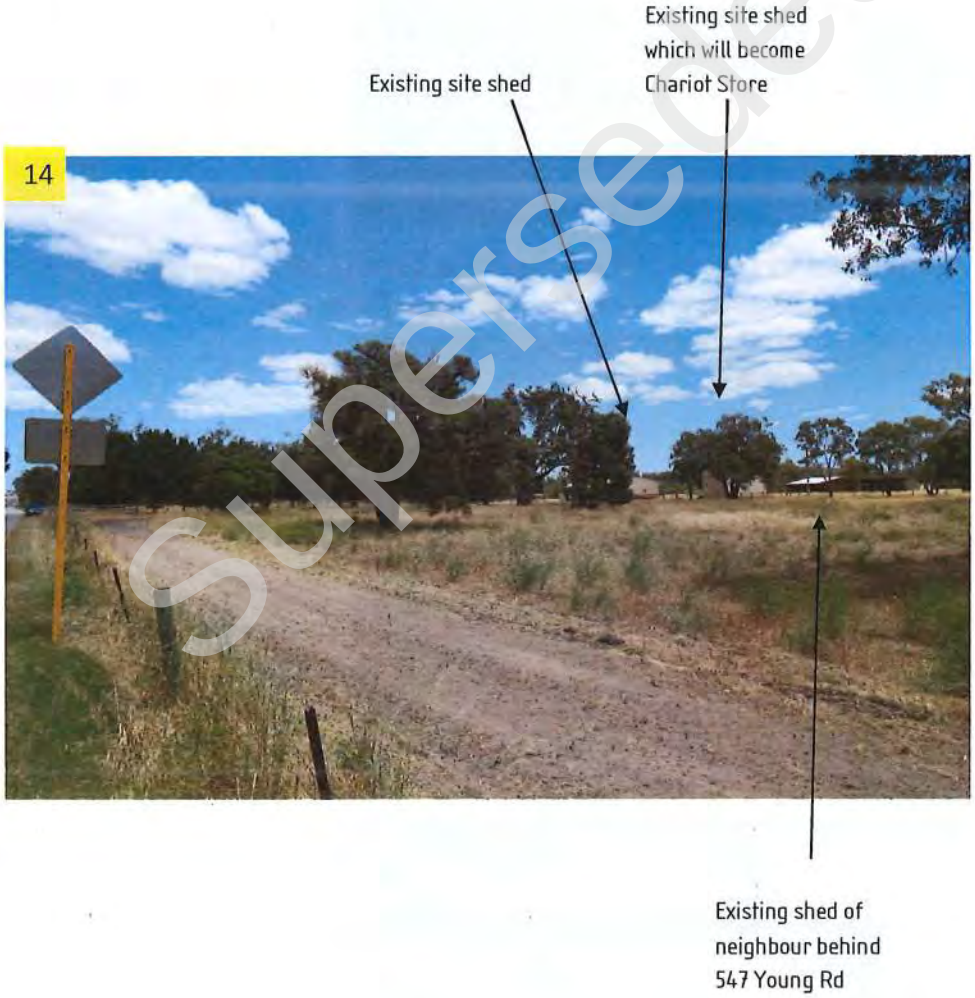


superseded

4.3.4 VIEWSHED 6: DRIVING ALONG FOLLY ROAD BACK TOWARDS FREEWAY VIEWS 13 + 14



i) View from Folly Road travelling West back to freeway. Existing sheds on site in view as well as neighbouring shed at RHS. Fire break at boundary in view.



Superseded

ii) View with proposed library and covered walkway structure in view. The Temple Goporum is obscured by existing mature trees.



iii) View with proposed library and covered walkway structure in view. New proposed landscaping shown in view assists in blending the buildings as well as enhancing the visual amenity.



Superseded

5.0 STRATEGIES FOR MANAGING VISUAL LANDSCAPE CHARACTER

In summary, the strategies adopted for maintaining the perceived visual landscape amenity of the proposed development on the site are as follows:

Generally, the visual management strategy adopted for siting the *entire development* can be seen in **Figure 2**, where the buildings are being proposed to the East of the property such that they are located in the cleared and filled area of the site and as such also locates it within the similarly developed areas of the region along the road network.

5.1 **The Temple** proper, where the typology of the architecture reflects the traditional form of a Hindu Temple with tall sculptured entry Goporams and is aesthetically connected to the culture and practices of the JET community, has been located in such a way as to be mostly perceived as 'Non Evident' and absorbed into the site by:

i. Keeping the building well set back from Folly Road, (46m to main wall and 52m to Goporam from Folly Road boundary)
ii. 'Obscuring' the building behind the existing mid wind row of trees (12-15m high) on western side, and the dense hedge of trees along Folly Road (6m high) so that viewsheds from Folly Road to the Temple are mostly obscured.
iii. Colours and materials of the Temple will 'blend' with the colours of 'natural landscape' – claddings of limestone (natural to Baldivis and Coastal region), renders of natural stone colours, highlights of timber detailing and framework, accents of brass and dark metals.
iv. Maintaining a height for the Goporam at the main front Entry of 14.7m which sits adjacent a large existing tree of 10m. Vision of the form of the Goporam and the top will be obscured in perspective of drivers along Folly Road. (See Section)
v. The sculptured facades will be created by artisans in traditional methods which as an expression of art is aligned with rural arts and crafts and as such is located comfortably in this rural setting.

5.2 **The Priest residences, Temple Kitchen and ablutions** have been set well back from Folly Road behind the Temple as a cluster of buildings and mostly non evident from Folly Road travellers. Nevertheless, these buildings take on an aesthetic character that reflects the pitched metal roof, gable ends, awning structures and clustering around a courtyard of ancillary buildings.

5.3 **The Secular buildings** (Multipurpose hall, Dining Hall, Library and guest accommodation) are architecturally expressed using forms, colours, and materials that are characteristic of this rural area and will 'blend' and maintain the visual amenity of the area. These character elements are:

i. Clustered rectangular buildings rather than one larger building that reflects the size and proportions of other clustered buildings on neighbouring properties.

Superseded

ii. Pitched roofs of 15 degrees, gable ends and dark custom orb finish to 'sit' the roofs into the landscape.

iii. Verandah post and beam simplicity across the façades of the buildings to facilitate covered walkways but also used to break the wall elevation down to a lesser scale and to reflect the simplistic typology of a typical rural 'homestead' or building.

iv. The buildings are quite linear, a visual characteristic of other homestead buildings of the rural region.

v. The secular buildings are on an East/West axis such that the facades are receding from the Folly Road axis. As such, the minimum setback of 30m is on the corner of the Multipurpose Hall, the rest of the secular buildings being well set back from Folly Road.

vi. Entry into the buildings, community gathering spaces, children's playground are located in courtyards and gardens out of street view such that groups of people are not visible.

vii. The guest accommodation is located well into the north east corner of the site and is proposed as a singular 'homestead' which is in keeping with its eastern neighbour aesthetically.

5.4 **Access Crossover and road** to the development is relocated further East so as to separate the entries from the opposite neighbour (66 Folly Rd) thereby reducing the impact of traffic access on Folly Road. A slip lane to the new property entry and low key roundabout set within 30m of the boundary on Folly Road has been incorporated to ease and slow traffic impact. No kerbing is proposed to maintain the low key appearance of the entry.

5.5 **Parking** has been located between the Temple and the secular buildings proposed to be built deep into the site (60m) so as to minimise vision of cars. A lightweight post and beam covered walkway connects the Secular buildings and the Temple further screening the cars. New landscaping is proposed to screen and blend the main carpark. The secondary carpark is located on the northern boundary, well behind the buildings so as to reduce its impact. The road and carparks are proposed in a gravel/ laterite asphalt that will blend in with the natural surrounding of the bush becoming eventually a dark brown colour.

5.6 **Existing Landscaping** consisting of remnant natural characteristic mature trees, wind rows, shrubs and tree hedges are all being maintained for the development except for 2 x trees which will need to be removed for fire safety (1 is very unhealthy/ dead)

5.7 **New Landscaping** is located strategically to *blend* the proposed buildings and further enhance the site and visual amenity of the development. It is proposed that new native planting will happen early in the staging of the development so as to allow maximum establishment of trees and bushes. **See Concept Landscaping Plan**

5.8 **Staging of the development** has been considered in such a way as to maintain visual amenity and least disruption to the locality. The first part of construction will be largely unseen behind the wind rows of trees. Landscape will be planted as a first stage to ensure trees and shrubs are established as the future stages commence so as to minimize visual impact of new buildings.

Superseded

6.0 CONCLUSION

The existing natural character of this area is one of large open grassy clearings interspersed with remnant vegetation, singular mature trees, roadside bushes and wind rows of trees. There are areas of non-native plantings, particularly around entry access points to properties. Post and wire fencing and cleared fire breaks characterise much of the street verge view.

The existing built character of this area is predominantly clustered rectilinear buildings with pitched custom orb roofs and timber post verandahs creating a linear horizontal aesthetic. The metal shed structures in the area can be sizable, and coloured in various powdercoat custom orb. Planted vegetation screens many of these existing structures.

The Sri Balaji Temple development in its entirety, sits comfortably within the above described natural landscape and the buildings are of a scale and nature that can align with the locality's characteristic built forms. As such, the proposed development does not impact negatively on the visual landscape character of the area, using a combined method of siting the proposed religious buildings of this development behind mature existing trees and wind rows, making those parts of the development fairly 'non-evident', whilst 'blending' the secular buildings of the proposal by adopting scale, forms, colours and materials that are recognised and characteristic of the built form in the locality. The proposed main car park is well set back from Folly Road and the secondary car park is nestled behind the secular buildings out of view. Additional new planting strategically located will assist to screen all the buildings as well as car park and further enhance the visual amenity of the site and area.

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View of main Temple in the Sri Balaji Temple Development from within the property.



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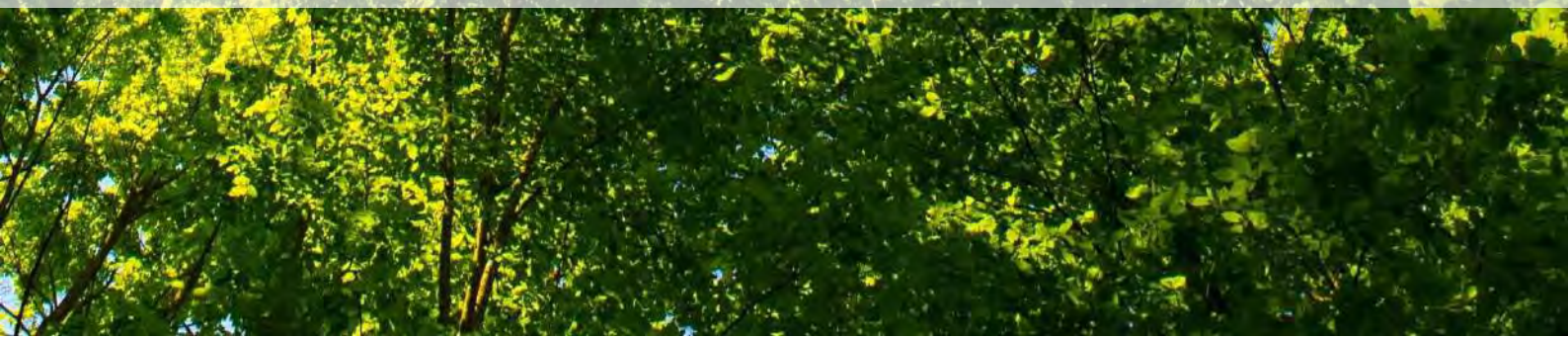
MARSHALL DAY Acoustics

BALAJI TEMPLE AND CULTURAL CENTRE
ACOUSTIC PLANNING REPORT

Rp 001 20210485 | 29 November 2021



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Report No.: **Rp 001 20210485**

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Document Control

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TABLE OF CONTENTS

1.0 INTRODUCTION 4

2.0 SITE DESCRIPTION 4

2.1 Site location 4

2.2 Development description 5

2.2.1 Proposed uses 5

2.2.2 Operating hours and occupancy 6

3.0 LEGISLATION AND GUIDELINES 6

3.1 Environmental Protection (Noise) Regulations 1997 7

3.1.1 Assigned noise levels 7

3.2 Road noise to the development 8

4.0 NOISE ASSESSMENT 9

4.1 Multipurpose hall 9

4.2 Carparks 10

4.3 Noise from freeway affecting site 11

5.0 RECOMMENDATIONS FOR NOISE MANAGEMENT 12

5.1 Building envelope design 12

5.2 Carpark design and management 12

5.3 General operational noise 13

5.4 Event noise 13

5.5 Additional noise sources 13

5.5.1 Mechanical services noise 13

6.0 CONCLUSIONS 14

APPENDIX A GLOSSARY OF TERMINOLOGY

APPENDIX B PLANNING MAP

APPENDIX C PROPOSED SITE PLAN

APPENDIX D ASSIGNED NOISE LEVEL CALCULATIONS

APPENDIX E NOISE MODELLING DETAILS

Superseded

1.0 INTRODUCTION

Archetype Design Studio, on behalf of JAPA Australia Foundation, has engaged Marshall Day Acoustics (MDA) to provide preliminary acoustic advice as part of the Development Application stage for the proposed Balaji Temple development located at Lot 53 Folly Road, Baldivis.

The requested advice is for the following items:

- Freeway noise affecting the building(s)
- Noise emanating from carparks to surrounding residences
- Noise emanating from the temple and multipurpose hall to surrounding residences

This assessment includes details of the site, relevant noise criteria, an assessment of noise levels at the nearest receivers, and preliminary design and noise management recommendations to be developed during detailed design.

A glossary of acoustic terminology used in this report is provided in Appendix A.

2.0 SITE DESCRIPTION

2.1 Site location

The Balaji Temple is proposed for Lot 53 Folly Road, Baldivis. An aerial photograph showing the site and surrounds is presented in Figure 1. The nearest noise-sensitive receivers are numbered and described in Table 1.

Figure 1: Aerial photograph of the site and surrounds (Image: Nearmap)



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Table 1: Nearest representative receivers

Receiver ID	Address	Description
1	574 Young Road	Residence
2	542 Young Road	Business and residence
3	66 Folly Road	Residence

The surrounding area is zoned rural and special rural.

A planning map showing the land use zoning is provided in Appendix B.

2.2 Development description

The proposed development includes the following new buildings and facilities:

- Temple, with kitchen and toilet facilities
- Multipurpose cultural hall
- Dining hall
- Library
- Short stay facility
- Priest residences
- Two open air carparks, with up to around 200 parking spaces

A copy of the proposed site plan is included in Appendix C.

2.2.1 Proposed uses

The main proposed uses for the new facilities on the site are summarised in Table 2.

Table 2: Proposed uses

Facility	Proposed uses
Temple	Religious practices (e.g. prayer, sermons, devotional singing)
Multi-purpose hall – regular use	Study of scriptures Chanting and Bhajans (devotional singing) Indian classical dance Sanskrit language classes Administration and meetings
Multi-purpose hall – occasional use	Wedding ceremonies and receptions
Priest residence	Residential accommodation
Short stay facility	Visiting guests from overseas
Library	Study of Vedic scriptures and texts
Temple kitchen	Preparation of food offerings at altar

Superseded

2.2.2 Operating hours and occupancy

The proposed operating hours and occupancy for the development are summarised in Table 3.

Table 3: Proposed operating hours and occupancy (regular use)

Day	Activity	Anticipated attendance	Time
Monday – Friday	Prayers	25 – 50	0600 – 1200 hrs
		25 – 50	1700 – 2100 hrs
Monday – Friday	Yoga classes	20	1800 – 1900 hrs
Saturday – Sunday	Prayers	100 – 150	0600 – 1200 hrs
		100 – 150	1700 – 2100 hrs
Saturday – Sunday	Scripture classes	50 – 75	1500 – 1800 hrs
Once per month on average	Special Hindu festival days	50 – 75	0600 – 1200 hrs
		150 – 250	1700 – 2100 hrs

In addition to the above, Hindu weddings are proposed to be held on occasion. We understand these would be held within the hall on weekends, with an average of six events per year. The maximum number of attendees at weddings is 400. Further detailed consideration of these proposed events will be required so that potential noise impacts can be managed. Further discussion and recommendations for this are provided in Section 5.0.

3.0 LEGISLATION AND GUIDELINES

The guidance documents relevant to this assessment are summarised in Table 4.

Table 4: Relevant legislation and guidelines

Document	Status	Relevance to assessment
Western Australian *Environmental Protection (Noise) Regulations 1997* (Noise Regulations)	Statutory requirement	Sets limits for noise from the development, e.g. mechanical plant equipment, patrons and music
State Planning Policy No. 5.4 *Road and Rail Noise* (SPP 5.4)	Planning policy	SPP 5.4 and the associated Implementation Guidelines are referred to with regard to traffic noise to noise-sensitive land uses within the proposed development
AS/NZS 2107:2016 *Acoustics - Recommended design sound levels and reverberation times for building interiors* (AS 2107)	Guideline	AS 2107 is referred to in SPP 5.4 and MDA recommends that the buildings be designed to meet internal noise levels and reverberation time criteria recommended in AS 2107

Superseded

3.1 Environmental Protection (Noise) Regulations 1997

External noise emission is governed by the *Western Australia Environmental Protection (Noise) Regulations 1997* (the Noise Regulations). The Noise Regulations are a "prescribed standard" under the *Environmental Protection Act 1986*.

The assessment of noise emission under the Noise Regulations is based on external noise level limits that apply at a receiver position. The calculation of the noise level limits takes into account the local road network, the land use in the surrounding area and the time of day. These calculated noise level limits are known as 'assigned noise levels.'

Noise emissions from a proposed development site are assessed over an assessment period which can vary between fifteen minutes and four hours. The assessment period must be appropriate for the assessment of the emission and depends on the type and character of the noise source(s).

The assigned noise levels are defined in terms of statistical A-weighted and Slow-weighted sound pressure levels as follows:

- L_{AS10}, this is the noise level not to be exceeded for more than 10% of the assessment period
- L_{AS1}, this is the noise level not to be exceeded for more than 1% of the assessment period
- L_{ASmax}, this is the noise level not to be exceeded at any time.

In determining the assigned noise levels applicable to the development, reference has been made to the town planning scheme map available from the City of Rockingham Local Planning Scheme provided in Appendix B.

3.1.1 Assigned noise levels

The assigned noise levels applicable to the representative most-affected receivers are presented in Table 5. Full details of the parameters used in the calculation of the assigned noise levels are provided in Appendix D.

Table 5: Summary of assigned noise levels

Type of premises receiving noise	Time of day	Assigned noise level (dB)		
		L_{A10}	L_{A1}	L_{Amax}
Noise sensitive premises: highly sensitive area	0700-1900 – Monday to Saturday	45	55	65
	0900-1900 – Sunday and public holidays	40	50	65
	1900-2200 – All days	40	50	55
	2200-0700 – Monday to Saturday, or 2200-0900 Sunday and public holidays	35	45	55
Noise sensitive premises: any area other than highly sensitive area	All hours	60	75	80

In addition, the noise emissions must be free of annoying characteristics such as: impulsiveness, modulation and tonality. Adjustments are also applicable where the noise emission is music. These adjustments are presented in Table 6.

Superseded

Table 6: Adjustments for annoying characteristics

Adjustment where noise emission is not music. These adjustments are cumulative to a maximum of 15 dB			Adjustment where noise emission is music	
Where tonality is present	**Where modulation is present**	**Where impulsiveness is present**	**Where impulsiveness is not present**	**Where impulsiveness is present**
+5 dB	+5 dB	+10 dB	+10 dB	+15 dB

Division 5 of the Noise Regulations states that "Regulation 7 does not apply to community noise". Community noise is defined in Schedule 2 and includes:

> 3. Noise emitted from an assembly convened solely for the purpose of divine worship where —
>
> (a) the noise is not noise of a kind referred to in regulation 15(2); and
>
> (b) the premises or public place on which the worship takes place is land which is referred to in section 6.26(2)(d), (e) or (f) of the *Local Government Act 1995*.

Some activities on the site are considered to be 'community noise' and therefore would not be assessable against the assigned levels, although this would depend on other factors including the classification of the premises.

Other activities proposed for the site would not be exempt and these are also likely to have the highest associated noise levels. Estimated noise levels from these activities are described and compared with the assigned levels criteria below.

3.2 Road noise to the development

The relevant policy for the assessment of road traffic noise in Western Australia is *State Planning Policy No. 5.4 Road and Rail Noise* (SPP 5.4). A screening assessment has been undertaken using the Noise Exposure Forecast table in the SPP 5.4 *Road and Rail Noise Guidelines*. The outcomes are summarised in Table 7.

Table 7: Forecast noise exposure category

Road name	Number of lanes (total)	Vehicles per day	Distance to noise sensitive receiver	Forecast noise exposure	Noise exposure category
Kwinana Fwy	8	>60 000	>300 m*	<53	None

* the receiver location has been taken to be the nearest noise-sensitive building (the priest's residence)

The forecast noise exposure level is below the SPP 5.4 external noise target and therefore no further measures are required to address traffic noise intrusion under SPP 5.4.

The distance and forecast noise levels presented in Table 7 are the furthest distance possible in the SPP 5.4 Noise Exposure Forecast table. The actual separation distance between the Kwinana Fwy and the nearest noise-sensitive buildings proposed for the site is >500 m. As such, external traffic noise levels at the buildings will be lower than 53 dB, particularly at night (noting that the forecast noise exposure levels are daytime levels).

Superseded

4.0 NOISE ASSESSMENT

The following noise sources associated with the operation of the temple have been considered in the noise assessment:

- Noise from amplified music as part of a private function within the multipurpose hall
- Noise from cars and patrons using the carparks
- Freeway noise affecting the site

To estimate potential noise transmission from site activity, a 3-dimensional model of the proposed hall and surrounding environment was created using SoundPLAN proprietary noise modelling software (version 8.2).

Details on the modelling method are provided in Appendix E.

4.1 Multipurpose hall

The source levels used in the assessment are based on measurements obtained by staff at MDA of activities including instructional music lessons and wedding bands.

An internal reverberant level of 97 dB L_{A10} has been assumed within the hall as a reasonable upper limit during weddings and events where amplified music may be played inside the hall. The normal uses of this hall are expected to be significantly below this level. Refer to Appendix E3 for the sound spectra.

The estimated noise levels at the nearest representative receivers are provided in Table 8. The levels are based on the building envelope recommendations provided in Section 5.0 and assume windows and doors to the hall are all closed.

Table 8: Multipurpose hall predicted levels from events (dB)

Receiver	Address	Predicted level (L_{A10})	Assigned level (L_{A10})	Compliance	Margin (evening/night)
1	574 Young Road	21	Evening: 40 dB Night: 35 dB	✓	-20 / -15
2	542 Young Road	29		✓	-11 / -6
3	66 Folly Road	29		✓	-11 / -6

The predicted levels from within the multipurpose hall show:

- The 40 dB L_{A10} assigned level is likely to be met with a margin of at least 11 dB at all receivers
- The 35 dB L_{A10} assigned level is likely to be met with a margin of at least 6 dB at all receivers

Under a compliance survey assessment, noise levels measured at nearby receivers would be assessed to determine whether any 'annoying character adjustments' are appropriate. While ambient noise levels at the time would need to be factored in, if the dominant source were found to be music, it would typically attract a +10 dB adjustment, which would mean that the assigned levels may not be met during night-time hours at all locations.

While these are preliminary estimates only at this stage, the following can be determined:

- Music levels during events will need to be carefully managed to meet the assigned levels, particularly during night-time hours (i.e. after 2200 hrs)
- Windows and doors may need to be closed at times to contain noise
- The building envelope design will require careful consideration during detailed design so that the building is capable of sufficiently containing noise when required.

Superseded

The scenario modelled is likely to be the highest noise activity in the multipurpose hall during normal operations and it has been modelled in this manner (doors and windows assumed closed) and compared with assigned levels during evening and night-time hours to inform the building envelope design.

Based on the margins for compliance for this scenario and noting that typical operations will have significantly lower noise levels than those modelled, the proposed development is considered feasible, provided that provisions are made in the design.

Some managerial controls are also expected be required, particularly for large events. A noise management plan should be developed so that any operational procedures that are found necessary to achieve compliance are clearly documented for staff to follow.

Preliminary design and management recommendations are outlined in Section 5.0.

4.2 Carparks

The proposed development includes:

- A main carpark with 65 parking bays between the temple and multipurpose hall towards the northern boundary of the site
- A row of 15 car parking bays along the northern boundary of the site
- A secondary carpark with 16 bays to the north of the multipurpose hall
- 4 additional bays near the short stay accommodation

The expected hours of usage for the carparks can be estimated somewhat from the proposed operating hours summarised in Section 2.2.2. The scenarios with the most potential to impact on nearby receivers are expected to be when cars and attendees arrive prior to 0700 hours for prayers or festival days.

We understand that the arrival and departure of attendees are generally spread out and not all at once. On this basis, we consider that individual cars and voices in the carpark are the noise sources with most potential to affect nearby receivers, particularly since it is these short duration noise events that have potential to occur during sensitive times of the day. As such, an assessment against the 55 dB L_{Amax} evening and night-time assigned noise level is considered the most appropriate.

Typical noise sources from the car park will include:

- Noise from vehicles within the carpark
- Vehicle start-ups, doors being opened and closed
- Voices from car park users

The maximum sound levels would generally be from car door slams. Sound power data used for the calculations is provided in Appendix E. The levels are based on a range of measurements taken by MDA and are considered to represent typical maximum levels from parking bays. Excessive noise resulting from anti-social or non-typical behaviour could generate higher noise levels than those considered in the assessment; however, it is expected that this would be unlikely for this type of development and management procedures could be used to control this if required.

To calculate maximum noise levels at the nearest receivers, noise sources were placed in the nearest parking bay to each respective receiver. The worst-case location for each receiver is reported and compared to the L_{Amax} assigned levels.

The predicted noise levels are provided in Table 9.

Superseded

Table 9: Carpark predicted levels, without noise barrier (dB)

Receiver	Address	Predicted level (L_{Amax})	Assigned level (L_{Amax})*	Compliance
1	574 Young Road	32	55	✓
2	542 Young Road	41	55	✓
3	66 Folly Road	40	55	✓

The estimated levels show that noise from typical maximum sources in the parking bays nearest the surrounding receivers would meet the assigned levels.

General recommendations to help manage carpark noise are provided in Section 5.2.

4.3 Noise from freeway affecting site

As detailed in Section 3.2, traffic noise levels to the nearest building proposed for the site (Priest Residence) and therefore to the rest of the site, are below the SPP 5.4 external noise targets. As such, no further measures are required to address traffic noise intrusion under SPP 5.4.

Based on the forecast exposure level, internal noise levels of AS 2107 are expected to be achievable with typical facade designs that allow for natural ventilation.

Superseded

5.0 RECOMMENDATIONS FOR NOISE MANAGEMENT

The noise assessment detailed above demonstrates that noise from the multipurpose hall and carpark can meet the assigned levels. The design should allow for the provisions outlined below, to be developed during detailed design. Managerial controls will also be an important factor for the successful operation of the temple, and these should be developed into a noise management plan to be maintained by the operator.

Preliminary recommendations for the design and management of the temple are outlined below.

5.1 Building envelope design

At this stage of the design, the materials and designs for the building envelope are not yet determined. The noise modelling presented for the multipurpose hall is nominally based on:

- Closed and sealed R_w 31 (e.g. 6.38 mm laminated) acoustic glazing. The extents and locations of external windows will need to be factored in when designing the facade. If larger extents are used (i.e. entire facades), higher ratings should be considered. Similarly, smaller windows to more shielded facades could accommodate lower ratings.
- External walls being solid masonry (e.g. precast or double brick), rated around R_w 50. Lightweight facade elements could be considered but should be designed to contain music noise.
- A moderately high performing roof and suspended ceiling build-up (min. R_w 45).
- For external doors, the modelling assumes R_w 31, as per the glazing.

Doors are weak points acoustically, particularly since they cannot remain closed at all times. For event noise, it would be beneficial if the design allows for the option to close and seal some doors at times (e.g. during any late night hours for events). If the main entry doors are located in a shielded position on the building relative to the nearby receivers, this would allow greater operational flexibility. Airlocks could also be considered, although the potential impracticality for typical hall uses is noted.

5.2 Carpark design and management

The following general design recommendations are made to reduce car park noise:

- The surface of the carpark should be a low noise asphalt or bitumen type
- Although primarily a safety consideration, vehicle speeds should be restricted to control noise. Signage, line markings and chicanes should be considered in lieu of speed humps, as speed humps can be a cause of nuisance noise
- Loose road coverings such as drains should be avoided

Managerial options that could be implemented include:

- Attendees being made aware of the need to be respectful of residential neighbours, including encouragement not to loiter in the carpark and to depart from site in a quiet manner
- Directing attendees to park in less sensitive areas on site first and/or restricting access to certain parts of carparks. Although it is noted that carparks nearest the buildings are likely to fill up first and these are also furthest from the residents.

Superseded

5.3 General operational noise

For managing noise from general operations, the following options will be available and should be considered:

- Hall timetabling, with quieter activities such as scripture and language classes scheduled for more noise sensitive times wherever possible (refer to the assigned levels hours in Table 5)
- Any third parties hiring the hall should be made aware of the proximity of noise sensitive neighbours and their responsibility to manage their activity levels
- Staff and volunteers being informed of noise management responsibilities

While some of these would not typically need to be formalised in a noise management plan, managerial controls related to large events would.

5.4 Event noise

The assessment of event noise demonstrates that noise can be contained within the multipurpose hall when required, provided that music levels are controlled, particularly for any events after 2200 hours.

The assessment is a simplified review and does not account for the numerous variables that would need to be considered in further detail before any large events such as weddings are held on the site.

The following would need to be considered:

- Proposed location(s) on site
- Number of patrons
- Event times / durations
- Proposed music, activities, etc.

Once these are determined, more specific noise management procedures should be developed to manage noise risks associated with events. Patrons in outdoor areas in particular will need to be reviewed. Outdoor patron noise has not been reviewed in detail as part of this preliminary assessment.

5.5 Additional noise sources

The following additional noise sources on site were identified. These will also need to be considered in the design and managed by the operator.

5.5.1 Mechanical services noise

At this stage of the project, the mechanical services design strategy is not yet confirmed; however, services will need to be designed so that compliance with the Noise Regulations is achieved.

Noise from mechanical services equipment is typically controlled using design and engineering methods such as:

- Plant equipment siting and selection to reduce noise impacts
- Barriers/screens around plant equipment
- Duct attenuators and acoustic louvres

In addition, equipment will need to be appropriately vibration isolated.

Based on the layout, siting of the buildings, and buffer distances to nearby receivers, it is expected that services noise can be adequately controlled using typical noise control approaches.

Superseded

Noise to within the development itself should also be considered and we recommend the internal noise level criteria of AS 2107 be targeted in the design.

6.0 CONCLUSIONS

This reported has been prepared as part of the Development Application (DA) for the proposed Balaji Temple development located at Lot 53 Folly Road, Baldivis.

Assessment of specific noise considerations was requested and included for:

- Freeway noise affecting the building(s)
- Noise emanating from carparks to surrounding residences
- Noise emanating from multipurpose hall to surrounding residences

Descriptions and assessment of these aspects is provided to a level of detail considered appropriate for this stage of the development. The outcomes show that the proposed development is feasible for the site, provided that noise is managed, particularly from events.

Preliminary recommendations for the design are provided, which should be developed during detailed design. The extent of noise controls that can be incorporated in the design will ultimately determine the scope of any operational noise management procedures that are required.

Superseded

APPENDIX A GLOSSARY OF TERMINOLOGY

A-weighting	The process by which noise levels are corrected to account for the non-linear frequency response of the human ear.
dB	Decibel The unit of sound level. Expressed as a logarithmic ratio of sound pressure P relative to a reference pressure of Pr=20 μPa i.e. dB = 20 x log(P/Pr)
Frequency	The number of pressure fluctuation cycles per second of a sound wave. Measured in units of Hertz (Hz).
Hertz (Hz)	Hertz is the unit of frequency. One hertz is one cycle per second. One thousand hertz is a kilohertz (kHz).
L_{A1}	The noise level exceeded for 1% of the assessment period, measured in dBA.
L_{A10}	The noise level exceeded for 10% of the assessment period, measured in dBA.
L_{Amax}	The A-weighted maximum noise level, measured in dBA.
Octave band	A range of frequencies where the highest frequency included is twice the lowest frequency. Octave bands are referred to by their logarithmic centre frequencies, these being 31.5 Hz, 63 Hz, 125 Hz, 250 Hz, 500 Hz, 1 kHz, 2 kHz, 4 kHz, 8 kHz, and 16 kHz for the audible range of sound.
SPL or L_P	Sound Pressure Level A logarithmic ratio of a sound pressure measured at distance, relative to the threshold of hearing (20 μPa RMS) and expressed in decibels.
SWL or L_W	Sound Power Level A logarithmic ratio of the acoustic power output of a source relative to 10^{-12} watts and expressed in decibels. Sound power level is calculated from measured sound pressure levels and represents the level of total sound power radiated by a sound source.

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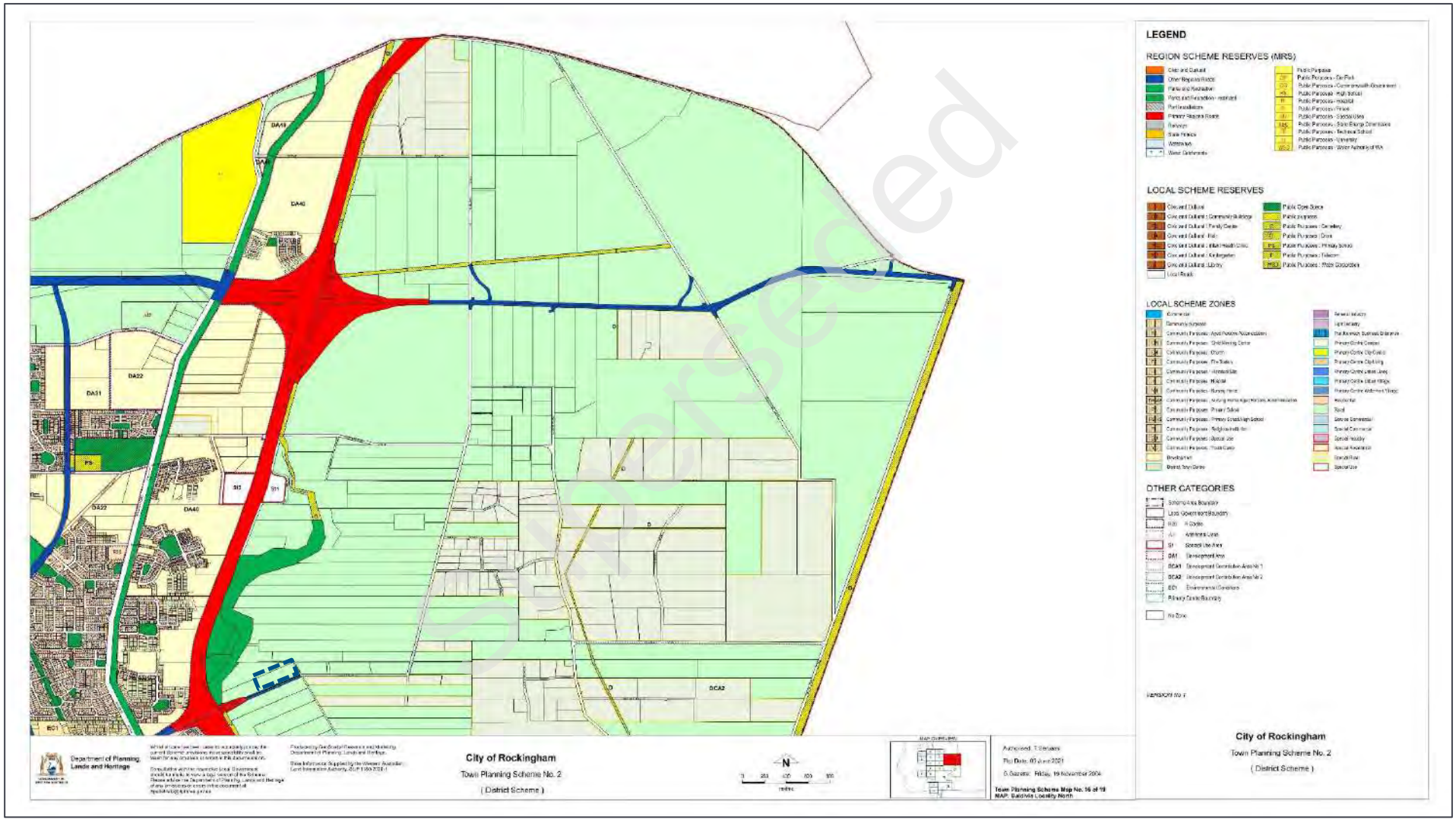
APPENDIX B PLANNING MAP



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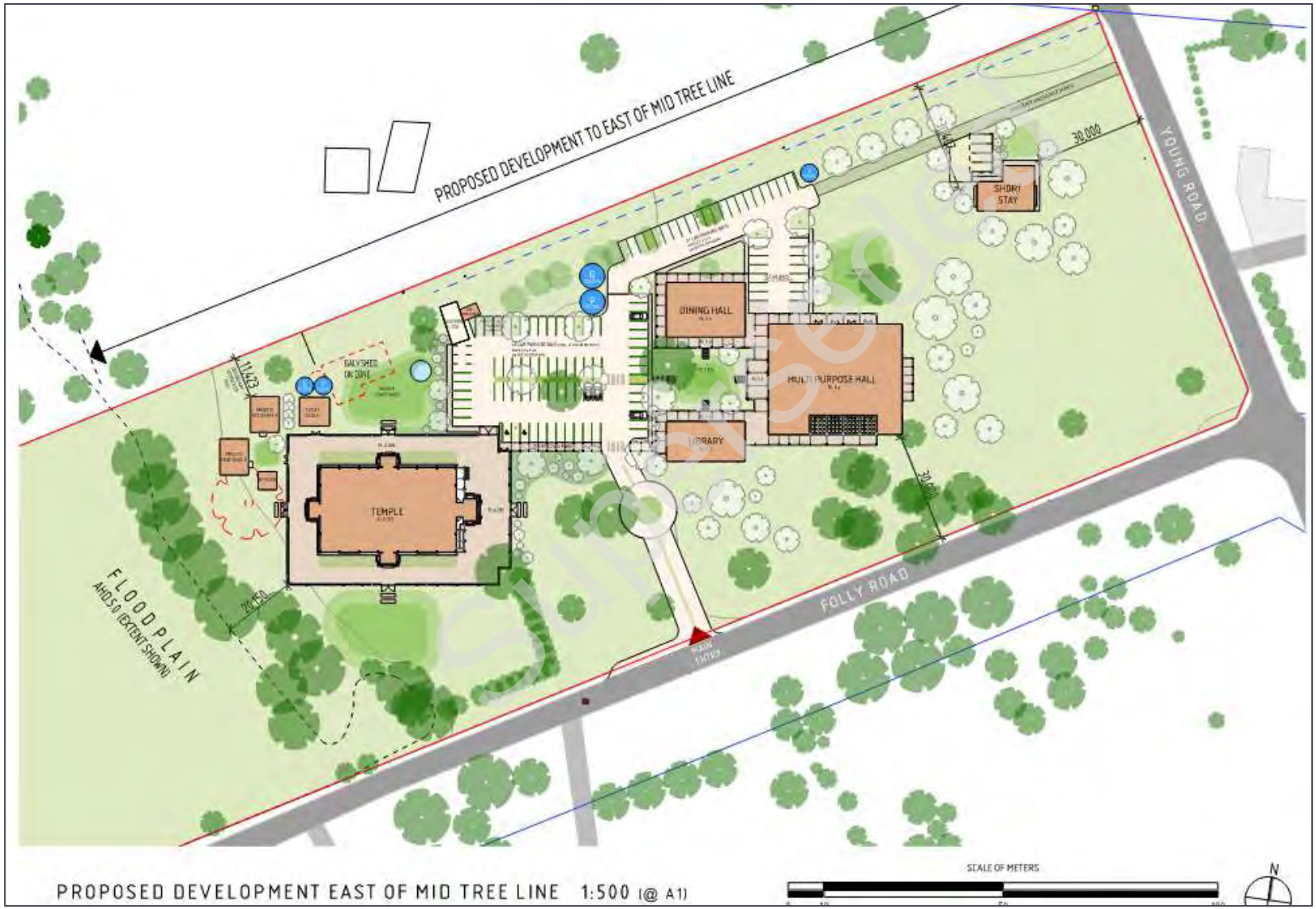
APPENDIX C PROPOSED SITE PLAN



APPENDIX D ASSIGNED NOISE LEVEL CALCULATIONS

The determination of the Influencing Factor (IF) which affects the assigned levels applicable at the nearest residential receivers is based on the following:

- The number of major and secondary roads in proximity to the receiver
- The area of commercial and industrial zoned land surrounding the receiver

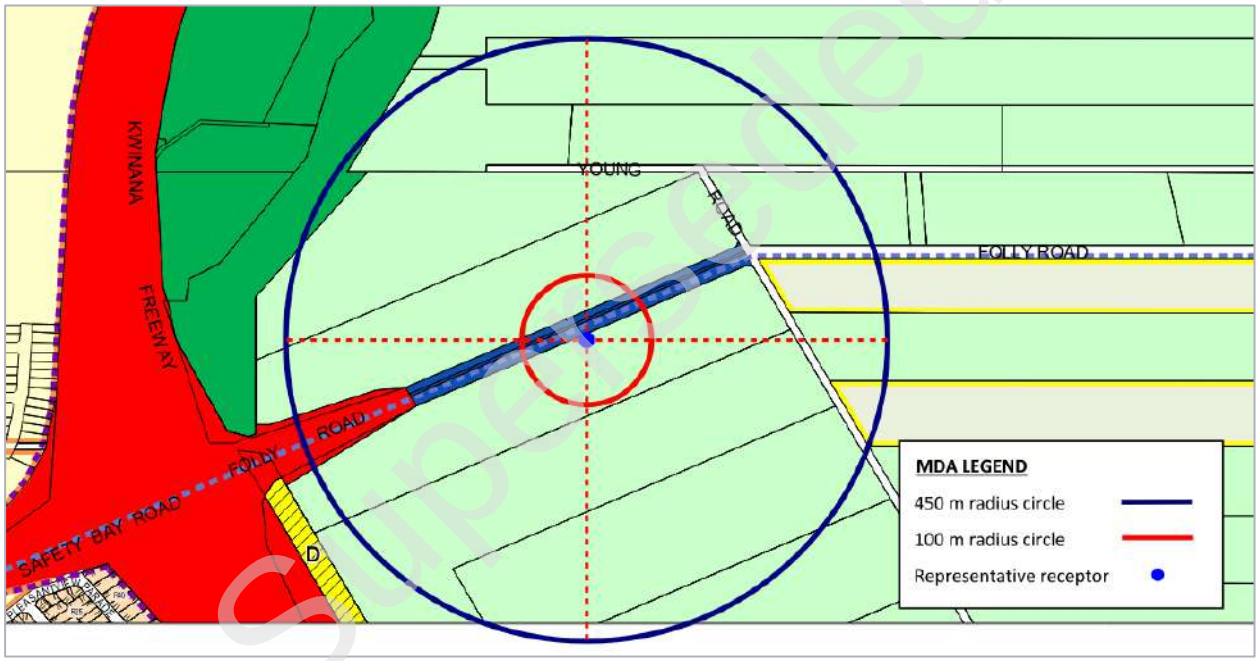
The procedure defined in the Noise Regulations considers the land use and road types with two circles centred on the receiver location, one of 450 m radius, and one of 100 m radius.

The land use has been determined from:

- City of Rockingham Local Planning Scheme (accessed 21/09/2021)

An extract of the City of Rockingham planning map showing the 100 m and 450 m radius circles centred at the nearest sensitive receiver at 66 Folly Road is presented in Figure 2.

Figure 2: Extract of planning map with 100 m and 450 m radius areas used to determine the IF shown



Transport factors of 6 dB and 2 dB apply if there are any Major Roads (a road carrying in access of 15,000 vpd) within the 100 m and 450 m circles respectively. For each Secondary Road (a road carrying in between 6,000 - 15,000 vpd) within the 100 m circle, a 2 dB transport factor applies. The total transport factor that is included in the IF is limited to 6 dB.

Traffic data for the nearby roads obtained from Main Roads is presented in Table 10.

Table 10: Traffic data and classifications for nearby roads (source: Main Roads)

Road	Average weekday traffic volume (AADT/VPD)	Classification
Folly Road (West of Young Road)	2,592 (2020/2021)	-

Based on the data presented in Table 10 and noting that the Kwinana Fwy is more than 450 m away from the nearest noise sensitive receivers, the transport factor is 0 dB.

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A summary of the input parameters used to determine the IF is presented in Table 11.

Table 11: Influencing Factor (IF) calculation parameters

	100 m circle	450 m circle	IF
Land use:			
Industrial %	0%	0%	-
Commercial %	0%	>3%	-
Transport Factor:			
Major road	0	0	-
Secondary roads	0	n/a	-
		Influencing Factor:	**0 dB**

Based on the parameters above, the IF is calculated to be 0 dB.

Superseded

APPENDIX E NOISE MODELLING DETAILS

E1 Modelling method

A 3-dimensional model of the proposed building, carpark and surrounding environment has been created using SoundPLAN proprietary noise modelling software (version 8.2).

Geometry data for the model has been sourced from public aerial photography and building heights defined on the basis of standard assumed heights per floor level. The geometries in the model are simplified representations of the built environment that have been configured to a level of detail that is appropriate for noise calculation purposes.

A screenshot from the noise model is shown in Figure 3.

Figure 3: Screenshot from SoundPLAN noise model



Superseded

The SoundPLAN model has been used to calculate noise levels in accordance with the International Standard *ISO 9613-2: 1996 Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation* (ISO 9613-2). ISO 9613-2 is a general environmental noise calculation standard that has been used extensively throughout Australia, New Zealand, and Europe since its publication in 1996.

The implementation of ISO 9613-2 within proprietary noise modelling software enables multiple sound transmission paths, including reflected and screened paths, to be accounted for in the calculated noise levels. While atmospheric effects are expected to have a negligible effect on the transmission of sound from the site to neighbouring sensitive receiver locations, it is noted that the ISO 9613-2 predicts noise levels for conditions which favour the propagation of noise.

E2 Noise modelling inputs

Selected key inputs for the noise model are presented in Table 12.

Table 12: Noise modelling inputs

Parameter	Input
Noise source data	Refer to Table 13 below
Topography data	Sourced via Google
Noise source heights:	
Cars	0.5 m above ground
Voices	1.5 m above ground
Receiver details:	
Height	1.5 m above ground
Location	- 15 m from nearest facade - At the facade of 542 Young Road (based on proximity to boundary)
Ground attenuation	G = 0.5 (50% absorptive)

E3 Noise source levels

In order to undertake the acoustic assessment, noise level data has been sourced from the MDA noise database. The MDA noise database is a comprehensive compilation of noise measurements of numerous sources performed by staff at MDA. These measurements have been used to calculate suitable inputs for the noise model.

The sound levels presented in Table 13 have been used in this assessment.

Table 13: Sound levels for noise sources used in assessment

		Octave band centre frequency, Hz (dB)							
Noise source	**Metric**	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**dBA**
Car door slam	$L_{WS,Max}$	108	104	94	88	85	83	80	93
Amplified music	$L_{10,rev}$	95	95	95	90	90	90	90	97

Superseded

Bushfire management plan/Statement addressing the Bushfire Protection Criteria coversheet

Site address: 67 FOLLY ROAD BALDIVIS

Site visit: Yes ☑ No ☐

Date of site visit (if applicable): Day 5 Month SEPTEMBER Year 2021

Report author or reviewer: Anthony Rowe

WA BPAD accreditation level (please circle):

Not accredited ☐ Level 1 BAL assessor ☐ Level 2 practitioner ☐ Level 3 practitioner ☑

If accredited please provide the following.

BPAD accreditation number: 36690 Accreditation expiry: Month December Year 2021

Bushfire management plan version number: V2

Bushfire management plan date: Day 29 Month NOVEMBER Year 2021

Client/business name: Jeeyars Acharya Peetham Ltd

Superseded

	Yes	No
Has the BAL been calculated by a method other than method 1 as outlined in AS3959 (tick no if AS3959 method 1 has been used to calculate the BAL)?		✔
Have any of the bushfire protection criteria elements been addressed through the use of a performance principle (tick no if only acceptable solutions have been used to address all of the bushfire protection criteria elements)?		✔

Is the proposal any of the following (see SPP 3.7 for definitions)?	Yes	No
Unavoidable development (in BAL-40 or BAL-FZ)		✔
Strategic planning proposal (including rezoning applications)		✔
High risk land-use		✔
Vulnerable land-use	✔	

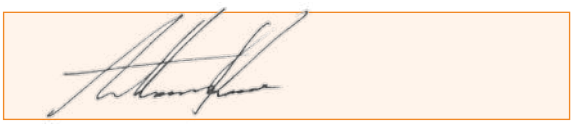
None of the above ☐

Note: Only if one (or more) of the above answers in the tables is yes should the decision maker (e.g. local government or the WAPC) refer the proposal to DFES for comment.

Why has it been given one of the above listed classifications (E.g. Considered vulnerable land-use as the development is for accommodation of the elderly, etc.)?

CONSIDERED A VULNERABLE DEVELOPMENT DUE TO VISITATION BY PERSONS WHO MAY NOT BE FAMILIAR WITH THE LOCATION

The information provided within this bushfire management plan to the best of my knowledge is true and correct:

Signature of report author or reviewer 

Date 30 November 2021

Bushfire Management Plan

67 Folly Road, Baldivis

Client – Jeeyars Acharya Peetham Ltd

November 2021

Superseded

envision
bushfire protection

LIMITATIONS STATEMENT

This Bushfire Management Plan ('BMP') has been solely prepared for the Sri Balaji Temple to be located 67 Folly Road Baldivis (**the Site**) within the City of Rockingham.

Envision Bushfire Protection

ABN: 90958370365

PO Box 7209 SHENTON PARK WA 6008

P: 0428 066 147

Email: admin@envisionbp.com.au

Version Control

67 Folly Road Baldivis			
Version	**Date**	**Author**	
V1	20 September 2021	Anthony Rowe	Draft
V2	29 November 2021	Anthony Rowe	Revised site location

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Disclaimer

In undertaking this work, the authors have made every effort to accurately apply the available information at the time of writing following the instructions of the regulatory authorities and applying best practice as described by the Fire Protection Association Australia. Any conclusions drawn or recommendations made in the report are made in good faith, and the consultants take no responsibility for how this information and the report are subsequently used.

Envision Bushfire Protection accepts no liability for a third party's use of, or reliance upon, this specific report.

Envision Bushfire Protection accepts no liability for the inaction of the owner to provide or maintain the bushfire protection measures identified in this report. Vegetation is dynamic, building materials may distort, and the accumulation and the location of flammable materials near the building may affect the potential for damage or loss of a building to occur.

Failure to maintain the property and/or building to these standards may compromise an insurance policy if currently covering any of your assets or those of any third party that may be consequentially affected due such failure. If not insured, and if you are seeking insurance, this report may not influence the decision of any insurer not to offer cover.

Importantly the measures contained in this report cannot guarantee human safety or an absence of harm or that the building will not be damaged or would survive a bushfire event on every occasion. This is due to the unpredictable nature of fire behaviour (knowledge in this field continues to develop) and the unpredictable nature of extreme weather conditions.

Superseded

Scope of this report

Envision Bushfire Protection has been engaged to provide expert bushfire safety and planning advice.

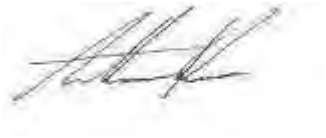
The scope of the advice has been to assess the proposal for compliance with the policy measures described in State Planning Policy 3.7 and identify appropriate mitigation measures to be considered by the determining authority. This is described in a Bushfire Management Plan and prepared with regard to the Department of Planning Lands and Heritage templates.

The investigations and mitigation measures identified in the BMP, has, in turn, formed the basis for the preparation of a Bushfire Emergency Evacuation Plan.

Client relationship

I was engaged to provide expert bushfire safety and planning advice. My relationship with the client is a standard commercial contract, and no private, personal, or other matter has influenced the content of the BMP or my findings.

STATEMENT OF CONFORMITY – PLANNING AND DEVELOPMENT ACT 2005



Anthony Rowe Level 3 - BPAD36690

Principal

The signatory declares that this Bushfire Management Plan meets the requirements of State Planning Policy 3.7 and the Guidelines for Planning in Bushfire Prone Areas V1.3.

Superseded

EXECUTIVE SUMMARY

Preface

The applicant Sri Balaji Temple proposes to establish a place of worship and community centre at 67 Folly Road Baldivis (subject land). The maximum number of visitors to the facility at any time is 400 people.

The subject land is 7.5 ha, but the proposal will only occupy 3.2 ha at its eastern extent (**the site**). The remainder of the subject land is to be retained as pasture.

The site is within a declared bushfire prone area. Accordingly, the proposal is development that is required to be assessed for its compliance with State Planning Policy 3.7 *Planning in Bushfire Prone Areas* ('**SPP 3.7**') and the bushfire protection criterial described in the Guidelines V1.3.

The intent of the policy is: "***to preserve life and reduce the impact of bushfire on property and infrastructure"***. The proposed land-use because it will invite visitation by people unfamiliar with the locality is classified as a 'Vulnerable' development. In addition to addressing the bushfire protection criteria through a Bushfire Management Plan (BMP), the application is to be accompanied by a bushfire emergency evacuation plan (BEEP). Together they address the preservation of life (BEEP) and impact of bushfire on property (BMP).

This BMP has been prepared in accordance with SPP 3.7 and Appendix Five in the Guidelines V1.3 and the Department of Planning Lands and Heritage (DPLH) *BMP Template for a complex development application*.

The following describes the outcome of the investigations, following the arrangement described by the DPLH template.

1. **Proposal details (addressed in Section 1)**

The proposal is to construct a place of worship and community centre comprising the following buildings.

- Temple;
- Multi-Purpose Hall;
- Short stay;
- Library;
- Priest residence @2
- Dining Hall; and
- Outbuildings @2.

The site is mostly clear of trees, flat, and has been used for pasture and grazing. The site is vacant except for a centrally located implement shed (to be demolished) and a smaller galvanised shed to be retained.

The site is located on Folly Road which is a through road 164 m from Kwinana Freeway (west) with multiple destination options north, east and south. The site has 64 primary parking bays with provision for a further 126 parking bays.

The site does not have access to a reticulated water supply, a strategic water supply is not located nearby, and the nearest hydrant is located 970 m south of the site. A water tank convenient to the street access, for use by emergency services is to be provided.

2. **Environmental considerations (addressed in Section 2)**

No clearing of regulated vegetation is proposed or required, for the purpose of bushfire protection. The development will predominantly displace pasture grass. The site contains sparsely distributed trees which are desired to be retained where not displaced by buildings or paved surfaces.

Future landscaping of the site will be for amenity purposes and will be planted as low threat following cl 2.2.3.2 (e) AS3959:2018.

3. **Bushfire assessment results (addressed in Section 3)**

A Bushfire Attack Level assessment following Method 1 AS 3959:2018, and the DPLH *Visual guide for bushfire risk assessment in Western Australia*, and using an FFDI of 80, has been undertaken.

The development site (3.2 ha from 7.5 ha) is predominantly pasture, with a sparse tree distribution, and retains no restricted vegetation. The nominated development site (3.2 ha at the eastern extent) will be

Superseded

maintained in a low threat condition; the BAL within the development site will be determined by external vegetation.

The indicative BAL, post development has been assessed

- Temple = BAL 12.5;
- Multi-Purpose Hall = BAL 12.5;
- Short stay = BAL 12.5;
- Library = BAL 12.5;
- Priest Residence A= BAL 19
- Priest Residence B = BAL 12.5
- Dining Hall = BAL 12.5;
- Outbuildings (storage shed) = BAL 29; and
- Outbuilding (toilet block) = BAL 12.5,

4. Identification of bushfire hazard issues (addressed in Section 4)

The site has been identified as potentially subject to a grassland fire run, but unlikely to be subject to ember attack in the event of a fire given the modest extent of forest vegetation adjoining Kwinana Freeway, and the absence of significant stands of forest within 5 km of the site.

The site offers access to multiple destinations in all directions of the compass. This provides the opportunity to evacuate the facility and head in a direction away from an advancing bushfire. The locality is also open offering expansive views to take avoidance action from an approaching fire, and to anticipate a fire's arrival at the site.

The site is within mobile network coverage, from transponders located in BAL low areas (Baldivis urban area west of the site). It is anticipated that continuous communication would be maintained throughout a bushfire event to provide guidance for safety.

5. Assessment against the bushfire protection criteria (addressed in Section 5)

The proposal was compared with the four Bushfire Protection Criteria Elements: Location, Siting and Design, Access, and Water.

Acceptable Solution

Element 1 Location - This provision requires a strategic proposal demonstrates upon completion the area will be classified as a low or moderate Bushfire Hazard Level. The site is within an area that is predominantly grassland which is a moderate Bushfire Hazard Level.

Element 2 Siting and Design – This provision requires a planning application should demonstrate the habitable buildings will not be exposed to a BAL greater than BAL-29.

The analysis of the Bushfire Attack Level across the site, as illustrated by the BAL Contour Plan Figure 5, illustrates the place of assembly buildings (habitable building) and short stay and priest residence (accommodation class) will be located at less than BAL 29.

The construction standards in AS3959:2018 apply to accommodation type building classes (class 1-3). Other classes are determined by the National Construction Code fire requirements, some of which exceed the performance provided by AS3959:2018. Where the construction performance would be less than AS3959:2018, a higher construction standard can be volunteered and authorised in accordance with cl. 78E(1) in the Planning regulations (LPS Regulations 2015 Schedule 2); if it is not in conflict with a direction made by the National Construction Code

Given the comparatively low radiant heat level and an unlikely ember attack, it has been left to applicant discretion to adopt a range of minor construction and land management techniques proportionate to the risk, aside from maintaining the site in a low bushfire fuel condition and threat, to restrict the spread of bushfire within the perimeters of the site.

In this regard the buildings will be constructed to the commensurate BAL level at their location, and an area larger than the minimum Asset Protection Zone will be provided to minimise the BAL level at the habitable buildings (determined by conditions external to the site).

Superseded

A condition of approval is recommended to affirm the area to be maintained as low threat and the BAL constructions volunteered for the habitable buildings.

Element 3 Vehicle Access – this provision requires the site has access to a through road to provide alternate routes of escape and access for fire fighters.

A service entry and a main entry (two way) is from Folly Road and services the Temple carpark (main carpark). The service entry loops through to the main entry to facilitate a forward movement and access to all buildings on site.

A supplementary road is provided as an additional egress onto Young Road to create a through road, to provide an additional capacity for evacuation and avoid any potential conflict with arriving emergency service vehicles.

It is recommended the 50 000 L water tank to be provided for emergency services is placed near the service entry, so as not to obstruct or confuse vehicles evacuating from the main carpark.

The site is large with a number of buildings located further than 50 m from Folly Road. The private driveways are through open areas over level low threat grounds, a low bushfire hazard level, and will comply with the technical requirements (dimensions) for private driveways. A condition of approval is recommended to affirm the provision of the driveway and vehicle circulation area in accordance with the technical requirement of the Bushfire Protection Criteria (Table 6 column 3, Guidelines v1.3).

Fire breaks are required to be maintained to City requirements, affecting the western end of the site.

Element 4 Water – this provision requires the availability of water for firefighting purposes.

The site does not have access to a reticulated water supply or firefighting hydrants. The nearest hydrant is located 950 m west of the site, on Safety Bay Road. A 50 000 L water supply is to be provided for emergency services. A condition of approval is recommended to affirm its reserve for emergency services and fitted with couplings corresponding to the City's technical requirements.

Additional Bushfire Management Strategies (addressed in section 5.2)

Additional management strategies, further to the Bushfire Protection Criteria, include the measures to minimise the exposure of visitors to bushfire impacts. This is addressed in the Bushfire Emergency Evacuation Plan. It includes seasonal management to oversee works to ensure the development site is maintained as low threat.

Spatial representation of the bushfire management strategies (Figure Ex 1)

The key features demonstrating compliance with the bushfire protection measures are identified on the *Spatial representation of the bushfire management strategies*.

These actions are reflected in the following *Responsibilities for implementation and management of the bushfire measures.*

6. Responsibilities for implementation and management of the bushfire measures

The Owner responsibilities (Guidelines 4.6.3) identify the bushfire management measures necessary to achieve compliance with the bushfire protection criteria.

Owner

1.	The adoption of the Bushfire Emergency Evacuation Plan (Appendix 2 here in).	Ongoing
2.	The development site (extent shown on Figure Ex1), with in the area identified as Asset Protection Zone, is to be maintained as low threat in accordance with the descriptions provided in AS 3959:2018 cl. 2.2.3.2 (f).	Prior to occupation and ongoing
3.	The habitable buildings are to be constructed commensurate to BAL level at their location on the site unless *the method is in conflict with a requirement of the Building Act 2011.*	Prior to occupation

Superseded

4.	The internal roads (private driveway and supplementary road (Emergency and Service Access) are to be constructed and maintained in accordance with Guidelines for Planning in Bushfire Prone Areas, Appendices, Element 3 Table 6, Column 3 (private driveway).	Prior to occupation
5.	Firebreaks to be installed and maintained in accordance with the City of Rockingham Annual Fire Control Notice	Prior to occupation
6.	A minimum 50 000 L water supply (tank) shall be provided, accessible to the emergency and service access, with a coupling to City of Rockingham specification and signposted as exclusively for the use by emergency services.	Prior to occupation
7.	A notification, pursuant to Section 70A *Transfer of Land Act 1893* is to be placed on the certificate(s) of title of the proposed lot(s) with a Bushfire Attack Level (BAL) rating of 12.5 or above, advising of the existence of a hazard or other factor. The notification is to state as follows: "This land is within a bushfire prone area as designated by an Order made by the Fire and Emergency Services Commissioner and is subject to a Bushfire Management Plan. Additional planning and building requirements may apply to development on this land"	Prior to occupation

Advisory notes

1. The landowner acknowledges their duty of care to protect any visitors to the site from harm, from a bushfire affecting the property and for the safe direction from the site.

2. The landowner is responsible for availing themselves of any promotions and information to assist owners in preparing for and responding to a bushfire event as may be made by the City or the Department Fire and Emergency Services

The City of Rockingham

1.	Developing and maintaining district bushfire fighting services and facilities.	Ongoing
2.	Administer the *Bushfire Act 1954* and the enforcement of the City Fire Control Notice *Where there is conflict between this Bushfire Management Plan and the City Fire Control Notice the higher level of bushfire protection will prevail*	Ongoing
3.	Promoting education and awareness of bushfire prevention and preparation measures through the community.	Ongoing
4.	Administering the requirements of the *Planning and Development Act 2005* by ensuring the facility closure in accordance with the terms of the Development approval.	Ongoing
5.	Administering the requirements of the *Planning and Development Act 2005* and the *Building Act 2011*.	Ongoing

Superseded

State Government

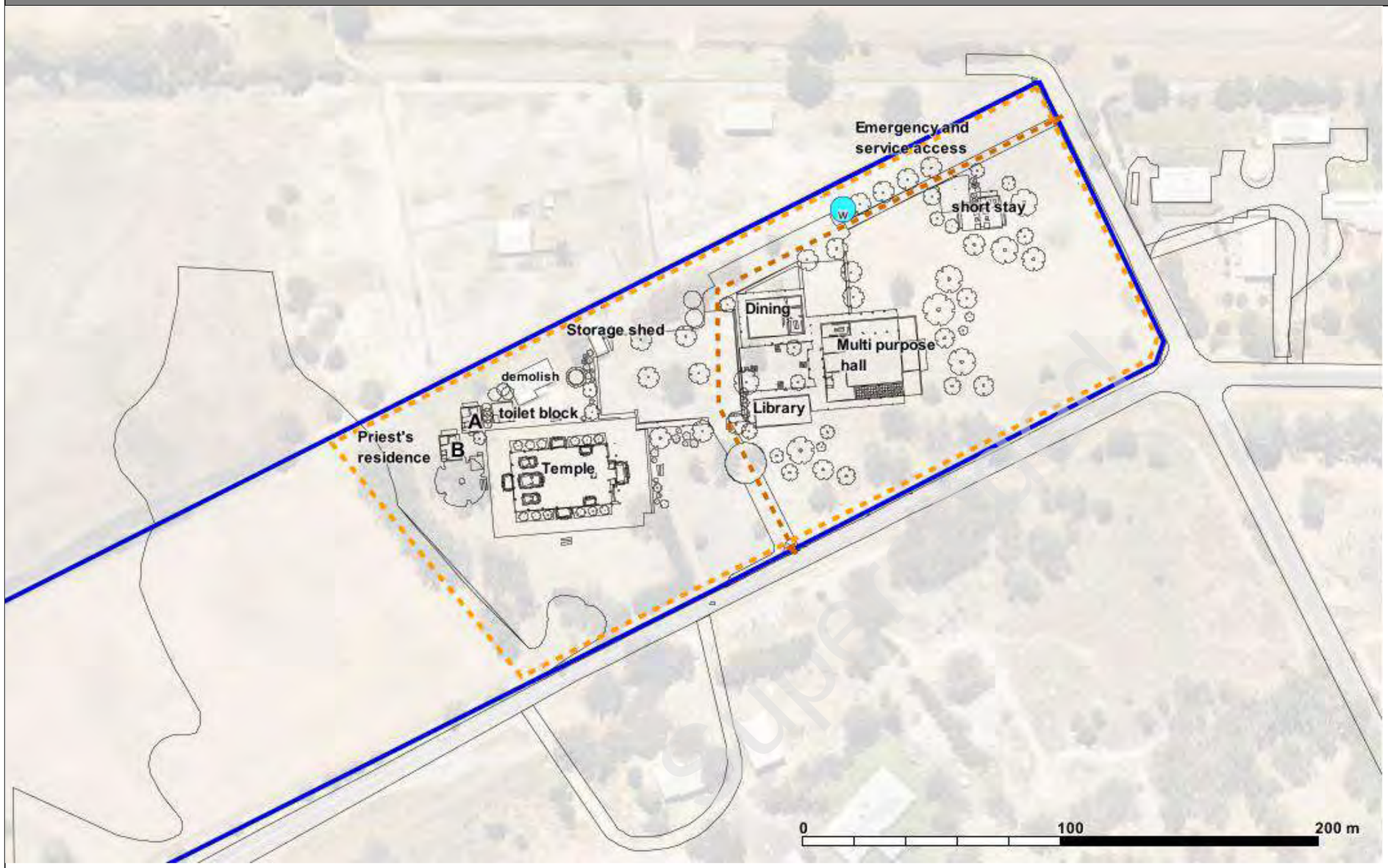
- Notification of Emergency Alerts - Website and Telecommunication Media — Ongoing
- Policing operations to minimise the deliberate ignition of bushfires. — Ongoing
- Maintain fuel reduction on public lands — Ongoing

Acknowledgment - Proponent

The proponent acknowledges the responsibilities as listed above and the requirement to ensure that should the land transfer to a new owner, that the new owner is aware of the BMP and their ongoing responsibility.

Superseded

Figure Ex 1 - Spatial representation of the proposed risk management strategies



LEGEND

	Site Boundary
	Asset Protection Zone
	Access throughway
W	Dedicated water tank 50 000 L

Property Assessment Details

Prepared by: Anthony Rowe

Accreditation Level: Level 3

Accreditation Number: 36690

Date: 29 November 2021

Conditions

1. The development site (extent shown on Fig Ex1), within the area identified as Asset Protection Zone is to be maintained as low threat in accordance with the descriptions provided in AS 3959:2018 cl. 2.2.3.2 (f).
2. The habitable buildings are to be constructed commensurate to BAL level at their location.
3. The internal roads (private driveway and supplementary road (Emergency and Service Access) are to be constructed and maintained in accordance with Guidelines for Planning in Bushfire Prone Areas, Appendices, Element 3 Table 6, Column 3 (private driveway).
4. Firebreaks to be installed and maintained in accordance with the City of Rockingham annual Fire Control Notice (*Bushfire Act 1954).*
5. A minimum 50 000 L water supply (tank) shall be provided, accessible to the emergency and service access, with a coupling to City of Rockingham specification and signposted as exclusively for the use by emergency services.

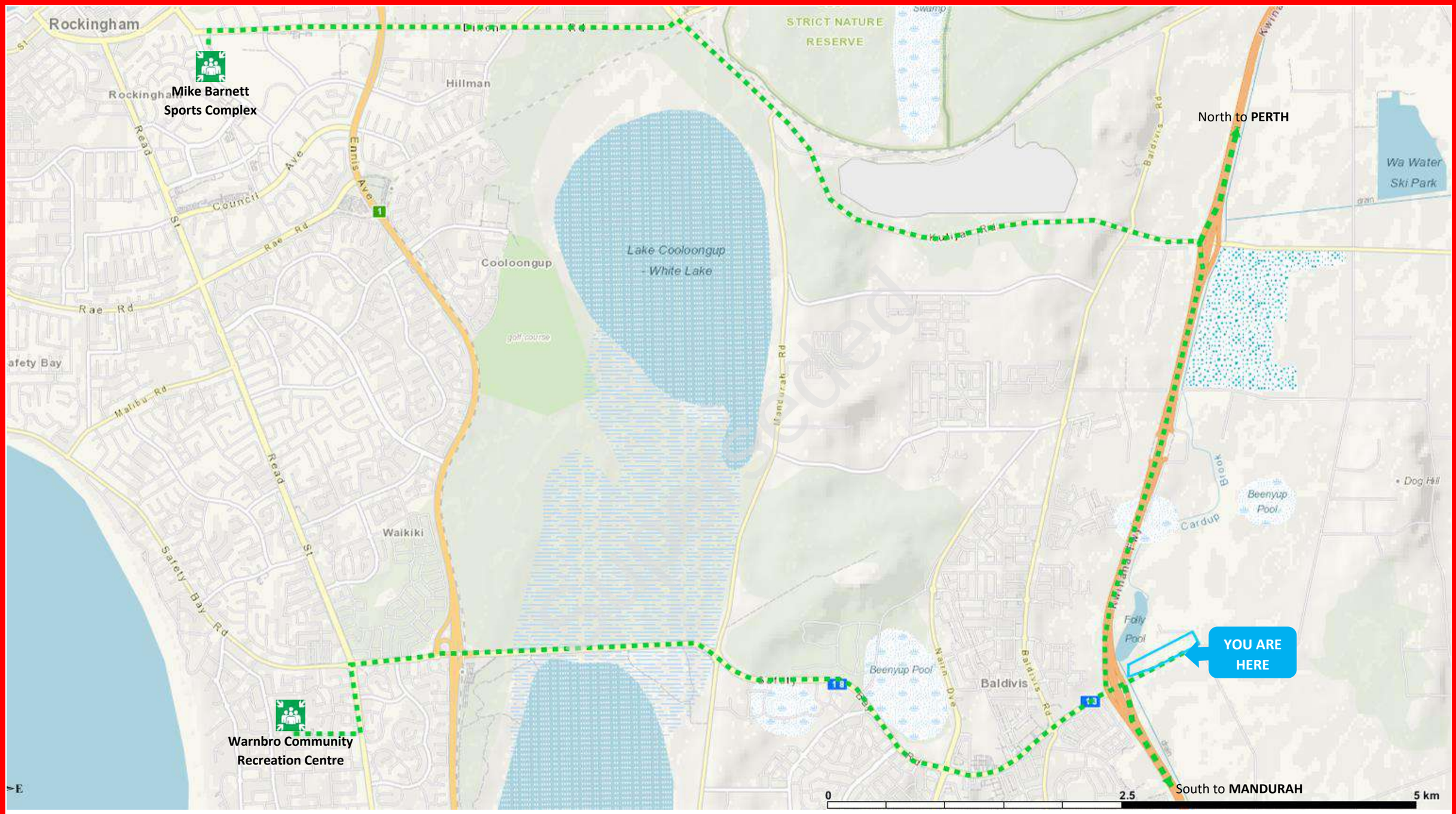
Notifications

1. A notification, pursuant to Section 70A Transfer of Land Act 1893 is to be placed on the certificate(s) of title of the proposed lot(s) with a Bushfire Attack Level (BAL) rating of 12.5 or above, advising of the existence of a hazard or other factor. The notification is to state as follows:
"This land is within a bushfire prone area as designated by an Order made by the Fire and Emergency Services Commissioner and is subject to a Bushfire Management Plan Additional planning and building requirements may apply to development on this land"

Advisory Notes

1. In addressing the structural fire requirements, the options available to satisfy the requirement of the National Construction Code should preference measures that will also assist with bushfire protection. This may include the positioning of fire hoses to provide for applying water to the external surface of the buildings and for a distance of at least 10 m from the buildings

EMERGENCY EVACUATION DIAGRAM



Your Location Is **The Sri Balaji Temple 67 Folly Road, Baldivis**

EVACUATE if DFES or Police advise evacuation is required or if you see an uncontrolled fire

Follow instructions from the Emergency Services Incident Controller (the DFES officer managing the fire).

- Assemble at the Temple building closest to the carpark
- Evacuate to destination and via route as directed by Emergency Services either directly or by public announcement.

DO NOT TRAVEL THROUGH FIRE

Monitor Emergency Information: ABC Radio 720AM; DFES information 13 33 37;

Emergency WA - www.emergency.wa.gov.au

SURVIVAL - if it is not safe to leave - advise DFES (ph. 13 33 37) of your location and the number of persons present

- keep fire extinguishers close by
- Soak towels to block smoke ingress
- Monitor the building condition for smoke and heat.
- Keep hydrated and monitor the fire's passing.
- Leave the building when safe to do so and shelter to avoid heat
- Evacuate the site when DFES/Emergency Services confirm a safe route is available

DO NOT STAY IN A BURNING BUILDING

Table of Contents

1. PROPOSAL DETAILS 1

1.1 Introduction 1

1.2 Regulatory Compliance Requirements 5

2. ENVIRONMENTAL CONSIDERATIONS 7

2.1 Native Vegetation – Modification and Clearing 7

2.2 Re-vegetation/Landscape Plans 7

3. BUSHFIRE ASSESSMENT 8

3.1 Bushfire Attack Level Assessment (Inputs) 8

3.2 Determined Bushfire Attack Level (Outputs) Method 1 21

4. IDENTIFICATION OF BUSHFIRE HAZARD ISSUES 22

5. BUSHFIRE PROTECTION MEASURES 26

5.1 State Planning Policy 3.7 - Planning In Bushfire Prone Areas (SPP 3.7) 26

5.2 Guidelines for Planning in Bushfire Prone Areas Version 1.3 (the Guidelines) 26

5.3 Bushfire Management Strategies 34

5.4 Spatial representation of the bushfire management strategies 36

6. RESPONSIBILITIES FOR IMPLEMENTATION AND MANAGEMENT OF THE BUSHFIRE MEASURES 37

APPENDIX 1 - Emergency Evacuation Plan
APPENDIX 2 - APZ Guidelines cl. 2.2.3.2(f)
APPENDIX 3 – Access Standard
APPENDIX 4 – Water Tank
APPENDIX 5 – References

Superseded

1. PROPOSAL DETAILS

1.1 Introduction

The purpose of this BMP is to assess the suitability to establish a place of worship and community centre at 67 Folly Road Baldivis. ('**the site**').

The subject land is 7.5 ha in area, but the proposal will occupy only the 3.2 ha east portion **(the site)** with the balance of the subject land retained as pasture grass.

The site is within the administration area of the City of Rockingham Western Australia **(Plate 1)** and is located within a bushfire prone area (OBRM 2019) **Plate 2.**

Development, buildings, and land use, located within a bushfire prone area, are required to demonstrate compliance with the requirements of State Planning Policy 3.7.

The policy intent is ***to preserve life and reduce the impact of bushfire on property and infrastructure***, and compliance is achieved where a proposal incorporates the Acceptable Solutions as described under each Element in the Bushfire Protection Criteria or can satisfy the intent of each Element by performance principle and the Precautionary Principle.

This document presents an assessment of a proposed vulnerable class of development "visitation uses that may involve people who are unaware of their surroundings" with the requirements State Planning Policy 3.7 and *Guidelines for Planning in Bushfire Prone Areas* (WAPC, V1.3 December 2017) including assessment against each of the Bushfire Protection Criteria and the requirement for an Emergency Evacuation Plan.

Purpose of this Plan

The purpose of this BMP is to assess the suitability of the proposal and its location for the intended use and identify the measures to avoid an increase in the threat of bushfire and reduce the vulnerability of people and property (to the degree necessary) from potentially significant adverse bushfire impacts.

Site and Proposal Description

Landowner	Sri Balaji Temple
Address	67 Folly Road Baldivis
Local Government Area	City of Rockingham
Local Planning Scheme Zone	Rural Local Planning Scheme 21
Bushfire Season	1 December – 12 May (precise dates may vary annually)
Development proposal	Place of worship and community centre • Temple; • Multi-Purpose Hall; • Short stay; • Library; • Priest residence A • Priest residence B and adjacent kitchen; • Dining Hall; and • Outbuildings @2.
Building class	Temple, Multi-Purpose Hall, and Dining Hall = Class 9 b Short stay and Priest's residence @2 = Class 1a
Lot size	7.5ha: development site 3.2 ha

Superseded

Land description site	Rural			
Adjoining Land uses	North	East	South	West
2.5 Km	Rural living (low grass and building)	Rural living (low grass and building	Rural living (low grass and building	Pasture agricultural
5 km	Remnant forest contiguous 5 km	Urban, market gardens 5 km north	Perth urban area contiguous 5 km south	Shrubland contiguous 5 km west
Road Access	Folly Road from Kwinana Freeway			
Water supply	The site does not have access to a reticulated water supply or a hydrant network. The nearest hydrant is 1.4 km west of the main entry on Safety Bay Road.			
Tele communications	The site is within the Telstra 4G network			
Emergency services	The nearest rural fire brigades are • Baldivis VFES, Corner Tranby Dr &, Eighty Rd, Baldivis (5 km) • Kwinana South VBFB 11 Barker Rd, Wellard (11 km)			
Minor Development	N/A			
Unavoidable development	N/A			
Vulnerable Development	Yes			
High risk land use	N/A			

Superseded



Plate 1:Site in Locality

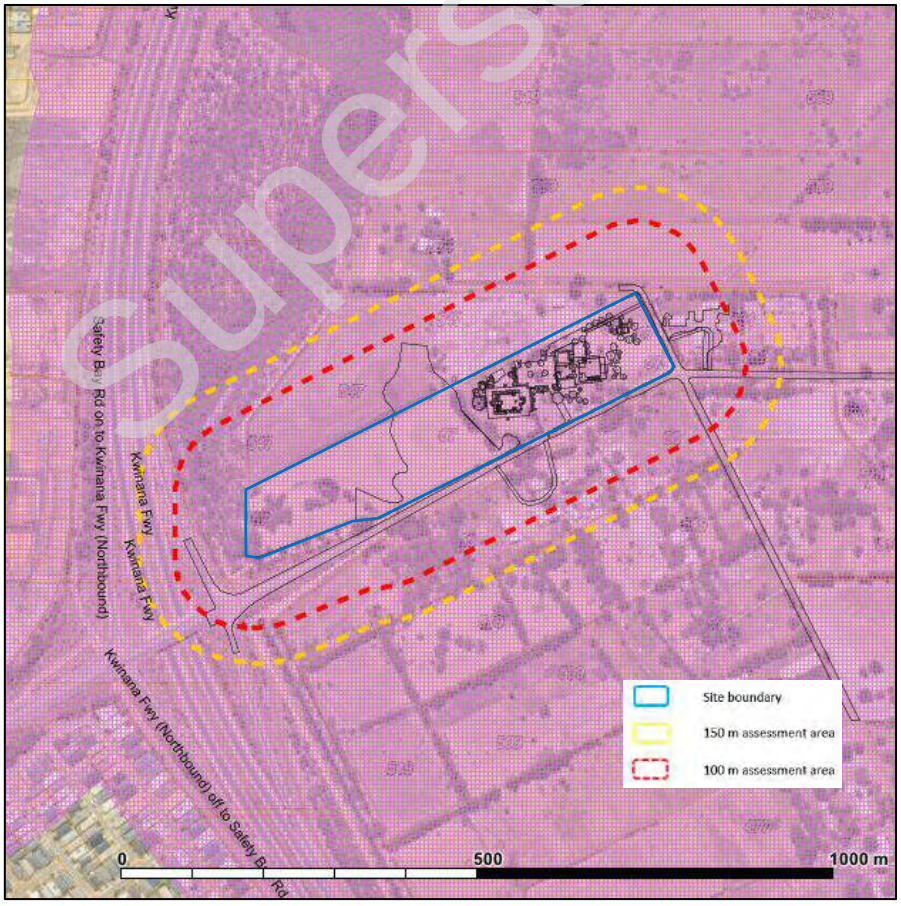


Plate 2: OBRM Bushfire Prone Area (Pink area)

Supersede

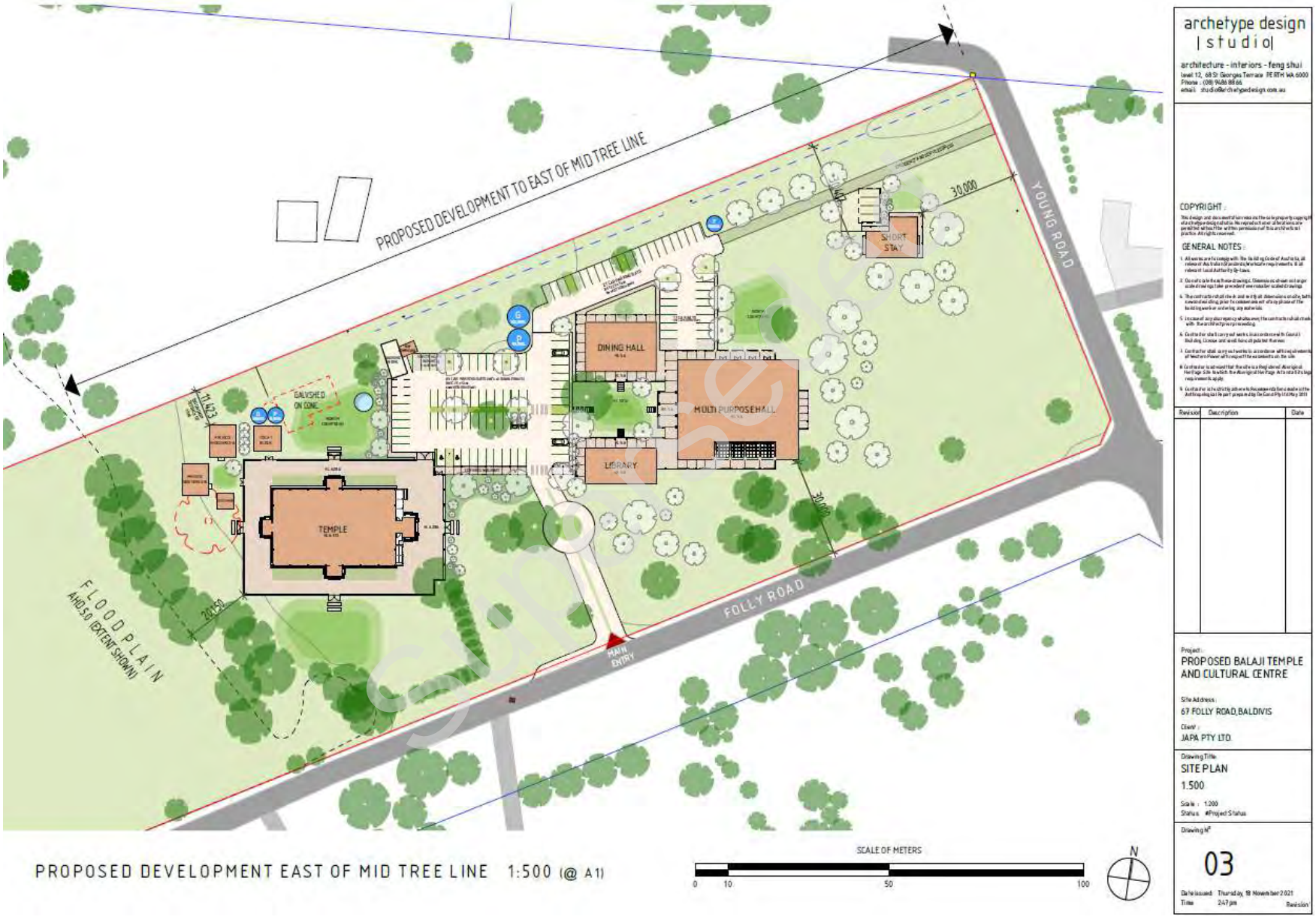


Plate 3: Site Plan

1.2 Regulatory Compliance Requirements

Planning and Development Act 2005 - SPP 3.7

On 7 December 2015, the State Government introduced by Gazette, a state map of Bushfire Prone Areas by order under the *Fire and Emergency Services Act 1998* and introduced development controls in Bushfire Prone Areas through the *Planning and Development Act 2005*. These controls were authorised by State Planning Policy 3.7 (Planning in Bushfire Prone Areas) regulations introduced under Part 10A Schedule 2 of the *Planning and Development (Local Planning Scheme) Regulations 2015* and guided by the *Guidelines for Planning in Bushfire Prone Areas*.

The State Planning Policy, Regulations, and Guidelines now form the foundation for fire risk management planning in WA at a community and land development level. The Policy Intent of SPP 3.7 is ***to preserve life and reduce the impact of bushfire on property and infrastructure***.

Applicable clause from SPP 3.7, addressing subdivision include:

SPP 6.2: A development application within a bushfire prone area has or will, on completion, have a moderate BHL and/or where BAL-12.5 to BAL-29 applies, may be considered for approval. *In this instance the proposal will not exceed BAL 29 refer to Figure 5.*

SPP 6.5: A development application in a bushfire protection area is to be accompanied by an assessment against the bushfire protection criteria contained within the Guidelines, demonstrating compliance within the boundary of the development. *The proposed development requires no imposition beyond its site.*

SPP 6.7: A development that will result in the introduction or intensification of development or land use in an area that has or will, on completion, have an extreme BHL and/or BAL-40 or BAL-FZ will not be supported. *In this instance the proposed development will not exceed BAL 29 refer to Figure 5.*

SPP 6.10: The decision-maker may impose a 'notice on title' advising that the site is located in a bushfire prone area and is subject to a Bushfire Management Plan. *Routinely imposed as a condition of planning approval.*

SPP 6.11: Precautionary Principle if a landowner/proponent cannot satisfy the performance principles of the relevant policy measures (intent) through either the acceptable solutions outlined in the Guidelines, or through the alternative solutions (Performance Principle) the application may not be approved. *The proposal can achieve compliance with the Acceptable Solutions see section 5 of this report.*

Building Act 2011

The proposal is a class 9 building for the purpose of the *Building Act 2011*, which in turn applies the National Construction Code 2019. AS3959:2018 does not apply to the construction of buildings other than class 1, 2, 3, and 10a, and is only used for the purpose of determining the siting of other building classes. A higher standard of construction can be volunteered and conditioned through the *LPS Regulations 2015*, provided it is not in conflict with the provisions of the *Building Act 2011* or NCC 2019 (s.131 Planning and Development Act 2005).

***Bushfires Act* 1954**

Section 33 of the *Bushfires Act 1954* recognises the responsibility of all landowners to prevent the spread of bushfire. The City of Rockingham issues a Fire Control Notice annually. The City can issue a notice upon the landowner to act as and when specified in the notice with respect to anything which is upon the land, and which in the opinion of the local government or its duly authorised officer, is or is likely to be conducive to the outbreak of a bushfire or the spread or extension of a bushfire.

An owner who fails to comply with a notice is guilty of an offence (Penalty: $5,000). The local government may in addition carry out the required works of the notice and recover the costs incurred by application to a Court. *Individual lot owners mutually rely upon the management of the neighbouring land through the Bush Fires Act, to reduce the incidence of bushfire.*

Superseded

Environmental Regulations (Regulated vegetation)

Environment Protection Act 1986 and Environmental Protection (clearing native vegetation) Regulation 2004

It is an offense to clear native vegetation without the authority of a permit or an exemption. The act of clearing native vegetation, requires a permit from either the Department of Water and Environmental Regulation (DWER) or the Department of Mines, Industry Regulation and Safety (DMIRS), unless an exemption applies.

Exemptions *Environment Protection Act 1986* include:

- Clearing required by local government Section 33 *Bushfire Act 1954.*
- Clearing in accordance with the terms of a subdivision approval.
- Clearing in accordance with a permit under the *Bushfires Act 1954* (prescribed burning) and clearing by a bushfire control officer.

Exemptions *Environmental Protection (clearing native vegetation) Regulation 2004*

- Clearing to the extent necessary to construct an approved building.
- Clearing that is for fire hazard reduction burning.
- Clearing to maintain an area cleared in the last ten years.

(exemptions do not apply in Environmentally Sensitive Areas, and for clearing > than 5 ha)

https://www.der.wa.gov.au/your-environment/environmentally-sensitive-areas

(WA) Biodiversity Conservation Act 2016 and Bio-diversity Conservation Regulations 2018

The *Biodiversity Conservation Act, 2016*, replaces the *Wildlife Conservation Act, 1950*, and the *Sandalwood Act, 1929*, it became operational with the *Bio-diversity Conservation Regulations 2018*, on 1 January 2019.

The Act provides for listing species, threatened ecological communities (TECs), key threatening processes, and critical habitats. It introduces criteria for listing species 'endangered', 'critically endangered' or 'vulnerable,' to align with the Environment Conservation and Biodiversity Conservation Act 1999 (Cth).

The *Biodiversity Conservation Act 2016* recognises that activities approved under the *Environment Protection Act 1986* do not require further approval include clearing of native vegetation that is either exempt or done under the authority of a clearing permit or done in accordance with an implementation decision under Part IV of the *Environment Protection Act 1986*.

Commonwealth Environment Protection Biodiversity Conservation Act 1999

The Commonwealth Environment Protection Biodiversity Conservation Act 1999 provides for the protection of matters of national environmental significance. National environment law does not generally regulate fire prevention measures taken by state and territory governments, but no specific exemptions are provided.

The proposal does not require the clearance of regulated vegetation.

Superseded

2. ENVIRONMENTAL CONSIDERATIONS

2.1 Native Vegetation – Modification and Clearing

A fundamental consideration in the assessment of development under SPP 3.7 is to avoid instances where bushfire risk management measures would conflict with or be limited by other biodiversity management measures.

In accordance with the Department of Planning Lands and Heritage template (BMP template to support a BAL Contour Assessment) a review of the listed databases has been undertaken as part of this assessment to identify whether restrictions or other specific considerations may apply that would affect the implementation of any bushfire protection initiatives that may otherwise be identified.

Table 1: Ecological database assessment.

Is the land affected by:	**Yes/No/NA**	**If yes - describe**	
Conservation Wetland or buffer (DBCA-019 DBCA-017)	Nearby	A flood prone area is identified at the west of the development site but is not listed. The Folly Pool is adjacent the west boundary and runs north along Kwinana Freeway. The development site (the 3.2 ha portion of the lot proposed for development) is not affected.	
RAMSAR Wetland (DBCA-010)	NA		
Threatened and Priority Flora (DBCA-036)	NA		
Threatened and Priority Fauna (DBCA-037)	NA		
Threatened Ecological Communities (DBCA-038)	NA		
Bush Forever (COP-071)	NA		
Environmentally Sensitive Area (DWER-046)	NA		
Regionally Significant Natural Areas (DWER-070)	NA		
Conservation Covenant (DPIRD-023)	NA		
Does the proposal require the removal of restricted vegetation?		**~~Yes~~**	**No**

The proposed buildings and carpark will displace an area classed as grassland

2.2 Re-vegetation/Landscape Plans

Future landscaping of the site for the purpose of amenity is to be implemented to maintain a low bushfire fuel condition and threat within the site by following the descriptions provided for at cl. 2.2.3.2(f) in AS3959:2018.

It is desired to retain existing trees on site where not displaced by buildings or paved surfaces.

Superseded

3. BUSHFIRE ASSESSMENT

3.1 Bushfire Attack Level Assessment (Inputs)

The following assessment has applied the methodologies described in AS3959-2018, the Guidelines, and has used the Fire Protection Association Australia accredited practitioner methodology for the preparation of Bushfire Attack Level (BAL) assessments.

All vegetation within 150 m (context) of the subject building has been classified following Clause 2.2.3 (AS 3959 -2018) to determine the predominant vegetation affecting the behaviour at the locality. The Bushfire Attack Level is determined by the predominant vegetation within 100 m of the site boundary (for subdivision), or around the development site (building envelope) or the external face from a habitable building.

AS 3959:2018 prescribes six categories of Bushfire Attack Level (BAL): BAL-LOW, BAL-12.5, BAL-19, BAL-29, BAL-40, and BAL-FZ. In addition, BAL-FZ describes only performance solutions where the separation from classified vegetation (on completion) is less than 10 m. The BAL level is used for determining the siting of development (to be less than BAL-40) and in turn the construction standard that is equivalent to the BAL at the proposed building location.

This assessment has followed the guidance of AS3959:2018. This includes:

- A recognition of excluded vegetation types described at cl.2.2.3.2 (e) and (f), but the underlying vegetation should still be classed e.g. an orchard may be excluded but not the grassland within it.
- A separate plot is applied if there is a variation in the slope greater than 5.0^0
- For various vegetation classes a representation that is less than 10%, does not constitute the predominant class. Foliage cover referred to in AS3959:2018 for various classes is based on the foliage cover for that class as a percentage of a ha. (shadow cast is not representative of foliage cover).
- The measurement point and the most influential vegetation class (presenting the highest BAL at the building) is used for the determination of the BAL at the building (Figure 2.2 AS3959:2018).
- Consideration of the predominant vegetation is to consider the likelihood of regeneration.

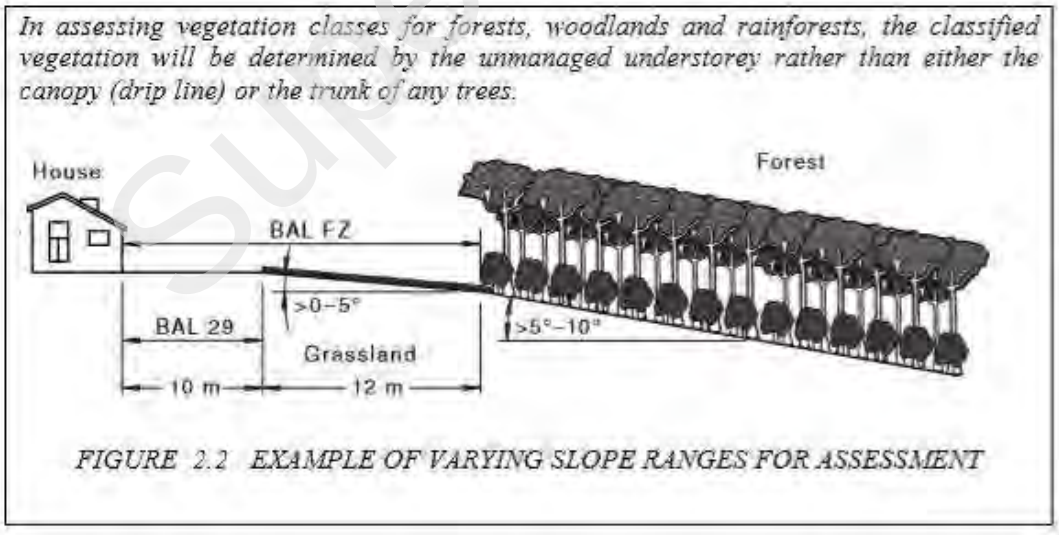


Plate 4**:** Effective Slope and measurement taken from AS3959:2018

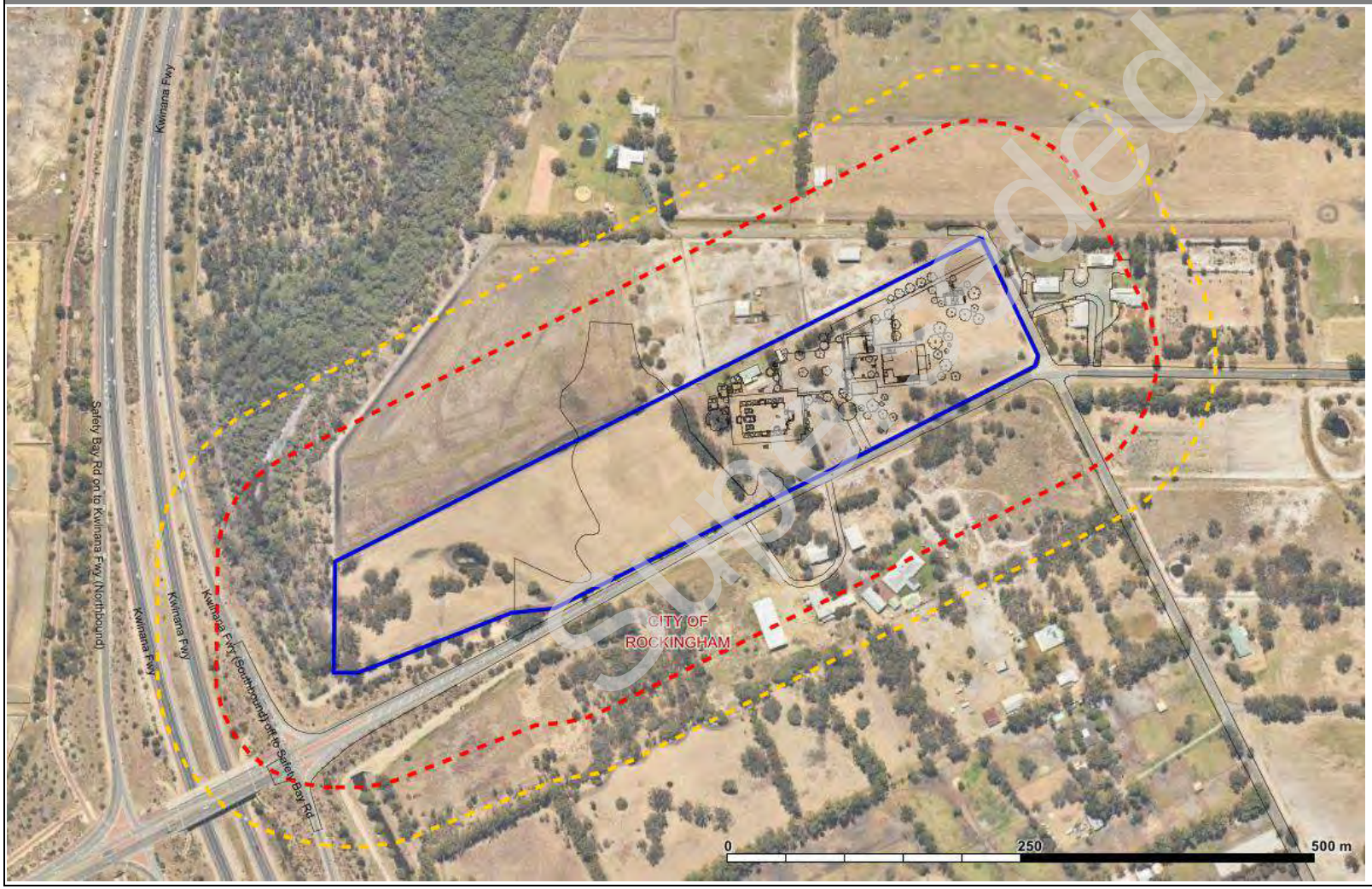
Effective slope under each vegetation plot was assessed in accordance with the methodology detailed in AS 3959-2018 Construction of buildings in bushfire prone areas (AS 3959) (Standards Australia, 2018 Bushfire Fuels). Slope data was measured on site and cross referenced with Landgate elevation data.

Superseded

Photo evidence Site Assessment & Site Plans

The assessment of this site / development was undertaken on 5 September 2021 by a BPAD Accredited Practitioner for the purpose of determining the Bushfire Attack Level in accordance with AS 3959 - 2018 Simplified Procedure (Method 1).

Figure 1: Location - Sri Balaji Temple 67 Folly Road Baldivis



Site boundary

150 m assessment area

100 m assessment area

Assessment Date: 05/09/2021
Prepared: Anthony Rowe
Accreditation Level: BPAD L3
Accreditation Number: 36690
Accreditation Expiry: Dec 2021
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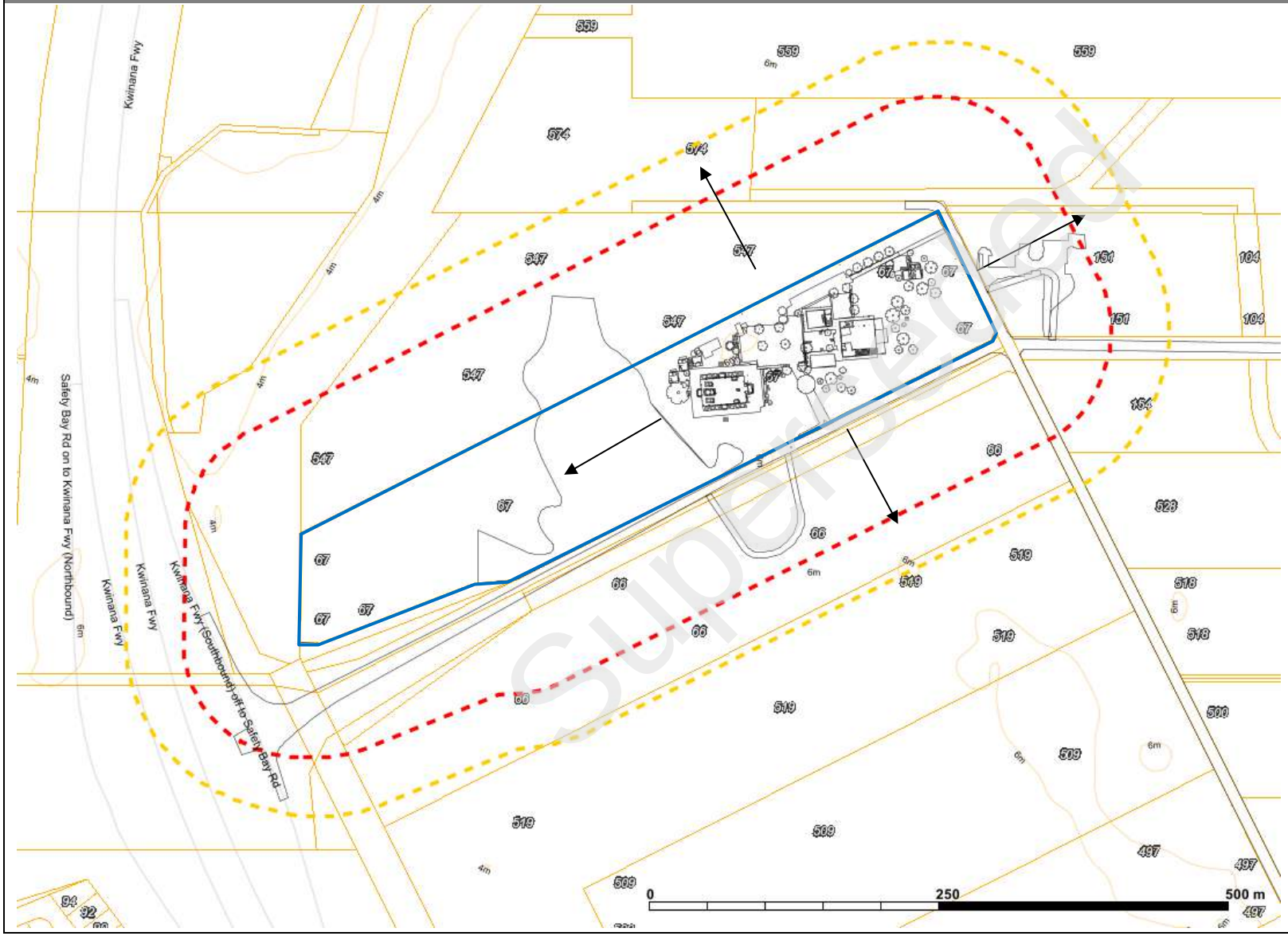
Figure 2: Topography – Sri Balaji Temple 67 Folly Road Baldivis



Buildings

Site boundary

150 m assessment area

100 m assessment area

AHD contour 2 m

Upslope

Downslope 0--5

Downslope 5--10

Downslope 10--15

Downslope 15--20

Assessment Date: 05/09/2021
Prepared: Anthony Rowe
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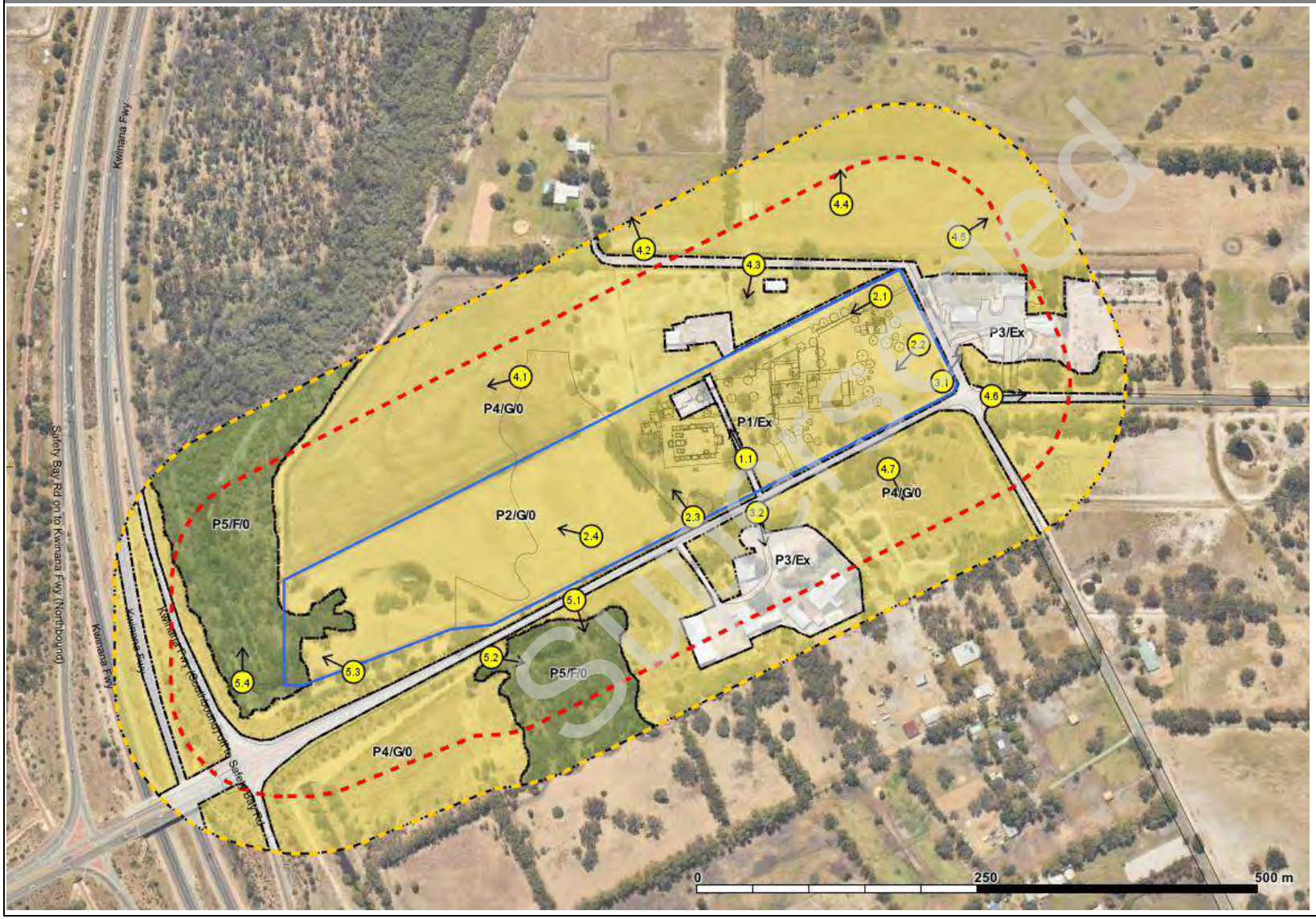
Figure 3: Vegetation Classification - Sri Balaji Temple 67 Folly Road Baldivis



Superseded

- Site boundary
- 150 m assessment area
- 100 m assessment area
- Class A Forest
- Class B Woodland
- Class C Shrubland
- Class D Scrub
- Class G Grassland
- Excluded
- Photo point
- Plot Label

Assessment Date: 05/09/2021
Prepared: Anthony Rowe
Accreditation Level: BPAD L3
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PLOT: 1		
Vegetation Classification	**PHOTO ID: 1.1**	
Excludable - 2.2.3.2(e) Non Vegetated Areas		
Slope		
Flat		
Description (AS3959)		
2.2.3.2 Exclusions – Low threat vegetation and non-vegetated areas e) Non-vegetated areas, that is, areas permanently cleared of vegetation, including waterways, exposed beaches, roads, footpaths, buildings and rocky outcrops.		

Observation/Justification for classification

Fuel Hazard	Surface	Near surface	Elevated	Bark
Low	✓	✓	✓	✓
Moderate				
High				
Very High				
Extreme				

Post development

Low threat area to be within the expanded area to be developed.

Comment: The existing driveway and workshop/shed compound. The workshop is to be demolished.

Superseded

PLOT: 2

Vegetation Classification

Class G Grassland – Sown pasture G-26

Slope

Flat

Description (AS3959)

Grassland: All forms (except tussock moorlands) including situations with shrubs and trees if the overstorey foliage cover is less than 10%. Includes pasture and cropland. NOTE: Grassland managed in a minimal fuel condition and non-curing cropland is regarded as low threat vegetation for the purposes of Clause 2.2.3.2.

Observation/Justification for classification

Fuel Hazard	Surface	Near surface	Elevated	Bark
Low		✓	✓	✓
Moderate				
High	✓			
Very High				
Extreme				

Post development

Grassland will be displaced and become low threat, by buildings and future landscaping. The balance area photo 2.4 will be retained as grassland.

PHOTO ID: 2.1



PHOTO ID: 2.2



PHOTO ID: 2.3



PHOTO ID: 2.4



Comment: The site is flat and mostly pasture grasses that will be displaced by the placement of the proposed development. The balance area in photo 2.3 will be retained as grassland. Photo 2.4 is a single row of trees.

Superseded

PLOT: 3

Vegetation Classification

Excludable - 2.2.3.2(e) Non Vegetated Areas

Slope

Flat

Description (AS3959)

2.2.3.2 Exclusions – Low threat vegetation and non-vegetated areas

e) Non-vegetated areas, that is, areas permanently cleared of vegetation, including waterways, exposed beaches, roads, footpaths, buildings and rocky outcrops.

PHOTO ID: 3.1



PHOTO ID: 3.2



Observation/Justification for classification

Fuel Hazard	Surface	Near surface	Elevated	Bark
Low	✓	✓	✓	✓
Moderate				
High				
Very High				
Extreme				

Comment: The area is predominantly grazing land with cleared areas for houses and sheds. Areas around houses are irrigated grasses, no curing and low threat (background in photo 3.1 Excluded, the fore ground has been classed as grassland). Photo 3.2 illustrates a commercial activity with grasses less than 100 mm, isolated trees foreground, and hardstand areas.

Post development

Existing land uses are expected to remain, the excluded areas around existing buildings is expected to be retained.

Superseded

PLOT: 4

Vegetation Classification

Class G Grassland – Sown pasture G-26

Slope

Flat

Description (AS3959)

Grassland: All forms (except tussock moorlands) including situations with shrubs and trees if the overstorey foliage cover is less than 10%. Includes pasture and cropland. NOTE: Grassland managed in a minimal fuel condition and non-curing cropland is regarded as low threat vegetation for the purposes of Clause 2.2.3.2.

Observation/Justification for classification

Fuel Hazard	Surface	Near surface	Elevated	Bark
Low	✓			✓
Moderate		✓	✓	
High				
Very High				
Extreme				

Post development

Retained vegetation, outside of the site

PHOTO ID: 4.1



PHOTO ID: 4.2



PHOTO ID: 4.3



PHOTO ID: 4.4



Comment: Adjoining areas are predominantly grassland excluding single trees and windrows along the road verges.

Superseded

PLOT: 4

Vegetation Classification

Class G Grassland – Sown pasture G-26

Slope

Flat

Description (AS3959)

Grassland: All forms (except tussock moorlands) including situations with shrubs and trees if the overstorey foliage cover is less than 10%. Includes pasture and cropland.
NOTE: Grassland managed in a minimal fuel condition and non-curing cropland is regarded as low threat vegetation for the purposes of Clause 2.2.3.2.

Observation/Justification for classification

Fuel Hazard	Surface	Near surface	Elevated	Bark
Low	✓			✓
Moderate		✓	✓	
High				
Very High				
Extreme				

Post development

Retained vegetation, outside of the site

PHOTO ID: 4.5



PHOTO ID: 4.6



PHOTO ID: 4.7



Comment: Adjoining areas are predominantly grassland excluding single trees and windrows along the road verges.

Superseded

PLOT:5

Vegetation Classification

Class A Forest - Open forest A-03

Slope

Flat

Description (AS3959)

Open Forest: Trees over 30 m high; 30%-70% foliage cover (may include understorey ranging from rainforest species and tree ferns to low trees and tall shrubs). Found in areas of high reliable rainfall. Typically dominated by eucalypts with a sub-dominant tree layer.

Observation/Justification for classification

Fuel Hazard	Surface	Near surface	Elevated	Bark
Low	✓	✓	✓	✓
Moderate				
High				
Very High				
Extreme				

Post development

Retained vegetation, outside of the site.

PHOTO ID: 5.1



PHOTO ID: 5.2



PHOTO ID: 5.3



Comment: An area of forest is retained adjacent to the Kwinana Freeway. Direct access to the Baldivis urban area (west of the site) across Kwinana Freeway, onto Safety Bay Road is available with only a 60 m (short travel through) through extreme(bushfire) vegetation. An alternative route is available but immediate evacuation to the Baldivis urban area is mostly anticipated. Mechanical failures along roadsides can ignite roadside vegetation but land scape scale fires are most likely to come from the eastern hemisphere to the site because of the bushfire fuels to the east.

Superseded

POTENTIAL BUSHFIRE IMPACT - Outputs

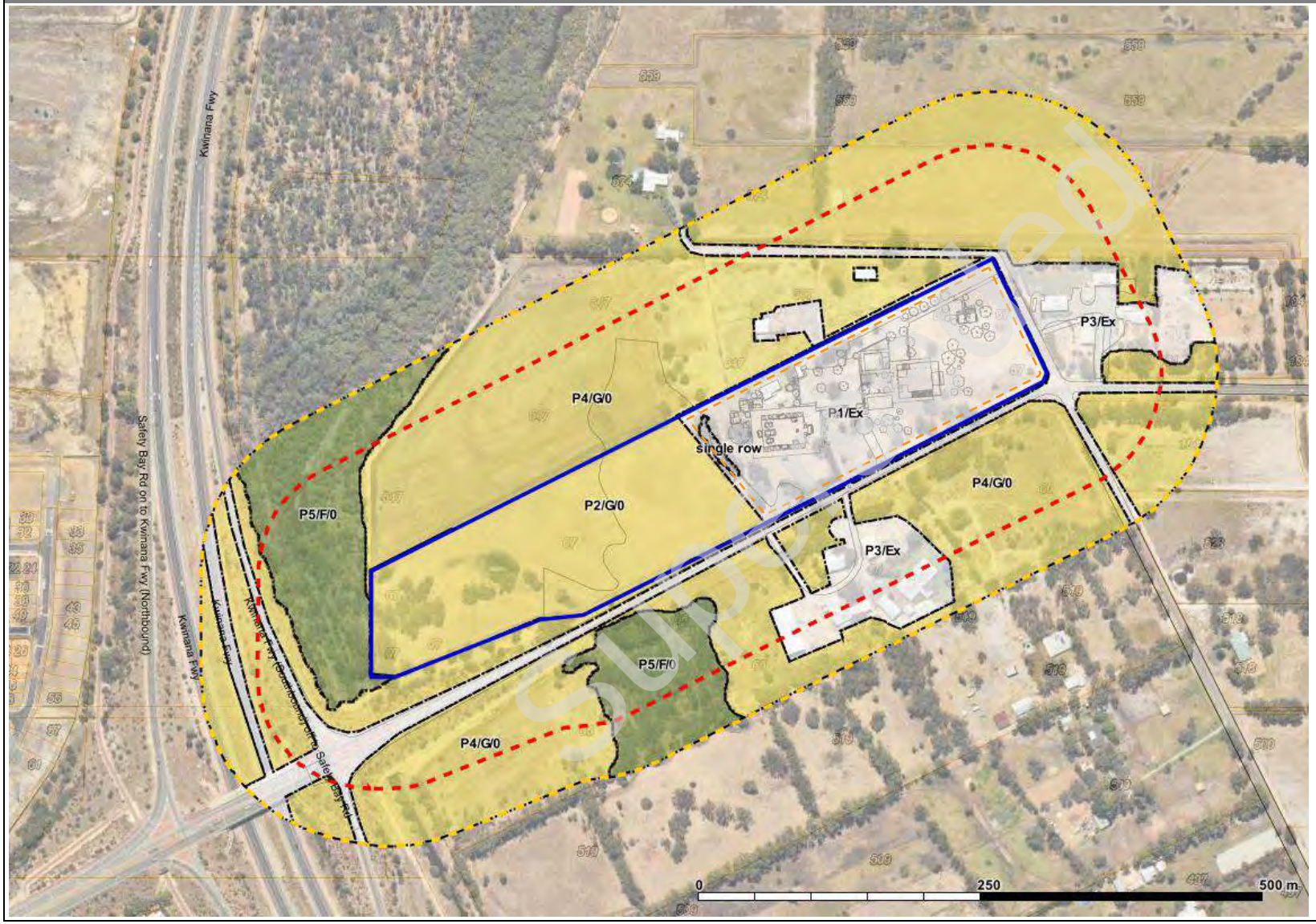
In accordance with SPP 3.7, a BAL Contour Map has been prepared to illustrate the potential radiant heat impacts and associated BAL ratings for the assessment area after the development is completed (Figure 5). Figure 5 is based upon an overall completion and illustrates that no building will exceed BAL 29.

The required distance and commensurate BAL rating is provided below. Plots 1 and 3 are excluded vegetation and impose no separation.

Plot	Vegetation classification	Effective slope (degrees)	Separation Distance (AS 3959:2018 Table 2.5)	BAL
5	Forest	Flat/upslope	< 16 m	BAL-FZ
			16- < 21 m	BAL-40
			21 - < 31 m	BAL-29
			31 - < 42 m	BAL-19
			42 - < 100 m	BAL-12.5
			> 100 m	BAL-LOW
2 and 4	Grassland	Flat/upslope	< 6 m	BAL-FZ
			6- < 8 m	BAL-40
			8 - < 12 m	BAL-29
			12 - < 17 m	BAL-19
			17 - < 50 m	BAL-12.5
			> 50 m	BAL-LOW

Superseded

Figure 4: Vegetation Classification Post Development – Sri Balaji Temple 67 Folly Road Baldivis



- Building Envelope
- Site boundary
- 150 m assessment area
- 100 m assessment area
- Class A Forest
- Class B Woodland
- Class C Shrubland
- Class D Scrub
- Class G Grassland
- Excluded
- Low threat area boundary (APZ)
- Plot Label

Assessment Date: 05/09/2021
Prepared: Anthony Rowe
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FPAA FIRE MAP 2020
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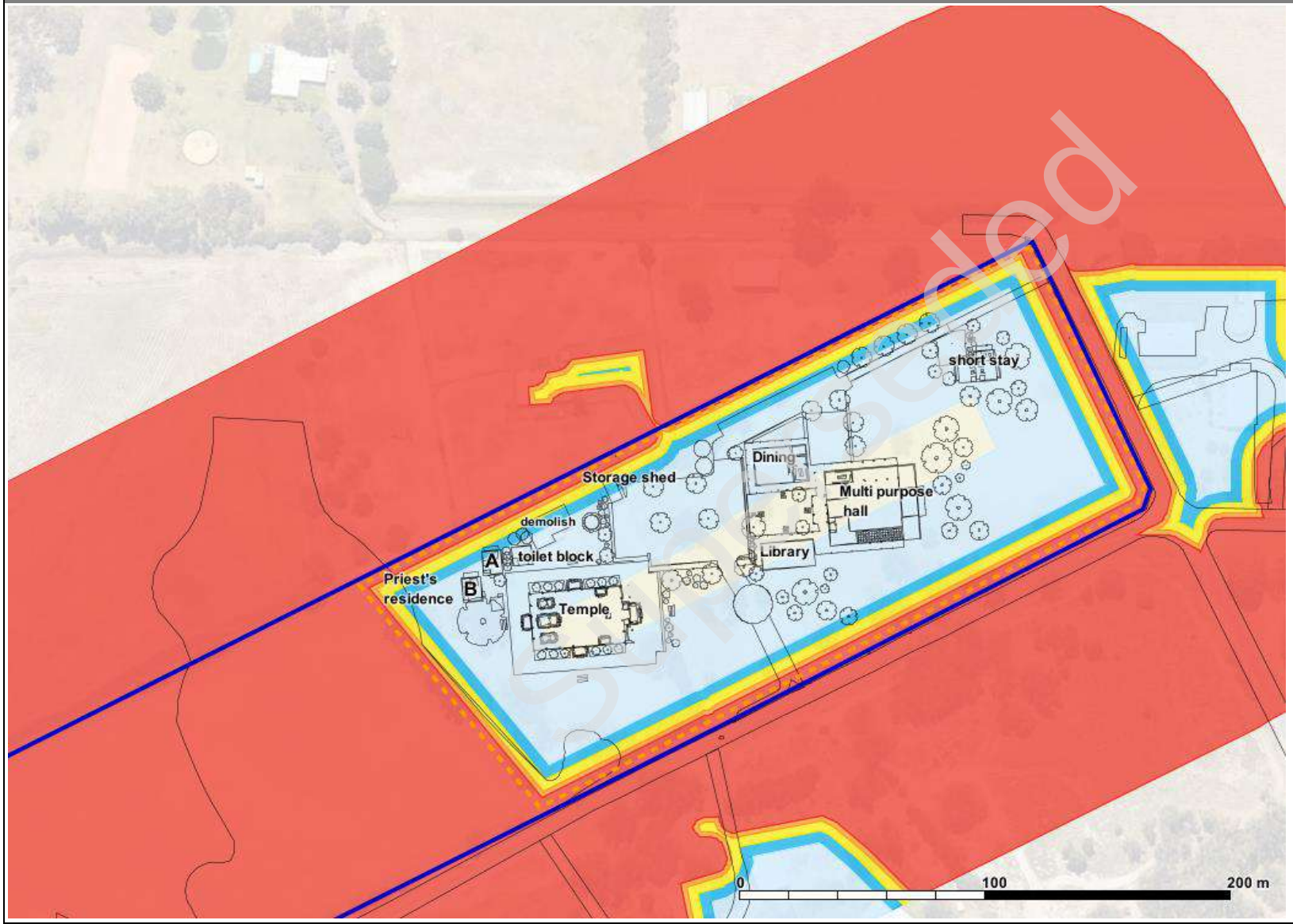
Figure 5: BAL Contour Plan Post Development - Sri Balaji Temple 67 Folly Road Baldivis



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3.2 Determined Bushfire Attack Level (Outputs) Method 1

The Indicative Bushfire Attack Level (highest BAL) for the site / proposed development is based upon the conditions and classified vegetation present at the time of completion.

Determined Bushfire Attack Level has been derived in accordance with clause 2.2.6 (Method 1) of AS 3959:2018.

The BAL for each building is determined by the distance to the nearest boundary and the proposed management extent at the west of the development site.

Indicative Bushfire Attack Level	BAL Level
Temple	BAL - 12.5
Multi-Purpose Hall	BAL - 12.5
Library	BAL – 12.5
Dining Hall	BAL – 12.5
Short stay	BAL – 12.5
Priest's Residence A	BAL – 19
Priest's Residence B and kitchen	BAL – 12.5
Outbuilding (toilet block)	BAL – 12.5
Outbuilding (storage shed)	BAL – 29

.

Superseded

4. IDENTIFICATION OF BUSHFIRE HAZARD ISSUES

Bushfire Behaviour

Sustainable fire combustion depends upon the availability of fuel, oxygen, and heat. Removal of any one of the three aspects will extinguish or not sustain a fire. Fuel management, the management of vegetation, is the most practical means of control.

Bushfire behaviour, as it increases in intensity and speed of travel, can exceed human control measures and when this occurs the risk increases to humans and property. Bushfire behaviour is a result of climate, topography, and the availability of bushfire fuel (vegetation).

- Climate (drought and season) & weather (temperature, humidity, wind, atmospheric instability).

  Wind

  Bushfires are influenced by the wind direction and the speed. The wind direction generally determines the direction of the fire and wind speed, along with ground slope, generally determines the speed a fire will travel over ground. As wind strength increases it increases the availability of oxygen allowing the fire intensity to increase.

  Atmospheric conditions determine the potential for the uplift of embers and particles that can be distributed by the prevailing wind direction well ahead of the fire, up to 9 km, to create spot fires that can advance the location of the fire front.

  Fire Danger Index FDI

  FDI is an indicator of potential fire intensity and behaviour based upon weather conditions; temperature, humidity, and wind speed, together with climate measures, drought factor representing the dryness of the ground fuels.

  The FDI is an indicator of the potential for house loss and fatalities.

  The FDI is used as a basis for determining the required design performance of a building.

- Topography (slope of the ground, aspect) – fire travels faster uphill, and in some conditions may determine the direction of the fire. The landform can also channel and increase the windspeed at a locality and create turbulence. It is measured as 0.0^0 or in downslope increments of 5.0^0.

- Vegetation (horizontal and vertical structure, flammability, mass, and availability). Measured as a vegetation classification, or an exclusion, in AS 3959 (Method 1). The arrangement of fuel has a greater effect upon the intensity of a fire than just its mass; its exposure to oxygen is referred to as its availability in a bushfire.

It is assumed that a bushfire will achieve a steady-state and be fully developed to maximum intensity over a 100 m (minimum) fire run. Grass fires travel faster (GFDI) than a forest canopy fire, but a forest canopy fire can eject a higher level of embers and also eject them over a greater distance. Crown fires occur when the ground fire is intense, and conversely, when ground fuels are managed, the resultant fire intensity may not be sufficient to involve the crown or sustain a fire.

Fuel reduction initiatives such as slashing and controlled burns are intended to reduce the fuel availability to a level where the intensity of the fire remains controllable.

Climate

The nearest weather station to the site is at Jandakot airport. The site is within an area described as having a Mediterranean climate of dry summers and mild, wet winters. The majority of rainfall is between May and September. The prohibited burning period is from mid-December to mid-March.

The Bushfire Danger Season has traditionally been between November and April each year, but recent climatic conditions have caused fire danger conditions to be present either side of this period.

Severe bushfire conditions FDI 50+, occur mostly between January and March. Extreme and Catastrophic conditions occur mostly in the afternoon and typically with south-south easterly winds (BoM Jandakot airport). A bushfire can however come from any direction.

Superseded

Bushfires generally travel in the direction of the prevailing wind. The direction of the prevailing wind conditions can affect the options for evacuation and anticipated fire intensity depending upon the slope and fuel.

The wind roses below (Plates 5 and 6) for February (averaged) recorded at 9 am and 3 pm. illustrate wind directions are predominantly from the east in the mornings and from the south west and west in the afternoons

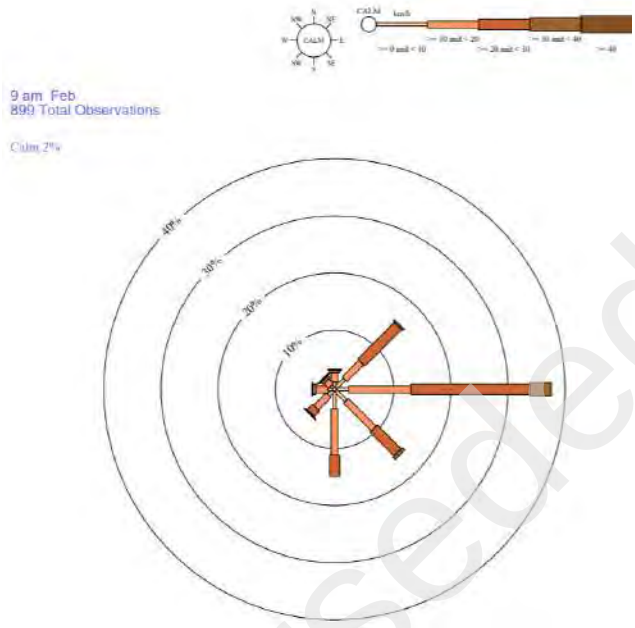


Plate 5: BoM weather data, prevailing wind directions as at 9 am

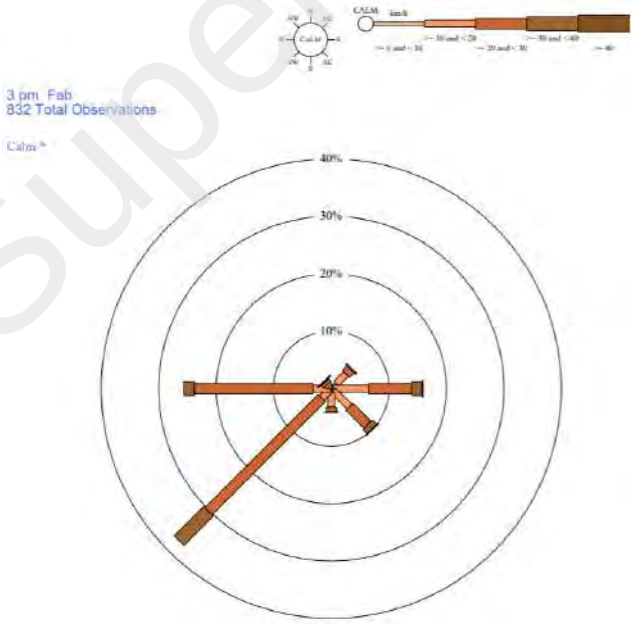


Plate 6: BoM weather data, prevailing wind directions as at 3 pm

Superseded



Plate 7: 2.5 km and 5.0 km – landscape context

Bushfire Hazard Issues

The following bushfire hazard issues have been identified.

The site as observed from plate 7 is within an immediate are that is characterised as pasture grasses > 100 mm (grassland).

The site does not adjoin forest, but forest is a generator of embers and ember attack is attributed to the greatest building loss. The density of ember attack diminishes with distance from the forest and the size of the forest area, the larger the area the greater the convective lift and dispersal of embers. The subject land adjoins a narrow strip of vegetation alongside the Kwinana Freeway, that expands in area (31 ha) to the north of the site. It is the closest forest vegetation at 200 m. Other areas of forest of less than 100 ha are located 900 m east, followed by pasture and grassland out to 5 km. Forest is also located 2 km west associated with the wetlands system (Lake Cooloongup / Lake Walyungup). This is followed by urban development 5 km west of the site.

The risk to the site is primarily from a grassfire from the adjoining land, which can be arrested at the perimeter if the site is maintained in a low threat condition.

The site due to its separation and the size of the nearest forests may be subject to a low density ember attack. A dense ember attack can amass embers against vulnerable surfaces, such as windows, whereas a low density

Superseded

ember attack is reliant upon finding readily flammable materials that can in turn engage heavier fuels that may overwhelm a building exterior. Site management to enclose flammable material and restrict the location of flammable material near to buildings is an effective measure to minimise the risk of building ignition.

Evaporative cooling units are noted for drawing embers and are required to have ember screens in bushfire prone areas.

Access

The primary evacuation option is Folly Road to Kwinana Freeway and the Baldivis Urban area west of the site which is mostly through low and moderate (acceptable) bushfire hazard level conditions.

An area of forest along Kwinana freeway (Folly Pool) separates the site from the urban area but is only 60 m, below the width for a fully developed (maximum intensity) fire. Roadside vegetation can be ignited by human activity and mechanical failure. There is an alternate route from the site , but immediate access to the safety of the Baldivis urban area is preferred. A landscape fire is apart from the road side ignition likely to only come from the east, because grassland and classified vegetation extends east of the site. Heading west is into the Baldivis urban area and low threat. In most instance therefore the Evacuation will be taken into Baldivis, in the opposite direction to an approaching fire.

Evacuation is the preferred response when the evacuation routes are safer than the site. This is determined by ensuring the Available Safe Evacuation (Egress) Time (ASET) is greater than the Required Safe Evacuation Time (RSET). In this instance the lead time for RSET is short because visitors will be congregated and will not need to gather possessions.

The minimum RSET time to evacuate to Kwinana Freeway, and the urban BAL Low area is 30 minutes. Most visitors will not be required to collect possessions and will be able to move to evacuation immediately upon instruction. Emergency management of the site would include ensuring the orderly of evacuation of vehicles from the carpark.

Superseded

5. BUSHFIRE PROTECTION MEASURES

5.1 State Planning Policy 3.7 - Planning In Bushfire Prone Areas (SPP 3.7)

SPP 3.7 applies to all subdivision applications in designated bushfire prone areas.

SPP 3.7 Objectives

Policy Measure 5 contains the objectives of SPP 3.7. The following demonstrates how the proposed development meets each of the objectives.

Objective 1: Avoid any increase in the threat of bushfire to people, property, and infrastructure. The preservation of life and management of bushfire impact is paramount.

Development Response

The nature of the proposed activity will not increase the occurrence or intensity of bushfire within its locality.

Objective 2: Reduce vulnerability to bushfire through the identification and consideration of bushfire risks in decision-making at all stages of the planning and development process.

Development Response

Objective 2 is satisfied through:

- The site is adjacent the urban area, across Kwinana Freeway, providing quick access to BAL Low and safety from bushfire attack. The site also has access to safe destination east of the site because Folly Road is a through road connecting to multiple route options.
- The buildings are separated from the perimeter and there is no restriction from the site being maintained as low threat that any proposed building will have a BAL exceeding BAL 29.

Objective 3: Ensure that higher order strategic planning documents, strategic planning proposals, subdivision and development applications take into account bushfire protection requirements and include specified bushfire protection measures.

Development Response

Objective 3 is satisfied through the compliance of the proposed development with all required Policy Principles as detailed as detailed in Section 5.2 of this report.

Objective 4: Achieve an appropriate balance between bushfire risk management measures and, biodiversity conservation values, environmental protection and biodiversity management and landscape amenity, with consideration of the potential impacts of climate change.

Development Response

The site is former pasture/grazing land. It is not required for environment protection nor are any locational restrictions presented at the site.

5.2 Guidelines for Planning in Bushfire Prone Areas Version 1.3 (the Guidelines)

The Guidelines apply to development applications located within designated bushfire prone areas. The Guidelines provide supporting information for implementation of SPP 3.7. Specifically, they provide the Bushfire Protection Criteria to be addressed for all applications.

5.2.1 Bushfire Protection Criteria

The bushfire risk mitigation strategies detailed in (Table 2 below) are designed to comply with the Bushfire Protection Criteria detailed in Guidelines for Planning in Bushfire Prone Areas Version 1.3 (the Guidelines) Appendix 4 (WAPC, 2017).

Where discrepancy occurs between State and Local bushfire planning provisions the higher standard of mitigation has been selected.

Superseded

Table 2: Bushfire Protection Criteria assessment.

For each of the elements listed within Appendix 4 of the Guidelines for Planning in bushfire-prone areas, the 'intent' must be achieved either by the proposal meeting the acceptable solutions; or where these acceptable solutions cannot be fully met, then by a performance-based solution that can achieve the 'intent.'

✓	Acceptable solution provided	C	An Acceptable Solution to be conditioned
N/A	Not Applicable	P	Performance Principle solution see 5.2

Bushfire Protection Criteria	Method of Compliance	AS	PP	Proposed Bushfire Management Strategies
Element 1: location To ensure that strategic planning proposals, subdivision, and development applications are located in areas with the least possible risk of bushfire to facilitate the protection of people, property, and infrastructure	**A1.1 Development location** The strategic planning proposal, subdivision, and development application is located in an area that is or will, on completion, be subject to either a moderate or low bushfire hazard level, or BAL–29 or below.	✓		In accordance with the WAPC Position Statement: *Planning in bushfire prone areas – Demonstrating Element 1: Location and Element 2: Siting and design*, the consideration of the bushfire hazard level (BHL) is not relevant to a development site but in this instance has been considered with regard to a broader context to include access considerations. The immediate land to the site is rural and predominantly grass and classed as moderate BHL. <u>Development response</u> Compliance acknowledged

Superseded

Bushfire Protection Criteria	Method of Compliance	AS	PP	Proposed Bushfire Management Strategies
Element 2: Siting and Design To ensure that the siting and design of development minimises the level of bushfire impact	**A2.1 Asset Protection Zone** Every habitable building is surrounded by, and every proposed lot can achieve, an APZ depicted on submitted plans, which meets the following requirements: • Width: Measured from any external wall or supporting post or column of the proposed building, and of sufficient size to ensure the potential radiant heat impact of a bushfire does not exceed 29kW/m² (BAL-29) in all circumstances. • Location: the APZ should be contained solely within the boundaries of the lot on which the building is situated, except in instances where the neighbouring lot or lots will be managed in a low-fuel state on an ongoing basis, in perpetuity (see explanatory notes). • Management: the APZ is managed in accordance with the requirements of 'Standards for Asset Protection Zones.' (See Schedule 1).	✓		The Acceptable solution A2.1 requires that the BAL at a habitable building can achieve a BAL not exceeding BAL-29, by measures within the boundary of the lot/development site. The effect of the Asset Protection Zone (determined by low threat measures AS3959:2018 in cl. 2.2.3.2(f)) is established over the extent of the 3.2 ha development site. It is utilised as the post development conditions and the on BAL contour shown on Figure 5. There is no restriction upon establishing a low threat area, as the extent of the development site. Because the development site is to be maintained as low threat, within its 3.2 ha perimeter, individual buildings will not be required to have an Asset Protection Zone but can rely on the site being managed as low threat AS3959:2018 cl. 2.2.3.2(f). The BAL at each building has therefore been determined by the condition and classification of vegetation external to the development site and no building exceeds BAL-29. Note: In this instance AS3959:2018 cl. 2.2.3.2(f) has been used as a standard, instead of Schedule 1 Element 3, because the intent is a garden, (making it excluded as a threat in the first instance) the APZ Standard Schedule 1 Element 3 is a spatial distribution vertical and horizontal classified vegetation. AS3959:2018 cl. 2.2.3.2(f) is also the measure used for the construction standard in AS3959:2018. <u>Development Response</u> • The site is to be maintained as low threat. following the description provided at cl. 2.2.3.2 AS3959:2018.
Element 3: Vehicular Access To ensure that the vehicular access serving a subdivision/ development is	**A3.1 Two access routes** Two different vehicular access routes are provided, both of which connect to the public road network, provide safe access and egress to two different destinations, and are available to all residents/the public at all times and under all weather conditions.	✓		Folly Road is a through road. The primary direction for evacuation would be to access Kwinana Freeway for destinations north or south. <u>Development response</u> Compliance acknowledged

Superseded

<table>
<tr><th>Bushfire Protection Criteria</th><th>Method of Compliance</th><th>AS</th><th>PP</th><th>Proposed Bushfire Management Strategies</th></tr>
<tr><td rowspan="3">available and safe during a bushfire event</td><td>A3.2 Public road

A public road is to meet the requirements in Table 6, Column 1.

Table 6: Vehicular access technical requirements
<table><tr><th>TECHNICAL REQUIREMENTS</th><th>1 Public road</th><th>2 Cul-de-sac</th><th>3 Private driveway</th><th>4 Emergency access way</th><th>5 Fire se acce rout</th></tr><tr><td>Minimum trafficable surface (m)</td><td>6*</td><td>6</td><td>4</td><td>6*</td><td>6*</td></tr><tr><td>Horizontal clearance (m)</td><td>6</td><td>6</td><td>6</td><td>6</td><td>6</td></tr><tr><td>Vertical clearance (m)</td><td>4.5</td><td>N/A</td><td>4.5</td><td>4.5</td><td>4.5</td></tr><tr><td>Maximum grade <50 metres</td><td>1 in 10</td><td>1 in 10</td><td>1 in 10</td><td>1 in 10</td><td>1 in 10</td></tr><tr><td>Minimum weight capacity (t)</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td></tr><tr><td>Maximum crossfall</td><td>1 in 33</td><td>1 in 33</td><td>1 in 33</td><td>1 in 33</td><td>1 in 33</td></tr><tr><td>Curves minimum inner radius (m)</td><td>8.5</td><td>8.5</td><td>8.5</td><td>8.5</td><td>8.5</td></tr></table>* Refer to E3.2 Public roads Trafficable surface</td><td>✓</td><td></td><td>Folly Road is bituminised road compliant with Table 6 Column 1. It connects both west and east to an extensive public road network providing multiple destination options away from an advancing bushfire.

<u>Development response</u>

Compliance acknowledged.</td></tr>
<tr><td>A3.3 Cul-de-sac (including a dead-end road)

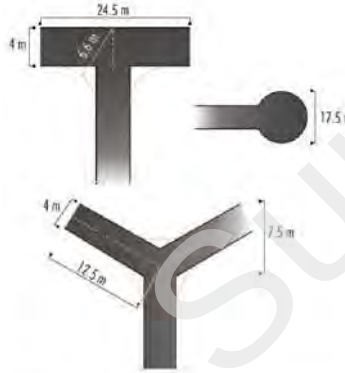
Requirements in Table 6, Column 2;

• Maximum length: 200 metres (if public emergency access is provided between cul-de-sac heads maximum length can be increased to 600 metres provided no more than eight lots are serviced and the emergency access way is no more than 600 metres); and
• Turn-around area requirements, including a minimum 17.5 metre diameter head.</td><td>N/A</td><td></td><td></td></tr>
<tr><td>A3.4 Battle-axe

Requirements in Table 6, Column 3;

• Maximum length: 600 metres; and Minimum width: six metres.</td><td>N/A</td><td></td><td></td></tr>
</table>

Superseded

Bushfire Protection Criteria	Method of Compliance	AS	PP	Proposed Bushfire Management Strategies
	A3.5 Private driveway longer than 50 m Requirements in Table 6, Column 3; • Required where a house site is more than 50 metres from a public road; • Passing bays: every 200 metres with a minimum length of 20 metres and a minimum width of two metres (i.e. the combined width of the passing bay and constructed private driveway to be a minimum six metres); • Turn-around areas designed to accommodate type 3.4 fire appliances and to enable them to turn around safely every 500 metres (i.e. kerb to kerb 17.5 metres) and within 50 metres of a house; and • Any bridges or culverts are able to support a minimum weight capacity of 15 tonnes. • All-weather surface (i.e. compacted gravel, limestone or sealed)  **Figure 22**: Design requirements for a private driveway longer than 50 metres Turning areas should allow type 3.4 fire appliances to turn safely	C		Primary entry (two way) is from Folly Road and services the Temple carpark (main carpark). A supplementary road (Emergency and Service Access) is provided to Young Road as a through road option for egress and to avoid any potential conflict with arriving emergency service vehicles. The site is large with a number of buildings located further than 50 m from Folly Road. The private driveway/road, which is lined with carparking spaces links all buildings, with the exception of the priest's residence. The private driveway/road is through open areas and over level ground and will comply with the technical requirements for private driveways. Access to the priest's residence is unobstructed over open ground. The proposed supplementary road (Emergency and Service Access), has a 4 m carriage way but is through open land with a horizontal clearance compliant with the minimum of 6 m. A condition is recommended to affirm the provision of the driveway and vehicle circulation area in accordance with the technical requirement of the Bushfire Protection Criteria (Table 6 column 3, Guidelines v1.3). <u>Development response</u> A condition of approval is to be provided to maintain the private driveway in accordance with Table 6 Column 3.

Superseded

Bushfire Protection Criteria	Method of Compliance	AS	PP	Proposed Bushfire Management Strategies
	A3.6 Emergency access way Requirements in Table 6, Column 4; • No further than 600 metres from a public road; • Provided as right of way or public access easement in gross to ensure accessibility to the public and fire services during an emergency; and • Must be signposted.	N/A		
	A3.7 Fire service access routes (perimeter roads) Requirements Table 6, Column 5; • Provided as right of ways or public access easements in gross to ensure accessibility to the public and fire services during an emergency; • Surface: all-weather (i.e. compacted gravel, limestone or sealed) Dead end roads are not permitted; • Turn-around areas designed to accommodate type 3.4 appliances and to enable them to turn around safely every 500 metres (i.e. kerb to kerb 17.5 metres); • No further than 600 metres from a public road; • Allow for two-way traffic and; • Must be signposted	N/A		
	A3.8 Firebreak width	C		Firebreaks are installed at the site 3 m inside the perimeter. <u>Development response</u> Firebreaks to be maintained in accordance with the City of Rockingham Annual Fire Control Notice.

Superseded

Bushfire Protection Criteria	Method of Compliance	AS	PP	Proposed Bushfire Management Strategies
Element 4: Water To ensure that water is available to the subdivision, development or land use to enable people, property and infrastructure to be defended from bushfire	**A4.1 Reticulated areas** The subdivision, development or land use is provided with a reticulated water supply in accordance with the specifications of the relevant water supply authority and Department of Fire and Emergency Services. **E4.1**: The Water Corporation's 'No. 63 Water Reticulation Standard' is deemed to be the baseline criterion for developments and should be applied unless local water supply authorities' conditions apply.	N/A		
	A4.2 Non-reticulated areas • Volume: minimum 50,000 litres per tank; Ratio of tanks to lots: minimum one tank per 25 lots (or part thereof); • Tank location: no more than two kilometres to the furthermost house site within the residential development to allow a 2.4 fire appliance to achieve a 20 minute turnaround time at legal road speeds; • Hardstand and turn-around areas suitable for a type 3.4 fire appliance (i.e. kerb to kerb 17.5 metres) are provided within three metres of each water tank; and • Water tanks and associated facilities are vested in the relevant local government	C		The site does not have access to a reticulated water supply. The nearest hydrant is located 950 m west of the site on Safety Bay Road. There is no community water tank provided for emergency services that is closer to the hydrant. It is recommended the emergency services water tank 50 000 L (appropriate to the scale of the development) is placed near the service entry, so as not to obstruct or confuse vehicle evacuating from the main carpark. The supply of water for the facility as will be required by the National Construction Code, to address a structural fire, can also serve the owners needs for a bushfire. When designing the system for approval for a structural fire the solutions should be designed to serve both a bushfire and a structural fire. As an example the placement of fire hoses to serve both the interior and exterior of buildings and the area around the buildings. <u>Development response</u> A minimum 50 000 L water supply (tank) shall be provided with coupling to City of Rockingham specification and signposted as exclusively for use by emergency services. The tank is to be located convenient to the supplementary road (Emergency and Service Access).

Superseded

Bushfire Protection Criteria	Method of Compliance	AS	PP	Proposed Bushfire Management Strategies
	A4.3 Individual lots within non-reticulated areas (Only for use if creating 1 additional lot and cannot be applied cumulatively) Single lots above 500 square metres need a dedicated static water supply on the lot that has the effective capacity of 10,000 litres.	N/A		

Superseded

5.3 Bushfire Management Strategies

The proposal is not a high-risk land use (likely to increase the risk of starting a bushfire), but it may attract people who are unfamiliar with bushfire prevention. Prevention necessitates the restriction of some activities that contribute to ignitions, including the disposal of cigarettes or outside fires (torches, wood fired barbeques).

The principles of Emergency Management (listed below) that may apply to the proposal can be divided across the BMP and BEEP working in unison – the BMP determines the suitability of the location, and the BEEP describes the management actions. The two align with emergency management principles as follows:

- Prevention – avoidance and mitigation works undertaken in advance i.e. (Planned Asset protection Zone).
- Preparation – education, procedures, training i.e. Seasonal maintenance APZ, regular review of (BEEP)requirements, contacts , responsibilities, and warning systems
- Response – actions taken in an event for saving lives (primary) - early evacuation if safe or shelter as a last resort with survival procedures described (BEEP).
- Recovery – return and restoration procedures described (BEEP).

5.3.1 Vulnerable Development Emergency Evacuation (Cl 6.6)

In regard to this proposal the additional bushfire management strategies to the Bushfire Protection Criteria, relates to the management of the facility to preserve life, and for a Vulnerable class of development this is to be addressed in the BEEP.

The proposed BEEP is attached in Appendix 2 and follows the State Government's *A Guide to developing a Bushfire Emergency Evacuation Plan* October 2019 and the *Emergency Evacuation Plan template* V1.1. The BEEP has been developed consistent with the Australian Standard AS 3745-2010, Planning for Emergencies in facilities.

The attached BEEP incorporates the requirements listed under section 5.5.2 V1.3 Guidelines for Planning in Bushfire Prone areas and acknowledged in **Table 4.**

Table 4: Compliance with Cl. 5.5.2 *Guidelines for Planning in Bushfire Prone Areas*

The emergency evacuation plan should be concise and consider:	**Addressed in Emergency Evacuation Plan**
The number of guests at the facility	400 maximum *Average attendance is 100 - 150 people.* *A long term projection is fortnightly attendance by up to 400 people for weddings or festivals.*
Whether the occupants are permanent or transient	Transient
Whether there is a caretaker on site	The site is supervised at all times
Whether there are people with a disability, medically dependant, young children, or the elderly	Visitors are able-bodied or expected to be in the care of a patron.
Identification of a safe alternative location if there was a need for evacuation/relocation	Visitors are expected to return to their homes through the urban road network.
A proposed method of movement of occupants to a safe location(s)	Private vehicles

Superseded

Details of suitable access/egress routes for the expected type/volume of traffic, including alternatives when suitable roads are inaccessible, insufficient or inappropriate	Folly Road to Kwinana Freeway, Perth Urban area road network.
Transport options for those without access to private vehicles	Guests are expected to arrive by private vehicle.
Options to shelter in place as a last resort	Evacuation is the preferred response as per DFES instruction however if it is not safe to leave a contingency has been made for shelter as a last resort in the Temple building
Roles and responsibilities of facility personnel and emergency services.	Sri Balaji Temple will be responsible for the preparation of the facility before the commencement of each bushfire season. Sri Balaji Temple will have members present at all times who are familiar with the locality. The facility manager will have the responsibility as the Chief fire Warden. Emergency procedures and responsibilities shall be clearly displayed within the buildings.

Superseded

The emergency evacuation plan should consider if actions will change based on a series of triggers, such as:	Addressed in Emergency Evacuation Plan
Effective warning methods appropriate for the occupants (including consideration of at-risk persons and the demographics of the occupants)	The Chief Warden will monitor the media for Fire Danger Rating information and be trained in the triggers and procedure for evacuation.
Closure of facility and early relocation of occupants appropriate to the fire danger rating (FDR) and bushfire warnings	
Any local government bushfire requirements (for example, harvest and vehicle movement bans)	N/A
A suitably qualified emergency management professional should prepare the emergency evacuation plan in collaboration with relevant stakeholders including the landowner/developer and the local government (refer to section 6.14 of the Guidelines)	Anthony Rowe Accreditation Level 3 Accreditation Number: 36690

5.4 Spatial representation of the bushfire management strategies

Further to the assessment against the bushfire protection criteria, the key features demonstrating compliance should be represented spatially in the *Spatial representation of the bushfire management strategies*. It represents the required bushfire risk management measures that must be implemented and maintained.

The Spatial representation of the bushfire management strategies is provided in Figure Ex1.

Superseded

6. RESPONSIBILITIES FOR IMPLEMENTATION AND MANAGEMENT OF THE BUSHFIRE MEASURES

The responsibilities for implementation and management of the bushfire measures, summarises the measures identified to achieve compliance with the bushfire protection measures following SPP 3.7. This has been provided in the Executive Summary. The details contained within the planning application authorised by the responsible decision maker are enforceable under section 214 of the *Planning and Development Act 2005*. The items addressed in the table responsibilities for implementation and management of the bushfire measures form part of the planning authorisation and where there is conflict supersede the detail of the planning application.

The responsibilities assigned to the City of Rockingham reflect the current activities of the City and are not to be relied upon nor are they binding upon the City as a consequence of this Bushfire Management Plan.

Owner

1.	The adoption of the Bushfire Emergency Evacuation Plan (Appendix 2 here in).	Ongoing
2.	The development site (extent shown on Figure Ex1), with in the area identified as Asset Protection Zone, is to be maintained as low threat in accordance with the descriptions provided in AS 3959:2018 cl. 2.2.3.2 (f).	Prior to occupation and ongoing
3.	The habitable buildings are to be constructed commensurate to BAL level at their location on the site.	Prior to occupation
4.	The internal roads (private driveway and supplementary road (Emergency and Service Access) are to be constructed and maintained in accordance with Guidelines for Planning in Bushfire Prone Areas, Appendices, Element 3 Table 6, Column 3 (private driveway).	Prior to occupation
5.	Firebreaks to be installed and maintained in accordance with the City of Rockingham Annual Fire Control Notice.	Prior to occupation
6.	A minimum 50 000 L water supply (tank) shall be provided, accessible to the emergency and service access, with a coupling to City of Rockingham specification and signposted as exclusively for the use by emergency services.	Prior to occupation
7.	A notification, pursuant to Section 70A *Transfer of Land Act 1893* is to be placed on the certificate(s) of title of the proposed lot(s) with a Bushfire Attack Level (BAL) rating of 12.5 or above, advising of the existence of a hazard or other factor. The notification is to state as follows: "This land is within a bushfire prone area as designated by an Order made by the Fire and Emergency Services Commissioner and is subject to a Bushfire Management Plan Additional planning and building requirements may apply to development on this land"	Prior to occupation

Superseded

APPENDIX 1 - Emergency Evacuation Plan

Superseded

BUSHFIRE EMERGENCY EVACUATION DOCUMENTS

Sri Balaji Temple

67 Folly Road, Baldivis

November 2021

This document contains two parts:

1. The preparation compliance with the WAPC A *Guide to developing a BUSHFIRE EMERGENCY EVACUATION PLAN October 2019: and*

2. The Emergency Evacuation Plan contained in Appendix 1. The Emergency Evacuation Plan incorporates the requirement of AS3745-2010 where relevant in the WAPC Emergency Evacuation Plan Template.

Section 1 does not form part of Emergency Plan

1. ESTABLISHING THE EMERGENCY MANAGEMENT TEAM

In accordance with the Guidelines for preparing a bushfire emergency evacuation plan an accredited bushfire practitioner was engaged (Anthony Rowe BPAD L3 36690).

The bushfire planning practitioner has been responsible for assisting the emergency management team with

- The establishment and implementation of emergency plans and procedures
- Formulation of emergency procedures
- Reviewing the local emergency services

The Emergency Planning Committee with feedback from the Emergency Management Team should regularly review the emergency evacuation plan to ensure it remains practical and current.

Emergency Planning Committee (EPC)

The **Emergency Planning Committee** (The Sri Balaji Temple management team) is responsible for overseeing the preparation of the site buildings and grounds and any supporting facilities required for protection in a bushfire, prior to the approaching bushfire season. This includes attendance to any maintenance required to minimise the risk of damage from bushfire attack and extends to ensuring that site mobile phones are registered on the Emergency Alert System.

The Emergency Planning Committee should regularly review the emergency evacuation plan to ensure it remains practical and current.

The Committee is responsible for reviewing the BEEP and overseeing the undertaking of education and training. It evaluates the outcomes of any drills and ensure appropriate resources are provided to prepare for the bushfire season.

The Committee is responsible for establishing the Emergency Management Team and assigning roles and responsibilities to staff.

The difference between the **Emergency Planning Committee** and the **Emergency Management Team** is the Emergency Planning Committee is responsible for all things in planning for the occurrence of a bushfire and preparing the facility to minimise any adverse effects. The priority is human safety. The Emergency Management Team responds to the bushfire event, it comprises the people expected to be in attendance at the time of a bushfire event. Its priority is human safety, and secondary may also include firefighting if trained. There should be no expectation upon any visitor to the facility to participate in firefighting.

Emergency Management Team (EMT)

The Emergency Management Team shall comprise staff assigned to the following positions:

- Chief Warden
- Area Warden Communication
- Area Warden Traffic

The Chief Warden will be responsible for responding to a bushfire event and ensuring the safety of visitors.

Section 2 does not form part of Emergency Plan

2. PREPARING THE EMERGENCY PLAN

The emergency plan applies to the facility, **The Sri Balaji Temple,** at 67 Folly Road, Baldivis.

The Bushfire Management Plan dated **29 November 2021** articulates bushfire safety measures that include:

- Identification of the Asset Protection Zone and maintenance
- Provision of firefighting equipment

This Emergency Plan has been prepared in response to bushfire threats identified in the BMP.

The Sri Balaji Temple is within a rural area of Baldivis, 400 m east of the residential area of Baldivis.

- Monitor the DFES Alerts and Warnings web page https://www.emergency.wa.gov.au
  The Chief Warden is responsible for monitoring this site at regular intervals.

Evacuate before the fires arrival when safe to do so.

- If a fire is within 5 km of the site (Chief Warden)
- If smoke or a fire is seen nearby (Chief Warden)
- If directly advised to leave by DFES or the police (Chief Warden)

Time Required to Evacuate – 30 minutes to exit the site.

Transportation Arrangements – Private Vehicles.

3. DETERMINE EMERGENCY ACTION

The **primary action** in response to bushfire threat is early **evacuation**

In a bushfire event, announcements will be made via electronic media and online, regarding bushfire incidents and potential threats to the site.

- Monitor the DFES Alerts and Warnings web page **https://www.emergency.wa.gov.au**
  The Chief Warden is responsible for monitoring this site at regular intervals during the bushfire season

The Trigger to evacuate.

- If the day has been forecast to be Severe, Extreme or Catastrophic.
- If directly advised to leave by DFES or the Police.
- If fire and/or smoke is identified within 5 km.

Time Required to Evacuate – 30 minutes

Suitable Access Routes: from Folly Road travel west to Safety Bay Road and on to Warnbro or north on Kwinana Freeway then west on Kulija Road/Dixon Road to Rockingham

Transportation Arrangements: Private Vehicles.

Section 15 does not form part of Emergency Plan

4. EVACUATION / SHELTER REQUIREMENTS

Visitors to The Sri Balaji Temple will arrive by their own transport and it is expected they would evacuate via their own transport back to the Perth Urban area.

The City of Rockingham has four primary evacuation centres which may be activated in a bushfire emergency, however in an emergency, announcement will be made via electronic media and online confirming locations of evacuation centres.

Whilst shelter on site is not recommended the owner should ensure the Asset Protection Zone is maintained.

PRIMARY AND SECONDARY EMERGENCY PROCEDURES

The Primary procedure is to EVACUATE when safe to do so.

Evacuation should be in the direction advised by Emergency Services, usually in the opposite direction to the approaching fire.

Head west on Folly Road and on to Safety Bay Road if a fire will arrive from the north.

Head west on Folly Road then north on Kwinana Freeway if a fire will arrive from the south.

The Emergency Evacuation Plan must be reviewed annually, ensuring all information, procedures, contact details and any attached publications (e.g. DFES) are current.

A current copy must be kept at the facility, and an A3 size copy of the evacuation diagram is to be displayed at all exit doors in all buildings.

If advised by DFES or emergency services that it is not safe to leave, either directly or by public information, or if fire/flames are visible from the site, then shelter in the Temple.

Assemble all visitors and staff, close all doors and windows, block smoke ingress, keep hydrated, observe the passing of the fire front, then exit the building when survivable conditions establish outside or if the building is failing.

5. TRAINING REQUIREMENTS

The Emergency Planning Committee is responsible for:

- The written procedures applicable to the site.
- Individual roles and responsibilities.
- Identifying Response Actions
  - Access and egress routes and managing evacuation.
  - Assembly point location and shelter procedures.

The Emergency Management Team is responsible for:

- Acknowledging the emergency response plan and the evacuation procedures.
- Acknowledging the location of facilities
- The allocation of responsibilities.
  - Nominating the chief warden
  - Nominating the traffic management responsibility
  - First aid responsibility

Section 2 does not form part of Emergency Plan

Emergency Evacuation Plan Preparation Checklist

The following questions will assist the individual in developing or reviewing the Emergency Evacuation Plan to identify an off-site location. For an appropriate off-site location ***Note that the majority of visitors to the facility will be day visitors and as such will return to their homes unless their home is within the area being evacuated due to the bushfire; in that instance they would attend an evacuation (welfare) centre as per public advice.***		
If there are occupants with support needs that require a similar facility to support them, is the off-site location suitable?	Yes No	☒ ☐
Comment: Visitors with support needs may attend the facility but would have a carer or family member in attendance with them to provide the required support.		
Is the off-site location in an area away from the effects of a bushfire?	Yes No	☒ ☐
Comment: City nominated emergency evacuation facility		
Are there amenities (toilets, food, water etc.) available at the off-site location? (if applicable)	Yes No	☒ ☐
Can the off-site location accommodate the number of occupants?	Yes No	☒ ☐
Comment: City nominated emergency evacuation facility		
Does the route to the off-site location require transporting through bushfire affected areas or areas that may be affected by an approaching bushfire?	**Yes** **No**	☒ ☐
Has the owner of the off-site location advised that they are happy to accommodate occupants if evacuation from a bushfire emergency occurs?	Yes No	☒ ☐
Comment: City nominated emergency evacuation facility		

Section 1 does not form part of Emergency Plan

Consider the following questions to assist in planning transport arrangements.	
Do you have your own transport for all occupants? **If no what transport provider will you use?** Visitors will have their own transport	Yes ☐ No ☒
Are private vehicles to be used?	Yes ☒ No ☐
If using private vehicles will there be sufficient vehicles to transport all the occupants, will they be available when you need them, and will there be drivers available? **If no, consider another mode of transport**	Yes ☒ No ☐
Will there be sufficient vehicles to transport all occupants? All visitors will arrive by private transport	Yes ☒ No ☐
Have occupants with support needs been considered when determining transport types and necessary timing to evacuate?	Yes ☒ No ☐
Do you require ambulances? **If yes, St John Ambulance Australia needs to be consulted.**	Yes ☐ No ☒
Is a community bus available?	Yes ☐ No ☒
Will community buses be available when you need them and will drivers be available?	Yes ☐ No ☒
Are other means of transport available?	Yes ☐ No ☒
Do you need any other type of special transport?	Yes ☐ No ☒

Section 1 does not form part of Emergency Plan

The following questions will assist the individual in developing or reviewing the Emergency Evacuation Plan to identify an on-site building. For an appropriate building, the answers to ***the below questions should receive a 'yes'.***	
Is the property well maintained and kept free from a build-up of fuel and leaf litter in gutters and around buildings?	Yes ☒ No ☐
• The standards for Asset Protection Zones in The Guidelines for Planning in Bushfire Prone Areas should be used as a reference	
Is there a building on-site that is away from bushland and is unlikely to be impacted by bushfire?	Yes ☐ No ☒
NA	
Is the building constructed in a manner that minimises bushfire attack with appropriate Asset Protection Zones?	Yes ☐ No ☐
NA	
Can the building accommodate the number of occupants and visitors?	Yes ☐ No ☐
NA	
Is there ease of accessibility to the building, and is it easily identifiable?	Yes ☐ No ☐
NA	
Is there access to amenities (toilets, food, water, etc.) away from the effects of a bushfire?	Yes ☒ No ☐
NA	

Section 1 Subject to does not form part of Emergency Plan

BUSHFIRE EMERGENCY PLAN

NAME OF FACILITY	The Sri Balaji Temple
ADDRESS	67 Folly Road, Baldivis
PREPARED BY	Anthony Rowe, L3 BPAD 36690
OWNER/OPERATOR	Jeeyars Acharya Peetham Ltd
DATE	29 November 2021
VERSION NUMBER	2

Superseded

Document Control

Version	Date	Details	Undertaken by
1	20/09/2021	DRAFT	Anthony Rowe
2	29/11/2021	FINAL	Anthony Rowe

Emergency Management Team

Name	Role	Identification Colour	Contact Details
	Chief Warden		
	Area Warden (Communication)		
	Area Warden (Traffic)		

FACILITY DETAILS

This Plan is for the Sri Balaji Temple and has been designed to assist management in protecting life and property in the event of a bushfire.

The plan outlines procedures for both **evacuation** and **shelter-in-place** to enhance the protection of occupants from the threat of a bushfire.

The primary action to follow in a bushfire emergency is to:

Evacuate ☒ Shelter in place ☐

NAME OF CONTACT PERSON		tbc	
POSITION / ROLE OF CONTACT PERSON		Sri Balaji Temple facility manager	
PHONE NUMBER		tbc	
FACILITY TYPE	Place of Worship	NUMBER OF BUILDINGS	5
NUMBER OF STAFF	tbc	NUMBER OF OCCUPANTS	400
NUMBER OF OCCUPANTS WITH SUPPORT NEEDS		0	
DESCRIPTION OF SUPPORT NEEDS		Not applicable	

Superseded

RESPONSIBILITIES

The following outlines who has responsibility for implementing emergency procedures in the event of a bushfire.

Position	Role	Responsibility
OWNER or MANAGER Emergency Planning Committee (EPC)		• Daily - check www.emergency.wa.gov.au for any warnings or alerts • Monitor Fire Danger Ratings at all times when visitors are at the site and ensure precautionary evacuation (closure) occurs on days of Extreme or Catastrophic Fire Danger Rating (FDR) • Ensure the site is prepared for the bushfire season • Maintain the Asset Protection Zone • Establish a first aid store.
Sri Balaji Temple Staff Emergency Management Team	Chief Warden	• Monitor conditions on Severe plus FDR days o Local ABC Radio 720 am o emergency.wa.gov.au • Determine with DFES/emergency services that safe evacuation is available • Determine to Evacuate- advise visitors to evacuate due to an emergency warning and if DFES advise the evacuation route is safe • Remain contactable (mobile phone) at all times • If a fire is within 5 km of the site or if an Emergency or Watch and Act warning has been issued confirm the safe evacuation (route) and destination and oversee evacuation • Advise visitors of the safe route and destination • Ensure all visitors have been accounted for and have evacuated • evacuate staff

EMERGENCY CONTACTS

Name of Organisation	Office / Contact	Contact details
Fire / Police / Ambulance	Fire or Emergency	**000 (112 from a mobile)**
Department of Fire & Emergency Services	Emergency Information	**13 33 37 (13 DFES)**
Emergency WA	Warnings and incidents	**www.emergency.wa.gov.au**
Bureau of Meteorology	Weather information	**1300 659 213**

Secondary Contacts

Name of Organisation	Office / Contact	Contact details

Superseded

PREPAREDNESS

CHECKLIST – ongoing, prior to and during the bushfire season		
BUSHFIRE SEASON: DECEMBER TO MAY OF EVERY YEAR (refer to the Citys Annual Fire Hazard Reduction Notice for precise start and finish dates as they vary each season)		
Action	**Frequency**	**Responsibility**
To be completed during the bushfire season from December to May each year by the Emergency Planning Committee (facility owner and/or manager). **Please refer to the City's Annual Fire Hazard Reduction Notice for precise start and finish dates as they vary each season.**		
1. The Asset Protection Zone is maintained as per the Standards for Asset Protection Zones (*Schedule 1 Guidelines for planning in bushfire prone areas)*	Ongoing	EPC
2. The evacuation diagram is clearly displayed at the exit doors of all buildings		
3. Emergency Contacts details are current and identified on the Evacuation Diagram		
4. First aid kits are stocked.		

AWARENESS AND PRE-EMPTIVE PROCEDURES

The following outlines the actions that must be taken to ensure occupants maintain an awareness of the bushfire threat and the appropriate procedures to follow.

Actions	Frequency	Responsible Person
Days forecast Very High, Severe, Extreme or Catastrophic		
Check the Emergency WA website **hourly** for alerts and warnings www.emergency.wa.gov.au	Monitor for alerts. Close / evacuate the facility evacuate if advised to do so by Emergency Services or if a fire is observed nearby.	Chief Warden
Throughout the Bushfire Season		
Check the Emergency WA website **daily** for alerts and warnings www.emergency.wa.gov.au	Check for alerts prior to opening each day. Actively monitor any incidents within 10 Km.	Chief Warden

Superseded

The Department of Fire and Emergency Services provides community and emergency advice about predicted and current conditions that advise about the level of bushfire threat.

The Fire Danger Rating (**FDR)** is based on the forecast weather conditions, the higher the rating, the higher the threat.

Extreme or Catastrophic ratings are the highest level and represent unsafe conditions.



Fire Danger Rating (DFES)		Emergency Warnings and Actions
CATASTROPHIC / **EXTREME**		**EMERGENCY WARNING**
The worst conditions for a fire. Homes are not designed or built to withstand a fire in these conditions. The only safe place is away from bushfire risk areas.		*An out of control fire is approaching very fast. You must leave now if it is safe to do so or act immediately to survive.*
SEVERE / **VERY HIGH**		**WATCH AND ACT**
Seek out information and be ready to leave or stay and actively defend your property if a fire starts. Only stay if you are 100% prepared.		*A fire is approaching and is out of control. You must leave now check it is safe to do so.*
HIGH / **LOW - MODERATE**		**ADVICE**
Be vigilant. Check your fire plan and continue to monitor conditions as they can change quickly.		*A fire has started, but there is no immediate danger. Stay alert and watch for signs of a fire.*

Superseded

EMERGENCY PROCEDURE, LOCATION, AND TRANSPORT DETAILS

Evacuation

Designated evacuation assembly point/s

1. The carpark

Primary off-site location

It is expected that visitors would return to their homes via the urban road network unless home is in a location which is affected by the bushfire. In that case visitors would follow Emergency Services advice on the location of evacuation welfare centres.

The following are two of the Welfare centres nominated by the City of Rockingham.

Name of venue	**Warnbro Community Recreation Centre**		
Address of venue	Okehampton Rd, Warnbro		
Nearest cross street	Warnbro Sound Avenue	Map reference	MQ93+P2 Warnbro
Venue phone number	(08) 9528 0333		
Primary route to location	Head **WEST** on Folly Road and continue onto Safety Bay Road. After 7.8 km turn left onto Warnbro Sound Avenue and after 577 m turn right onto Okehampton Road. The entry to Warnbro Community Recreation Centre is on the right after 570 m.		
Secondary route to location	Head **WEST** on Folly Road and continue onto Safety Bay Road then turn right to merge onto Kwinana Freeway. After 3.4 km take the Mundijong Road exit and after 7.4 km turn left onto Dixon then turn left onto Ennis Avenue. Follow Ennis Avenue to Safety Bay Road turn right then turn left onto Warnbro Sound Avenue and right onto Okehampton Road. The entry to Warnbro Community Recreation Centre is on the right after 570 m.		

Primary transportation arrangements

Visitors will have transport adequate for all members of their party.

Estimated travelling time to destination 12 minutes

Secondary off-site location

Name of venue	**Mike Barnett Sports Complex**		
Address of venue	Goddard St, Rockingham		
Nearest cross street	Dixon Road	Map reference	PPCW+H5 Rockingham
Primary route to location	Head **WEST** on Folly Road and continue onto Safety Bay Road then turn right to merge onto Kwinana Freeway. After 3.4 km take the Mundijong Road exit and after 7.4 km turn left onto Dixon Road – stay on Dixon Road for 4 km then turn left on to . Follow Ennis Avenue to Safety Bay Road turn right then turn left to the Mike Barnett Sports Complex.		
Secondary route to location	na		

Secondary transportation arrangements

Visitors will have their own transport adequate for all members of the party.

Estimated travelling time to destination 15 minutes

Superseded

EVACUATE OR SURVIVAL

The **primary action** to follow if there is an imminent bushfire threat is to **EVACUATE** following confirmation (DFES or emergency services) that a safe evacuation route is available.

Shelter in place is not recommended. Early evacuation by vehicle to the urban area will be available however if DFES or emergency services have advised it is too late to leave then Survival procedures are to be activated. Visitors and staff should assemble in the temple for as long as it is safe to do so and until the fire has passed. If it becomes unsafe to stay in the temple visitors and staff should assemble outside at the furthest point from the approaching fire.

Designated on-site building: The temple.
Refer to DFES publication (attachment 2) for survival instructions.

Procedures for evacuation and shelter-in-place in the event of a bushfire.

Trigger	Action	Responsible Person
EVACUATE		
WATCH and ACT – EVACUATE **A fire is within 10 km** DFES have advised to evacuate and confirmed the route is safe **OR** **A fire is within 5 km** And DFES have advised to evacuate and confirmed the route is safe – EVACUATE via SAFE ROUTE	• Assemble at the temple • Advise visitors of safe route/s and destinations • Ensure all visitors have been accounted for and have evacuated • evacuate staff	**Chief Warden**
SURVIVAL – only if advised by DFES it is not possible to leave and shelter in place as a last resort is to be taken		
EMEGENCY – SURVIVAL **A fire is approaching 5km** and DFES have advised it is not safe to to evacuate **OR** **A fire is within 5 km** **OR** **A fire is observed to be approaching** and DFES have advised it is not safe to evacuate **SHELTER on SITE**	• Contact emergency services to advise you are sheltering in place. • Remain calm and advise all guests and staff to assemble in the temple. • If it becomes unsafe to stay in the temple visitors and staff will move to an area outside that is furthest from the fire front. • Keep visitors calm and stay hydrated. • Evacuate when a safe evacuation route becomes available as advised by DFES/emergency services	**Chief Warden**

Superseded

RECOVERY

Action	Responsible Person
Following an evacuation when the area has been deemed safe by emergency services the owner/manager will: • return to the site • check grounds for any smouldering objects • determine when it will be safe to re-open	**Chief Warden**
Debrief - assess the severity of the event; - would the actions taken be sufficient to ensure the safety of staff and visitors in an extreme event; - were there any unexpected problems not accounted for in the existing emergency plan; - update the emergency plan to include any learnings from the event.	**Emergency Planning Committee (owner) with the Emergency Management Team (Chief Warden)**

Superseded

Attachment 1 – Emergency Plan and Evacuation Map

Superseded

BUSHFIRE EMERGENCY RESPONSE PLAN

FACILITY DETAILS

Location : Sri Balaji Temple
67 Folly Road, Baldivis

Facility: Place of Worship

Guests : **Maximum 400**

CONTACT PERSONS	ROLE	CONTACT NO.
Facility Manager	Chief Warden	Tbc

Chief Warden

- Monitor Alerts, Determine with DFES (emergency services) that evacuation is safe, or shelter is necessary
- Alert and Instruct visitors
- Advise visitors to evacuate and confirm the evacuation destination and route
- Ensure all visitors have been accounted for and evacuation is complete
- **If not safe to evacuate** – Advise visitors of safety procedures, maintain confidence and keep calm.
- Remain contactable (mobile phone) at all times

INFORMATION SOURCES

Local ABC radio	720 am
DFES information line	13 33 37
Emergency WA	www.emergency.wa.gov.au
Bureau of Meteorology	1300 659 213

EMERGENCY CONTACTS

Fire, Police or Ambulance 000

EMERGENCY WARNINGS (DFES)

ADVICE – PREPARE TO EVACUATE

Trigger: Fire is greater than 5 km away

An ADVICE warning has been issued across telecommunications media of an incident nearby (within 10 km).

Response:

The Chief Warden will take the following information into consideration when determining if and when to evacuate:

- The severity of the bushfire incident.
- Approximate time for the bushfire to impact the facility.

If the decision is made to evacuate, follow the procedure under Watch and Act.

WATCH AND ACT - EVACUATE

Trigger: Fire is within 5 km

DFES or Police have advised **EVACUATION IS REQUIRED** (Public Notice)

or

Smoke or fire is observed and DFES have confirmed safe evacuation along Folly Road is available.

Confirm with DFES or police the direction in which evacuation should be taken (public information).

Response:

- Advise visitors of evacuation destination and route.
- Oversee evacuation of visitors by private vehicles.

EMERGENCY - SURVIVAL

Trigger: Fire is within 2 km

DFES or Police have advised **EVACUATION IS NOT SAFE**
or
Smoke or fire is observed near by

Response

Survival Plan – only to be enacted in the event that DFES or police have advised a safe evacuation route is not available

- Visitors and staff remain undercover in the temple whilst it is safe to do so.
- Close all doors and windows, block smoke ingress, keep patons hydrated.
- Monitor the passing of the firefront.
- Monitor the building condition, if it becomes unsafe to stay in the building move outside to an area as far as possible from the fire front.

ALL CLEAR

When emergency services have deemed the area safe:

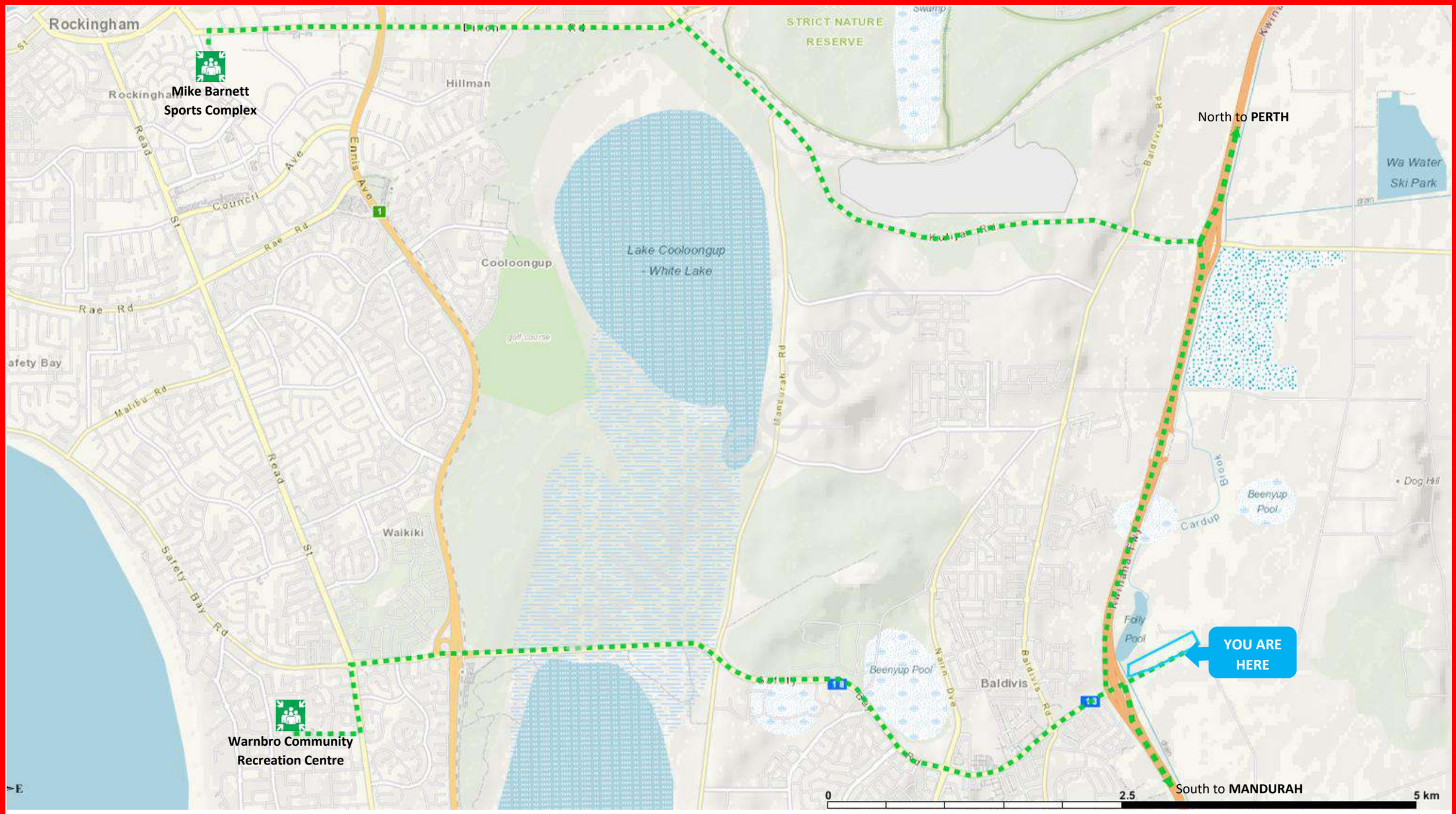
- Return to the site (chief warden)
  - check buildings and grounds for any smouldering objects.
  - determine if it is safe for visitors to return
- Monitor grounds and buildings, particularly roofs for smouldering material for 24 hours after the event. Extinguish small fires.

Vehicle Management

Staff and visitors are expected to arrive by private vehicle and whilst at the facility must ensure they keep a vehicle at the site to facilitate their own evacuation.

Superseded

EMERGENCY EVACUATION DIAGRAM



Your Location Is **The Sri Balaji Temple 67 Folly Road, Baldivis**

EVACUATE if DFES or Police advise evacuation is required or if you see an uncontrolled fire

Follow instructions from the Emergency Services Incident Controller (the DFES officer managing the fire).

- Assemble at the Temple building closest to the carpark
- Evacuate to destination and via route as directed by Emergency Services either directly or by public announcement.

DO NOT TRAVEL THROUGH FIRE

Monitor Emergency Information: ABC Radio 720AM; DFES information 13 33 37;

Emergency WA - www.emergency.wa.gov.au

SURVIVAL - if it is not safe to leave - advise DFES (ph. 13 33 37) of your location and the number of persons present

- keep fire extinguishers close by
- Soak towels to block smoke ingress
- Monitor the building condition for smoke and heat.
- Keep hydrated and monitor the fire's passing.
- Leave the building when safe to do so and shelter to avoid heat
- Evacuate the site when DFES/Emergency Services confirm a safe route is available

DO NOT STAY IN A BURNING BUILDING

Attachment 2 – DFES Sheltering Fact Sheet

Superseded

Sheltering in Your Home

Bushfire Fact Sheet

Sheltering in your home during a bushfire should be your last option, when all other plans fail and you are unable to leave.

Bushfires are very unpredictable and you need to be well prepared to change your plans if you can no longer leave your property.

Even if you do not intend to stay and actively defend your property, you need to be physically and mentally prepared if sheltering in your home becomes your only option.

When the fire front passes, the heat will be extreme and you must shelter at this time whether you planned to or not.

If it is too late to leave the property

- Stay in the house when the fire front is passing.
- If people are expecting you to leave, let them know you are now staying.
- Take shelter inside in the room furthest from the fire front.
- Make sure all doors and windows are sealed as best as possible.
- Soak towels and rugs in water, and lay them along the inside of external doorways.
- Soak woollen blankets and keep them handy for protection against radiant heat.
- Take down curtains and push furniture away from windows.
- Get down low to limit your exposure to smoke.
- Actively defend your property by putting out spot fires.
- Remember to check the roof cavity through the manhole for any spot fires.
- Drink plenty of water to avoid becoming dehydrated.



People have died sheltering in bathrooms and other rooms without an exit door leading outside. Make sure you can easily escape and shelter in a room with at least two ways to get outside and one that has a water supply (eg. a laundry with a door that goes outside or a kitchen).

Preparing to evacuate

Shelter in the house for as long as possible. Many people have died from toxic smoke and fumes when their house has caught fire.

If your house catches on fire and the conditions inside become unbearable, leave through the door furthest from the approaching fire and go to an area that has already been burnt.

The majority of people die in a bushfire from radiant heat. You should protect yourself from radiant heat with long sleeves, long trousers and strong leather boots.

Superseded

For more information visit dfes.wa.gov.au
or contact DFES Community Engagement – 9395 9816

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Government of **Western Australia**
Department of **Fire & Emergency Services**

DFES
Department of Fire & Emergency Services

APPENDIX 2 - APZ Guidelines

cl. 2.2.3.2(f)

Superseded

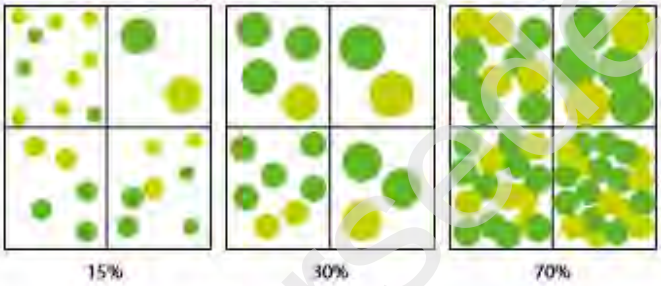
Element 2 – Siting and Design (Guidelines for Planning in Bushfire Prone Areas v1.3)

ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT

SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES

- **Fences:** within the APZ are constructed from non-combustible materials (e.g. iron, brick, limestone, metal post and wire). It is recommended that solid or slatted non-combustible perimeter fences are used.
- **Objects:** within 10 metres of a building, combustible objects must not be located close to the vulnerable parts of the building i.e. windows and doors.
- **Fine Fuel load:** combustible dead vegetation matter less than 6 millimetres in thickness reduced to and maintained at an average of two tonnes per hectare.
- **Trees (> 5 metres in height):** trunks at maturity should be a minimum distance of 6 metres from all elevations of the building, branches at maturity should not touch or overhang the building, lower branches should be removed to a height of 2 metres above the ground and or surface vegetation, canopy cover should be less than 15% with tree canopies at maturity well spread to at least 5 metres apart as to not form a continuous canopy.

Figure 18: Tree canopy cover – ranging from 15 to 70 per cent at maturity



- **Shrubs (0.5 metres to 5 metres in height):** should not be located under trees or within 3 metres of buildings, should not be planted in clumps greater than 5m² in area, clumps of shrubs should be separated from each other and any exposed window or door by at least 10 metres. Shrubs greater than 5 metres in height are to be treated as trees.
- **Ground covers (<0.5 metres in height):** can be planted under trees but must be properly maintained to remove dead plant material and any parts within 2 metres of a structure, but 3 metres from windows or doors if greater than 100 millimetres in height. Ground covers greater than 0.5 metres in height are to be treated as shrubs.
- **Grass:** should be managed to maintain a height of 100 millimetres or less.

Submitted

APPENDIX 3 – Access Standard

Superseded

Table 6: Vehicular access technical requirements

TECHNICAL REQUIREMENTS	1 Public road	2 Cul-de-sac	3 Private driveway	4 Emergency access way	5 Fire service access routes
Minimum trafficable surface (m)	6*	6	4	6*	6*
Horizontal clearance (m)	6	6	6	6	6
Vertical clearance (m)	4.5	N/A	4.5	4.5	4.5
Maximum grade <50 metres	1 in 10	1 in 10	1 in 10	1 in 10	1 in 10
Minimum weight capacity (t)	15	15	15	15	15
Maximum crossfall	1 in 33	1 in 33	1 in 33	1 in 33	1 in 33
Curves minimum inner radius (m)	8.5	8.5	8.5	8.5	8.5

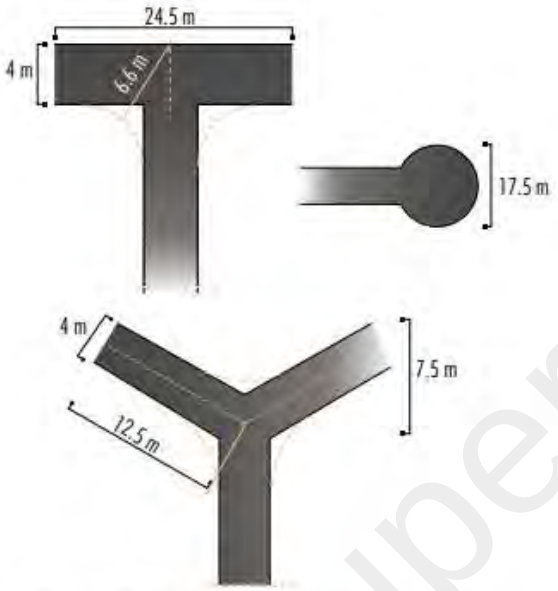


Figure 22: Design requirements for a private driveway longer than 50 metres
Turning areas should allow type 3.4 fire appliances to turn safely

Superseded

APPENDIX 4 – Water Tank

Superseded

Specification for Water Tanks

A capacity of not less than 10,000 L is maintained solely for fire-fighting purposes.

The water supply must be stored in an above ground water tank constructed of concrete, steel or corrugated iron.

The water supply outlet/s must be fixed to the water tank.

The outlets should provide a gate valve with 100 mm cam loc fitting, with a 50 mm adaptor for use by the brigade.

All fixed above-ground water pipelines and fittings must be of non-corrodible and non-combustible materials.

Be located so that fire brigade vehicles are able to get to within 4 metres of the water supply outlet

The water supply must be readily identifiable.

Superseded

APPENDIX 5 – References

Superseded

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Superseded

COTERRA ENVIRONMENT



67 Folly Road, Baldivis

Environmental Assessment Report

Rev 0 November 2021

Superseded

CALIBRE | COMMITMENT | COLLABORATION

Superseded

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Our Ref: ARDBAL01
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Contents

1 Introduction 6
1.1 Planning Context 6
1.2 Purpose of this Report 6
2 Environmental Guidance and Policies 7
2.1 Town Planning 7
2.1.1 City of Rockingham Town Planning Scheme No. 2 7
2.1.2 City of Rockingham Local Planning Policies 7
2.2 Land Use Planning 7
2.2.1 EPA Guidance Statement No. 33 – Environmental Guidance for Planning and Development 7
2.2.2 Draft State Planning Policy 2.9 Planning for Water 8
2.2.3 State Planning Policy 3.7: Planning in Bushfire Prone Areas and Guidelines for Planning in Bushfire Prone Areas 8
3 Site Characteristics 9
3.1 Soils and topography 9
3.1.1 Geology and soils 9
3.1.2 Acid sulfate soils 9
3.1.3 Topography 9
3.2 Hydrology 10
3.2.1 Groundwater 10
3.2.2 Surface water and wetlands 10
3.2.3 Drainage 10
3.3 Vegetation and flora 11
3.3.1 Vegetation complexes 11
3.3.2 Current state of vegetation 11
3.3.3 Bush Forever 11
3.3.4 Conservation-significant flora 12
3.3.5 Bush Fire Risk 12
3.4 Fauna 13
3.4.1 Fauna habitat 13
3.4.2 Conservation-significant fauna 13
3.4.3 Black Cockatoo Habitat Tree Assessment 14
3.4.4 Mosquitoes 15
3.5 Historical land uses 15
3.5.1 Aerial imagery 15
3.5.2 Site visit 15
3.6 Potential contamination 17
4 Potential Environmental Impacts and Management 19
4.1 Soils 19
4.1.1 Potential Impacts 19
4.1.2 Management Measures 19
4.2 Groundwater and Stormwater 19
4.2.1 Potential Impacts 19

Superseded

4.2.2 Management Measures 19
4.3 Surface Water and Wetlands 19
4.3.1 Potential Impacts 19
4.3.2 Management Measures 20
4.4 Vegetation 20
4.4.1 Potential Impacts 20
4.4.2 Management Measures 20
4.5 Fauna 21
4.5.1 Potential Impacts 21
4.5.2 Management Measures 21
4.6 Bushfire Management 21
4.7 Potential Contamination 22
4.7.1 Unexpected Finds 22
4.8 Construction Impacts 22
5 Conclusion 23
6 References 24

Tables

Table 1: Wetlands 10
Table 2: Wetland management categories 10
Table 3: Potential conservation-significant flora species 12
Table 4: Potential conservation-significant fauna species 13
Table 5: Habitat trees 15
Table 6: Potentially contaminating activities 17

Plates

Plate 1 Soil profile 9
Plate 2: *Eucalyptus rudis* 11
Plate 3: *Melaleuca rhaphiophylla* 11
Plate 4: Inundated land in western portion of site (flood plain) 16
Plate 5: On-site infrastructure (shed/residence) 16
Plate 6: On-site infrastructure (shed and rainwater tank) 16
Plate 7: Powerlines (northern boundary) 16
Plate 8: Septic tank 17
Plate 9: Scattered native vegetation 17
Plate 10: Planted pine trees 17
Plate 11: Degraded site condition due to grazing 17

Superseded

Figures

Figure 1 Site location

Figure 2 Aerial photography

Figure 3 Development plan

Figure 4 Soils and topography

Figure 5 Hydrological features

Figure 6 Floodplain mapping

Figure 7 Potential habitat trees

Appendices

Appendix 1 Fauna Habitat Assessment (Harewood, 2021)

Appendix 2 ASS Self-Assessment Form (WAPC, 2020)

Superseded

1 Introduction

Japa Limited is proposing a site redevelopment at 67 (Lot 53) Folly Road, Baldivis (Figure 8). The site is located in the City of Rockingham, approximately 45 kilometres (km) from Perth city. The site is currently vacant and has been used for rural purposes (Figure 9).

Japa Limited propose to develop the site as a Sri Balaji Hindu temple (Figure 10). This will require development within the eastern end of the site, with the western end (beyond the 1 in 100-year flood plain level) not being altered from its current state.

1.1 Planning Context

The site is currently zoned 'Rural' under the Metropolitan Region Scheme (MRS) and 'Rural' under the City of Rockingham Town Planning Scheme (TPS) No. 2 (DPLH, 2004).

To proceed with development of the site, development must be approved as a discretionary land use in the 'Rural' zone, by the City of Rockingham (Section 2.1.1).

1.2 Purpose of this Report

This Environmental Assessment Report (EAR) is being prepared to support a Development Application for the site, to identify matters of environmental concern and management measures to avoid impact to the environment, to ultimately facilitate development of the site. This EAR is intended for submission to the City of Rockingham.

Superseded

2 Environmental Guidance and Policies

2.1 Town Planning

2.1.1 City of Rockingham Town Planning Scheme No. 2

The City of Rockingham TPS No 2 details provisions for development within the City of Rockingham. TPS No. 2 details objectives for 'rural' zones as follows:

"To preserve land for farming and foster semi-rural development which is sympathetic to the particular characteristics of the areas in which it is located, having due regard to the objectives and principles outlines in the Rural Land Strategy and supported by any other Plan of Policy that the Local Government may adopt from time to time as a guide to future development within the Zone" (DPLH, 2004).

Development in rural zones must adhere to the following provisions, specific to the proposed site redevelopment:

- Setbacks – all development, including clearing of land, shall be setback a minimum 30 m from the primary street and 10 m from all other boundaries, other than a firebreak or vehicular accessway
- Clearing of vegetation – no native or remnant vegetation shall be removed or cleared unless approved by the Local Government, and other than for the purpose of a fire break, fire protection within an asset protection zone, dwelling, outbuilding, fence and vehicular access or where such vegetation is dead, diseased or dangerous

In relation to proposed development at the site, TPS No. 2 details that places of worship are not permitted unless the Local Government has exercised its discretion by granting development approval after giving special notice in accordance with Clause 64 of the deemed provisions, which requires that the application for development on the site be advertised and undertaken in accordance with a development approval.

The site is also subject to Development Contribution Area No. 2 under TPS No. 2, which requires financial contribution by site owners to the City of Rockingham for the implementation of various plans.

2.1.2 City of Rockingham Local Planning Policies

The City of Rockingham has developed a number of Local Planning Policies which may have relevance to development at the site, including but not limited to the following:

- Planning Policy No. 3.1.1 – Rural Land Strategy (City of Rockingham, 2020)
- Planning Policy No 3.4.3 – Urban Water Management (City of Rockingham, 2019).

2.2 Land Use Planning

2.2.1 EPA Guidance Statement No. 33 – Environmental Guidance for Planning and Development

This guidance statement provides an overview of environmental protection processes and information, to assist land use planning and development in Western Australia. It provides specific information on (EPA, 2008):

- Environmental protection processes in Western Australia including referral and environmental impact assessment procedures that apply to land use planning and development under the *Environmental Protection Act 1986*
- EPA's advice on protecting a range of biophysical factors, to assist land use planning

Superseded

- EPA's advice on managing potential pollutants, waste and water (pollution management factors), to assist land use planning
- EPA's advice on protecting aspects of the biophysical environment of cultural and social significance to the community (social surroundings factors), and the EPA's position on risk.

2.2.2 Draft State Planning Policy 2.9 Planning for Water

Draft State Planning Policy 2.9 (SPP 2.9) – Planning for Water (WAPC, 2021) is intended to guide development in consideration of water resource management with the aims of:

- Protecting and improving the environmental, social, cultural and economic values of the State's water resources
- Protecting public health and the long-term supply of good quality and affordable drinking water
- Managing the risk of riverine flooding to people, property and infrastructure
- Ensuring the secure and sustainable supply, use and re-use of water resources
- Ensuring future development is resilient to the water-related impacts of climate change
- Minimising future costs and protection public health by ensuring health by ensuring that appropriate wastewater infrastructure is provided (WAPC, 2021).

2.2.3 State Planning Policy 3.7: Planning in Bushfire Prone Areas and Guidelines for Planning in Bushfire Prone Areas

State Planning Policy 3.7 (SPP 3.7) – Planning in Bushfire Prone Areas (WAPC, 2015) and the associated Guidelines for Planning in Bushfire Prone Areas (WAPC, 2017) have been developed to implement effective risk-based land use planning and development to preserve life and reduce the impact of bushfire on property and infrastructure (WAPC, 2015).

SPP 3.7 applies to all strategic planning, subdivision and development applications in bushfire prone areas, and aims to support development through an assessment of bushfire hazard. The aims of SPP 3.7 are to:

- Avoid increases in the threat of bushfire to people, property and infrastructure
- Reduce vulnerability to bushfire through identification and consideration of bushfire risks
- Ensure higher order strategic planning documents, proposals, subdivision and development applications take into account bushfire protection requirements
- Achieve an appropriate balance between bushfire risk management measures, biodiversity conservation values, environmental protection and biodiversity management and landscape amenity, with consideration to climate change (WAPC, 2015).

The Guidelines for Planning in Bushfire Prone Areas (WAPC, 2017) provides guidance on the implementation of SPP 3.7, and assist in:

- Determining appropriate land use planning in relation to bushfire prone areas across Western Australia
- Specifying the requirements to be met at each stage of the planning process
- Ensuring that necessary bushfire protection measures are incorporated into development (WAPC, 2017).

Superseded

3 Site Characteristics

3.1 Soils and topography

3.1.1 Geology and soils

Two geological units are represented at the site

- Mc2: clayey silt – dark greyish brow, mottled in part, soft when wet, plastic in part, blocky, variable clay content, of alluvial origin
- S10: sand – as S8 as relatively thin veneer over C2, M4 and Mc2, noting S8: sand – very light grey at surface, yellow at depth, fine to medium-grained, sub-rounded quartz, moderately well sorted, of eolian origin (Gozzard, 1983).

These soils are typically representative of Bassendean Sands over Guildford Formation (Gozzard, 1983), as evidenced on site (Plate 1).



Plate 1 Soil profile

Source: Coterra; 07/09/2021

3.1.2 Acid sulfate soils

The site is located in an area identified as having a 'moderate to low' risk of containing acid sulfate soils (Landgate, 2021).

3.1.3 Topography

The site is generally flat and ranges in topography from 4 m in the west to 6 m in the east (Landgate, 2021).

Superseded

3.2 Hydrology

3.2.1 Groundwater

Groundwater at the site is located at 2 metres Australian Height Datum (m AHD), approximately 3 m below ground level (DWER, 2020). Groundwater salinity is approximated at 1000-1500 mg/L (DWER, 2020).

3.2.2 Surface water and wetlands

A multiple use wetland is located on the site (Table 1; Figure 12). Folly Pool, a conservation category wetland is located adjacent to the site (Figure 12). The wetland management category definitions are provided in Table 2. The western portion of the site is located within the floodplain for Folly Pool (Figure 13).

Table 1: Wetlands

Wetland Name	Wetland Unique Feature ID	Landform	Wetland Type	Management Category	Total Area (ha)	Area on site (ha)
Unnamed	16021	Flat	Palusplain	Multiple Use	27,603	5.7
Folly Pool	16015	Basin	Sumpland	Conservation	22.74	0

Table 2: Wetland management categories

Management Category	General Description	Management Objective
Conservation	Wetlands which support a high level of attributes and functions	Highest priority wetlands. Objective is to preserve and protect the existing conservation values of the wetlands through various mechanisms including: • reservation in national parks, crown reserves and State-owned land, • protection under Environmental Protection Policies, and • wetland covenanting by landowners. No development or clearing is considered appropriate. These are the most valuable wetlands and any activity that may lead to further loss or degradation is inappropriate.
Resource Enhancement	Wetlands which may have been partially modified but still support substantial ecological attributes and functions	Priority wetlands. Ultimate objective is to manage, restore and protect towards improving their conservation value. These wetlands have the potential to be restored to Conservation category. This can be achieved by restoring wetland function, structure and biodiversity. Protection is recommended through a number of mechanisms.
Multiple Use	Wetlands with few remaining important attributes and functions	Use, development and management should be considered in the context of ecologically sustainable development and best management practice catchment planning through landcare.

Source: EPA (2008)

3.2.3 Drainage

The Peel Main Drain runs down the Kwinana Freeway, adjacent to the eastern boundary of the site.

The Peel Main Drain ultimately discharges into the Serpentine River, which is located approximately 3 km southeast of the site (Figure 12).

Superseded

3.3 Vegetation and flora

3.3.1 Vegetation complexes

Historically, the vegetation at the site would have been representative of the Serpentine River Complex, described as "closed scrub of *Melaleuca* species and fringing woodland of *Eucalyptus rudis* – *Melaleuca rhaphiophylla* along streams" (Heddle et al, 1980).

3.3.2 Current state of vegetation

In its current condition, land is the eastern portion of the site has largely been grazed, and contains grass seed and weeds. Scattered *E. rudis* trees dominate the remaining vegetation on site (Plate 2). Melaleuca species are also present (Plate 3).

Land in the western portion of the site contains grasses, scattered Melaleuca species and dense vegetation adjacent to Folly Pool. This portion of the site was not assessed further given no development is proposed within the floodplain/western portion of the site.

Superseded



Plate 2: *Eucalyptus rudis*



Plate 3: *Melaleuca rhaphiophylla*

3.3.3 Bush Forever

Bush Forever (BF) Site 418 (Folly Pool, Baldivis) is located adjacent to the site on the western boundary. Vegetation in BF Site 418 is typical of the Pinjarra Plain and Serpentine River complexes (Heddle et al, 1980), and contains *E. rudis* woodland over *M. rhaphiophylla* low forest, and *Baumea sp.* sedgelands (DEP, 2000).

Bush Forever Site 369 (Doghill Road Bushland, Baldivis) is located approximately 1 km east of the site. Vegetation in BF Site 369 is typical of the Pinjarra Plain and Dardanup complexes (Heddle et al, 1980), and contains *Banksia attenuata, B. menziesii* and *Allocasuarina fraseriana* low woodland; scattered *Eucalyptus marginata* and/or *Eucalyptus gomphocephala* over *Banksia* species low woodland (DEP, 2000).

Bush Forever Site 419 (Maramanup Pool, Baldivis) is located approximately 1.5 km south of the site. Vegetation in BF Site 419 is typical of the Pinjarra Plain and Serpentine River complexes (Heddle et al, 1980), and contains similar vegetation to BF Site 418 (DEP, 2000).

3.3.4 Conservation-significant flora

A search was undertaken of the EPBC Protected Matters Search Tool to determine the presence of threatened ecological communities and conservation-significant flora on site (Table 3). No conservation-significant flora is expected to occur on the site as a result of historical land uses (Section 3.4.3) and a lack of vegetation (overstorey and understorey species) on the site.

Table 3: Potential conservation-significant flora species

Name	Status	Type of Presence	Likelihood of Occurrence
Threatened Ecological Communities			
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community may occur within area	Unlikely
Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community likely to occur within area	Unlikely
Plants			
Andersonia gracilis (Slender Andersonia)	Endangered	Species or species habitat may occur within area	Unlikely
Diuris drummondii (Tall Donkey Orchid)	Vulnerable	Species or species habitat may occur within area	Unlikely
Diuris micrantha (Dwarf Bee-orchid)	Vulnerable	Species or species habitat likely to occur within area	Unlikely
Diuris purdiei (Purdie's Donkey-orchid)	Endangered	Species or species habitat may occur within area	Unlikely
Drakaea elastica (Glossy-leaved Hammer Orchid, Warty Hammer Orchid)	Endangered	Species or species habitat may occur within area	Unlikely
Drakaea micrantha (Dwarf Hammer-orchid)	Vulnerable	Species or species habitat likely to occur within area	Unlikely
Eucalyptus x balanites (Cadda Road Mallee, Cadda Mallee)	Endangered	Species or species habitat may occur within area	Unlikely
Synaphea sp. *Fairbridge Farm* (D. Papenfus 696) (Selena's Synaphea)	Critically Endangered	Species or species habitat likely to occur within area	Unlikely
Synaphea sp. *Serpentine* (G.R. Brand 103)	Critically Endangered	Species or species habitat may occur within area	Unlikely

Superseded

3.3.5 Bush Fire Risk

The site is located in a mapped bushfire prone area, as defined by the Department of Fire and Emergency Services (Landgate, 2021). These areas are defined as being subject to, or likely to be subject to, bush fire attack, and are identified by the presence of and proximity to bush fire prone vegetation and includes both the area containing the bush fire prone vegetation and a 100 m buffer zone immediately surrounding it (Landgate, 2021).

3.4 Fauna

3.4.1 Fauna habitat

Based on the limited amount of vegetation at the site, the quality of fauna habitat is considered limited. As such, with the exception of migratory species, fauna species are more likely to be present in areas of better-quality vegetation i.e. adjacent Bush Forever Site 418 (Section 3.3.3).

3.4.2 Conservation-significant fauna

A search was undertaken of the EPBC Protected Matters Search Tool to determine the presence of threatened fauna species on site (Table 4). No conservation-significant fauna are expected to occur on the site as a result of historical land uses (Section 3.4.3) and a lack of fauna habitat on the site.

Table 4: Potential conservation-significant fauna species

Name	Status	Type of Presence	Likelihood of Occurrence
Birds			
Apus pacificus (Fork-tailed Swift)	Migratory (Marine)	Species or species habitat likely to occur within area	Unlikely
Actitis hypoleucos (Common Sandpiper)	Migratory (Wetland)	Species or species habitat known to occur within area	Unlikely
Ardea ibis (Cattle Egret)	Other	Species or species habitat may occur within area	Unlikely
Botaurus poiciloptilus (Australasian Bittern)	Endangered	Species or species habitat likely to occur within area	Unlikely
Calidris acuminata (Sharp-tailed Sandpiper)	Migratory (Wetland)	Species or species habitat known to occur within area	Unlikely
Calidris canutus (Red Knot, Knot)	Endangered	Species or species habitat may occur within area	Unlikely
Calidris ferruginea (Curlew Sandpiper)	Critically Endangered Migratory (Wetland)	Species or species habitat likely to occur within area	Unlikely
Calidris melanotos (Pectoral Sandpiper)	Migratory (Wetland)	Species or species habitat likely to occur within area	Unlikely
Calyptorhynchus banksii naso (Forest Red-tailed Black Cockatoo	Vulnerable	Species or species habitat likely to occur within area	Unlikely
Calyptorhynchus baudinii (Baudin's Cockatoo, Long-billed Black-Cockatoo)	Endangered	Species or species habitat likely to occur within area	Unlikely
Calyptorhynchus latirostris (Carnaby's Cockatoo, Short-billed Black-Cockatoo)	Endangered	Breeding may occur within area	Unlikely
Haliaeetus leucogaster (White-bellied Sea-Eagle)	Other	Species or species habitat likely to occur within area	Unlikely
Leipoa ocellata (Malleefowl)	Vulnerable	Species or species habitat may occur within area	Unlikely

Superseded

Name	Status	Type of Presence	Likelihood of Occurrence
Merops ornatus (Rainbow Bee-eater)	Other	Species or species habitat may occur within area	Unlikely
Motacilla cinerea (Grey Wagtail)	Other	Species or species habitat may occur within area	Unlikely
Numenius madagascariensis (Eastern Curlew, Far Eastern Curlew)	Critically Endangered Migratory (Wetland)	Species or species habitat may occur within area	Unlikely
Pandion haliaetus (Osprey)	Migratory (Wetland)	Species or species habitat likely to occur within area	Unlikely
Rostratula australis (Australian Painted Snipe)	Endangered	Species or species habitat likely to occur within area	Unlikely
Sternula nereis nereis (Australian Fairy Tern)	Vulnerable	Species or species habitat may occur within area	Unlikely
Tringa nebularia (Common Greenshank)	Migratory (Wetland)	Species or species habitat likely to occur within area	Unlikely
Mammals			
Dasyurus geoffroii (Chuditch, Western Quoll)	Vulnerable	Species or species habitat likely to occur within area	Unlikely
Pseudocheirus occidentalis (Western Ringtail Possum)	Critically Endangered	Species or species habitat may occur within area	Unlikely

3.4.3 Black Cockatoo Habitat Tree Assessment

Harewood (2021) conducted a Black Cockatoo habitat tree assessment across the site, to identify trees potentially suitable for black cockatoo use as nesting habitat (Appendix 1). The assessment was considered in respect of Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*), Baudin's Black Cockatoo (*Calyptorhynchus baudinii*) and the Forest Red-tailed Black Cockatoo (*Calyptorhynchus bansii naso*). Trees assessed included:

- *Eucalyptus rudis* (Flooded Gum)
- *Melaleuca* species (two species)
- Conifer (exotic) species.

Whilst *E. rudis* is identified as a potential roosting tree for Carnaby's Black Cockatoo (Groom 2011), Melaleuca and conifer species are not.

Criteria used to assess potential habitat were trees with a diameter breast height (DBH measurement of > 10 cm (

Table 5). Of the 97 trees identified, 43 trees have a DBH of ≥ 50 cm, most of which did not contain any hollows (Harewood, 2021). Of the 7 trees observed to contain hollows of various sizes, none of these trees were considered potentially suitable for black cockatoo species for nesting purposes (Harewood, 2021).

Superseded

Table 5: Habitat trees

Total Number of Trees (DBH > 10 cm)	# Trees with No DBH > 10 cm and < 50 cm	# Trees with DBH ≥ 50 cm with NO hollows	# Trees with DBH ≥ 50 cm with hollows considered UNSUITABLE for nesting Black Cockatoos	# Trees with DBH ≥ 50 cm with hollows considered SUITABLE for nesting Black Cockatoos	Tree Species		
					Flooded Gum	Paperbark (two species)	Conifer (exotic)
97	54	36*	7	0	65	13	19

Source: Harewood, 2021

** 4 of these trees were identified as Paperbark trees, which do not represent black cockatoo breeding habitat*

3.4.4 Mosquitoes

No assessment has been made for mosquitoes at the site, however given the proximity of the site to Folly Pool, it may be beneficial for the project design to incorporate features which avoid attracting mosquitoes and nuisance insects (e.g. lighting design to avoid attracting mosquitoes and midge, avoid creating standing water etc).

3.5 Historical land uses

3.5.1 Aerial imagery

An assessment was made of historical land use on the basis of aerial photography (Landgate, 2020). The site has largely only been used for rural/agricultural purposes, with changes/development evidenced as follows:

1953: the site has been partially cleared. Vegetation remains in the western portion of the site, in association with Folly Pool, and is scattered throughout the eastern portion of the site.

1965: the site remains unchanged.

1970: vegetation throughout the site has been cleared.

1974 – 1995: the site remains unchanged.

2000: a driveway has been constructed in the eastern portion of the site, leading to a large shed structure. Evidence of some ground disturbance (i.e. cropping) is located adjacent the shed. A dam is evident in the eastern portion of the site.

2005: additional structures have been constructed in the eastern portion of the site, including possible septic tanks and a large rainwater tank. The land seems to be used for agricultural purposes. Pine trees have been planted as a windbreak in a portion of the site adjacent to the southern boundary and the driveway.

2010 - 2020: the site remains unchanged.

3.5.2 Site visit

A site visit conducted by Coterra in August 2021 confirmed:

- The western portion of the site was inundated, consistent with flood plain mapping associated with Folly Pool (Plate 4)
- On-site infrastructure comprises two sheds (corrugated steel), one stock feeder, one rainwater tank, and a partially-paved accessway (Plate 5 and Plate 6)

Superseded

- Powerline distribution poles (~33kV) are located on the northern boundary of the site (Plate 7) that connects to a distribution network along Young Road
- A septic tank is also present on site, adjacent to one of the sheds (Plate 8)
- Scattered native vegetation was observed, largely around the perimeter of the site (Plate 9)
- Planted pine trees form a wind screen on part of the site adjacent to the accessway and along the southern boundary (Plate 10)
- The overall site condition was degraded due to rural land use activities (grazing) (Plate 11).



Plate 4: Inundated land in western portion of site (flood plain)



Plate 5: On-site infrastructure (shed/residence)



Plate 6: On-site infrastructure (shed and rainwater tank)



Plate 7: Powerlines (northern boundary)

Superseded



Plate 8: Septic tank



Plate 9: Scattered native vegetation



Plate 10: Planted pine trees



Plate 11: Degraded site condition due to grazing

Source: Coterra; 07/09/2021

Superseded

3.6 Potential contamination

Consideration has been given to any potentially contaminating activities, industries and land uses, in accordance with relevant guidance (DER, 2014; Table 6).

Although the site has been used for agricultural (rural) activities, these do not appear to have been intensive (Section 3.5), and no visual evidence of point sources of contamination, including hazardous materials, Potential Asbestos Containing Materials (ACM), uncontrolled fill, soil staining or odour, was observed during the site visit.

Table 6: Potentially contaminating activities

Industry, activity or land use	Potential contaminant types
Asbestos production or disposal	ACM Asbestos fibres
Intensive agriculture* (including feedlots and saleyards)	Carbamates Organochlorine pesticides (e.g. Endrin, Methoxychlor, Pentachlorophenol)

Industry, activity or land use	Potential contaminant types
	Organophosphate pesticides Herbicides (e.g. Triazine, Atrazine, 2,4,5-T 2,4-D, MCPA, Picloram) Insecticides DDT, DDE and DDD, Bifenthrin Aldrin and Dieldrin Nitrates Salinity Metals (e.g. aluminium, arsenic, cadmium, copper, iron, lead, magnesium, potassium) Nutrients (e.g. nitrogen, phosphorus) Toxaphene

Source: DER, 2014

Superseded

4 Potential Environmental Impacts and Management

4.1 Soils

4.1.1 Potential Impacts

The site is located in an area 'moderate to low' risk ASS area (Section 3.1.2). Disturbance to ASS has the potential to create an acidic environment, which may impact groundwater if not appropriately managed.

4.1.2 Management Measures

Once detailed engineering and construction details are available an ASS self-assessment form (WAPC, 2020; Appendix 2) should be completed, and if there is potential for ASS to be impacted by the development, an ASS investigation should be undertaken. The ASS investigation and management plan should be undertaken in accordance with the following:

- Identification and Investigation of Acid Sulfate Soils and Acidic Landscapes (DER, 2015a)
- Treatment and Management of Soils and Water in Acid Sulfate Soil Landscapes (DER, 2015b).

These investigations and management plans could be undertaken as a condition of the Development Application approval.

4.2 Groundwater and Stormwater

4.2.1 Potential Impacts

The proposed development must be managed to avoid adverse impacts to groundwater which could then have an impact on the adjacent CCW and its ecological values.

4.2.2 Management Measures

A Water Management Strategy and a Site and Soil Evaluation are being prepared to support the Development Application.

The Water Management Strategy demonstrates water is able to be appropriately managed on site to support the proposed development (Water Insight, 2021a).

As opposed to typical urban developments, this site does not include large areas of single private lots or public open space (Water Insight, 2021a).

A conceptual stormwater management strategy has been developed to mimic the natural hydrological regime and manage the 15 mL, minor and major rainfall events (Water Insight, 2021a). This strategy ensures that stormwater from the development will not cause site flooding and will not impact the surrounding community.

The Site and Soil Evaluation has been prepared to confirm the site's suitability for onsite wastewater management and to recommend the type of onsite wastewater management system required for the proposed development (Water Insight, 2021b).

4.3 Surface Water and Wetlands

4.3.1 Potential Impacts

Based on the proximity of the CCW adjacent to the site, potential risks and pressures to wetlands and waterways from development include:

Superseded

- Development may have the potential to increase nutrient loading to the sites surface and groundwater, influencing wetland nutrient balancing and ecology
- Clearing of vegetation associated with wetlands and/or wetland buffers may have the potential to impact on wetland values
- Potential risk of ASS-related impacts to groundwater regime, if not managed appropriately during construction.

4.3.2 Management Measures

In relation to wetland buffers the EPA provides the following advice: '*Wetlands that are to be protected require a minimum 50m buffer distance'* (EPA, 2008).

Although the development is proposed adjacent to the Folly Pool flood plain, it is not expected that development will affect the CCW. The proposed development is located approximately 350 m from the Folly Pool CCW, so no additional buffers are required to be considered for this development.

The development also avoids any land use changes within the floodplain extent.

4.4 Vegetation

Existing vegetation within the eastern (proposed development) area on site is limited to a scattering of native and introduced trees with no understorey present (Section 3.3). Native vegetation in the western portion of the site is limited to the western boundary, in association with Folly Pool. This vegetation was not assessed as part of this assessment as it is not proposed to be disturbed.

4.4.1 Potential Impacts

Although vegetation is scattered throughout the development area, it will be retained where possible. The potential for bushfire risks associated with retained and planted vegetation should also be considered.

4.4.2 Management Measures

Existing vegetation (native and introduced species) will be retained where possible.

In addition, trees will be planted around the site boundary (Figure 10). These trees should be considered in the context of providing screening to surrounding land users and also fauna habitat opportunities (Section 4.5) while not generating an additional bushfire risk through appropriate spacing and understorey design/management. In general, the following species are recommended to be considered (Section 4.6):

- *Eucalyptus rudis*
- *Melaleuca rhaphiophylla*
- *Banksia attenuata*
- *Banksia menziesii*
- *Allocasuarina fraseriana*
- *Eucalyptus marginata*
- *Eucalyptus gomphocephala.*

These species represent historical vegetation complexes on the site, and nearby Bush Forever sites. In addition, they provide habitat opportunities for black cockatoo species (Groom, 2011). Specific species should be determined for suitability by a Landscape Architect.

Superseded

4.5 Fauna

4.5.1 Potential Impacts

Potential impacts to fauna during vegetation clearing, should be considered and managed. Impacts to fauna from construction are associated with removal of habitat, and animal injury/fatality from the use of machinery.

4.5.2 Management Measures

Given the lack of fauna habitat on site, there does not appear to be a requirement for the preparation of a Fauna and Relocation Management Plan associated with the development. Some fauna management actions should still be included within the Construction Management Plan (Section 4.7), as follows:

- Clearing outside of the main avifauna breeding season is recommended, if possible.
- Prior to the commencement of clearing the clearing and construction boundary will be surveyed to ensure it is accurately located and demarcated.
- Potential fauna habitat trees with hollows should be retained where possible (Figure 14). Based on the proposed development layout, five of the seven trees containing hollows appear likely to be able to be retained. These trees will be tagged to ensure accidental damage does not occur.
- A fauna relocator will be engaged to inspect the tree and to undertake fauna relocation, *if deemed necessary*. A Licence to Take or Disturb Fauna for the purpose of Relocating will be submitted to the Department of Biodiversity, Conservation and Attractions (DBCA) prior to tree removal commencing so this approval is in place, should it be required. A copy of the approved DBCA licence will be provided to the City of Rockingham prior to the commencement of works.
- Clearing will be undertaken in the direction of retained vegetation in order to encourage any remaining fauna to move in this direction.
- Any vehicles on site will be restricted to the clearing and construction area footprint to minimise impact to vegetation beyond this boundary. Vehicle movements will be restricted to speeds of 30 km/hour
- If any fauna is located and/or injured, contact the Project Superintendent or Environmental Consultant for instructions. If these representatives cannot be reached, contact the DBCA Wildcare helpline (9474 9055).

The proposed site development does not appear likely to result in a significant impact on a fauna species protected under the EPBC Act, therefore referral of the project under this legislation does not appear warranted.

Mosquito management, including mosquito habitat mapping and monitoring, may need to be addressed as part of the building design and approval process to minimise risk to people from diseases such as Ross River Virus or Ross River Virus, which are known to occur in the Peel Region, involved in site development.

4.6 Bushfire Management

Given the site is in a bush fire prone area (Section 3.3.5), a Bushfire Management Plan has been prepared by Envision Bushfire Protection for the site, in accordance with the following:

- *State Planning Policy 3.7 – Planning in Bushfire Prone Areas* (WAPC, 2015)
- *Guidelines for Planning in Bushfire Prone Areas* (WAPC, 2017).
- The Bushfire Management Plan (Envision Bushfire Protection, 2021) recommends the following actions in relation to the existing environment and the proposed development:

Superseded

- No clearing of existing vegetation is required for the purpose of bushfire protection
- Future landscaping of the site will be for amenity purposes only and will be planted as low-threat, in accordance with Australian Standard AS 3959:2018 – Construction in Bushfire Prone Areas
- Firebreaks to be installed 3 m inside the site perimeter, and maintained in accordance with the City of Rockingham Fire Control Notice
- Installation of a minimum 50,000 L water supply tank for fire-fighting purposes, located convenient to the service entry from Folly Road, in accordance with City of Rockingham specifications.

4.7 Potential Contamination

4.7.1 Unexpected Finds

If, during earthworks, potential point sources of contamination are identified (i.e. asbestos or uncontrolled fill), an Unexpected Finds Protocol should be enacted, as follows:

1. Stop Works.
2. An experienced contamination professional should be contacted for advice and potential investigation of point sources of contamination, in accordance with the DWER's Contamination Sites Management Series, including:
   - *Assessment and Management of Contaminated Sites* (DER, 2014)
   - Identification, Reporting and Classification of Contaminated Sites in Western Australia (DER, 2017).
3. If contamination is confirmed to be present above guideline levels, management and remediation works should be undertaken to the satisfaction of DWER.

4.8 Construction Impacts

Construction activities need to be managed to minimise the impact to adjacent residents. Impacts can include:

- Dust generation from excavation activities
- Noise generation from machinery
- Uncontrolled sediment/surface water run-off during site works
- Inadvertent damage to trees marked for retention
- Inappropriate disposal of waste/wind-blown litter.
- Inadvertent access to areas beyond the development footprint.

All of these potential impacts are manageable through appropriate site management practices. A site Construction Management Plan could be required as a condition of the Development Application approval, which would detail specific management measures to avoid and/or mitigate these potential impacts prior site works commencing.

Superseded

5 Conclusion

Based on review of the key environmental features of the site and surrounds, no environmental constraints have been identified which would prevent development as proposed.

A number of relevant environmental factors may trigger management requirements prior to and during construction. Assessment works in relation to these matters can undertaken post-development approval, prior to works on site commencing.

The following further investigations and/or management plans may be required, as conditions to the development approval:

- ASS investigation and/or ASS and Dewatering Management Plan (if required)
- Construction Management Plan, including fauna management and Unexpected Finds Protocol.

Superseded

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Superseded

Figures

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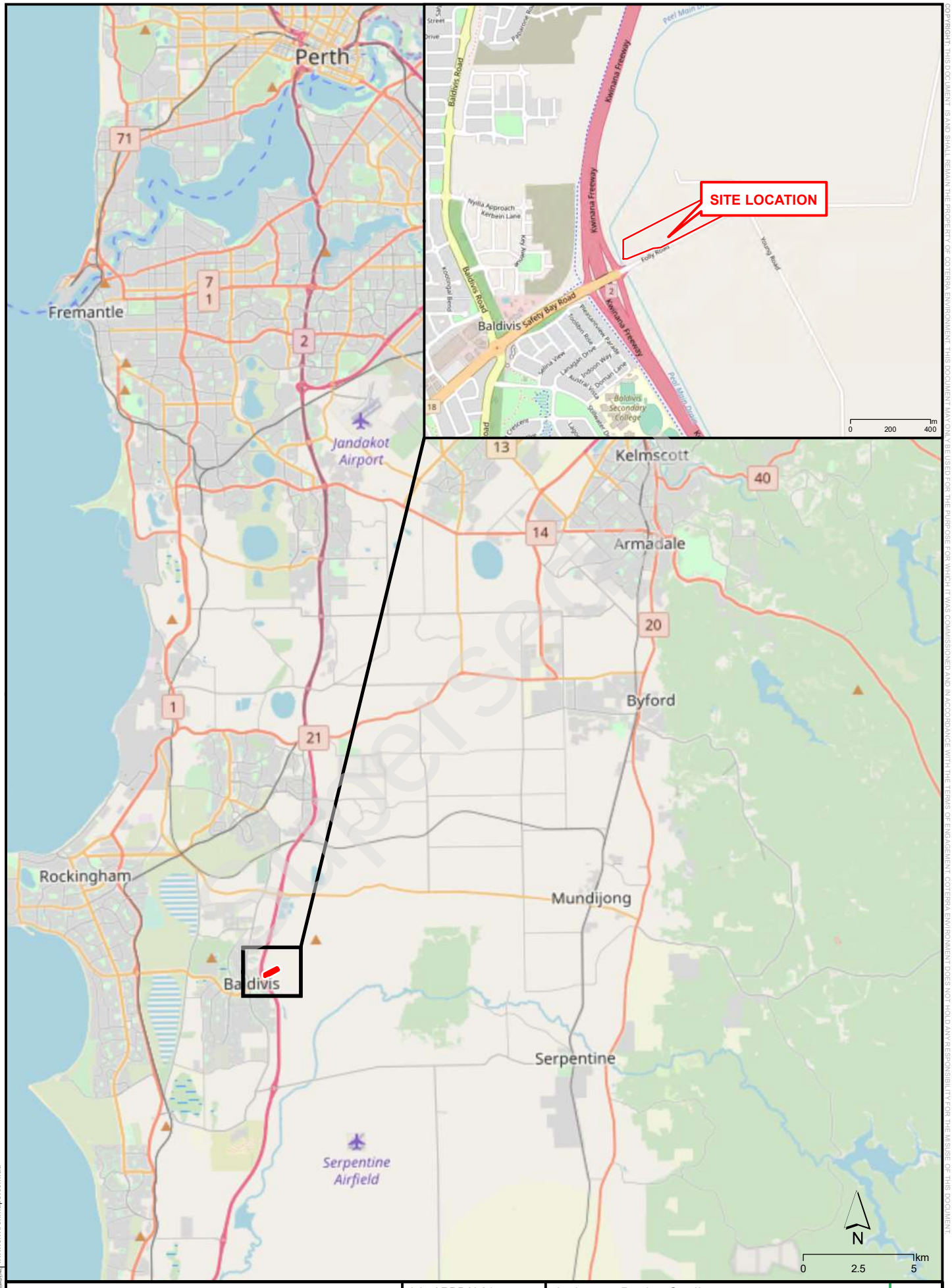

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SITE LOCATION

Figure 1

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LEGEND

Site Boundary

Cadastre

N

0 12.5 25 50 75 100 m

Scale: 1:2,000 @ A3
GDA 1994 MGA Zone 50

Young Rd

Folly Rd

Kwinana Fwy

Safety Bay Rd

Superseded

Source: Cadastre - Landgate, 2021
Orthophoto - NearMaps, 13.08.21

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AERIAL PHOTOGRAPHY

Figure 2

PROPOSED DEVELOPMENT TO EAST OF MID TREE LINE

YOUNG ROAD

EMERGENCY AND SERVICE EGRESS

SHORT STAY

21 CAR PARKING BAYS
BAYS 2.5 x 5.4m
6m WIDTH DRIVEWAY

DINING HALL
RL 5.6

MULTI PURPOSE HALL
RL 5.6

LIBRARY
RL 5.6

65 CAR PARKING BAYS (INCL. x2 DISABLED BAYS)
BAYS 2.5 x 5.4m
6m WIDTH DRIVEWAY

COVERED WALKWAY

BIN COMPOUND

TOILET BLOCK

PRIESTS RESIDENCE

PRIESTS RESIDENCE

KITCHEN

RL 6.286

TEMPLE
RL 6.372

RL 6.286

FOLLY ROAD

MAIN ENTRY

N

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Source: Archetype Design Studio

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DEVELOPMENT PLAN

Figure 3

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LEGEND

- Site Boundary
- Cadastre
- Contour (mAHD)

Acid Sulphate Soil Risk

- High to Moderate Risk
- Moderate to Low Risk

Geology

- C2: CLAY - strong brown and dark grey clay, plastic in places, soft when wet, variable silt content in matrix, of alluvial origin.
- Mc2: CLAYEY SILT - dark greyish brown, mottled in part, soft when wet, plastic in part, blocky, variable clay content, of alluvial origin.
- S10: SAND - as S8 as relatively thin veneer over C2, M4 and Mc2.
- Water

N

0 12.5 25 50 75 100 m

Scale: 1:2,000 @ A3
GDA 1994 MGA Zone 50

Water
Young Rd
S10
Folly Rd
C2
Mc2
Kwinana Fwy
Safety Bay Rd

Superseded

Source: ASS Risk - DWER
Cadastre - Landgate, 2021
Orthophoto - NearMaps, 13.08.21
Geology - DoIR: Geological Survey of W.A., 1999

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SOILS AND TOPOGRAPHY

Figure 4

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LEGEND

- Site Boundary
- Cadastre
- Riverine Pool - Folly Pool
- Drain

Wetlands

- Conservation
- Resource Enhancement
- Multiple Use

N

0 25 50 100 150 200 m

Scale: 1:4,000 @ A3
GDA 1994 MGA Zone 50

UFI 16009
FOLLY POOL
UFI 16015
UFI 16010
UFI 16021
UFI 14695
PEEL MAIN DRAIN
Yangeti Rd
Nyilla App
Moodjar Wy
Pimelea St
Quondong St
Abelia Rd
Beaufortia Cr
Safety Bay Rd
Folly Rd
Young Rd
Pleasantview Pde
Toolibin Rise
Navarino Tce
Albina Wy
Lanagan Dr
Kwinana Fwy
Kwinana Fwy

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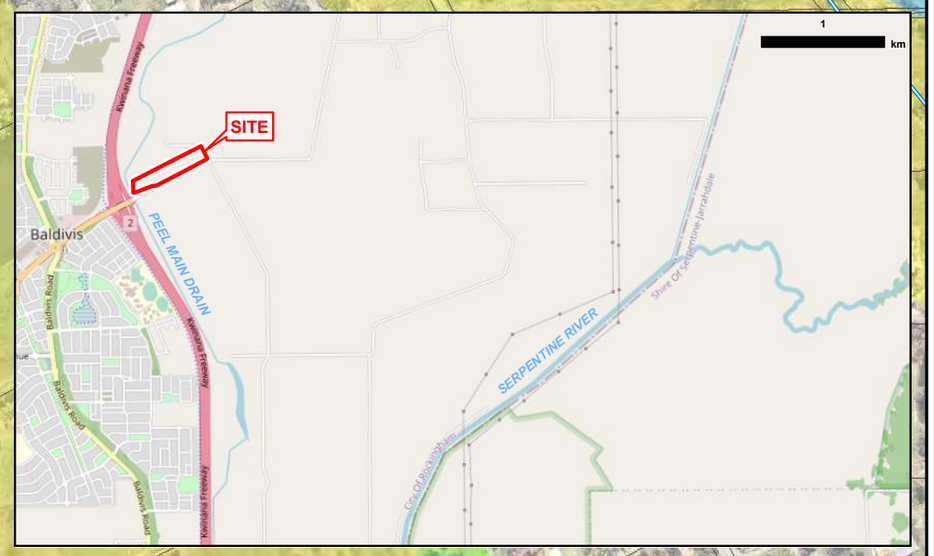

Source: Cadastre - Landgate, 2021
Orthophoto - NearMaps, 13.08.21
Hydrological Features - DWER
Wetlands - DBCA, 2021

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HYDROLOGICAL FEATURES

Figure 5

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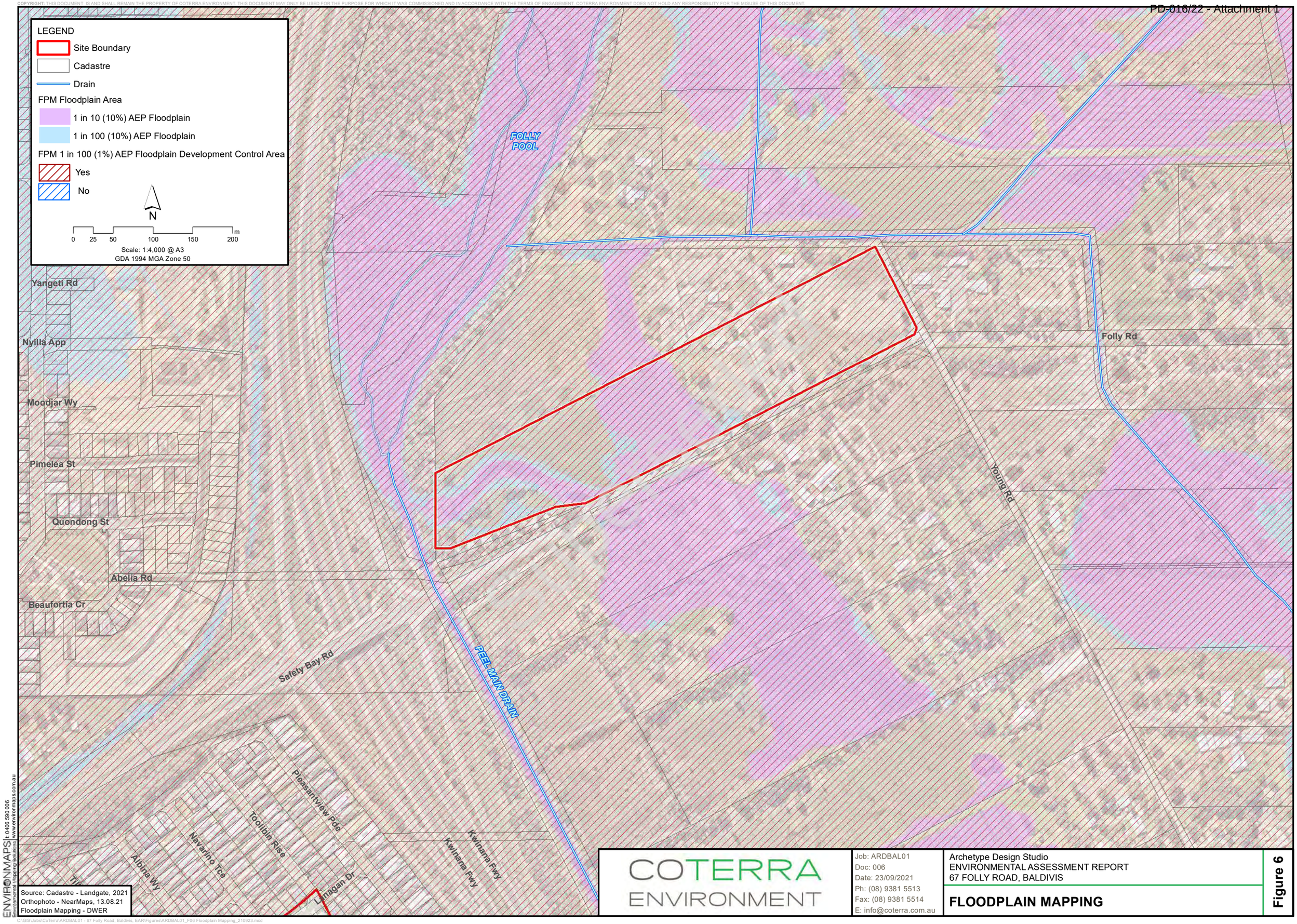

Source: Cadastre - Landgate, 2021
Orthophoto - NearMaps, 13.08.21
Floodplain Mapping - DWER

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FLOODPLAIN MAPPING

Figure 6

Appendix 1 Fauna Habitat Assessment (Harewood, 2021)

Superseded

Black Cockatoo Habitat Tree Assessment



67 Folly Road Baldivis

September 2021

Version 1

Superseded

On behalf of:
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Prepared by:
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TABLE OF CONTENTS

SUMMARY

1. INTRODUCTION 1
2. SCOPE OF WORKS 1
3. METHODS 1
4. SURVEY CONSTRAINTS 3
5. RESULTS 3
6. CONCLUSION 4
7. REFERENCES 5

TABLES

TABLE 1: Summary of Trees (DBH >10cm)

FIGURES

FIGURE 1: Survey Area - Aerial Photograph

FIGURE 2: Survey Area - Trees (DBH>10cm)

APPENDICES

APPENDIX A: Tree (DBH ≥10cm) Details

Superseded

SUMMARY

This report details the results of a targeted black cockatoo habitat tree assessment of a section of 67 Folly Road, Baldivis. It is understood that the area is being investigated for suitability as a site for a proposed Balaji temple and cultural centre. The proposed development will be centred on the eastern half of the property which makes up about 3.5 hectares (ha) of the 7.6 ha property (Figure 1).

The assessment was primarily undertaken to provide information on the extent of black cockatoo breeding habitat present within the survey area.

The survey area contains 97 trees with a DBH of ≥ 10cm, with a small number containing possible small to medium sized hollows considered unsuitable for black cockatoos to use for nesting purposes. No trees present within the survey area appear to contain hollows that can be considered suitable or potentially suitable for black cockatoos to use for nesting purposes.

Based on the results of this assessment it is concluded that any clearing within the survey area is unlikely to have any significant direct or indirect impact on black cockatoos. Nonetheless planning should take into account the presence of some existing or potential hollow bearing trees which should be considered for retention wherever possible.

Superseded

1. INTRODUCTION

This report details the results of a targeted black cockatoo habitat tree assessment of a section of 67 Folly Road, Baldivis. It is understood that the area is being investigated for suitability as a site for a proposed Balaji temple and cultural centre. The proposed development will be centred on the eastern half of the property which makes up about 3.5 hectares (ha) of the 7.6 ha property (Figure 1).

In addition to open grassland the survey area contains scattered and small groves of flooded gum and paperbark trees (some planted) in addition to a small number of planted exotic conifers.

Information obtained as part of this fauna assessment report will be used in conjunction with other environmental investigations to guide project planning which will aim to minimise potential environmental impacts. The information presented may also be used by regulatory authorities to assess the potential impact of the proposal on fauna and fauna habitats at the site during the project evaluation and approval process if required.

Superseded

2. SCOPE OF WORKS

The scope of works was to:

1. Undertake a survey of the trees within the eastern end of the site (i.e. up to the floodplain line) to note species, the diameter at breast height and the presence of any hollows which could provide habitat opportunities for black cockatoos.

   The tree survey should identify all trees with a diameter at breast height (DBH) that measures 10 centimetres (cm) or more. Potential black cockatoo breeding trees (DBH $\geq$50cm) that contain hollows must also be indicated; and

2. Prepare a report detailing methods and results.

Note: For the purposes of this report the term black cockatoo is in reference to Baudin's black cockatoo *Calyptorhynchus baudinii*, Carnaby's black cockatoo *Calyptorhynchus latirostris* and the forest red-tailed black cockatoo *Calyptorhynchus banksii naso*.

3. METHODS

The tree assessment has involved the identification of all tree species within the survey area that have a DBH of equal to or over 10 cm. The DBH of each tree was estimated using a pre-made 10cm "caliper".

In addition, “black cockatoo breeding habitat trees” (i.e. trees with a DBH of ≥50 cm as defined by criteria published by the Department of Agriculture, Water and the Environment (Commonwealth of Australia 2012) were specifically identified.

Target black cockatoo breeding habitat trees species included marri, jarrah, wandoo and flooded gum or any other *Corymbia/Eucalyptus* species of a suitable size that may have been present. Peppermints, banksia, sheoak and melaleuca tree species (for example) even if of a suitable size were not recorded as potential breeding trees as they typically do not develop hollows that are used by black cockatoos.

The location of each tree identified as being over the threshold DBH was recorded with a GPS and details on tree species, number and size of hollows (if any) noted. Trees observed to contain hollows (of any size/type) were marked with “H” using spray paint.

Potential hollows were placed into one of four categories, based on the size of the apparent hollow entrance, these being:

- Small = ~<5cm diametre (i.e. entrance too small for a black cockatoo);
- Medium = ~5cm-10cm diametre (i.e. entrance too small for a black cockatoo);
- Large = ~>10cm diametre (entrance large enough for a black cockatoo but possible hollow appears to be unsuitable for nesting i.e. wrong orientation, too small, too low or too shallow); or
- Large (cockatoo) = ~>10cm diametre (entrance appears big enough to provide access to a possible hollow that maybe suitable for a black cockatoo to use for nesting).

Based on this assessment trees present within the survey area were then placed into one of six categories:

- Tree <10cm DBH (tree not recorded);
- Tree ≥10cm DBH but <50cm DBH - tree assessed as not suitable for black cockatoos;
- Tree ≥50cm DBH - unsuitable tree species (e.g. paperbark) – assessed as not suitable for black cockatoos;
- Tree ≥50cm DBH - suitable tree species (e.g. flooded gum) – assessed as suitable for black cockatoos but no hollows seen;
- Tree ≥50cm DBH - suitable tree species (e.g. flooded gum) - one or more hollows seen, none of which were considered suitable for black cockatoos to use for nesting; or
- Tree ≥50cm DBH – suitable tree species (e.g. flooded gum) one or more hollows seen, with at least one considered potentially suitable for black cockatoos to use for nesting.

Superseded

For the purposes of this assessment a tree containing a potential cockatoo nest hollow was defined as:

Generally, any tree which is alive or dead that contains one or more visible hollows (cavities within the trunk or branches) or possible hollows considered potentially suitable for occupation by a black cockatoo for the purpose of nesting/breeding. Hollows that had an entrance greater than about 10cm in diameter and would allow the entry of a black cockatoo into a suitably orientated and sized branch/trunk were recorded as a "potential black cockatoo nest hollow".

Identified hollows were examined using binoculars for evidence of actual use by black cockatoos (e.g. chewing around hollow entrance, scarring and scratch marks on trunks and branches).

A wireless pole mounted camera and drone were available for use if closer inspection of suspect hollows were required.

4. SURVEY CONSTRAINTS

No seasonal sampling has been carried out as part of this fauna assessment. The conclusions presented are based upon field data and the environmental monitoring and/or testing carried out over a limited period of time and are therefore merely indicative of the environmental condition of the site at the time of the field assessments. It should also be recognised that site conditions can change with time.

During the survey trees with hollows were searched for. It should be noted that identifying hollows suitable for fauna species from ground level has limitations. Generally, the full characteristics of any hollow seen are not fully evident (e.g. internal dimensions). It is also difficult to locate all hollows within all trees as some are not observable from ground level.

5. RESULTS

A summary of the trees observed within the survey area with a DBH >10cm is provided in Table 1 and their location shown in Figure 2. Additional details on each tree recorded can be found in Appendix A.

The survey area contains 97 trees with a DBH of equal to or greater than 10 cm. Of these, 43 have a DBH of ≥50cms, most of which were not observed to contain hollows (Note: Four paperbarks with a DBH ≥50cm are included in this figure – these do not represent potential black cockatoo breeding habitat).

Seven trees (including one paperbark) were observed to contain possible hollows with various sized entrances but none were considered by the Author to be potentially suitable for black cockatoos to use for nesting purposes. This conclusion was in most cases based on entrances

Superseded

to possible hollows being too small, branches being of an unfavourable orientation and/or hollows being too low or shallow.

No trees present within the survey area appear to contain hollows that can be considered suitable or potentially suitable for black cockatoos to use for nesting purposes.

Table 1: Summary of Trees (DBH >10cm)

Total Number of Trees (DBH >10cm)	Number of Trees with DBH >10cm and <50cm	Number of Trees with DBH ≥50cm with no hollows	Number of Trees with DBH ≥50cm with Hollows Considered Unsuitable for Nesting Black Cockatoos	Number of Trees with DBH ≥50cm with Hollows Considered Suitable for Nesting Black Cockatoo	Tree Species		
					Flooded Gum	Paperbark (two species)	Conifer (exotic)
97	54	36	7	0	65	13	19

Superseded

6. CONCLUSION

The assessment reported on here was primarily undertaken to provide information on the extent of black cockatoo breeding habitat present within the survey area.

The survey area contains 97 trees with a DBH of ≥ 10cm, with a small number containing possible small to medium sized hollows considered unsuitable for black cockatoos to use for nesting purposes. No trees present within the survey area appear to contain hollows that can be considered suitable or potentially suitable for black cockatoos to use for nesting purposes.

Based on the results of this assessment it is concluded that any clearing within the survey area is unlikely to have any significant direct or indirect impact on black cockatoos. Nonetheless planning should take into account the presence of some existing or potential hollow bearing trees which should be considered for retention wherever possible.

7. REFERENCES

Commonwealth of Australia (2012). *EPBC Act* Referral guidelines for three threatened black cockatoo species: Carnaby's cockatoo (endangered) *Calyptorhynchus latirostris*, Baudin's cockatoo (vulnerable) *Calyptorhynchus baudinii*, Forest red-tailed black cockatoo (vulnerable) *Calyptorhynchus banksii naso*.

Superseded

FIGURES

Superseded



Legend

- Cadastral Boundaries (Existing)
- Lot Boundary
- Survey Area
- Tree <50cm DBH - No hollows seen
- Tree >50cm DBH - No hollows seen
- Tree >50cm DBH - One or more hollows unsuitable for black cokatoos

0 25 50 75 100
Metres

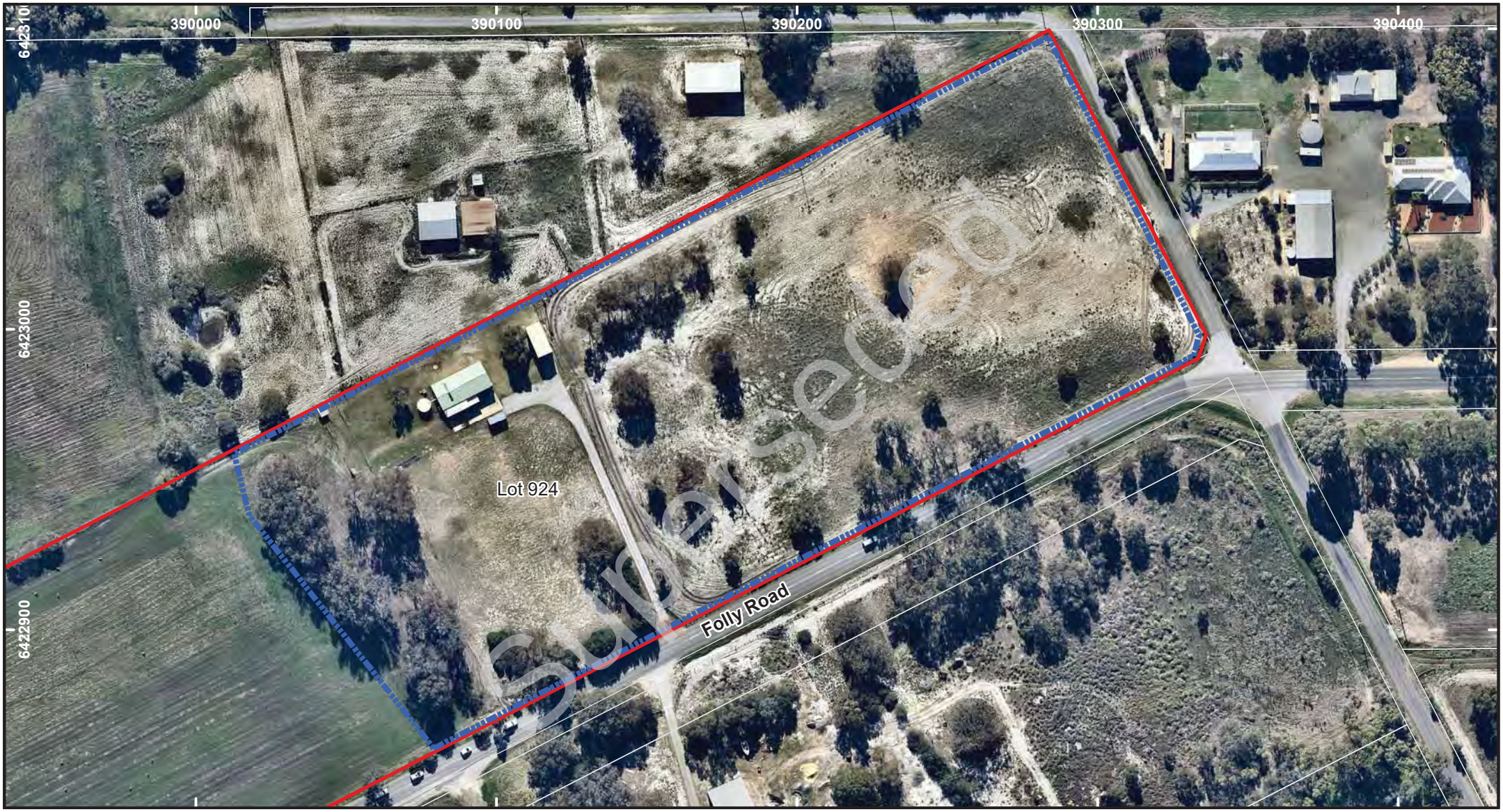
Fauna Survey

Drawn: G Harewood
Date: Sept 2021
Scale: 1:1,750
Projection/Coordinate System: UTM/MGA Zone 50

67 Folly Road
Baldivis

Survey Area Trees (DBH >10cm)

Figure: 2



Legend

- Cadastral Boundaries (Existing)
- Lot Boundary
- Survey Area

0 25 50 75 100
Metres

Fauna Survey

67 Folly Road
Baldivis

Survey Area Aerial Photograph

Drawn: G Harewood
Date: Sept 2021
Scale: 1:1,750
Projection/Coordinate System: UTM/MGA Zone 50
Figure: 1

Superseded

APPENDIX A

TREE (DBH >10CM) DETAILS

Trees
DBH >10cm
Datum - GDA94
Entrance Size Ranges - Small = >5cm, Medium = 5 to 10cm, Large = >10cm

Waypoint Number	Zone	mE	mN	Tree Species	DBH (cm)	Tree Height (m)	Number of Hollows	Estimated Hollow Entrance Size	Occupancy	Chew Marks	Potential Cockatoo Nest Hollow	Comments
wpt001	50H	390154	6422919	Stout Paperbark (M. preisiana)	>50	5-10	0					
wpt002	50H	390177	6422923	Stout Paperbark (M. preisiana)	<50	0-5	0					
wpt003	50H	390201	6422935	Stout Paperbark (M. preisiana)	>50	5-10	0					
wpt004	50H	390224	6422957	Flooded Gum	>50	15-20	0					
wpt005	50H	390231	6422952	Flooded Gum	<50	15-20	0					
wpt006	50H	390233	6422952	Flooded Gum	<50	15-20	0					
wpt007	50H	390235	6422965	Flooded Gum	>50	15-20	0					
wpt008	50H	390230	6422968	Flooded Gum	>50	15-20	0					
wpt009	50H	390247	6422961	Flooded Gum	>50	15-20	0					
wpt010	50H	390250	6422962	Flooded Gum	<50	15-20	0					
wpt011	50H	390248	6422950	Flooded Gum	<50	15-20	0					
wpt012	50H	390252	6422958	Flooded Gum	>50	15-20	0					
wpt013	50H	390244	6422977	Swamp Paperbark (M. rhaphiophylla)	<50	5-10	0					
wpt014	50H	390259	6422964	Flooded Gum	>50	15-20	0					
wpt015	50H	390263	6422962	Flooded Gum	<50	15-20	0					
wpt016	50H	390266	6422963	Flooded Gum	<50	15-20	0					
wpt017	50H	390269	6422962	Flooded Gum	>50	15-20	0					
wpt018	50H	390289	6422985	Swamp Paperbark (M. rhaphiophylla)	<50	5-10	0					
wpt019	50H	390320	6422998	Swamp Paperbark (M. rhaphiophylla)	<50	0-5	0					
wpt020	50H	390231	6423017	Flooded Gum	<50	5-10	0					
wpt021	50H	390185	6423034	Stout Paperbark (M. preisiana)	<50	0-5	0					
wpt022	50H	390183	6423017	Stout Paperbark (M. preisiana)	<50	0-5	0					
wpt023	50H	390166	6423025	Flooded Gum	<50	5-10	0					
wpt024	50H	390163	6423027	Flooded Gum	<50	0-5	0					
wpt025	50H	390160	6423024	Flooded Gum	<50	5-10	0					
wpt026	50H	390154	6423021	Flooded Gum	>50	10-15	0					
wpt027	50H	390150	6423017	Flooded Gum	<50	0-5	0					
wpt028	50H	390143	6423016	Flooded Gum	>50	10-15	0					
wpt029	50H	390136	6423010	Flooded Gum	<50	15-20	0					
wpt030	50H	390130	6423004	Flooded Gum	<50	15-20	0					
wpt031	50H	390174	6422991	Flooded Gum	>50	15-20	2+	Small	No Signs	No Signs	No	
wpt032	50H	390145	6422979	Flooded Gum	>50	15-20	2+	Small	No Signs	No Signs	No	
wpt033	50H	390177	6422950	Swamp Paperbark (M. rhaphiophylla)	>50	10-15	2+	Small	No Signs	No Signs	No	
wpt034	50H	390175	6422952	Flooded Gum	<50	5-10	0					
wpt035	50H	390165	6422948	Flooded Gum	>50	15-20	0					
wpt036	50H	390153	6422947	Flooded Gum	>50	5-10	0					
wpt037	50H	390105	6422997	Stout Paperbark (M. preisiana)	>50	5-10	0					
wpt038	50H	390107	6422990	Stout Paperbark (M. preisiana)	<50	0-5	0					

Superseded

Waypoint Number	Zone	mE	mN	Tree Species	DBH (cm)	Tree Height (m)	Number of Hollows	Estimated Hollow Entrance Size	Occupancy	Chew Marks	Potential Cockatoo Nest Hollow	Comments
wpt039	50H	390064	6422944	Flooded Gum	>50	15-20	2+	Small & Medium	Galahs	No Signs	No	
wpt040	50H	390052	6422941	Flooded Gum	>50	15-20	2+	Small	No Signs	No Signs	No	
wpt041	50H	390032	6422949	Flooded Gum	>50	15-20	0					
wpt042	50H	390030	6422945	Flooded Gum	>50	15-20	0					
wpt043	50H	390030	6422945	Flooded Gum	>50	15-20	0					
wpt044	50H	390032	6422949	Flooded Gum	<50	10-15	0					
wpt045	50H	390030	6422944	Flooded Gum	>50	15-20	0					
wpt046	50H	390030	6422942	Flooded Gum	<50	10-15	0					
wpt047	50H	390031	6422941	Flooded Gum	>50	15-20	0					
wpt048	50H	390032	6422938	Flooded Gum	<50	0-5	0					
wpt049	50H	390034	6422939	Flooded Gum	>50	15-20	0					
wpt050	50H	390033	6422939	Flooded Gum	<50	10-15	0					
wpt051	50H	390035	6422937	Flooded Gum	<50	10-15	0					
wpt052	50H	390034	6422933	Flooded Gum	>50	15-20	0					
wpt053	50H	390037	6422931	Flooded Gum	>50	5-10	0					
wpt054	50H	390037	6422932	Flooded Gum	<50	15-20	0					
wpt055	50H	390036	6422932	Flooded Gum	>50	15-20	0					
wpt056	50H	390035	6422935	Flooded Gum	>50	5-10	0					
wpt057	50H	390041	6422928	Flooded Gum	<50	10-15	0					
wpt058	50H	390044	6422926	Flooded Gum	<50	0-5	0					
wpt059	50H	390044	6422918	Flooded Gum	<50	5-10	0					
wpt060	50H	390051	6422918	Flooded Gum	>50	5-10	0					
wpt061	50H	390052	6422918	Flooded Gum	<50	5-10	0					
wpt062	50H	390052	6422916	Flooded Gum	>50	15-20	0					
wpt063	50H	390053	6422913	Flooded Gum	>50	15-20	0					
wpt064	50H	390054	6422913	Flooded Gum	>50	15-20	0					
wpt065	50H	390058	6422912	Flooded Gum	>50	15-20	0					
wpt066	50H	390059	6422911	Flooded Gum	<50	10-15	0					
wpt067	50H	390059	6422914	Flooded Gum	>50	15-20	0					
wpt068	50H	390073	6422913	Flooded Gum	>50	10-15	0					
wpt069	50H	390077	6422908	Flooded Gum	>50	15-20	2+	Small & Medium	No Signs	Galahs	No	
wpt070	50H	390085	6422900	Flooded Gum	>50	15-20	2+	Small	No Signs	No Signs	No	
wpt071	50H	390076	6422891	Flooded Gum	>50	15-20	0					
wpt072	50H	390079	6422889	Stout Paperbark (M. preisiana)	<50	0-5	0					
wpt073	50H	390080	6422882	Flooded Gum	>50	15-20	0					
wpt074	50H	390101	6422897	Conifer (exotic)	<50	0-5	0					
wpt075	50H	390106	6422892	Conifer (exotic)	<50	0-5	0					
wpt076	50H	390111	6422893	Flooded Gum	>50	15-20	0					
wpt077	50H	390113	6422892	Flooded Gum	>50	15-20	0					
wpt078	50H	390105	6422893	Flooded Gum	<50	0-5	0					
wpt079	50H	390107	6422880	Swamp Paperbark (M. rhaphiophylla)	<50	0-5	0					
wpt080	50H	390124	6422886	Conifer (exotic)	<50	0-5	0					

Superseded

Waypoint Number	Zone	mE	mN	Tree Species	DBH (cm)	Tree Height (m)	Number of Hollows	Estimated Hollow Entrance Size	Occupancy	Chew Marks	Potential Cockatoo Nest Hollow	Comments
wpt081	50H	390127	6422886	Conifer (exotic)	<50	0-5	0					
wpt082	50H	390133	6422894	Conifer (exotic)	<50	0-5	0					
wpt083	50H	390135	6422897	Conifer (exotic)	<50	0-5	0					
wpt084	50H	390138	6422897	Conifer (exotic)	<50	0-5	0					
wpt085	50H	390141	6422900	Conifer (exotic)	<50	0-5	0					
wpt086	50H	390145	6422904	Conifer (exotic)	<50	0-5	0					
wpt087	50H	390148	6422903	Conifer (exotic)	<50	0-5	0					
wpt088	50H	390150	6422904	Conifer (exotic)	<50	0-5	0					
wpt089	50H	390151	6422902	Conifer (exotic)	<50	0-5	0					
wpt090	50H	390149	6422904	Conifer (exotic)	<50	0-5	0					
wpt091	50H	390148	6422908	Conifer (exotic)	<50	0-5	0					
wpt092	50H	390146	6422910	Conifer (exotic)	<50	0-5	0					
wpt093	50H	390145	6422914	Conifer (exotic)	<50	0-5	0					
wpt094	50H	390143	6422918	Conifer (exotic)	<50	0-5	0					
wpt095	50H	390141	6422921	Conifer (exotic)	<50	0-5	0					
wpt096	50H	390140	6422925	Conifer (exotic)	<50	0-5	0					
wpt097	50H	390135	6422927	Flooded Gum	>50	15-20	0					

Superseded

DISCLAIMER

This fauna assessment report ("the report") has been prepared in accordance with the scope of services set out in the contract, or as otherwise agreed, between the Client and Greg Harewood ("the Author"). In some circumstances the scope of services may have been limited by a range of factors such as time, budget, access and/or site disturbance constraints. In accordance with the scope of services, the Author has relied upon the data and has conducted environmental field monitoring and/or testing in the preparation of the report. The nature and extent of monitoring and/or testing conducted is described in the report.

The conclusions are based upon field data and the environmental monitoring and/or testing carried out over a limited period of time and are therefore merely indicative of the environmental condition of the site at the time of preparing the report. Also it should be recognised that site conditions, can change with time.

Within the limitations imposed by the scope of services, the field assessment and preparation of this report have been undertaken and performed in a professional manner, in accordance with generally accepted practices and using a degree of skill and care ordinarily exercised by reputable environmental consultants under similar circumstances. No other warranty, expressed or implied, is made.

In preparing the report, the Author has relied upon data, surveys, analyses, designs, plans and other information provided by the Client and other individuals and organisations, most of which are referred to in the report ("the data"). Except as otherwise stated in the report, the Author has not verified the accuracy of completeness of the data. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report ("conclusions") are based in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of the data. The Author will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to the Author.

The report has been prepared for the benefit of the Client and no other party. The Author assumes no responsibility and will not be liable to any other person or organisation for or in relation to any matter dealt with or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report (including without limitation matters arising from any negligent act or omission of the Author or for any loss or damage suffered by any other party relying upon the matters dealt with or conclusions expressed in the report). Other parties should not rely upon the report or the accuracy or completeness of any conclusions and should make their own enquiries and obtain independent advice in relation to such matters.

The Author will not be liable to update or revise the report to take into account any events or emergent circumstances or facts occurring or becoming apparent after the date of the report.

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Appendix 2 ASS Self-Assessment Form (WAPC, 2020)

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GOVERNMENT OF WESTERN AUSTRALIA

Western Australian Planning Commission

Acid Sulfate Soils Self-Assessment Form

Version: 6.1 (August 2020)

Applicant

The applicant is the person with whom the WAPC will correspond and, if the application is approved, the person to whom the approval will be sent.

WAPC reference no.

Full name

Postal address

Town / suburb

Postcode

Email

Phone number

Applicant signature

Date

Application property details

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Step 1

Assess the possibility of acid sulfate soils disturbance

Question 1: Are any dewatering or drainage works (either temporary or permanent) proposed to be undertaken? yes no

Question 2: Is excavation of 100 cubic metres or more of soil proposed?
(100 cubic metres is about 10 standard-sized dump truck loads.) yes no

If you have answered no to both question 1 and question 2 then no further investigation is required at this stage. Please sign this form and submit it, together with any supporting information, to the Department of Water and Environmental Regulation (DWER).

If you have answered yes to either question 1 or question 2 go on to step 2.

Step 2

Conduct an acid sulfate soils investigation in accordance with the guideline, *Identification and investigation of acid sulfate soils,* available on DWER's website at https://dwer.wa.gov.au/

Question 3: Did the acid sulfate soils investigation indicate that there are acid sulfate soils present? ___ yes ___ no

If no to question 3, then no further investigation is required at this stage. Please sign this form and submit it, together with the written results of the investigation (in the form of an acid sulfate soils report) and supporting information to DWER with a request for clearance of the acid sulfate soils condition.

If yes to question 3, please sign this form and submit it, together with the written results of the investigation (in the form of an acid sulfate soils report), an acid sulfate soils management plan and a copy of the approved subdivision plan, to DWER with a request for approval of the management plan.

Note: After completion of site works in accordance with the approved management plan you will be required to submit a closure report, prepared in accordance with DWER's acid sulfate soils guidelines, to DWER together with a request for clearance of the acid sulfate soils condition.

Tick box for attachments as appropriate

- ☐ copy of current deposited plan
- ☐ copy of approved subdivision plan
- ☐ copy of approved development plan
- ☐ acid sulfate soils investigation report
- ☐ acid sulfate soils management plan

Declaration

I declare that the information provided is true and correct to the best of my knowledge.

Applicant signature: ..... Date: .....

Submit form and required attachments to the
Department of Water and Environmental Regulation

By email: info@dwer.wa.gov.au

Or by mail:
Department of Water and Environmental Regulation
Locked Bag 10,
Joondalup DC, WA 6919

If you have any questions relating to the Acid Sulfate Soils Self-Assessment form, please contact DWER on 1300 762 982 or email info@dwer.wa.gov.au

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COTERRA
ENVIRONMENT

Level 1, 98 Colin Street
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67 Folly Road, Baldivis

Site and Soil Evaluation

Prepared for
Jeeyars Archarya Peettam Australia Ltd

December 2021

Superseded

waterinsight

Executive Summary

This Site and Soil Evaluation (SSE) has been prepared to support a Development Application for 67 Folly Road, Baldivis (the site) to confirm the sites suitability for onsite wastewater management and to provide advice relating to the required wastewater management system.

The site is 7.44 ha and is in the City of Rockingham. A reticulated sewerage service is not available at the site and an onsite wastewater management system is required.

The site is proposed to be developed into a Place of Worship and cultural centre. The site is anticipated to provide permanent accommodation for the priests, a place of worship (temple) and facilities to hold large religious events and weddings. The development plan includes.

- A Hindu Temple
- Multipurpose hall
- Dining hall
- Library
- Short stay accommodation
- Priest's Residences
- Carparking
- Landscaped gardens

The site is in the Peel Harvey Catchment and a Sewerage Sensitive Area. A secondary treatment unit (STS) (previously termed an aerobic treatment unit) with nutrient removal capabilities will be used at the site to receive and treat all wastewater generated at the site.

This SSE has been prepared in accordance with the Government Sewerage Policy (DPLH, 2019). The environmental aspects of the site in relation to sewerage collection, treatment and onsite disposal have been considered. The SSE includes a description of the

- Soil profile to a depth of 2m
- Results of soil infiltration testing
- Maximum groundwater levels

Site topography, soil type and other features affecting the design and use of an STS including the location of waterways, wetlands and drains has been assessed. This SSE demonstrates the site can accommodate a suitable wastewater management system and not impact public health or the environment.

Superseded

Table of Contents

1 Introduction 1
1.1 Background 1
1.2 Proposed Development 1
1.3 Planning Context 2
1.4 Guidance Documents 2
1.5 Objectives of the Site and Soil Evaluation 3
2 Existing Environment 4
2.1 Site Location and Landuse 4
2.2 Climate 5
2.3 Topography 5
2.4 Soil Types 6
2.5 Public Drinking Water Source Areas 7
2.6 Wetland Mapping 7
2.7 Surface Water and Flooding 7
2.8 Groundwater 8
3 Site Investigation 12
3.1 Site Visit 12
3.2 Soil Profile 12
3.3 Permeability Assessment 15
4 Wastewater Management 17
4.1 Site Requirements 17
4.2 Proposed Treatment System 18
4.3 Discharge Loading Rates 19
4.4 Disposal Area 20
4.5 Land Application Area 21
5 References 23

List of Figures

Figure 1: Site Location
Figure 2: Sewerage Sensitive Area Mapping
Figure 3: Topography
Figure 4: Soil Type and Sampling Locations
Figure 5: Wetland Mapping
Figure 6: Hydrological Features
Figure 7: Flood Mapping
Figure 8: Indicative Land Application Area

Superseded

List of Tables

Table 1: PRI Classification of Western Australian Soils....6
Table 2: PRI Results of Onsite Soils....7
Table 3: DWER Groundwater Monitoring Data....11
Table 4: On site Permeability Test....15
Table 5: Manufacturers of Domestic Approved Secondary Treatment Systems with Nutrient Removal Capabilities (certified to AS546.3.2017)....18
Table 6: Hydraulic Loading....19
Table 7: Wastewater Management Summary....22

List of Plates

Plate 1: Typical site view (from southern boundary, looking north)....4
Plate 2: Typical site view (centre of development area, looking northeast)....5
Plate 3: Perth Groundwater Map – Minimum Groundwater Level Contours....8
Plate 4: Perth Groundwater Map – Minimum Groundwater Level Contours....9
Plate 5: DWER Groundwater Monitoring Locations, AAMGL and MGL....10
Plate 6: Test Pit FR1....13
Plate 7: Test Pit FR2....13
Plate 8: Test Pit FR3....14
Plate 9: Test Pit FR4....14
Plate 10: Test Pit FR5....15

List of Appendices

Appendix A Development Plans
Appendix B Feature Survey
Appendix C PRI Laboratory Analysis
Appendix D WIN Bore Hydrographs
Appendix E Soil Logs
Appendix F Determination of Soil Category

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Disclaimer
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1 Introduction

1.1 Background

This Site and Soil Evaluation (SSE) has been prepared on behalf of Jeeyars Acharya Peettam Australia Ltd (the proponent) to support a Development Application for 67 Folly Road, Baldivis (the site, Figure 1).

The site is 7.44 ha and is in the City of Rockingham (CoR). The site is proposed to be developed into a Place of Worship and cultural centre. A reticulated sewerage service is not available at the site and an onsite wastewater management system is required.

The site is mapped as being in a Sewage Sensitive Area (Figure 2) for the following reasons

- Estuary catchment on the Swan and Scott Coastal Plain
- Within 1 km of significant wetland.

The SSE is an important part of the land development permitting process for on-site wastewater systems. The site evaluation is used to determine if site and soil conditions are suitable for installation of an on-site wastewater system, the size of the land application area and if any physical features such as waterways, drinking water bores, drainages, or wells that may require setbacks to prevent possible contamination.

1.2 Proposed Development

The site is anticipated to provide permanent accommodation for the priests, a place of worship (Hindu temple), and facilities to hold religious events and weddings. The proposed Development Plans are provided in Appendix A and include.

- A Hindu Temple
- Multipurpose hall
- Dining hall
- Library
- Short stay accommodation
- Priest's Residences
- Carparking
- Landscaped gardens

Although the site is 7.44 ha, the proposed development is expected to occupy approximately 3.2 ha of the site only. The development will occur on the eastern half of the site to avoid environmental constraints including main drains, a Conservation category wetland and the 1% AEP floodplain.

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1.3 Planning Context

The site is zoned Rural under the Metropolitan Region Scheme and Rural under the CoR Local Town Planning Scheme No.2 (DPLH,2004).

1.4 Guidance Documents

This report has been prepared in accordance with the Government Sewerage Policy 2019 and has been developed with reference to the following guidance documents.

- Australian Standard AS/NZS1547:2012 *On-site Domestic Wastewater Management* Australia/New Zealand Standard.
- *Guidance on Site and soil evaluation for onsite sewerage management*, Department of Health 2019
- *Government Sewerage Policy,* State Government of Western Australia 2019.

Relevant Planning Policy's applicable to the site and management of wastewater include.

- State Planning Policy 2.1 Peel Harvey Coastal Catchment, and
- State Planning Policy 2.9 Water Resources

1.4.1 Government Sewerage Policy

The Government Sewerage Policy establishes the WA Government's position on the provision of sewerage services in the State through the planning and development of land.

The Policy includes specific requirements for the onsite sewage system and disposal for developments located in the sewerage sensitive areas. The requirements that are relevant to the site include:

- The discharge point of the onsite sewage system should be at least 1.5 metres above the highest groundwater level
- The site will require an unencumbered land application area for the disposal of sewage in accordance with Schedule 2 of the Policy
- Secondary treatment systems with nutrient removal are required in sewage sensitive areas.

Statement of Planning Policy No.2.1

One of the objectives of the *Statement of Planning Policy No. 2.1 The Peel-Harvey Coastal Plain Catchment* is to ensure that changes to landuse within the catchment to the Peel Harvey estuarine system are controlled as to avoid and minimise environmental damage.

SPP No.2.1 includes policy provisions for several landuses including Rural residential lots over 4000m^2. The applicable provisions relating to wastewater management are discussed in Section 6.2.1 of SPP 2.1 and include:

Lots that are created in this category should only use conventional on-site effluent disposal if:

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- Factors such as slope, soil type, permeability, vegetation cover and system design have been addressed (the onus of proof rests with the subdivider to justify that on-site disposal and/or any associated site modifications would be acceptable to remove any adverse effects on public health, water resources or the environment while not detrimentally impacting on the character of the area).
- There is at least 100m horizontal separation between the disposal system and the nearest water body.
- Development within public groundwater resource areas utilising on-site effluent disposal will require approval from the Water Authority of Western Australia. Disposal systems require Health Department approval.
- On-site effluent disposal will be limited to densities of no more than one effluent disposal system per hectare.
- Existing vegetation should be retained except where there are defined building envelopes, approved utility requirements and firebreaks. Where lots do not have defined building envelopes existing vegetation may be removed from an area of up to 1000m^2 for the construction of approved buildings except where special approval is granted for a greater area of clearing.

1.5 Objectives of the Site and Soil Evaluation

In line with the objectives of the Government Sewerage Policy, the objective of preparing the SSE is to.

- Demonstrate the site can manage wastewater onsite
- Protect public health and amenity
- Protect the environment and local water and land resources
- Promote efficient use of infrastructure and developable land, and
- Minimise the costs to the boarder community and proponent by ensuring an appropriate level and form of sewerage servicing is provided.

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2 Existing Environment

2.1 Site Location and Landuse

The site is predominately cleared and used for rural purposes and contains two large sheds. The main large shed has a septic tank and rainwater tank. The Kwinana Freeway is west of the site a rural business in located south of the site and rural properties are located north and east (Figure 1). Plate 1 and Plate 2 provide a typical view of the site.



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Plate 1: Typical site view (from southern boundary, looking north)



Plate 2: Typical site view (centre of development area, looking northeast)

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2.2 Climate

2.3 Topography

The site is very flat and planar. For this reason, the 1m topographic contours indicate the topography at the site is approximately 4 mAHD in the west to 5 mAHD in the east (Figure 3). A feature survey, provided in Appendix B, indicates the area where the existing sheds are located has the highest elevation of 5.95 mAHD and the lowest elevation of approximately 5.04 mAHD occurs on the southeast corner of the site. The site has a change in height of 0.91m over 205m (0.44% slope).

2.4 Soil Types

2.4.1 Regional Soil Mapping

The soil types and land units are mapped on Figure 4.

The western half of the site is mapped as.

- Pj_P4: Poorly drained flats, sometimes with gilgai microrelief and with moderately deep to deep black, olive grey and some yellowish brown cracking clays and less commonly non-cracking friable clays with generally acidic subsoils

A gilgai is a small, ephemeral lake formed from a depression in the soil surface in expanding clay soils. Additionally, the term "gilgai" is used to refer to the overall micro-relief in such areas, consisting of mounds and depressions, not just the lakes themselves. The name comes from an Aboriginal word meaning small water hole. These pools are commonly a few metres across and less than 30 cm deep. Gilgais are found worldwide wherever cracking clay soils and pronounced wet and dry seasons are present.

The eastern half of the site, where development is proposed to occur mainly consists of.

- Pj_B1: Extremely low to very low relief dunes, undulating sandplain and discrete sand rises with deep bleached grey sands sometimes with a pale-yellow B horizon or a weak iron-organic hardpan at depths generally greater than 2 m; banksia dominant, and

Further details about the soil type and onsite investigations are provided in Section 3.0 Site Investigation.

2.4.2 Phosphorus Retention Index

The Phosphorus Retention Index (PRI) describes a soils ability to adsorb or 'lock up' applied phosphorus. Soils with a high PRI will quickly bind phosphorus, conversely soils with a low PRI will lock up only small amounts of phosphorus, leaving most of the phosphorus available for plant uptake or accumulation in the soil profile. Table 1 below provides an explanation of the PRI classification of the soils ability to adsorb applied phosphorus.

Table 1: PRI Classification of Western Australian Soils

PRI	Classification	Example Soil Type
<2	Very weakly adsorbing or desorbing	Grey sands, Bassendean sands, Badgingarra sands
2-5	Weakly desorbing	Grey-brown duplex, deep duplex sands, Lancelin sands
5-20	Moderately adsorbing	Grey loamy sands, yellow brown sands, Coolup loamy sands, Spearwood sands
20-70	Strongly adsorbing	Lateritic gravels and sandy loams, Kununurra clays, Darling Range gravels
>70	Very strongly adsorbing	Lateritic loams, iron rich peats, Karri loams

Superseded

Soil samples from four test pits were taken to test for PRI. A drill rig was used to take a soil core to a depth of 2m to classify the soil type and soil samples were taken from each soil horizon. The test pit locations are shown on Figure 4 and the laboratory results of the soil PRI are provided in Appendix C and Table 2 below.

Table 2 indicates the soils at the site are generally very weakly to weakly desorbing. An unusual result of 989 was recorded at FR3 at a depth of 1.8m to 2.0m. These results are indicative of the Bassendean Sands on site.

Table 2: PRI Results of Onsite Soils

Site	Depth (m)		
	0-0.15	0.15 – 1.8	1.8 – 2.0
FR1	2.4	0.8	3.6
FR2	1.4	0.4	1.1
FR3	0.7	-0.2	989
FR4	-0.1	2.7	0.9

2.5 Public Drinking Water Source Areas

The Public Drinking Water Source Area (PDWSA) online mapping tool (DWER, 2021x) indicates the site is not in a PDWSA.

2.6 Wetland Mapping

The Department of Biodiversity Conservation and Attractions (DBCA,,) geomorphic wetland mapping is shown on Figure 5. Most of the site is mapped as a Multiple Use Palusplain wetland (Unique feature ID 16,021).

Folly Pool, located immediately west of the site is mapped as a Conservation category wetland (Unique Feature ID 16,015). The centre of Folly Pool is classified as a Sumpland while the perimeter of the wetland, including the portion of the wetland located nearest the site is classified as a Palusplain wetland.

Although not mapped as a wetland, there are two lying gilgai's located in the west of the site which contain water during winter.

The proposed development of the site is proposed to occur in the eastern half of the site, outside any necessary buffer to Folly Pool.

2.7 Surface Water and Flooding

There are no waterways or drains located in the site however the southern extent of Folly Pool and the Peel Main Drain is located adjacent to the site's western boundary. The Peel Main Drain flows in a southerly direction and discharges to the Serpentine River at Keralup Pool, approximately 10 km south of the site.

Superseded

The Peel Main Drain typically flows between July and October each year and stops flowing during Summer and Autumn. Nutrient concentrations, both total nitrogen and total phosphorus are high due to the catchment of the PMD containing leached soils, and intensive agricultural landuses (DWER, 2018).

There are several Water Corporations drains located north and east of the site, as shown on Figure 6. The Serpentine River, Peel Main Drain and Water Corporation drains flood during major rainfall events.

The 10% Annual Exceedance Probability (AEP) and 1% AEP flood mapping at the site is provided on Figure 7. The 1% AEP flood level at the site is 5.0 mAHD and the floodplain traverses through the centre and western corner of the site.

Development of the site is proposed to occur in the eastern half of the site, outside the floodplain and is not prone to flooding.

2.8 Groundwater

2.8.1 Groundwater Licences

The online Water Register (DWER, 2021) indicates the site does not have a groundwater licence as shown in Plate 3 below.



Plate 3: Perth Groundwater Map – Minimum Groundwater Level Contours

The nearest properties with a groundwater licence are located at 574 Young Road, approximately 0.25 km north and 519 Young Road, located 0.27 km south of the site.

Superseded

2.8.2 Groundwater Aquifers

The online Water Register (DWER, 2021) indicates the site is located within the Stakehill groundwater area and the Marama up and Stakehill Confined groundwater subareas. The Superficial Swan, Leederville and Yarragadee North aquifers are present.

2.8.3 Regional Groundwater Monitoring

The Perth Groundwater Map (DWER, 2020) maximum groundwater level contours do not extend to the site. The minimum groundwater level contours extend to the site, as shown in Plate 3 which indicate the minimum groundwater level at the site is approximately 2 mAHD on the west of the site to 2.5 mAHD on the east.

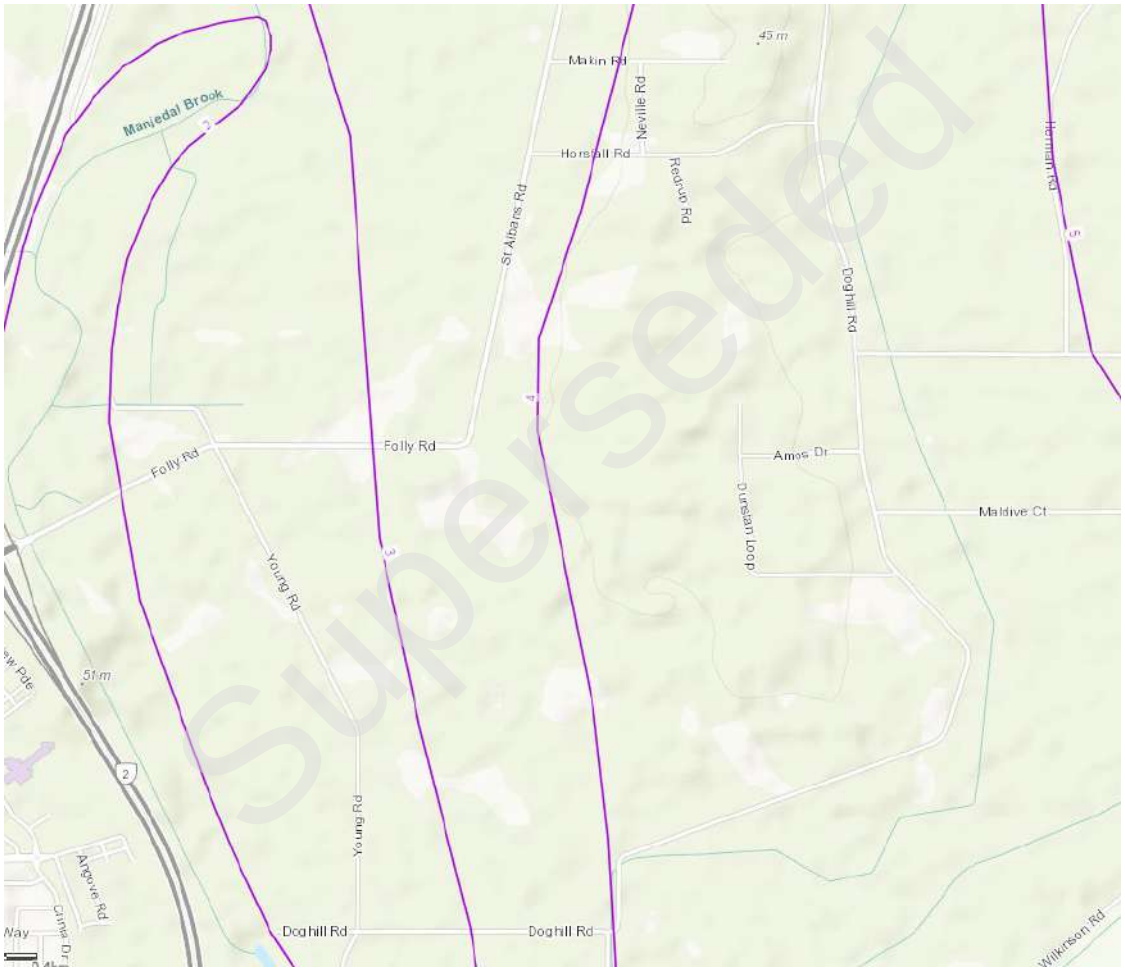

Plate 4: Perth Groundwater Map – Minimum Groundwater Level Contours

2.8.4 Local Groundwater Monitoring

During the onsite investigation completed on the 7th September 2021 (detailed further in Section 3), groundwater was encountered at 0.6 m below ground level (bgl) at FR3 and 0.8 m bgl at soil sampling locations FR5 (Figure 4). Peak groundwater levels generally occur in September to October each year, these levels are therefore close to representing of the peak 2021 groundwater levels.

The Water Register (DWER, 2021) indicates the nearest DWER groundwater monitoring bores are located 1.66 km south (WIN 61410478) and 2.45 km east of the site (WIN 61410093), both on Doghill Road.

WIN 61410478 has 46 years of groundwater level data from 1975 to 2021 and WIN 61410093 has groundwater levels recorded from 2011 to 2021. The water level hydrographs are provided in Appendix D.

Plate 3 and Table 1 below provides the Average Annual Maximum Groundwater Level and Maximum Groundwater Level for WIN 61410478 and WIN 61410093, and an estimated MGL for the site.

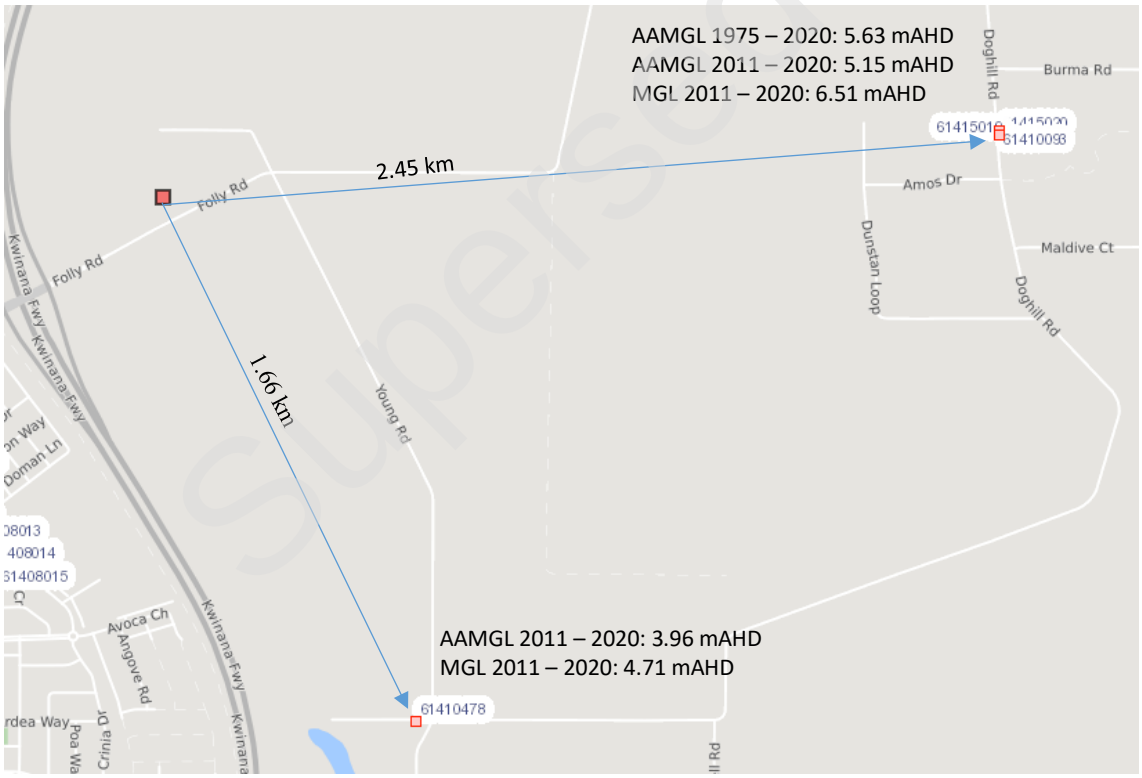

Plate 5: DWER Groundwater Monitoring Locations, AAMGL and MGL

Superseded

Table 3: DWER Groundwater Monitoring Data

WIN Site	Long term AAMGL (mAHD) 1975 - 2020	10yr AAMGL (mAHD) 2011 - 2020	MGL* (mAHD)	Perth Groundwater Map (PGM) Minimum Groundwater Levels (mAHD)	Difference MGL – PGM (m)
61410478	n/a	3.96	4.71 Recorded in 2018	2.4	2.31
61410093	5.63	5.63	6.51 Recorded in 1984	4.6	1.91

*MGL 61410478 1975 – 2020 and 61410093 2011 – 2020.

2.8.5 Estimated Site Maximum Groundwater Level

Given the absence of onsite groundwater monitoring data and limited local data, an estimate of the onsite maximum groundwater levels has been derived by calculating the maximum groundwater level at the nearest DWER monitoring bores and comparing this data to the minimum groundwater contours shown at the same locations in the Perth Groundwater Map. The MGL at the DWER monitoring bores was an average of 2.11 m (2.31+1.91/2) higher than the minimum groundwater levels contours shown in the Perth Groundwater Map.

As discussed in Section 2.8.1, the minimum groundwater contours in the Perth Groundwater Map indicate the minimum groundwater level at the site is approximately 2 mAHD on the west of the site to 2.5 mAHD on the east.

The peak groundwater levels at the site are approximately 4.11m AHD on the west and centre of the site and 4.61 mAHD on the east of the site. This results in a clearance to peak groundwater levels of approximately 1.49m in the west and centre and 0.59m in the east of the site.

Winter rainfall in Baldivis in 2021 was above average. Groundwater was encountered during the site visit and on-site drilling in September at two locations (0.6 m bgl at FR3 and 0.8 m bgl at FR5 (Figure 4). Further geotechnical investigations will be completed at the site, groundwater levels will be recorded as part of this investigation and will need to be used to inform the detailed design of the wastewater system for the effluent disposal areas to achieve a minimum clearance to groundwater of 1.5m.

Superseded

3 Site Investigation

3.1 Site Visit

WaterInsight completed a site visit on the 7th September 2021. The proposed development is to occur on the eastern half of the site, outside the floodplain area. The site visit and soil sampling concentrated on the proposed development area only.

The soils were examined and described from 5 test sites (FR1 to FR5). Southwest Drilling used a GeoProbe drill rig to take a soil core to a depth of 2m. Due to the soil's consistency across the proposed development area, WaterInsight completed infiltration testing at three locations (FR2, FR4 and FR5). The drilling was completed easily, with no resistance and all test sites were drilled to a depth to 2m. The proposed development area did not contain fill material, gravel, or rocky outcrops. Figure 4 provides the soil sampling and infiltration test locations.

A site walk over was completed to identify any other features which may impact the use of an STS.

3.2 Soil Profile

The soil profile of each test pit is shown in Plate 6 to 10 below and the soils logs are included in Appendix E. The soil profile for all test sites was similar comprising of pale deep sands.

Test site FR1 contained a dark grey/black layer at a depth of 1.8 – 2.0 which was more prominent that at the other test locations.

The drainage of the proposed development area is classified as 'rapid draining', with no signs of localised ponding at the time of the investigation.

The soil profile can be described as:

- 0-15: SAND light grey to brown, fine to medium grained, loose, well graded, moist
- 15-1.8 SAND white, fine to medium grained, loose, well graded, moist
- 1.8-2.0 SAND dark grey to black fine to medium grained, well graded, moist.

A detailed Geotechnical Investigation will be completed as a condition of development approval to determine the site classification and site preparation requirements. The outcomes of this investigation will also be used to confirm the detailed design of the wastewater management system.

Superseded



Plate 6: Test Pit FR1



Plate 7: Test Pit FR2

Superseded



Plate 8: Test Pit FR3



Plate 9: Test Pit FR4

Superseded



Plate 10: Test Pit FR5

3.3 Permeability Assessment

In accordance with AS/NZS1547 permeability testing was completed in the field at FR2, FR3 and FR5. Table 3 below indicates the average saturated hydraulic conductivity for the deep sands was 4.49 m/day which is representative of a 'rapidly drained' soil, (AS/NZS 1547, refer Appendix F).

Table 4: On site Permeability Test

Test Site	Field Saturated Hydraulic Conductivity (m/d)
FR2	5.86
FR3	4.23
FR5	3.37

The values of indicative permeability are based on the movement of water, not effluent through the soil. They are estimates only and shall be used with caution in assisting the determination of the Soil Category. In the field soil permeability is strongly influenced by the presence of biological channels such as root holes.

Superseded

As this site is expected to be used for large functions and events, it is advised that additional permeability testing is completed at the final location of the leach drains/land application areas once detailed design of the wastewater management system has been completed.

Superseded

4 Wastewater Management

4.1 Site Requirements

The Government Sewerage Policy outlines the minimum site requirements for onsite sewage disposal to protect public health and the environment. An onsite sewage system is not to be located within.

- a wellhead protection zone or on Crown land within a reservoir protection zone
- 30 metres of a private bore used for household/ drinking water purposes
- 100 metres of a waterway or significant wetland and not within a waterway foreshore area or wetland buffer.
- 100 metres of a drainage system that discharges directly into a waterway or significant wetland without treatment
- any area subject to inundation and/or flooding in a 10% AEP rainfall event.
- 1.5 metres above the highest groundwater level (in sewerage sensitive area)

Smaller setbacks may be considered where a proponent demonstrates, to the satisfaction of the responsible authority in consultation with the relevant advisory agencies (Department of Water and Environmental Regulation and/or Department of Biodiversity, Conservation and Attractions, Department of Health and/or Local Government) that the reduced setbacks will not have a significant impact on the environment or public health.

Additional setbacks to structures which impact the sizing and location of the available land application areas include.

- 1.2 metres between treatment tanks to buildings, property boundaries, driveways, paths, and other tanks
- 1.2 metres between tranches, beds and soak wells to trafficable areas
- 1.8 metres between tranches, beds and soak wells to boundary, building, tanks and other land application systems
- Sub surface dripper to
    - Boundaries, building, treatment tanks, driveways 0.5m
    - Open drain 3.0m
    - Garden bore 10m

Superseded

4.2 Proposed Treatment System

As the site is in the Peel Harvey Catchment and a Sewerage Sensitive Area, and near open major drains which drain to a significant wetland. A secondary treatment system with nutrient removal will be required to treat wastewater to a higher standard and will principally be disposed via leach drains.

Secondary wastewater management systems, with nutrient removal capabilities can produce treated effluent of secondary standard, that is ≤20 mg/L of Biochemical Oxygen Demand (BOD), ≤30 mg/L of Total suspended solids (TSS) and ≤10 cfu/100 mL of *Escherichia (E) coli*.

The Department of Health have confirmed that they do not keep record of any manufacturers with approved commercial secondary treatment systems with nutrient removal capabilities (certified to AS1546.3.2017), however have advised that the manufacturers with approved domestic secondary treatment systems with nutrient removal capabilities (certified to AS1546.3.2017) should be contacted. Table 5 below provides a list of the domestic approved secondary treatment systems with nutrient removal capabilities (certified to AS1546.3.2017) that are listed on the Department of Health website (accessed December 2021). A brochure from

Table 5: Manufacturers of Domestic Approved Secondary Treatment Systems with Nutrient Removal Capabilities (certified to AS546.3.2017)

Manufacturer/Distributor	Contact Details
BioSeptic	Phone (02) 4629 6666 Email: sales@bioseptic.com.au
Biomax	Phone 9250 7733 Email: info@biomax.com.au
Everhard Industries	Phone 9417 8222 Email: waorders@everhard.com.au
Fuji Clean Australia	Phone 9561 2927 Email: dwain@fujiclean.com.au
Taylex Australia	Phone 1300 829 539 Email: info@taylex.com.au
Toowoomba Tanks	Phone (07) 4634 2860 Email: sales@tanks.com.au

Due to the treatment and disinfection process, the treated wastewater may be used for garden irrigation. In this instance however, the available unrestricted land application area is limited. Disposal of the treated wastewater via leach drains requires less space and is recommended as the primary means of disposing the treated effluent.

Superseded

The site does not have a groundwater licence for irrigation and the groundwater aquifers at the site are over allocated, meaning the development may not receive a groundwater allocation for irrigation of landscaping and turf.

As a secondary treatment system with nutrient removal capabilities is being provided, the treated wastewater could be used to irrigate the landscaping and turf, instead of the water being directly infiltrated and wasted through the leach drains.

A disposal system which uses a combination of leach drains and sub surface irrigation could be investigated at the detailed design stage as a means of irrigating the proposed landscaping and turf to provide recreational areas. Groundwater levels during summer will be close to their lowest, allowing irrigation of the landscaping to occur.

4.3 Discharge Loading Rates

The site includes domestic (priests' residences) and commercial landuses. The site is expected to cater for religious festivals and weddings with a maximum of 400 guests. The weddings will likely require up to 20 catering staff. The commercial hydraulic load has been based on a maximum capacity of 420 persons and the short stay accommodation will be treated the same as residential homes.

Despite the Site Plans indicating the priests' residences and short stay accommodation will be 3 to 4 bedrooms, the Department of Health have been requesting that the hydraulic loading for dwellings be based on a worst case scenario of 6 people occupying a 5 bedroom residence, which results in a hydraulic loading of 900l/day (150l/person/day).

To demonstrate to the Department of Health that the site is capable of managing wastewater on site, a design hydraulic loading of 900l/day has been considered for the two priests' residence and short stay accommodation. These details however should be reassessed at the detailed design stage as part of the building application to ensure an appropriately sized wastewater management system is designed and installed to suit the dwelling to be constructed.

Table 6 below details the developments maximum daily hydraulic loading.

Table 6: Hydraulic Loading

Type of Premise	Combined Flow (L/Person/day)	Total Daily Hydraulic Load (L/day)
Domestic		
Priest residence A	150	900
Priest residence B	150	900
Sub Total Domestic		1800

Superseded

Type of Premise	Combined Flow (L/Person/day)	Total Daily Hydraulic Load (L/day)
Commercial		
Short stay accommodation	150	900
Place of worship (with cooking and catering facilities), temple, dining hall, multipurpose hall, library)	30	12,600
Sub Total Commercial		13,500
Total		**15,300**

The septic tank located at the existing shed will remain but has been excluded from this SSE.

The site will use a single secondary treatment system to collect, treat and dispose of the effluent.

4.4 Disposal Area

While secondary treated effluent has undergone chlorination and is treated to a higher standard than septic tank effluent, it can still contain pathogenic microorganisms some of which are chlorine resistant. Therefore, the effluent:

- is unsuitable for human contact or consumption
- must only be used on a dedicated irrigation area
- must not be surface irrigated on areas such as lawns or areas used for recreational purposes; and
- is unsuitable for irrigation onto vegetable gardens or food crops.

If the effluent is used for irrigation, the irrigation area (size and location) forms part of the approved wastewater system. It is illegal for owners to modify the location or size of the approved irrigation area without approval from the local government.

Irrigation areas must:

- have warning signs displayed advising that effluent is being used and is not suitable for human contact or consumption
- achieve minimum setbacks from certain features such as buildings, boundaries and paved areas, to avoid human exposure to the effluent
- not be altered or reduced in size without approval
- be looked after so that irrigation lines are accessible for maintenance
- be planted out with salt and nutrient resistant plants to avoid puddling or run off of effluent.

Superseded

Activities within the land application area shall not interfere with the function of the current and future land application system and people should avoid potential contact with effluent residues. Unless allowed for in the design, the land application area) should:

- not be built on or paved in a manner which precludes reasonable access
- not be subject to vehicular traffic (other than a pedestrian-controlled lawnmower)
- not be subject to regular foot traffic such as pathways and clothesline areas; and
- should be kept in a manner which enables servicing and maintenance of the disposal area

4.5 Land Application Area

4.5.1 Flatbed Leach Drains

Due to the scale of the development, flat bed leach drains are recommended to dispose of the treated effluent as they require less space to infiltrate the effluent, when compared to surface or sub surface irrigation.

As mentioned, a combination of leach drains and sub surface irrigation could be considered at the detailed design stage to provide irrigation water for the proposed landscaping.

For secondary treated effluent, the following calculation is used to determine the length of leach drains required for both domestic and commercial applications.

- Land application area for leach drains (m2) in sand, gravel and loam soils is:

= Hydraulic loading (L/day) ÷ 50 ÷ IA

The IA of Atlantis Corporation flatbed leach drains = 2.6 m2/m.

The IA of leach drains varies depending on the manufacturer chosen and the land application area will need to be calculated to suit the leach drains used, a list of the approved leach drains is available on the Department of Health website (https://ww2.health.wa.gov.au/Articles/A_E/Approved-leach-drains).

The minimum length of leach drains required to dispose of the effluent via leach drains is 118 m (15,300 l/day ÷ 50 ÷ 2.6).

A minimum of two rows of leach drains are required to allow for maintenance to be completed. The leach drains are 2.5m wide and require 1.8m separation between each bed.

The possible configuration of leach drains would be 6 drains x 20m long. The footprint required for installation is approximately 24m x 20m, plus setback clearances. The leach drains will need to be semi inverted to achieve a clearance of 1.5m to the maximum groundwater level year-round.

Superseded

4.5.2 Irrigation

Irrigation requires significantly larger land application areas than leach drains to dispose of the effluent. As mentioned the site could use a combination of leach drains and irrigation including shallow subsurface drip irrigation and covered surface drip irrigation.

The Government Sewerage Policy provides the following calculation to determine the required irrigation land application area as follows:

- Land application area for irrigation (m2)

= hydraulic load (L/day) X conversion factor for the soil texture.

The conversion factor for secondary treated effluent for gravels and sands and sandy loams is 0.2.

The minimum application area required to dispose of the treated effluent via irrigation alone is 3,060m^2 excluding setbacks) (15,300 l/day x 0.2).

A summary of the above information is provided in Table 7.

Table 7: Wastewater Management Summary

Discharge Rate L/day	Proposed System	Disposal Area	
		Irrigation (m^2)	*Leach Drains (m)
15,300	Secondary with nutrient removal	3,060	118 (Footprint of 24m x 20m)

***The length of the leach drains will vary slightly depending on the type of leach drain used**

An *Application to Construct or Install An Apparatus for the Treatment of Sewerage* will need to be submitted to the City of Rockingham by the lot owners following detailed design to specify the final design and wastewater management system to be installed.

4.5.3 Indicative Disposal Area

Figure 8 has been created to provide indicative effluent disposal areas to demonstrate the development is able to adequately dispose of the treated wastewater on site. The proposed leach drain location is located on the higher area of the site to achieve clearance to groundwater and comply with the required buffers, including providing a 100m buffer to the Water Corporation drains, Folly Pool and the Peel Main Drain.

The feature survey indicates the ground level in the south of the site at the proposed leach drain location is 5.80 mAHD. The maximum groundwater levels at this location are estimated to be 4.11 mAHD. Depending on the outcomes of future geotechnical investigation, a partially inverted leach drain may be required to ensure the base of the leach drains achieve a clearance to peak groundwater of 1.5m.

Superseded

5 References

CoTerra Environment (2021) Environmental Assessment Report – 67 Folly Road, Baldivis

Department of Health (2015). *Code of Practice for the Design, Manufacture, Installation and Operation of Aerobic Treatments Units (ATU's) Serving Single Dwellings*

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Department of Water and Environmental Regulation. (2019). *Water Information Reporting.*

Department of Water and Environmental Regulation (2020). *Perth Groundwater Map.* Government of Western Australia, Perth, Western Australia.

Department of Water and Environmental Regulation. (2021). *Water Register.*

Landgate (2021). Shared Land Information Platform – Locate V5. Government of Western Australia, Perth, Western Australia.

State Government of Western Australia (2019). Government Sewerage Policy.

Superseded

Superseded

Figures



Legend

- Lot Boundary
- Cadastral Lines

N

0 60 120 180 240 300 m

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Site Boundaries: Landgate
Imagery: Landgate/ESRI
GDA 1994 MGA Zone 50

NOTE: All areas and dimensions are subject to survey, engineering and detailed design and may change without notice.

SITE AND SOIL EVALUATION

67 Folly Road, Baldivis

Figure 1

Site Location



Superseded

Legend

- Lot Boundary
- Cadastral Lines

Government Sewerage Policy (DPLH-062)

- a) Estuary catchments on the Swan and Scott Coastal Plains
- f) Within 1km of significant wetlands

N

0 60 120 180 240 300 m

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SITE AND SOIL EVALUATION

67 Folly Road, Baldivis

Figure 2

Sewerage Sensitive Area Mapping



Superseded

Legend

- Lot Boundary
- Cadastral Lines
- Contours 1m interval (mAHD)

N

0 60 120 180 240 300 m

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SITE AND SOIL EVALUATION
Balaji Temple and Cultural Centre
67 Folly Road, Baldivis

Figure 3
Topography

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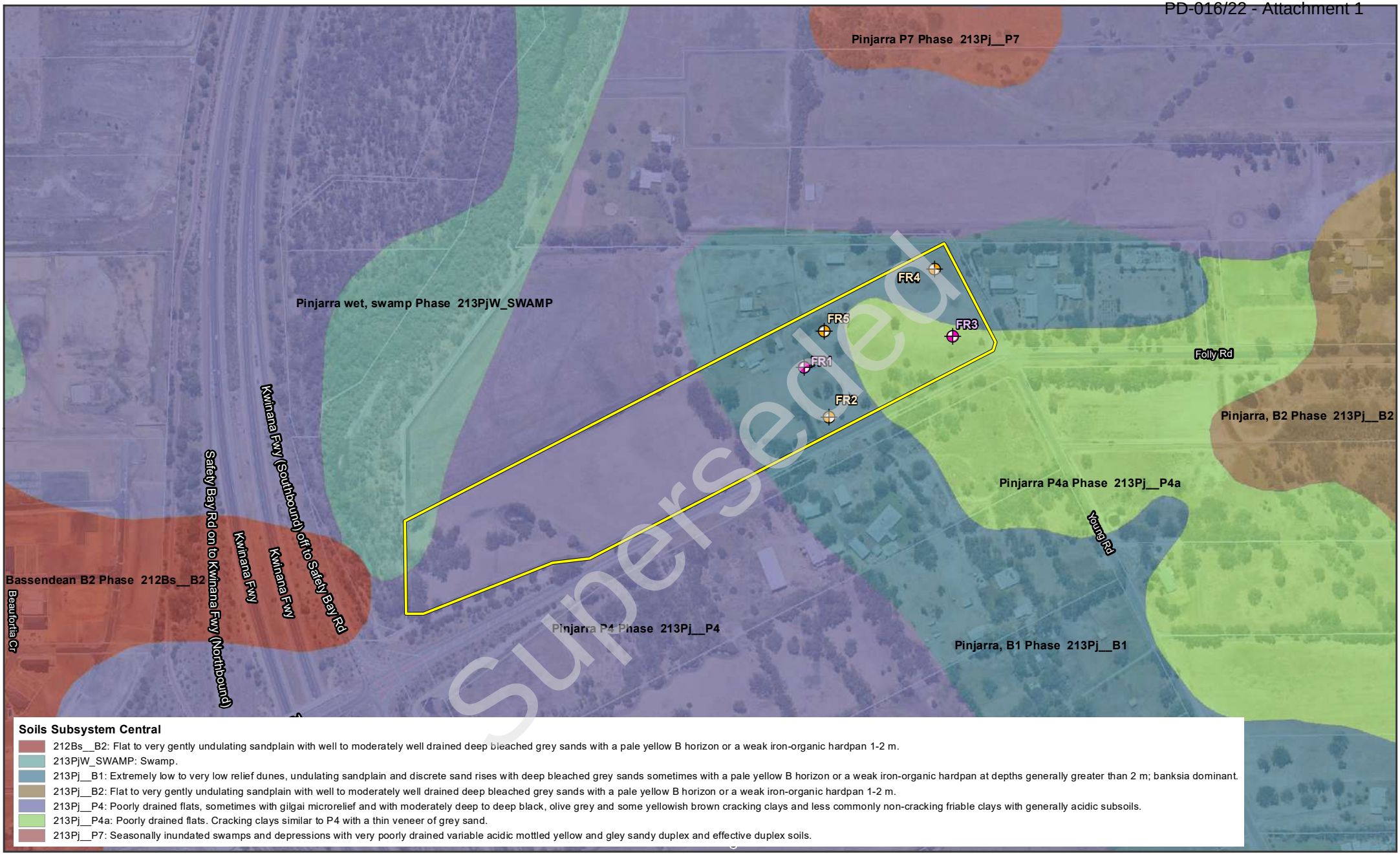

Soils Subsystem Central

- 212Bs__B2: Flat to very gently undulating sandplain with well to moderately well drained deep bleached grey sands with a pale yellow B horizon or a weak iron-organic hardpan 1-2 m.
- 213PjW_SWAMP: Swamp.
- 213Pj__B1: Extremely low to very low relief dunes, undulating sandplain and discrete sand rises with deep bleached grey sands sometimes with a pale yellow B horizon or a weak iron-organic hardpan at depths generally greater than 2 m; banksia dominant.
- 213Pj__B2: Flat to very gently undulating sandplain with well to moderately well drained deep bleached grey sands with a pale yellow B horizon or a weak iron-organic hardpan 1-2 m.
- 213Pj__P4: Poorly drained flats, sometimes with gilgai microrelief and with moderately deep to deep black, olive grey and some yellowish brown cracking clays and less commonly non-cracking friable clays with generally acidic subsoils.
- 213Pj__P4a: Poorly drained flats. Cracking clays similar to P4 with a thin veneer of grey sand.
- 213Pj__P7: Seasonally inundated swamps and depressions with very poorly drained variable acidic mottled yellow and gley sandy duplex and effective duplex soils.

Legend

- Lot Boundary
- Cadastral Lines
- Soil Sampling Location
- Soil Sampling and Infiltration Test Location

N

0 60 120 180 240 300 m

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SITE AND SOIL EVALUATION

Balaji Temple and Cultural Centre
67 Folly Road, Baldivis

Figure 4

Soil Type and Sampling Locations



Superseded

Legend

- Lot Boundary
- Cadastral Lines

Geomorphic Wetlands Swan Coastal Plain DBCA_019

- Conservation
- Resource Enhancement
- Multiple Use

N

0 60 120 180 240 300 m

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SITE AND SOIL EVALUATION
Balaji Temple and Cultural Centre
67 Folly Road, Baldivis

Figure 5
Wetland Mapping



Legend

- Lot Boundary

Hydrography

- Watercourse - minor
- Drain - major (Water Corporation)
- Area Subject to Inundation

N

0 60 120 180 240 300 m

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Site Boundaries: Landgate
Imagery: Landgate/ESRI
GDA 1994 MGA Zone 50

NOTE: All areas and dimensions are subject to survey, engineering and detailed design and may change without notice.

SITE AND SOIL EVALUATION

Balaji Temple and Cultural Centre
67 Folly Road, Baldivis

Figure 6

Hydrological Features

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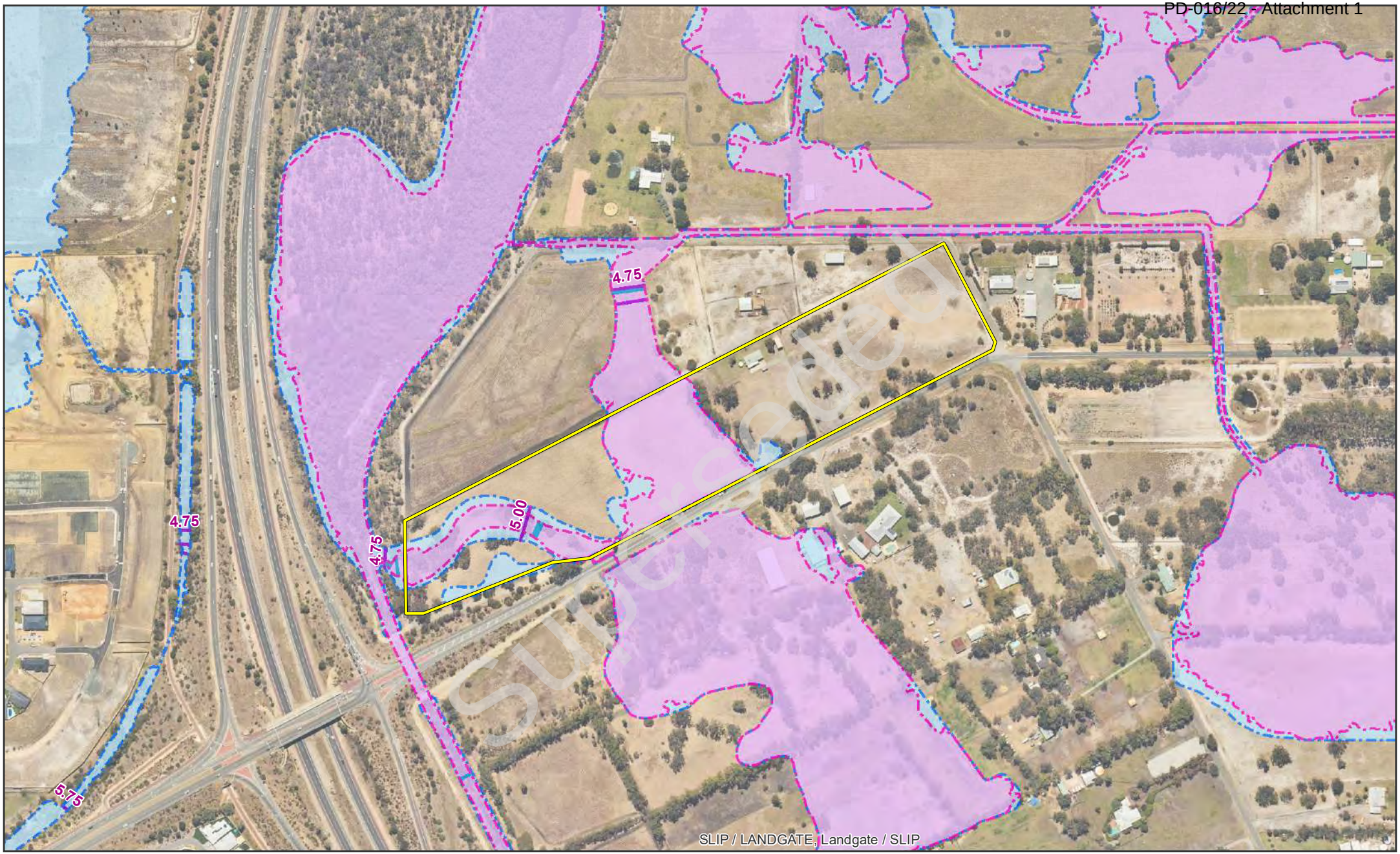

Superseded

Legend

Lot Boundary

Floodplain Area (DWER-020)

1 in 10 (10%) AEP floodplain

1 in 100 (1%) AEP floodplain

Flood Level Contours (m AHD) (DWER-018)

1 in 10 (10%) AEP flood level contour

1 in 100 (1%) AEP flood level contour

N

0 60 120 180 240 300 m

waterinsight
W: www.waterinsight.net.au
E: kelly@waterinsight.com.au
P: +61 411 354 463

Site Boundaries: Landgate
Imagery: Landgate/ESRI
GDA 1994 MGA Zone 50

NOTE: All areas and dimensions are subject to survey, engineering and detailed design and may change without notice.

Site and Soil Evaluation

Balaji Temple and Cultural Centre
67 Folly Road, Baldivis

Figure 7

Flood Mapping

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1:5,000 @ A4 ***Date: 21/09/2021***

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Legend

- Site Boundary
- Cadastre
- Proposed Development
- Indicative Irrigation
- Indicative Leach Drain Location (24m x 20m)
- Folly Pool - Conservation Category Wetland
- 100m Folly Pool CCW Buffer
- Drainage - Open Channel
- 100 m Peel Drain Buffer

- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS
- CADASTRE SOURCED LANDGATE 2021
- AERIAL PHOTOGRAPHY SOURCED NEARMAPS 13.08.21

waterinsight

0 37.5 75 150 N

Metres

Scale: 1:5,000 @ A4

LOCALITY MAP



CREATED	JOB	DATE	REVISION
ENVIRONMAPS	2130	7/12/2021	0

SITE AND SOIL EVALUATION

Balaji Temple and Cultural Centre
67 Folly Road, Baldivis

FIGURE 8

INDICATIVE LAND APPLICATION AREAS

ENVIRONMAPS Environmental Mapping Solutions | t: 0406 590 006 | www.environmaps.com.au

C:\GIS\Jobs\Water Insight\2130 - Folly Rd, Baldivis\Figures\2130_F08 Indicative Land Application Areas_211207.mxd

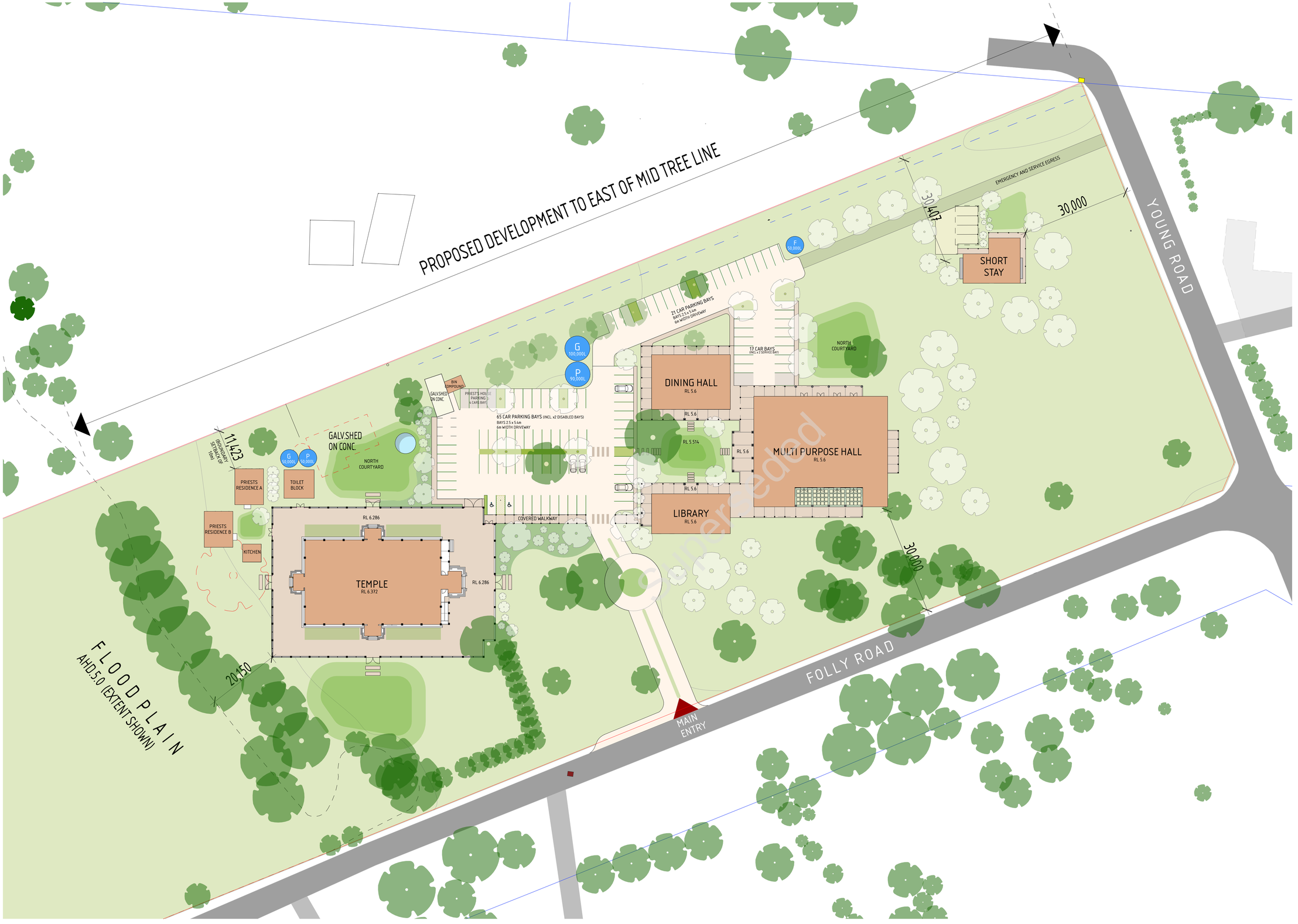
Superseded

Appendices

Superseded

Appendix A
Development Plans


PROPOSED DEVELOPMENT TO EAST OF MID TREE LINE
YOUNG ROAD
FOLLY ROAD
FOLLY ROAD
SHORT STAY
DINING HALL
MULTI PURPOSE HALL
LIBRARY
TEMPLE
GAZEBO
GAZEBO
GAZEBO



PROPOSED DEVELOPMENT EAST OF MID TREE LINE 1:500 (@ A1)

SCALE OF METERS

0 10 50 100

N

archetype design studio

architecture - interiors - feng shui
level 12, 68 St Georges Terrace PERTH WA 6000
Phone : (08) 9486 8866
email: studio@archetypedesign.com.au

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2. Do not scale from these drawings. Dimensions shown on larger scale drawings take precedent over smaller scaled drawings
4. The contractor shall check and verify all dimensions on site, both new and existing, prior to commencement of any phase of the building work or ordering any materials
5. In case of any discrepancy whatsoever, the contractor shall check with the architect prior proceeding
6. Contractor shall carry out works in accordance with Council Building License and conditions stipulated thereon
7. Contractor shall carry out works in accordance with requirements of Western Power with respect the easements on the site.
8. Contractor is advised that the site is a Registered Aboriginal Heritage Site to which the Aboriginal Heritage Act and all its lega requirements apply.
9. Contractor is to strictly adhere to Recommendations made in the Anthropological Report prepared by De Gand Pty Ltd May 2011

Revision	Description	Date

Project :
PROPOSED BALAJI TEMPLE AND CULTURAL CENTRE

Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

Drawing Title:
SITE PLAN
1.500

Scale : 1.200
Status: #Project Status

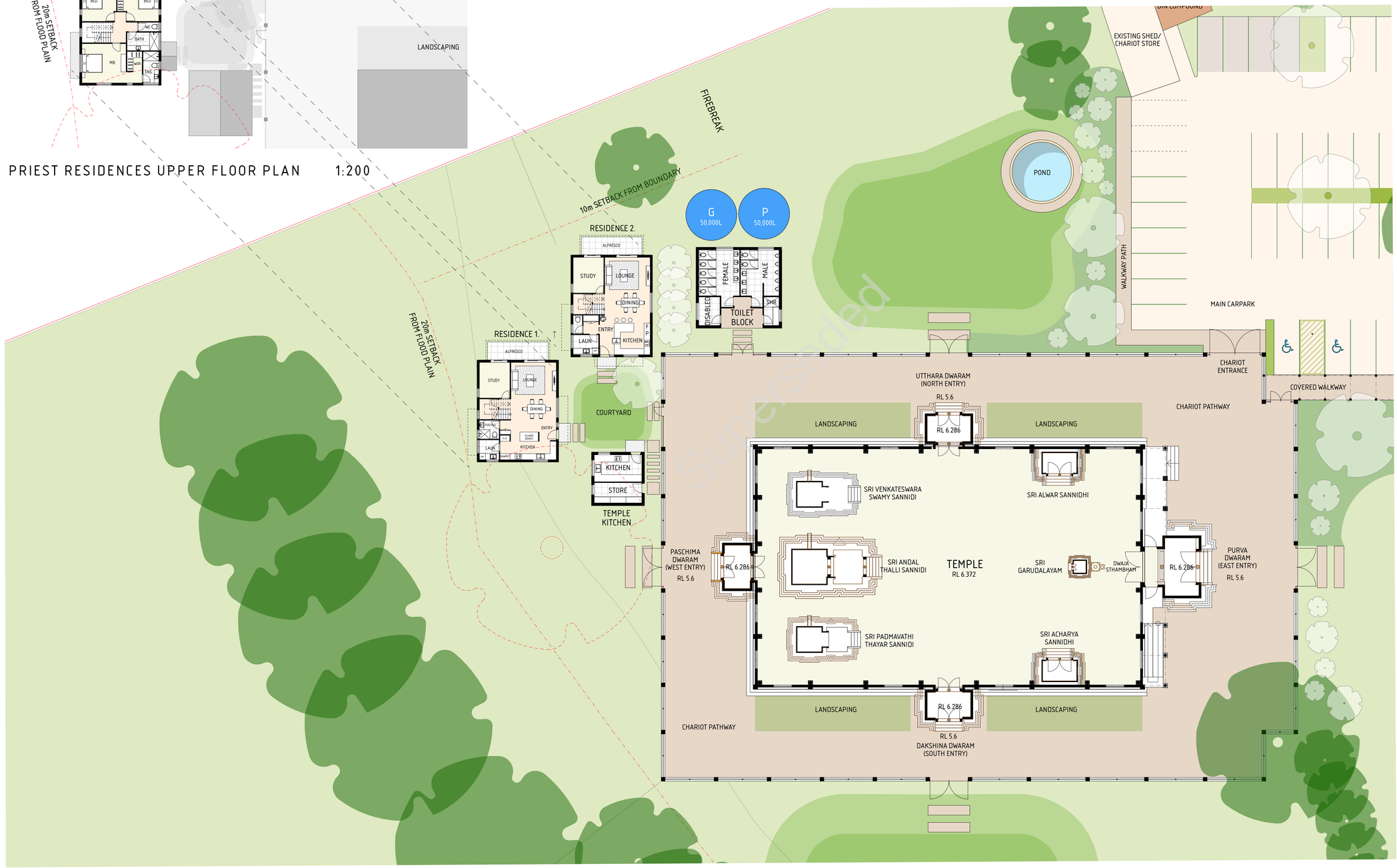
Drawing N^{0}

03

Date issued: Thursday, 18 November 2021
Time 2:47 pm
Revision



PRIEST RESIDENCES UPPER FLOOR PLAN 1:200



TEMPLE PLAN, PRIESTS QUARTERS + TOILET BLOCK 1:200 (@ A1)

SCALE OF METERS

0 5 25 50

N

archetype design studio

architecture - interiors - feng shui
level 12, 68 St Georges Terrace PERTH WA 6000
Phone : (08) 9486 8866
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7. Contractor shall carry out works in accordance with requirements of Western Power with respect the easements on the site.
8. Contractor is advised that the site is a Registered Aboriginal Heritage Site to which the Aboriginal Heritage Act and all its lega requirements apply.
9. Contractor is to strictly adhere to Recommendations made in the Anthropological Report prepared by De Gand Pty Ltd May 2011

Revision	Description	Date

Project :
PROPOSED BALAJI TEMPLE AND CULTURAL CENTRE

Site Address :
67 FOLLY ROAD,BALDIVIS

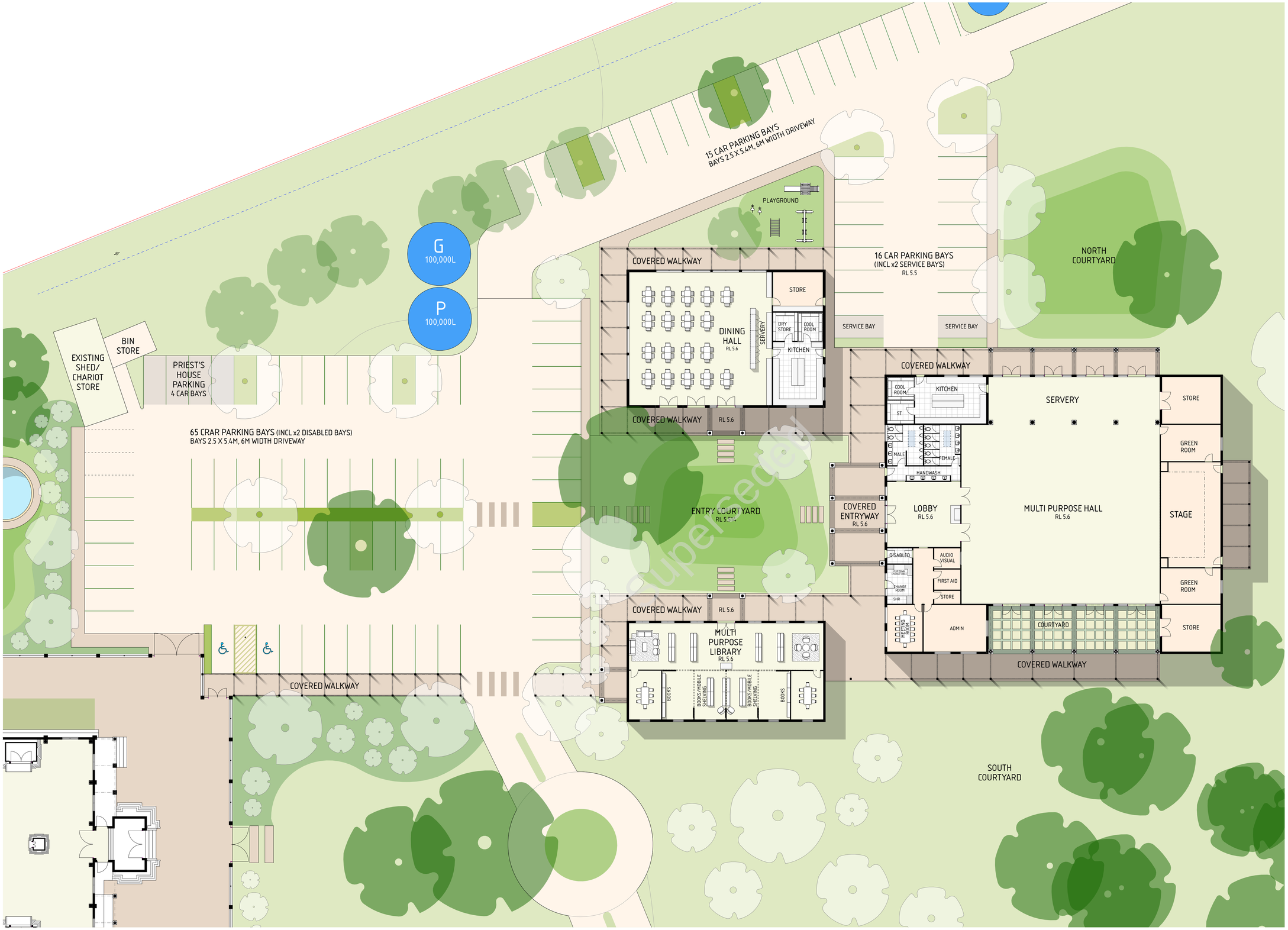
Client :
JAPA PTY LTD.

Drawing Title:
TEMPLE PLAN

Scale : 1:200
Status: #Project Status

Drawing N^{0}
04

Date issued: Monday, 22 November 2021
Time 11:45 am
Revision



MULTI-PURPOSE HALL, DINING + LIBRARY PLAN 1:200 (@ A1)

SCALE OF METERS

0 5 25 50

N

archetype design studio

architecture - interiors - feng shui
level 12, 68 St Georges Terrace PERTH WA 6000
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2. Do not scale from these drawings. Dimensions shown on larger scale drawings take precedent over smaller scaled drawings
4. The contractor shall check and verify all dimensions on site, both new and existing, prior to commencement of any phase of the building work or ordering any materials
5. In case of any discrepancy whatsoever, the contractor shall check with the architect prior proceeding
6. Contractor shall carry out works in accordance with Council Building License and conditions stipulated thereon
7. Contractor shall carry out works in accordance with requirements of Western Power with respect the easements on the site.
8. Contractor is advised that the site is a Registered Aboriginal Heritage Site to which the Aboriginal Heritage Act and all its legal requirements apply.
9. Contractor is to strictly adhere to Recommendations made in the Anthropological Report prepared by De Gand Pty Ltd May 2011

Revision	Description	Date

Project :
PROPOSED BALAJI TEMPLE AND CULTURAL CENTRE

Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

Drawing Title:
MULTI PURPOSE HALL, LIBRARY + DINING HALL GF PLAN

Scale : 1:200
Status: #Project Status

Drawing N⁰
06

Date issued: Monday, 22 November 2021
Time 11:43 am
Revision


EMERGENCY AND SERVICE EGRESS
F
50,000L
3 NORTH
3 WEST
3 SOUTH
3 EAST
SHORT STAY/2
SHORT STAY/2
SHORT STAY/1
SHORT STAY/1
ENS
ENS
ENS
ENS
ENS
SUPERVISOR
SUPERVISOR
SUPERVISOR

Superseded

Appendix B
Feature Survey

Young Road
Bitumen

Folly Road
Bitumen

114.16

464.29

621.11

Power Pole (H/T)

PEG GONE

Stay Pole

Stay Wire

Consumer Pole

Consumer Overhead Power Cable

Closest Wire To Boundary (High Tension)

Bitumen

Telstra Pipe

Gate

Semi-Mount

Nil

Street Sign

Galv. Shed On Slab

Galv. Shed On Concrete

Approx F/L 6.11

Gravel Track

Post & Wire Fence (Poor Cond.)

Stay Anchor

Concrete

Galv. Patio

Galv. Shed On Concrete

Approx F/L 6.09

Note: Septic

Pump

PVC Tank

Galv. Post

Paddock

Small Trees

Flagging

Crossover to Opp.

Set Nail At Centreline Of Road Approx A.H.D. level 6.13m (Reduced Level) (Established from S.S.M. SKG using data supplied by the Geodetic Section of Lamington)

DISCLAIMER:
HIGH TENSION POWER LINES. CHECK TITLE FOR EASEMENTS AND WESTERN POWER FOR SET-BACKS.

NOTEBEWARE-ADVISE TRADES
O/Head power lines

Superseded

	Power Ozone
	Power Pole
LEGEND	Phone Pits
	Water Conn.
TW 10.00	Top Pillar/Post
TW 10.00	Top Wall
TR 10.00	Top Retaining
TF 10.00	Top Fence

LOT MISCLOSE
0.104 m

DISCLAIMER:
Lot boundaries drawn on survey are approximate only. Survey plan does not include title search and as such may not show easements or other interests not shown on plan. Title should be checked to verify all lot details and for any easements or other interests which may affect building on the property.

DISCLAIMER:
Survey does not include verification of cadastral boundaries. All features and levels shown are based on orientation to existing pegs and fences only which may not be on correct cadastral alignment. Any designs based or dependent on the location of existing features should have those features' location verified in relation to the true boundary.

DISCLAIMER:
Survey shows visible features only and will not show locations of underground pipes or conduits for internal or mains services. Verification of the location of all internal and mains services should be confirmed prior to finalisation of any design work.

DISCLAIMER:
Cottage & Engineering surveys accept no responsibility for any damages or loss changes to the parcel or portion of the parcel of land shown on this survey including any adjoining neighbours levels and features that have occurred after the date on this survey. All Sewer details plotted from information supplied by Water Corporation.

Scale 1:200
0 2 4 6 8

BEWARE: POSSIBLE SERVICE RUN IN & COST

COTTAGE SURVEYS
87-89 Guthrie Street
Osborne Park WA 6017
PO Box 1611
Osborne Park
Western Australia WA 6917
P: (08) 9446 7351
E: perth@cottage.com.au
w: www.cottage.com.au

JOB # 507054 | GPS | Lat: -32.324566 Long: 115.933314
ADDRESS 457 Folly Road | LOT Lot 53 (DP 61344)
SUBURB Bullsnis | AREA 7.4367m | VOL 2193 | FOL 800 | SSA No
LGA CITY OF ROCKINGHAM | DATE 18 Aug 21
DRAWN B. Sabia

ROADS Bitumen
KERBS Semi-Mount / Nil
FOOTPATH Nil
SOIL Sand
DRAINAGE Good
VEGETATION Refer to Survey

ELEC. O/Head
COMMS. Yes
WATER Check Owner
GAS Check Alinta
SEWER Nil
COASTAL No

Superseded

Appendix C
PRI Laboratory Analysis

Analysis Results

CSBP Soil and Plant Laboratory

97227
Water Insight Pty Ltd

	Lab No	4IS21053	4IS21054	4IS21055	4IS21056	4IS21057	4IS21058	4IS21059	4IS21060
	Name	FR1	FR1	FR1	FR2	FR2	FR2	FR3	FR3
	Code	0-0.15	0.15-1.8	1.8-2.0	0-0.15	0.15-1.8	1.8-2.0	0-0.10	0.10-1.8
	Customer	Water Insight Pty Ltd	Water Insight Pty Ltd	Water Insight Pty Ltd	Water Insight Pty Ltd	Water Insight Pty Ltd	Water Insight Pty Ltd	Water Insight Pty Ltd	Water Insight Pty Ltd
	Depth	0-10	0-10	0-10	0-10	0-10	0-10	0-10	0-10
Phosphorus Retention Index		2.4	0.8	3.6	1.4	0.4	1.1	0.7	-0.2

Superseded

CSBP Lab. Extract Value.

Analysis Results

CSBP Soil and Plant Laboratory

Lab No	4IS21061	4IS21062	4IS21063	4IS21064
Name	FR3	FR4	FR4	FR4
Code	1.8-2.0	0-0.15	0.15-1.8	1.8-2.0
Customer	Water Insight Pty Ltd	Water Insight Pty Ltd	Water Insight Pty Ltd	Water Insight Pty Ltd
Depth	0-10	0-10	0-10	0-10
Phosphorus Retention Index	989.0	-0.1	2.7	0.9

Superseded

CSBP Lab. Extract Value.

Superseded

Appendix D
WIN Bore Hydrographs

Department of Water and Environmental Regulation

Period 47 Year 01/01/1975 to 01/01/2022 1975-2021

61410093 T350 115.00 Water Level (mAHD) GW

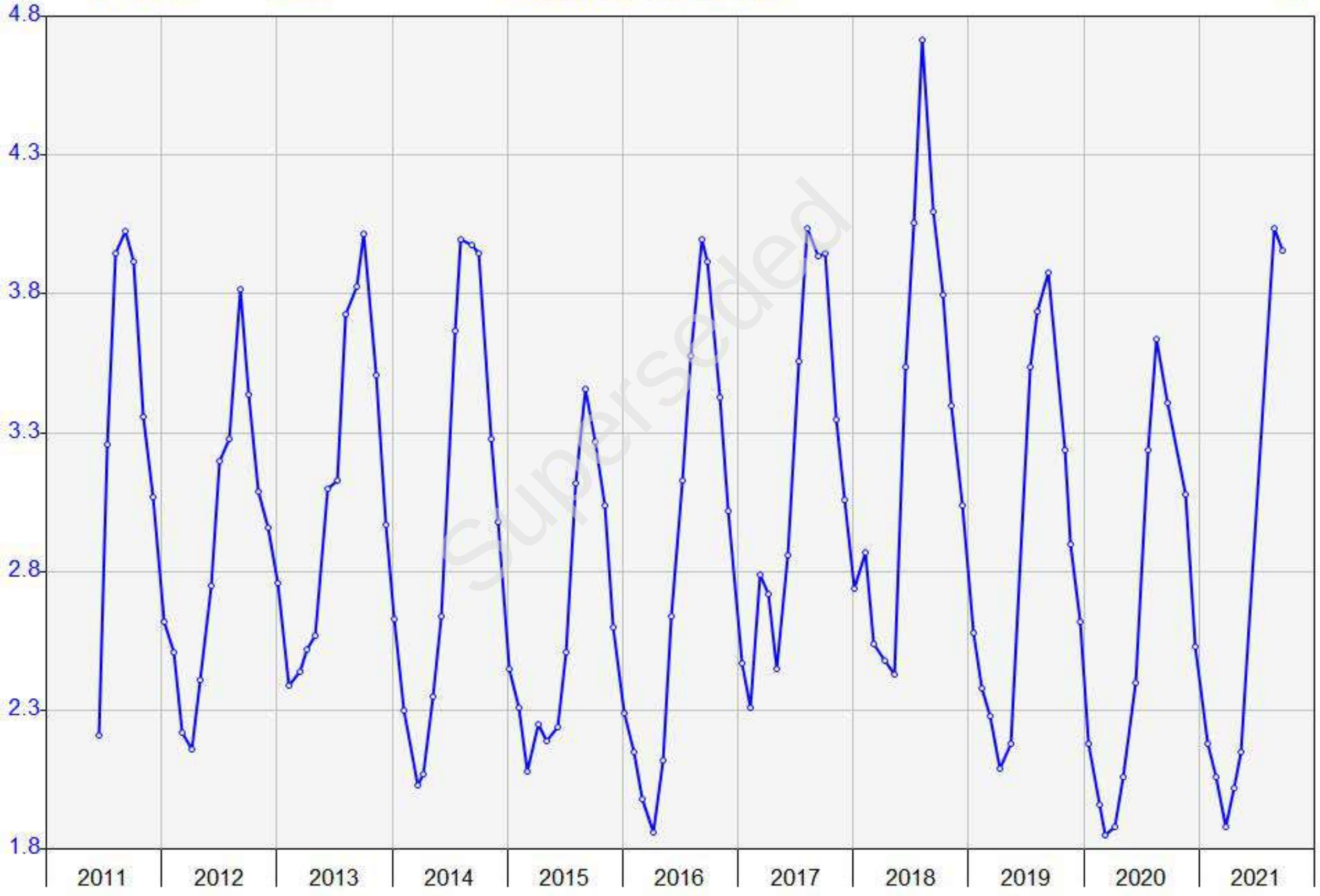


Superseded

Department of Water and Environmental Regulation

Period 11 Year 01/01/2011 to 01/01/2022 2011-21

61410478 SSB4 115.00 Water Level (mAHD) GW



Superseded

Superseded

Appendix E
Soil Logs

Test Pit Log
Test Pit: FR1
Sheet: 1/5

Project		Excavation/Drilling		Coordinates	
Job	2130	Contractor	South West Drilling	Latt	-32.3247
Client	Jeeyars Acharya Peetam	Equipment	Geoprobe Drill Rig	Long	115.8328
Project	67 Folly Rd SSE	Bucket/Auger	Auger	Weather	fine, no rain
Location	Baldivis	Logged By	KL		
Date	7/09/2021	Time	am		

Depth (m)	Ease of Excavation	Material Description Soil Type Particle Characteristics, colour, secondary components	Moisture Condition	Groundwater Level	Comments
0.15	Easy	SAND fine to medium grained, light brown to dark brown, loose, well graded	Moist		
1.8	Easy	SAND fine to mediumg grained, white, loose, well graded	Moist		
2.0	Easy	SAND fine to mediumg grained, dark grey to black, well graded	Moist		
		Test pit termintaed at target depth of 2.0			

Superseded

Test Pit Log
Test Pit: FR2
Sheet: 2/5

Project		Excavation/Drilling		Coordinates	
Job	2130	Contractor	South West Drilling	Latt	-32.3250
Client	Jeeyars Acharya Peetam	Equipment	Geoprobe Drill Rig	Long	115.8330
Project	67 Folly Rd SSE	Bucket/Auger	Auger	Weather	fine, no rain
Location	Baldivis	Logged By	KL		
Date	7/09/2021	Time	am		

Depth (m)	Ease of Excavation	Material Description Soil Type Particle Characteristics, colour, secondary components	Moisture Condition	Groundwater Level	Comments
0.15	Easy	SAND fine to medium grained, light grey, loose, well graded	Moist		
1.8		SAND fine to mediumg grained, white, loose, well graded	Moist		
2.0		SAND fine to mediumg grained, dark grey, well graded	Moist		
		Test pit termintaed at target depth of 2.0m			

Superseded

Test Pit Log
Test Pit: FR3
Sheet: 3/5

Project		Excavation/Drilling		Coordinates	
Job	2130	Contractor	South West Drilling	Latt	-32.3244
Client	Jeeyars Acharya Peetam	Equipment	Geoprobe Drill Rig	Long	115.8344
Project	67 Folly Rd SSE	Bucket/Auger	Auger	Weather	fine, no rain
Location	Baldivis	Logged By	KL		
Date	7/09/2021	Time	am		

Depth (m)	Ease of Excavation	Material Description Soil Type Particle Characteristics, colour, secondary components	Moisture Condition	Groundwater Level	Comments
0.15	Easy	SAND fine to medium grained, dary grey, loose, well graded	Moist		
0.5	Easy	SAND fine to mediumg grained, white to light grey, loose, well graded	Moist	▼	
1.0					
1.5					
1.8					
2.0	Easy	SAND fine to mediumg grained, dark grey, well graded	Moist		
		Test pit termintaed at target depth 2.0m			

Superseded

Test Pit Log
Test Pit: FR4
Sheet: 4/5

Project		Excavation/Drilling		Coordinates	
Job	2130	Contractor	South West Drilling	Latt	-32.3238
Client	Jeeyars Acharya Peetam	Equipment	Geoprobe Drill Rig	Long	115.8342
Project	67 Folly Rd SSE	Bucket/Auger	Auger	Weather	fine, no rain
Location	Baldivis	Logged By	KL		
Date	7/09/2021	Time	am		

Depth (m)	Ease of Excavation	Material Description Soil Type Particle Characteristics, colour, secondary components	Moisture Condition	Groundwater Level	Comments
0.25	Easy	SAND fine to medium grained, dary grey to brown, loose, well graded	Moist		
0.5	Easy	SAND fine to mediumg grained, white to light grey, loose, well graded	Moist		
1.0					
1.5					
1.9					
2.0	Easy	SAND fine to mediumg grained, dark grey, well graded	Moist		
		Test pit termintaed at target depth 2.0m			

Superseded

Test Pit Log
Test Pit: FR5
Sheet: 5/5

Project		Excavation/Drilling		Coordinates	
Job	2130	Contractor	South West Drilling	Latt	-32.32436
Client	Jeeyars Acharya Peetam	Equipment	Geoprobe Drill Rig	Long	115.83304
Project	67 Folly Rd SSE	Bucket/Auger	Auger	Weather	fine, no rain
Location	Baldivis	Logged By	KL		
Date	7/09/2021	Time	am		

Depth (m)	Ease of Excavation	Material Description Soil Type Particle Characteristics, colour, secondary components	Moisture Condition	Groundwater Level	Comments
0.1	Easy	SAND fine to medium grained, light brown to dark brown, loose, well graded	Moist		
0.2	Easy	SAND fine to mediumg grained, white, loose, well graded	Moist	▼	
0.5					
1.0					
1.5					
1.8					
	Easy	SAND fine to mediumg grained, dark grey, well graded	Moist		
2.0					
		Test pit termintaed at target depth of 2.0			

Superseded

Superseded

Appendix F
Determination of Soil Category

TABLE 4.1.1
DETERMINATION OF SOIL CATEGORY

Soil category (see Note 1)	Soil texture	Structure	Indicative permeability (K_{sat}) (m/d) (see Note 2)	Indicative drainage class (see Note 3)
1	Gravels and sands	Structureless (Massive)	>3.0	Rapidly drained
2	Sandy loams	Weakly structured	> 3.0	Well drained
		Massive	1.4-3.0	
3	Loams	High/moderate structured	1.5-3.0	Moderately well drained
		Weakly structured or massive	0.5-1.5	
4	Clay loams	High/moderate structured	0.5-1.5	Imperfectly drained
		Weakly structured	0.12-0.5	
		Massive	0.06-0.12	
5 (Note 4)	Light clays	Strongly structured	0.12-0.5	Poorly drained
		Moderately structured	0.06-0.12	
		Weakly structured or massive	< 0.06	
6 (Note 4)	Medium to heavy clays	Strongly structured	0.06-0.5	Very poorly drained
		Moderately structured	< 0.06	
		Weakly structured or massive	< 0.06	

NOTES:

1 Soil Category determination shall take into account the soil horizons within the depth range into which effluent is absorbed (see Clause 4.1.4 and Paragraph 4.1A8). Figure 4.1A1 may be used to report on the overall soil category determined from the inspection of the individual soil layers.

2 The values of indicative permeability K_{sat} are based on the movement of water, not effluent, through the soil. They are estimates only and shall be used with caution in assisting the determination of the Soil Category. In the field, soil permeability is strongly influenced by the presence of biological channels such as old root holes, termite, ant and worm passages, as well as shrinkage cracks, and not merely by soil texture. A virgin clay-based soil under native bush could easily be ten times as permeable as the same soil under frequent cultivation or compacted by heavy traffic.

3 Indicative drainage classes are based on the assumption that drainage is governed only by the indicative permeability and that external factors play no role.

4 For clay-dominated soils having dispersive (sodic) or shrink/swell behaviour, specialist soil advice and special design techniques will be required to enable their utilization for land-application systems. Generally these soils will have very poor drainage.

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TABLE L1
RECOMMENDED DESIGN LOADING RATES FOR TRENCHES AND BEDS

Soil category	Soil texture	Structure	Indicative permeability (K_{sat})(m/d)	Design loading rate (DLR) (mm/d)			
				Trenches and beds			ETA/ETS beds and trenches
				Primary treated effluent		Secondary treated effluent	
				Conservative rate	Maximum rate		
1	Gravels and sands	Structureless (massive)	> 3.0	20 (see Note 1)	35 (see Note 1)	50 (see Note 1)	(see Note 4)
2	Sandy loams	Weakly structured	> 3.0	20 (see Note 1)	30 (see Note 1)	50 (see Note 1)	
		Massive	1.4 – 3.0	15	25	50	
3	Loams	High/ moderate structured	1.5 – 3.0	15	25	50	
		Weakly structured or massive	0.5 – 1.5	10	15	30	
4	Clay loams	High/ moderate structured	0.5 – 1.5	10	15	30	12
		Weakly structured	0.12 – 0.5	6	10	20	8
		Massive	0.06 – 0.12	4	5	10	5
5	Light clays	Strongly structured	0.12 – 0.5	5	8	12	8
		Moderately structured	0.06 – 0.12	(see Notes 2 & 3)	5	10	5 (see Notes 2, 3, & 5)
		Weakly structured or massive	< 0.06			8	
6	Medium to heavy clays	Strongly structured	0.06 – 0.5				
		Moderately structured	< 0.06				
		Weakly structured or massive	< 0.06				

NOTES:
1 The treatment capacity of the soil and not the hydraulic capacity of the soil or the growth of the clogging layer govern the effluent loading rate in Category 1 and weakly structured Category 2 soils. Land application systems in these soils require design by a suitably qualified and experienced person, and distribution techniques to help achieve even distribution of effluent over the full design surface (see L6.2 and Figure L4 for recommended discharge method by discharge control trench). These soils have low nutrient retention capacities, often allowing accession of nutrients to groundwater.
2 To enable use of such soils for on-site wastewater land application systems, special design requirements and distribution techniques or soil modification procedures will be necessary. For any system designed for these soils, the effluent absorption rate shall be based upon soil permeability testing. Specialist soils advice and special design techniques will be required for clay dominated soils having dispersive (sodic) or shrink/swell behaviour. Such soils shall be treated as Category 6 soils. In most situations, the design will need to rely on more processes than just absorption by the soil.
3 If K_{sat} < 0.06 m/d, a full water balance for the land application can be used to calculate trench/bed size (see Appendix Q).
4 ETA/ETS systems are not normally used on soil Categories 1 to 3.
5 For Category 6 soils ETA/ETS systems are suitable only for use with secondary treated effluent.

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Superseded

67 Folly Road, Baldivis

Water Management Strategy

Prepared for
Jeeyars Archarya Peettam Australia Ltd

December 2021

Superseded

waterinsight

Executive Summary

This Water Management Strategy (WMS) has been prepared to support a Development Application for 67 Folly Road, Baldivis (the site). The WMS assesses the local water resources, provides recommendations about how water will be managed on site and makes commitments to complete further studies which will be completed as part of the future Urban Water Management Plan (or similar). It is envisaged that the WMS will provide technical guidance to inform the UWMP and detailed engineering design.

The site is 7.44 ha and is in the City of Rockingham. The site is proposed to be developed into a Place of Worship and cultural centre. The site is anticipated to provide permanent accommodation for the priests, a place of worship (temple) and facilities to hold religious events and weddings. The development plan includes.

- A Hindu temple
- Multipurpose hall
- Dining hall
- Library with short stay accommodation
- Priest's Residence
- Storage sheds
- Carparking, both permanent and overflow carparking
- Basketball court/ playground
- Landscaped courtyards.

This WMS has been prepared with consideration of the Better Urban Water Management Guidelines (WAPC, 2008) and demonstrates that water is able to be appropriately managed to support the proposed landuse and provides the concept water management strategies for the site. Table 1 provides a summary of the site environmental characteristics and proposed water management strategies.

Table 1: LWMS Summary

Section	Description
Background Section 1.0	The WMS has been prepared to accompany a Development Application for 67 Folly Road, Baldivis.
Proposed Development Section 1.2	The site is proposed to be developed into a Place of Worship and cultural centre. The development is anticipated to provide permanent accommodation for the priests, a place of worship (Hindu temple), and facilities to hold religious events and weddings.
Planning Context Section 1.3	The site is zoned Rural under the Metropolitan Region Scheme and Rural under the City of Rockingham Local Town Planning Scheme No.2

Superseded

Section	Description
Existing Landuse Section 2.1	The site was predominately cleared in the 1970's (Coterra Environment, 2021) and used for rural purposes. The site contains a driveway to the rear of the property where two sheds are located. The main larger shed has a rainwater tank and septic tank. The Kwinana Freeway is west of the site a rural business in located south of the site and rural properties are located north and east
Topography Section 2.3	The site is very flat. A feature survey, provided in Appendix B, indicates the area where the existing sheds are located has the highest elevation of 5.95 mAHD and the lowest elevation of approximately 5.04 mAHD occurs on the southeast corner of the site.
Soil Type Section 2.4	Extremely low to very low relief dunes, undulating sandplain and discrete sand rises with deep bleached grey sands sometimes with a pale-yellow B horizon or a weak iron-organic hardpan at depths generally greater than 2 m
Wetland Mapping Section 2.8	Most of the site is mapped as a Multiple Use Palusplain wetland. Folly Pool, located immediately west of the site is mapped as a Conservation category wetland. The centre of Folly Pool is classified as a Sumpland while the perimeter of the wetland, including the portion of the wetland located nearest the site is classified as a Palusplain wetland.
Surface Water Section 2.9	There are no waterways or drains located in the site however the southern extent of Folly Pool and the Peel Main Drain is located adjacent to the site's western boundary. The Peel Main Drain flows in a southerly direction and discharges to the Serpentine River at Keralup Pool, approximately 10 km south of the site. Several Water Corporation drains are located north and east of the site. The 1% AEP flood level at the site is 5.0 mAHD and the floodplain traverses through the centre and western corner of the site.
Groundwater Section 2.10	Given the absence of onsite groundwater monitoring data and limited local data, an estimate of the onsite maximum groundwater levels has been derived by calculating the maximum groundwater level at the nearest DWER monitoring bores and comparing this data to the minimum groundwater contours shown at the same locations in the Perth Groundwater Map. The MGL at the DWER monitoring bores was an average of 2.11 m (2.31+1.91/2) higher than the minimum groundwater levels contours shown in the Perth Groundwater Map. The minimum groundwater contours in the Perth Groundwater Map indicate the minimum groundwater level at the site is approximately 2 mAHD on the west of the site to 2.5 mAHD on the east.

Superseded

Section	Description
	The peak groundwater levels at the site are approximately 4.11m AHD on the west and centre of the site and 4.61 mAHD on the east of the site. This results in a clearance to peak groundwater levels of approximately 1.49m in the west and centre and 0.59m in the east of the site. The site has a bore (unlicenced) which will be used to irrigate upto 0.2ha of turf and landscaping. A Water Allocation report obtained from DWER indicates there is no additional groundwater allocation available for licencing.
Water Servicing and Wastewater Disposal Section 3.0	The Water Corporation potable water and reticulated wastewater network does not extend to the site. As a result, potable water will come from rainwater (rainwater tanks) and water being carted into the site, as required. The site is in a sewerage sensitive area. A secondary treatment system with nutrient removal capability will be used. As the site is in a Sewage Sensitive Area, treated wastewater is required to be disposed in an area with at least 1.5m separation to maximum groundwater levels. A slightly raised (inverted) effluent disposal areas will be required to provide adequate clearance to groundwater from the natural surface.
Water Conservation Strategy Section 3.5	The site will need to conserve potable water wherever possible. Measures include • The use of water efficient fixtures and fittings within the site • Installation of rainwater tanks on all building to collect rainfall • Rainwater tanks plumbed into toilets • Signage around the property asking guests to conserve water • The use of waterwise landscaping and efficient irrigation design • Recycling treated wastewater from the secondary treatment system for irrigation of landscaping/turf where site conditions permit.
Stormwater Management Section 4.1	A conceptual stormwater management strategy has been developed which demonstrates that the site can effectively manage stormwater generated during minor and major rainfall events. Pre and post development catchment boundaries and directions of flow have been maintained as closely as possible. Rainwater tanks will collect most of the rainfall from roof areas for potable water supply. Swales/rain gardens and landscaped areas will collect and infiltrate stormwater from impervious areas. The site has a sandy soil profile to at least 2m below natural surface. Peak groundwater levels however during Spring are within approximately 1m of the natural surface. Overland flow and infiltration of stormwater within swales is recommended over using large scale underground storage tanks. A Geotechnical Investigation will be completed to further confirm the sites drainage capacity.
Flood Management	The proposed development area is located outside the floodplain of Folly Pool and the Peel Main Drain. The development is not at risk of flooding.

Superseded

Section	Description
Section 4.2	
Groundwater Management Section 4.3	No active groundwater controls, including sub soil drainage will be provided however a Geotechnical Investigation will be prepared as a condition of the Development Application approval which will advise on the required site preparation and building pad design requirements. Depending on the proponent's preference, a small amount of fill may be applied to the lowest areas of the site, located in the southeast to increase the clearance to groundwater during Spring and limit the risk of waterlogged pockets potentially limiting the use of the site in Winter and Spring. As the site will be used for large religious events and weddings, the site should be kept useable year-round. The detailed engineering and earthworks will be completed following approval of the Development Application and detailed in the UWMP (or equivalent).
Implementation of the Water Management Strategy Section 5.0	The preparation of an Urban Water Management Plan (UWMP) (or similar) is likely to be required to present the detailed design information including: • The final Development Concept Plan • Landscape plans • Geotechnical Investigation • Detailed stormwater drainage design including the location and sizing of drainage infrastructure and required storage for the first flush and minor (10% AEP) and major (1% AEP) rainfall events • Engineering plans including earthworks, roads, and drainage infrastructure • Potable water supply confirmed, and detailed design of all rainwater tanks and greywater recycling systems completed • Evidence that required approvals to use rainwater and greywater have been obtained.

Superseded

Table of Contents

1 Introduction 1
1.1 Background 1
1.2 Proposed Development 1
1.3 Planning Context 1
1.4 Guidance Documents 1
1.5 Related Studies 2
2 Existing Environment 3
2.1 Site Location and Landuse 3
2.2 Climate 4
2.3 Topography 4
2.4 Soil Types 5
2.5 Acid Sulphate Soils 7
2.6 Contaminated Sites 7
2.7 Public Drinking Water Source Areas 7
2.8 Wetland Mapping 7
2.9 Surface Water and Flooding 8
2.10 Groundwater 8
2.11 Flora and Fauna 12
3 Water Servicing and Wastewater Disposal 13
3.1 Potable Water 13
3.2 Fire Water 13
3.3 Irrigation Water 13
3.4 Wastewater Disposal 13
3.5 Water Conservation Measures 13
4 Water Management Strategy 15
4.1 Stormwater Management 15
4.2 Flood Management 19
4.3 Groundwater Management 19
5 Implementation of the Water Management Strategy 20
6 References 21

List of Figures

Figure 1: Site Location
Figure 2: Topography
Figure 3: Soil Type and Sampling Locations
Figure 4: Wetland Mapping
Figure 5: Hydrological Features
Figure 6: Flood Mapping
Figure 7: Pre development Surface Water Catchments and Directions of Flow
Figure 8: Post development Stormwater Catchments and Directions of Flow
Figure 9: Drainage Plan

Superseded

List of Tables

Table 1: LWMS Summary i
Table 2: PRI Classification of Western Australian Soils 6
Table 3: PRI Results of Onsite Soils 7
Table 4: Groundwater Resource Availability 9
Table 5: DWER Groundwater Monitoring Data 12
Table 6: Groundwater Aquifer Properties 16
Table 7: Catchment Parameters 16
Table 8: Stormwater Storage Requirements 17

List of Plates

Plate 1: Typical site view (from southern boundary, looking north) 3
Plate 2: Typical site view (centre of development area, looking northeast) 4
Plate 3: Test Pit FR2 6
Plate 4: Perth Groundwater Map – Minimum Groundwater Level Contours 8
Plate 5: Perth Groundwater Map – Minimum Groundwater Level Contours 10
Plate 6: DWER Groundwater Monitoring Locations, AAMGL and MGL 11
Plate 7: Catchment Landuse Breakdown 16

List of Appendices

Appendix A Development Plans
Appendix B Feature Survey
Appendix C PRI Laboratory Analysis
Appendix D WIN Bore Hydrograph

Superseded

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1 Introduction

1.1 Background

This Water Management Strategy (WMS) has been prepared on behalf of Jeeyars Acharya Peettam Australia Ltd (the proponent) to support a Development Application for 67 Folly Road, Baldivis (the site, Figure 1).

The site is 7.44 ha and is in the City of Rockingham (CoR).

1.2 Proposed Development

The site is anticipated to provide a place of worship (Hindu temple), permanent accommodation for the priests and facilities to hold religious events and weddings. The proposed Development Plans are provided in Appendix A and include.

- A Hindu Temple
- Multipurpose hall
- Dining hall
- Library
- Short stay accommodation
- Priest's Residences
- Carparking
- Landscaped gardens

Although the site is 7.44 ha, the proposed development will occupy approximately 3.2 ha of the site. Development will occur on the eastern half of the site to avoid environmental constraints including main drains, a Conservation category wetland and the 1% AEP floodplain.

1.3 Planning Context

The site is zoned Rural under the Metropolitan Region Scheme and Rural under the CoR Local Town Planning Scheme No.2 (DPLH,2004).

1.4 Guidance Documents

This report has been prepared in accordance with State Planning Policy 2.9: Water Resources (Government of Western Australia 2006) and will guide future development of the site. This report has been developed with reference to the following guidance documents:

- Better Urban Water Management (WAPC 2008)
- Floodplain Management Water facts 14 (Water and Rivers Commission 2000)
- Government Sewarage Policy (DPLH, 2019)
- Stormwater Management Manual for Western Australia (DoW 2004 – 2007).

Superseded

This report details the water resources located at the site and the integrated water management strategies that will be implemented to appropriately manage and conserve water resources. Integrated water management will be achieved at the site through the following design objectives:

- Manage the risk to human life and damage to infrastructure from surface water flooding
- Manage the impacts of the relatively high groundwater table
- Mimic the pre-development hydrological regime by maintaining the pre development catchment boundaries and peak flow rates leaving the site to pre-development conditions
- Maintain water quality (surface and groundwater) within the development in relation to predevelopment conditions
- Provide fit-for-purpose water supply and wastewater disposal options

1.5 Related Studies

An Environmental Assessment Report (Coterra Environment, 2021) has been completed in support of the development application for this site.

A Site and Soil Evaluation (WaterInisght,2021) has been completed to detail the proposed onsite wastewater management system and disposal requirements. The results of the SSE are detailed in Section 3.0.

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2 Existing Environment

2.1 Site Location and Landuse

The site was predominately cleared in the 1970's (Coterra Environment, 2021) and used for rural purposes. The site contains a driveway and two sheds located in the rear of the property. The main large shed has a septic tank and rainwater tank. The Kwinana Freeway is west of the site, a rural business in located south and rural properties are located north and east (Figure 1). Plate 1 and Plate 2 provide a typical view of the site.



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Plate 1: Typical site view (from southern boundary, looking north)



Plate 2: Typical site view (centre of development area, looking northeast)

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2.2 Climate

The climate in Baldivis is warm and temperate. Climate and weather statistic from the Jandakot Airport (Site No. 009172), indicates the mean maximum and minimum temperature of 31.5^{oC} and 7.1^{oC} are experienced in February and July respectively. The area receives a mean annual rainfall of 816 mm/yr.

2.3 Topography

The site is very flat. For this reason, the 1m topographic contours indicate the topography at the site is approximately 4 mAHD in the west to 5 mAHD in the east (Figure 3). A feature survey, provided in Appendix B, indicates the area where the existing sheds are located has the highest elevation of 5.95 mAHD and the lowest elevation of approximately 5.04 mAHD occurs on the southeast corner of the site.

2.4 Soil Types

2.4.1 Regional Soil Mapping

The soil types and land units are mapped on Figure 4.

The western half of the site is mapped as.

- Pj_P4: Poorly drained flats, sometimes with gilgai microrelief and with moderately deep to deep black, olive grey and some yellowish brown cracking clays and less commonly non-cracking friable clays with generally acidic subsoils

A gilgai is a small, ephemeral lake formed from a depression in the soil surface in expanding clay soils. Additionally, the term "gilgai" is used to refer to the overall micro-relief in such areas, consisting of mounds and depressions, not just the lakes themselves. The name comes from an Aboriginal word meaning small water hole. These pools are commonly a few metres across and less than 30 cm deep. Gilgais are found worldwide wherever cracking clay soils and pronounced wet and dry seasons are present.

The eastern half of the site, where development is proposed to occur mainly consists of.

- Pj_B1: Extremely low to very low relief dunes, undulating sandplain and discrete sand rises with deep bleached grey sands sometimes with a pale-yellow B horizon or a weak iron-organic hardpan at depths generally greater than 2 m; banksia dominant.

Further details about the soil type and onsite investigations are provided in Section 3.0 Site Investigation.

2.4.2 Onsite Investigation

WaterInsight completed a site visit on the 7thSeptember 2021 to prepare the Site and Soil Evaluation. The soils were examined and described from 5 test sites (FR1 to FR5) as shown on Figure 3. The soil profile for all test sites was similar comprising of pale deep sands as shown in Plate 3 below.

Southwest Drilling used a GeoProbe drill rig to take a soil core to a depth of 2m. The drilling was completed easily, with no resistance and all test sites were drilled to a depth of 2m. The proposed development area did not contain fill material, gravel, or rocky outcrops.

A Geotechnical Investigation will be completed as a condition of development approval to determine the site classification and required site preparation.

Onsite infiltration testing was completed at 3 locations (FR2, FR3 and FR5) to assist with preparing the Site and Soil Evaluation. The filed saturated hydraulic conductivity ranged from 3.37m/day at FR5 to 5.86m/day at FR2.

Superseded



Plate 3: Test Pit FR2

2.4.3 Phosphorus Retention Index

The Phosphorus Retention Index (PRI) describes a soils ability to adsorb or 'lock up' applied phosphorus. Soils with a high PRI will quickly bind phosphorus, conversely soils with a low PRI will lock up only small amounts of phosphorus, leaving most of the phosphorus available for plant uptake or accumulation in the soil profile. Table 2 below provides an explanation of the PRI classification of the soils ability to adsorb applied phosphorus.

Table 2: PRI Classification of Western Australian Soils

PRI	Classification	Example Soil Type
<2	Very weakly adsorbing or desorbing	Grey sands, Bassendean sands, Badgingarra sands
2-5	Weakly desorbing	Grey-brown duplex, deep duplex sands, Lancelin sands
5-20	Moderately adsorbing	Grey loamy sands, yellow brown sands, Coolup loamy sands, Spearwood sands
20-70	Strongly adsorbing	Lateritic gravels and sandy loams, Kununurra clays, Darling Range gravels
>70	Very strongly adsorbing	Lateritic loams, iron rich peats, Karri loams

Superseded

Soil samples from four test pits were taken to test for PRI. A drill rig was used to take a soil core to a depth of 2m to classify the soil type and soil samples were taken from each soil horizon. The test pit locations are shown on Figure 4 and the laboratory results of the soil PRI are provided in Appendix C and Table 3 below.

Table 3 indicates the soils at the site are generally very weakly to weakly desorbing. An unusual result of 989 was recorded at FR3 at a depth of 1.8m to 2.0m. These results are indicative of the Bassendean Sands on site.

Table 3: PRI Results of Onsite Soils

Site	Depth (m)		
	0-0.15	0.15 – 1.8	1.8 – 2.0
FR1	2.4	0.8	3.6
FR2	1.4	0.4	1.1
FR3	0.7	-0.2	989
FR4	-0.1	2.7	0.9

2.5 Acid Sulphate Soils

The site is mapped as having a low to moderate risk of acid sulphate soils (ASS) occurring within 3m of the natural soil surface but high to moderate risk of ASS beyond 3m of the natural soil surface.

2.6 Contaminated Sites

A search of the DWER Contaminated Sites Database (DWER) indicates the site does not contain any contaminated sites.

2.7 Public Drinking Water Source Areas

The Public Drinking Water Source Area (PDWSA) online mapping tool (DWER, 2021) indicates the site is not in a PDWSA.

2.8 Wetland Mapping

The geomorphic wetland mapping is shown on Figure 5. Most of the site is mapped as a Multiple Use Palusplain wetland (Unique feature ID 16,021).

Folly Pool, located immediately west of the site is mapped as a Conservation category wetland (Unique Feature ID 16,015). The centre of Folly Pool is classified as a Sumpland while the perimeter of the wetland, including the portion of the wetland located nearest the site is classified as a Palusplain wetland.

Although not mapped as a wetland, there are two lying gilgai's located in the west of the site which contain water during winter.

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The proposed development of the site is proposed to occur in the eastern half of the site, outside any necessary buffer to Folly Pool.

2.9 Surface Water and Flooding

There are no waterways or drains located in the site however the southern extent of Folly Pool and the Peel Main Drain is located adjacent to the site's western boundary. The Peel Main Drain flows in a southerly direction and discharges to the Serpentine River at Keralup Pool, approximately 10 km south of the site.

The Peel Main Drain typically flows between July and October each year and stops flowing during Summer and Autumn. Nutrient concentrations, both total nitrogen and total phosphorus are high due to the catchment of the PMD containing leached soils, and intensive agricultural landuses (DWER, 2018).

There are several Water Corporations drains located north and east of the site, as shown on Figure 6. The Serpentine River, Peel Main Drain and Water Corporation drains flood during major rainfall events.

The 10% Annual Exceedance Probability (AEP) and 1% AEP flood mapping at the site is provided on Figure 7. The 1% AEP flood level at the site is 5.0 mAHD and the floodplain traverses through the centre and western corner of the site.

Development of the site is proposed to occur in the eastern half of the site, outside the floodplain and is therefore not at risk of flooding.

2.10 Groundwater

2.10.1 Groundwater Licences

The online Water Register (DWER, 2021) indicates the site does not have a groundwater licence as shown in Plate 4 below. The site does however have a bore (unlicenced).



Plate 4: Perth Groundwater Map – Minimum Groundwater Level Contours

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2.10.2 Groundwater Aquifers and Allocation

The online DWER Water Register (DWER, 2021) indicates the site is located within the Stakehill groundwater area and the Maramanup and Stakehill Confined groundwater subareas. The Superficial Swan, Leederville and Yarragadee North aquifers underly the site.

An Aquifer Allocation Report (Appendix D) was obtained from DWER on the 27th September 2021. It indicates that there is currently 214,180 kL of groundwater allocation available for licencing in the Superficial Swan aquifer. There are however applications currently being assessed requesting 266,273 kL of groundwater which would use all the groundwater allocation currently available.

Table 4: Groundwater Resource Availability

Management Area	Management Sub Area	Resource	Allocation Limit (kL)	Allocated Volume (kL)	Remaining Volume (kL)	% Allocated and Committed	Additional Requested
Stakehill	Maramanup	Superficial Swan	1,421,950	1,207,770	214,180	84.9%	266,273
Stakehill	Stakehill Confined	Cattamarra Coal Measures	0	0	0	0	
Stakehill	Stakehill Confined	Leederville	389,620	503,878	-159,258	140.88%	10,000
Stakehill	Stakehill Confined	Yarragadee North	0	0	0	0	

2.10.3 Regional Groundwater Monitoring

The Perth Groundwater Map (DWER, 2020) maximum groundwater level contours do not extend to the site. The minimum groundwater level contours extend to the site, as shown in Plate 5 which indicate the minimum groundwater level at the site is approximately 2 mAHD on the west of the site to 2.5 mAHD on the east.

Superseded

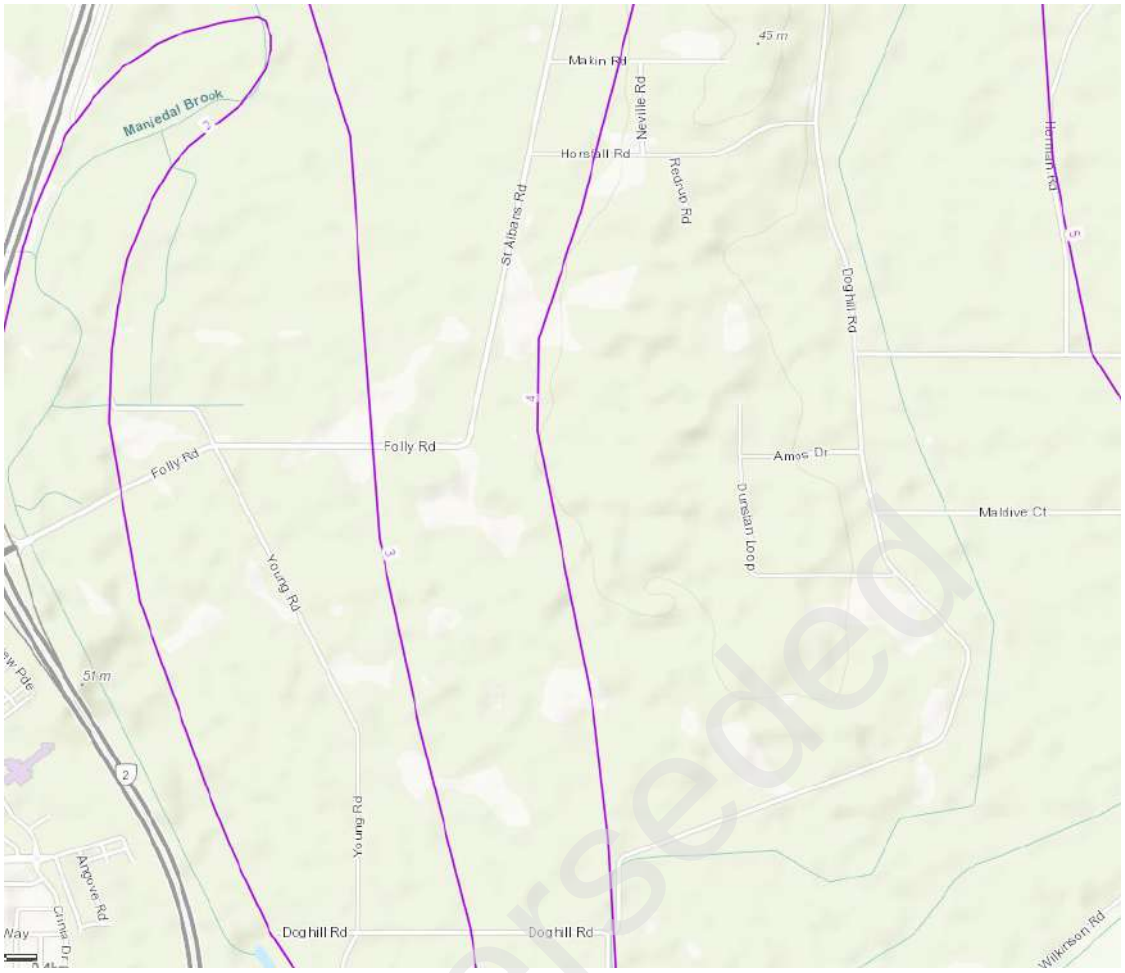

Plate 5: Perth Groundwater Map – Minimum Groundwater Level Contours

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2.10.4 Local Groundwater Monitoring

During the onsite investigations (detailed further in Section 3), groundwater was encountered at 0.6 m below ground level (bgl) at FR3 and 0.8 m bgl at soil sampling locations FR5 (Figure 4). Peak groundwater levels generally occur in September to October each year, these levels are therefore not representative of peak groundwater levels.

The Water Register (DWER, 2021) indicates the nearest DWER groundwater monitoring bores are located 1.66 km south (WIN 61410478) and 2.45 km east of the site (WIN 61410093), both on Doghill Road.

WIN 61410478 has 46 years of groundwater level data from 1975 to 2021 and WIN 61410093 has groundwater levels recorded from 2011 to 2021. The water level hydrographs are provided in Appendix E.

Plate 6 and Table 5 below provides the Average Annual Maximum Groundwater Level and Maximum Groundwater Level for WIN 61410478 and WIN 61410093, and an estimated MGL for the site.

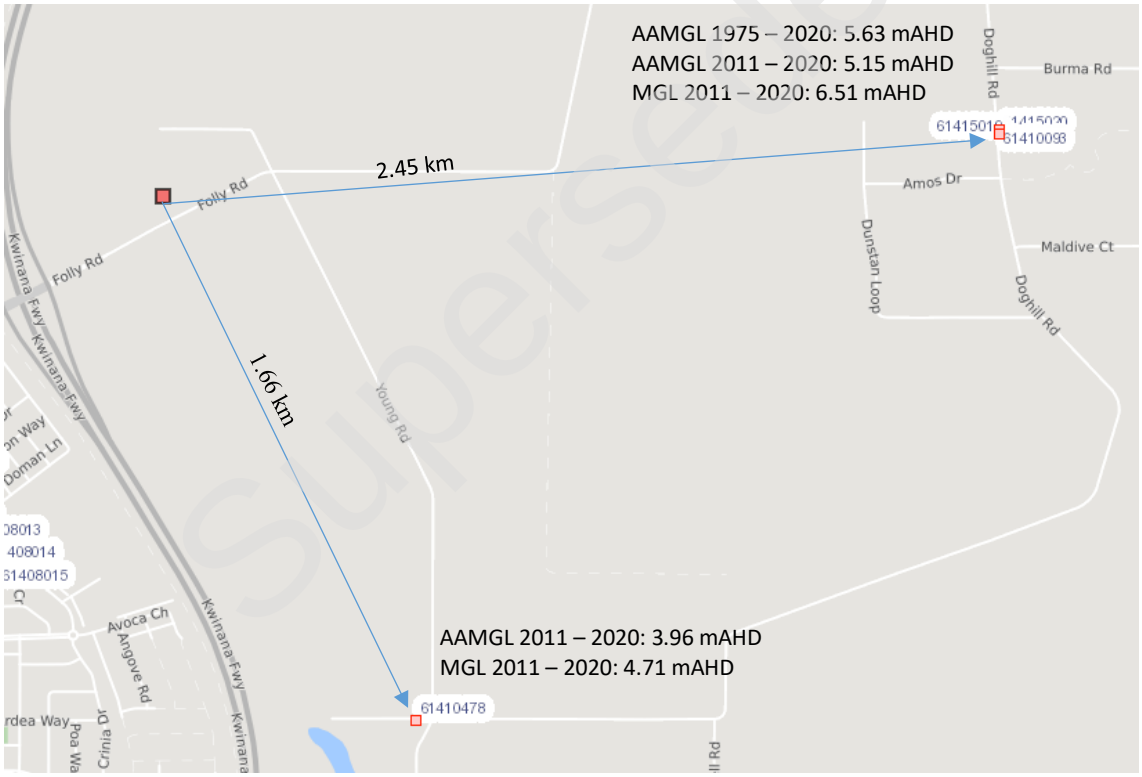

Plate 6: DWER Groundwater Monitoring Locations, AAMGL and MGL

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Table 5: DWER Groundwater Monitoring Data

WIN Site	Long term AAMGL (mAHD) 1975 - 2020	10yr AAMGL (mAHD) 2011 - 2020	MGL* (mAHD)	Perth Groundwater Map (PGM) Minimum Groundwater Levels (mAHD)	Difference MGL – PGM (m)
61410478	n/a	3.96	4.71 Recorded in 2018	2.4	2.31
61410093	5.63	5.63	6.51 Recorded in 1984	4.6	1.91

*MGL 61410478 1975 – 2020 and 61410093 2011 – 2020.

2.10.5 Estimated Site Maximum Groundwater Level

Given the absence of onsite groundwater monitoring data and limited local data, an estimate of the onsite maximum groundwater levels has been derived by calculating the maximum groundwater level at the nearest DWER monitoring bores and comparing this data to the minimum groundwater contours shown at the same locations in the Perth Groundwater Map. The MGL at the DWER monitoring bores was an average of 2.11 m (2.31+1.91/2) higher than the minimum groundwater levels contours shown in the Perth Groundwater Map.

As discussed in Section 2.8.1, the minimum groundwater contours in the Perth Groundwater Map indicate the minimum groundwater level at the site is approximately 2 mAHD on the west of the site to 2.5 mAHD on the east.

The peak groundwater levels at the site are approximately 4.11m AHD on the west and centre of the site and 4.61 mAHD on the east of the site. This results in a clearance to peak groundwater levels of approximately 1.49m in the west and centre and 0.59m in the east of the site.

2.11 Flora and Fauna

An Environmental Assessment Report (Coterra Environment, 2021) has been completed, which included a search of the EPBC Protected Matters Search Tool, no conservation significant flora or fauna is expected to occur on the site because of the historical clearing and agricultural landuse.

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3 Water Servicing and Wastewater Disposal

3.1 Potable Water

The total water requirements for the development are estimated to be 2,646,640 L/year. Potable water will be sourced from installing rainwater tanks on all buildings and potable water will also be tanked into the site as required.

3.2 Fire Water

Envision Bushfire Protection have advised that the site will require a 50,000 L water tank to provide water for fire suppression.

The existing bore (unlicenced) located on site will be used to fill this tank. Groundwater used for firefighting is exempt from requiring a licence from DWER.

3.3 Irrigation Water

The site contains an unlicenced bore which has been used for watering stock. This bore can be used to irrigate small areas of turf and landscaping. Irrigating an area of turf and landscaping which is less than 0.2ha is exempt from requiring a licence.

In addition, the site will install a secondary treatment system for the management of wastewater. This system will consider the use of using a combination of leach drains and irrigation including shallow subsurface drip irrigation and covered surface drip irrigation. As the groundwater aquifers at the site are over allocated it seems a waste to simply infiltrate the treated effluent via leach drains.

3.4 Wastewater Disposal

A reticulated sewerage service is not available at the site and an onsite wastewater management system is required.

A Site and Soil Evaluation (WaterInsight, 2021) has been completed to confirm the sites suitability for onsite wastewater management and to provide recommendations about the type and sizing of the required onsite wastewater management system.

The site is mapped as being in a Sewage Sensitive Area for the following reasons

- Estuary catchment on the Swan and Scott Coastal Plain
- Within 1 km of significant wetland.

For this reason, a secondary treatment system with nutrient removal capabilities will be used. The leach drains are proposed to be located on one of the highest areas of the site to provide adequate separation to groundwater and will achieve a 100m buffer to the Water Corporation drains and floodplain boundary.

3.5 Water Conservation Measures

The development of the site will incorporate the following water conservation strategies:

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- The use of waterwise landscaping and efficient irrigation design: The proposed Development Plan includes small areas of soft landscaping and open space which will limit the amount of water required outside of the building envelopes. The site also contains mature vegetation which can be retained to reduce the need to establish newly planted vegetation which requires higher rates of irrigation to become established
- Groundwater and treated wastewater will be used as the water source for irrigation. Potable water will not be used for irrigation to reduce potable water consumption.
- The use of water efficient fixtures and fittings within the site: water efficient shower heads and tap fittings are already mandated as part of the Building Code of Australia
- Rainwater tanks will be installed on all buildings and possibly plumbed to toilets.
- A 'water supply assessment' will be completed as part of the future UWMP, to assess the volume of rainfall which is likely to be collected from all building roof areas in order to quantify the size and number of rainwater tanks required.

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4 Water Management Strategy

4.1 Stormwater Management

Development of the site will result in additional impervious areas and runoff into downstream environments. Therefore, stormwater management will address this with specific measures for various stormwater events, to maintain pre-development flow paths and peak flow rates leaving the site to pre-development conditions.

A conceptual stormwater management strategy has been developed which demonstrates that the site can effectively manage stormwater generated during minor and major rainfall events.

As opposed to typical urban developments, this development will not include large areas of single private lots or public open space. A stormwater management strategy which manages stormwater to prevent the site from flooding and does not increase the risk of flooding to third parties is required.

Due to the sandy soil profile but relatively shallow groundwater table, the objective of the drainage design is to install a 'disconnected' drainage network which minimises the use of pipes and underground infiltration (underground storage tanks), and relies on at source surface infiltration and storage, to replicate the current hydrological regime and minimise constructions costs and maintenance.

4.1.1 Drainage Catchments

Based on the existing topography, the site has been divided into four sub catchments as shown on Figure 6. The post development catchments have been estimated on Figure 7. The site is flat and the earthworks and building plans are not available yet, the post development catchments will need to be refined further and presented in the UWMP, when these details are available.

A drainage plan is provided on Figure 9 to provide indicate locations as to where drainage swales and shallow soakwells can be located onsite. As an earthworks plan is not available, the post development catchment boundaries and indicative drainage areas have been located to match the predevelopment conditions, as closely as possible.

PCSump has been used to model the sites drainage requirements. A saturated hydraulic conductivity of 3m/day and a groundwater level of 4.11 mAHD has been used. Tables 6 to 8 provide further detail of the site's drainage requirements.

The details provided in Table 8, do not account for the use of rainwater tanks. An assessment of the number and size of rainwater tanks will be completed at the detailed design stage. Table 8 demonstrates the site is capable of managing stormwater without rainwater tanks (worst case scenario).

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Table 6: Groundwater Aquifer Properties

Aquifer Parameter	Result
K sat	3
Porosity	0.15
Base of Aquifer (mAHD)	-12
Design Groundwater Level (mAHD)	4.11



Plate 7: Catchment Landuse Breakdown

Table 7: Catchment Parameters

Landuse	Initial Loss	Percentage Loss	Areas (ha)			
			Catchment 1	Catchment 2	Catchment 3	Catchment 4
Structures/Buildings	0	0.1	0.106	0.087	0.0	0.139
Roads/paths/hardstand	0	0.1	0.106	0.032	0	0.183
Carpark	0	0.1	0.104	0.022	0	0.161
Open Space	0	0.9	0.886	0.653	0.091	0.663

Superseded

Table 8: Stormwater Storage Requirements

Storage Requirements	Areas (ha)				
	Catchment 1	Catchment 2	Catchment 3	Catchment 4	Catchment 4 carpark
Swale invert level (mAHD)	4.50	4.50	4.90	4.50	4.50
Base width (m)	2.5 (swale)	5 (swale)	vdrain	7	10
Base Length (m)	150	35	40	55	13
Batter (1:h)	4	4	2	4	4
Storage depth (m)	0.50	0.50	0.10	0.50	0.50
15mm Event					
Critical storm (hr)					
Rainfall (mm)	15	15	15	15	15
Volume (m^3)	44	22	0	40	19
Area (m^2)	499	212	0	433	155
Depth (m)	0.1	0.11	0	0.10	0.13
20% AEP					
Critical storm (hr)	9 min	6 min	30 min	12 min	6
Rainfall (mm)	56.1	48.8	20.1	61.7	48.8
Volume (m^3)	104	50	0	101	37
Area (m^2)	630	254	0	502	178
Depth (m)	0.29	0.24	0	0.23	0.24

Note: Catchment 3 does not require any storage as the area remains undeveloped and there are no other site flows passing through the catchment, a swale however could be placed within Catchment 3 if required at detailed design stage.

Superseded

1% AEP					
Critical storm (hr)	24	12	30min	24	9
Rainfall (mm)	142	117	24.5	142	106
Volume (m^3)	276	126	0	244	89
Area (m^2)	910	346	0	637	236
Depth (m)	0.43	0.49	0	0.48	0.49

4.1.2 First 15mm

The first 15mm of runoff from buildings will be retained in rainwater tanks for potable water supply. The first 15mm from all other impervious surfaces including roads, carparking and paved areas will be retained and infiltrated on site using landscaped treatments including landscaped features, swales and tree pits.

Due to the low-density nature of the development, roads will not include kerbs to allow for direct runoff and infiltration.

The site contains sandy soils to a depth of at least 2.0m which are suitable for onsite infiltration. The high groundwater table however will limit infiltration in Spring when groundwater levels are at their peak. Overland flowpaths, directing water away from the building envelope during larger rainfall events should be incorporated at the detailed design stage.

4.1.3 Minor Events

Runoff from up to the 20% AEP event will be detained within rain gardens and swales If incorporated, any piped network will be designed to covey the 20% AEP rainfall event.

4.1.4 Major Events

For rainfall events greater than the 20% AEP up to the 1 % AEP, stormwater will be conveyed as overland flow to swales located around the perimeter of the property. A series of open swales will be used to convey water through the site using predominately existing flow paths.

Further stormwater modelling will be completed and detailed in the UWMP (or equivalent). Final dimensions of all drainage infrastructure will be detailed prior to construction.

4.1.5 Water Quality Treatment

Clean roof runoff will be collected in rainwater tanks to provide potable water supply. Stormwater from impervious surfaces including road reserves and around the building envelopes will infiltrate the first flush as close to source as possible using landscaped features, swales and tee pits which will be dispersed throughout the site.

Plant species in the landscape features will comprise of native and or waterwise species to reduce irrigation demand as well as fertiliser and pesticide use. The site is not expected to

Superseded

generate any nutrient source or other sources of contamination likely to impact the water quality of groundwater or surface water.

4.2 Flood Management

The proposed development area is located outside the floodplain of Folly Pool and the Peel Main Drain. The development is not at risk of flooding.

4.3 Groundwater Management

No active groundwater controls, including sub soil drainage will be provided however a Geotechnical Investigation will be prepared as a condition of the Development Application approval which will advise on the required site preparation and building pad design requirements. Generally, a minimum clearance of 0.5m from natural surface to maximum groundwater levels is required to prevent damage to infrastructure due to waterlogging and rising damp. The finish level of the building envelopes will be detailed in the UWMP (or equivalent).

As the site is in a Sewage Sensitive Area, treated wastewater is required to be disposed in an area with at least 1.5m separation to maximum groundwater levels. A slightly raised (less than 0.5m) effluent disposal areas will be required to provide adequate clearance to groundwater from the natural surface. The Geotechnical Investigation will assess groundwater levels at the site when the work is being completed and this information will be used to confirm the required leach drain and building elevations.

Depending on the proponent's preference, a small amount of fill may be applied to the lowest areas of the site, generally located in the southeast corner to increase the clearance to groundwater during Spring and limit the risk of waterlogged soils potentially limiting the use of the site in Winter and Spring. As the site will be used for large religious events and weddings, the site should be always kept useable.

The two key strategies include retention of existing vegetation where possible and the infiltration of the first flush of rainfall at source to replicate current (pre-development) conditions and the recharge of groundwater.

Other key strategies for managing groundwater quality at the site include:

- Use of reticulated sewerage
- Maximising native vegetation within POS
- Fertiliser and pesticide use on site to be minimised using waterwise and or native landscaping, minimal community open space and private gardens due to the style of development.

Superseded

5 Implementation of the Water Management Strategy

The preparation of an Urban Water Management Plan (UWMP) or Stormwater Management Plan (SMP) as a condition of the Development Application approval is to be expected and will provide the following information.

- The final Development Concept Plan
- Landscape plans
- Geotechnical Investigation
- Detailed stormwater drainage design including the location and sizing of all drainage infrastructure and required storage for the first flush and minor (20% AEP) and major (1% AEP) rainfall events
- Engineering plans including earthworks, roads and drainage infrastructure
- Potable water supply confirmed and detailed design of all rainwater tanks on all buildings completed
- Evidence that required approvals to recycle water or greywater have been obtained.

Superseded

6 References

CoTerra Environment (2021) Environmental Assessment Report – 67 Folly Road, Baldivis

Department of Health (2015). *Code of Practice for the Design, Manufacture, Installation and Operation of Aerobic Treatments Units (ATU's) Serving Single Dwellings*

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Department of Water (2004-2007) Stormwater Management Manual for Western Australia

Department of Water and Environmental Regulation. (2019a). Acid Sulfate Soil Risk Map, Swan Coastal Plain - GIS Dataset.

Department of Water and Environmental Regulation (2018). Peel Main Drain. Peel-Harvey estuary catchment nutrient report 2018.

Department of Water and Environmental Regulation. (2019). *Water Information Reporting.*

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Department of Water and Environmental Regulation. (2021). *Water Register.*

Government of Western Australia, 2006, State Planning Policy 2.9: Water Resources, Government Gazette, 19 December 2006.

Landgate (2021). Shared Land Information Platform – Locate V5. Government of Western Australia, Perth, Western Australia.

State Government of Western Australia (2019). Government Sewerage Policy.

Western Australian Planning Commission and Department of Planning and Infrastructure. (2008). Better Urban Water Management.

Superseded

Superseded

Figures



Superseded

Legend

- Lot Boundary
- Cadastral Lines

N

0 60 120 180 240 300 m

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WATER MANAGEMENT STRATEGY

Balaji Temple and Cultural Centre
67 Folly Road, Baldivis

Site Boundaries: *Landgate*
Imagery: *Landgate/ESRI*

GDA 1994 MGA Zone 50

NOTE: All areas and dimensions are subject to survey, engineering and detailed design and may change without notice.

Figure 1

Site Location

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1:5,000 @ A4

Date: 23/09/2021



Superseded

Legend

- Lot Boundary
- Cadastral Lines
- Contours 1m interval (mAHD)

N

0 60 120 180 240 300 m

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1:5,000 @ A4 Date: 23/09/2021

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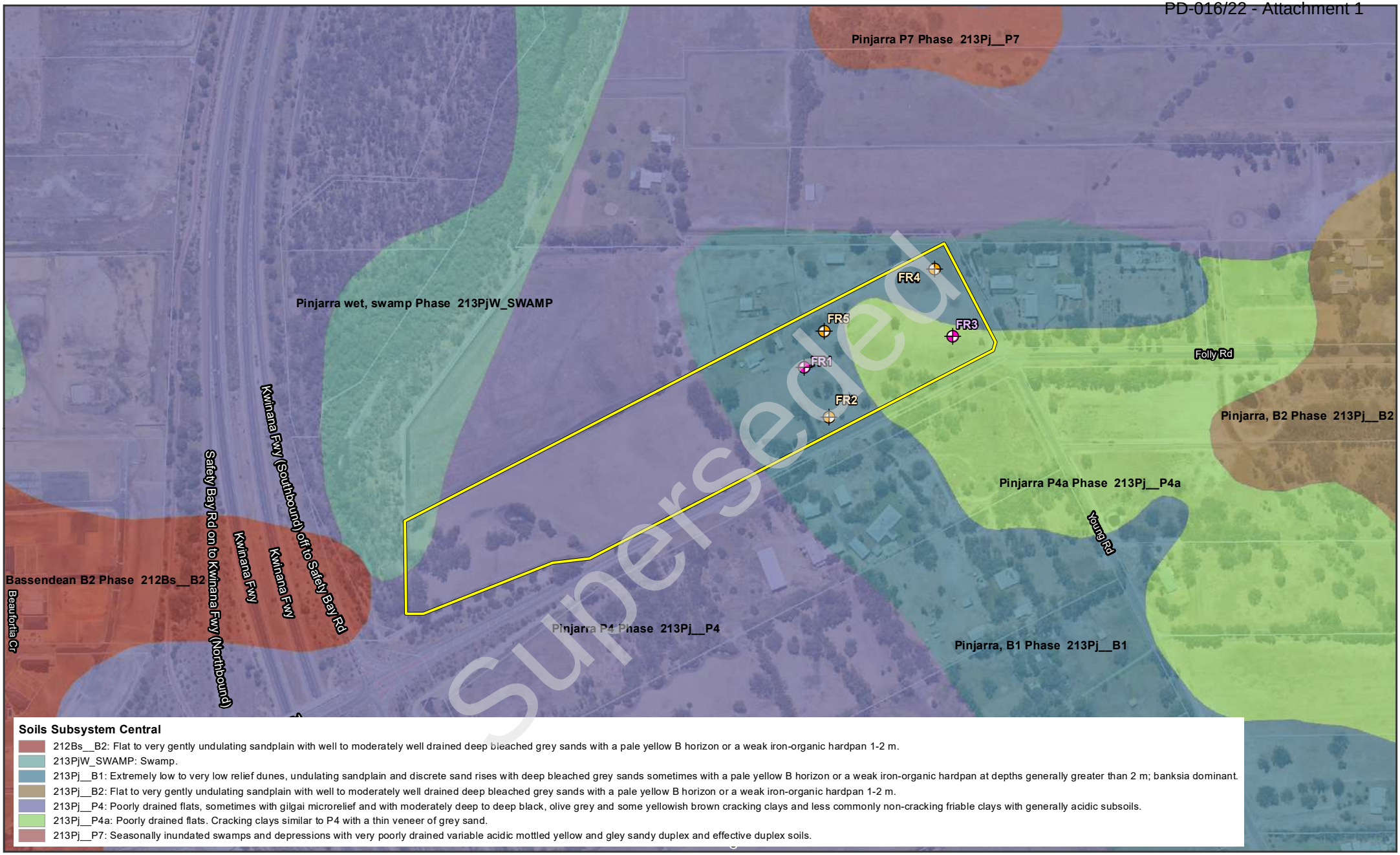
Site Boundaries: Landgate
Imagery: Landgate/ESRI
GDA 1994 MGA Zone 50

NOTE: All areas and dimensions are subject to survey, engineering and detailed design and may change without notice.

WATER MANAGEMENT STRATEGY
Balaji Temple and Cultural Centre
67 Folly Road, Baldivis

Figure 2
Topography



Soils Subsystem Central

- 212Bs__B2: Flat to very gently undulating sandplain with well to moderately well drained deep bleached grey sands with a pale yellow B horizon or a weak iron-organic hardpan 1-2 m.
- 213PjW_SWAMP: Swamp.
- 213Pj__B1: Extremely low to very low relief dunes, undulating sandplain and discrete sand rises with deep bleached grey sands sometimes with a pale yellow B horizon or a weak iron-organic hardpan at depths generally greater than 2 m; banksia dominant.
- 213Pj__B2: Flat to very gently undulating sandplain with well to moderately well drained deep bleached grey sands with a pale yellow B horizon or a weak iron-organic hardpan 1-2 m.
- 213Pj__P4: Poorly drained flats, sometimes with gilgai microrelief and with moderately deep to deep black, olive grey and some yellowish brown cracking clays and less commonly non-cracking friable clays with generally acidic subsoils.
- 213Pj__P4a: Poorly drained flats. Cracking clays similar to P4 with a thin veneer of grey sand.
- 213Pj__P7: Seasonally inundated swamps and depressions with very poorly drained variable acidic mottled yellow and gley sandy duplex and effective duplex soils.

Legend

- Lot Boundary
- Cadastral Lines
- Soil Sampling Location
- Soil Sampling and Infiltration Test Location

N

0 60 120 180 240 300 m

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Site Boundaries: Landgate
Imagery: Landgate/ESRI
GDA 1994 MGA Zone 50

NOTE: All areas and dimensions are subject to survey, engineering and detailed design and may change without notice.

Water Management Strategy
Balaji Temple and Cultural Centre
67 Folly Road, Baldivis

Figure 3

Soil Type and Sampling Locations



Legend

- Lot Boundary
- Cadastral Lines

Geomorphic Wetlands Swan Coastal Plain DBCA_019

- Conservation
- Resource Enhancement
- Multiple Use

N

0 60 120 180 240 300 m

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WATER MANAGEMENT STRATEGY
Balaji Temple and Cultural Centre
67 Folly Road, Baldivis

Figure 4
Wetland Mapping



Legend

Lot Boundary

Hydrography

Watercourse - minor

Drain - major (Water Corporation Drains)

N

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WATER MANAGEMENT STRATEGY

Balaji Temple and Cultural Centre
67 Folly Road, Baldivis

Figure 5

Hydrological Features

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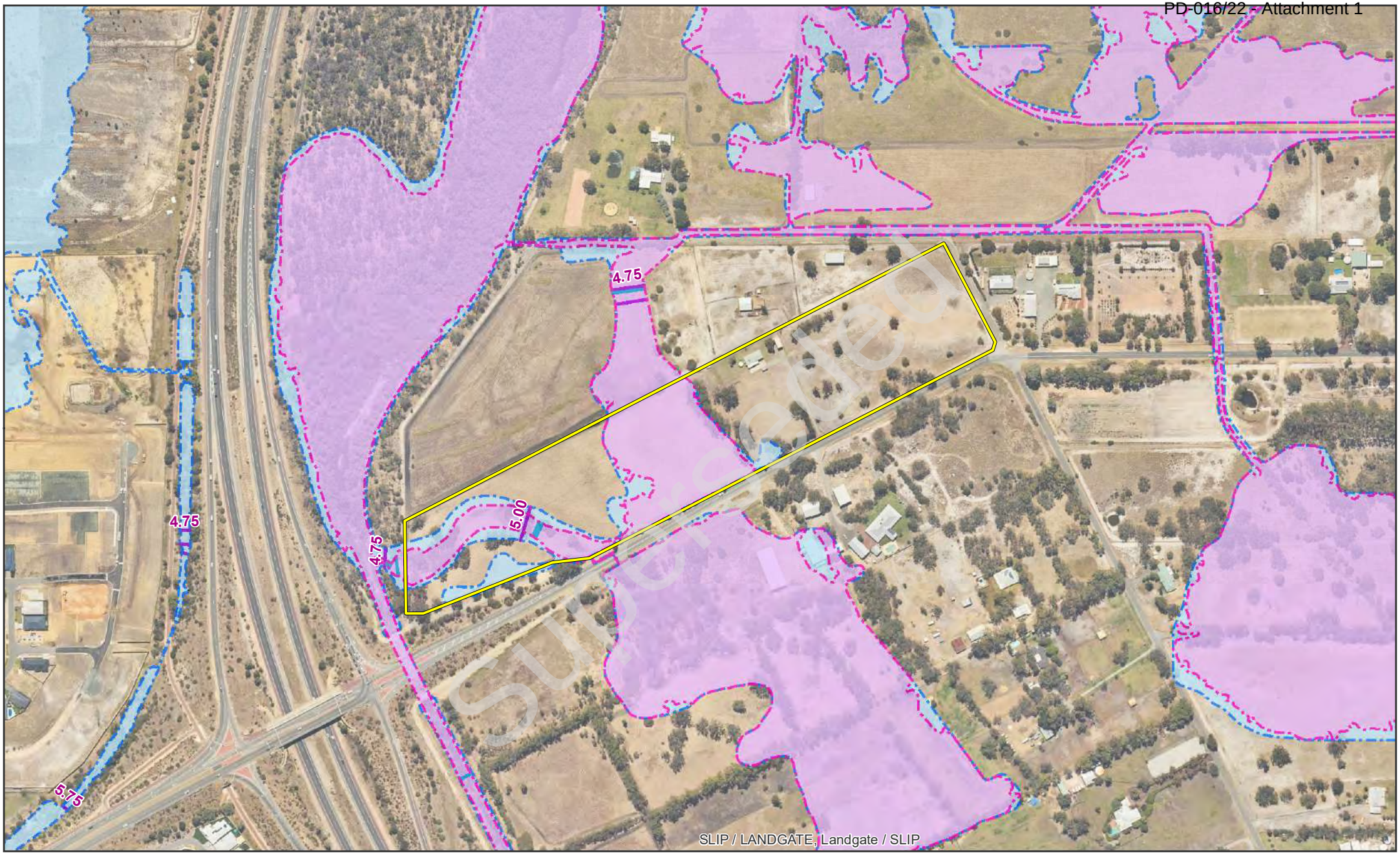

Superseded

Legend

Lot Boundary

FPM Extent of Flooding

Extent of 1 in 100 (1%) AEP flooding

Extent of 1 in 10 (10%) AEP flooding

FPM Floodplain Area (DWER-020)

1 in 10 (10%) AEP floodplain

1 in 100 (1%) AEP floodplain

FPM Flood Level Contours (m AHD) (DWER-018)

1 in 10 (10%) AEP flood level contour

1 in 100 (1%) AEP flood level contour

N

0 60 120 180 240 300 m

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Imagery: Landgate/ESRI
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WATER MANAGEMENT STRATEGY

Balaji Temple and Cultural Centre
67 Folly Road, Baldivis

Figure 6

Flood Mapping

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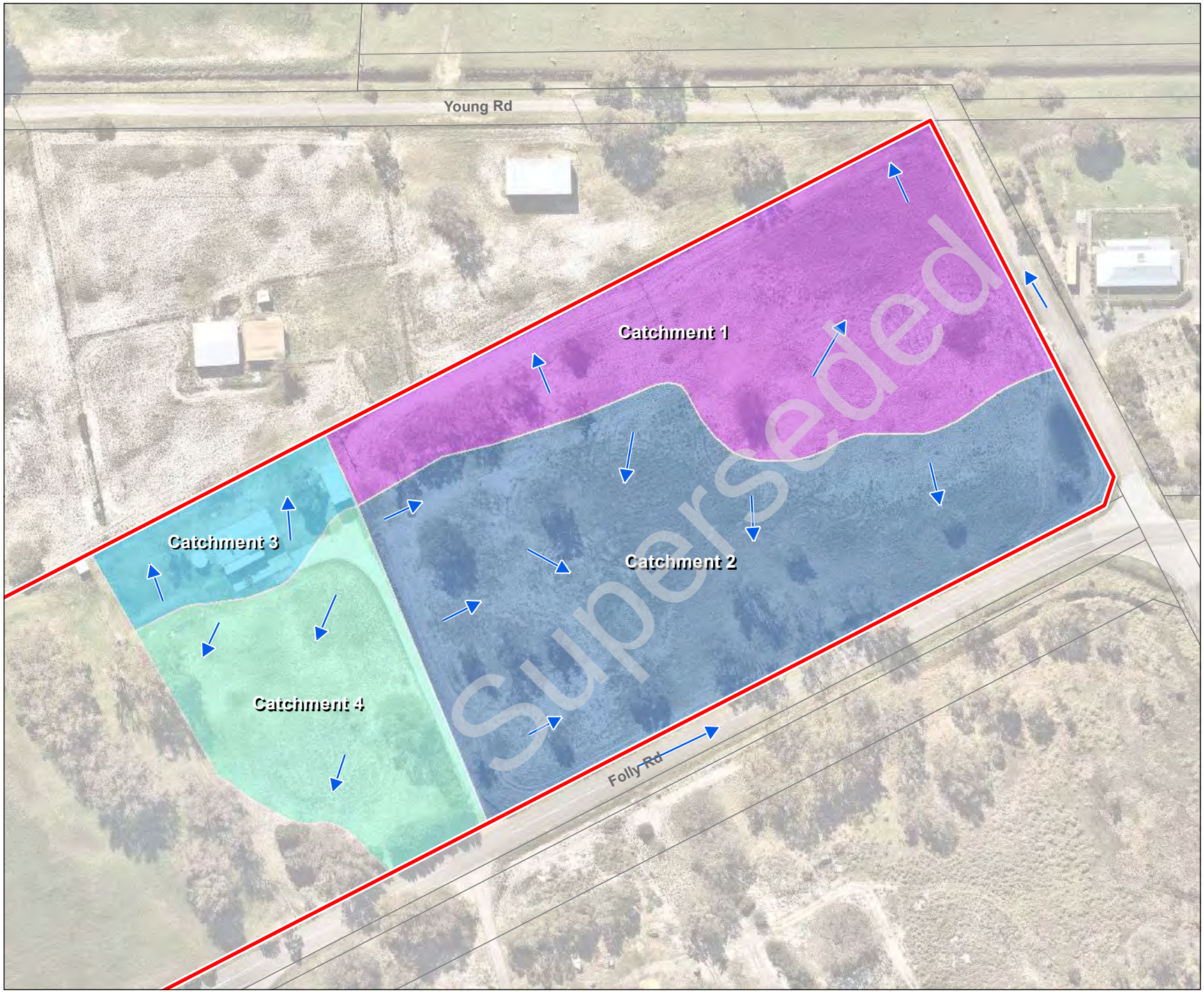

Legend

- Site Boundary
- Cadastre
- Predevelopment Surface Water Direction Flow

Predevelopment Catchments

- Catchment 1
- Catchment 2
- Catchment 3
- Catchment 4

- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS
- CADASTRE SOURCED LANDGATE 2021
- AERIAL PHOTOGRAPHY SOURCED NEARMAPS 13.08.21

waterinsight

0 10 20 40
Metres
Scale: 1:1,500 @ A4

N

LOCALITY MAP



CREATED	JOB	DATE	REVISION
ENVIRONMAPS	2130	10/12/2021	0

SITE AND SOIL EVALUATION
Balaji Temple and Cultural Centre
67 Folly Road, Baldivis

FIGURE 7

PREDEVELOPMENT SURFACE WATER CATCHMENTS AND DIRECTION OF FLOW

ENVIRONMAPS Environmental Mapping Solutions | t: 0406 590 006 | www.environmaps.com.au

C:\GIS\Jobs\Water Insight\2130 - Folly Rd, Baldivis\Figures\2130_F07 Predevelopment Surface Water Catchments and Direction of Flow_211207.mxd

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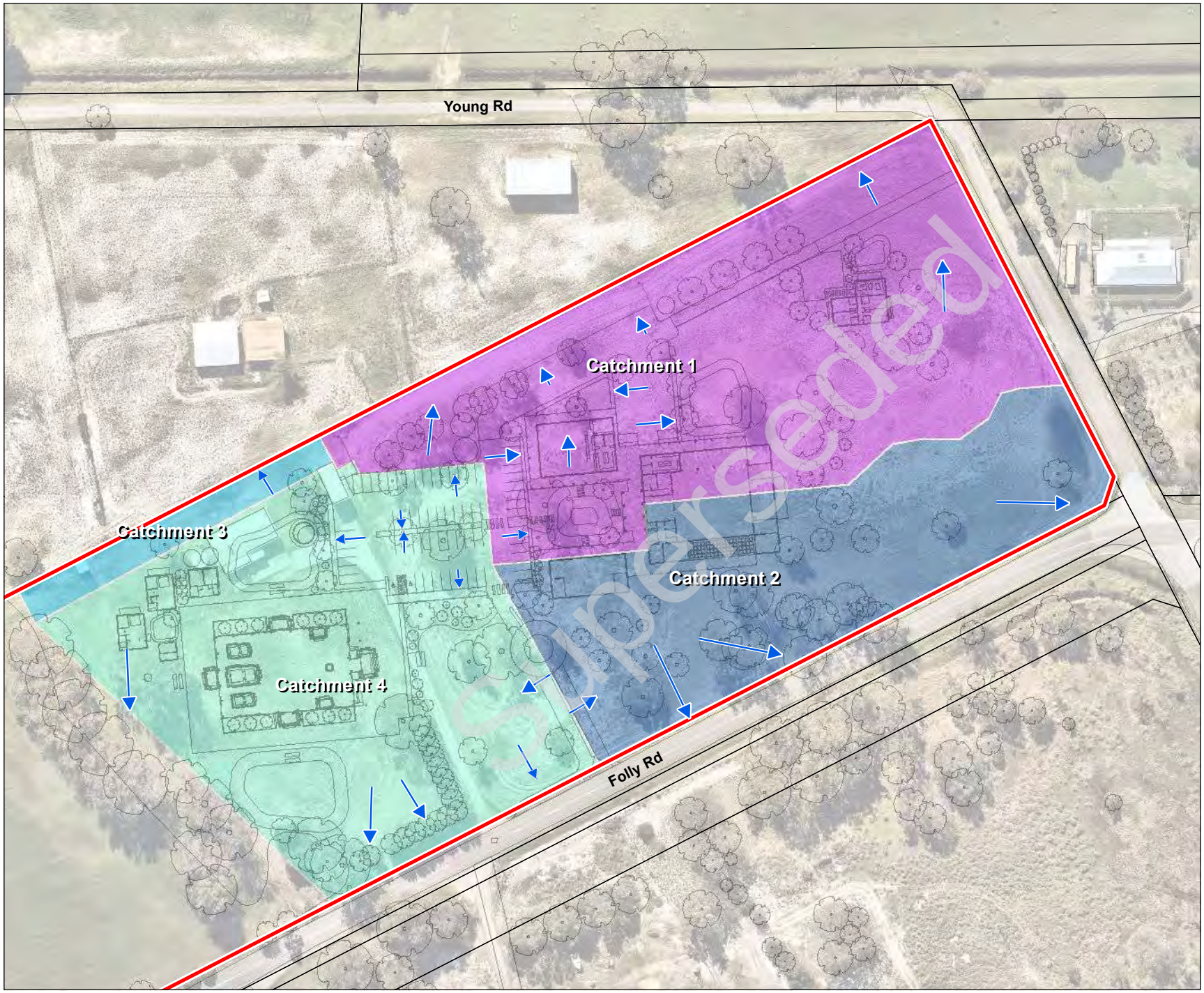

Legend

- Site Boundary
- Cadastre
- Proposed Development
- Post Development Surface Water Direction Flow

Post Development Catchments

- Catchment 1
- Catchment 2
- Catchment 3
- Catchment 4

- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS
- CADASTRE SOURCED LANDGATE 2021
- AERIAL PHOTOGRAPHY SOURCED NEARMAPS 13.08.21

waterinsight

0 10 20 40
Metres
Scale: 1:1,500 @ A4

N

LOCALITY MAP



CREATED	JOB	DATE	REVISION
ENVIRONMAPS	2130	10/12/2021	0

SITE AND SOIL EVALUATION
Balaji Temple and Cultural Centre
67 Folly Road, Baldivis

FIGURE 8

POST DEVELOPMENT SURFACE WATER CATCHMENTS AND DIRECTION OF FLOW

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Legend

- Site Boundary
- Cadastre
- Proposed Development
- Rainwater Tanks
- Indicative Landscaped Turf Drainage Swale

- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS
- CADASTRE SOURCED LANDGATE 2021
- AERIAL PHOTOGRAPHY SOURCED NEARMAPS 13.08.21

waterinsight

0 10 20 40
Metres
Scale: 1:1,500 @ A4

N

LOCALITY MAP



CREATED	JOB	DATE	REVISION
ENVIRONMAPS	2130	10/12/2021	0

SITE AND SOIL EVALUATION
Balaji Temple and Cultural Centre
67 Folly Road, Baldivis

FIGURE 9

DRAINAGE PLAN

ENVIRONMAPS Environmental Mapping Solutions t: 0406 590 006 www.environmaps.com.au

C:\GIS\Jobs\Water Insight\2130 - Folly Rd, Baldivis\Figures\2130_F09 Drainage Plan_211207.mxd

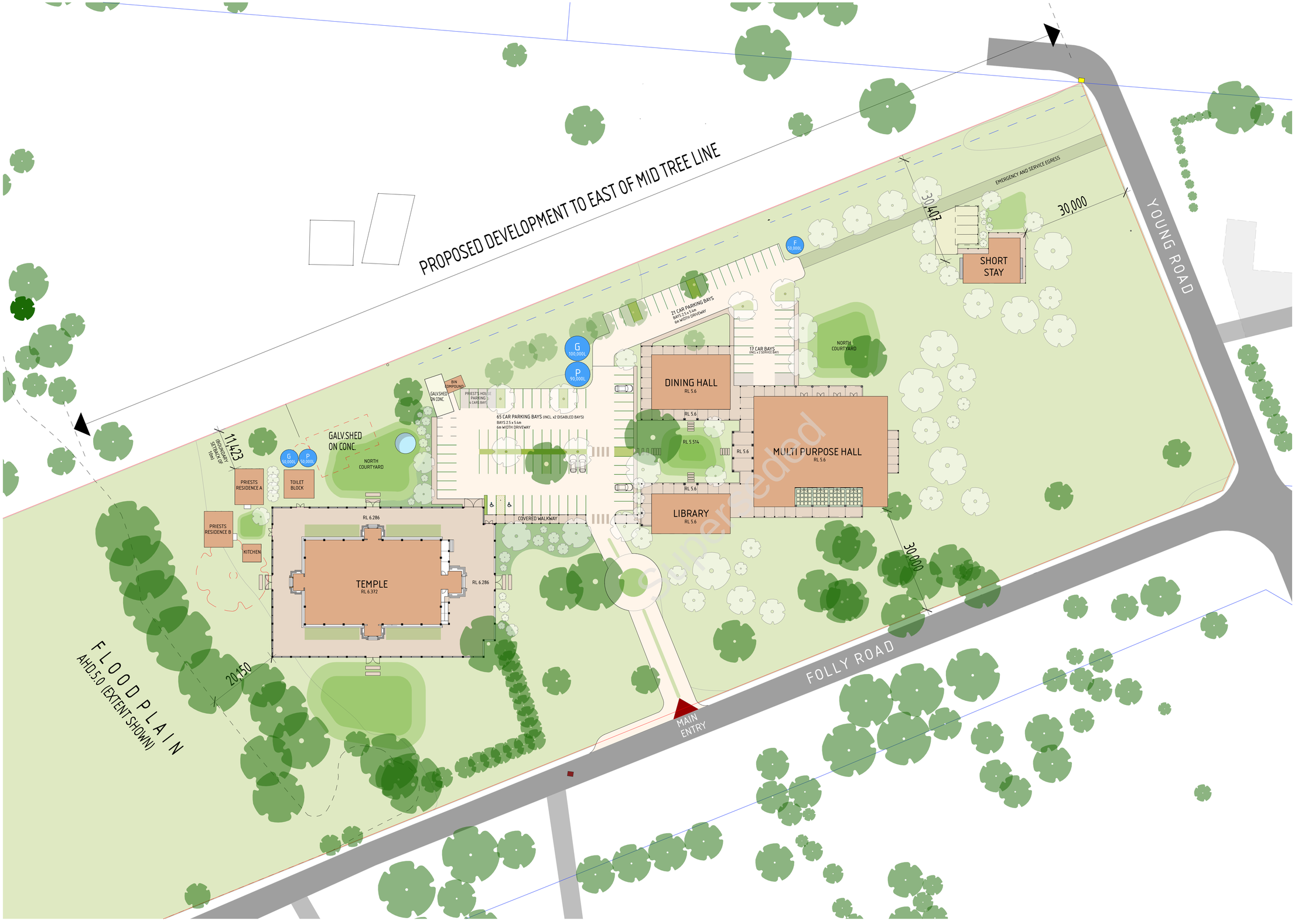
Superseded

Appendices

Superseded

Appendix A
Development Plans


PROPOSED DEVELOPMENT TO EAST OF MID TREE LINE
YOUNG ROAD
FOLLY ROAD
FOLLY ROAD
SHORT STAY
DINING HALL
MULTI PURPOSE HALL
LIBRARY
TEMPLE
GAZEBO
GAZEBO
GAZEBO



PROPOSED DEVELOPMENT EAST OF MID TREE LINE 1:500 (@ A1)

SCALE OF METERS

0 10 50 100

N

archetype design studio

architecture - interiors - feng shui
level 12, 68 St Georges Terrace PERTH WA 6000
Phone : (08) 9486 8866
email: studio@archetypedesign.com.au

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5. In case of any discrepancy whatsoever, the contractor shall check with the architect prior proceeding
6. Contractor shall carry out works in accordance with Council Building License and conditions stipulated thereon
7. Contractor shall carry out works in accordance with requirements of Western Power with respect the easements on the site.
8. Contractor is advised that the site is a Registered Aboriginal Heritage Site to which the Aboriginal Heritage Act and all its lega requirements apply.
9. Contractor is to strictly adhere to Recommendations made in the Anthropological Report prepared by De Gand Pty Ltd May 2011

Revision	Description	Date

Project :
PROPOSED BALAJI TEMPLE AND CULTURAL CENTRE

Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

Drawing Title:
SITE PLAN
1.500

Scale : 1.200
Status: #Project Status

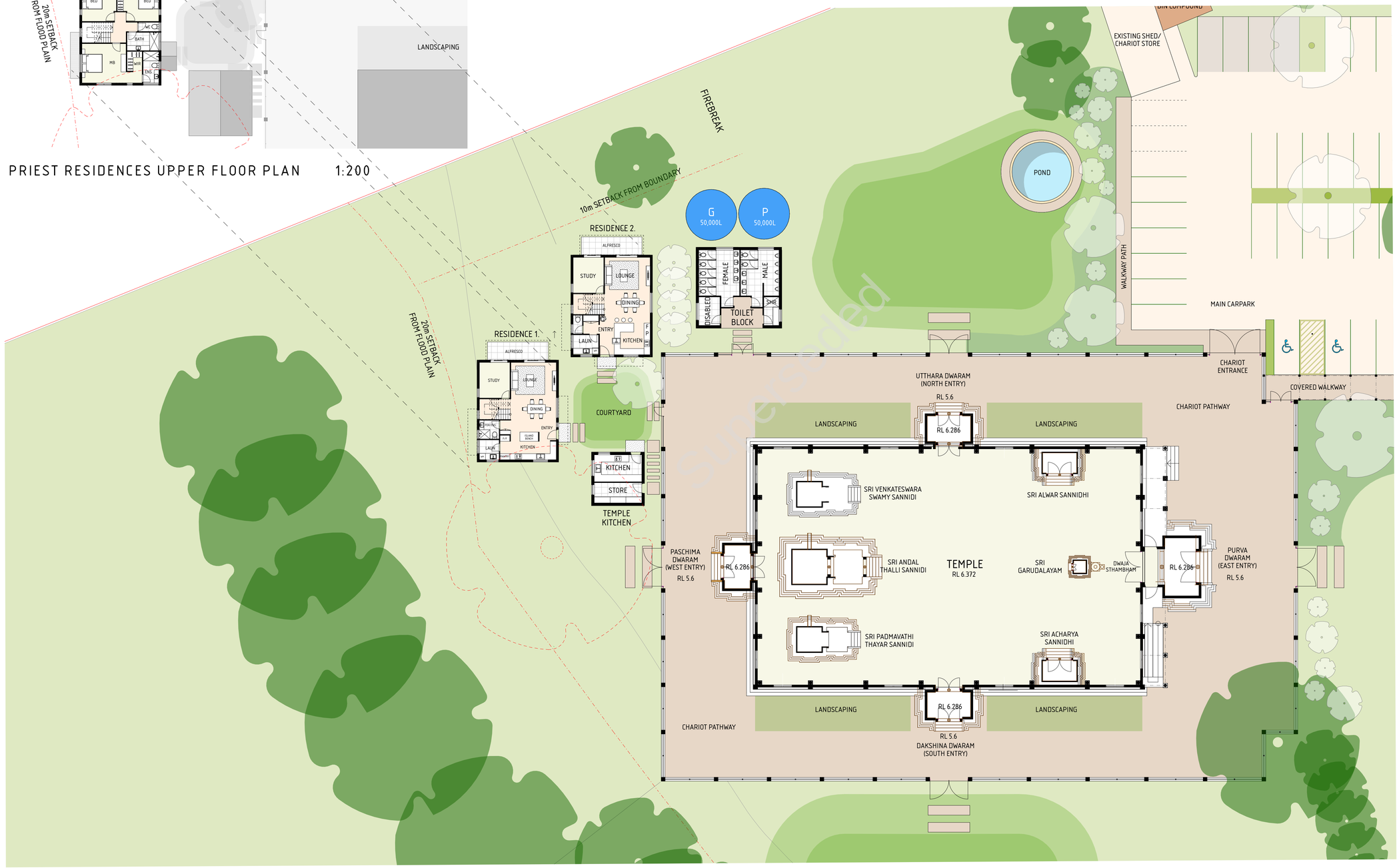
Drawing N^{0}

03

Date issued: Thursday, 18 November 2021
Time 2:47 pm
Revision



PRIEST RESIDENCES UPPER FLOOR PLAN 1:200



TEMPLE PLAN, PRIESTS QUARTERS + TOILET BLOCK 1:200 (@ A1)

SCALE OF METERS

0 5 25 50

N

archetype design studio

architecture - interiors - feng shui
level 12, 68 St Georges Terrace PERTH WA 6000
Phone : (08) 9486 8866
email: studio@archetypedesign.com.au

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5. In case of any discrepancy whatsoever, the contractor shall check with the architect prior proceeding
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7. Contractor shall carry out works in accordance with requirements of Western Power with respect the easements on the site.
8. Contractor is advised that the site is a Registered Aboriginal Heritage Site to which the Aboriginal Heritage Act and all its lega requirements apply.
9. Contractor is to strictly adhere to Recommendations made in the Anthropological Report prepared by De Gand Pty Ltd May 2011

Revision	Description	Date

Project :
PROPOSED BALAJI TEMPLE AND CULTURAL CENTRE

Site Address :
67 FOLLY ROAD,BALDIVIS

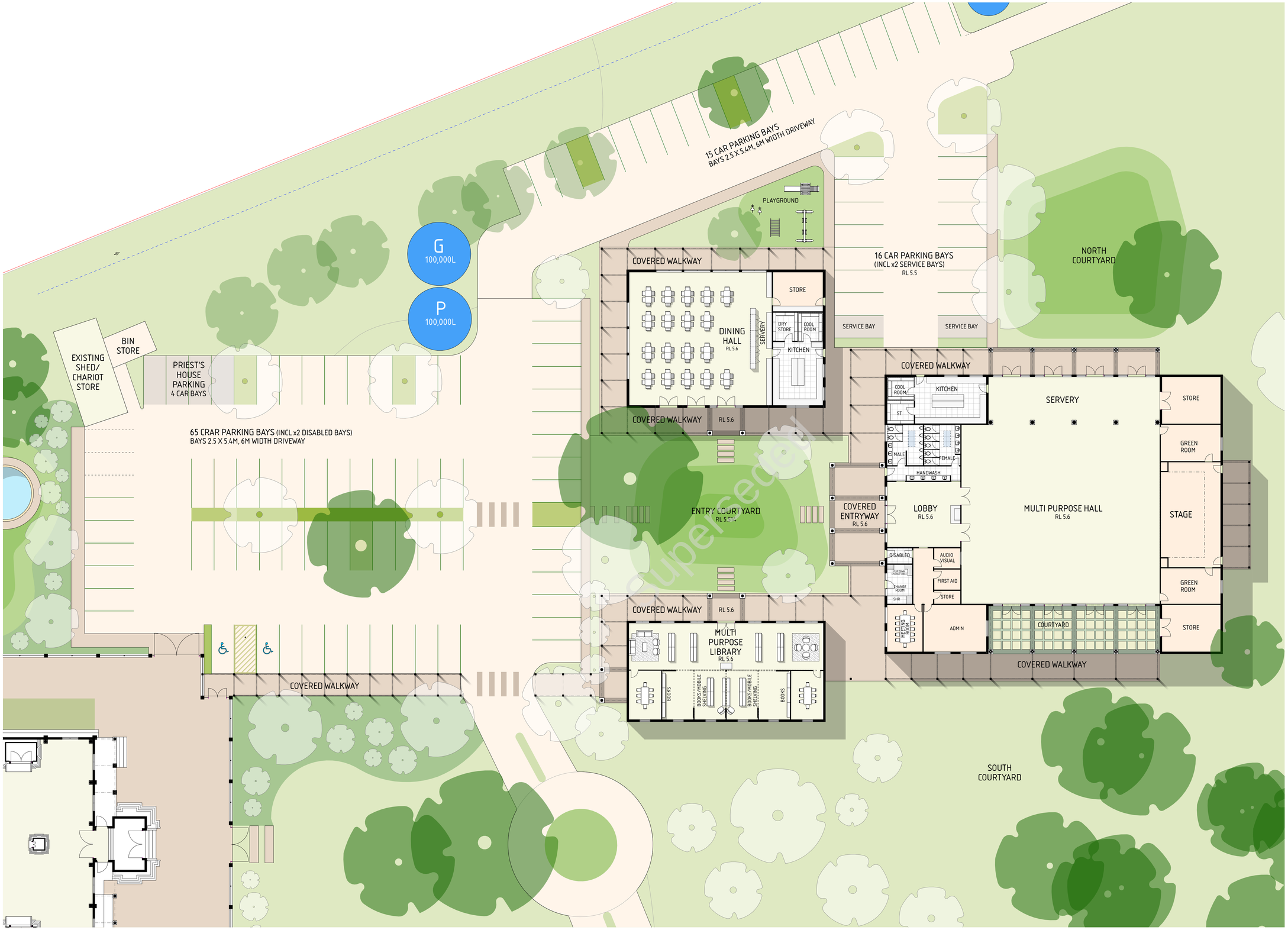
Client :
JAPA PTY LTD.

Drawing Title:
TEMPLE PLAN

Scale : 1:200
Status: #Project Status

Drawing N^{0}
04

Date issued: Monday, 22 November 2021
Time 11:45 am
Revision



MULTI-PURPOSE HALL, DINING + LIBRARY PLAN 1:200 (@ A1)

SCALE OF METERS

0 5 25 50

N

archetype design studio

architecture - interiors - feng shui
level 12, 68 St Georges Terrace PERTH WA 6000
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4. The contractor shall check and verify all dimensions on site, both new and existing, prior to commencement of any phase of the building work or ordering any materials
5. In case of any discrepancy whatsoever, the contractor shall check with the architect prior proceeding
6. Contractor shall carry out works in accordance with Council Building License and conditions stipulated thereon
7. Contractor shall carry out works in accordance with requirements of Western Power with respect the easements on the site.
8. Contractor is advised that the site is a Registered Aboriginal Heritage Site to which the Aboriginal Heritage Act and all its legal requirements apply.
9. Contractor is to strictly adhere to Recommendations made in the Anthropological Report prepared by De Gand Pty Ltd May 2011

Revision	Description	Date

Project :
PROPOSED BALAJI TEMPLE AND CULTURAL CENTRE

Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

Drawing Title:
MULTI PURPOSE HALL, LIBRARY + DINING HALL GF PLAN

Scale : 1:200
Status: #Project Status

Drawing N⁰
06

Date issued: Monday, 22 November 2021
Time 11:43 am
Revision


EMERGENCY AND SERVICE EGRESS
F
50,000L
3 NORTH
3 WEST
3 SOUTH
3 EAST
SHORT STAY/2
SHORT STAY/2
SHORT STAY/1
SHORT STAY/1
ENS
ENS
ENS
ENS
ENS
SUPERVISOR
SUPERVISOR
SUPERVISOR

Superseded

Appendix B
Feature Survey

Young Road
Bitumen

Folly Road
Bitumen

114.16

464.29

621.11

Power Pole (H/T)

PEG GONE

Stay Pole

Stay Wire

Consumer Pole

Consumer Overhead Power Cable

Closest Wire To Boundary (High Tension)

Bitumen

Telstra Pipe

Gate

Semi-Mount

Nil

Street Sign

Galv. Shed On Slab

Galv. Shed On Concrete

Approx F/L 6.11

Gravel Track

Post & Wire Fence (Poor Cond.)

Stay Anchor

Concrete

Galv. Patio

Galv. Shed On Concrete

Approx F/L 6.09

Note: Septic

Pump

PVC Tank

Galv. Post

Paddock

Small Trees

Flagging

Crossover to Opp.

Set Nail At Centreline Of Road Approx A.H.D. level 6.13m (Reduced Level) (Established from S.S.M. SKG using data supplied by the Geodetic Section of Lamington)

DISCLAIMER:
HIGH TENSION POWER LINES. CHECK TITLE FOR EASEMENTS AND WESTERN POWER FOR SET-BACKS.

NOTEBEWARE-ADVISE TRADES
O/Head power lines

Superseded

	Power Ozone
	Power Pole
LEGEND	Phone Pits
	Water Conn.
TW 10.00	Top Pillar/Post
TW 10.00	Top Wall
TR 10.00	Top Retaining
TF 10.00	Top Fence

LOT MISCLOSE
0.104 m

DISCLAIMER:
Lot boundaries drawn on survey are approximate only. Survey plan does not include title search and as such may not show easements or other interests not shown on plan. Title should be checked to verify all lot details and for any easements or other interests which may affect building on the property.

DISCLAIMER:
Survey does not include verification of cadastral boundaries. All features and levels shown are based on orientation to existing pegs and fences only which may not be on correct cadastral alignment. Any designs based or dependent on the location of existing features should have those features' location verified in relation to the true boundary.

DISCLAIMER:
Survey shows visible features only and will not show locations of underground pipes or conduits for internal or mains services. Verification of the location of all internal and mains services should be confirmed prior to finalisation of any design work.

DISCLAIMER:
Cottage & Engineering surveys accept no responsibility for any damages or loss changes to the parcel or portion of the parcel of land shown on this survey including any adjoining neighbours levels and features that have occurred after the date on this survey. All Sewer details plotted from information supplied by Water Corporation.

Scale 1:200
0 2 4 6 8

BEWARE: POSSIBLE SERVICE RUN IN & COST

COTTAGE SURVEYS
87-89 Guthrie Street
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JOB # 507054 | GPS | Lat: -32.324566 Long: 115.933314
ADDRESS 457 Folly Road | LOT Lot 53 (DP 61344)
SUBURB Bullsnis | AREA 7.4367m | VOL 2193 | FOL 800 | SSA No
LGA CITY OF ROCKINGHAM | DATE 18 Aug 21
DRAWN B. Sabia

ROADS Bitumen
KERBS Semi-Mount / Nil
FOOTPATH Nil
SOIL Sand
DRAINAGE Good
VEGETATION Refer to Survey

ELEC. O/Head
COMMS. Yes
WATER Check Owner
GAS Check Alinta
SEWER Nil
COASTAL No

Superseded

Appendix C
PRI Laboratory Analysis

Analysis Results

CSBP Soil and Plant Laboratory

97227
Water Insight Pty Ltd

	Lab No	4IS21053	4IS21054	4IS21055	4IS21056	4IS21057	4IS21058	4IS21059	4IS21060
	Name	FR1	FR1	FR1	FR2	FR2	FR2	FR3	FR3
	Code	0-0.15	0.15-1.8	1.8-2.0	0-0.15	0.15-1.8	1.8-2.0	0-0.10	0.10-1.8
	Customer	Water Insight Pty Ltd	Water Insight Pty Ltd	Water Insight Pty Ltd	Water Insight Pty Ltd	Water Insight Pty Ltd	Water Insight Pty Ltd	Water Insight Pty Ltd	Water Insight Pty Ltd
	Depth	0-10	0-10	0-10	0-10	0-10	0-10	0-10	0-10
Phosphorus Retention Index		2.4	0.8	3.6	1.4	0.4	1.1	0.7	-0.2

Superseded

CSBP Lab. Extract Value.

Analysis Results

CSBP Soil and Plant Laboratory

Lab No	4IS21061	4IS21062	4IS21063	4IS21064
Name	FR3	FR4	FR4	FR4
Code	1.8-2.0	0-0.15	0.15-1.8	1.8-2.0
Customer	Water Insight Pty Ltd	Water Insight Pty Ltd	Water Insight Pty Ltd	Water Insight Pty Ltd
Depth	0-10	0-10	0-10	0-10
Phosphorus Retention Index	989.0	-0.1	2.7	0.9

Superseded

CSBP Lab. Extract Value.

Superseded

Appendix D
Groundwater Allocation Plan

Government of Western Australia
Department of Water and Environmental Regulation

Resource Allocation Report

(All Volumes in kL)

Water Online

Data Last Refreshed : **27 Sep 2021**
Rows Returned :**4**

As Of Date : 27 Sep 2021
Resource Type : All
Allocation Planning Area : All
Management Area : Stakehill
Management Sub Area : Maramanup,Stakehill Confined
Allocation Category : All
Component : General

Management Area	Management Sub Area	Resource	Component	Component Status	Allocation Limit	Allocated Volume	Committed Volume	Remaining Volume	% Allocated and Committed	Additional Requested
Stakehill	Maramanup	Stakehill, Maramanup, Perth - Superficial Swan	General	G3	1,421,950	1,207,770	0	**214,180**	**84.94%**	266,273
Stakehill	Stakehill Confined	Stakehill, Stakehill Confined, Perth - Cattamarra Coal Measures.	General	G4	0	0	0	**0**	**0.00%**	
Stakehill	Stakehill Confined	Stakehill, Stakehill Confined, Perth - Leederville.	General	G4	389,620	503,878	45,000	**-159,258**	**140.88%**	10,000
Stakehill	Stakehill Confined	Stakehill, Stakehill Confined, Perth - Yarragadee North.	General	G4	0	0	0	**0**	**0.00%**	
					1,811,570	**1,711,648**	**45,000**	**54,922**	**96.97%**	**276,273**

REGISTER EXTRACT INFORMATION

The Department of Water and Environmental Regulation is committed to quality service to its customers and makes every attempt to ensure accuracy, currency and reliability of the data contained in this document. However changes in circumstances after time of publication may impact the quality of this information.

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Appendix D
WIN Bore Hydrographs

Department of Water and Environmental Regulation

Period 47 Year 01/01/1975 to 01/01/2022 1975-2021

61410093 T350 115.00 Water Level (mAHD) GW

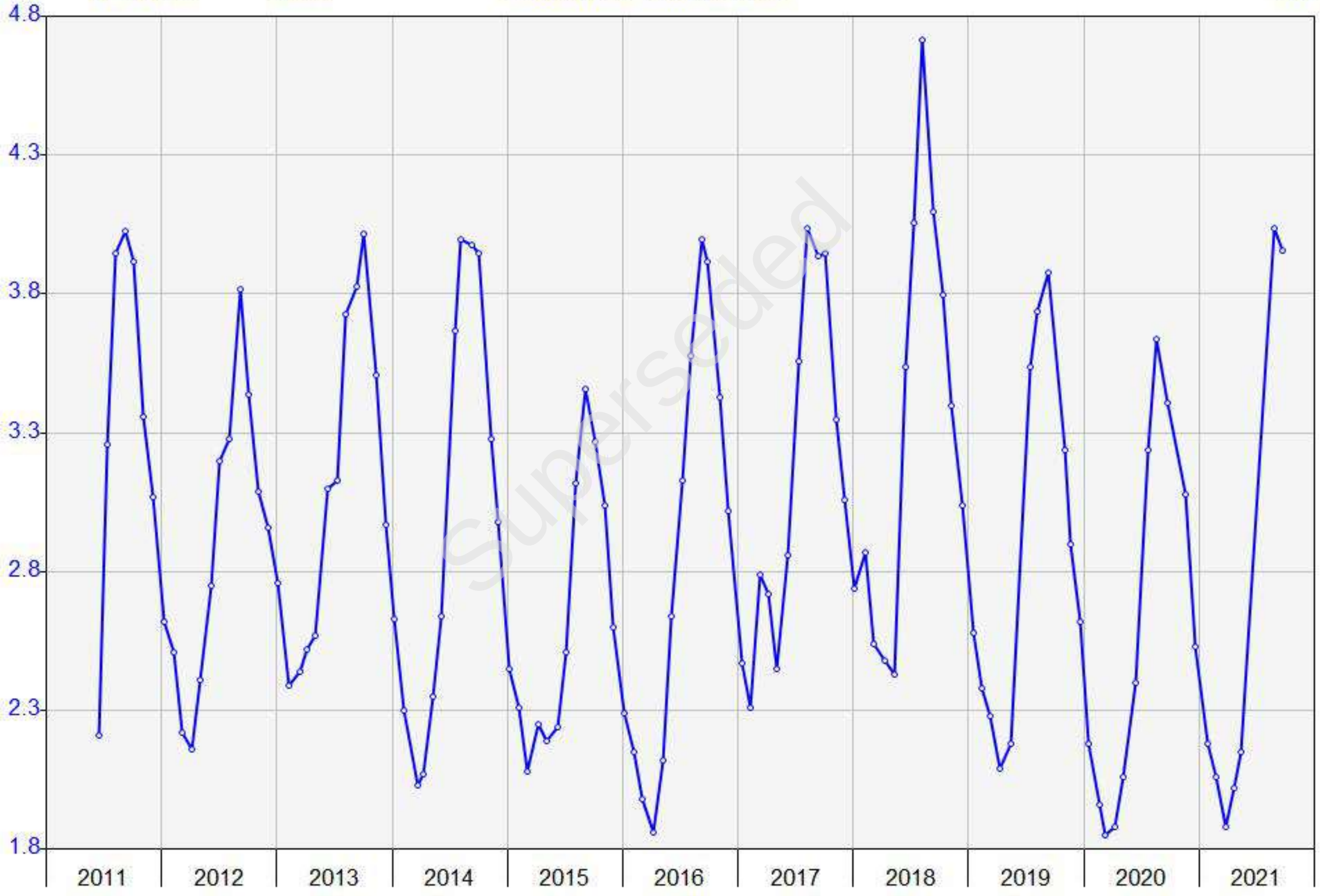


Superseded

Department of Water and Environmental Regulation

Period 11 Year 01/01/2011 to 01/01/2022 2011-21

61410478 SSB4 115.00 Water Level (mAHD) GW



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Superseded



Transport Impact Assessment

Superseded

Project:	Proposed Place of Worship 67 Folly Road, Baldivis
Client:	Jeeyars Acharya Peettam Australia Pty Ltd c/- Archetype Design Studio
Author:	Paul Nguyen
Date:	6th December 2021
Shawmac Document #:	2109004-TIA-001

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Document Status: Client Review

Version	Prepared By	Reviewed By	Approved By	Date
A	Paul Nguyen	Richard Jois	Richard Jois	06/12/2021

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File Reference: Y:\Jobs Active 2021\T&T - Traffic & Parking\Archetype_67 Folly Rd, Baldivis_TIS_2109004\3. Documents\3.2 Reports\Archetype_67 Folly Rd, Baldivis_TIA_Rev A.docx

Contents

1. Introduction and Background 1
1.1. Proponent 1
1.2. Site Location 1
1.3. Scope 2
2. Development Proposal 3
2.1. Land Use 3
2.2. Activities 3
2.3. Access 3
3. Existing Situation 5
3.1. Land Uses 5
3.2. Road Network 5
3.2.1. Layout and Hierarchy 5
3.2.2. Traffic Counts 7
4. Changes to Surrounding Transport Networks 9
5. Transport Assessment 10
5.1. Development Traffic Generation and Distribution 10
5.1.1. Regular Weekday 10
5.1.2. Regular Weekend 10
5.1.3. Special Hindu Festival Days 11
5.1.4. Hindu Weddings 11
5.2. Mid-Block Capacity 12
5.2.1. Peak Hour Traffic Capacity 12
5.2.2. Daily Traffic Capacity 12
5.3. Intersection and Access Capacity 13
5.4. Long Term Capacity 15
6. Analysis of Development Access 16
6.1. Location 16

Superseded

6.2. Sight Distance 17
6.2.1. Folly Road 18
6.2.2. Young Road 19
6.3. Auxiliary Lanes 20
6.4. Service Vehicle Access 23
7. Road Safety 24
7.1. Crash History 24
8. Alternative Transport Modes 25
8.1. Public Transport 25
8.2. Pedestrian / Cycle Access 25
9. Parking 26
9.1. Car Parking Provision 26
9.2. Car Parking Requirements 26
10. Conclusions 27
Appendix A – SIDRA Analysis Results 28
Appendix B – Vehicle Swept Paths 37

Superseded

Figures

Figure 1: General Site Location 1
Figure 2: Site Layout 4
Figure 3: Aerial View of Existing Site (June 2021) 5
Figure 4: Road Layout and Hierarchy 6
Figure 5: Speed Limits 6
Figure 6: Average Weekday Traffic 7
Figure 7: Average Weekend Traffic 8
Figure 8: Modelled Layouts 14
Figure 9: Proposed Access Arrangement 16
Figure 10: Sight Distance Requirements 17
Figure 11: Sight Distance Check – Folly Road 18
Figure 12: Sight Distance Check – Young Road 19
Figure 13: Major Road Traffic Volume Calculation 20
Figure 14: Warrants Assessment Results 21
Figure 15: BAL Layout (Austroads) 22
Figure 16: Crash History January 2016 to December 2020 24

Tables

Table 1: SIDRA Results – Freeway Ramp Intersections 15
Table 2: SIDRA Results – Main Site Access 15

Superseded

1. Introduction and Background

1.1. Proponent

Shawmac has been engaged by Archetype Design Studio on behalf of Jeeyars Acharya Peettam Australia Pty Ltd (JAPA Pty Ltd) to prepare a Transport Impact Assessment (TIA) for a proposed place of worship in Baldivis.

1.2. Site Location

The site address is Lot 53, Number 67 Folly Road, Baldivis and the local authority is the City of Rockingham.

The general site location is shown in Figure 1.



Figure 1: General Site Location

Superseded

1.3. Scope

This TIA has been prepared in accordance with the Western Australian Planning Commission's (WAPC) *Transport Impact Assessment Guidelines*. According to the TIA guidelines, the key objectives of a TIA are to:

- assess the proposed internal transport networks with respect to accessibility, circulation and safety for all modes, that is, vehicles, public transport, pedestrians and cyclists;
- assess the level of transport integration between the development and the surrounding land uses;
- determine the impacts of the traffic generated by the development on the surrounding land uses; and
- determine the impacts of the traffic generated by the development on the surrounding transport networks.

Superseded

2. Development Proposal

2.1. Land Use

The proposed development includes a main temple building, a multi-purpose hall, a dining hall, a library, a priests residence, car parking and other supporting amenities. The entire development will be located on the north-eastern half of the property closest to Young Road.

2.2. Activities

The main activity at the site will be daily prayer sessions including a morning session and an evening session. Other activities include weekday yoga classes, weekend scripture classes, special Hindu Festival Days and Hindu Weddings. A summary of the expected activities, hours and attendance numbers as provided by the client is detailed below:

• Weekday Prayers (Mon-Fri)	25-50 people (morning session)	6:00am to 12:00pm
	25-50 people (evening session)	5.00pm to 9.00pm
Weekday Yoga Classes (2 per week)	20 people	6:00pm to 7:00pm
• Saturday/Sunday Prayers	100-150 people (morning session)	6:00am to 12:00pm
	100-150 people (evening session)	5.00pm to 9.00pm
Saturday/Sunday Scripture Classes	50-75 people (included in the above)	3:00pm to 6:00pm
• Special Hindu Festival Days occurring on average once per month		
If on a weekday	50-75 people (morning session)	6:00am to 12:00pm
	200-250 people (evening session)	5.00pm to 9.00pm
If on a weekend day	200 people (morning session)	6:00am to 12:00pm
	200-250 people (evening session)	5.00pm to 9.00pm
• Hindu Weddings occurring on average 6 times per year only on weekends		
	300-400 people	6:00pm to 12:00am

Hindu prayer sessions are relatively unstructured and so attendance is generally spread out over the session.

It is also noted that Hindu weddings will not occur on the same day as a special Hindu festival day.

2.3. Access

Vehicle access is proposed on Folly Road including a main entry crossover and a secondary service crossover.

The site layout and access arrangement is shown in Figure 2.

Superseded



Figure 2: Site Layout

3. Existing Situation

3.1. Land Uses

The site currently has a warehouse type building and an outbuilding. An aerial view of the existing site is shown in Figure 3.



Superseded

Figure 3: Aerial View of Existing Site (June 2021)

3.2. Road Network

3.2.1. Layout and Hierarchy

The current layout and hierarchy of the surrounding road network is shown in Figure 4.

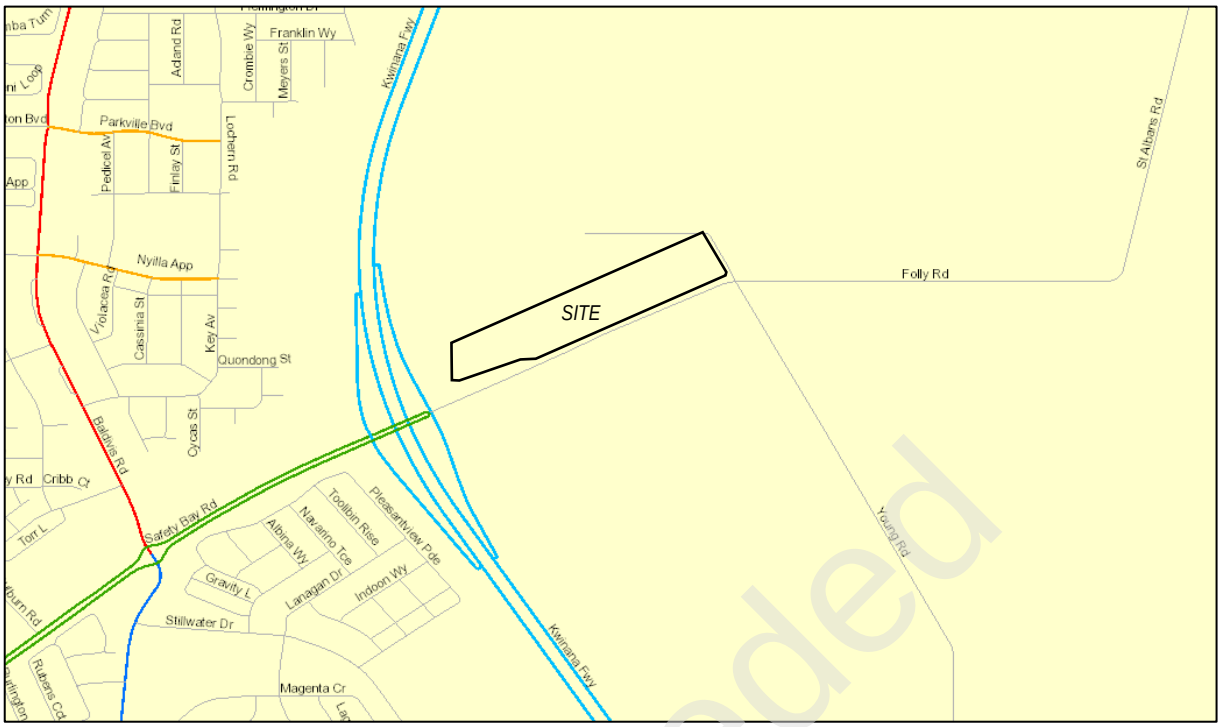


Figure 4: Road Layout and Hierarchy

The current speed limits are shown in Figure 5.

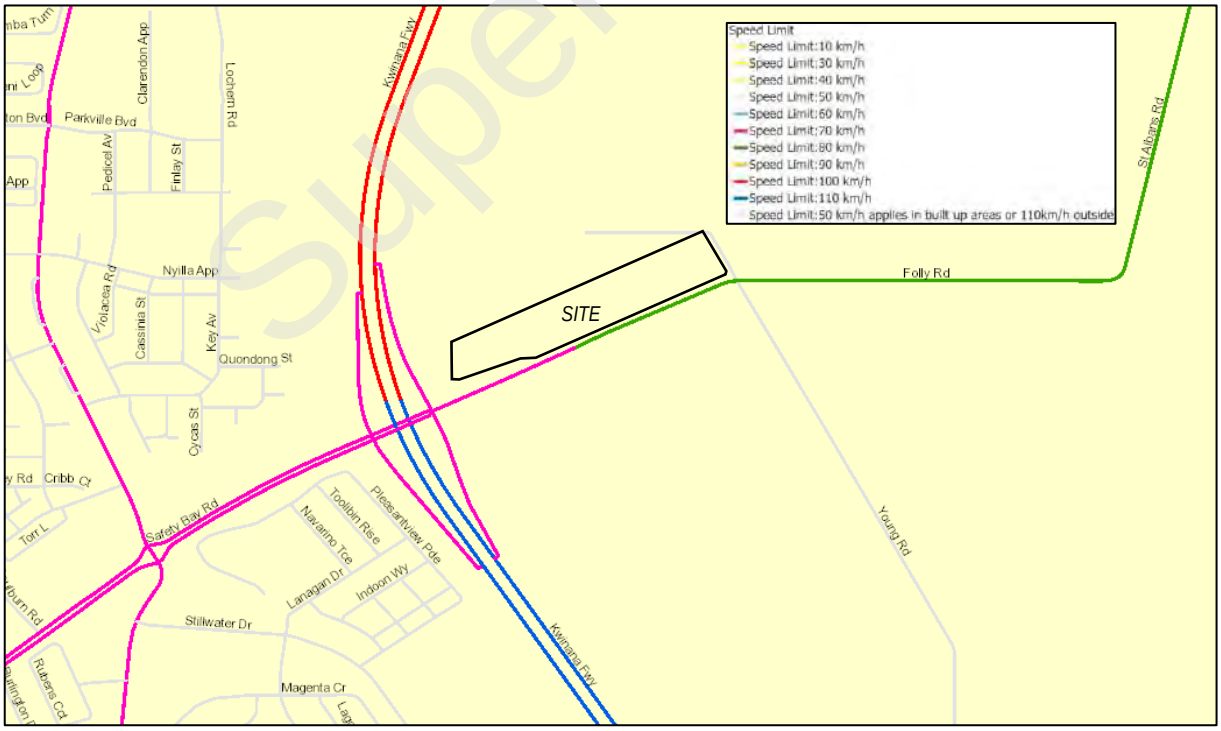


Figure 5: Speed Limits

Superseded

3.2.2. Traffic Counts

The latest traffic counts for Folly Road was obtained from the Main Roads WA *Traffic Map* as shown in Figure 6 and Figure 7.

mainroads WESTERN AUSTRALIA

SITE 7131

Hourly Volume

Folly Rd (1070107)

West of Young Rd (SLK 0.75)

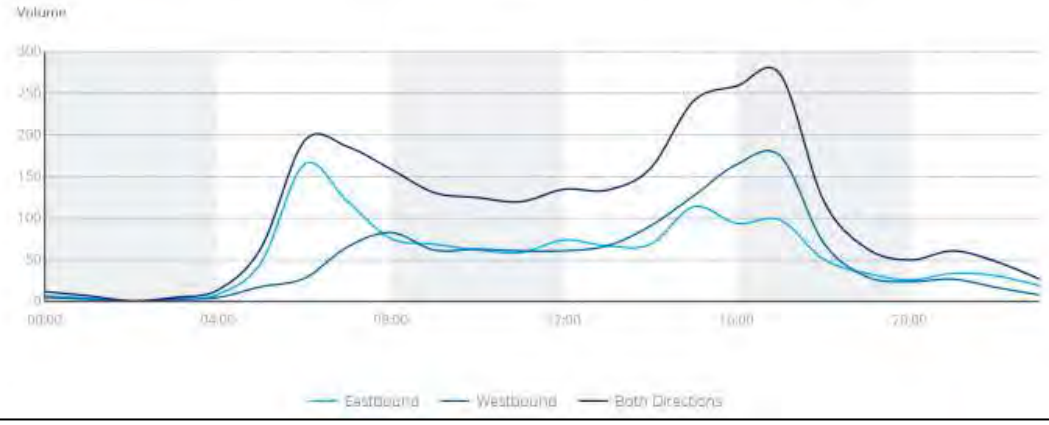
2020/21

Monday to Friday

	All Vehicles			Heavy Vehicles			
	EB	WB	Both	EB	WB	Both	%
00:00	7	5	12	0	1	1	8.3
01:00	4	3	7	1	1	2	28.6
02:00	1	0	1	0	0	0	0.0
03:00	2	3	5	0	0	0	0.0
04:00	9	5	14	1	1	2	14.3
05:00	47	18	65	9	4	13	20.0
06:00	165	28	193	18	6	24	12.4
07:00	120	66	186	18	9	27	14.5
08:00	76	83	159	14	11	25	15.7
09:00	69	62	131	10	7	17	13.0
10:00	62	63	125	10	10	20	16.0
11:00	59	61	120	8	8	16	13.3
12:00	74	61	135	12	8	20	14.8
13:00	67	67	134	10	6	16	11.9
14:00	69	91	160	8	11	19	11.9
15:00	114	127	241	12	16	28	11.6
16:00	94	165	259	13	15	28	10.8
17:00	98	175	273	10	16	26	9.5
18:00	51	71	122	6	5	11	9.0
19:00	34	30	64	3	4	7	10.9
20:00	26	24	50	2	3	5	10.0
21:00	34	27	61	2	2	4	6.6
22:00	31	17	48	2	1	3	6.3
23:00	19	8	27	1	0	1	3.7
TOTAL	1332	1260	2592	170	145	315	12.2

Peak Statistics

AM	TIME	06:00	07:45	06:15	06:45	07:30	07:30
	VOL	165	89	196	19	12	30
PM	TIME	16:15	16:45	16:45	15:15	16:30	16:15
	VOL	115	180	280	15	13	30



Superseded

Figure 6: Average Weekday Traffic

mainroads WESTERN AUSTRALIA

SITE 7131

Hourly Volume

Folly Rd (1070107)

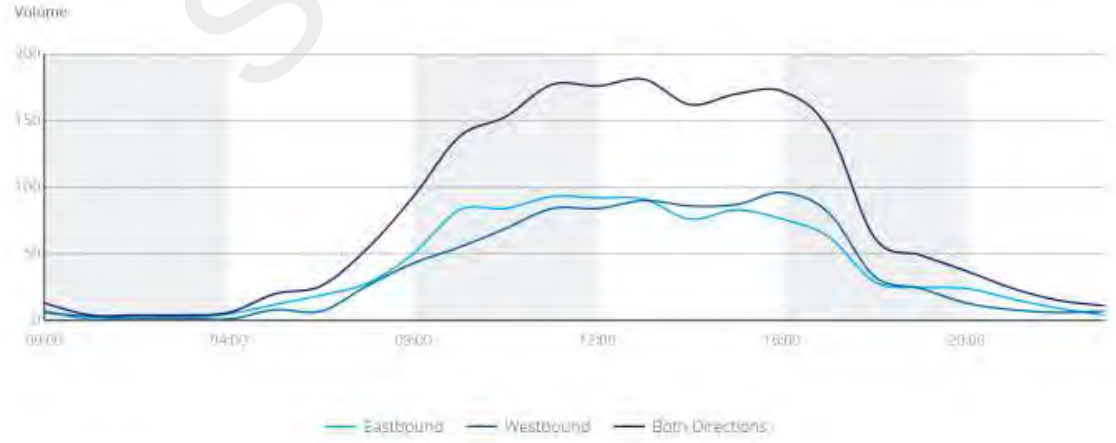
West of Young Rd (SLK 0.75)

2020/21
Weekend

	All Vehicles			Heavy Vehicles			
	EB	WB	Both	EB	WB	Both	%
00:00	7	6	13	1	0	1	7.7
01:00	1	3	4	0	1	1	25.0
02:00	2	2	4	0	0	0	0.0
03:00	2	2	4	0	0	0	0.0
04:00	5	1	6	1	0	1	16.7
05:00	12	8	20	1	1	2	10.0
06:00	19	7	26	4	1	5	19.2
07:00	28	26	54	4	5	9	16.7
08:00	50	43	93	9	8	17	18.3
09:00	83	55	138	11	6	17	12.3
10:00	84	69	153	10	6	16	10.5
11:00	93	84	177	10	10	20	11.3
12:00	92	84	176	15	7	22	12.5
13:00	91	90	181	8	8	16	8.8
14:00	76	86	162	12	8	20	12.3
15:00	83	87	170	13	13	26	15.3
16:00	76	96	172	8	7	15	8.7
17:00	83	61	144	5	9	14	9.7
18:00	29	33	62	4	5	9	14.5
19:00	25	24	49	3	2	5	10.2
20:00	24	13	37	3	1	4	10.8
21:00	16	8	24	0	1	1	4.2
22:00	9	6	15	0	1	1	6.7
23:00	4	7	11	0	0	0	0.0
TOTAL	974	921	1895	123	99	222	11.7

Peak Statistics

AM	TIME	09:45	10:30	10:30	11:45	11:00	11:30
	VOL	96	87	180	13	10	21
PM	TIME	12:15	12:45	12:45	12:15	15:15	15:15
	VOL	97	99	185	15	14	26



Superseded

Figure 7: Average Weekend Traffic

4. Changes to Surrounding Transport Networks

The section of Folly Road between Kwinana Freeway and Young Road is reserved as a regional road under the Metropolitan Region Scheme.

According to the *Perth and Peel @ 3.5million* frameworks, the site and surrounding areas to the west of Kwinana Freeway are not flagged for development by 2050. Folly Road is also not identified as a proposed regional road or freight road by 2050. It is therefore considered that the upgrade of Folly Road is unlikely to occur in the foreseeable future.

Superseded

5. Transport Assessment

5.1. Development Traffic Generation and Distribution

The traffic generation has been estimated from the proposed activities, operating hours and expected attendance numbers as provided by the client and operator.

Patrons are likely to include many families and so the average person to car ratio would be reasonably high. As instructed by the City, a conservative vehicle occupancy of 2 persons per car has been adopted. It is also conservatively assumed that the higher end of the attendance numbers will be reached during each activity session. The estimated traffic generation is detailed in the following sections.

5.1.1. Regular Weekday

• Weekday Prayers (Mon-Fri)	25-50 people (morning session)	6:00am to 12:00pm
	25-50 people (evening session)	5.00pm to 9.00pm
Weekday Yoga Classes (2 per week)	20 people	6:00pm to 7:00pm

On a regular weekday, the busiest day would be on a day that a yoga class is held with up to 120 people expected over the day. The daily traffic generation would therefore be in the order of 120 vehicle movements per day (60 inbound and 60 outbound. As mentioned previously, prayer sessions are unstructured and so arrivals and departures will typically be spread out over the session. It is broadly estimated that 10% of the daily traffic would occur during each of the weekday peak hours on the road network which is from 7 to 8am and from 4 to 5pm based on the traffic counts along Folly Road and Kwinana Freeway. This would equate to 12 vehicle movements during each peak hour with all movements likely to be inbound based on the session times.

5.1.2. Regular Weekend

• Saturday/Sunday Prayers	100-150 people (morning session)	6:00am to 12:00pm
	100-150 people (evening session)	5.00pm to 9.00pm
Saturday/Sunday Scripture Classes	50-75 people (included in the above)	3:00pm to 6:00pm

On a regular weekend, up to 300 people are expected to attend the site per day over the various sessions. The daily traffic generation would therefore be in the order of 300 vehicle movements per day (150 inbound and 150 outbound). According to the Folly Road traffic counts, the peak period of traffic is more spread out and generally occurs from around 11am to 4pm. The weekend peak hour of combined site traffic and background traffic is therefore likely to be from 12 to 1pm at the end of the morning prayer session. Assuming the peak hour traffic is equivalent to 10% of the daily volumes, the site is estimated to generate approximately 30 vehicle trips during the peak hour with all trips likely to be outbound.

Superseded

5.1.3. Special Hindu Festival Days

- Special Hindu Festival Days occurring on average once per month

If on a weekday	50-75 people (morning session)	6:00am to 12:00pm
	200-250 people (evening session)	5.00pm to 9.00pm
If on a weekend day	200 people (morning session)	6:00am to 12:00pm
	200-250 people (evening session)	5.00pm to 9.00pm

If occurring on a weekday, the traffic generation from a Special Hindu Festival Day is estimated to be 326 vehicle movements per day (163 inbound and 163 outbound) including approximately 33 vehicle movements during each peak hour, mostly inbound as the peak hours coincide with the start of the prayer sessions.

If occurring on a weekend day, the traffic generation from a Special Hindu Festival Day is estimated to be 450 vehicle movements per day (225 inbound and 225 outbound) including approximately 45 vehicle movements during the midday peak hour, mostly outbound as the peak hour coincides with the end of the morning prayer session.

5.1.4. Hindu Weddings

- Hindu Weddings occurring on average 6 times per year only on weekends

	300-400 people	6:00pm to 12:00am

A higher average car occupancy of 3 persons per car has been assumed for Hindu weddings to account for a likely higher proportion of families. A wedding is therefore estimated to generate approximately 266 vehicle movements including 133 inbound movements before the wedding and 133 vehicle movements after the wedding.

Superseded

5.2. Mid-Block Capacity

5.2.1. Peak Hour Traffic Capacity

As detailed in the previous section, the traffic generated from the development throughout the majority of the year (approximately 347 days per year) will be relatively low with a maximum hourly traffic generation of 30 vehicle movements expected. According to the WAPC TIA guidelines, an increase of between 10 to 100 peak hour vehicles is considered to have a low to moderate impact and is generally accepted as being acceptable without needing detailed capacity analysis. The estimated 30 vehicles is at the lower end of this range and so regular day-to-day usage of the site is considered to have a low traffic impact and the development traffic can be accommodated within the capacity of the existing road network.

On special Hindu festival days occurring approximately 12 times per year, the expected traffic generation is also relatively low with a maximum hourly traffic generation of 33 vehicle movements each peak hour if occurring on a weekday or up to 45 vehicle movements during the mid-day peak hour if occurring on a weekend. This volume of traffic can also be accommodated within the capacity of the existing road network.

A Hindu wedding (approximately 6 per year) is likely to be the highest peak hour traffic generator. However, the arrival and departure periods are likely to occur outside of the weekend peak period from 11am to 4pm. The traffic impact of this is assessed further in the following sections.

5.2.2. Daily Traffic Capacity

Folly Road is currently classified as an access road with a target daily traffic volume of 3,000 vehicles per day according to WAPC *Liveable Neighbourhoods*.

On a weekday, the maximum post-development daily traffic volume is estimated to be 2,918 vehicles per day on a Special Hindu Festival Day. The daily traffic will be much lower for the majority of the year..

On a weekend, the maximum post-development daily traffic volume is estimated to be 2,345 vehicles per day. Both values are within the target value of 3,000 vehicles per day.

Superseded

5.3. Intersection and Access Capacity

The peak hour capacity has been undertaken in SIDRA Intersection 9.0. The assessment includes the main site crossover on Folly Road and the nearby Kwinana Freeway / Folly Road / Safety Bay Road signalised ramp intersections. The following critical peak hours have been assessed:

- Weekday morning peak hour on a special Hindu festival day
- Weekday afternoon peak hour on a special Hindu festival day
- Weekend mid-day peak hour on a special Hindu festival day
- Weekend 5 to 6pm on a Hindu wedding day

The intersection peak hour traffic flows, signal phasing, average cycle times and other key inputs were derived from Main Roads WA SCATS signal data and the model has been set up according to Main Roads WA's *Operational Modelling Guidelines*. For the weekend, the Saturday traffic volumes were used as the daily and peak hour volumes were higher than on Sunday. For the Hindu wedding days, it is conservatively assumed that all arrival traffic arrives within the single hour.

The majority of site traffic is likely to be generated to and from the west along Folly Road and it is assumed that site traffic is split as follows:

- 20% west via Safety Bay Road
- 60% north via Kwinana Freeway
- 20% south via Kwinana Freeway

The modelled layouts are shown in Figure 8. The freeway ramps were modelled together as a network.

Superseded

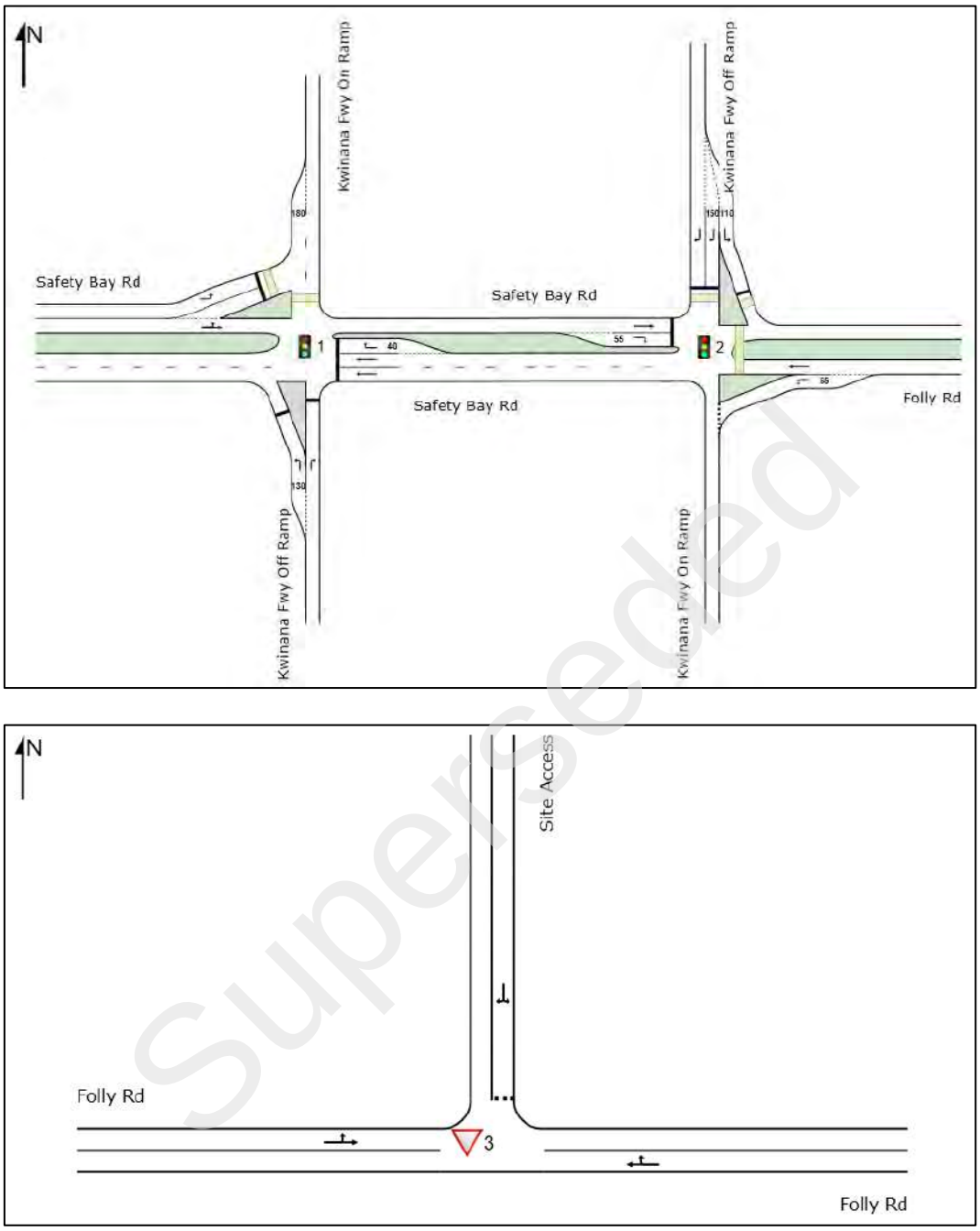


Figure 8: Modelled Layouts

Superseded

The assessment results are included as Appendix A and summarised in Table 1 and Table 2.

Table 1: SIDRA Results – Freeway Ramp Intersections

Scenario	Average LOS	Worst LOS	DOS	Average Delay	Worst Delay	95%ile Queue
Weekday AM Peak – Existing	C	C	0.622	14.1s	32.4s	50.0m
Weekday PM Peak – Existing	B	D	0.811	16.3s	48.2s	92.7m
Weekend PM Peak – Existing	B	D	0.613	14.3s	37.5s	50.9m
Weekday AM Peak – Festival Day	C	C	0.618	14.1s	33.1s	50.3m
Weekday PM Peak – Festival Day	B	D	0.811	16.4s	48.2s	92.7m
Weekend PM Peak – Festival Day	B/C	D	0.697	15.2s	35.6s	53.2m
Weekend 5-6PM – Wedding Day	B	D	0.525	14.6s	43.5s	49.3m

Table 2: SIDRA Results – Main Site Access

Scenario	Average LOS	Worst LOS	DOS	Average Delay	Worst Delay	95%ile Queue
Weekday AM Peak – Festival Day	A	A	0.090	1.5s	10.0s	0.0m
Weekday PM Peak – Festival Day	A	A	0.090	1.1s	9.9s	0.0m
Weekend PM Peak – Festival Day	A	A	0.054	0.1s	9.9s	0.5m
Weekend 5-6PM – Wedding Day	A	A	0.111	4.8s	10.0s	0.0m

As shown, the freeway ramp intersections operate within capacity with and without the development traffic. The development traffic represents a small proportion of the background traffic and so the level of performance is relatively similar to the existing performance.

The proposed main site access will also operate well within capacity under all peak hour scenarios.

5.4. Long Term Capacity

For development applications, it is standard practice to assess the long term capacity of the road network, typically 10 years following opening of the development. As mentioned previously, the site and surrounding areas to the west of Kwinana Freeway are not flagged for development by 2050 and so it is unlikely that traffic volumes would increase in the foreseeable future. On this basis, a long term capacity analysis is not considered necessary.

Superseded

6. Analysis of Development Access

6.1. Location

The access arrangement of the development is shown in Figure 9.

The main access is located slightly to the east of the existing access on Folly Road. A secondary egress is proposed on Young Road which will only be used for service vehicle and emergency vehicles.

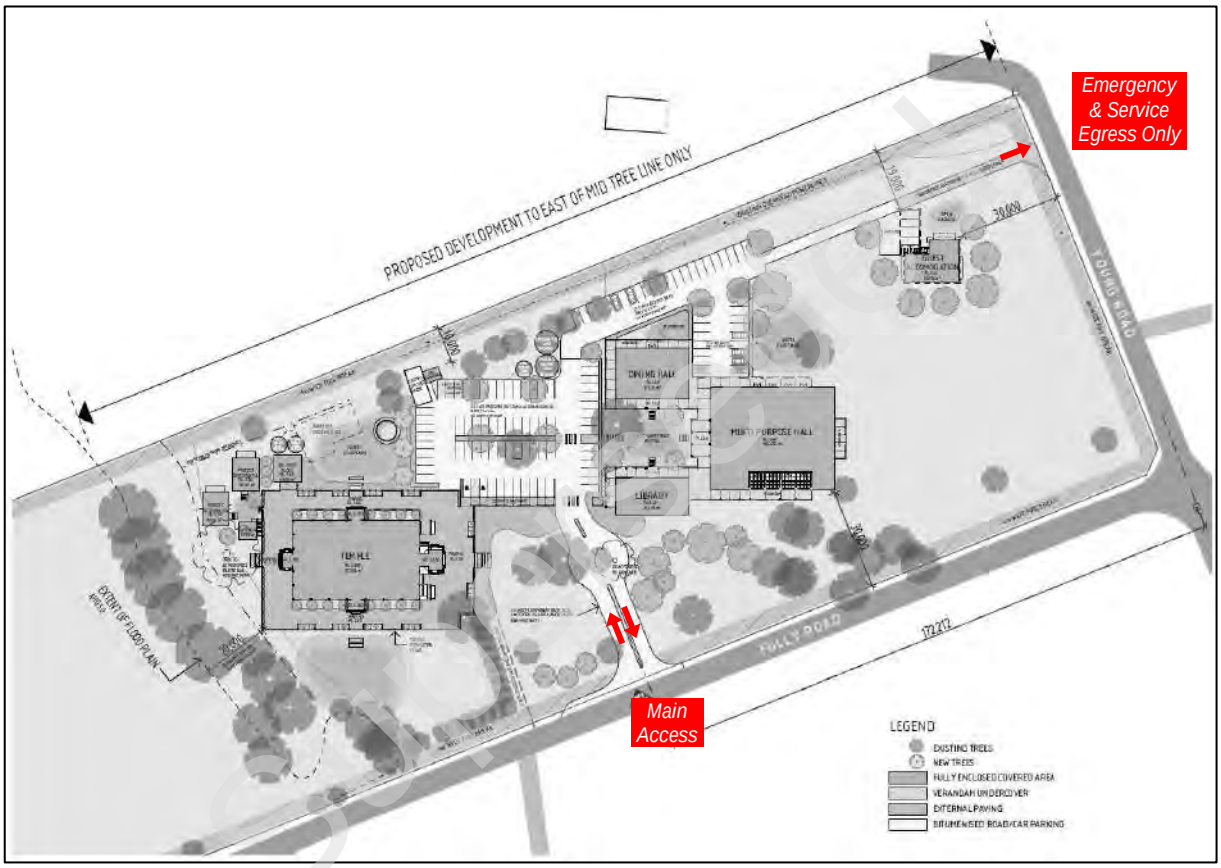
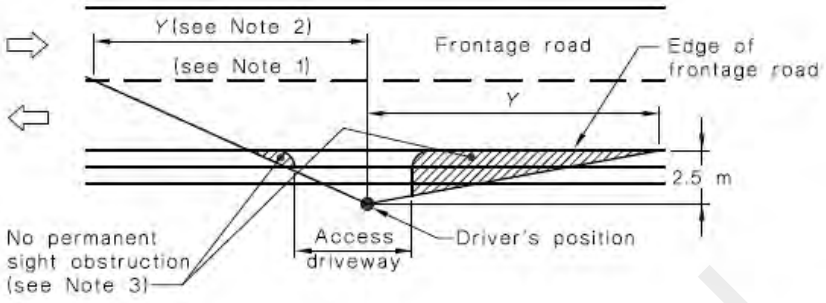


Figure 9: Proposed Access Arrangement

As mentioned previously, the section of Folly Road between Kwinana Freeway and Young Road is reserved as a regional road under the Metropolitan Region Scheme and according to regional road mapping, the frontage section of Folly Road is a Category 2 regional road on which frontage access may be allowed subject to approval.

6.2. Sight Distance

Sight distance requirements from vehicle exit points is defined in Figure 3.2 of AS2890.1 as shown in Figure 10.



Frontage road speed (Note 4) km/h	Distance (Y) along frontage road m		
	Access driveways other than domestic (Note 5)		Domestic property access (Note 6)
	Desirable 5 s gap	Minimum SSD	
40	55	35	30
50	69	45	40
60	83	65	55
70	97	85	70
80	111	105	95
90	125	130	Use values from 2nd and 3rd columns
100	139	160	
110	153	190	

Figure 10: Sight Distance Requirements

Superseded

6.2.1. Folly Road

Based on the 80km/h speed limit along the frontage section of Folly Road, the minimum required sight distance is 105m (111m desirable).

The sight distance check is shown Figure 11.



Figure 11: Sight Distance Check – Folly Road

As shown, the desirable sight distance is achieved in both directions. Vertically, the geometry of Folly Road near the proposed crossover is relatively flat with no crests that would impede sight distance.

There is some vegetation close to or within the roadside area which should be monitored and trimmed to ensure that adequate sight distance is maintained.

Superseded

6.2.2. Young Road

Based on the layout and geometry of the adjacent section of Young Road, the likely operating speed south of the proposed egress is estimated to be 50km/h which requires a minimum of 45m sight distance (69m desirable). To the north of the egress is a relatively tight curve and the speed of vehicles approaching from this direction would be much lower. Based on the curve radius (approximately 17m), the approach speed around the curve is estimated to be 25km/h which requires approximately 21m of sight distance.

The sight distance check is shown Figure 12.



Superseded

Figure 12: Sight Distance Check – Young Road

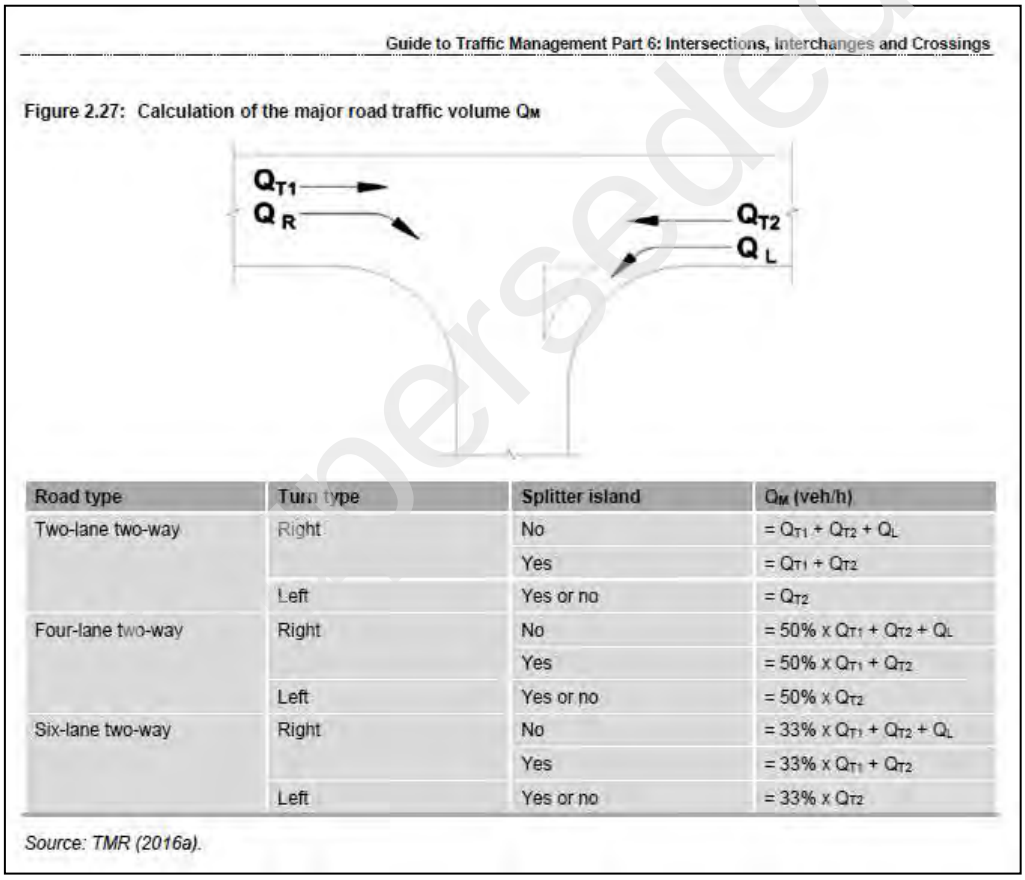
As shown, the required sight distance is achieved in both directions. Vertically, the geometry of Young Road near the proposed crossover is also relatively flat with no crests that would impede sight distance.

6.3. Auxiliary Lanes

Considering the high speed environment and relatively high proportion of heavy vehicles along Folly Road, the Austroads warrants for turn treatments at intersections has been applied to the main access.

The warrants are outlined in Austroads *Guide to Road Design Part 4: Intersections and Crossings – General* (AGRD04) and are used to provide guidance on the provision of intersection turn treatments from the major road based on safety and capacity. The warrants assessment has been undertaken using the Main Roads WA Intersection Warrants Calculator spreadsheet which modifies the AGRD04 equation to account for the high percentage of heavy vehicles in WA.

The input traffic volumes have been calculated as per Figure 13.



Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings

Figure 2.27: Calculation of the major road traffic volume Q_M

Road type	Turn type	Splitter island	Q_M (veh/h)
Two-lane two-way	Right	No	$= Q_{T1} + Q_{T2} + Q_L$
		Yes	$= Q_{T1} + Q_{T2}$
	Left	Yes or no	$= Q_{T2}$
Four-lane two-way	Right	No	$= 50\% \times Q_{T1} + Q_{T2} + Q_L$
		Yes	$= 50\% \times Q_{T1} + Q_{T2}$
	Left	Yes or no	$= 50\% \times Q_{T2}$
Six-lane two-way	Right	No	$= 33\% \times Q_{T1} + Q_{T2} + Q_L$
		Yes	$= 33\% \times Q_{T1} + Q_{T2}$
	Left	Yes or no	$= 33\% \times Q_{T2}$

Source: TMR (2016a).

Figure 13: Major Road Traffic Volume Calculation

The same critical scenarios used for the access capacity analysis have been used for this assessment except for the *Weekend PM Peak – Festival Day* as the majority of movements will be outbound during this period.

The results of the warrants assessment are shown in Figure 14.

INTERSECTION WARRANTS

Main Roads WA Supplement to Austroads Guide to Road Design - Part 4 A.8

DESIGN SPEED =	90km/h
SPLITTER ISLAND YES / NO =	No
DUAL CARRIAGEWAY YES / NO =	No

MOVEMENT	COUNT (v/h)	HV (%)
Q_{T1} =	66	13.6
Q_R =	0	0
Q_{T2} =	120	15
Q_L =	33	0

RIGHT TURN ASSESSMENT

Q_m =	219
% HV =	12.318
x =	0.00
TREATMENT =	BAR

LEFT TURN ASSESSMENT

Q_m =	120
% HV =	15.000
x =	0.77
TREATMENT =	BAL

Weekday AM Peak
Festival Day

INTERSECTION WARRANTS

Main Roads WA Supplement to Austroads Guide to Road Design - Part 4 A.8

DESIGN SPEED =	90km/h
SPLITTER ISLAND YES / NO =	No
DUAL CARRIAGEWAY YES / NO =	No

MOVEMENT	COUNT (v/h)	HV (%)
Q_{T1} =	165	9.1
Q_R =	0	0
Q_{T2} =	94	12.8
Q_L =	33	0

RIGHT TURN ASSESSMENT

Q_m =	292
% HV =	9.263
x =	0.00
TREATMENT =	BAR

LEFT TURN ASSESSMENT

Q_m =	94
% HV =	12.800
x =	0.61
TREATMENT =	BAL

Weekday PM Peak
Festival Day

INTERSECTION WARRANTS

Main Roads WA Supplement to Austroads Guide to Road Design - Part 4 A.8

DESIGN SPEED =	90km/h
SPLITTER ISLAND YES / NO =	No
DUAL CARRIAGEWAY YES / NO =	No

MOVEMENT	COUNT (v/h)	HV (%)
Q_{T1} =	81	9.9
Q_R =	0	0
Q_{T2} =	63	9.5
Q_L =	133	0

RIGHT TURN ASSESSMENT

Q_m =	277
% HV =	5.056
x =	0.00
TREATMENT =	BAR

LEFT TURN ASSESSMENT

Q_m =	63
% HV =	9.500
x =	0.73
TREATMENT =	BAL

Weekend 5-6PM
Wedding Day

Superseded

Figure 14: Warrants Assessment Results

As shown, all scenarios warrant a Basic Left (BAL) treatment which is a widened shoulder that allows turning vehicles to move off the through carriageway, making it easier for through vehicles to pass.

The typical layout of a BAL treatment is shown in Figure 15.

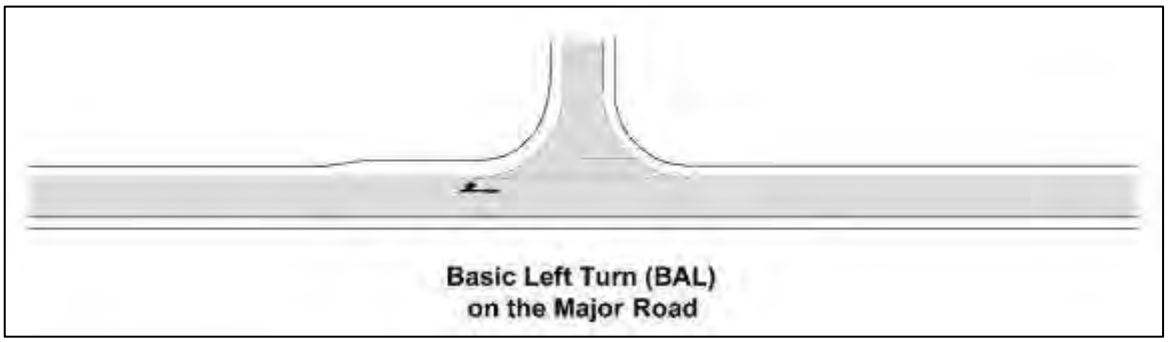


Figure 15: BAL Layout (Austroads)

Superseded

6.4. Service Vehicle Access

A swept path assessment has been undertaken using Autodesk Vehicle Tracking to check the manoeuvrability of trucks through the site. The Australian Standard 8.8m Medium Rigid Truck template has been used to check waste vehicle manoeuvrability to and from the bin compound area. A swept path has also been undertaken for the largest emergency vehicle which is understood to be a DFES 9.3m Combination Ladder Platform Truck. The emergency vehicle swept path was undertaken using a custom vehicle template created using the specifications noted on the DFES website.

The results of the swept path assessment are attached as Appendix B which demonstrate that the access and site layout provides adequate manoeuvrability for the expected service vehicles.

It is recommended that waste vehicle collection is scheduled outside of peak periods of traffic and operations where possible to minimise the impact on other users.

Superseded

7. Road Safety

7.1. Crash History

The crash history of the adjacent road network was obtained from the MRWA Reporting Centre. The search included the length of Folly Road from Kwinana Freeway to Young Road and the section of Young Road north of Folly Road. A summary of the recorded incidents over the five-year period ending December 2020 is shown in Figure 16.

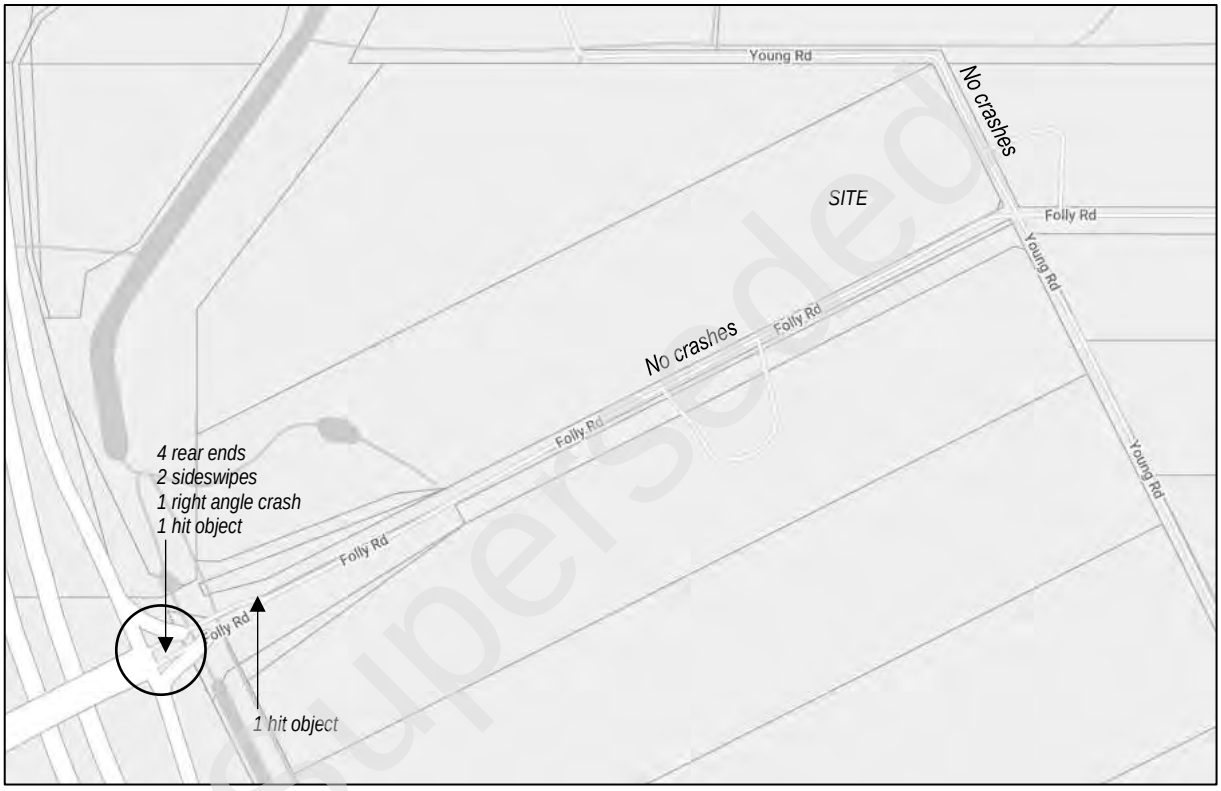


Figure 16: Crash History January 2016 to December 2020

The number and type of crashes do not indicate any major safety issues on the road network. There is no indication that the proposed development would increase the risk of crashes unacceptably.

Superseded

8. Alternative Transport Modes

8.1. Public Transport

The closest public transport services are located approximately 1.6km towards the west on the opposite side of the freeway. The demand for public transport is generally low for places of worship and so the provision of new services for the development is not warranted.

8.2. Pedestrian / Cycle Access

There are no paths along and the nearest path begins at the freeway ramp intersections.

Based on the proposed use and the relatively remote location, the demand for pedestrian or cycle access would be minimal and so the provision of paths or cycling infrastructure is not considered necessary.

Superseded

9. Parking

9.1. Car Parking Provision

The current plans indicate that the development will include a total of 109 on-site car parking including 65 bays in the main car park.

9.2. Car Parking Requirements

According to the City's Local Planning Scheme, the parking requirement for a Place of Worship is 1 bay per 4 persons accommodated.

Throughout the majority of the year, the typical attendance at any one time or session is up to 150 people and so the parking requirement would be 38 bays. The proposed 65 bays in the main car park is therefore sufficient on a regular day-to-day basis.

For the special Hindu festival days occurring on average once per month, the typical attendance at any one time or session is up to 250 people and so the parking requirement would be 63 bays. The proposed 65 bays in the main car park is also likely to be sufficient for the festival days.

For Hindu weddings occurring approximately 6 times per year, the typical attendance is up to 400 people which would require 100 bays. For these events, the additional parking areas may need to be used. The overall supply of 109 bays exceeds the calculated parking demand.

It is noted that the proposed dining hall will not generate traffic and will only be used by worshippers after regular prayer attendance if they wish to do so.

Overall, the proposed parking provision satisfies the requirements of the Local Planning Scheme and is considered to be adequate to meet the likely parking demand of the development.

Superseded

10. Conclusions

A Transport Impact Assessment for the proposed place of worship at 67 Folly Road in Baldivis has concluded the following:

- The volume of traffic generated by the proposed development can be accommodated within the capacity of the road network.
- The main site access warrants the provision of a Basic Left (BAL) turn treatment which is a widened shoulder.
- The minimum and desirable sight distance is achieved from both crossovers in both directions.
- A swept path assessment demonstrates that the site layout will adequately accommodate the movement of service and emergency vehicles.
- The crash history does not indicate any major safety issues on the road network and there is no indication that the proposed development would increase the risk of crashes unacceptably.
- The demand for public transport is generally low for places of worship and so the provision of new services for the development is not warranted.
- Based on the proposed use and the relatively remote location, the demand for pedestrian or cycle access would be minimal and so the provision of paths or cycling infrastructure is not considered necessary.
- The provision of 109 car bays satisfies the requirements of the City's Local Planning Scheme.

Superseded

Appendix A – SIDRA Analysis Results

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [SCATS]

Network: N101 [Weekday AM Peak (Network Folder: Existing)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 52 seconds (CCG Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h]	HV] %	ARRIVAL FLOWS [Total veh/h]	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh]	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: 1 [West Ramps - Weekday AM Peak]														
South: Kwinana Fwy Off Ramp														
1	L2	111	9.8	111	9.8	*0.546	32.4	LOS C	1.8	13.5	0.99	0.79	1.03	41.1
3	R2	7	9.8	7	9.8	0.036	29.7	LOS C	0.1	0.8	0.91	0.66	0.91	33.1
Approach		118	9.8	118	9.8	0.546	32.2	LOS C	1.8	13.5	0.98	0.78	1.02	40.8
East: Safety Bay Rd														
5	T1	716	8.3	716	8.3	0.311	2.4	LOS A	1.3	9.7	0.22	0.19	0.22	65.1
6	R2	19	8.3	19	8.3	*0.093	31.7	LOS C	0.3	2.3	1.00	0.70	1.00	31.8
Approach		735	8.3	735	8.3	0.311	3.1	LOS A	1.3	9.7	0.24	0.21	0.24	63.4
West: Safety Bay Rd														
10	L2	1100	8.3	1100	8.3	0.622	15.0	LOS B	6.7	50.0	0.68	0.77	0.68	52.7
11	T1	241	8.3	241	8.3	*0.622	7.6	LOS A	5.8	43.4	0.68	0.73	0.68	47.7
Approach		1341	8.3	1341	8.3	0.622	13.7	LOS B	6.7	50.0	0.68	0.76	0.68	52.1
All Vehicles		2194	8.4	2194	8.4	0.622	11.2	LOS B	6.7	50.0	0.55	0.58	0.55	53.5
Site: 2 [East Ramps - Weekday AM Peak]														
East: Folly Rd														
10	L2	5	12.2	5	12.2	0.004	8.3	LOS A	0.0	0.1	0.34	0.61	0.34	55.5
11	T1	60	12.2	60	12.2	0.285	24.5	LOS C	0.9	7.1	0.95	0.71	0.95	36.3
Approach		65	12.2	65	12.2	0.285	23.2	LOS C	0.9	7.1	0.90	0.70	0.90	38.3
North: Kwinana Fwy Off Ramp														
1	L2	5	14.5	5	14.5	0.008	18.0	LOS B	0.1	0.4	0.65	0.64	0.65	48.1
3	R2	656	14.5	656	14.5	0.557	21.8	LOS C	4.3	33.7	0.86	0.82	0.86	38.5
Approach		661	14.5	661	14.5	0.557	21.7	LOS C	4.3	33.7	0.86	0.82	0.86	38.6
West: Safety Bay Rd														
5	T1	111	8.3	111	8.3	0.162	8.4	LOS A	0.8	6.3	0.50	0.40	0.50	55.3
6	R2	136	8.3	136	8.3	0.569	25.5	LOS C	1.9	14.5	0.88	0.77	0.90	35.2
Approach		246	8.3	246	8.3	0.569	17.8	LOS B	1.9	14.5	0.71	0.61	0.72	42.1
All Vehicles		973	12.8	973	12.8	0.569	20.8	LOS C	4.3	33.7	0.82	0.76	0.83	39.5

Superseded

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [SCATS]

Network: N101 [Weekday PM Peak (Network Folder: Existing)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 76 seconds (CCG Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: 1 [West Ramps - Weekday PM Peak]														
South: Kwinana Fwy Off Ramp														
1	L2	168	9.8	168	9.8	* 0.811	48.2	LOS D	4.3	32.4	1.00	0.94	1.33	34.9
3	R2	7	9.8	7	9.8	0.035	39.4	LOS D	0.2	1.2	0.91	0.66	0.91	28.2
Approach		176	9.8	176	9.8	0.811	47.9	LOS D	4.3	32.4	1.00	0.92	1.31	34.8
East: Safety Bay Rd														
5	T1	1323	8.3	1323	8.3	0.507	2.5	LOS A	3.5	26.0	0.22	0.20	0.22	64.9
6	R2	9	8.3	9	8.3	0.068	44.8	LOS D	0.2	1.7	1.00	0.67	1.00	26.8
Approach		1333	8.3	1333	8.3	0.507	2.8	LOS A	3.5	26.0	0.23	0.20	0.23	64.2
West: Safety Bay Rd														
10	L2	764	8.3	764	8.3	0.388	11.1	LOS B	4.2	31.5	0.41	0.65	0.41	55.4
11	T1	233	8.3	233	8.3	* 0.388	4.0	LOS A	4.1	30.5	0.43	0.55	0.43	54.5
Approach		997	8.3	997	8.3	0.388	9.4	LOS A	4.2	31.5	0.41	0.63	0.41	55.3
All Vehicles		2505	8.4	2505	8.4	0.811	8.6	LOS A	4.3	32.4	0.36	0.42	0.38	55.6
Site: 2 [East Ramps - Weekday PM Peak]														
East: Folly Rd														
10	L2	18	12.2	18	12.2	0.014	8.2	LOS A	0.1	0.5	0.26	0.61	0.26	55.7
11	T1	151	12.2	151	12.2	0.522	33.1	LOS C	3.3	25.4	0.96	0.77	0.96	31.1
Approach		168	12.2	168	12.2	0.522	30.4	LOS C	3.3	25.4	0.89	0.76	0.89	34.0
North: Kwinana Fwy Off Ramp														
1	L2	14	14.5	14	14.5	0.018	19.2	LOS B	0.2	1.3	0.58	0.66	0.58	47.4
3	R2	1159	14.5	1159	14.5	* 0.762	27.5	LOS C	11.8	92.7	0.90	0.88	0.96	34.4
Approach		1173	14.5	1173	14.5	0.762	27.4	LOS C	11.8	92.7	0.90	0.88	0.95	34.6
West: Safety Bay Rd														
5	T1	93	8.3	93	8.3	0.134	17.2	LOS B	1.4	10.2	0.68	0.54	0.68	45.3
6	R2	146	8.3	146	8.3	0.697	43.5	LOS D	3.4	25.8	1.00	0.84	1.11	27.4
Approach		239	8.3	239	8.3	0.697	33.3	LOS C	3.4	25.8	0.87	0.72	0.94	32.3
All Vehicles		1580	13.3	1580	13.3	0.762	28.6	LOS C	11.8	92.7	0.89	0.84	0.94	34.1

signed

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [SCATS]

Network: N101 [Weekend PM Peak (Network Folder: Existing)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 62 seconds (CCG Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: 1 [West Ramps - Weekend PM Peak]														
South: Kwinana Fwy Off Ramp														
1	L2	155	9.8	155	9.8	* 0.608	35.6	LOS D	2.9	22.0	0.98	0.82	1.04	39.7
3	R2	6	9.8	6	9.8	0.025	31.7	LOS C	0.1	0.8	0.88	0.65	0.88	32.0
Approach		161	9.8	161	9.8	0.608	35.5	LOS D	2.9	22.0	0.98	0.81	1.04	39.5
East: Safety Bay Rd														
5	T1	972	8.3	972	8.3	0.413	2.8	LOS A	2.2	16.7	0.24	0.21	0.24	64.3
6	R2	20	8.3	20	8.3	* 0.117	37.5	LOS D	0.4	2.9	1.00	0.70	1.00	29.4
Approach		992	8.3	992	8.3	0.413	3.5	LOS A	2.2	16.7	0.25	0.22	0.25	62.8
West: Safety Bay Rd														
10	L2	895	8.3	895	8.3	0.485	12.6	LOS B	5.2	39.0	0.53	0.70	0.53	54.4
11	T1	245	8.3	245	8.3	* 0.485	5.2	LOS A	4.9	36.8	0.55	0.62	0.55	52.3
Approach		1140	8.3	1140	8.3	0.485	11.0	LOS B	5.2	39.0	0.54	0.69	0.54	54.1
All Vehicles		2293	8.4	2293	8.4	0.608	9.4	LOS A	5.2	39.0	0.44	0.49	0.45	54.8
Site: 2 [East Ramps - Weekend PM Peak]														
East: Folly Rd														
10	L2	12	12.2	12	12.2	0.009	8.3	LOS A	0.0	0.3	0.30	0.61	0.30	55.6
11	T1	92	12.2	92	12.2	0.518	31.2	LOS C	1.8	13.6	0.99	0.77	1.01	32.1
Approach		103	12.2	103	12.2	0.518	28.6	LOS C	1.8	13.6	0.91	0.75	0.93	35.1
North: Kwinana Fwy Off Ramp														
1	L2	9	14.5	9	14.5	0.013	18.0	LOS B	0.1	0.8	0.60	0.65	0.60	48.1
3	R2	874	14.5	874	14.5	0.613	21.9	LOS C	6.5	50.9	0.83	0.83	0.83	38.4
Approach		883	14.5	883	14.5	0.613	21.8	LOS C	6.5	50.9	0.83	0.83	0.83	38.6
West: Safety Bay Rd														
5	T1	93	8.3	93	8.3	0.140	14.8	LOS B	1.2	8.8	0.71	0.56	0.71	47.7
6	R2	152	8.3	152	8.3	0.589	34.3	LOS C	2.8	21.0	0.97	0.81	1.01	30.9
Approach		244	8.3	244	8.3	0.589	26.9	LOS C	2.8	21.0	0.87	0.71	0.90	35.7
All Vehicles		1231	13.1	1231	13.1	0.613	23.4	LOS C	6.5	50.9	0.85	0.80	0.85	37.6

superseded

SHAWMAC

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [SCATS]

Network: N101 [Weekday AM Peak - Festival Day (Network Folder: Future)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 53 seconds (CCG Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h]	DEMAND FLOWS HV [%]	ARRIVAL FLOWS [Total veh/h]	ARRIVAL FLOWS HV [%]	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh]	AVERAGE BACK OF QUEUE Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: 1 [West Ramps - Weekday AM Peak - Festival Day]														
South: Kwinana Fwy Off Ramp														
1	L2	111	9.8	111	9.8	* 0.557	33.1	LOS C	1.8	13.9	0.99	0.80	1.04	40.8
3	R2	14	5.3	14	5.3	0.067	30.1	LOS C	0.2	1.5	0.92	0.68	0.92	31.8
Approach		124	9.3	124	9.3	0.557	32.7	LOS C	1.8	13.9	0.98	0.78	1.03	40.1
East: Safety Bay Rd														
5	T1	716	8.3	716	8.3	0.307	2.3	LOS A	1.3	9.7	0.22	0.19	0.22	65.2
6	R2	19	8.3	19	8.3	* 0.094	32.3	LOS C	0.3	2.4	1.00	0.70	1.00	31.6
Approach		735	8.3	735	8.3	0.307	3.1	LOS A	1.3	9.7	0.24	0.20	0.24	63.4
West: Safety Bay Rd														
10	L2	1100	8.3	1100	8.3	0.618	14.8	LOS B	6.7	50.3	0.67	0.76	0.67	52.8
11	T1	248	8.1	248	8.1	* 0.618	7.4	LOS A	6.0	44.7	0.67	0.71	0.67	48.1
Approach		1348	8.3	1348	8.3	0.618	13.5	LOS B	6.7	50.3	0.67	0.75	0.67	52.3
All Vehicles		2207	8.3	2207	8.3	0.618	11.1	LOS B	6.7	50.3	0.54	0.57	0.54	53.5
Site: 2 [East Ramps - Weekday AM Peak - Festival Day]														
East: Folly Rd														
10	L2	5	12.2	5	12.2	0.004	8.3	LOS A	0.0	0.1	0.33	0.61	0.33	55.5
11	T1	60	12.2	60	12.2	0.290	25.1	LOS C	0.9	7.3	0.95	0.71	0.95	35.9
Approach		65	12.2	65	12.2	0.290	23.7	LOS C	0.9	7.3	0.90	0.71	0.90	37.9
North: Kwinana Fwy Off Ramp														
1	L2	26	2.9	26	2.9	0.038	17.1	LOS B	0.3	1.9	0.66	0.67	0.66	46.9
3	R2	656	14.5	656	14.5	0.538	21.4	LOS C	4.3	33.6	0.84	0.82	0.84	38.8
Approach		682	14.1	682	14.1	0.538	21.3	LOS C	4.3	33.6	0.84	0.81	0.84	39.3
West: Safety Bay Rd														
5	T1	124	7.4	124	7.4	0.184	9.0	LOS A	1.0	7.5	0.53	0.43	0.53	53.8
6	R2	136	8.3	136	8.3	0.580	26.3	LOS C	2.0	15.0	0.90	0.78	0.91	34.8
Approach		260	7.9	260	7.9	0.580	18.1	LOS B	2.0	15.0	0.72	0.61	0.73	41.9
All Vehicles		1007	12.3	1007	12.3	0.580	20.6	LOS C	4.3	33.6	0.81	0.75	0.81	39.9

Superseded

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [SCATS]

Network: N101 [Weekday PM Peak - Festival Day (Network Folder: Future)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 76 seconds (CCG Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h]	DEMAND FLOWS HV] %	ARRIVAL FLOWS [Total veh/h]	ARRIVAL FLOWS HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh veh]	AVERAGE BACK OF QUEUE Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: 1 [West Ramps - Weekday PM Peak - Festival Day]														
South: Kwinana Fwy Off Ramp														
1	L2	168	9.8	168	9.8	0.811	48.2	LOS D	4.3	32.4	1.00	0.94	1.33	34.9
3	R2	14	5.3	14	5.3	0.064	39.3	LOS D	0.3	2.1	0.92	0.68	0.92	27.5
Approach		182	9.5	182	9.5	0.811	47.5	LOS D	4.3	32.4	0.99	0.92	1.30	34.6
East: Safety Bay Rd														
5	T1	1323	8.3	1323	8.3	0.507	2.5	LOS A	3.5	26.0	0.22	0.20	0.22	64.9
6	R2	9	8.3	9	8.3	0.068	44.8	LOS D	0.2	1.7	1.00	0.67	1.00	26.8
Approach		1333	8.3	1333	8.3	0.507	2.8	LOS A	3.5	26.0	0.23	0.20	0.23	64.2
West: Safety Bay Rd														
10	L2	764	8.3	764	8.3	0.392	11.1	LOS B	4.3	31.9	0.41	0.65	0.41	55.4
11	T1	240	8.0	240	8.0	0.392	4.0	LOS A	4.1	30.7	0.43	0.54	0.43	54.5
Approach		1004	8.2	1004	8.2	0.392	9.4	LOS A	4.3	31.9	0.41	0.63	0.41	55.3
All Vehicles		2519	8.4	2519	8.4	0.811	8.7	LOS A	4.3	32.4	0.36	0.42	0.38	55.5
Site: 2 [East Ramps - Weekday PM Peak - Festival Day]														
East: Folly Rd														
10	L2	18	12.2	18	12.2	0.014	8.2	LOS A	0.1	0.5	0.26	0.61	0.26	55.7
11	T1	151	12.2	151	12.2	0.522	33.1	LOS C	3.3	25.4	0.96	0.77	0.96	31.1
Approach		168	12.2	168	12.2	0.522	30.4	LOS C	3.3	25.4	0.89	0.76	0.89	34.0
North: Kwinana Fwy Off Ramp														
1	L2	35	5.7	35	5.7	0.043	18.7	LOS B	0.4	3.2	0.59	0.67	0.59	46.4
3	R2	1159	14.5	1159	14.5	0.762	27.5	LOS C	11.8	92.7	0.90	0.88	0.96	34.4
Approach		1194	14.2	1194	14.2	0.762	27.2	LOS C	11.8	92.7	0.89	0.88	0.95	34.9
West: Safety Bay Rd														
5	T1	106	7.2	106	7.2	0.153	17.4	LOS B	1.5	11.1	0.65	0.52	0.65	44.6
6	R2	146	8.3	146	8.3	0.697	43.5	LOS D	3.4	25.8	1.00	0.84	1.11	27.4
Approach		253	7.9	253	7.9	0.697	32.5	LOS C	3.4	25.8	0.85	0.70	0.92	32.7
All Vehicles		1615	13.0	1615	13.0	0.762	28.4	LOS C	11.8	92.7	0.89	0.84	0.94	34.4

Superseded

SHAWMAC

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [SCATS]

Network: N101 [Weekend PM Peak - Festival Day (Network Folder: Future)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 57 seconds (CCG Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h]	DEMAND FLOWS HV] %	ARRIVAL FLOWS [Total veh/h]	ARRIVAL FLOWS HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh veh]	AVERAGE BACK OF QUEUE Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: 1 [West Ramps - Weekend PM Peak - Festival Day]														
South: Kwinana Fwy Off Ramp														
1	L2	155	9.8	155	9.8	0.629	34.0	LOS C	2.7	20.7	0.99	0.83	1.08	40.4
3	R2	6	9.8	6	9.8	0.026	30.1	LOS C	0.1	0.7	0.89	0.65	0.89	32.9
Approach		161	9.8	161	9.8	0.629	33.9	LOS C	2.7	20.7	0.99	0.83	1.08	40.2
East: Safety Bay Rd														
5	T1	981	8.2	981	8.2	0.427	3.8	LOS A	3.0	22.5	0.33	0.29	0.33	62.4
6	R2	48	3.4	48	3.4	0.251	35.6	LOS D	0.9	6.3	1.00	0.74	1.00	29.7
Approach		1029	8.0	1029	8.0	0.427	5.3	LOS A	3.0	22.5	0.36	0.31	0.36	59.3
West: Safety Bay Rd														
10	L2	895	8.3	895	8.3	0.512	13.2	LOS B	5.3	39.8	0.58	0.72	0.58	54.0
11	T1	245	8.3	245	8.3	0.512	5.7	LOS A	4.9	36.9	0.60	0.65	0.60	51.6
Approach		1140	8.3	1140	8.3	0.512	11.6	LOS B	5.3	39.8	0.58	0.70	0.58	53.7
All Vehicles		2331	8.3	2331	8.3	0.629	10.3	LOS B	5.3	39.8	0.51	0.54	0.52	53.8
Site: 2 [East Ramps - Weekend PM Peak - Festival Day]														
East: Folly Rd														
10	L2	21	6.7	21	6.7	0.017	7.9	LOS A	0.1	0.6	0.33	0.61	0.33	54.4
11	T1	129	8.6	129	8.6	0.565	27.8	LOS C	2.3	17.0	0.99	0.79	1.03	33.6
Approach		151	8.4	151	8.4	0.565	25.0	LOS C	2.3	17.0	0.89	0.77	0.93	37.0
North: Kwinana Fwy Off Ramp														
1	L2	9	14.5	9	14.5	0.015	19.1	LOS B	0.1	0.8	0.65	0.65	0.65	47.5
3	R2	874	14.5	874	14.5	0.697	24.4	LOS C	6.8	53.2	0.91	0.86	0.96	36.5
Approach		883	14.5	883	14.5	0.697	24.3	LOS C	6.8	53.2	0.90	0.86	0.96	36.7
West: Safety Bay Rd														
5	T1	93	8.3	93	8.3	0.128	12.3	LOS B	0.9	7.0	0.61	0.48	0.61	50.4
6	R2	152	8.3	152	8.3	0.610	30.0	LOS C	2.5	18.9	0.95	0.80	0.98	32.9
Approach		244	8.3	244	8.3	0.610	23.3	LOS C	2.5	18.9	0.82	0.68	0.84	37.9
All Vehicles		1278	12.6	1278	12.6	0.697	24.2	LOS C	6.8	53.2	0.89	0.82	0.93	37.0

Superseded

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [SCATS]

Network: N101 [Weekend 5-6PM - Wedding Day (Network Folder: Future)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 72 seconds (CCG Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: 1 [West Ramps - Weekend 5-6PM - Wedding Day]														
South: Kwinana Fwy Off Ramp														
1	L2	116	9.8	116	9.8	* 0.475	39.2	LOS D	2.4	18.4	0.97	0.78	0.97	38.2
3	R2	31	1.0	31	1.0	0.118	36.0	LOS D	0.6	4.2	0.91	0.71	0.91	28.0
Approach		146	8.0	146	8.0	0.475	38.5	LOS D	2.4	18.4	0.95	0.77	0.95	36.6
East: Safety Bay Rd														
5	T1	888	8.3	888	8.3	0.356	2.1	LOS A	1.7	12.8	0.17	0.15	0.17	65.7
6	R2	28	8.3	28	8.3	* 0.193	43.5	LOS D	0.6	4.8	1.00	0.72	1.00	27.2
Approach		917	8.3	917	8.3	0.356	3.4	LOS A	1.7	12.8	0.19	0.17	0.19	62.9
West: Safety Bay Rd														
10	L2	746	8.3	746	8.3	0.380	11.3	LOS B	4.0	29.9	0.43	0.66	0.43	55.2
11	T1	205	7.2	205	7.2	* 0.380	4.2	LOS A	3.8	28.0	0.46	0.58	0.46	53.5
Approach		952	8.1	952	8.1	0.380	9.7	LOS A	4.0	29.9	0.44	0.64	0.44	55.0
All Vehicles		2015	8.2	2015	8.2	0.475	8.9	LOS A	4.0	29.9	0.36	0.44	0.36	55.1
Site: 2 [East Ramps - Weekend 5-6PM - Wedding Day]														
East: Folly Rd														
10	L2	11	12.2	11	12.2	0.008	8.0	LOS A	0.0	0.3	0.26	0.61	0.26	55.8
11	T1	113	12.2	113	12.2	0.494	33.5	LOS C	2.4	18.5	0.98	0.77	0.98	30.8
Approach		123	12.2	123	12.2	0.494	31.4	LOS C	2.4	18.5	0.91	0.75	0.91	33.2
North: Kwinana Fwy Off Ramp														
1	L2	95	1.6	95	1.6	0.105	16.5	LOS B	1.1	7.8	0.57	0.69	0.57	47.1
3	R2	794	14.5	794	14.5	0.525	22.2	LOS C	6.3	49.3	0.77	0.81	0.77	38.2
Approach		888	13.1	888	13.1	0.525	21.6	LOS C	6.3	49.3	0.75	0.80	0.75	39.6
West: Safety Bay Rd														
5	T1	118	4.4	118	4.4	0.193	18.9	LOS B	1.6	11.6	0.66	0.54	0.66	42.0
6	R2	115	8.3	115	8.3	0.466	38.0	LOS D	2.4	17.9	0.96	0.78	0.96	29.4
Approach		233	6.3	233	6.3	0.466	28.3	LOS C	2.4	17.9	0.80	0.66	0.80	34.7
All Vehicles		1244	11.8	1244	11.8	0.525	23.8	LOS C	6.3	49.3	0.78	0.77	0.78	37.8

Superseded

SHAWMAC

MOVEMENT SUMMARY

▽ Site: 3 [Site Access - Weekday AM Peak - Festival Day (Site Folder: Future)]

Site Category: -
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg Satn v/c	Aver Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver Speed km/h
East: Folly Rd														
5	T1	66	0	69	0.0	0.036	0.0	LOS A	0.0	0.0	0.01	0.01	0.01	79.7
6	R2	1	0	1	0.0	0.036	8.6	LOS A	0.0	0.0	0.01	0.01	0.01	37.1
Approach		67	0	71	0.0	0.036	0.1	NA	0.0	0.0	0.01	0.01	0.01	78.9
North: Site Access														
7	L2	1	0	1	0.0	0.001	0.3	LOS A	0.0	0.0	0.19	0.06	0.19	32.7
9	R2	1	0	1	0.0	0.001	0.3	LOS A	0.0	0.0	0.19	0.06	0.19	32.6
Approach		2	0	2	0.0	0.001	0.3	LOS A	0.0	0.0	0.19	0.06	0.19	32.6
West: Folly Rd														
10	L2	33	0	35	0.0	0.090	10.0	LOS A	0.0	0.0	0.00	0.25	0.00	38.2
11	T1	120	17	126	14.5	0.090	0.0	LOS A	0.0	0.0	0.00	0.25	0.00	75.9
Approach		153	17	161	11.4	0.090	2.2	NA	0.0	0.0	0.00	0.25	0.00	66.5
All Vehicles		222	17	234	7.8	0.090	1.5	NA	0.0	0.0	0.00	0.18	0.00	69.6

Superseded

MOVEMENT SUMMARY

▽ Site: 3 [Site Access - Weekday PM Peak - Festival Day (Site Folder: Future)]

Site Category: -
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg Satn v/c	Aver Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver Speed km/h
East: Folly Rd														
5	T1	165	0	174	0.0	0.090	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	79.9
6	R2	1	0	1	0.0	0.090	8.6	LOS A	0.0	0.0	0.00	0.01	0.00	37.2
Approach		166	0	175	0.0	0.090	0.1	NA	0.0	0.0	0.00	0.01	0.00	79.5
North: Site Access														
7	L2	1	0	1	0.0	0.001	0.2	LOS A	0.0	0.0	0.17	0.06	0.17	32.7
9	R2	1	0	1	0.0	0.001	0.4	LOS A	0.0	0.0	0.17	0.06	0.17	32.6
Approach		2	0	2	0.0	0.001	0.3	LOS A	0.0	0.0	0.17	0.06	0.17	32.7
West: Folly Rd														
10	L2	33	0	35	0.0	0.073	9.9	LOS A	0.0	0.0	0.00	0.30	0.00	37.9
11	T1	94	10	99	10.8	0.073	0.0	LOS A	0.0	0.0	0.00	0.30	0.00	75.3
Approach		127	10	134	8.0	0.073	2.6	NA	0.0	0.0	0.00	0.30	0.00	64.2
All Vehicles		295	10	311	3.4	0.090	1.1	NA	0.0	0.0	0.00	0.13	0.00	72.1

MOVEMENT SUMMARY

▽ Site: 3 [Site Access - Weekend PM Peak - Festival Day (Site Folder: Future)]

Site Category: -
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Folly Rd														
5	T1	84	11	88	12.5	0.049	0.0	LOS A	0.0	0.0	0.01	0.01	0.01	79.8
6	R2	1	0	1	0.0	0.049	8.5	LOS A	0.0	0.0	0.01	0.01	0.01	37.2
Approach		85	11	89	12.4	0.049	0.1	NA	0.0	0.0	0.01	0.01	0.01	79.1
North: Site Access														
7	L2	1	0	1	0.0	0.034	0.2	LOS A	0.1	0.5	0.16	0.08	0.16	33.0
9	R2	45	0	47	0.0	0.034	0.3	LOS A	0.1	0.5	0.16	0.08	0.16	32.9
Approach		46	0	48	0.0	0.034	0.3	LOS A	0.1	0.5	0.16	0.08	0.16	32.9
West: Folly Rd														
10	L2	1	0	1	0.0	0.054	9.9	LOS A	0.0	0.0	0.00	0.01	0.00	39.7
11	T1	92	12	97	12.5	0.054	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	79.8
Approach		93	12	98	12.4	0.054	0.1	NA	0.0	0.0	0.00	0.01	0.00	79.2
All Vehicles		224	22	236	9.8	0.054	0.1	NA	0.1	0.5	0.04	0.03	0.04	66.5

Superseded

MOVEMENT SUMMARY

▽ Site: 3 [Site Access - Weekend 5-6PM - Wedding Day (Site Folder: Future)]

Site Category: -
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Folly Rd														
5	T1	81	7	85	8.7	0.047	0.0	LOS A	0.0	0.0	0.01	0.01	0.01	79.7
6	R2	1	0	1	0.0	0.047	8.7	LOS A	0.0	0.0	0.01	0.01	0.01	37.2
Approach		82	7	86	8.6	0.047	0.1	NA	0.0	0.0	0.01	0.01	0.01	79.1
North: Site Access														
7	L2	1	0	1	0.0	0.001	0.1	LOS A	0.0	0.0	0.13	0.04	0.13	32.8
9	R2	1	0	1	0.0	0.001	0.3	LOS A	0.0	0.0	0.13	0.04	0.13	32.6
Approach		2	0	2	0.0	0.001	0.2	LOS A	0.0	0.0	0.13	0.04	0.13	32.7
West: Folly Rd														
10	L2	133	0	140	0.0	0.111	10.0	LOS A	0.0	0.0	0.00	0.72	0.00	35.5
11	T1	63	5	66	8.7	0.111	0.0	LOS A	0.0	0.0	0.00	0.72	0.00	69.4
Approach		196	5	206	2.8	0.111	6.8	NA	0.0	0.0	0.00	0.72	0.00	45.2
All Vehicles		280	13	295	4.5	0.111	4.8	NA	0.0	0.0	0.00	0.51	0.00	53.3

Appendix B – Vehicle Swept Paths

Superseded


EXISTING OVERHEAD POWERLINES
EMERGENCY AND SERVICE VEHICLE EGRESS ONLY
4m WIDE FIRE BREAK
GUEST ACCOMODATION
RL 5.60
169.56 m²
OPEN GARDEN
CARPARK
DINING HALL
RL 5.60
334.26 m²
MULTI PURPOSE HALL
RL 5.60
1,046.94 m²
LIBRARY
RL 5.60
243.59 m²
VERANDAH
PLAYGROUND
17 CAR BAYS
ENTRY COURTYARD
RL 5.514
GREY WATER TANK 90,000L
POTABLE WATER TANK 90,000L
FIRE WATER TANK 50,000L
6m WIDTH DRIVEWAY
COVERED WALKWAY
DEMOLISH EXISTING SHED
NORTH COURTYARD
PRIESTS RESIDENCE
RL 5.70
80.00 m²
ABLUTION BLOCK
RL 5.60
66.76 m²
KITCHEN
27.37
TEMPLE
RL 6.372
975.01 m²
PAVING
RL 5.60
RL 6.286
TEMPLE PERIMETER FENCE
EXISTING GRAVEL TRACK TO FIRE TRAIL ROAD
DEAD END
BE REMOVED
FOLLY ROAD


EXISTING OVERHEAD POWERLINES
EMERGENCY AND SERVICE VEHICLE EGRESS ONLY
YOUNG ROAD
FOLLY ROAD
4m WIDE FIRE BREAK
OPEN GARDEN
CARPARK
GUEST ACCOMODATION
RL 5.60
169.56 m²
61 CAR PARKING BAYS
6m WIDTH DRIVEWAY
PLAYGROUND
17 CAR BAYS
VERANDAH
DINING HALL
RL 5.60
334.26 m²
GREY WATER TANK 90,000L
POTABLE WATER TANK 90,000L
FIRE WATER TANK 50,000L
ENTRY COURTYARD
RL 5.514
MULTI PURPOSE HALL
RL 5.60
1,046.94 m²
LIBRARY
RL 5.60
243.59 m²
EXISTING BIN ENCLOSURE
EXISTING POLY SHED TO BE DEMOLISHED
PRIEST HOUSE PARKING 4 CARS BAYS
60 CAR PARKING BAYS (INCL. 2 DISABLED BAYS)
BAYS 2.5 x 5.5m
6m WIDTH DRIVEWAY
DEMOLISH EXISTING SHED
NORTH COURTYARD
COVERED WALKWAY
ABLUTION BLOCK
RL 5.60
66.76 m²
PRIESTS RESIDENCE
RL 5.70
80.00 m²
PRIESTS RESIDENCE
RL 5.70
80.00 m²
KITCHEN
27.3m²
PAVING
RL 5.60
TEMPLE
RL 6.372
975.01 m²
RL 6.286
TREE TO BE REMOVED DUE TO BAL REQUIREMENT
TEMPLE PERIMETER FENCE
EXISTING GRAVEL TRACK TO BE RETAINED
DEAD TREE TO BE REMOVED

LOT 53

LEGEND		
	⊕	Power Dome
	⊙	Power Pole
	T C	Phone Pits
	W	Water Conn.
	[TP 10.00]	Top Pillar/Post
	[TW 10.00]	Top Wall
	[TR 10.00]	Top Retaining
	[TF 10.00]	Top Fence

⚠ DISCLAIMER:
Lot boundaries drawn on survey are based on landgate plan only. Survey does not include title search and as such may not show easements or other interests not shown on plan. Title should be checked to verify all lot details and for any easements or other interests which may affect building on the property.

⚠ DISCLAIMER:
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⚠ DISCLAIMER:
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⚠ DISCLAIMER:
Cottage & Engineering surveys accept no responsibility for any physical on site changes to the parcel or portion of the parcel of land shown on this survey including any adjoining neighbours levels and features that have occurred after the date on this survey. All Sewer details plotted from information supplied by Water Corporation.

⚠ BEWARE: POSSIBLE SERVICE RUN IN & COST

Locality Plan Not to Scale

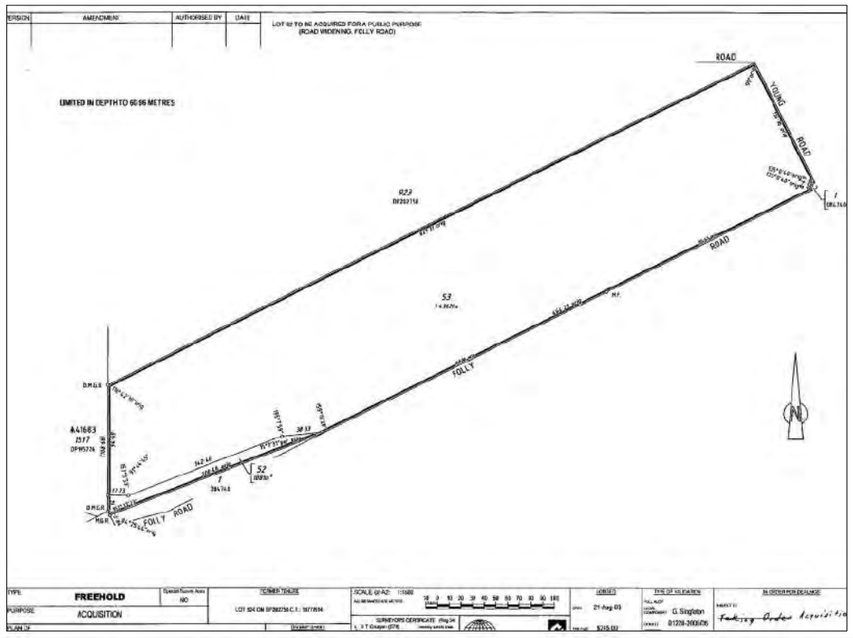
⚠ DISCLAIMER:
HIGH TENSION POWER LINES. CHECK TITLE FOR EASEMENTS AND WESTERN POWER FOR SET-BACKS.

Archetype Design

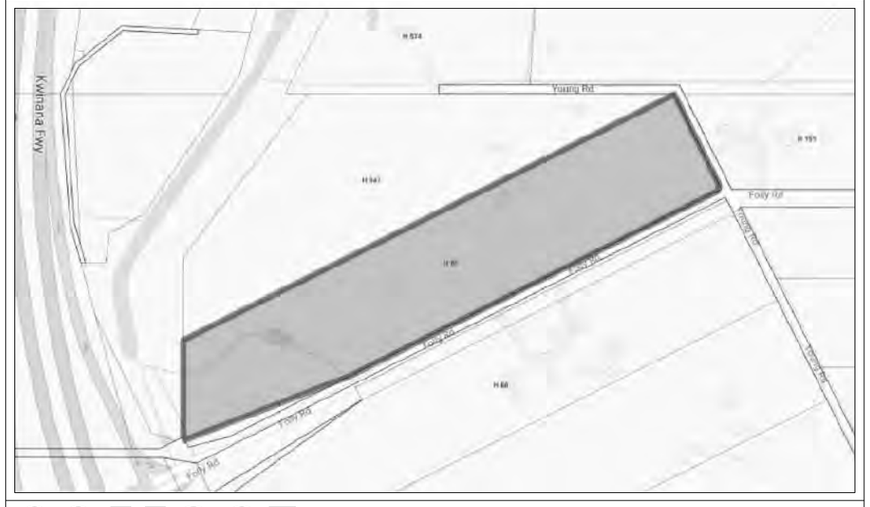
CONTOUR & FEATURE SURVEY

LOT Lot 53 (DP 61344)
ADDRESS #67 Folly Road, Baldivis
LGA CITY OF ROCKINGHAM

GPS Lat: -32.324566 Long: 115.833514
SSA No **AREA** 7.4362ha **VOL.** 2793 **FOL.** 800



ELEC.	O/Head	**SEWER**	Nil	**ROADS**	Bitumen	**COASTAL**	No (Approx. Only - Confirm With Shire)
GAS	Check Alinta	**COMMS**	Yes	**PATH**	Nil	**SOIL**	Sand
WATER	Check Owner	**DRAINAGE**	Good	**KERBS**	Semi-Mount / Nil	**VEG.**	Refer to Survey



COTTAGE SURVEYS
87-89 Guthrie St
Osborne Park
WA 6017
PO Box 1611
Osborne Park BC
WA 6917
P: (08) 9446 7361
E: perth@cottage.com.au
W: www.cottage.com.au

JOB: 507054 **DATE:** 18 Aug 21 **DRAWN:** B. Saliba

Young Road
Bitumen

Folly Road
Bitumen

114.16

464.29

621.11

Consumer Pole
Consumer Overhead Power Cable
Stay Pole
Stay Wire
Power Pole (H/T)
PEG GONE
Closest Wire To Boundary (High Tension)
Bitumen
Telstra Pipe
Gate
Semi-Mount
Nil
Street Sign
Stay Wire
Stay Anchored
Galv. Shed On Concrete
Approx F/L 6.11
Gravel Track
Post & Wire Fence (Poor Cond.)
Crossover to Opp.
Galv. Shed On Slab
Galv. Shed On Slab
Galv. Shed On Slab
Concrete
Galv. Patio
Galv. Shed On Concrete
Approx F/L 6.09
Note: Septic
Pump
PVC Tank
Galv. Post
Small Trees
Flagging
Paddock

DISCLAIMER:
HIGH TENSION POWER LINES. CHECK TITLE FOR EASEMENTS AND WESTERN POWER FOR SET-BACKS.

NOTEBEWARE-ADVISE TRADES
O/Head power lines

	Power Ozone
	Power Pole
LEGEND	Phone Pits
	Water Conn.
TW 10.00	Top Pillar/Post
TW 10.00	Top Wall
TR 10.00	Top Retaining
TF 10.00	Top Fence

LOT MISCLOSE
0.104 m

DISCLAIMER:
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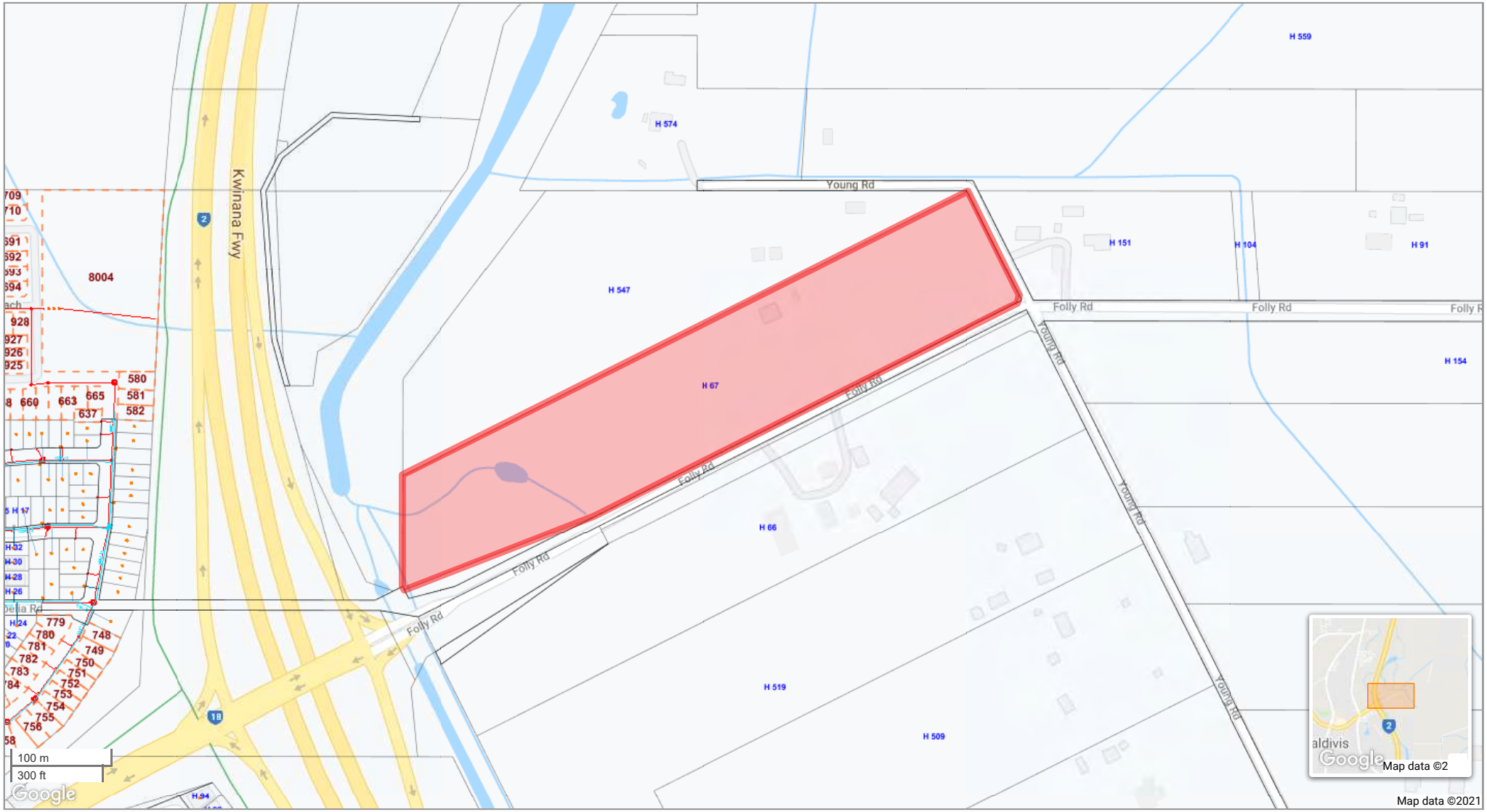
Scale 1:200
0 2 4 6 8

BEWARE: POSSIBLE SERVICE RUN IN & COST

COTTAGE SURVEYS
87-89 Guthrie Street
Osborne Park WA 6017
PO Box 1611
Osborne Park
Western Australia WA 6917
P: (08) 9446 7351
E: perth@cottage.com.au
w: cottagesurveys.com.au

JOB # 507054 | GPS | ELEC. O/Head
ADDRESS 457 Folly Road | Lat: -32.324566 Long: 115.933514 | COMMS. Yes
SUBURB Balmoral | LOT Lot 53 (DP 61344) | WATER Check Owner
LGA City of ROCKINGHAM | GAS Check Alinta
DRAWN B. Sabia | AREA 7.4367m | VOL 2193 | FDL 600 | SSA No | SEWER Nil | COASTAL No
DATE 18 Aug 21 | ROADS Bitumen | KERBS Semi-Mount / Nil | FOOTPATH Nil | SOIL Sand | DRAINAGE Good | VEGETATION Note: on Survey

507054



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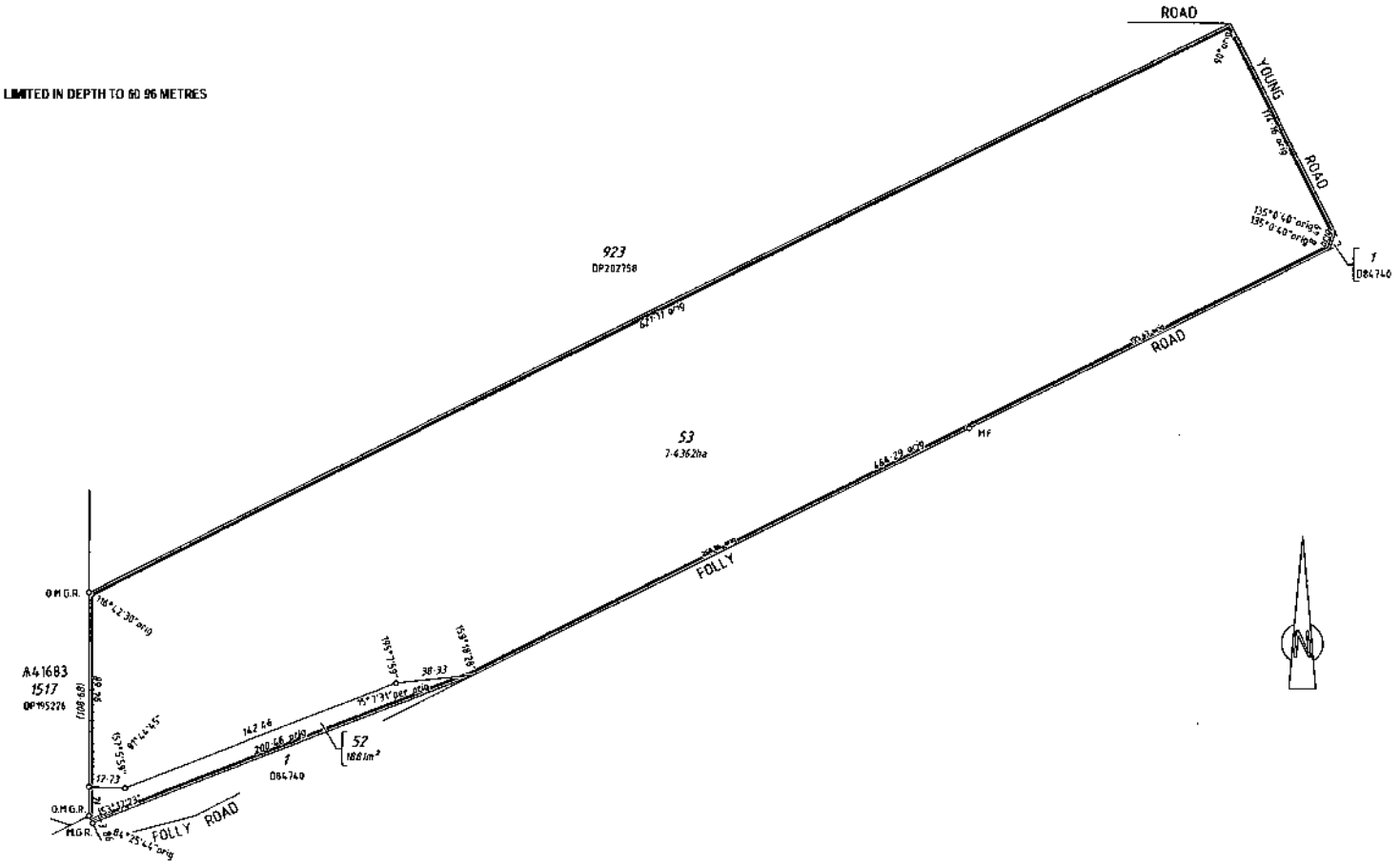
www.landgate.wa.gov.au

VERSION	AMENDMENT	AUTHORISED BY	DATE

LOT 52 TO BE ACQUIRED FOR A PUBLIC PURPOSE
(ROAD WIDENING, FOLLY ROAD)

DP 61344

LIMITED IN DEPTH TO 60 96 METRES



TYPE	FREEHOLD	Special Survey Area: NO	FORMER TENURE: LOT 924 ON DP202758 C T 1977/614
PURPOSE	ACQUISITION		
PLAN OF	LOTS 53 AND 54	ON MAP SHEET: 6633(S) 05 10	
DISTRICT: COCKBURN SOUND	FILE	FIELD BOOK: 107330	
TOWNSITE			
LOCAL AUTHORITY: CITY OF ROCKINGHAM			
LOCALITY: BALDIVIS			

SCALE (@ A2): 1:1500 — ALL DIMENSIONS ARE METRES — 10 0 10 20 30 40 50 60 70 80 90 100

SURVEYORS CERTIFICATE (Reg 54)
I, D T Grogan (578) hereby certify that
The plan to acquire and is a correct representation of the -
(a) survey, and/or
(b) calculations from measurements;
(delete if inapplicable)
undertaken for the purposes of this plan and that it complies with the relevant written law(s) in relation to which it is lodged.

dtgrogan — Licensed Surveyor — 18 Aug 08 Date

Bennett Grogan & Associates
Consulting Engineers & Surveyors
161 Western Drive Port Kennedy
PO Box 113 Mt Henry Town WA 6915
Telephone (08) 9581 6188 Facsimile (08) 9581 2981
Email: bgrogan@wadsp.com.au

LODGED
DATE: 21-Aug-08
FEE PAID: $245.00
ASSESS No.: 4211798

TYPE OF VALIDATION
FINAL AUDIT
LEGAL COMPONENT: G. Singleton
DIGIPLEX: 01228-2006406
CERTIFIED CORRECT
L.I.C.
F.S.C.

APPROVED BY WESTERN AUSTRALIAN PLANNING COMMISSION
FILE: 402/4/1/34
DELEGATED UNDER SEC 16 OF THE PAD ACT 2005
DATE: 8/10/2008

IN ORDER FOR DEALINGS
SUBJECT TO: Taking Order Acquisition
9.10.08
FOR INSPECTOR OF PLANS & SURVEYS AUTHORISED LAND OFFICER
APPROVED
13/6/2012
INSPECTOR OF PLANS & SURVEYS — AUTHORIZED LAND OFFICER

Landgate
Western Australian Land Information Authority

DEPOSITED PLAN
61344
ORIGINAL
SHEET 1 OF 1 SHEETS
VERSION 1

3058 dp61344.DWG
dp61344.GSO

SRI BALAJI TEMPLE DEVELOPMENT
67 FOLLY ROAD, BALDIVIS

CONTENTS

A01 LOCATION PLAN

A02 SITE PLAN 1:1000

A03 SITE PLAN 1:500

A04 TEMPLE + PRIESTS RESIDENCES
GROUND FLOOR PLAN

A05 TEMPLE + PRIESTS RESIDENCES
ELEVATIONS

A06 MULTI-PURPOSE HALL, DINING HALL + LIBRARY
GROUND FLOOR PLAN

A07 MULTI-PURPOSE HALL, DINING HALL + LIBRARY
ELEVATIONS

A08 GUEST ACCOMMODATION
GROUND FLOOR PLAN + ELEVATIONS

A09 LANDSCAPE PLAN

A10 STAGING PLAN

A11 PERSPECTIVE RENDERS



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|design studio|

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5. In case of any discrepancy whatsoever, the contractor shall check with the architect prior proceeding
6. Contractor shall carry out works in accordance with Council Building License and conditions stipulated thereon
7. Contractor shall carry out works in accordance with requirements of Western Power with respect the easements on the site.
8. Contractor is advised that the site is a Registered Aboriginal Heritage Site to which the Aboriginal Heritage Act and all its legal requirements apply.
9. Contractor is to strictly adhere to Recommendations made in the Anthropological Report prepared by De Gand Pty Ltd May 2011

Revision	Description	Date
REV 0	DEVELOPMENT APPLICATION SUBMISSION	DEC 2021
REV 1	AMENDMENTS IN RESPONSE TO COUNCIL + PUBLIC QUERIES/COMMENTS	FEB 2022

Project :
SRI BALAJI TEMPLE DEVELOPMENT

Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

Drawing Title:
CONTENTS

Scale :
Status: #Project Status

Drawing Nº
00

Date issued: Wednesday, 2 March 2022
Time 3:19 pm Revision : 1



LOCATION PLAN 1:2000 (@ A1)

N

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Revision	Description	Date
REV 0	DEVELOPMENT APPLICATION SUBMISSION	DEC 2021
REV 1	AMENDMENTS IN RESPONSE TO COUNCIL + PUBLIC QUERIES/COMMENTS	FEB 2022

Project :
SRI BALAJI TEMPLE DEVELOPMENT

Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

Drawing Title:
LOCATION PLAN

Scale :
Status: #Project Status

Drawing Nº
01

Date issued: Wednesday, 2 March 2022
Time 3:19 pm Revision : 1



SITE PLAN: TOTAL LOT 1:1000 (@ A1)

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Revision	Description	Date
REV 0	DEVELOPMENT APPLICATION SUBMISSION	DEC 2021
REV 1	AMENDMENTS IN RESPONSE TO COUNCIL + PUBLIC QUERIES/COMMENTS	FEB 2022

Project :
SRI BALAJI TEMPLE DEVELOPMENT

Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

Drawing Title:
SITE PLAN 1.1000

Scale :
Status: #Project Status

Drawing Nº
02

Date issued: Wednesday, 2 March 2022
Time 3:19 pm Revision : 1



PROPOSED DEVELOPMENT EAST OF MID TREE LINE 1:500 (@ A1)

LEGEND

- EXISTING TREES
- NEW TREES
- FULLY ENCLOSED COVERED AREA
- VERANDAH UNDERCOVER
- EXTERNAL PAVING
- BITUMENISED ROAD/CAR PARKING
- 4m WIDE FIREBREAK

SCALE

0m 10m 50m

N

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Revision	Description	Date
REV 0	DEVELOPMENT APPLICATION SUBMISSION	DEC 2021
REV 1	AMENDMENTS IN RESPONSE TO COUNCIL + PUBLIC QUERIES/COMMENTS	FEB 2022

Project :
SRI BALAJI TEMPLE DEVELOPMENT

Site Address :
67 FOLLY ROAD,BALDIVIS

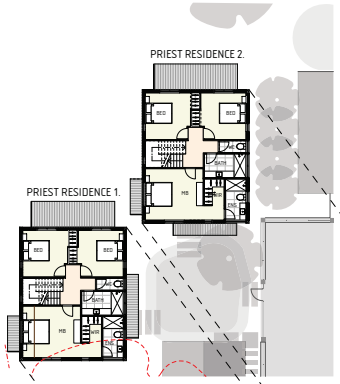
Client :
JAPA PTY LTD.

Drawing Title:
SITE PLAN 1.500

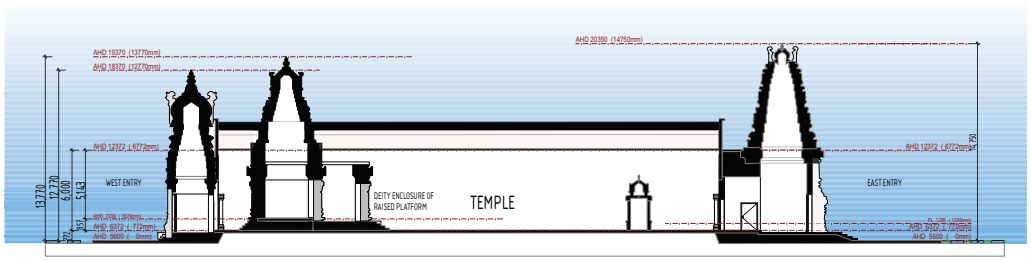
Scale :
Status: #Project Status

Drawing Nº
03

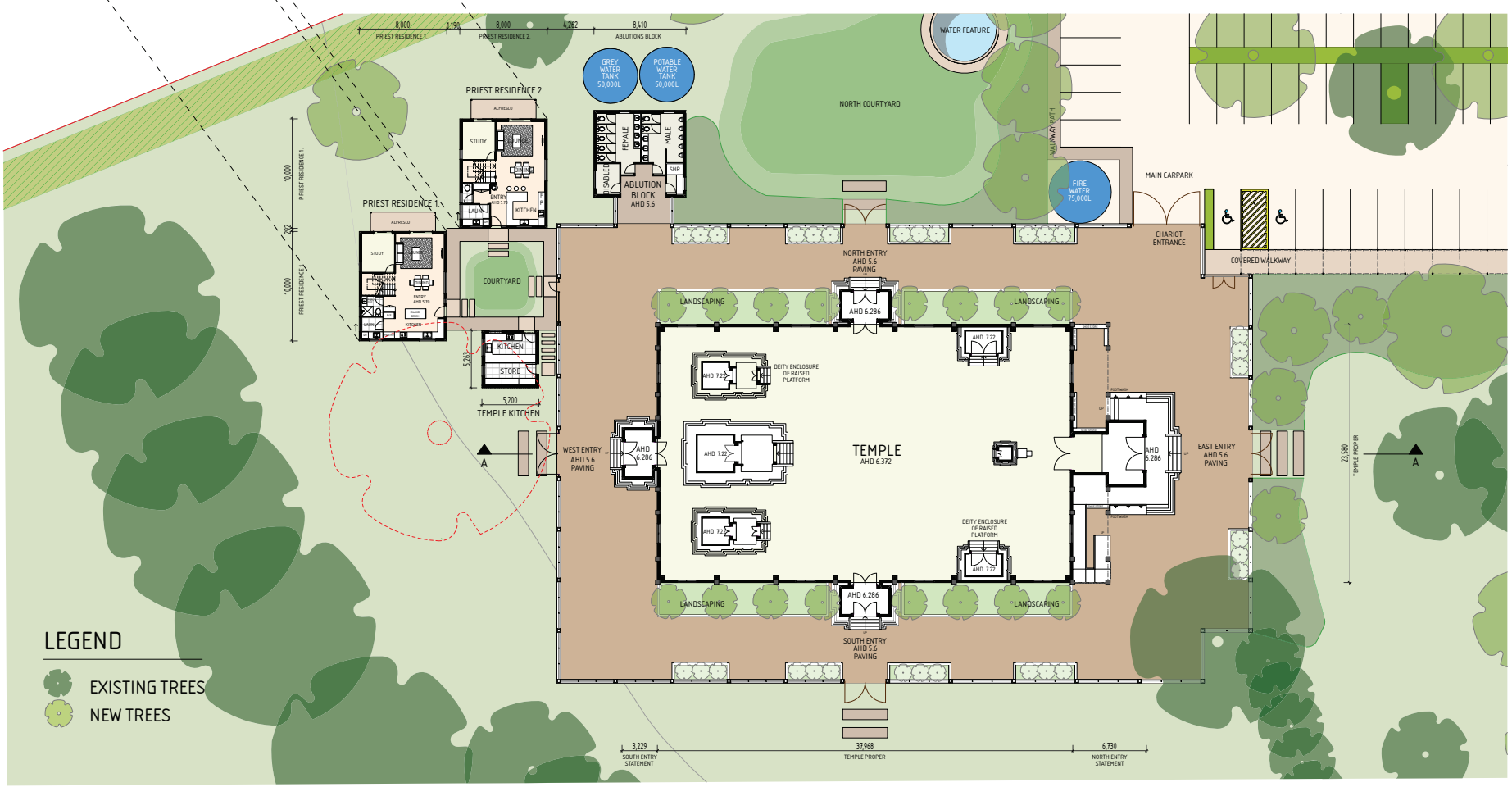
Date issued: Wednesday, 2 March 2022
Time 3:19 pm Revision : 1



PRIEST RESIDENCES UPPER FLOOR PLAN 1:200



TEMPLE LONGITUDINAL SECTION AA 1:200



LEGEND

- EXISTING TREES
- NEW TREES

TEMPLE PLAN, PRIESTS QUARTERS + TOILET BLOCK 1:200 (@ A1)

SCALE 0m 5m 25m

N

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Revision	Description	Date
REV 0	DEVELOPMENT APPLICATION SUBMISSION	DEC 2021
REV 1	AMENDMENTS IN RESPONSE TO COUNCIL + PUBLIC QUERIES/COMMENTS	FEB 2022

Project :
SRI BALAJI TEMPLE DEVELOPMENT

Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

Drawing Title:
TEMPLE PLAN

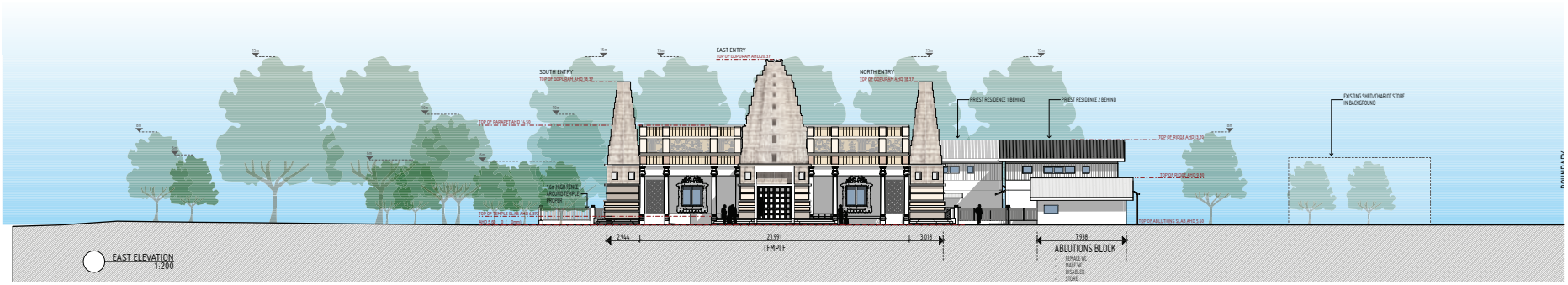
Scale :
Status: #Project Status

Drawing Nº
04

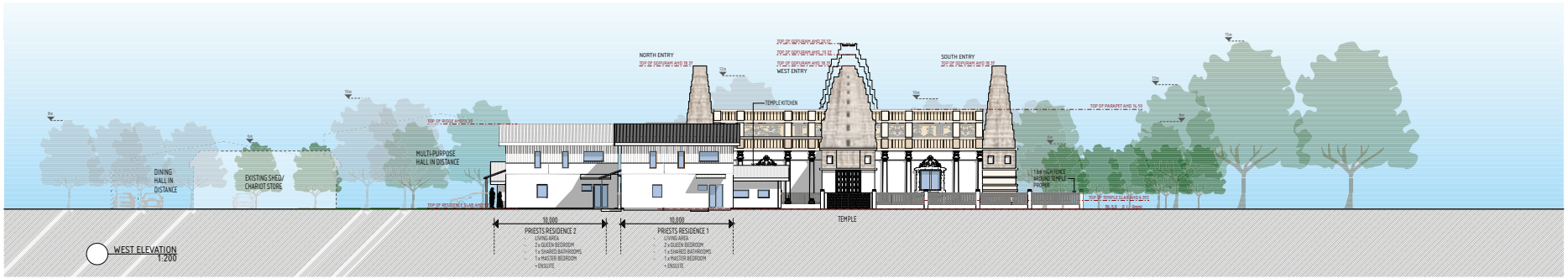
Date issued: Wednesday, 2 March 2022
Time 3:19 pm Revision : 1



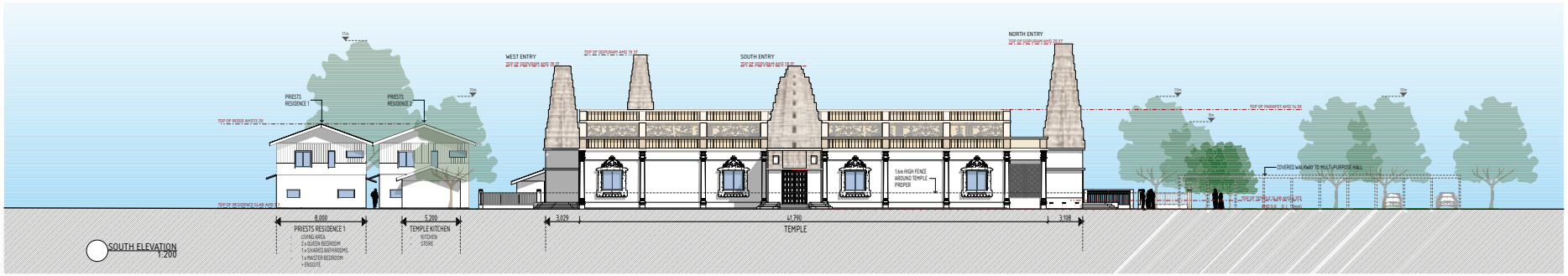
NORTH ELEVATION
1:200



EAST ELEVATION
1:200



WEST ELEVATION
1:200



SOUTH ELEVATION
1:200

ELEVATIONS 1:200 (@ A1)

NOTE:
ALL EXISTING TREES ARE DEPICTED AND DRAWN TO SCALE IN CORRECT POSITION. NEW TREES NOT SHOWN

SCALE
0m 5m 25m

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architecture - interiors - feng shui
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Phone : (08) 9486 8866
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Revision	Description	Date
REV 0	DEVELOPMENT APPLICATION SUBMISSION	DEC 2021
REV 1	AMENDMENTS IN RESPONSE TO COUNCIL + PUBLIC QUERIES/COMMENTS	FEB 2022

Project :
SRI BALAJI TEMPLE DEVELOPMENT

Site Address :
67 FOLLY ROAD,BALDIVIS

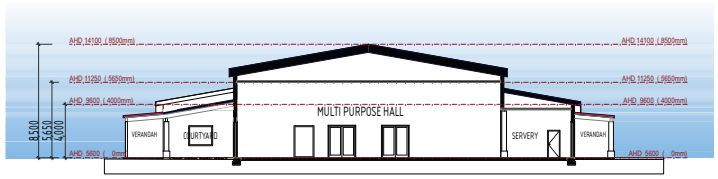
Client :
JAPA PTY LTD.

Drawing Title:
TEMPLE ELEVATIONS

Scale :
Status: #Project Status

Drawing Nº
05

Date issued: Wednesday, 2 March 2022
Time 3:20 pm Revision : 1



MULTI-PURPOSE HALL CROSS SECTION BB 1:200

LEGEND

- EXISTING TREES
- NEW TREES

FIREBREAK

REVERSING BAY

31 CAR PARKING BAYS
PLUS x1 REVERSING BAY
BAYS 2.5 X 5.4M, 6M WIDTH DRIVEWAY

FIRE WATER 75,000L

COURTYARD

NORTH COURTYARD

BIN ENCLOSURE

GREY WATER TANK 90,000L

POTABLE WATER TANK 90,000L

BUSHFIRE FIGHTING 50,000L

EXISTING SHED/ CHARIOT STORE

PRIEST'S HOUSE PARKING 4 CAR BAYS

60 CAR PARKING BAYS
INCL x 2 DISABLED BAYS
BAYS 2.5 X 5.4M, 6M WIDTH DRIVEWAY
RED BITUMEN

15 CAR PARKING BAYS
INCL x1 SERVICE BAY
PLUS x1 REVERSING BAY
AHD 5.5

SERVICE BAY

REVERSING BAY

VERANDAH

DINING HALL AHD 5.6

FURNITURE STORE

DRY STORE

COOL ROOM

SERVERY

KITCHEN

AHD 5.6

ENTRY COURTYARD AHD 5.514

FOUNTAIN

COVERED ENTRYWAY AHD 5.6

LOBBY AHD 5.6

MULTI PURPOSE HALL AHD 5.6

SERVERY

KITCHEN

COOL ROOM

DRY STORE

FURNITURE STORE

GREEN ROOM MALE

GREEN ROOM FEMALE

STAGE AHD 6.5

AHD 6.5

AHD 5.6

RAMP

AUDIO VISUAL

FIRST AID

STORE

TEMPLE ADMIN

COURTYARD

MULTI PURPOSE LIBRARY AHD 5.6

BOOKS

BOOKS

B

ZEBRA CROSSING

COVERED WALKWAY

SOUTH COURTYARD

SCALE
0m 5m 25m

N

MULTI-PURPOSE HALL, DINING + LIBRARY PLAN 1:200 (@ A1)

archetype
|design studio|
architecture - interiors - feng shui
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Project :
SRI BALAJI TEMPLE DEVELOPMENT

Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

Drawing Title:
MULTI PURPOSE HALL, LIBRARY + DINING HALL GF PLAN

Scale :

Status: #Project Status

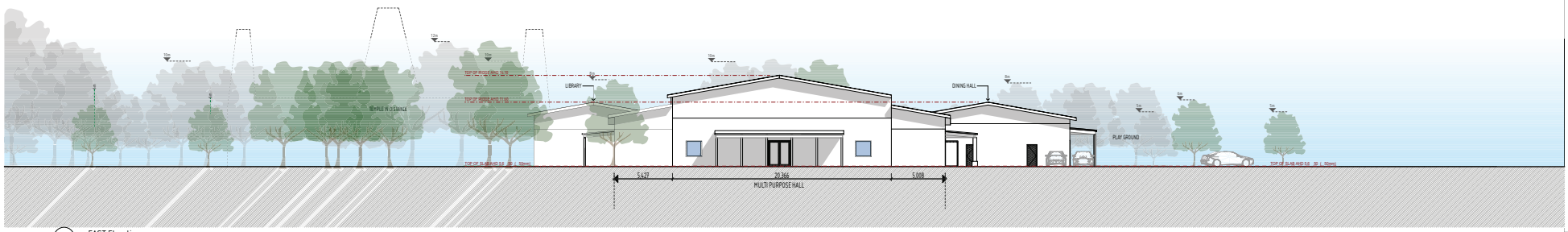
Drawing N°

06

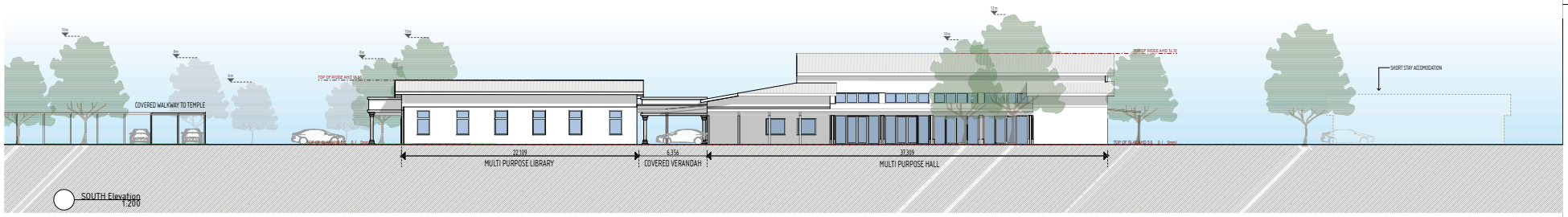
Date issued: Wednesday, 2 March 2022
Time 3:20 pm Revision : 1



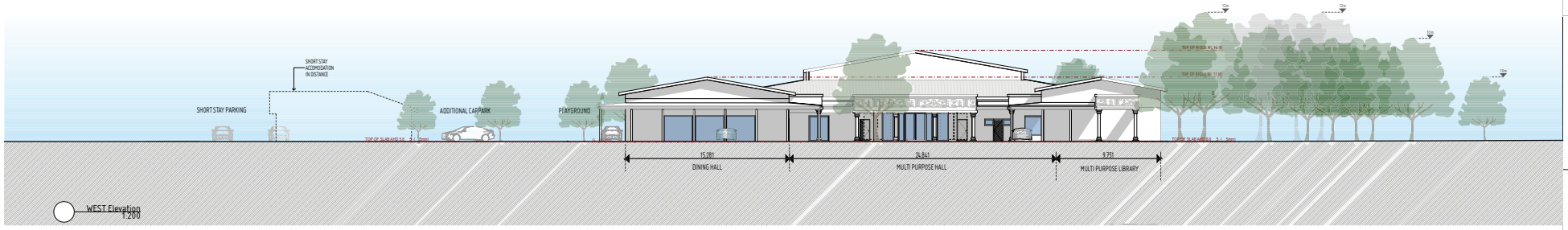
NORTH Elevation
1:200



EAST Elevation
1:200



SOUTH Elevation
1:200



WEST Elevation
1:200

MULTI-PURPOSE HALL, DINING + LIBRARY ELEVATIONS 1:200 (@ A1)

NOTE:
ALL EXISTING TREES ARE DEPICTED AND DRAWN TO SCALE IN CORRECT POSITION. NEW TREES NOT SHOWN

SCALE
0m 5m 25m

archetype
|design studio|
architecture - interiors - feng shui
level 12, 68 St Georges Terrace Perth WA 6000
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email: studio@archetypedesign.com.au

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REV 1	AMENDMENTS IN RESPONSE TO COUNCIL + PUBLIC QUERIES/COMMENTS	FEB 2022

Project :
SRI BALAJI TEMPLE DEVELOPMENT

Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

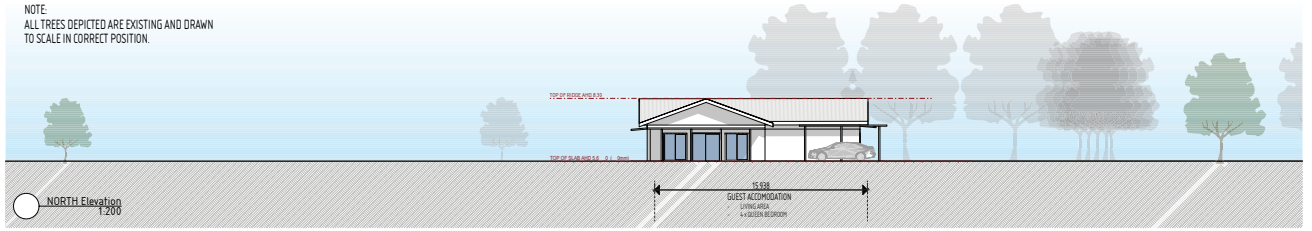
Drawing Title:
ELEVATIONS

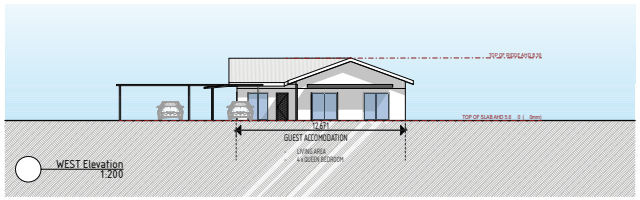
Scale :
Status: #Project Status

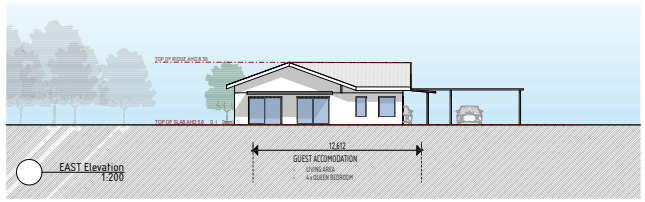
Drawing Nº
07

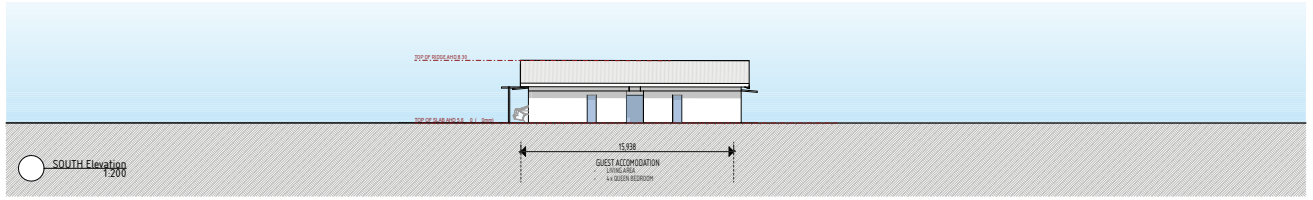
Date issued: Wednesday, 2 March 2022
Time 3:20 pm Revision : 1

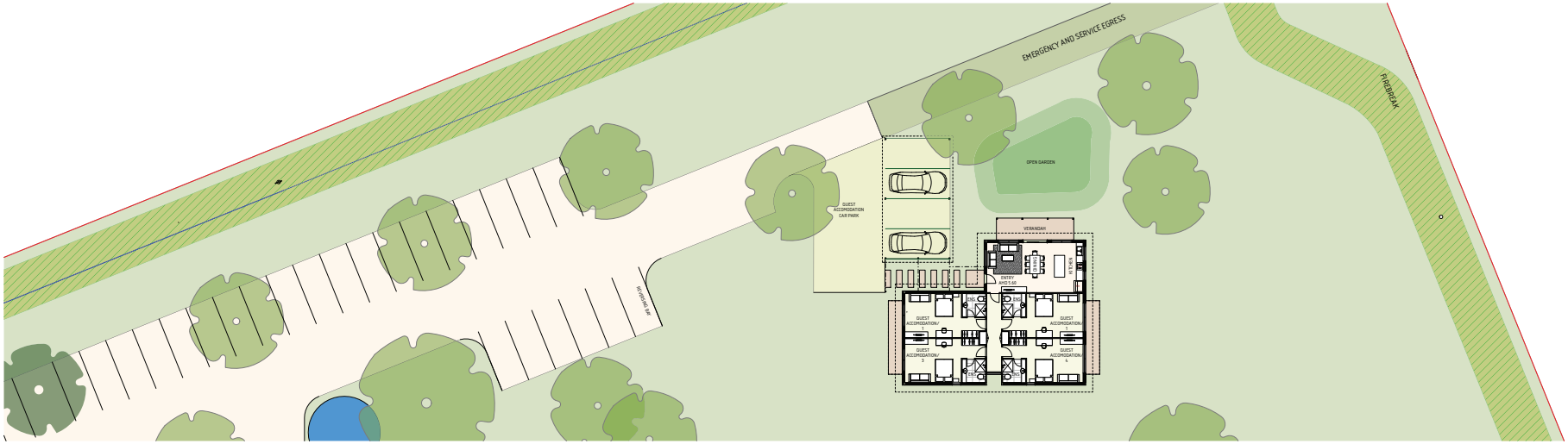
NOTE:
ALL TREES DEPICTED ARE EXISTING AND DRAWN TO SCALE IN CORRECT POSITION.











GUEST ACCOMMODATION PLAN + ELEVATIONS 1:200 (@ A1)

SCALE
0m 5m 25m

N

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Project :
SRI BALAJI TEMPLE DEVELOPMENT

Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

Drawing Title:
ACCOM PLANS + ELEVATIONS

Scale :
Status: #Project Status

Drawing N°
08

Date issued: Wednesday, 2 March 2022
Time 3:20 pm Revision : 1

LEGEND

Ai Planting along the slip lane at Folly Road, consisting of native shrubs and trees to further screen the development. The roundabout will be planted out with native shrubs.

Aii Planting of larger native trees to screen and blend the view of library and multi- purpose hall. These trees will emulate the cluster of existing trees on Folly Road and provide a continuous 'natural' flow of vegetation along the road thus enhancing the visual amenity of the site.

Aiii Planting of larger native trees to screen and blend the view of multi-purpose hall. These trees will emulate the cluster of existing trees on Folly Road and provide a continuous 'natural' flow of vegetation along the road thus enhancing the visual amenity of the site.

Aiv Planting of native trees around guest accommodation to screen the building from view lines along Folly and Young Roads

Av Planting of native trees to west of existing wind row of trees to further visually screen development from Folly Road

Avi Planting of larger native trees to screen and blend view of temple from neighbouring property

PROPERTY BOUNDARY

EXTENT OF WORKS

SWALE EDGE PLANTING

GROUND COVERS/GRASS

FIREBREAK

EXTERNAL PAVING

VERANDAH UNDERCOVER

GRAVEL, LASERITE ASPHALT ROAD/CARPARK

FULLY ENCLOSED COVERED AREA

Bi Main carpark will have central trees to provide shade over cars as well as perimeter trees to screen cars and provide further shade.

Bii Linear carpark behind Dining Hall to have further trees planted to extend the existing wind row on the north and assist shading and parking area

Biii Carpark behind Multi-purpose hall to have some trees and edge shrubs to assist in screening cars

Ci Planting around the immediate vicinity of Temple into planter beds located within the temple perimeter 'fence'. Ornamental trees with lower ornamental flowering shrubs and hedge bushes will be selected

Cii Planting of shrubs organically at outside perimeter of East side 'fence' of Temple and wrapping around to the south of the covered walkway on main carpark. Some smaller native trees will be incorporated.

TREES - RETAINED

CLUSTER TREES TO SCREEN BUILDINGS

TREES TO SCREEN AND SHADE CARPARK AND WALKWAY

NEW TREES TO TEMPLE

TREES TO BE REMOVED

Ciii The courtyard North of the main Temple will have an organically structured planted perimeter and open space. Native grass will be explored. A large water feature is also part of this garden experience and its location and symbol holds sacred value to this development. It will be chlorinated and moving water. Native grass will be explored.

Civ The courtyard to the Priest Residences and Temple kitchen will have some native shrubs to create a sense of place, privacy, and enclosure for the occupants.

Cv Planting of the main courtyard around which the secular buildings cluster. This will consist of different layers of plants to create a sense of nurtured garden providing a tranquil entry arrival space to these buildings. A small water feature is proposed.

Cvi Planting in the north aspect of the Multi-purpose hall to beautify the outlook will explore native grass and edge planting to create some sense of containment to the open space.

Cvii Planting at the entry and to the north aspect of the Guest Accommodation to create a sense of enclosure and privacy, as well as screening of their carbays.

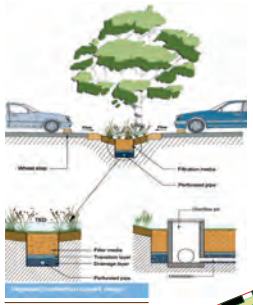

Diagram illustrating swale concept

LANDSCAPE PLAN 1:500 (@ A1)

Organically structured native garden edge to minimal contained areas of grass (native lawn to be explored) and pathways

Examples of swale landscape areas within and at edge of carpark



Tree Selections at Folly Road and Young Road perimeters/carparks

Eucalyptus rudis 'Flooded Gum' 6-20 H Will encourage black cockatoo habitat Evergreen

Allocasuarina fraseriana 'WA sheoak' 10m H x 6m W Evergreen

Melaleuca rhaphiophylla 'Swamp Paperbark' 6m H x 3m W

Banksia Attenuata 'Candle stick Banksia' 2m-3m H x 2m W Evergreen

Banksia Mensiesii 'Firewood Banksia' 5m10m H x 5-10m W Evergreen

Plant selections for organically structured garden edges/swales and courtyard planting

Adenanthos Sericea 'Woolly Bush' 3.5m H 1.5m W 1-1.5mH/W

Syzygium Smithii 'Lily Pilly' Hedgemaster 1-1.5mH/W

Boronia heterophylla, various 'Red Boronia' 1mH x 1m W

Westringia Wyanabbie 1-1.5mH/W

Pafasonia Occidentalis 80mH x 60mW

Dianella ensiformis Flax Lily 'Silver Streak'

Agapantha 'African Blue Lily' 1.2m

Lomandra, various 'Lime light' 'Longifolia'

Anigozanthos 'Gold Velvet Kangaroo Paw'

Anigozanthos 'Bush pearl Kangaroo Paw'

SCALE

0m 10m 50m

N

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Project :
SRI BALAJI TEMPLE DEVELOPMENT

Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

Drawing Title:
LANDSCAPE PLAN

Scale :

Status: #Project Status

Drawing N°

09

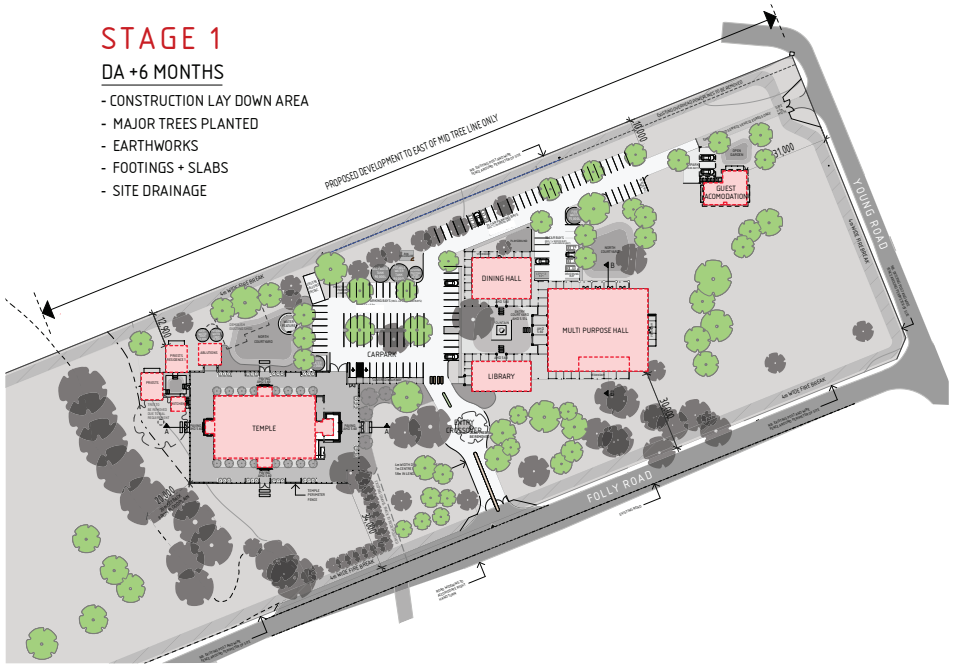
Date issued: Wednesday, 2 March 2022

Time 3:20 pm Revision : 1

STAGE 1

DA +6 MONTHS

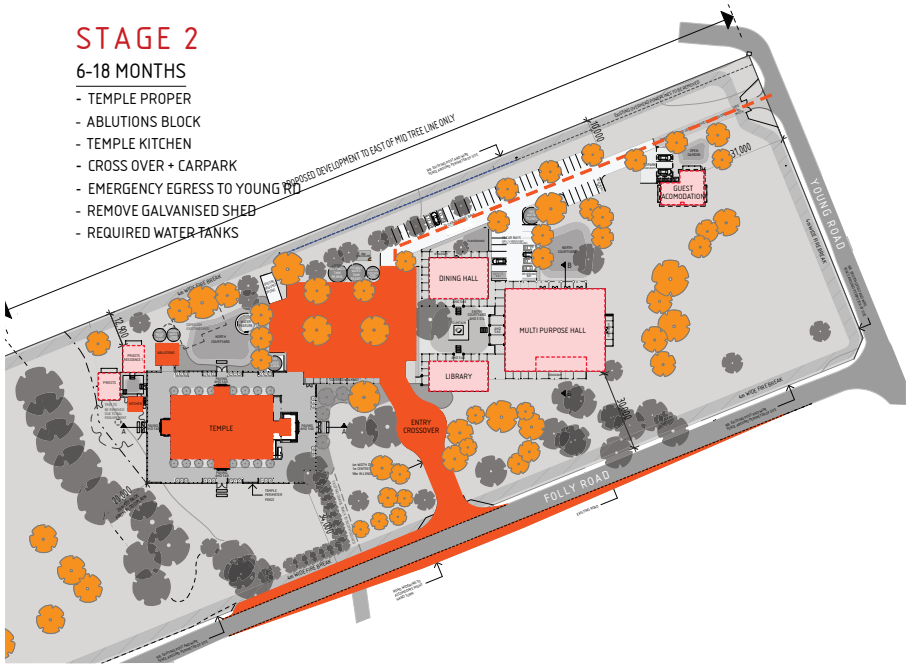
- CONSTRUCTION LAY DOWN AREA
- MAJOR TREES PLANTED
- EARTHWORKS
- FOOTINGS + SLABS
- SITE DRAINAGE



STAGE 2

6-18 MONTHS

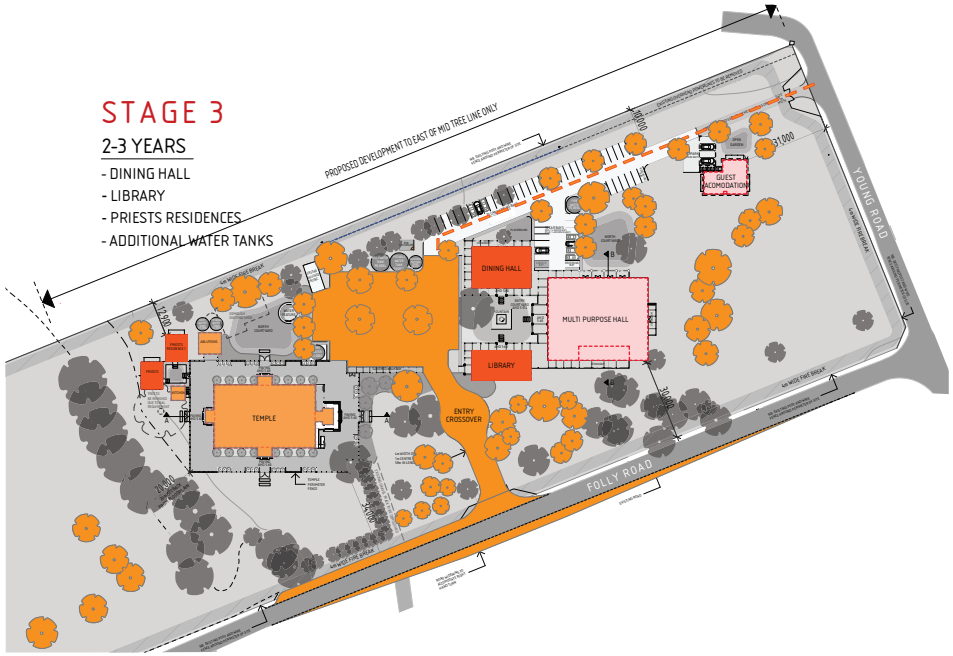
- TEMPLE PROPER
- ABLUTIONS BLOCK
- TEMPLE KITCHEN
- CROSS OVER + CARPARK
- EMERGENCY EGRESS TO YOUNG RD
- REMOVE GALVANISED SHED
- REQUIRED WATER TANKS



STAGE 3

2-3 YEARS

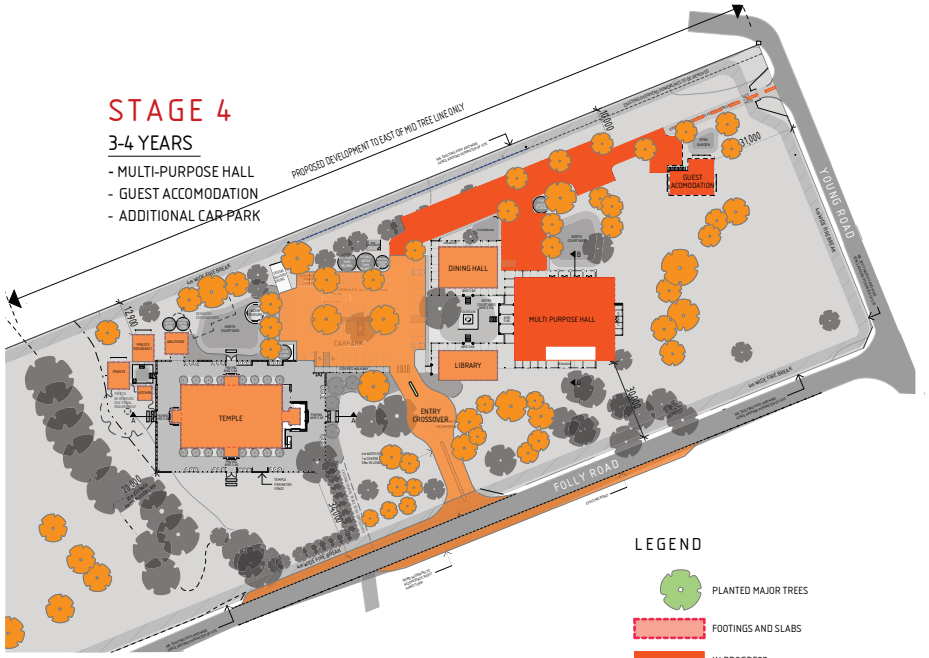
- DINING HALL
- LIBRARY
- PRIESTS RESIDENCES
- ADDITIONAL WATER TANKS



STAGE 4

3-4 YEARS

- MULTI-PURPOSE HALL
- GUEST ACCOMODATION
- ADDITIONAL CAR PARK



LEGEND

- PLANTED MAJOR TREES
- FOOTINGS AND SLABS
- IN PROGRESS
- COMPLETED WORKS
- DEMOLITION

N

STAGING DIAGRAM

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SRI BALAJI TEMPLE DEVELOPMENT

Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

Drawing Title:
STAGING DIAGRAM

Scale :
Status: #Project Status

Drawing Nº
10

Date issued: Wednesday, 2 March 2022
Time 3:20 pm Revision : 1



VIEW OF TEMPLE FROM WITHIN PROPERTY (EAST ENTRY)



VIEW TO TEMPLE FROM SECULAR BUILDINGS



VIEW INTO COURTYARD OF SECULAR BUILDINGS



AERIAL VIEW OF SRI BALAJI TEMPLE GROUNDS FROM FOLLY ROAD

PERSPECTIVE RENDERS

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Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

Drawing Title:
RENDERS

Scale :
Status: #Project Status

Drawing Nº
11

Date issued: Wednesday, 2 March 2022
Time 3:19 pm Revision : 1

archetype

Idesign studiol

Architectural and Visual Landscape Report

Proposal: **Sri Balaji Temple Development**
67 Folly Road Baldivis WA

Client: **Jeeyar Educational Trust (JET) Australia Foundation**
58 B First Avenue, Claremont, WA

Prepared By: **Archetype Design Studio**
041 236 9191

Date:	09 Dec 2021	01 - Final
Date:	02 March 2022	02 - Amendment
	23 March 2022	03 - Amendment (Correction Operating Hours)

We acknowledge the Traditional owners and Custodians of this land, the Binjareb and Whadjuk, Nyoongar peoples and their Elders, present, past and emerging. We wish to acknowledge and respect their continuing cultures and connection to the land, waters and community, as well as the contribution they make to the life of this city and this region.

CONTENTS

1.0 INTRODUCTION 3

2.0 ARCHITECTURAL OUTLINE OF THE PROPOSED DEVELOPMENT 5

2.0 Proposed Development Plan
2.1 Facilities of the Proposed Development
2.2 Access
2.3 Parking
2.4 Times of Use
2.5 Water tanks
2.6 Lighting
2.7 Staging of the Development
2.8 Staging of the Development Plan
2.9 Materials and Colours
2.10 Landscaping
2.11 Landscaping Concept Plan

3.0 VISUAL LANDSCAPE EVALUATION 19

3.1 Scope of Evaluation and Context
3.2 Regional Context
3.3 Local Context
3.4 Site Context

4.0 VISUAL LANDSCAPE ASSESSMENT AND VIEWS 32

4.1 Existing Site: Visual Landscape Views, Experience and Values
4.2 Proposed Development and Impact on Visual Landscape Views, Experience and Values
4.3 View sheds

5.0 STRATEGIES FOR MANAGING VISUAL LANDSCAPE CHARACTER 51

5.1 The Temple
5.2 The Priest Residences, Temple Kitchen and Ablutions
5.3 The Secular Buildings
5.4 Access Crossover and Road
5.5 Parking
5.6 Existing Remnant Vegetation
5.7 New Landscaping
5.8 Staging of the Development/ Plan
5.9 Materials and Colours
5.10 Lighting

6.0 CONCLUSION 53

1.0 INTRODUCTION

This Architectural and Visual Landscape Report has been prepared by Archetype Design as part of a Development Application for a new proposed Sri Balaji (Hindu) Temple Development located at 67 Folly Road, Baldivis in the City of Rockingham.

Rockingham Council Planners have requested a *Visual Landscape Evaluation and Assessment* as a component of this development application to consider how the proposal will be seen and its character consistency with the local area.

1.1 Jeeyar Educational Trust (JET) Australia Foundation

The Jeeyar Educational Trust (**JET**) Australian Foundation has purchased this plot of land on the eastern side of the freeway at Baldivis.

A summary of the **JET** community principles and activities are as follows:

- An Australian not for profit and Hindu religious organisation registered in Australia in 2008 with Centres in Brisbane, Sydney, Melbourne, Adelaide and Perth
- Key Principles of JET : Worship Your Own and Respect All
  Serve All Beings As Service To God
- Community based with dedicated volunteers young and experienced people, both professional and non-professional, motivated to serve the community and promoting equality, gratitude, harmony and peace through various activities such as:
  Social : Blood Donation, Covid relief activities, Health Awareness
  Religious : Universal peace and harmony through individual and community practices
  Educational: Structured value based Scripture education for children
  Environmental: Tree Planting, Recycling plant visits
- Perth JET Community has 500 + families with 900 subscribed members in database since 2010.

Most of the families in the JET community live south of the river, in Baldivis, Rockingham and nearby suburbs and therefore have identified the proposed site as ideal for their development. The JET community are proposing a development that can provide the following amenity for their families:

- Place of worship of Lord Venkateshwara, otherwise known as Lord Balaji.
  As such this will be a Hindu Temple.
  One of the oldest and holiest Hindu Temples dedicated to Lord Balaji is situated in the country side at the foot of a range of hills in the state of Andhra Pradesh in India. It is traditional for Temples around the world dedicated to Lord Balaji to be situated in a rural context facing the hills towards the East. For this reason, the property situated at 67 Folly Road in Baldivis represents an ideal site for the first Balaji Temple in Perth, being located on the Eastern side

of the freeway, where the site is bordered by rural landscapes and is facing the eastern foothills.

- Ā Place to teach human value- based education classes to uphold the Vedic traditions
- Ā Place to practice and teach yoga and meditation
- Ā Establish a community kitchen to serve the needy
- Ā Place to gather as families to support each other, especially after prayer
- Ā Place to be able to hold Hindu weddings and gatherings
- Ā Library for holding spiritual texts and resources
- Ā Place offered to stay for visiting guests of the Temple
- Ā Place to practice environmental preservation, tree planting and sustenance activities

The JET community are proposing to develop a cultural centre alongside the Temple on this site, to provide the above amenities for its community including a Multipurpose Hall, A Dining Hall, Library and Guest Accommodation. The Temple will also have some ancillary buildings including Priest Residences, a small Temple Kitchen and an Ablutions building. All necessary practises of best design have been incorporated to ensure the Temple building and its supporting secular buildings are absorbed and blended into the site so as not to disrupt the visual amenity of this rural area, but in fact enhance the site by way of new landscaping and architectural typology that is familiar and characteristic of the region.

The site and proposed development is immediately situated on the freeway 'off ramp' on Folly Road and as such affords convenient immediate access for JET community members without commuting throughout the adjacent rural neighbourhood.

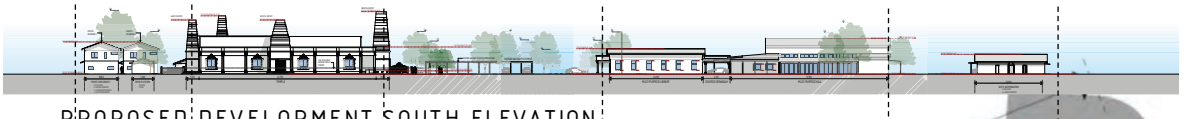
The Report that follows describes the new development proposal in terms of the architectural elements of building, use, and staging followed by the more specific Visual Landscape Evaluation and Assessment, which highlights further the strategies used to both absorb and blend the development into the site.



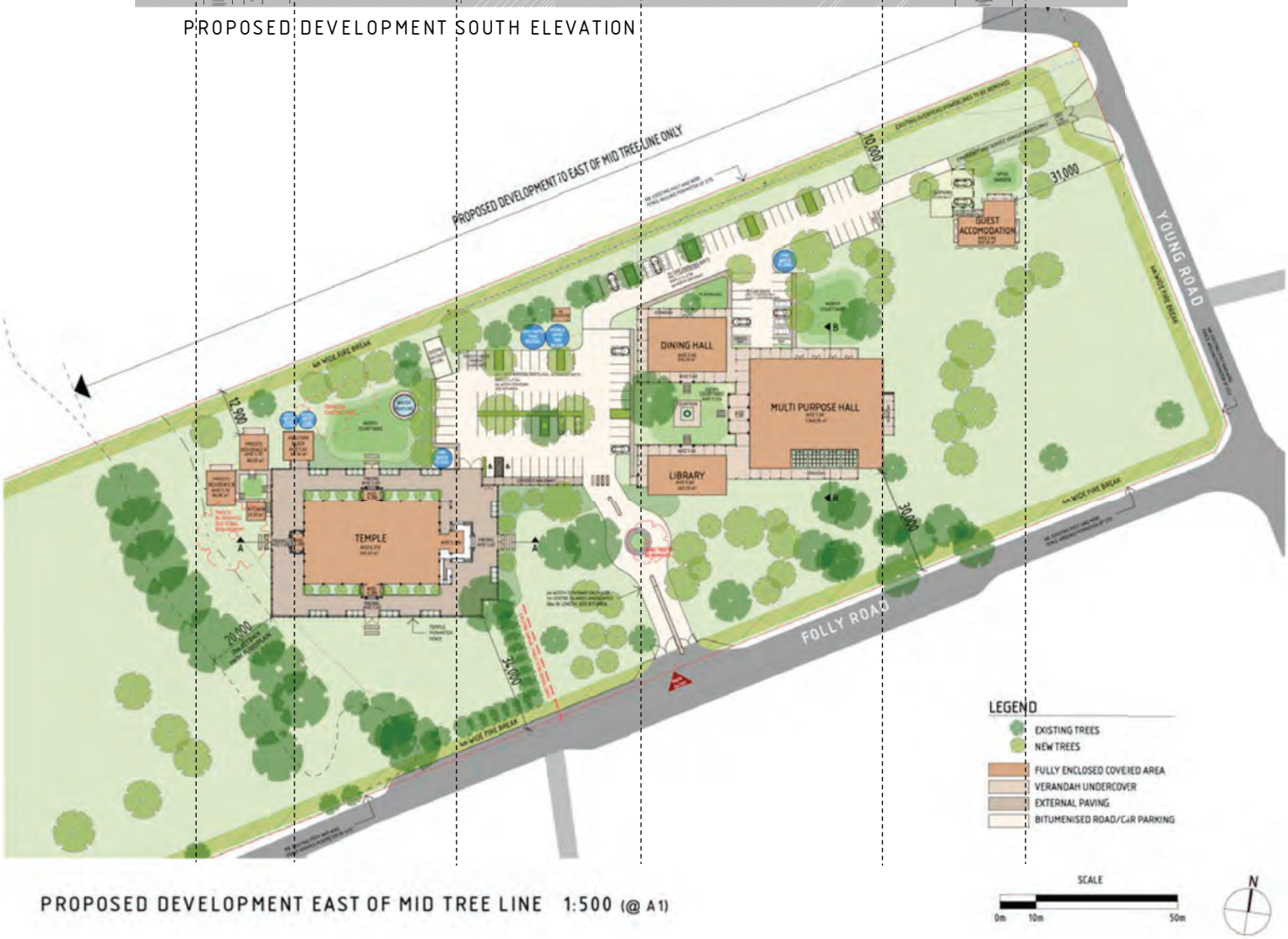
2.0 PROPOSED PLAN SRI BALAJI TEMPLE DEVELOPMENT

See Architectural Drawings A1 (1-10) for full description of development

01 Location Plan
02 Site Plan 1:1000
03 Site Plan 1:500
04 Temple Plan
05 Temple Elevations
06 Multipurpose Hall, Library and Dining Hall Plan
07 Multipurpose Hall, Library and Dining Hall Elevations
08 Accommodation Guest Plans and Elevations
09 Landscaping Concept
10 Staging Plan
11 Perspectives



PROPOSED DEVELOPMENT SOUTH ELEVATION



PROPOSED DEVELOPMENT EAST OF MID TREE LINE 1:500 (@ A1)

2.0 ARCHITECTURAL OUTLINE OF THE PROPOSED DEVELOPMENT

2.1 Facilities of proposed Development

Facilities proposed in the development are 'divided' into 2 types:

a) **Religious buildings** being the main Temple, with the ancillary buildings of Temple Kitchen, Priest Residences and Ablutions

The main Temple will serve the JET community as a place of prayer and worship.
The form of this building reflects an architecture typology typical of Indian Temples. This main building is essentially a large rectangular prayer hall with sculptured 'Gopurams' (entry 'gateway' features) at the four cardinal entry points into the building.

.

The Temple Architecture is designed according to the principles of Vastu Shastra, an ancient Indian body of knowledge which provides guidance on siting and design. The Temple entry must face East and preferably be sited parallel to cardinal directions. The decoration of the Temple building will be provided by professional artisans who richly and sacredly adorn the Gopurams and façades with sculptural relief and motifs.

The Temple, with a recognisable Hindu Temple aesthetic, has been purposefully located at a cleared area of the site that is surrounded by existing tree lines and hedges thus obscuring it from people that are driving past the site on Folly Road, or approaching the site from Young Road.

As will be shown in the Visual Management Strategy, the Temple building has been sited strategically to be mostly 'non evident'. Materials and colours of the Temple will be selected to enhance the 'blending' aspect of the building into the rural landscape, such as with the use of locally resourced limestone cladding, bronze and timber details and earthy limestone renders together with the corrugated roof.

The Temple requires an important independent boundary fence to establish the energy rectilinearly around this sacred building. As the Temple is sited back from the road, out of public view, this fence is proposed as a series of decorated columns 1.6m high with discreet infill panels that will be very visually permeable. There is a 5m paved perimeter around the Temple building which allows a 'chariot' to be wheeled around the Temple on particular festival days.

ii) **The Temple Kitchen** is a small ancillary building that has a kitchen used only by the Priests of the Temple to make food offerings used in the ceremonies. These food offerings are for the deities in the Temple and are very low in volume. The kitchen is located close to the Temple for practical reasons. A store area for pantry goods and Temple ceremonial items is also included in this building.

iii) The Ablution block is located close to the Temple for functional practicality. Male, Female and Disabled toilets are included as well as a shower and change room, which is often used as part of religious ceremonial washing.

iv) The Priests' Residences are located close to the Temple in order that the Priest can have ease of access. Two double storey houses have been planned, given that there are at least 2 Priests in attendance at the Temple. Often the Priest has a family as well, so the residences have been designed to cater for 2 x families at a minimum.

The above ancillary buildings to the Temple are located as a small **cluster** of buildings on the North West corner of the Temple, generally 'not evident' from Folly Road. A Courtyard entry to this hub affords a sense of both connection and separation for the Priests who will reside there. The living areas of the residences face North for better living amenity.

The form of the ancillary Temple buildings are simple rectilinear masonry construction, lightweight panel second storey and colourbond pitched gable roofs. Simple awning structures provide shade to the windows. A lean-to verandas gives shade to the living areas. This simple aesthetic is characteristic of other rural homesteads in the area.

v) The Chariot Store is an existing smaller shed structure on the northern boundary. This will house a small 'chariot', a wheeled cart used in the religious festivals and is wheeled around the Temple.

b) **Secular buildings** including a Multipurpose Hall, Dining Hall, Library and Guest Accommodation

i) The Multipurpose Hall can facilitate gatherings of up to 400 people seated at tables, designed primarily for cultural performances, weddings and other activities for the JET community.
The Hall has a commercial kitchen that can prepare food for patrons as well as cater for Hindu weddings from a servery area within the hall. A raised stage is provided for cultural performances and for staging the bridal party in weddings. Green rooms and storage space adjoin the stage. Male, Female and Disabled toilet facilities are provided within the building for convenience, but can be also accessed from the covered walkway from the Dining Hall and the Library. A northern garden is proposed for the Hall.

ii) The Dining Hall operates during lunch and dinner on Fridays and the weekend to serve those in the community that wish to stay for a meal after attending worship at the Temple. It is café style, where food is prepared in a commercial standard kitchen. A children's playground is in close proximity in north courtyard. The dining hall can serve about 80 people seated.

iii) The Library is a space where structured value based scripture education for children can be taught in flexible sized spaces. Room dividers will be used to allow the space to be opened up for larger group learning. The JET community will hold a collection of religious texts and resources to be kept in the library and available for loan or use in the space. The library will also cater for small group learning of yoga classes, Sanskrit language and other cultural learnings.

The **Multipurpose Hall, Dining Hall and Library** are clustered around a large entry courtyard and are in close proximity to the parking area. A covered walkway connects these secular buildings to the Temple building. The architectural forms of these building are designed to blend into the rural character of the immediate surrounds. Designed as simple rectangular buildings arranged around a courtyard reflect the clustering of buildings in the neighbouring properties. Colourbond pitched gable roof forms, post and beam verandah systems and a general linearity of building expression are highlighted in these secular buildings which are the visible aspect of the development. The scale of each of the buildings is also akin to the large shed structures on other rural properties in the area. Colours and materials will be a combination of mass wall (limestone and rendered brick), limestone cladding and render, timber post and beam, painted Hardie panel gable ends and dark colourbond roof to enhance the blending of the buildings into the landscape.

viii) Guest Accommodation is located closer to Young Road. A simple 'homestead' with 4 rooms to accommodate up to 8 people, this will provide short stay accommodation for visiting religious speakers and extended overseas community members. The rooms each have their own ensuite to be private and a communal kitchen and living space allows for visitors to relax and connect with each other. Covered parking for 4 cars is proposed access from the main car entry off Folly Road. This building being visible to both Folly Road and Young Road is designed to 'blend' architecturally into the landscape.

2.2 Access

The existing entry road and cross over will not be retained for the development.

A new crossover and entry road, including slip lane access, is proposed for the development, located further East on Folly Road, where it does not interfere with the access crossovers to the opposite neighbouring property on Folly Road. It is also proposed to have a low key roundabout at the entry road which is setback 30m from Folly Road boundary.

An emergency and service vehicles egress road is proposed for exit onto Young Road. This exit will only be utilised by FESA and Water Delivery trucks when necessary.

2.3 Parking

Onsite parking providing bays for are based on a maximum of 400 people on site at any one time. Wedding or cultural functions in the Multi Purpose Hall will not be held concurrently with Temple functions.

General Bays	105 x car bays including 2 disabled parking bays 1 x service bays for Multipurpose hall
2 Priest Residences	4 x covered car bays
Short Stay Accommodation	4 x covered car bays

Conceptually, the main parking area (60 bays + 4 Priest residence bays) are located between the Temple and the secular buildings, very well set back from Folly Road (average 62m). Existing trees together with new planting, and a walkway from the Temple to secular buildings will blend vision of the car park even more. Additional parking is located behind the Dining Hall and Multipurpose Hall out of lines of site from main view sheds along Folly and Young Roads.

2.4 Times of use and Activities

The main activity at the site will be morning and evening prayer sessions. Other activities include weekday yoga classes, weekend scripture classes, special Hindu Festival Days and Hindu Weddings. Hindu prayer sessions are relatively unstructured and so attendance is generally spread out over the session.

Note 1: Hindu weddings *will not* occur on the same day as a special Hindu festival day so the maximum numbers of people at any one time would be 400 people on the development site.

Note 2: Strictly *no alcohol* will be consumed on site at any time being a religious requirement.

A summary of the expected activities, hours and attendance numbers are outlined below:

•Ā	Weekday Prayers (Mon-Fri)	25 - 50 people (morning session)	7am – 12pm
		25 –50 people (evening session)	5pm - 9 pm
	Weekday Yoga Classes (2 per week)	20 people	6pm – 7pm
•Ā	Saturday/ Sunday Prayers	100 - 150 people (morning session)	7am - 12pm
		100 –150 people (evening session)	5pm – 9pm
	Saturday/Sunday Scripture Classes	50 - 75 people(included in the above)	3pm – 6pm
•Ā	Special Hindu Festival Days occurring on average once per month		
	If on a weekday	50 – 75 people (morning session)	7am – 12 pm
		200 – 250people (evening session)	5pm – 9pm
	If on a weekend day	200 people (morning session)	7am - 12pm
		200 – 250 people (evening session)	5pm – 9pm
•Ā	Hindu Weddings occurring on average 6 times per year only on Friday nights or weekends		
		300 – 400 people	6pm – 12 am

2.5 Water Tanks

Water tanks providing water for the site will use neutral colour bond colours and be landscaped to blend the tanks into the site. These tanks are located at northern boundary and mostly out of view of passing traffic.

2.6 Lighting

Lighting of the buildings will be sensitive and architectural to articulate way finding around the development. Lighting of the carpark area will be low level sensitively located so as to not spill onto adjoining properties or draw attention to the development from the roads. Only the Temple East façade main entry will be architecturally up lit, the remaining entry statements will no be uplit, and will remain obscured from Folly and Young Roads.

2.7 Staging of the Development

See also Staging Plan below.

Stage 1 **DA +6 Months**

Earthworks (slabs for all buildings) and Landscaping
Footings and slabs of all buildings
Site Drainage
Major trees planted to allow established growth of large trees at outset

Stage 2 **6 – 18 months**

Main Temple Proper (Note this building is predominantly non evident)
Ablutions block
Temple kitchen
Cross over and Carpark
Folly Road Entry, left hand turn and right hand turn widening
Emergency egress to Young Road and crossover
Remove Galvanised Shed

Stage 3 **2 – 3 Years**

Dining Hall
Library
Priests' Residences

Stage 4 **3 – 4 Years**

Multipurpose Hall
Guest Accommodation
Additional Carpark

2.8 STAGING OF THE DEVELOPMENT PLAN



STAGING DIAGRAM

2.9 Materials and Colours

All selections of the design of the proposed buildings will be sensitively selected to ensure that the buildings will blend into the surrounding natural and built character of the surrounding locality.

The **religious buildings** are screened by mature trees and so mostly non-evident. The mass elements of facades and entry gopurams of the Temple will be clad in part by limestone facings as well as rendered to match. Limestone is a locally acquired material of this Baldivis area. The sculptural carvings will be painted in monotones to match the neutral and natural colours of limestone. Windows will be dark bronze powdercoat aluminium and Roof will be not visible, behind a decorative parapet. Timber detail will be incorporated on the large entry doors which will assist in the rustic feel. At the main entry on the east, large powdercoat aluminium screens in dark bronze colours will screen the shoe area.

The perimeter fence to the Temple building will be as discreet as possible, given the functional requirement to the Vastu Shastra tradition. It is proposed to render the columns of the localised fence dark as to recede their appearance. The infill panels will be very visually permeable. It is currently proposed to be a simple vertical wrought iron fenestration that from a distance and through the dense existing hedging, will not be perceived.

The **secular buildings** are conventional in construction: rendered masonry walls, lightweight custom orb pitched roof, sheet panelled gables and lightweight post verandahs. These buildings will adopt a palette of both limestone cladding and render to tonally match in with neutral stone colours and contrast with dark gables, and roof colours used to 'sit' the buildings into the site. Timber posts of the verandah walkways and timber decorative door details will bring a connection to the Temple building and a rustic rural feel to these buildings.

The **road and carparks** are proposed in a gravel/ laterite asphalt that will blend in with the natural surrounding of the bush becoming eventually a dark brown colour. No kerbing is proposed to maintainzthe low key appearance of the entry. Edge planting and median strip will form a swale in the carparks.

Example palette of proposed materials and finishes



2.10 Landscaping

The proposed development is located such that all remnant vegetation is retained, other than x 2 trees, one of which is in poor health and largely dead, and the other which will be too close to the new Temple for safe fire distances.

The Landscape concept proposed for the development has been developed as part of the Visual Management Strategy to both reduce the impact of the built forms on the natural landscape as well as enhance the experience and amenity for both the public who will see the development and those that visit and use the facilities at the site.

New native landscaping is strategically located to assist in screening the buildings and carpark from view. Local native trees are proposed for biodiversity. The proposed landscape also enhances attractive outlook and extension from the buildings or courtyards with native garden edging proposed to the northern sides of the buildings and to act as paving and carpark swales. The concept of large open spaces with some protected, natural and organically defined edges where the community can enjoy nature and the landscape are envisaged.

The attached landscaping plans are conceptual and specific selections will be developed as the design development progresses. In concept, plant will comprise native and or waterwise species to reduce irrigation demand as well as fertiliser and pesticide use. The landscaping plans consists of the following areas **(**Refer also **Landscape Concept Plan** p16**)**

2.9.1 A. Landscape to South and East sides of buildings (along Folly and Young Roads)

Native trees and shrubs are proposed to further screen and blend the buildings into the natural landscape. These areas will emulate planting in a natural unstructured way and predominantly follow the building forms along Folly Road and Young Road. The site corner at Young Road and Folly Road has been left as the existing large grassy clearing to maintain the openness of the site and locality. (See Figure 1 below for selections)

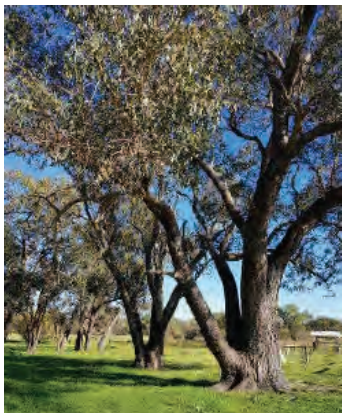
i) Planting along the southern boundary at Folly Road, consisting of native shrubs and trees to further screen the development.(*Melaleuca rhaphiophylla*)

ii) Planting of larger native trees to screen and blend the view of library and multi-purpose hall. These trees will emulate the cluster of existing trees on Folly Road and provide a continuous 'natural' flow of vegetation along the road thus enhancing the visual amenity of the site. Trees will include *Eucalyptus rudis and Melaleuca rhaphiophylla* which are both native to this area and already growing on site.

iii) Planting of larger native trees to screen and blend the view of multi-purpose hall. These trees will emulate the cluster of existing trees on Folly Road and provide a continuous 'natural' flow of vegetation along the road thus enhancing the visual amenity of the site. Trees will include *Eucalyptus rudis and melaleuca rhaphiophylla* which are native to this area and already growing on site.

iv) Planting of native trees around guest accommodation to screen the building from view lines along Folly and Young Roads

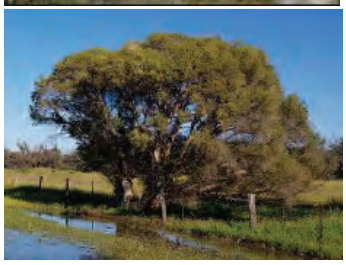
Figure 1: Native tree selections for Area A around the site boundary providing fauna habitat opportunities in addition to screening the buildings and enhancing the visual amenity of the area.



Eucalyptus rudis
'Flooded Gum'
6-20m H
Will encourage black cockatoo habitat
Evergreen



Allocasuarina fraseriana
'WA Sheoak'
10m H x 6m W
Evergreen



Melaleuca rhaphiophylla
'Swamp Paperbark'
6m H x 3m W



Banksia Attenuata
'Candle stick Banksia'
4m-10m H x 3- 8mW
Evergreen



Banksia Menziesii
'Firewood Banksia'
5 – 10 m H x 5-10m W
Evergreen

2.9.2 B. Landscape to Carparks

i) Main Carpark will have central trees to provide shade over cars as well as perimeter trees to screen cars and provide further shade.

ii) Linear carpark behind Dining Hall to have further trees planted to extend the existing wind row on the north and assist shading cars and parking area

iii) Carpark behind Multi-purpose hall to have some trees and edge shrubs to assist in screening cars

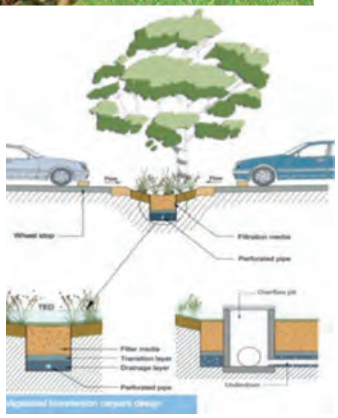
The use of strategic landscaped swales areas to hold and infiltrate the larger rainfall events will be proposed to collect and infiltrate the stormwater at the surface. Garden edge swales at the carpark will serve this function. Examples of swale carpark edging and median strips below. (Fig 1)





Fig 1: Examples of Swale landscape areas within and at edge of carpark

Fig 2: Carpark and paved areas and diagram showing swale concept



The selection of trees for the Carpark areas are proposed as a combination of native Banksia (Attenuata, Menziesii) together with some strategically located Eucalyptus Rudis and Allocasuarina Fraseriana to provide shade in the long term.

Fig 3: Tree Selections in carpark and closer to building courtyards:



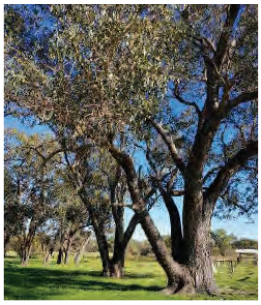
Banksia Menziesii
'Firewood Banksia'
5 – 10 m H x 5-10m W
Evergreen



Allocasuarina fraseriana
'WA Sheoak'
10m H x 6m W
Evergreen



Banksia Attenuata
'Candle stick Banksia'
4m-10m H x 3- 8mW
Evergreen
Allocasuarina



Eucalyptus rudis
'Flooded Gum'
6-20m H
Will encourage black cockatoo habitat
Evergreen

2.9.3 C. Landscape to Courtyards

Native trees and shrubs are proposed to beautify and enhance courtyard areas and perimeters close to buildings.
See Fig. 4 + 5 for example selections and concepts.

i) Planting around the immediate vicinity of the Temple in planter beds located within the temple perimeter 'fence'. Feature trees with lower ornamental flowering shrubs and hedge bushes will be selected

ii) Planting of shrubs organically at outside perimeter of East side 'fence' of Temple and wrapping around to the south of the covered walkway on main carpark. Some smaller native trees will be incorporated.

iii) The courtyard North of the main Temple will have an organically structured planted perimeter and open space. Native grass will be explored. A large water feature is also part of this garden experience and its location and symbol holds sacred value to this development. It will be chlorinated and moving water. Native grass will be explored.

iv) The courtyard to the Priest Residences and Temple kitchen will have some native shrubs to create a sense of place, privacy, and enclosure for the occupants.

v) Planting of the main courtyard around which the secular buildings cluster. This will consist of different layers of plants to create a sense of nurtured garden providing a tranquil entry arrival space to these buildings. A small water feature is proposed to the central paved area. A shaded playground will be located north of the Dining Hall.

vi) Planting in the north aspect of the Multi-purpose hall to beautify the outlook will explore native grass and edge planting to create some sense of containment to the open space.

vii) Planting at the entry and to the north aspect of the Guest Accommodation to create a sense of enclosure and privacy, as well as screening of their car bays.

Fig. 4 Organically structured native garden edge to minimal contained areas of grass (native lawn to be explored) and pathways











Fig. 5 Plant Selections for organically structured garden edges/ swales and courtyard planting.



Syzygium Smithii
'Lily Pilly' Hedgemaster
1-1.5mH/W



Adenanthol Sericea
'Woolly Bush'
3.5m H 1.5m W
1-1.5mH/W



Boronia heterophylla, various
'Red Boronia'
1mH x 1m W



Westringia Wyanabbie
1-1.5mH/W



Patasonia Occidentalis
80mH x 60mW



Dianella ensiformis, various
flax lily 'Silver Streak'



Agapantha
African Blue Lily
1.2M



Lomandra, various
'majestic pal'/Lime Light
'longifolia'



Anigozanthos
'Gold Velvet Kangaroo Paw'



Anigozanthos
'Bush pearl Kangaroo Paw'

2.9.4 Hydrozoning

The planting zones and layers will utilize hydrozoning to maximize watering efficiency.

Area A: Native trees to Folly Road and Young Road elevations See Fig 1

Minimal watering zone requiring only hand watering in the hotter months as the young trees becomes established. The intention is to engage the community in a service activity whereby more established natives will be donated by each family and then a roster system will be established to hand water the trees when first planted. This activity will happen in Stage 1 to establish the trees along the road elevations of the development which will assist in blending the buildings as they are constructed. It is intended to time the planting of the young trees close to the winter months so as to require less hand watering.

Area B: Carpark Planting

Minimal watering zone requiring only hand watering in the hotter months as the young trees become established. The community will be engaged in the process as above. The carpark trees will be established after the carpark asphalt is put down in each stage. Planting in stages will be undertaken in order to strategically establish trees prior to the building stage.

Area C: Courtyard and Close to Building Planting

Secondary zone gardens requiring moderate watering will happen in Area C and will be sub surface drip irrigation connected to Water tank.

2.10 Landscape Concept Plan



3.0 VISUAL LANDSCAPE EVALUATION

3.1 Scope and Context of Evaluation

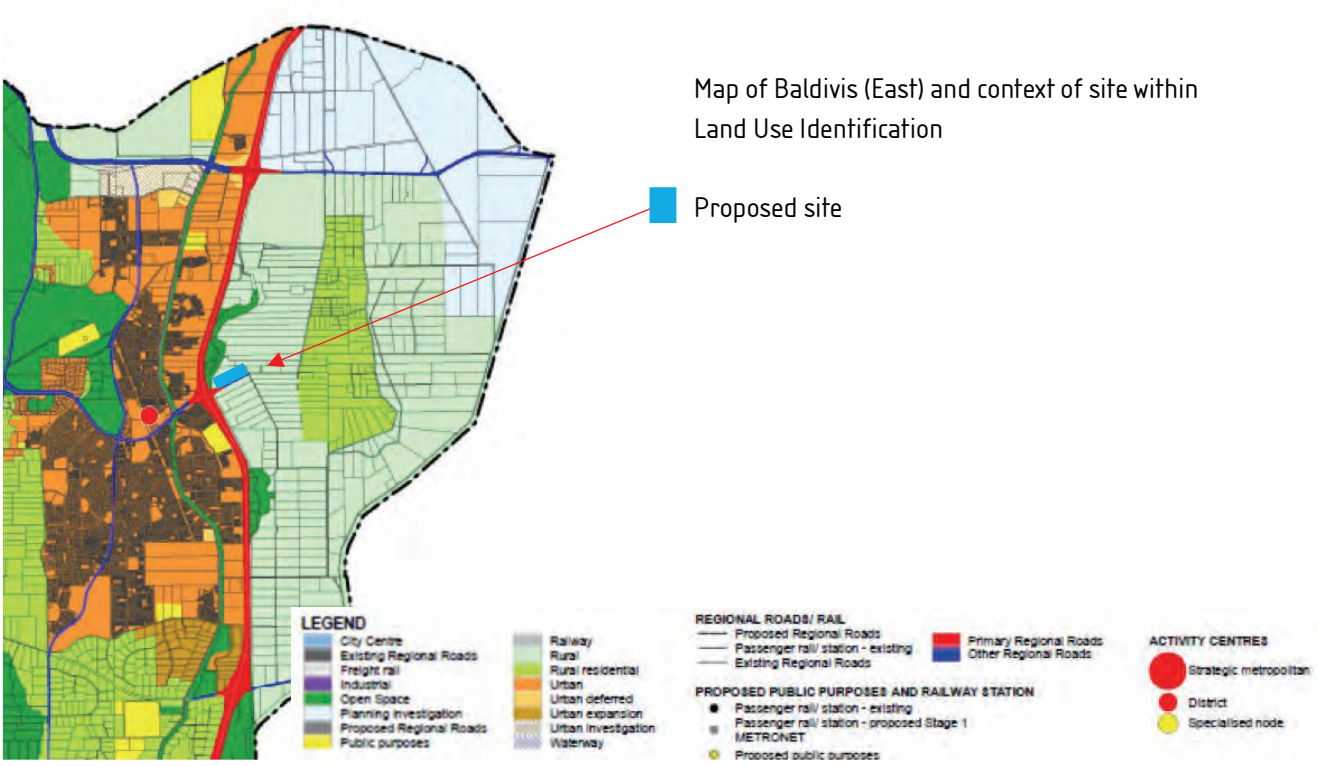
Guidance for undertaking a Visual Landscape Evaluation and Assessment is provided by the State Planning Authority, Department of Planning and Western Australian Planning Commission within the published manual *Visual Landscape Planning in Western Australia: A Manual for Evaluation, Assessment, Siting and Design*; 2007 (VLPWA)

The Visual Landscape Evaluation has been an important tool used to understand what gives the landscape in the vicinity of the site its particular character and what forms the visual amenity experienced by those living and working in the area. The Visual Landscape assessment has become a useful tool in viewing and assessing the impact of this development on the landscape and to ensure that the development is sympathetic to the overall landscape, its character and values.

This report has been undertaken in accordance with the principles set out in the VLPWA including:

- Site Survey and analysis by a team of experienced professional consultants
- Desktop study of cartographic and photographic material
- Analysis of photographs of approaches to the subject site along the road corridors

The image locations selected within this report are views taken from the public realm and represent generally the possible viewpoints of the development site. These locations serve as a general statement of the site, its surrounds and their associated character and potential views offered.



Map of Baldivis (East) and context of site within Land Use Identification

Proposed site

3.2 Regional Context Evaluation

Refer **Planning Report** prepared by Peter Webb & Associates,
2.1 State Planning Framework, p7-10 and
2.2 Local Planning Framework, p26

The Visual Landscape of the regional context of the subject site can be understood in terms of its location with respect to the Kwinana Freeway.

Land **west** of the freeway comprises medium density residential suburbs with single housing subdivisions, schools and infrastructure for suburban life. **See Figure 1 + 2.**

Figure 2: Regional Context Aerial Photo

- Subject site is adjacent Freeway, and located immediately in vicinity of urban development on other side of freeway.
- Subject site is located on Freeway off ramp into the Rural district East being Folly Road, a transport corridor extension of Safety Bay Road
- Subject site is located on 'fringe' of the Rural district, which has broad pattern of land use, tenure and settlement.

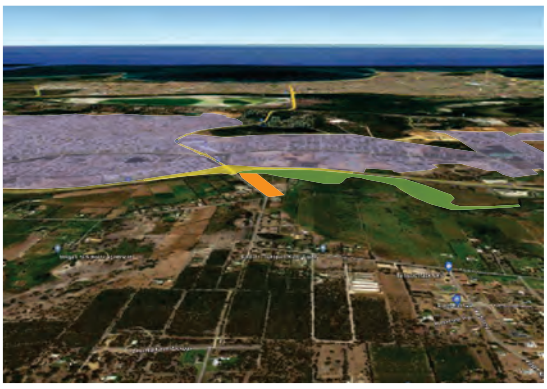
SUBJECT SITE
URBAN DEVELOPMENT
BUSH FOREVER SITE
FREEWAY ENTRY ONTO FOLLY ROAD



VIEW NORTH



VIEW EAST



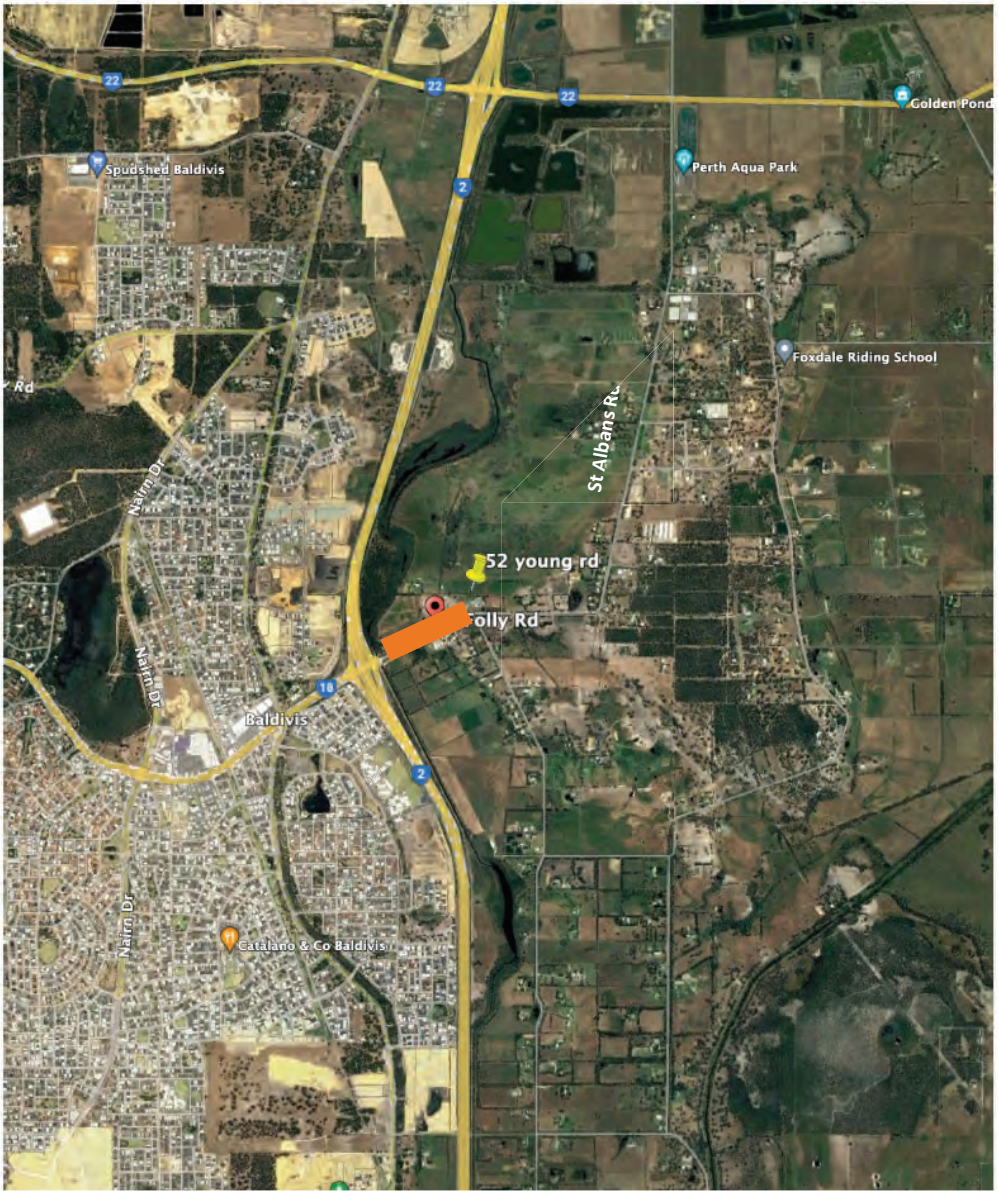
VIEW WEST

Adjacent to the freeway **east** is the Peel Main drain and the Conservation Wetlands including Folly Pool. The visual experience of the region east of the freeway is a view of large rural properties of open pastures and grasslands dotted with remnant native vegetation consisting of trees and bushes. The built forms in the landscape conjure rural land type uses, farming sheds and homesteads.
See Figure 2 + 3

Strategic studies prepared by City of Rockingham on and in the vicinity of the proposed site determined there was no land suitable for *priority agricultural pursuits* in this locality due to the low land capabilities of the area. This area (including the subject land) is instead recognised in the City's Rural Land Strategy for its environmental significance and visual amenity.

As can be seen on the **Regional context aerial photograph between freeway, Mundijong and Karnup Roads** and the **Regional context of the proposed site (Figure 2 + 3),** land clearing and buildings clearly follow the road network, which is distinctly along Folly Rd, Young Rd and St Albans Rd. Cleared areas of land have more built up combinations of dwellings and outbuilding sheds. Many shed structures throughout this region are significantly sizable. Dwellings and sheds can often be seen clearly from the road or may be obscured by remnant native tree and bush vegetation.

*The visual management strategy adopted for siting the development can be seen in **Figure 4**, where the buildings are being proposed to the East of the property such that they are located in the cleared and filled area of the site and as such also locate within the similarly developed areas of the region along the road network.*



Proposed Site:

Located on Folly Road at Freeway Entry/ Exit, the property being on the physical 'fringe' of this rural area, but still within the 'cleared' area of the

Area to east of dotted line is where cleared areas are and where buildings and remnant vegetation are located. Note how the cleared area follows the road network.



Proposed Site: Development Area

This part of the proposed site is already cleared and filled to above the flood plain level with scant remnant vegetation. This is the area within where the buildings of the development are proposed.

Proposed Site: Flood Plain Area

This part of the proposed site is also flat, subject to flooding and the western end (close to Freeway) adjoins a conservation wetland.

Area to East of Dotted line is where cleared areas within this region now exist within which buildings and remnant vegetation are located. Note how the cleared area follows the road network.

3.3 Local Context Evaluation

The rural character of the surrounding properties of the proposed site can be evaluated in terms of built forms and vegetation of the neighbouring properties both adjacent and in the immediate vicinity. *The following descriptions can be correlated with the **Aerial Photo** below.*

3.3.1 Built Forms

Generally, on any typical property, the neighbouring buildings are clustered into hubs consisting of one or two homesteads and a few sheds. The hub is located around car movement and access from the street, and many of these clusters have large expanses of bitumen or gravel around which the buildings sit.

i) Sheds

Buildings on the surrounding properties are predominantly rectangular sheds, mostly very large, and built of custom orb sheeting. They are used for storage and utility functions of rural industry and farm use. Many are plain metallic zincalume, others colourbond sheeting in wheat and beige colours, a few in 'green' to 'blend' the shed into the landscape.

ii) Homesteads

Neighbouring properties A, B and C have combinations of homestead buildings and sheds on the property with people living on the property.
Properties D and E do *not* have any residential homestead buildings at present.
As described below, the homestead buildings are typically lightweight framed walls with painted 'Hardie' cement sheet panel cladding. Roofs are colourbond sheeting with gable end or hip pitched roofs of about 10 - 15 degrees.

3.3.2 Vegetation

i) Remnant Vegetation

All properties neighbouring the proposed site have been cleared of remnant vegetation where the buildings have been located. Clumpings of natural remnant vegetation still exists along Folly and Young Road and throughout the properties typically away from buildings. Remnant vegetation is also located at entry points on some of the properties.

ii) New Landscaping

Typically, new trees and landscaping have been planted around neighbouring building hubs to create protection, shade, screening and enhancement of the properties. A combination of native trees/ bushes as well as introduced species of plants have been used.

3.3.3 Neighbouring Properties

Aerial Photograph

Below is an Aerial Photograph of the proposed site in context with the immediate neighbouring properties.



.3.3 Local Context Evaluation: Neighbouring Properties

A. 66 Folly Road (Opposite Site on Folly Road)



1. Aerial photo

This property has a hub of buildings consisting of large sheds of various sizes together with a rural homestead.
There are 2 x Entry points from Folly Road, and the buildings are located around the driveway network.

2. Large visible Shed from Folly Road.



The largest shed on this property and in complete view of Folly Road is located about 61m from the road and is approx. 17m width x 42m length x 6-8m height.
Colourbond (Green) clads walls and roof.
The adjacent shed is 14m width x 20m length x 6-8m in height. It is zincalume metal sheeting. Large visible watertanks/ silos sit alongside the shed.



3. The first entry from Folly Road

is low key although a large kerbside gravel/ bitumen crossover/ turning circle is prominent on Folly Road outside the property fenceline, The fence is simple timber post and wire.



4. The second entry from Folly Road

is more established with bitumen driveway and crossover, and timber fencing.

3.3 Local Context Evaluation: Neighbouring Properties

B. 151 Folly Road (Opposite Site on Young Road)



1. Aerial photo

This property has a hub of buildings consisting c large sheds of various sizes together with rural homesteads.
There are 2 x Entry points to the property, one fr Folly Road, and one from Young Road. The buildi are located around the large area of bitumen driveway.

2. Homesteads seen from intersection of Folly and Young Roads



The homestead which can be seen is about 12m f road edge and measures about
12m x 24m.
A large shed measuring 13m x 24m is also seen closer to the intersection, about 28m from Young Road

3. Main Entry from Young Road



shows extensive loose bitumen driveway and wir gate.
The residence has a colourbond roof with lightweight cement sheet panels for walls.
A 'typical' verandah with steel posts surrounds t home, the roof of the verandah being continuous main roof but changed into a lesser pitch.
The adjacent shed is 14m width x 20m length x 6-
in height. It is zincalume metal sheeting. Large visible water tanks sit alongside the shed.

4. Second Entry from Folly Road



is also well established with a wide entry bitumer crossover and simple painted timber fence.
Palm trees form the landscaped entry statement.

Local Context Evaluation:
Neighbouring Properties



C 574 Young Road
(Behind Proposed Site on Young Road)

1. Aerial photo

This property has a hub of buildings out of view consisting of sheds of various sizes together with a rural homestead.
The buildings are located around a gravel driveway which is interspersed with landscape and trees.

Entry from end of Young Road

The homestead is not visible from the road, scree by established trees. A small lean to shed is visible. The gate and entry fencing is a simple cross member style timber fence. Other post and wire fencing is can be seen marked throughout the property.

1

2

4

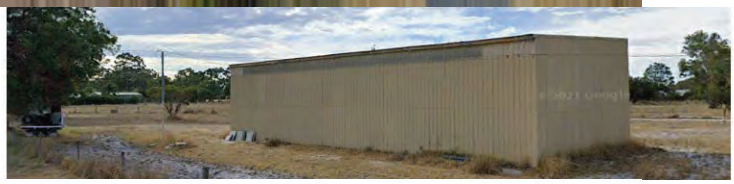




D. Lot 52 Young Road + 547 Young Road
(Property behind and immediately adjacent north of proposed site)

A beige colourbond shed on left and Large rectangular beige container shed located on right.





Visible Shed

No residential on this property, only highly visible sheds such as this large colourbond container s 20m x 5m, located 10m from road edge.



Visible Shed

No residential on this property, only highly visible sheds such as this open post and metal roof shed,.

3.4 SITE CONTEXT EVALUATION

The subject site is located in Baldivis, in the City of Rockingham.
The property is located on Folly Road which begins as a primary regional road into this sector of Baldivis from the Kwinana Freeway. Folly Road then becomes an 'Other regional road' as it runs along the length of the site. The clients have selected this site with the view that whilst it is at the entry to the Baldivis (east) Rural district, it is also on the 'fringe', and not deeply established in the rural area.

The *land use* for this area is primarily rural dwellings and sheds, both large and small with acreage for small agricultural and livestock farming, although the City of Rockingham in it's Rural Strategy have identified that there was no land suitable for *priority agricultural pursuits* in this locality due to the low land capabilities of the area.

The landscape of the area is of a rural scene with remnant mature trees, planted wind rows of trees, bush clumpings and non-native plantings by local property owners.

The built characteristics of the area are rural dwellings and buildings clustered together around driveway access. Large shed structures also characterise the area.

3.4.1 Topography

For a more detailed site description see the Environmental Consultant's Report
The total land area of the site is 74,362m2, (7.4Ha) which includes more than half the site being open field adjacent to the Conservation Wetland.
The site has a primary southern frontage to Folly Road of approximately 664m and a frontage to the side street Young Road of 114m. The proposed 'development' area of the site, from the mid wind row of trees on the site has a length along Folly Road of 270m which is less than half the length of the entire site.
The northern boundary of the site abuts another private property (547 Young road) on which some outbuilding sheds are located.
The land is relatively flat, with a gradual fall towards the western conservation wetlands. (See Survey)
The site has an existing crossover and access road which will not be retained as a new main entry is being proposed.

3.4.2 Visual Landscape Character of the Site

See Aerial Photo Description of Site (Figure 4) and accompanying character unit list to follow.

3.4.3 Natural Landscape Character of the Existing Site Also Refer Figure 5

a) The subject site is located immediately East of a Bush Forever site.

b) The freeway and its buffer vegetation is located to the west end of the site. Views across to the site from the freeway are very limited to a driver concentrating on the road.ie. The site is protected from view of approaching drivers from the Freeway

c) A conservation wetland comprising Folly Pool as part of Manjedal Brook comprise the western end of the site. These areas are largely untouched by any previous development.

d) A large grassy open flat field of flood plain lies between Folly Pool and the dividing mid line of trees which would have been planted as a wind row. This large part of the site is often under water in winter.

e) This mid site wind row of trees naturally divides the site into the 'developed area' and the floodplain area. This wind row consists of melaluka ranging in height between 8m and 10m. There are no nesting tree hollows in the trees. Vison through these trees is moderate.

f) The land to the east of these trees has effectively been cleared and filled over time, leaving remnant vegetation clusters, single mature trees and planted wind rows which intersperse larger areas of grassy open clearings.

g) A strong wind row of 6m trees form a strong hedge at the existing entry of the site. Vision through the hedge is minimal.

h) A large clump of 10-12m high trees are located on Folly Road, providing a vegetation feature on Folly Road.

i) An established wind row of trees of about 5-8m height has been planted on part of the northern boundary, just in from the firebreak.

j) Individual remnant trees are in varying states of health.

k) Sandy, filled and compacted clearings are already completed to achieve the minimum RL above the 100 year Floodplain level

3.4.4 Built Landscape Character of Existing Site

l) A couple of large sheds exist on the northern boundary of the site, set well back from Folly Road.

m) They reflect the same structure and materials of other sheds on adjacent properties, with roof and wall construction in metal colour bond and have attached flat roof awning structures. Only the smaller shed is intended to be retained for use in the development.

n) The site has a timber post and wire perimeter fence (approx. 1.0 m high) running along the entire length of Folly Road boundary, Young Road boundary and northern boundary to neighbouring property.

o) A firebreak runs along the entire perimeter of the site

p) A straight crushed limestone/ bluemetal access way strongly divides the property into East and West sides. The crossover itself is unsealed pea gravel.

P A straight crushed limestone/blue metal access way strongly divides the property into east and west sides

F All land east of the mid wind row of trees has been cleared and filled over time, leaving remnant vegetation clusters, single mature trees and planted wind rows which intersect larger areas of grassy open clearings

D A large grassy open field of flood plain lies between folly pool and the dividing midline of trees, often underwater in winter

I Wind row of existing trees about 6m in height planted on part of the northern boundary, in front of the firebreak

H Large clump of trees 10-12m high located on southern site boundary, providing a vegetation feature on Folly road

C Conservation wetland comprise the western end of site. This area is largely untouched.

L Existing shed on northern boundary are well set back from Folly road



M 151 Young road - built characteristics of area are rural dwelling, buildings + shed with buildings clustered together around driveway access

K Sandy compacted clearings indicate historical car access to existing site

A Subject site situated to the immediate east of bush forever site

M Folly road - Built characteristics of area are rural dwelling, buildings = shed with buildings clustered together around driveway access

B Entry into Baldivis east onto Folly road from freeway. Buffer vegetation protects site from views. Approaching drivers on freeway and off ramp at Folly road are unable to see into site at all.

J Individual remnant trees are in varying states of health

E Mid site wind row of trees 13-15m high naturally divides site into 'developed area' and flood plain area

G Strong wind row of 6m trees form dense hedge at existing entry of site. Vision through hedge is minimal

Figure 5: VISUAL LANDSCAPE CHARACTER OF SITE

4.0 VISUAL ASSESSMENT AND VIEWS

The following assessment describes how the visual landscape character of the existing site is viewed, experienced and valued and then describes the impact that the proposed development will have on that visual landscape character.

The landscape character of the site is predominately experienced by the public from Folly Road driving East and West. Another view shed is experienced from Young Road travelling towards the site from South to North.

Generally, the road and traffic conditions in the greater area allow speeds of 70km per hour. There is no footpath and pedestrian access along these roads does not happen.

4.1 Existing Site Visual Landscape Views, Experience and Value

The visual experience of the **existing site** arriving into the area from the Freeway onto Folly Road is a view shed of large open grassy clearing of the lower lying land adjacent to the conservation wetland, followed by views of the densely planted mid area of existing mature wind rows of 12-15m trees and 6m trees that obscures vision into the site in that area, followed again by a view shed across the site of open grassy clearings interspersed by mature trees and bushes. A large clustering of mature trees is located along Folly Road mid-way between the dense hedge of 6m trees and Young Road which again distracts the view line from going deep into the site. The eastern end of the site is very open and clear.

The visual experience going westwards back to the freeway along Folly Road is of a site that is quite exposed, open and grassy at the eastern end with little tree cover and unoccupied paddocks. The informal firebreaks are clearly visible and simple post and wire fencing are in close proximity to Folly and Young Roads given very little verge depths.

The visual experience along Young Road north towards the site and intersection of Folly Road is of a significantly large sized area of cleared, open grassy site. The property across the road from the site on 151 Young Road exhibits a vegetative density along Young Rd with non-native palms and bushes obscuring the homestead clustering on that property which is only 10m set back from the Young Road boundary.

4.2 Proposed Development and Impact on Visual Landscape Views, Experience and Value

The visual experience of the **proposed development** is intended to use elements of design and siting to both *absorb* the buildings into the site as well as *blend* the buildings, and can be described as follows:

4.2.1 View 1-7

Arrival from the freeway along Folly road preserves the view of low lying open grassy clearing adjacent the wetland (which forms more that half the site), as there is no development proposed on this area.

The main Temple (which is 'different' and 'unfamiliar' in aesthetic to a rural setting in Baldivis) has been located behind the mid site wind row of trees and dense hedge along Folly Road, such that the impact of this building is 'non evident'. The heights of the existing trees obscure the taller sculptured Temple Goporam entry statements, via their density of tree canopy, heights and the perspective of a person viewing the site in the car.

4.2.2 View 8 + 9

As the traveller proceeds along Folly Road beyond the tree hedge, the view deep into the site is of the secular building cluster. The forms, colours and materials of these buildings reflect the typology of typical rural buildings in this area. A walkway structure that connects the Halls to the Temple is of low scale, open with post/ beam/ simple roof and together with new planting screens vision through to the proposed carpark area, which is very well set back from Folly Road. Location of the second extended carpark is 'hidden' behind the secular buildings. The large clustering of mature trees on Folly Road further distracts the view of the secular buildings.

4.2.3 View 10

The view experience along Folly Road towards the Eastern end of the site as approach is made to Young Road has been maintained as the existing open clearing thereby not impacting the experience of the traveller or viewer of this significantly portioned corner of the site on the intersection of Young and Folly Roads.

Towards the northern end of the site, a single dwelling for guest accommodation is proposed with carport attached. This has been located more than 30m from Young Rd (secondary street) and the proposed building forms are similar to those dwellings on the neighbouring property (151 Young Road). As such, this proposed 'homestead' type building maintains the visual landscape character of the area and with the addition of proposed native planting to further screen the guest accommodation, the impact will be a further blending and enhancement of the visual landscape.

4.2.4 View 11

The view experienced along Young Road towards the site travelling north is again of the large existing open grassy corner of the site. Deep into the sightline is the guest accommodation as also described in View 10. The impact of the development from the main part of Young Road is that of a blended development.

4.2.5 View 12

The view experience on Young Road 'behind' the proposed site looking directly at the site (as a passenger in a car)

4.2.6 View 13 + 14

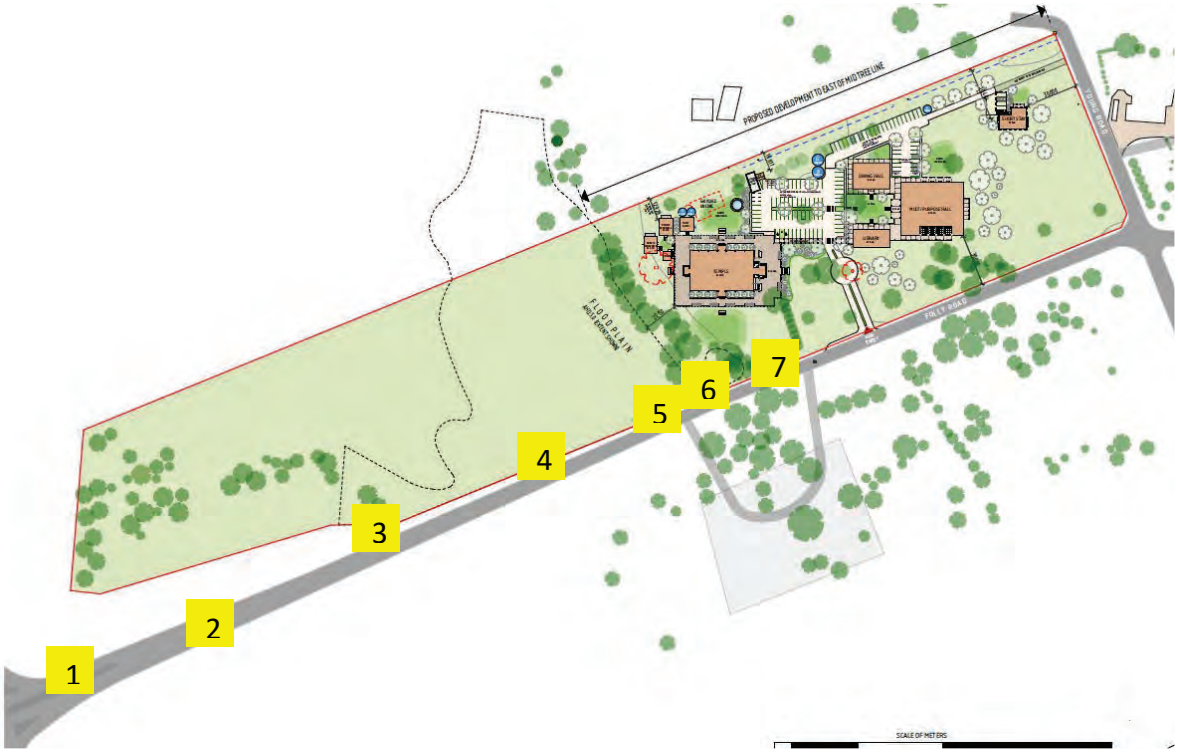
The view experience driving west along Folly Road back towards the freeway. The Temple building is seen in the deep distance. The Temple Goporam structure is obscured and mostly non-evident behind existing tall mature trees.

The main view sheds of the development as described above are pictured in the following pages.

4.3 VIEWSHEDS - PHOTOGRAPHS

There are essentially 6 view sheds that characterise the experience of the proposed site within the rural context of this site.

4.3.1 VIEWSHED 1: FOLLY ROAD TRAVELLING EAST VIEWS 1-7



a) View 1+2: Approach from Freeway off ramp along Folly Road Eastwards. Proposed site on LHS in both images. Roadside remnant vegetation and the protected wetland vegetation alongside the freeway obscures view completely of the site for the traveller on the road that is entering into this rural region









b) View 3: Approach along Folly Road Eastwards. View into clearing of Floodplain area of site (LHS of road)

i) View of existing site with evidence of water from winter rains on site. Wind row 15m trees in view shed in distance.



ii) View of proposed development behind existing row of 15 m trees. Both the Temple and Priests' residences are heavily screened from view. The Temple Goporams are non-evident given the density and height of the existing trees.



c) View 4 : Approach East along Folly Road.

i) Closer view looking across open grassy clearing of site with mid-line wind row of trees in view line. Existing shed structures on site screened by wind row (centre of photo). Shed structures of adjacent property also in view behind trees at LHS



ii) View of site with proposed Temple and Priest residences heavily screened and highly absorbed into site (non- evident), screened by dense wind row of existing trees. Temple Goporams non- evident in view screened by existing tree canopy.



c) View 5 Approach east along Folly Road

i) View of site with proposed Temple and Priest residences non evident in viewshed, screened by dense wind row of existing trees. Opening in wind row of trees allows vision through to existing shed structures and water tank. Fire break along perimeter in foreground.



ii) View of development with proposed Priest residences, Temple kitchen and ablutions seen intermittently through largest gap in wind row of established trees. The large tree which will be removed in development has been cut from this image as well. Note the west Goporam of Temple is screened and mostly non-evident in view, as is most of the Temple building.



d) View 6: Approach east along Folly Road. Development site on LHS in both images
View of dense established tree hedge which obscures view of site.

i) View of existing site looking into established trees from corner of 'development area'



ii) View of site showing proposed Temple mostly screened behind existing trees of 'development area'



Note: Photo 6d taken of shed structure across the road at 66 Folly Road from same location



e) View 7 View of site showing proposed development along Folly Road screened by existing wind row of trees.

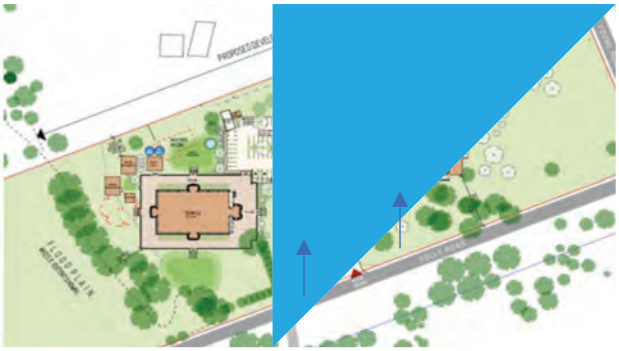
i) View of existing site looking through mature trees and dense hedge on Folly Road. Existing shed structure can be seen on site on north boundary.



ii) View of proposed Temple through trees along Folly Road. South and West Goporum non-evident in view.



4.3.2 VIEWSHED 2: FOLLY ROAD STILL TRAVELLING EAST VIEWS 8 + 9



View 8: Looking towards development area at first clearing along Folly Road near proposed entry (Wide angle lens)

i) Existing Site from Folly Road



ii) Site s
wind s
on Rh

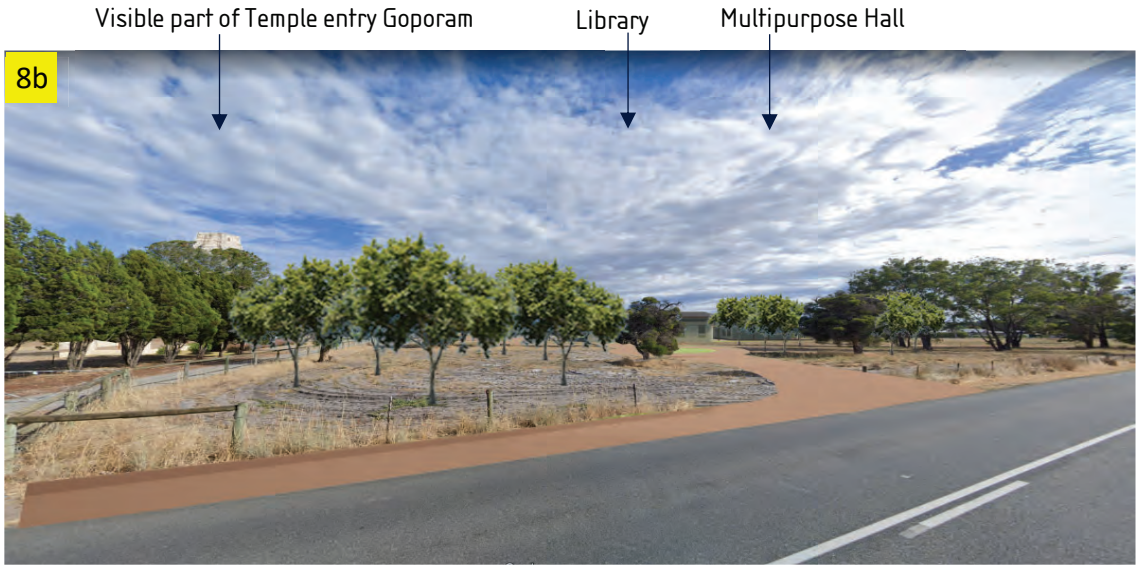
Visible part of Temple entry gopo

Library

Multipurpose Hall



iii) Site showing proposed development *with the addition of new proposed landscape* which enhances the development and further absorbs the development into t



iv) Looking towards existing site at first clearing along Folly Road at existing entry (51 deg angle of view) and then at 8c with proposed walkway and new fence structure around Temple (RHS) (Note: Wire front gate and timber fence will be demolished and not visible in 8d)





v) View of existing site (8e) and View from Folly Road looking across to library and distant Multipurpose Hall (8f) which includes proposed planting to further blend the building





vi) View from Folly Road (back to freeway) looking at dense hedge corner of existing entry (8g)
Proposed Temple non- evident and set back and behind trees (8f)





Top of Entry
Goporam visible only

View 9: View from Folly Road travelling east after existing entry

i) Existing Site from Folly Road



ii) Proposed Multipurpose Hall in view from Folly Road (no added landscape)

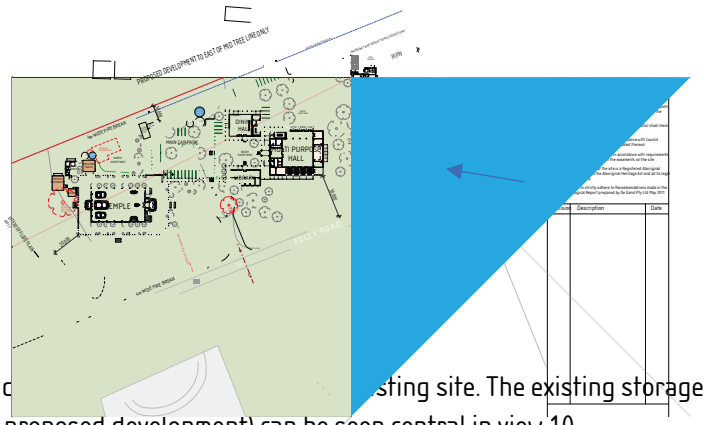


iii) Site showing proposed development *with the addition of new proposed landscape* which enhances the development and further blends the development into the site.



4.3.3 VIEWSHED 3: FOLLY ROAD TRAVELLING WEST TOWARDS SITE AND YOUNG ROAD INTERSECTION

VIEW 10



i) View travelling west along Folly Road[illegible]sting site. The existing storage shed (to be used as Chariot store in proposed development) can be seen central in view.10



Existing sheds on site

ii) View travelling west along Folly Road approaching Young Road and proposed site with east end of Multipurpose Hall in view. Image has no proposed additional landscape shown.10a

Proposed Multi-purpose

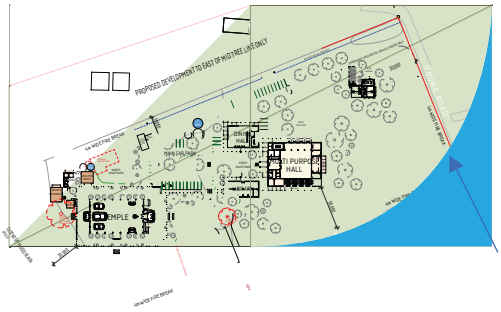


iii) View[illegible]pose Hall in view. Proposed addit[illegible]amenity of the area.10b



4.3.4 VIEWSHED 4: YOUNG ROAD TRAVELLING NORTH TOWARDS SITE AND FOLLY ROAD INTERSECTION

VIEW 11



a) View 11

i) View travelling north along Young Road approaching existing site and Folly Road intersection. Note the large brown shed of property behind proposed site is in view on LHS



ii) View travelling west along Folly Road approaching site with Guest accommodation in view line. Large brown shed of neighbouring property behind proposed site is still in view. (No additional landscaping shown)



iii) View travelling west along Folly Road approaching site with Guest accommodation in view line *but with proposed landscaping shown in view*. Large brown shed of neighbouring property behind proposed site is still in view. (No additional landscaping shown)



4.3.4 VIEWSHED 5: YOUNG ROAD AT NORTHERN BEND LOOKING AT THE SITE (AS CAR PASSENGER)

VIEW 1



a) View 12

i) View from north bend in Young Road. Only 3 x properties are in this area, with only 1 residence. The storage shed on RHS will be retained for proposed Chariot store. A building on property across Folly Road can seen.





ii) View with proposed the proposed guest accommodation front in view (12a) and landscape enhancing and blending the development with trees to carpark and around accommodation (12b)

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12b



VIEWSHED FROM LOT 547 LOOKING AT THE SITE

Views taken from location of adjoining neighbour's stated preferred location for a future dwelling, illustrating views towards Temple (12c) and towards Multi Purpose Hall (12d)



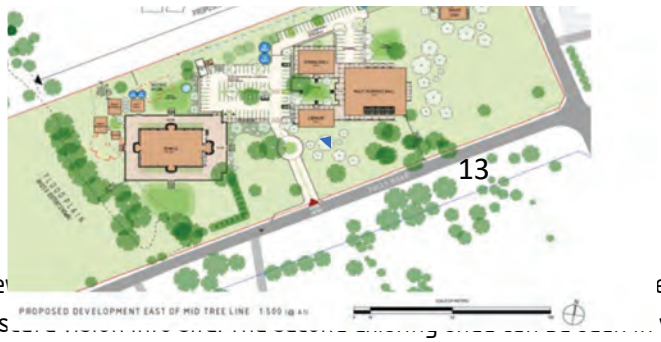


View from possible future dwelling towards Temple and car park



View from possible future dwelling towards Multi Purpose Hall and Dining Hal

4.3.4 VIEWSHED 6: DRIVING ALONG FOLLY ROAD BACK TOWARDS FREEWAY VIEWS 13 + 14



i) Vie egetation and large mature trees obs view.



ii) View with proposed library in view . Remnant vegetation and large mature trees obscure vision of the multi-purpose hall and assists to maintain the visual amenity of the area.



ii) View with proposed multipurpose hall and library in view *with proposed new landscaping* which assists in blending and screening the secular buildings more from street view. Remnant vegetation and large mature trees obscure vision and maintain the visual amenity of t



4.3.4 VIEWSHED 6: DRIVING ALONG FOLLY ROAD BACK TOWARDS FREEWAY VIEWS 13 + 14



i) View from Folly Road travelling West back to freeway. Existing sh
neighbouring shed at RHS. Fire break at boundary in view.

Existing site shed
which will become
Chariot Store



Existing shed of
neighbour behind
547 Young Rd

ii) View with proposed library and covered walkway structure in view. The Temple Goporum is obscured by existing mature trees.



iii) View with proposed library and covered walkway structure in view. New proposed landscaping shown in view assists in blending the buildings as well as enhancing the visual amenity.

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5.0 STRATEGIES FOR MANAGING VISUAL LANDSCAPE CHARACTER

In summary, the strategies adopted for maintaining the perceived visual landscape amenity of the proposed development on the site are as follows:

Generally, the visual management strategy adopted for siting the *entire development* can be seen in **Figure 2**, where the buildings are being proposed to the East of the property such that they are located in the cleared and filled area of the site and as such also locates it within the similarly developed areas of the region along the road network.

5.1 **The Temple** proper, where the typology of the architecture reflects the traditional form of a Hindu Temple with tall sculptured entry Gopurams and is aesthetically connected to the culture and practices of the JET community, has been located in such a way as to be mostly perceived as 'Non Evident' and absorbed into the site by:

i. Keeping the building well set back from Folly Road, (46m to main wall and 52m to Gopuram from Folly Road boundary)
ii. 'Obscuring' the building behind the existing mid wind row of trees (12-15m high) on western side, and the dense hedge of trees along Folly Road (6m high) so that viewsheds from Folly Road to the Temple are mostly obscured.
iii. Colours and materials of the Temple will 'blend' with the colours of 'natural landscape' – claddings of limestone (natural to Baldivis and Coastal region), renders of natural stone colours, highlights of timber detailing and framework, accents of brass and dark metals.
iv. Maintaining a height for the Gopuram at the main front Entry of 14.7m which sits adjacent a large existing tree of 10m. Vision of the form of the Gopuram and the top will be obscured in perspective of drivers along Folly Road. (See Section)
v. The sculptured facades will be created by artisans in traditional methods which as an expression of art is aligned with rural arts and crafts and as such is located comfortably in this rural setting.

5.2 **The Priest residences, Temple Kitchen and ablutions** have been set well back from Folly Road behind the Temple as a cluster of buildings and mostly non evident from Folly Road travellers. Nevertheless, these buildings take on an aesthetic character that reflects the pitched metal roof, gable ends, awning structures and clustering around a courtyard of ancillary buildings.

5.3 **The Secular buildings** (Multipurpose hall, Dining Hall, Library and guest accommodation) are architecturally expressed using forms, colours, and materials that are characteristic of this rural area and will 'blend' and maintain the visual amenity of the area. These character elements are:

i. Clustered rectangular buildings rather than one larger building that reflects the size and proportions of other clustered buildings on neighbouring properties.

ii. Pitched roofs of 15 degrees, gable ends and dark custom orb finish to 'sit' the roofs into the landscape.

iii. Verandah post and beam simplicity across the façades of the buildings to facilitate covered walkways but also used to break the wall elevation down to a lesser scale and to reflect the simplistic typology of a typical rural 'homestead' or building.

iv. The buildings are quite linear, a visual characteristic of other homestead buildings of the rural region.

v. The secular buildings are on an East/West axis such that the facades are receding from the Folly Road axis. As such, the minimum setback of 30m is on the corner of the Multipurpose Hall, the rest of the secular buildings being well set back from Folly Road.

vi. Entry into the buildings, community gathering spaces, children's playground are located in courtyards and gardens out of street view such that groups of people are not visible.

vii. The guest accommodation is located well into the north east corner of the site and is proposed as a singular 'homestead' which is in keeping with its eastern neighbour aesthetically.

5.4 **Access Crossover and road** to the development is relocated further East so as to separate the entries from the opposite neighbour (66 Folly Rd) thereby reducing the impact of traffic access on Folly Road. A slip lane to the new property entry and low key roundabout set within 30m of the boundary on Folly Road has been incorporated to ease and slow traffic impact. No kerbing is proposed to maintain the low key appearance of the entry.

5.5 **Parking** has been located between the Temple and the secular buildings proposed to be built deep into the site (60m) so as to minimise vision of cars. A lightweight post and beam covered walkway connects the Secular buildings and the Temple further screening the cars. New landscaping is proposed to screen and blend the main carpark. The secondary carpark is located on the northern boundary, well behind the buildings so as to reduce its impact. The road and carparks are proposed in a gravel/ laterite asphalt that will blend in with the natural surrounding of the bush becoming eventually a dark brown colour.

5.6 **Existing Landscaping** consisting of remnant natural characteristic mature trees, wind rows, shrubs and tree hedges are all being maintained for the development except for 2 x trees which will need to be removed for fire safety (1 is very unhealthy/ dead)

5.7 **New Landscaping** is located strategically to *blend* the proposed buildings and further enhance the site and visual amenity of the development. It is proposed that new native planting will happen early in the staging of the development so as to allow maximum establishment of trees and bushes. **See Concept Landscaping Plan**

5.8 **Staging of the development** has been considered in such a way as to maintain visual amenity and least disruption to the locality. The first part of construction will be largely unseen behind the wind rows of trees. Landscape will be planted as a first stage to ensure trees and shrubs are established as the future stages commence so as to minimize visual impact of new buildings.

6.0 CONCLUSION

The existing natural character of this area is one of large open grassy clearings interspersed with remnant vegetation, singular mature trees, roadside bushes and wind rows of trees. There are areas of non-native plantings, particularly around entry access points to properties. Post and wire fencing and cleared fire breaks characterise much of the street verge view.

The existing built character of this area is predominantly clustered rectilinear buildings with pitched custom orb roofs and timber post verandas creating a linear horizontal aesthetic. The metal shed structures in the area can be sizable, and coloured in various powder coat custom orb. Planted vegetation screens many of these existing structures.

The proposed development in its entirety, sits comfortably within the above described natural landscape and the buildings are of a scale and nature that can align with the locality's characteristic built forms. As such, the proposed development does not impact negatively on the visual landscape character of the area, using a combined method of siting the proposed religious buildings of this development behind mature existing trees and wind rows, making those parts of the development fairly 'non-evident', whilst 'blending' the secular buildings of the proposal by adopting scale, forms, colours and materials that are recognised and characteristic of the built form in the locality. The proposed main car park is well set back from Folly Road and the secondary car park is nestled behind the secular buildings out of view. Additional new planting strategically located will assist to screen all the buildings as well as car park and further enhance the visual amenity of the site and area.

Summary of Report Amendments.

Revision 1

24 February 2022

Page	Section	Amendment
5	2.0	Updated Site Plan
9	2.4	Amended daily opening times from 6.00am to 7.00am
	2.3	Car Parking Numbers updated
10	2.6	Confirm only east façade (main entry) uplit
	2.7	Updated staging plan to include additional trees and Folly rd entry treatments
15	2.9.2	Update car park tree species
18	2.10	Update landscape plan
19	3.1	Correct graphic error, (location on site)
36	4.3.1	Update Perspective 4a
37	4.3.1	Update perspective 5a
43	4.3.2	Update 9b
47	4.3.4	Insert new page, include viewsheds of Temple and Multi Purpose Hall taken from location of adjoining neighbour's stated preferred location for a future dwelling,
50	4.3.4	Update perspective 14b

Bushfire Management Plan

67 Folly Road, Baldivis

Client – Jeeyars Acharya Peetham Ltd

February 2022

envision
bushfire protection

LIMITATIONS STATEMENT

This Bushfire Management Plan ('BMP') has been solely prepared for the Sri Balaji Temple to be located 67 Folly Road Baldivis (**the Site**) within the City of Rockingham.

Envision Bushfire Protection

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Version Control

67 Folly Road Baldivis			
Version	**Date**	**Author**	
V1	20 September 2021	Anthony Rowe	Draft
V2	29 November 2021	Anthony Rowe	Revised site location
V3	22 February 2022	Anthony Rowe	Revised APZ description

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Disclaimer

In undertaking this work, the authors have made every effort to accurately apply the available information at the time of writing following the instructions of the regulatory authorities and applying best practice as described by the Fire Protection Association Australia. Any conclusions drawn or recommendations made in the report are made in good faith, and the consultants take no responsibility for how this information and the report are subsequently used.

Envision Bushfire Protection accepts no liability for a third party's use of, or reliance upon, this specific report.

Envision Bushfire Protection accepts no liability for the inaction of the owner to provide or maintain the bushfire protection measures identified in this report. Vegetation is dynamic, building materials may distort, and the accumulation and the location of flammable materials near the building may affect the potential for damage or loss of a building to occur.

Failure to maintain the property and/or building to these standards may compromise an insurance policy if currently covering any of your assets or those of any third party that may be consequentially affected due such failure. If not insured, and if you are seeking insurance, this report may not influence the decision of any insurer not to offer cover.

Importantly the measures contained in this report cannot guarantee human safety or an absence of harm or that the building will not be damaged or would survive a bushfire event on every occasion. This is due to the unpredictable nature of fire behaviour (knowledge in this field continues to develop) and the unpredictable nature of extreme weather conditions.

Scope of this report

Envision Bushfire Protection has been engaged to provide expert bushfire safety and planning advice.

The scope of the advice has been to assess the proposal for compliance with the policy measures described in State Planning Policy 3.7 and identify appropriate mitigation measures to be considered by the determining authority. This is described in a Bushfire Management Plan and prepared with regard to the Department of Planning Lands and Heritage templates.

The investigations and mitigation measures identified in the BMP, has, in turn, formed the basis for the preparation of a Bushfire Emergency Evacuation Plan.

Client relationship

I was engaged to provide expert bushfire safety and planning advice. My relationship with the client is a standard commercial contract, and no private, personal, or other matter has influenced the content of the BMP or my findings.

STATEMENT OF CONFORMITY – PLANNING AND DEVELOPMENT ACT 2005



Anthony Rowe Level 3 - BPAD36690

Principal

The signatory declares that this Bushfire Management Plan meets the requirements of State Planning Policy 3.7 and the Guidelines for Planning in Bushfire Prone Areas V1.3.

EXECUTIVE SUMMARY

Preface

The applicant Sri Balaji Temple proposes to establish a place of worship and community centre at 67 Folly Road Baldivis (subject land). The maximum number of visitors to the facility at any time is 400 people.

The subject land is 7.5 ha, but the proposal will only occupy 3.2 ha at its eastern extent (**the site**). The remainder of the subject land is to be retained as pasture.

The site is within a declared bushfire prone area. Accordingly, the proposal is development that is required to be assessed for its compliance with State Planning Policy 3.7 *Planning in Bushfire Prone Areas* ('**SPP 3.7**') and the bushfire protection criterial described in the Guidelines V1.3.

The intent of the policy is: "***to preserve life and reduce the impact of bushfire on property and infrastructure"***. The proposed land-use because it will invite visitation by people unfamiliar with the locality is classified as a 'Vulnerable' development. In addition to addressing the bushfire protection criteria through a Bushfire Management Plan (BMP), the application is to be accompanied by a bushfire emergency evacuation plan (BEEP). Together they address the preservation of life (BEEP) and impact of bushfire on property (BMP).

This BMP has been prepared in accordance with SPP 3.7 and Appendix Five in the Guidelines V1.3 and the Department of Planning Lands and Heritage (DPLH) *BMP Template for a complex development application*.

The following describes the outcome of the investigations, following the arrangement described by the DPLH template.

1. **Proposal details (addressed in Section 1)**

The proposal is to construct a place of worship and community centre comprising the following buildings.

- Temple;
- Multi-Purpose Hall;
- Short stay;
- Library;
- Priest residence @2
- Dining Hall; and
- Outbuildings @2.

The site is mostly clear of trees, flat, and has been used for pasture and grazing. The site is vacant except for a centrally located implement shed (to be demolished) and a smaller galvanised shed to be retained.

The site is located on Folly Road which is a through road 164 m from Kwinana Freeway (west) with multiple destination options north, east and south. The site has 64 primary parking bays with provision for a further 126 parking bays.

The site does not have access to a reticulated water supply, a strategic water supply is not located nearby, and the nearest hydrant is located 970 m south of the site. A water tank convenient to the street access, for use by emergency services is to be provided.

2. **Environmental considerations (addressed in Section 2)**

No clearing of regulated vegetation is proposed or required, for the purpose of bushfire protection. The development will predominantly displace pasture grass. The site contains sparsely distributed trees which are desired to be retained where not displaced by buildings or paved surfaces.

Future landscaping of the site will be for amenity purposes and will be planted as low threat following cl 2.2.3.2 (e) AS3959:2018.

3. **Bushfire assessment results (addressed in Section 3)**

A Bushfire Attack Level assessment following Method 1 AS 3959:2018, and the DPLH *Visual guide for bushfire risk assessment in Western Australia*, and using an FFDI of 80, has been undertaken.

The development site (3.2 ha from 7.5 ha) is predominantly pasture, with a sparse tree distribution, and retains no restricted vegetation. The nominated development site (3.2 ha at the eastern extent) will be

maintained in a low threat condition; the BAL within the development site will be determined by external vegetation.

The indicative BAL, post development has been assessed

- Temple = BAL 12.5;
- Multi-Purpose Hall = BAL 12.5;
- Short stay = BAL 12.5;
- Library = BAL 12.5;
- Priest Residence A= BAL 19
- Priest Residence B = BAL 12.5
- Dining Hall = BAL 12.5;
- Outbuildings (storage shed) = BAL 29; and
- Outbuilding (toilet block) = BAL 12.5,

4. Identification of bushfire hazard issues (addressed in Section 4)

The site has been identified as potentially subject to a grassland fire run, but unlikely to be subject to ember attack in the event of a fire given the modest extent of forest vegetation adjoining Kwinana Freeway, and the absence of significant stands of forest within 5 km of the site.

The site offers access to multiple destinations in all directions of the compass. This provides the opportunity to evacuate the facility and head in a direction away from an advancing bushfire. The locality is also open offering expansive views to take avoidance action from an approaching fire, and to anticipate a fire's arrival at the site.

The site is within mobile network coverage, from transponders located in BAL low areas (Baldivis urban area west of the site). It is anticipated that continuous communication would be maintained throughout a bushfire event to provide guidance for safety.

5. Assessment against the bushfire protection criteria (addressed in Section 5)

The proposal was compared with the four Bushfire Protection Criteria Elements: Location, Siting and Design, Access, and Water.

Acceptable Solution

Element 1 Location - This provision requires a strategic proposal demonstrates upon completion the area will be classified as a low or moderate Bushfire Hazard Level. The site is within an area that is predominantly grassland which is a moderate Bushfire Hazard Level.

Element 2 Siting and Design – This provision requires a planning application should demonstrate the habitable buildings will not be exposed to a BAL greater than BAL-29.

The analysis of the Bushfire Attack Level across the site, as illustrated by the BAL Contour Plan Figure 5, illustrates the place of assembly buildings (habitable building) and short stay and priest residence (accommodation class) will be located at less than BAL 29.

The construction standards in AS3959:2018 apply to accommodation type building classes (class 1-3). Other classes are determined by the National Construction Code fire requirements, some of which exceed the performance provided by AS3959:2018. Where the construction performance would be less than AS3959:2018, a higher construction standard can be volunteered and authorised in accordance with cl. 78E(1) in the Planning regulations (LPS Regulations 2015 Schedule 2); if it is not in conflict with a direction made by the National Construction Code

Given the comparatively low radiant heat level and an unlikely ember attack, it has been left to applicant discretion to adopt a range of minor construction and land management techniques proportionate to the risk, aside from maintaining the site in a low bushfire fuel condition and threat, to restrict the spread of bushfire within the perimeters of the site.

In this regard the buildings will be constructed to the commensurate BAL level at their location, and an area larger than the minimum Asset Protection Zone will be provided to minimise the BAL level at the habitable buildings (determined by conditions external to the site).

A condition of approval is recommended to affirm the area to be maintained as low threat and the BAL constructions volunteered for the habitable buildings.

Element 3 Vehicle Access – this provision requires the site has access to a through road to provide alternate routes of escape and access for fire fighters.

A service entry and a main entry (two way) is from Folly Road and services the Temple carpark (main carpark). The service entry loops through to the main entry to facilitate a forward movement and access to all buildings on site.

A supplementary road is provided as an additional egress onto Young Road to create a through road, to provide an additional capacity for evacuation and avoid any potential conflict with arriving emergency service vehicles.

It is recommended the 50 000 L water tank to be provided for emergency services is placed near the service entry, so as not to obstruct or confuse vehicles evacuating from the main carpark.

The site is large with a number of buildings located further than 50 m from Folly Road. The private driveways are through open areas over level low threat grounds, a low bushfire hazard level, and will comply with the technical requirements (dimensions) for private driveways. A condition of approval is recommended to affirm the provision of the driveway and vehicle circulation area in accordance with the technical requirement of the Bushfire Protection Criteria (Table 6 column 3, Guidelines v1.3).

Fire breaks are required to be maintained to City requirements, affecting the western end of the site.

Element 4 Water – this provision requires the availability of water for firefighting purposes.

The site does not have access to a reticulated water supply or firefighting hydrants. The nearest hydrant is located 950 m west of the site, on Safety Bay Road. Two 75 000 L water tanks will be provided for emergency services. A condition of approval is recommended to affirm its reserve for emergency services and fitted with couplings corresponding to the City's technical requirements.

Additional Bushfire Management Strategies (addressed in section 5.2)

Additional management strategies, further to the Bushfire Protection Criteria, include the measures to minimise the exposure of visitors to bushfire impacts. This is addressed in the Bushfire Emergency Evacuation Plan. It includes seasonal management to oversee works to ensure the development site is maintained as low threat.

Spatial representation of the bushfire management strategies (Figure Ex 1)

The key features demonstrating compliance with the bushfire protection measures are identified on the *Spatial representation of the bushfire management strategies*.

These actions are reflected in the following *Responsibilities for implementation and management of the bushfire measures.*

6. Responsibilities for implementation and management of the bushfire measures

The Owner responsibilities (Guidelines 4.6.3) identify the bushfire management measures necessary to achieve compliance with the bushfire protection criteria.

Owner

1.	The adoption of the Bushfire Emergency Evacuation Plan (Appendix 2 here in).	Ongoing
2.	The development site (extent shown on Fig Ex1), within the area identified as Asset Protection Zone is to be maintained compliant with the Asset Protection Zone Standard described in Element 2, Schedule 1 of the Guidelines v1.3.	Prior to occupation and ongoing
3.	The habitable buildings are to be constructed commensurate to BAL level at their location on the site unless *the method is in conflict with a requirement of the Building Act 2011.*	Prior to occupation

4.	The internal roads (private driveway and supplementary road (Emergency and Service Access) are to be constructed and maintained in accordance with Guidelines for Planning in Bushfire Prone Areas, Appendices, Element 3 Table 6, Column 3 (private driveway).	Prior to occupation
5.	Firebreaks to be installed and maintained in accordance with the City of Rockingham Annual Fire Control Notice	Prior to occupation
6.	Two 75 000 L water supply (tanks)are proposed, accessible to the emergency and service access, with couplings to City of Rockingham specification and signposted as exclusively for the use by emergency services.	Prior to occupation
7.	A notification, pursuant to Section 70A *Transfer of Land Act 1893* is to be placed on the certificate(s) of title of the proposed lot(s) with a Bushfire Attack Level (BAL) rating of 12.5 or above, advising of the existence of a hazard or other factor. The notification is to state as follows: "This land is within a bushfire prone area as designated by an Order made by the Fire and Emergency Services Commissioner and is subject to a Bushfire Management Plan. Additional planning and building requirements may apply to development on this land"	Prior to occupation

Advisory notes

1. The landowner acknowledges their duty of care to protect any visitors to the site from harm, from a bushfire affecting the property and for the safe direction from the site.

2. The landowner is responsible for availing themselves of any promotions and information to assist owners in preparing for and responding to a bushfire event as may be made by the City or the Department Fire and Emergency Services

The City of Rockingham

1.	Developing and maintaining district bushfire fighting services and facilities.	Ongoing
2.	Administer the *Bushfire Act 1954* and the enforcement of the City Fire Control Notice *Where there is conflict between this Bushfire Management Plan and the City Fire Control Notice the higher level of bushfire protection will prevail*	Ongoing
3.	Promoting education and awareness of bushfire prevention and preparation measures through the community.	Ongoing
4.	Administering the requirements of the *Planning and Development Act 2005* by ensuring the facility closure in accordance with the terms of the Development approval.	Ongoing
5.	Administering the requirements of the *Planning and Development Act 2005* and the *Building Act 2011*.	Ongoing

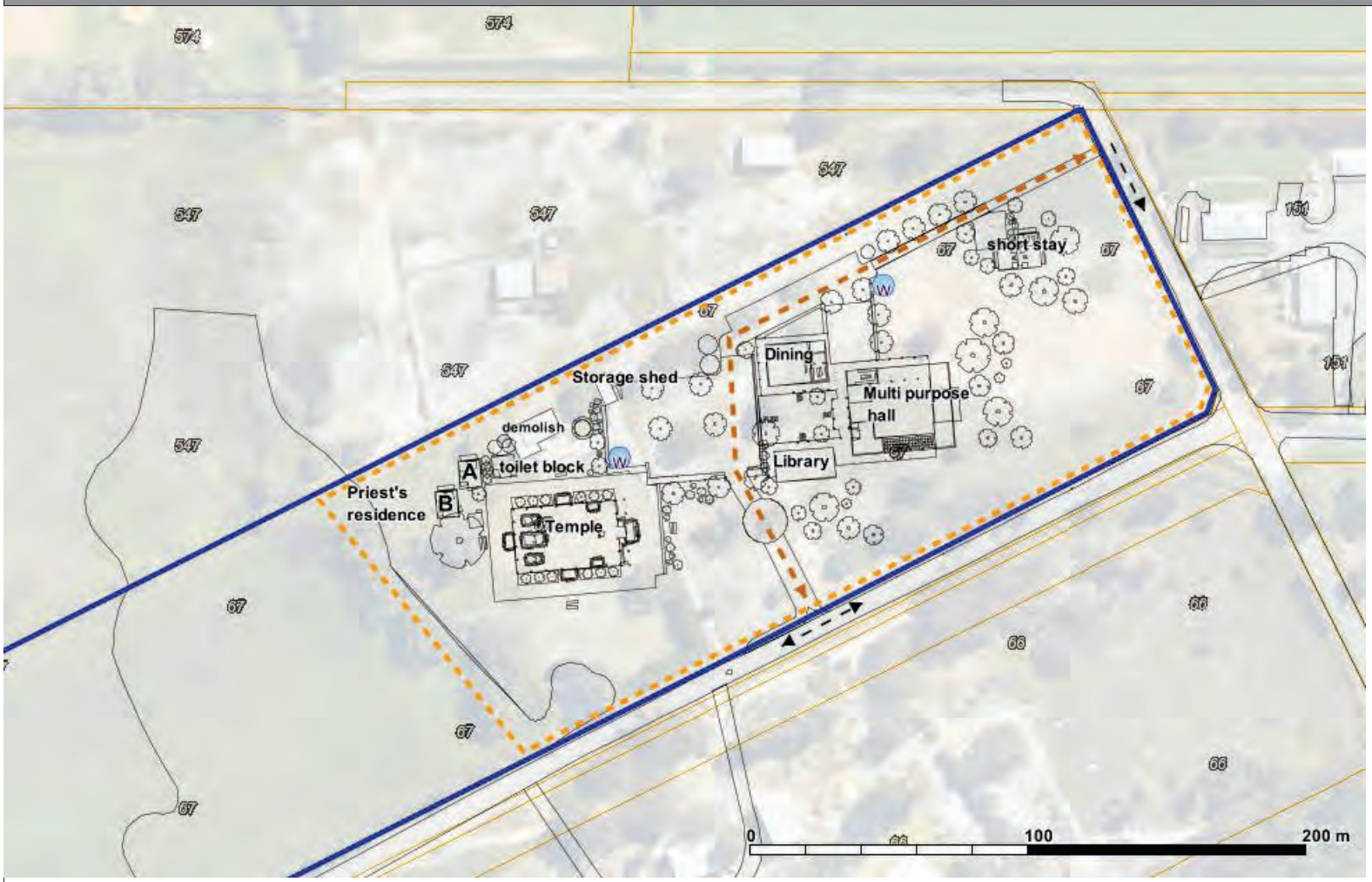
State Government

- Notification of Emergency Alerts - Website and Telecommunication Media — Ongoing
- Policing operations to minimise the deliberate ignition of bushfires. — Ongoing
- Maintain fuel reduction on public lands — Ongoing

Acknowledgment - Proponent

The proponent acknowledges the responsibilities as listed above and the requirement to ensure that should the land transfer to a new owner, that the new owner is aware of the BMP and their ongoing responsibility.

Figure Ex 1 - Spatial representation of the proposed risk management strategies



LEGEND

- Site Boundary
- Asset Protection Zone
- Access throughway
- W — Dedicated water tank

Property Assessment Details

Prepared by: Anthony Rowe

Accreditation Level: Level 3

Accreditation Number: 36690

Date: 22 February 2022

Conditions

1. The development site (extent shown on Fig Ex1), within the area identified as Asset Protection Zone is to be maintained compliant with the Asset Protection Zone Standard described in Element 2, Schedule 1 of the Guidelines v1.3
2. The habitable buildings are to be constructed commensurate to BAL level at their location.
3. The internal roads (private driveway and supplementary road (Emergency and Service Access) are to be constructed and maintained in accordance with Guidelines for Planning in Bushfire Prone Areas, Appendices, Element 3 Table 6, Column 3 (private driveway).
4. Firebreaks to be installed and maintained in accordance with the City of Rockingham annual Fire Control Notice (*Bushfire Act 1954).*
5. 2 @ 75 000 L water supply (tank) shall be provided, reserved for emergency services with couplings to the City of Rockingham specification and signposted as exclusively for the use by emergency services.

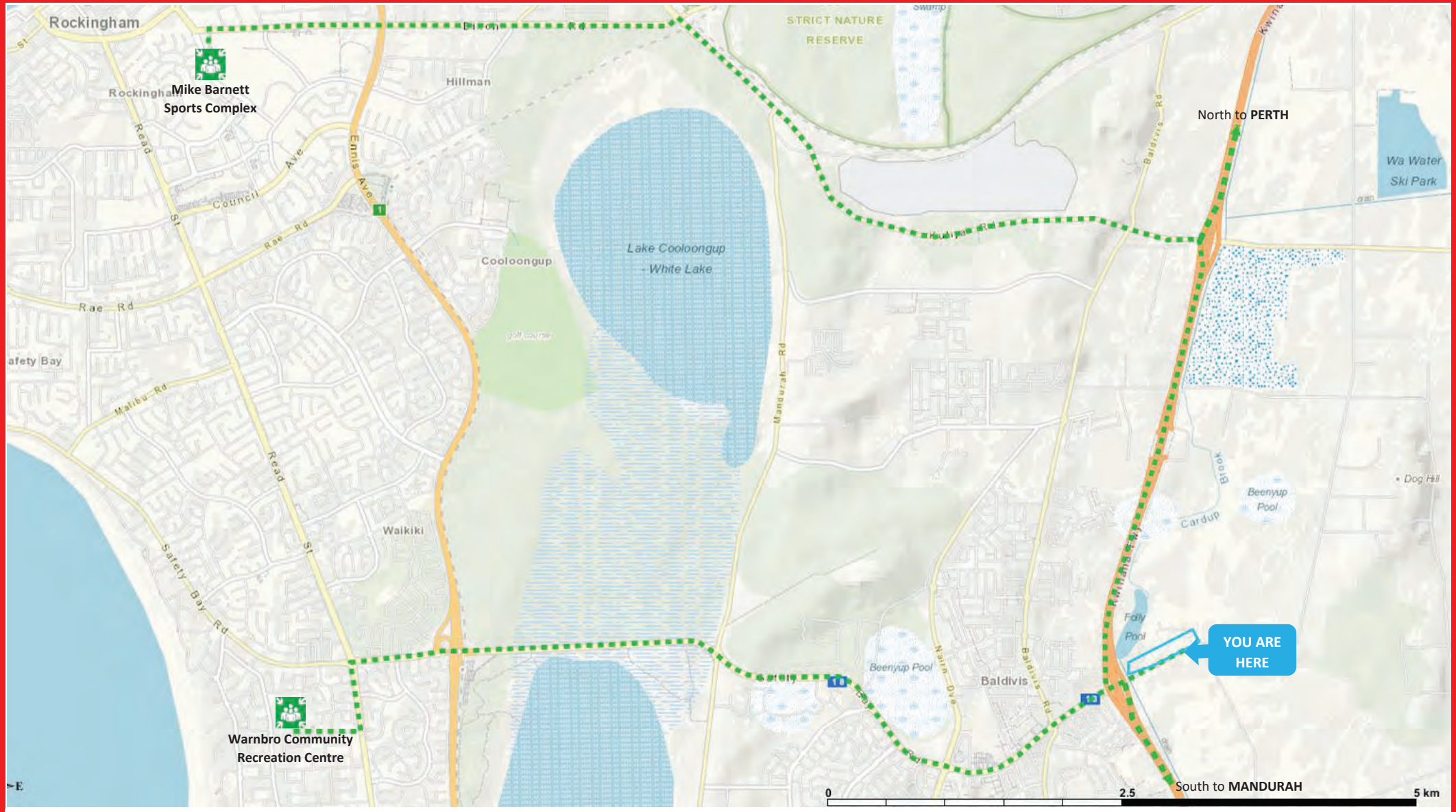
Notifications

1. A notification, pursuant to Section 70A Transfer of Land Act 1893 is to be placed on the certificate(s) of title of the proposed lot(s) with a Bushfire Attack Level (BAL) rating of 12.5 or above, advising of the existence of a hazard or other factor. The notification is to state as follows: "This land is within a bushfire prone area as designated by an Order made by the Fire and Emergency Services Commissioner and is subject to a Bushfire Management Plan Additional planning and building requirements may apply to development on this land"

Advisory Notes

1. In addressing the structural fire requirements, the options available to satisfy the requirement of the National Construction Code should preference measures that will also assist with bushfire protection. This may include the positioning of fire hoses to provide for applying water to the external surface of the buildings and for a distance of at least 10 m from the buildings

EMERGENCY EVACUATION DIAGRAM



Your Location Is **The Sri Balaji Temple 67 Folly Road, Baldivis**

EVACUATE if DFES or Police advise evacuation is required or if you see an uncontrolled fire

Follow instructions from the Emergency Services Incident Controller (the DFES officer managing the fire).

- Assemble at the Temple building closest to the carpark
- Evacuate to destination and via route as directed by Emergency Services either directly or by public announcement.

DO NOT TRAVEL THROUGH FIRE

Monitor Emergency Information: ABC Radio 720AM; DFES information 13 33 37;
Emergency WA - www.emergency.wa.gov.au

SURVIVAL - if it is not safe to leave - advise DFES (ph. 13 33 37) of your location and the number of persons present

- keep fire extinguishers close by
- Soak towels to block smoke ingress
- Monitor the building condition for smoke and heat.
- Keep hydrated and monitor the fire's passing.
- Leave the building when safe to do so and shelter to avoid heat
- Evacuate the site when DFES/Emergency Services confirm a safe route is available

DO NOT STAY IN A BURNING BUILDING

Table of Contents

1. PROPOSAL DETAILS 1

1.1 Introduction 1

1.2 Regulatory Compliance Requirements 5

2. ENVIRONMENTAL CONSIDERATIONS 7

2.1 Native Vegetation – Modification and Clearing 7

2.2 Re-vegetation/Landscape Plans 7

3. BUSHFIRE ASSESSMENT 8

3.1 Bushfire Attack Level Assessment (Inputs) 8

3.2 Determined Bushfire Attack Level (Outputs) Method 1 21

4. IDENTIFICATION OF BUSHFIRE HAZARD ISSUES 22

5. BUSHFIRE PROTECTION MEASURES 26

5.1 State Planning Policy 3.7 - Planning In Bushfire Prone Areas (SPP 3.7) 26

5.2 Guidelines for Planning in Bushfire Prone Areas Version 1.3 (the Guidelines) 26

5.3 Bushfire Management Strategies 35

5.4 Spatial representation of the bushfire management strategies 37

6. RESPONSIBILITIES FOR IMPLEMENTATION AND MANAGEMENT OF THE BUSHFIRE MEASURES 38

APPENDIX 1 - Emergency Evacuation Plan
APPENDIX 2 - APZ Guidelines cl. 2.2.3.2(f)
APPENDIX 3 – Access Standard
APPENDIX 4 – Water Tank
APPENDIX 5 – References

1. PROPOSAL DETAILS

1.1 Introduction

The purpose of this BMP is to assess the suitability to establish a place of worship and community centre at 67 Folly Road Baldivis. ('**the site**').

The subject land is 7.5 ha in area, but the proposal will occupy only the 3.2 ha east portion **(the site)** with the balance of the subject land retained as pasture grass.

The site is within the administration area of the City of Rockingham Western Australia **(Plate 1)** and is located within a bushfire prone area (OBRM 2019) **Plate 2.**

Development, buildings, and land use, located within a bushfire prone area, are required to demonstrate compliance with the requirements of State Planning Policy 3.7.

The policy intent is ***to preserve life and reduce the impact of bushfire on property and infrastructure***, and compliance is achieved where a proposal incorporates the Acceptable Solutions as described under each Element in the Bushfire Protection Criteria or can satisfy the intent of each Element by performance principle and the Precautionary Principle.

This document presents an assessment of a proposed vulnerable class of development "visitation uses that may involve people who are unaware of their surroundings" with the requirements State Planning Policy 3.7 and *Guidelines for Planning in Bushfire Prone Areas* (WAPC, V1.3 December 2017) including assessment against each of the Bushfire Protection Criteria and the requirement for an Emergency Evacuation Plan.

Purpose of this Plan

The purpose of this BMP is to assess the suitability of the proposal and its location for the intended use and identify the measures to avoid an increase in the threat of bushfire and reduce the vulnerability of people and property (to the degree necessary) from potentially significant adverse bushfire impacts.

Site and Proposal Description

Landowner	Sri Balaji Temple
Address	67 Folly Road Baldivis
Local Government Area	City of Rockingham
Local Planning Scheme Zone	Rural Local Planning Scheme 21
Bushfire Season	1 December – 12 May (precise dates may vary annually)
Development proposal	Place of worship and community centre • Temple; • Multi-Purpose Hall; • Short stay; • Library; • Priest residence A • Priest residence B and adjacent kitchen; • Dining Hall; and • Outbuildings @2.
Building class	Temple, Multi-Purpose Hall, and Dining Hall = Class 9 b Short stay and Priest's residence @2 = Class 1a
Lot size	7.5ha: development site 3.2 ha

Land description site	Rural			
Adjoining Land uses	North	East	South	West
2.5 Km	Rural living (low grass and building)	Rural living (low grass and building	Rural living (low grass and building	Pasture agricultural
5 km	Remnant forest contiguous 5 km	Urban, market gardens 5 km north	Perth urban area contiguous 5 km south	Shrubland contiguous 5 km west
Road Access	Folly Road from Kwinana Freeway			
Water supply	The site does not have access to a reticulated water supply or a hydrant network. The nearest hydrant is 1.4 km west of the main entry on Safety Bay Road.			
Tele communications	The site is within the Telstra 4G network			
Emergency services	The nearest rural fire brigades are • Baldivis VFES, Corner Tranby Dr &, Eighty Rd, Baldivis (5 km) • Kwinana South VBFB 11 Barker Rd, Wellard (11 km)			
Minor Development	N/A			
Unavoidable development	N/A			
Vulnerable Development	Yes			
High risk land use	N/A			



Plate 1:Site in Locality

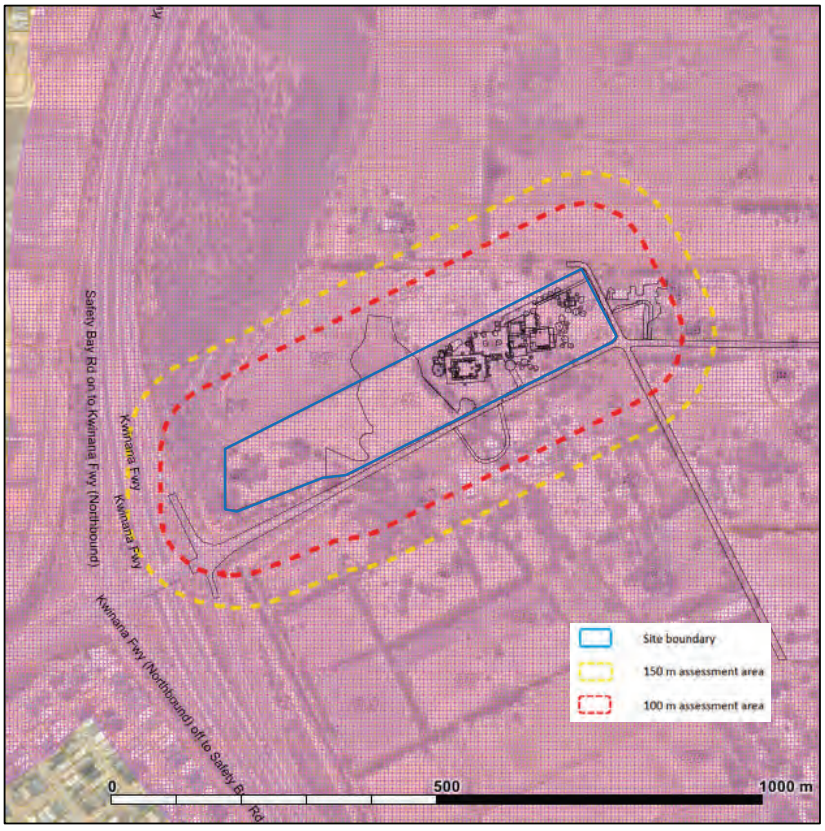


Plate 2: OBRM Bushfire Prone Area (Pink area)

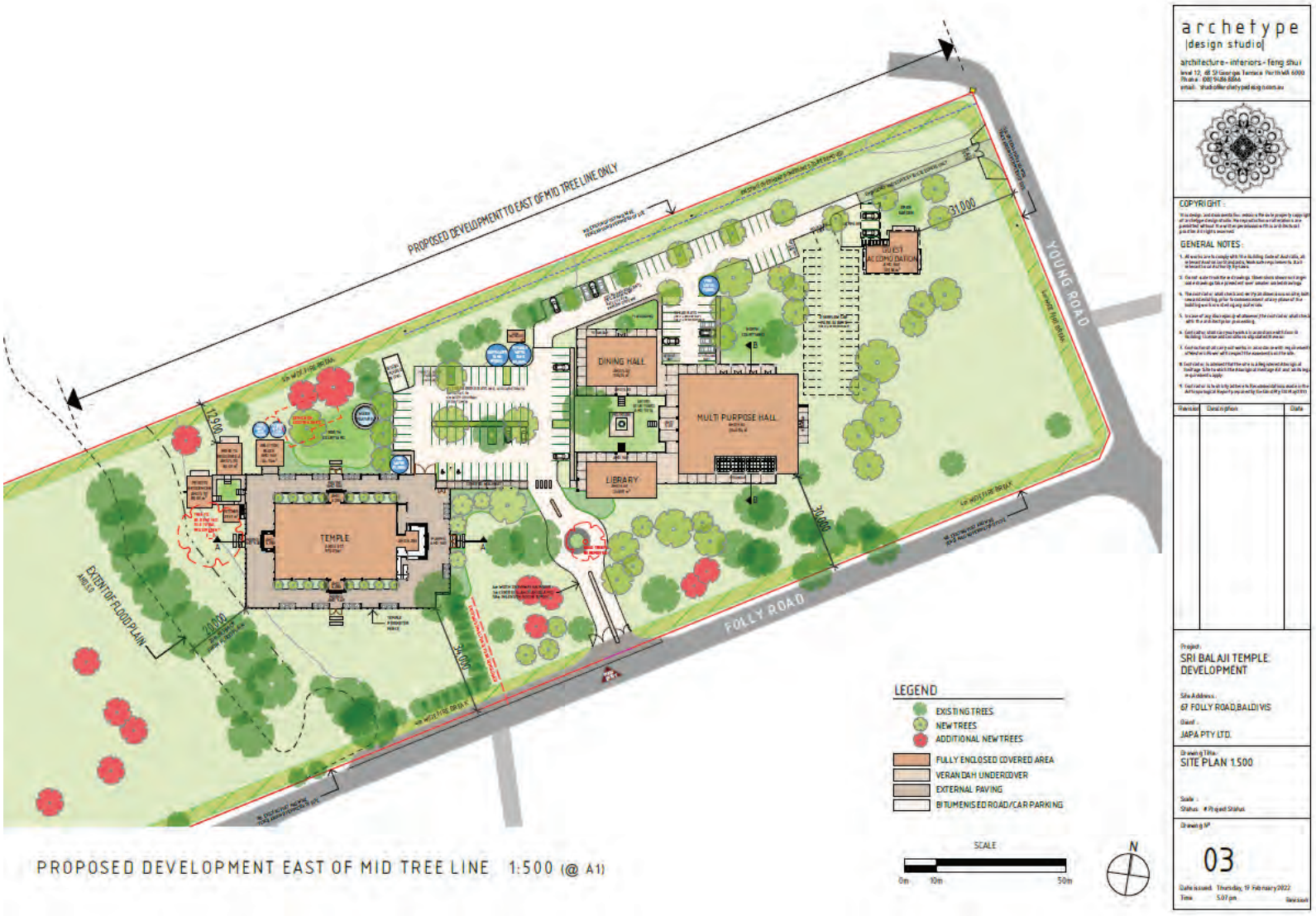


Plate 3: Site Plan

1.2 Regulatory Compliance Requirements

Planning and Development Act 2005 - SPP 3.7

On 7 December 2015, the State Government introduced by Gazette, a state map of Bushfire Prone Areas by order under the *Fire and Emergency Services Act 1998* and introduced development controls in Bushfire Prone Areas through the *Planning and Development Act 2005*. These controls were authorised by State Planning Policy 3.7 (Planning in Bushfire Prone Areas) regulations introduced under Part 10A Schedule 2 of the *Planning and Development (Local Planning Scheme) Regulations 2015* and guided by the *Guidelines for Planning in Bushfire Prone Areas*.

The State Planning Policy, Regulations, and Guidelines now form the foundation for fire risk management planning in WA at a community and land development level. The Policy Intent of SPP 3.7 is ***to preserve life and reduce the impact of bushfire on property and infrastructure***.

Applicable clause from SPP 3.7, addressing subdivision include:

SPP 6.2: A development application within a bushfire prone area has or will, on completion, have a moderate BHL and/or where BAL-12.5 to BAL-29 applies, may be considered for approval. *In this instance the proposal will not exceed BAL 29 refer to Figure 5.*

SPP 6.5: A development application in a bushfire protection area is to be accompanied by an assessment against the bushfire protection criteria contained within the Guidelines, demonstrating compliance within the boundary of the development. *The proposed development requires no imposition beyond its site.*

SPP 6.7: A development that will result in the introduction or intensification of development or land use in an area that has or will, on completion, have an extreme BHL and/or BAL-40 or BAL-FZ will not be supported. *In this instance the proposed development will not exceed BAL 29 refer to Figure 5.*

SPP 6.10: The decision-maker may impose a 'notice on title' advising that the site is located in a bushfire prone area and is subject to a Bushfire Management Plan. *Routinely imposed as a condition of planning approval.*

SPP 6.11: Precautionary Principle if a landowner/proponent cannot satisfy the performance principles of the relevant policy measures (intent) through either the acceptable solutions outlined in the Guidelines, or through the alternative solutions (Performance Principle) the application may not be approved. *The proposal can achieve compliance with the Acceptable Solutions see section 5 of this report.*

Building Act 2011

The proposal is a class 9 building for the purpose of the *Building Act 2011*, which in turn applies the National Construction Code 2019. AS3959:2018 does not apply to the construction of buildings other than class 1, 2, 3, and 10a, and is only used for the purpose of determining the siting of other building classes. A higher standard of construction can be volunteered and conditioned through the *LPS Regulations 2015*, provided it is not in conflict with the provisions of the *Building Act 2011* or NCC 2019 (s.131 Planning and Development Act 2005).

***Bushfires Act* 1954**

Section 33 of the *Bushfires Act 1954* recognises the responsibility of all landowners to prevent the spread of bushfire. The City of Rockingham issues a Fire Control Notice annually. The City can issue a notice upon the landowner to act as and when specified in the notice with respect to anything which is upon the land, and which in the opinion of the local government or its duly authorised officer, is or is likely to be conducive to the outbreak of a bushfire or the spread or extension of a bushfire.

An owner who fails to comply with a notice is guilty of an offence (Penalty: $5,000). The local government may in addition carry out the required works of the notice and recover the costs incurred by application to a Court. *Individual lot owners mutually rely upon the management of the neighbouring land through the Bush Fires Act, to reduce the incidence of bushfire.*

Environmental Regulations (Regulated vegetation)

Environment Protection Act 1986 and Environmental Protection (clearing native vegetation) Regulation 2004

It is an offense to clear native vegetation without the authority of a permit or an exemption. The act of clearing native vegetation, requires a permit from either the Department of Water and Environmental Regulation (DWER) or the Department of Mines, Industry Regulation and Safety (DMIRS), unless an exemption applies.

Exemptions *Environment Protection Act 1986* include:

- Clearing required by local government Section 33 *Bushfire Act 1954.*
- Clearing in accordance with the terms of a subdivision approval.
- Clearing in accordance with a permit under the *Bushfires Act 1954* (prescribed burning) and clearing by a bushfire control officer.

Exemptions *Environmental Protection (clearing native vegetation) Regulation 2004*

- Clearing to the extent necessary to construct an approved building.
- Clearing that is for fire hazard reduction burning.
- Clearing to maintain an area cleared in the last ten years.

(exemptions do not apply in Environmentally Sensitive Areas, and for clearing > than 5 ha)

https://www.der.wa.gov.au/your-environment/environmentally-sensitive-areas

(WA) Biodiversity Conservation Act 2016 and Bio-diversity Conservation Regulations 2018

The *Biodiversity Conservation Act, 2016*, replaces the *Wildlife Conservation Act, 1950*, and the *Sandalwood Act, 1929*, it became operational with the *Bio-diversity Conservation Regulations 2018*, on 1 January 2019.

The Act provides for listing species, threatened ecological communities (TECs), key threatening processes, and critical habitats. It introduces criteria for listing species 'endangered', 'critically endangered' or 'vulnerable,' to align with the Environment Conservation and Biodiversity Conservation Act 1999 (Cth).

The *Biodiversity Conservation Act 2016* recognises that activities approved under the *Environment Protection Act 1986* do not require further approval include clearing of native vegetation that is either exempt or done under the authority of a clearing permit or done in accordance with an implementation decision under Part IV of the *Environment Protection Act 1986*.

Commonwealth Environment Protection Biodiversity Conservation Act 1999

The Commonwealth Environment Protection Biodiversity Conservation Act 1999 provides for the protection of matters of national environmental significance. National environment law does not generally regulate fire prevention measures taken by state and territory governments, but no specific exemptions are provided.

The proposal does not require the clearance of regulated vegetation.

2. ENVIRONMENTAL CONSIDERATIONS

2.1 Native Vegetation – Modification and Clearing

A fundamental consideration in the assessment of development under SPP 3.7 is to avoid instances where bushfire risk management measures would conflict with or be limited by other biodiversity management measures.

In accordance with the Department of Planning Lands and Heritage template (BMP template to support a BAL Contour Assessment) a review of the listed databases has been undertaken as part of this assessment to identify whether restrictions or other specific considerations may apply that would affect the implementation of any bushfire protection initiatives that may otherwise be identified.

Table 1: Ecological database assessment.

Is the land affected by:	**Yes/No/NA**	**If yes - describe**
Conservation Wetland or buffer (DBCA-019 DBCA-017)	Nearby	A flood prone area is identified at the west of the development site but is not listed. The Folly Pool is adjacent the west boundary and runs north along Kwinana Freeway. The development site (the 3.2 ha portion of the lot proposed for development) is not affected.
RAMSAR Wetland (DBCA-010)	NA	
Threatened and Priority Flora (DBCA-036)	NA	
Threatened and Priority Fauna (DBCA-037)	NA	
Threatened Ecological Communities (DBCA-038)	NA	
Bush Forever (COP-071)	NA	
Environmentally Sensitive Area (DWER-046)	NA	
Regionally Significant Natural Areas (DWER-070)	NA	
Conservation Covenant (DPIRD-023)	NA	
Does the proposal require the removal of restricted vegetation?	**~~Yes~~**	**No**

The proposed buildings and carpark will displace an area classed as grassland

2.2 Re-vegetation/Landscape Plans

Future landscaping of the site for the purpose of amenity is to be implemented to maintain a low bushfire fuel condition and threat within the site by following the descriptions provided for at cl. 2.2.3.2(f) in AS3959:2018.

It is desired to retain existing trees on site where not displaced by buildings or paved surfaces.

3. BUSHFIRE ASSESSMENT

3.1 Bushfire Attack Level Assessment (Inputs)

The following assessment has applied the methodologies described in AS3959-2018, the Guidelines, and has used the Fire Protection Association Australia accredited practitioner methodology for the preparation of Bushfire Attack Level (BAL) assessments.

All vegetation within 150 m (context) of the subject building has been classified following Clause 2.2.3 (AS 3959 -2018) to determine the predominant vegetation affecting the behaviour at the locality. The Bushfire Attack Level is determined by the predominant vegetation within 100 m of the site boundary (for subdivision), or around the development site (building envelope) or the external face from a habitable building.

AS 3959:2018 prescribes six categories of Bushfire Attack Level (BAL): BAL-LOW, BAL-12.5, BAL-19, BAL-29, BAL-40, and BAL-FZ. In addition, BAL-FZ describes only performance solutions where the separation from classified vegetation (on completion) is less than 10 m. The BAL level is used for determining the siting of development (to be less than BAL-40) and in turn the construction standard that is equivalent to the BAL at the proposed building location.

This assessment has followed the guidance of AS3959:2018. This includes:

- A recognition of excluded vegetation types described at cl.2.2.3.2 (e) and (f), but the underlying vegetation should still be classed e.g. an orchard may be excluded but not the grassland within it.
- A separate plot is applied if there is a variation in the slope greater than 5.0^0
- For various vegetation classes a representation that is less than 10%, does not constitute the predominant class. Foliage cover referred to in AS3959:2018 for various classes is based on the foliage cover for that class as a percentage of a ha. (shadow cast is not representative of foliage cover).
- The measurement point and the most influential vegetation class (presenting the highest BAL at the building) is used for the determination of the BAL at the building (Figure 2.2 AS3959:2018).
- Consideration of the predominant vegetation is to consider the likelihood of regeneration.

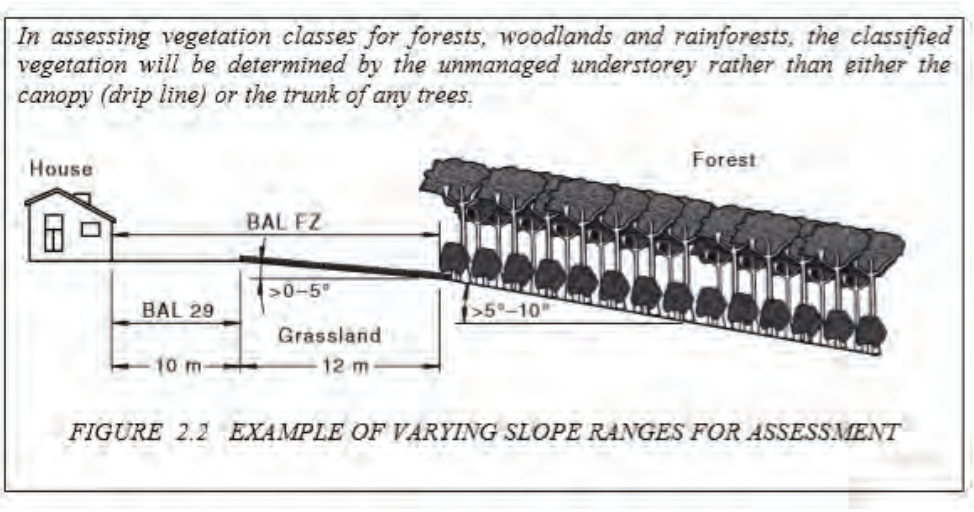


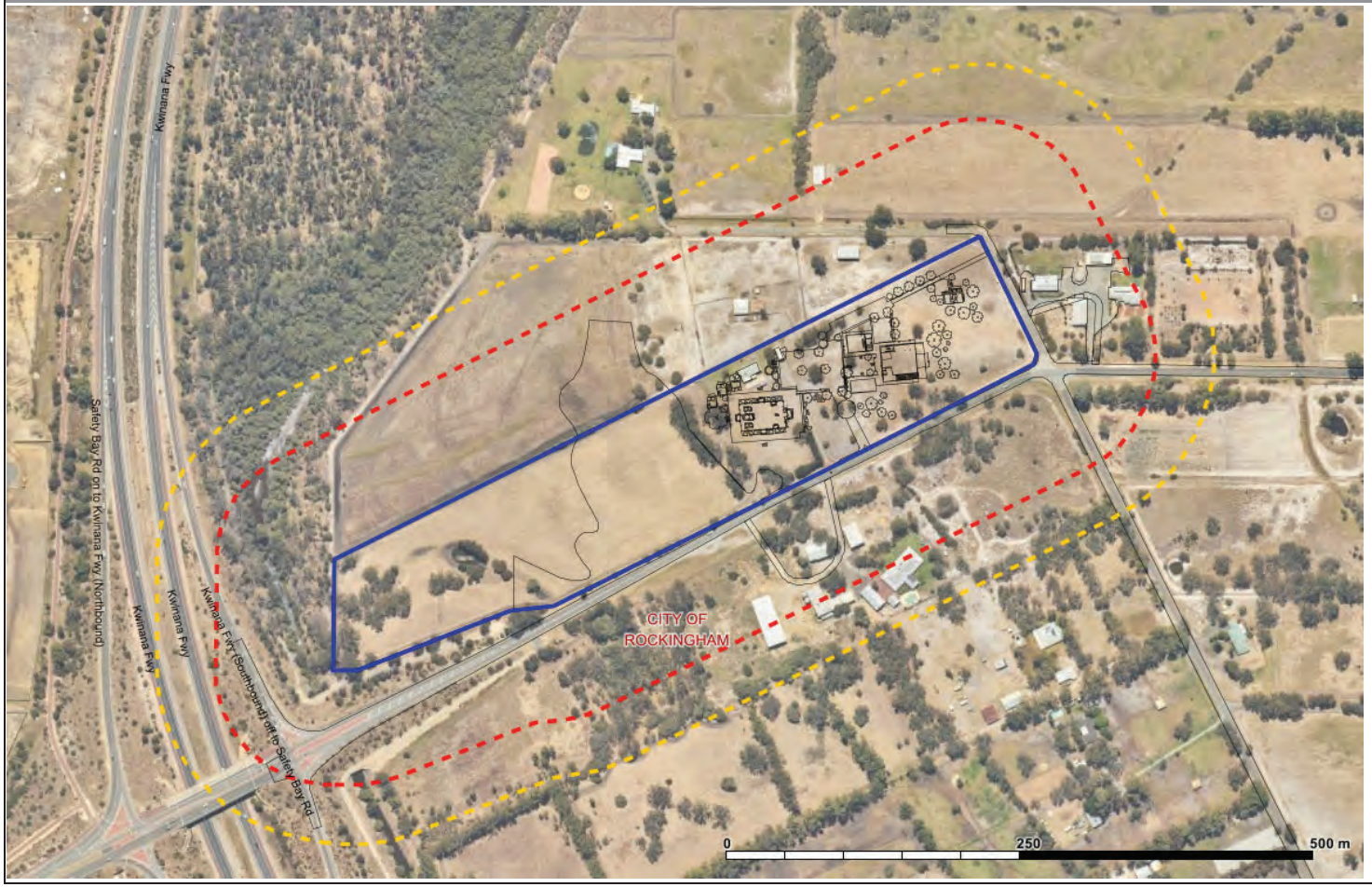
Plate 4: Effective Slope and measurement taken from AS3959:2018

Effective slope under each vegetation plot was assessed in accordance with the methodology detailed in AS 3959-2018 Construction of buildings in bushfire prone areas (AS 3959) (Standards Australia, 2018 Bushfire Fuels). Slope data was measured on site and cross referenced with Landgate elevation data.

Photo evidence Site Assessment & Site Plans

The assessment of this site / development was undertaken on 5 September 2021 by a BPAD Accredited Practitioner for the purpose of determining the Bushfire Attack Level in accordance with AS 3959 - 2018 Simplified Procedure (Method 1).

Figure 1: Location - Sri Balaji Temple 67 Folly Road Baldivis



Site boundary

150 m assessment area

100 m assessment area

Assessment Date: 05/09/2021
Prepared: Anthony Rowe
Accreditation Level: BPAD L3
Accreditation Number: 36690
Accreditation Expiry: Dec 2022
FPAA FIRE MAP 2022
GADA 1994 MGA Zone 50

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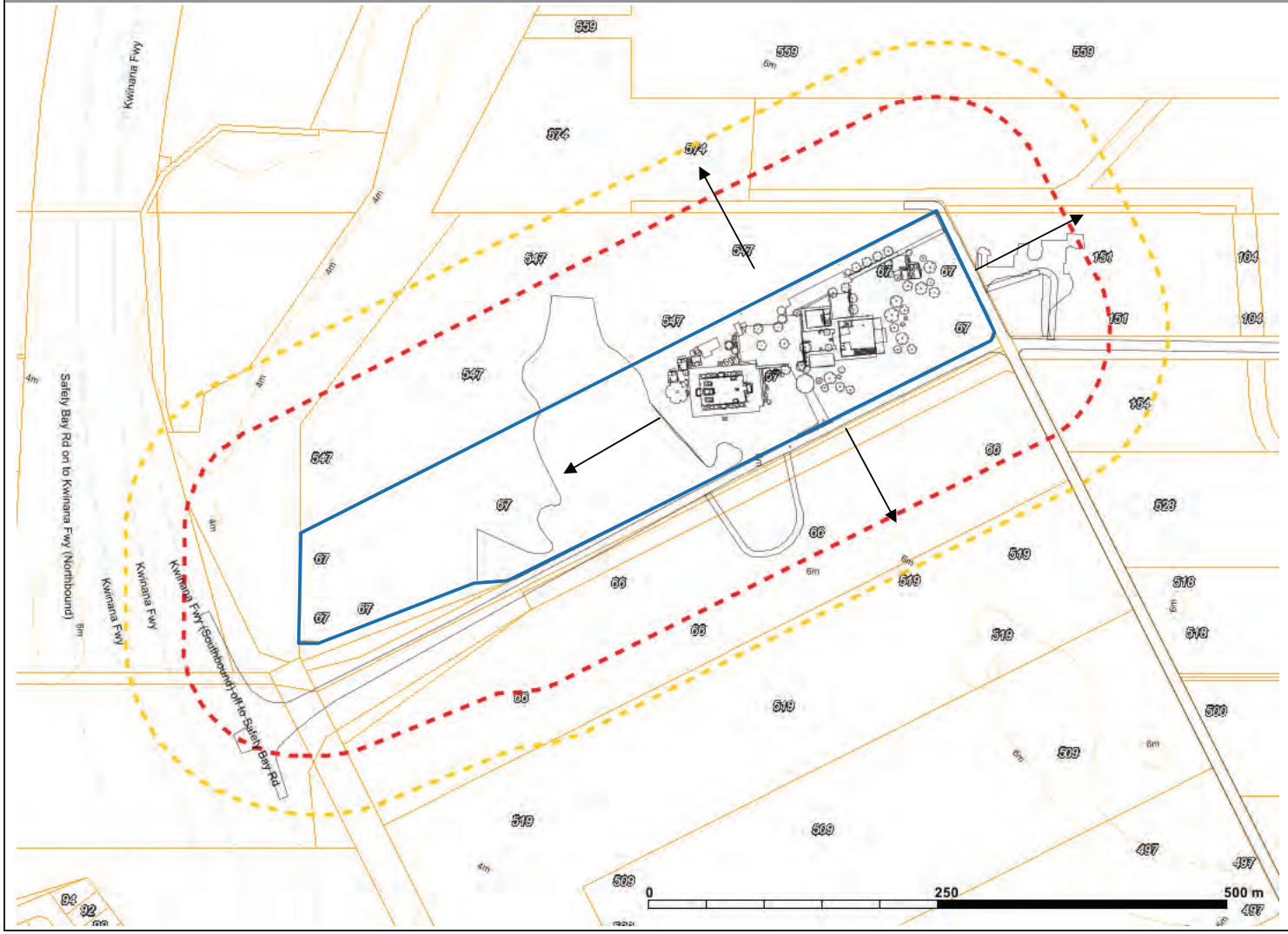
Figure 2: Topography – Sri Balaji Temple 67 Folly Road Baldivis



Buildings

Site boundary

150 m assessment area

100 m assessment area

AHD contour 2 m

Upslope

Downslope 0--5

Downslope 5--10

Downslope 10--15

Downslope 15--20

Assessment Date: 05/09/2021
Prepared: Anthony Rowe
Accreditation Level: BPAD L3
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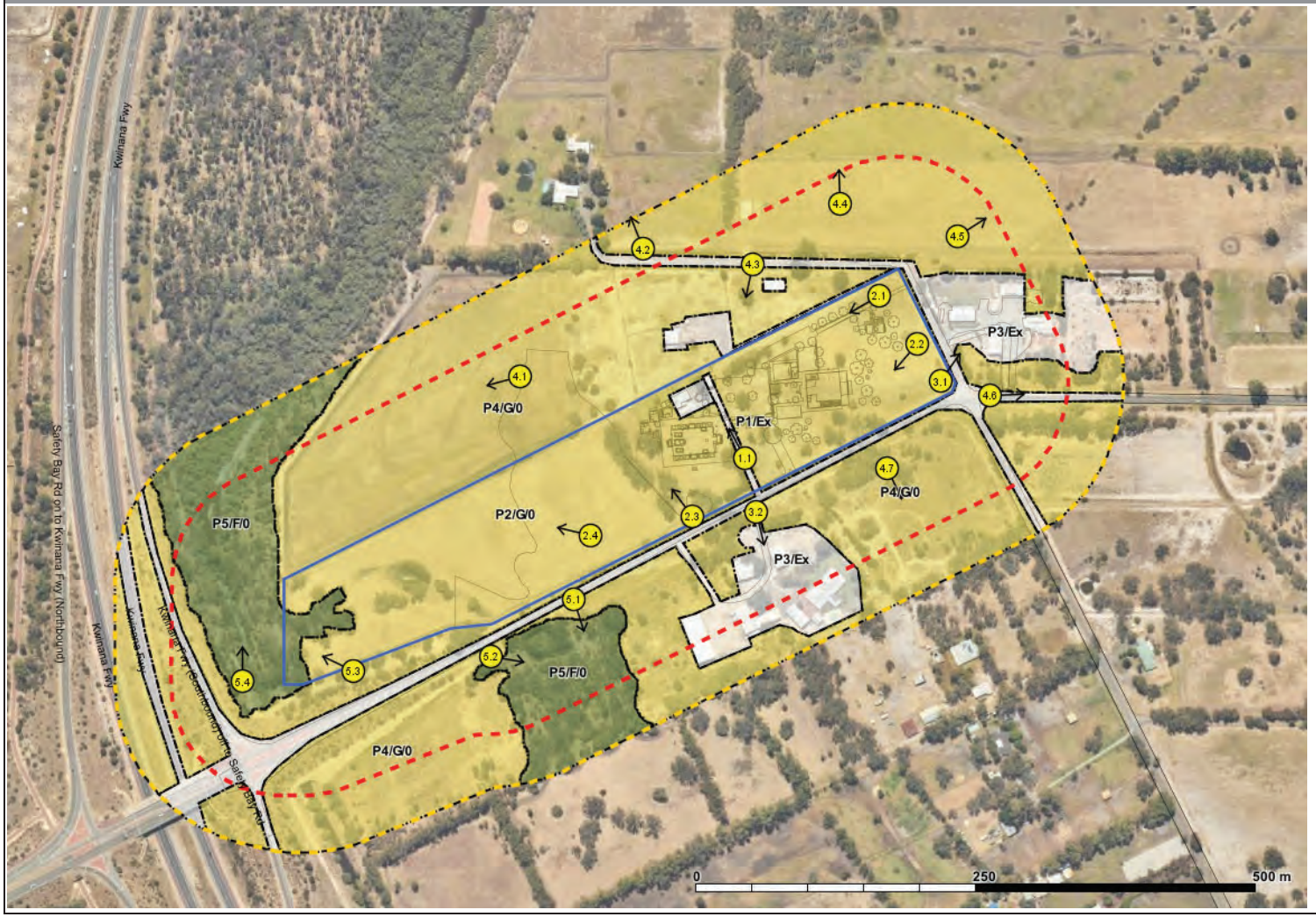
Figure 3: Vegetation Classification - Sri Balaji Temple 67 Folly Road Baldivis



- Site boundary
- 150 m assessment area
- 100 m assessment area
- Class A Forest
- Class B Woodland
- Class C Shrubland
- Class D Scrub
- Class G Grassland
- Excluded
- Photo point
- Plot Label

Assessment Date: 05/09/2021
Prepared: Anthony Rowe
Accreditation Level: BPAD L3
Accreditation Number: 36690
Accreditation Expiry: Dec 2022
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PLOT: 1

Vegetation Classification

Excludable - 2.2.3.2(e) Non Vegetated Areas

Slope

Flat

Description (AS3959)

2.2.3.2 Exclusions – Low threat vegetation and non-vegetated areas

e) Non-vegetated areas, that is, areas permanently cleared of vegetation, including waterways, exposed beaches, roads, footpaths, buildings and rocky outcrops.

PHOTO ID: 1.1



Observation/Justification for classification

Fuel Hazard	Surface	Near surface	Elevated	Bark
Low	✓	✓	✓	✓
Moderate				
High				
Very High				
Extreme				

Post development

Low threat area to be within the expanded area to be developed.

Comment: The existing driveway and workshop/shed compound. The workshop is to be demolished.

PLOT: 2

Vegetation Classification

Class G Grassland – Sown pasture G-26

Slope

Flat

Description (AS3959)

Grassland: All forms (except tussock moorlands) including situations with shrubs and trees if the overstorey foliage cover is less than 10%. Includes pasture and cropland. NOTE: Grassland managed in a minimal fuel condition and non-curing cropland is regarded as low threat vegetation for the purposes of Clause 2.2.3.2.

Observation/Justification for classification

Fuel Hazard	Surface	Near surface	Elevated	Bark
Low		✓	✓	✓
Moderate				
High	✓			
Very High				
Extreme				

Post development

Grassland will be displaced and become low threat, by buildings and future landscaping. The balance area photo 2.4 will be retained as grassland.

PHOTO ID: 2.1



PHOTO ID: 2.2



PHOTO ID: 2.3



PHOTO ID: 2.4



Comment: The site is flat and mostly pasture grasses that will be displaced by the placement of the proposed development. The balance area in photo 2.3 will be retained as grassland. Photo 2.4 is a single row of trees.

<table>
<tr><th colspan="3">PLOT: 3</th></tr>
<tr><td>Vegetation Classification</td><td>PHOTO ID: 3.1</td><td>PHOTO ID: 3.2</td></tr>
<tr><td>Excludable - 2.2.3.2(e) Non Vegetated Areas</td><td rowspan="2"> 
</td><td rowspan="2"> 
</td></tr>
<tr><td>Slope</td></tr>
<tr><td>Flat</td><td colspan="2" rowspan="2">Comment: The area is predominantly grazing land with cleared areas for houses and sheds. Areas around houses are irrigated grasses, no curing and low threat (background in photo 3.1 Excluded, the fore ground has been classed as grassland). Photo 3.2 illustrates a commercial activity with grasses less than 100 mm, isolated trees foreground, and hardstand areas.</td></tr>
<tr><td>Description (AS3959)
2.2.3.2 Exclusions – Low threat vegetation and non-vegetated areas
e) Non-vegetated areas, that is, areas permanently cleared of vegetation, including waterways, exposed beaches, roads, footpaths, buildings and rocky outcrops.</td></tr>
<tr><td>Observation/Justification for classification
<table>
<tr><th>Fuel Hazard</th><th>Surface</th><th>Near surface</th><th>Elevated</th><th>Bark</th></tr>
<tr><td>Low</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td></tr>
<tr><td>Moderate</td><td></td><td></td><td></td><td></td></tr>
<tr><td>High</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Very High</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Extreme</td><td></td><td></td><td></td><td></td></tr>
</table></td><td colspan="2"></td></tr>
<tr><td>Post development
Existing land uses are expected to remain, the excluded areas around existing buildings is expected to be retained.</td><td colspan="2"></td></tr>
</table>

PLOT: 4

Vegetation Classification

Class G Grassland – Sown pasture G-26

Slope

Flat

Description (AS3959)

Grassland: All forms (except tussock moorlands) including situations with shrubs and trees if the overstorey foliage cover is less than 10%. Includes pasture and cropland. NOTE: Grassland managed in a minimal fuel condition and non-curing cropland is regarded as low threat vegetation for the purposes of Clause 2.2.3.2.

Observation/Justification for classification

Fuel Hazard	Surface	Near surface	Elevated	Bark
Low	✓			✓
Moderate		✓	✓	
High				
Very High				
Extreme				

Post development

Retained vegetation, outside of the site

PHOTO ID: 4.1



PHOTO ID: 4.2



PHOTO ID: 4.3



PHOTO ID: 4.4



Comment: Adjoining areas are predominantly grassland excluding single trees and windrows along the road verges.

PLOT: 4

Vegetation Classification

Class G Grassland – Sown pasture G-26

Slope

Flat

Description (AS3959)

Grassland: All forms (except tussock moorlands) including situations with shrubs and trees if the overstorey foliage cover is less than 10%. Includes pasture and cropland. NOTE: Grassland managed in a minimal fuel condition and non-curing cropland is regarded as low threat vegetation for the purposes of Clause 2.2.3.2.

Observation/Justification for classification

Fuel Hazard	Surface	Near surface	Elevated	Bark
Low	✓			✓
Moderate		✓	✓	
High				
Very High				
Extreme				

Post development

Retained vegetation, outside of the site

PHOTO ID: 4.5



PHOTO ID: 4.6



PHOTO ID: 4.7



Comment: Adjoining areas are predominantly grassland excluding single trees and windrows along the road verges.

PLOT:5

Vegetation Classification

Class A Forest - Open forest A-03

Slope

Flat

Description (AS3959)

Open Forest: Trees over 30 m high; 30%-70% foliage cover (may include understorey ranging from rainforest species and tree ferns to low trees and tall shrubs). Found in areas of high reliable rainfall. Typically dominated by eucalypts with a sub-dominant tree layer.

Observation/Justification for classification

Fuel Hazard	Surface	Near surface	Elevated	Bark
Low	✓	✓	✓	✓
Moderate				
High				
Very High				
Extreme				

Post development

Retained vegetation, outside of the site.

PHOTO ID: 5.1



PHOTO ID: 5.2



PHOTO ID: 5.3



Comment: An area of forest is retained adjacent to the Kwinana Freeway. Direct access to the Baldivis urban area (west of the site) across Kwinana Freeway, onto Safety Bay Road is available with only a 60 m (short travel through) through extreme(bushfire) vegetation. An alternative route is available but immediate evacuation to the Baldivis urban area is mostly anticipated. Mechanical failures along roadsides can ignite roadside vegetation but land scape scale fires are most likely to come from the eastern hemisphere to the site because of the bushfire fuels to the east.

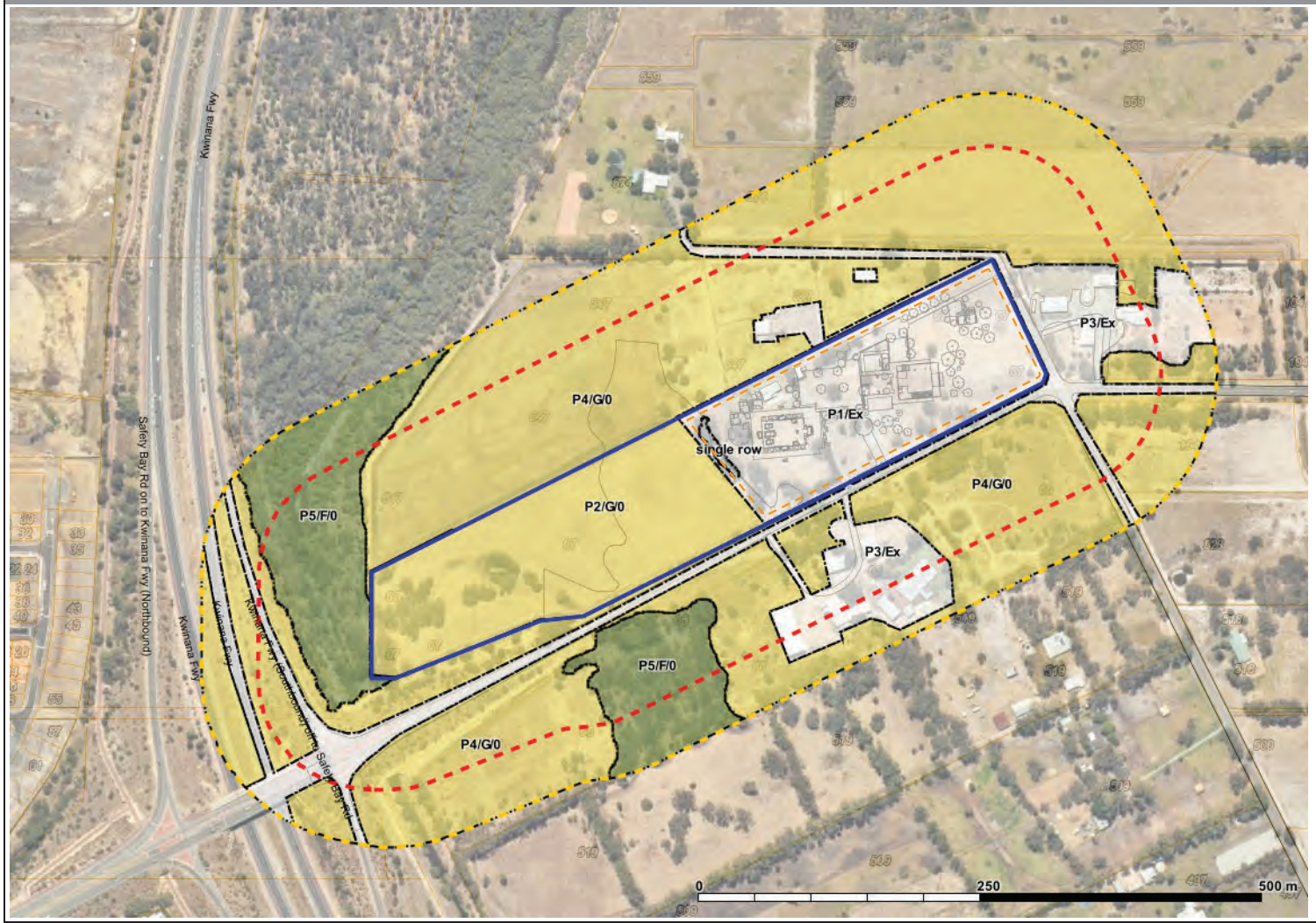
POTENTIAL BUSHFIRE IMPACT - Outputs

In accordance with SPP 3.7, a BAL Contour Map has been prepared to illustrate the potential radiant heat impacts and associated BAL ratings for the assessment area after the development is completed (Figure 5). Figure 5 is based upon an overall completion and illustrates that no building will exceed BAL 29.

The required distance and commensurate BAL rating is provided below. Plots 1 and 3 are excluded vegetation and impose no separation.

Plot	Vegetation classification	Effective slope (degrees)	Separation Distance (AS 3959:2018 Table 2.5)	BAL
5	Forest	Flat/upslope	< 16 m	BAL-FZ
			16- < 21 m	BAL-40
			21 - < 31 m	BAL-29
			31 - < 42 m	BAL-19
			42 - < 100 m	BAL-12.5
			> 100 m	BAL-LOW
2 and 4	Grassland	Flat/upslope	< 6 m	BAL-FZ
			6- < 8 m	BAL-40
			8 - < 12 m	BAL-29
			12 - < 17 m	BAL-19
			17 - < 50 m	BAL-12.5
			> 50 m	BAL-LOW

Figure 4: Vegetation Classification Post Development – Sri Balaji Temple 67 Folly Road Baldivis



- Building Envelope
- Site boundary
- 150 m assessment area
- 100 m assessment area
- Class A Forest
- Class B Woodland
- Class C Shrubland
- Class D Scrub
- Class G Grassland
- Excluded
- Low threat area boundary (APZ)
- Plot Label

Assessment Date: 05/09/2021
Prepared: Anthony Rowe
Accreditation Level: BPAD L3
Accreditation Number: 36690
Accreditation Expiry: Dec 2022
FPAA FIRE MAP 2022
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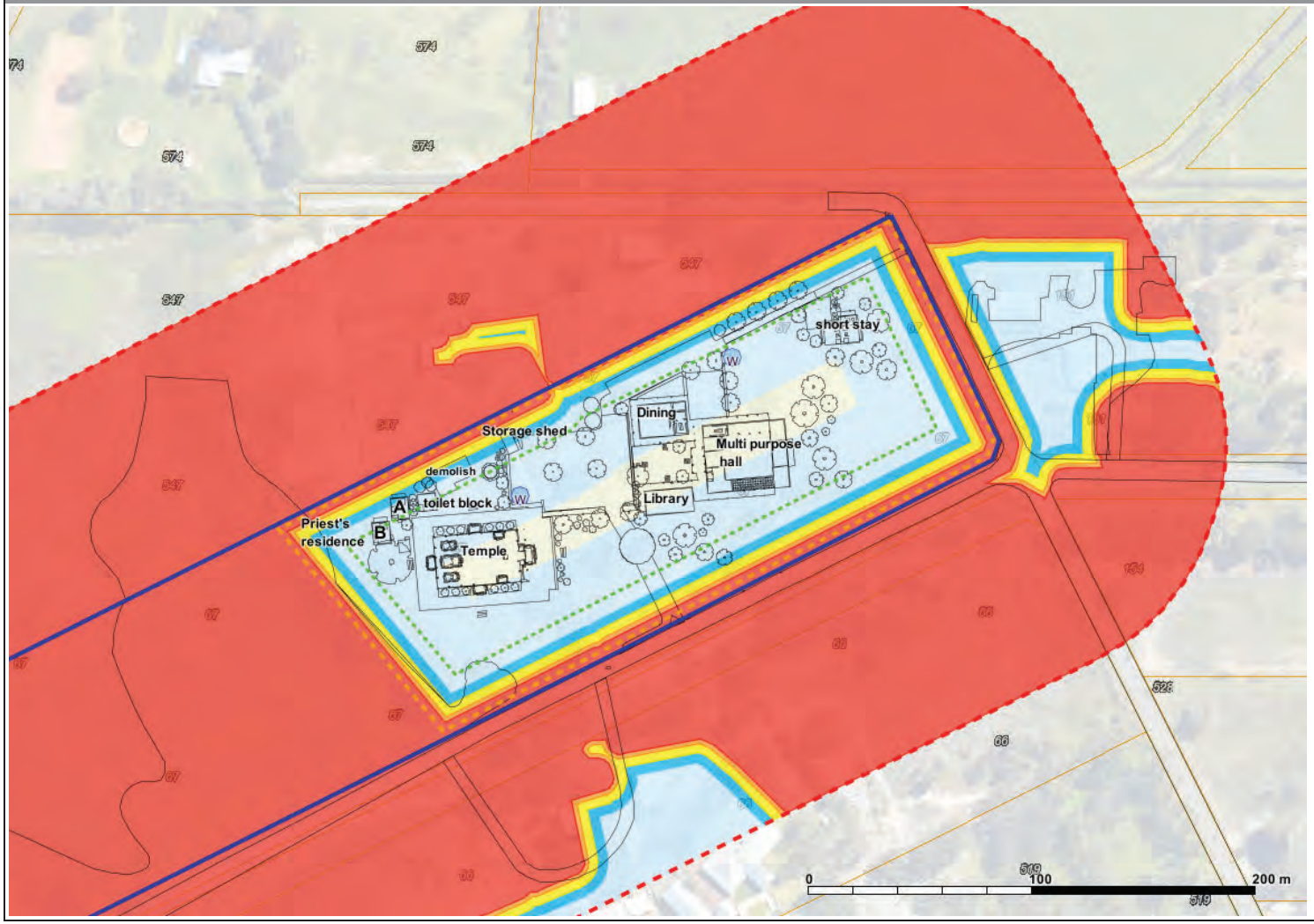
Figure 5: BAL Contour Plan Post Development - Sri Balaji Temple 67 Folly Road Baldivis



Site boundary
150 m assessment area
100 m assessment area
BAL-FZ
BAL-40
BAL-29
BAL-19
BAL-12.5
BAL-Low
BAL-10

Assessment Date: 05/09/2021
Prepared: Anthony Rowe
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3.2 Determined Bushfire Attack Level (Outputs) Method 1

The Indicative Bushfire Attack Level (highest BAL) for the site / proposed development is based upon the conditions and classified vegetation present at the time of completion.

Determined Bushfire Attack Level has been derived in accordance with clause 2.2.6 (Method 1) of AS 3959:2018.

The BAL for each building is determined by the distance to the nearest boundary and the proposed management extent at the west of the development site.

Indicative Bushfire Attack Level	BAL Level
Temple	BAL - 12.5
Multi-Purpose Hall	BAL - 12.5
Library	BAL – 12.5
Dining Hall	BAL – 12.5
Short stay	BAL – 12.5
Priest's Residence A	BAL – 19
Priest's Residence B and kitchen	BAL – 12.5
Outbuilding (toilet block)	BAL – 12.5
Outbuilding (storage shed)	BAL – 29

.

4. IDENTIFICATION OF BUSHFIRE HAZARD ISSUES

Bushfire Behaviour

Sustainable fire combustion depends upon the availability of fuel, oxygen, and heat. Removal of any one of the three aspects will extinguish or not sustain a fire. Fuel management, the management of vegetation, is the most practical means of control.

Bushfire behaviour, as it increases in intensity and speed of travel, can exceed human control measures and when this occurs the risk increases to humans and property. Bushfire behaviour is a result of climate, topography, and the availability of bushfire fuel (vegetation).

- Climate (drought and season) & weather (temperature, humidity, wind, atmospheric instability).

  Wind

  Bushfires are influenced by the wind direction and the speed. The wind direction generally determines the direction of the fire and wind speed, along with ground slope, generally determines the speed a fire will travel over ground. As wind strength increases it increases the availability of oxygen allowing the fire intensity to increase.

  Atmospheric conditions determine the potential for the uplift of embers and particles that can be distributed by the prevailing wind direction well ahead of the fire, up to 9 km, to create spot fires that can advance the location of the fire front.

  Fire Danger Index FDI

  FDI is an indicator of potential fire intensity and behaviour based upon weather conditions; temperature, humidity, and wind speed, together with climate measures, drought factor representing the dryness of the ground fuels.

  The FDI is an indicator of the potential for house loss and fatalities.

  The FDI is used as a basis for determining the required design performance of a building.

- Topography (slope of the ground, aspect) – fire travels faster uphill, and in some conditions may determine the direction of the fire. The landform can also channel and increase the windspeed at a locality and create turbulence. It is measured as 0.0^0 or in downslope increments of 5.0^0.

- Vegetation (horizontal and vertical structure, flammability, mass, and availability). Measured as a vegetation classification, or an exclusion, in AS 3959 (Method 1). The arrangement of fuel has a greater effect upon the intensity of a fire than just its mass; its exposure to oxygen is referred to as its availability in a bushfire.

It is assumed that a bushfire will achieve a steady-state and be fully developed to maximum intensity over a 100 m (minimum) fire run. Grass fires travel faster (GFDI) than a forest canopy fire, but a forest canopy fire can eject a higher level of embers and also eject them over a greater distance. Crown fires occur when the ground fire is intense, and conversely, when ground fuels are managed, the resultant fire intensity may not be sufficient to involve the crown or sustain a fire.

Fuel reduction initiatives such as slashing and controlled burns are intended to reduce the fuel availability to a level where the intensity of the fire remains controllable.

Climate

The nearest weather station to the site is at Jandakot airport. The site is within an area described as having a Mediterranean climate of dry summers and mild, wet winters. The majority of rainfall is between May and September. The prohibited burning period is from mid-December to mid-March.

The Bushfire Danger Season has traditionally been between November and April each year, but recent climatic conditions have caused fire danger conditions to be present either side of this period.

Severe bushfire conditions FDI 50+, occur mostly between January and March. Extreme and Catastrophic conditions occur mostly in the afternoon and typically with south-south easterly winds (BoM Jandakot airport). A bushfire can however come from any direction.

Bushfires generally travel in the direction of the prevailing wind. The direction of the prevailing wind conditions can affect the options for evacuation and anticipated fire intensity depending upon the slope and fuel.

The wind roses below (Plates 5 and 6) for February (averaged) recorded at 9 am and 3 pm. illustrate wind directions are predominantly from the east in the mornings and from the south west and west in the afternoons

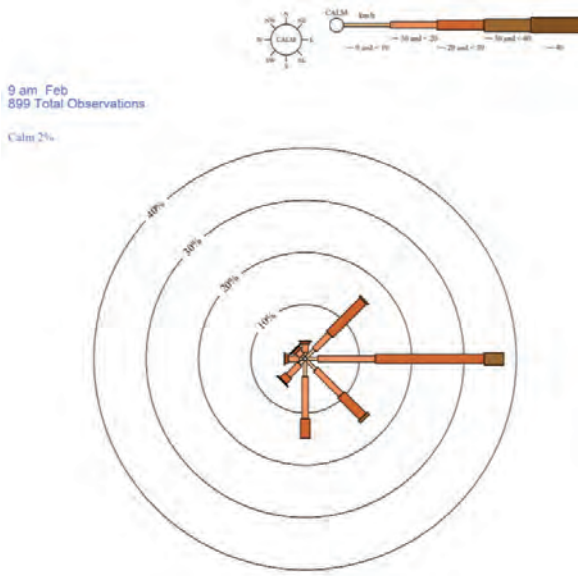


Plate 5: BoM weather data, prevailing wind directions as at 9 am

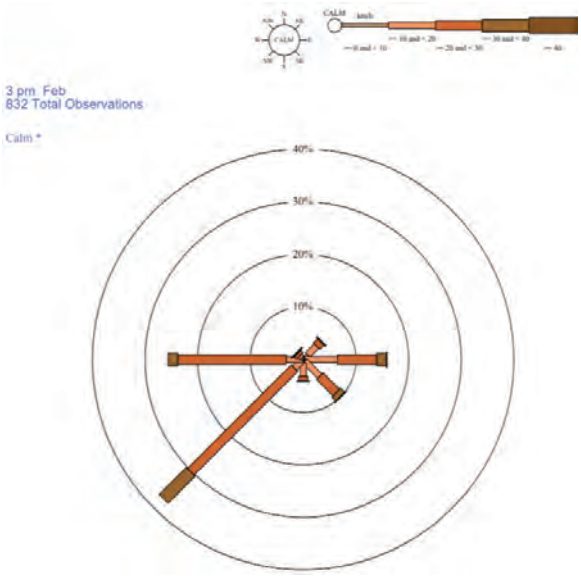


Plate 6: BoM weather data, prevailing wind directions as at 3 pm



Plate 7: 2.5 km and 5.0 km – landscape context

Bushfire Hazard Issues

The following bushfire hazard issues have been identified.

The site as observed from plate 7 is within an immediate are that is characterised as pasture grasses > 100 mm (grassland).

The site does not adjoin forest, but forest is a generator of embers and ember attack is attributed to the greatest building loss. The density of ember attack diminishes with distance from the forest and the size of the forest area, the larger the area the greater the convective lift and dispersal of embers. The subject land adjoins a narrow strip of vegetation alongside the Kwinana Freeway, that expands in area (31 ha) to the north of the site. It is the closest forest vegetation at 200 m. Other areas of forest of less than 100 ha are located 900 m east, followed by pasture and grassland out to 5 km. Forest is also located 2 km west associated with the wetlands system (Lake Cooloongup / Lake Walyungup). This is followed by urban development 5 km west of the site.

The risk to the site is primarily from a grassfire from the adjoining land, which can be arrested at the perimeter if the site is maintained in a low threat condition.

The site due to its separation and the size of the nearest forests may be subject to a low density ember attack. A dense ember attack can amass embers against vulnerable surfaces, such as windows, whereas a low density

ember attack is reliant upon finding readily flammable materials that can in turn engage heavier fuels that may overwhelm a building exterior. Site management to enclose flammable material and restrict the location of flammable material near to buildings is an effective measure to minimise the risk of building ignition.

Evaporative cooling units are noted for drawing embers and are required to have ember screens in bushfire prone areas.

Access

The primary evacuation option is Folly Road to Kwinana Freeway and the Baldivis Urban area west of the site which is mostly through low and moderate (acceptable) bushfire hazard level conditions.

An area of forest along Kwinana freeway (Folly Pool) separates the site from the urban area but is only 60 m, below the width for a fully developed (maximum intensity) fire. Roadside vegetation can be ignited by human activity and mechanical failure. There is an alternate route from the site , but immediate access to the safety of the Baldivis urban area is preferred. A landscape fire is apart from the road side ignition likely to only come from the east, because grassland and classified vegetation extends east of the site. Heading west is into the Baldivis urban area and low threat. In most instance therefore the Evacuation will be taken into Baldivis, in the opposite direction to an approaching fire.

Evacuation is the preferred response when the evacuation routes are safer than the site. This is determined by ensuring the Available Safe Evacuation (Egress) Time (ASET) is greater than the Required Safe Evacuation Time (RSET). In this instance the lead time for RSET is short because visitors will be congregated and will not need to gather possessions.

The minimum RSET time to evacuate to Kwinana Freeway, and the urban BAL Low area, based on 200 vehicles with a 15 delay to access folly Road (right hand turn) is 50 minutes. Most visitors will not be required to collect possessions and will be able to move to evacuation immediately upon instruction. Emergency management of the site would include ensuring the orderly of evacuation of vehicles from the carpark.

5. BUSHFIRE PROTECTION MEASURES

5.1 State Planning Policy 3.7 - Planning In Bushfire Prone Areas (SPP 3.7)

SPP 3.7 applies to all subdivision applications in designated bushfire prone areas.

SPP 3.7 Objectives

Policy Measure 5 contains the objectives of SPP 3.7. The following demonstrates how the proposed development meets each of the objectives.

Objective 1: Avoid any increase in the threat of bushfire to people, property, and infrastructure. The preservation of life and management of bushfire impact is paramount.

Development Response

The nature of the proposed activity will not increase the occurrence or intensity of bushfire within its locality.

Objective 2: Reduce vulnerability to bushfire through the identification and consideration of bushfire risks in decision-making at all stages of the planning and development process.

Development Response

Objective 2 is satisfied through:

- The site is adjacent the urban area, across Kwinana Freeway, providing quick access to BAL Low and safety from bushfire attack. The site also has access to safe destination east of the site because Folly Road is a through road connecting to multiple route options.
- The buildings are separated from the perimeter and there is no restriction from the site being maintained as low threat that any proposed building will have a BAL exceeding BAL 29.

Objective 3: Ensure that higher order strategic planning documents, strategic planning proposals, subdivision and development applications take into account bushfire protection requirements and include specified bushfire protection measures.

Development Response

Objective 3 is satisfied through the compliance of the proposed development with all required Policy Principles as detailed as detailed in Section 5.2 of this report.

Objective 4: Achieve an appropriate balance between bushfire risk management measures and, biodiversity conservation values, environmental protection and biodiversity management and landscape amenity, with consideration of the potential impacts of climate change.

Development Response

The site is former pasture/grazing land. It is not required for environment protection nor are any locational restrictions presented at the site.

5.2 Guidelines for Planning in Bushfire Prone Areas Version 1.3 (the Guidelines)

The Guidelines apply to development applications located within designated bushfire prone areas. The Guidelines provide supporting information for implementation of SPP 3.7. Specifically, they provide the Bushfire Protection Criteria to be addressed for all applications.

5.2.1 Bushfire Protection Criteria

The bushfire risk mitigation strategies detailed in (Table 2 below) are designed to comply with the Bushfire Protection Criteria detailed in Guidelines for Planning in Bushfire Prone Areas Version 1.3 (the Guidelines) Appendix 4 (WAPC, 2017).

Where discrepancy occurs between State and Local bushfire planning provisions the higher standard of mitigation has been selected.

Table 2: Bushfire Protection Criteria assessment.

For each of the elements listed within Appendix 4 of the Guidelines for Planning in bushfire-prone areas, the 'intent' must be achieved either by the proposal meeting the acceptable solutions; or where these acceptable solutions cannot be fully met, then by a performance-based solution that can achieve the 'intent.'

✓	Acceptable solution provided	C	An Acceptable Solution to be conditioned
N/A	Not Applicable	P	Performance Principle solution see 5.2

Bushfire Protection Criteria	Method of Compliance	AS	PP	Proposed Bushfire Management Strategies
Element 1: location To ensure that strategic planning proposals, subdivision, and development applications are located in areas with the least possible risk of bushfire to facilitate the protection of people, property, and infrastructure	**A1.1 Development location** The strategic planning proposal, subdivision, and development application is located in an area that is or will, on completion, be subject to either a moderate or low bushfire hazard level, or BAL–29 or below.	✓		In accordance with the WAPC Position Statement: *Planning in bushfire prone areas – Demonstrating Element 1: Location and Element 2: Siting and design*, the consideration of the bushfire hazard level (BHL) is not relevant to a development site but in this instance has been considered with regard to a broader context to include access considerations. The immediate land to the site is rural and predominantly grass and classed as moderate BHL. <u>Development response</u> Compliance acknowledged

Bushfire Protection Criteria	Method of Compliance	AS	PP	Proposed Bushfire Management Strategies
Element 2: Siting and Design To ensure that the siting and design of development minimises the level of bushfire impact	**A2.1 Asset Protection Zone** Every habitable building is surrounded by, and every proposed lot can achieve, an APZ depicted on submitted plans, which meets the following requirements: • Width: Measured from any external wall or supporting post or column of the proposed building, and of sufficient size to ensure the potential radiant heat impact of a bushfire does not exceed 29kW/m² (BAL-29) in all circumstances. • Location: the APZ should be contained solely within the boundaries of the lot on which the building is situated, except in instances where the neighbouring lot or lots will be managed in a low-fuel state on an ongoing basis, in perpetuity (see explanatory notes). • Management: the APZ is managed in accordance with the requirements of 'Standards for Asset Protection Zones.' (See Schedule 1).	✓		The Acceptable solution A2.1 requires that the BAL at a habitable building can achieve a BAL not exceeding BAL-29, by measures within the boundary of the lot/development site. The Asset Protection Zone is proposed to be established over the extent of the 3.2 ha development site. It is utilised as the post development conditions and the on BAL contour shown on Figure 5. There is no restriction upon establishing Asset Protection Zone, over the extent of the development site. The site is presently grassland and the Asset Protection Zone standard enables the site to be planted at 15% foliage cover. Because the development site is to be maintained Asset Protection Zone within its 3.2 ha perimeter, individual buildings will not be required to have an individual Asset Protection Zone. The BAL at each building has therefore been determined by the condition and classification of vegetation external to the development site and no building exceeds BAL-29. All buildings and the water tanks (for emergency services) are located within a BAL less than BAL-29. The Temple and the Multipurpose hall are located within a BAL that is less than BAL 10, and BAL low is available from each building to the driveway, permitting evacuation throughout a bushfire event if the external evacuation route was also safe (less than 10kWm^2). Note: The Asset Protection Zone Standard Schedule 1 Element 3 is a spatial distribution vertical and horizontal classified vegetation (15% foliage cover). <u>Development Response</u> • The site is to be maintained compliant with the Asset Protection Zone Standard described in Schedule 1 Element 3 Guidelines V1.3.

<table>
<tr><th>Bushfire Protection Criteria</th><th>Method of Compliance</th><th>AS</th><th>PP</th><th>Proposed Bushfire Management Strategies</th></tr>
<tr><td rowspan="3">Element 3: Vehicular Access

To ensure that the vehicular access serving a subdivision/ development is available and safe during a bushfire event</td><td>A3.1 Two access routes

Two different vehicular access routes are provided, both of which connect to the public road network, provide safe access and egress to two different destinations, and are available to all residents/the public at all times and under all weather conditions.</td><td>✓</td><td></td><td>Folly Road is a through road. The primary direction for evacuation would be to access Kwinana Freeway for destinations north or south.

<u>Development response</u>

Compliance acknowledged</td></tr>
<tr><td>A3.2 Public road

A public road is to meet the requirements in Table 6, Column 1.

Table 6: Vehicular access technical requirements
<table><tr><th>TECHNICAL REQUIREMENTS</th><th>1 Public road</th><th>2 Cul-de-sac</th><th>3 Private driveway</th><th>4 Emergency access way</th><th>5 Fire se acce rout</th></tr><tr><td>Minimum trafficable surface (m)</td><td>6*</td><td>6</td><td>4</td><td>6*</td><td>6*</td></tr><tr><td>Horizontal clearance (m)</td><td>6</td><td>6</td><td>6</td><td>6</td><td>6</td></tr><tr><td>Vertical clearance (m)</td><td>4.5</td><td>N/A</td><td>4.5</td><td>4.5</td><td>4.5</td></tr><tr><td>Maximum grade <50 metres</td><td>1 in 10</td><td>1 in 10</td><td>1 in 10</td><td>1 in 10</td><td>1 in 10</td></tr><tr><td>Minimum weight capacity (t)</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td></tr><tr><td>Maximum crossfall</td><td>1 in 33</td><td>1 in 33</td><td>1 in 33</td><td>1 in 33</td><td>1 in 33</td></tr><tr><td>Curves minimum inner radius (m)</td><td>8.5</td><td>8.5</td><td>8.5</td><td>8.5</td><td>8.5</td></tr><tr><td colspan="6">*Refer to E3.2 Public roads: Trafficable surface</td></tr></table></td><td>✓</td><td></td><td>Folly Road is bituminised road compliant with Table 6 Column 1. It connects both west and east to an extensive public road network providing multiple destination options away from an advancing bushfire.

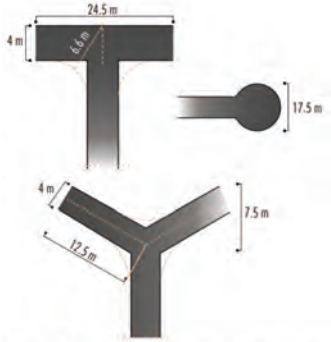
<u>Development response</u>

Compliance acknowledged.</td></tr>
<tr><td>A3.3 Cul-de-sac (including a dead-end road)

Requirements in Table 6, Column 2;

• Maximum length: 200 metres (if public emergency access is provided between cul-de-sac heads maximum length can be increased to 600 metres provided no more than eight lots are serviced and the emergency access way is no more than 600 metres); and
• Turn-around area requirements, including a minimum 17.5 metre diameter head.</td><td>N/A</td><td></td><td></td></tr>
</table>

Bushfire Protection Criteria	Method of Compliance	AS	PP	Proposed Bushfire Management Strategies
	A3.4 Battle-axe Requirements in Table 6, Column 3; • Maximum length: 600 metres; and Minimum width: six metres.	N/A		

Bushfire Protection Criteria	Method of Compliance	AS	PP	Proposed Bushfire Management Strategies
	A3.5 Private driveway longer than 50 m Requirements in Table 6, Column 3; • Required where a house site is more than 50 metres from a public road; • Passing bays: every 200 metres with a minimum length of 20 metres and a minimum width of two metres (i.e. the combined width of the passing bay and constructed private driveway to be a minimum six metres); • Turn-around areas designed to accommodate type 3.4 fire appliances and to enable them to turn around safely every 500 metres (i.e. kerb to kerb 17.5 metres) and within 50 metres of a house; and • Any bridges or culverts are able to support a minimum weight capacity of 15 tonnes. • All-weather surface (i.e. compacted gravel, limestone or sealed)  **Figure 22:** Design requirements for a private driveway longer than 50 metres Turning areas should allow type 3.4 fire appliances to turn safely	C		Primary entry (two way) is from Folly Road and services the Temple carpark (main carpark). A supplementary road (Emergency and Service Access) is provided to Young Road as a through road option for egress and to avoid any potential conflict with arriving emergency service vehicles. The site is large with a number of buildings located further than 50 m from Folly Road. The private driveway/road, which is lined with carparking spaces links all buildings, with the exception of the priest's residence. The private driveway/road is through open areas and over level ground and will comply with the technical requirements for private driveways. Access to the priest's residence is unobstructed over open ground. The proposed supplementary road (Emergency and Service Access), has a 4 m carriage way but is through open land with a horizontal clearance compliant with the minimum of 6 m. A condition is recommended to affirm the provision of the driveway and vehicle circulation area in accordance with the technical requirement of the Bushfire Protection Criteria (Table 6 column 3, Guidelines v1.3). <u>Development response</u> A condition of approval is to be provided to maintain the private driveway in accordance with Table 6 Column 3.

Bushfire Protection Criteria	Method of Compliance	AS	PP	Proposed Bushfire Management Strategies
	A3.6 Emergency access way Requirements in Table 6, Column 4; • No further than 600 metres from a public road; • Provided as right of way or public access easement in gross to ensure accessibility to the public and fire services during an emergency; and • Must be signposted.	N/A		
	A3.7 Fire service access routes (perimeter roads) Requirements Table 6, Column 5; • Provided as right of ways or public access easements in gross to ensure accessibility to the public and fire services during an emergency; • Surface: all-weather (i.e. compacted gravel, limestone or sealed) Dead end roads are not permitted; • Turn-around areas designed to accommodate type 3.4 appliances and to enable them to turn around safely every 500 metres (i.e. kerb to kerb 17.5 metres); • No further than 600 metres from a public road; • Allow for two-way traffic and; • Must be signposted	N/A		
	A3.8 Firebreak width	C		Firebreaks are installed at the site 3 m inside the perimeter. <u>Development response</u> Firebreaks to be maintained in accordance with the City of Rockingham Annual Fire Control Notice.

Bushfire Protection Criteria	Method of Compliance	AS	PP	Proposed Bushfire Management Strategies
Element 4: Water To ensure that water is available to the subdivision, development or land use to enable people, property and infrastructure to be defended from bushfire	**A4.1 Reticulated areas** The subdivision, development or land use is provided with a reticulated water supply in accordance with the specifications of the relevant water supply authority and Department of Fire and Emergency Services. **E4.1**: The Water Corporation's 'No. 63 Water Reticulation Standard' is deemed to be the baseline criterion for developments and should be applied unless local water supply authorities' conditions apply.	N/A		
	A4.2 Non-reticulated areas • Volume: minimum 50,000 litres per tank; Ratio of tanks to lots: minimum one tank per 25 lots (or part thereof); • Tank location: no more than two kilometres to the furthermost house site within the residential development to allow a 2.4 fire appliance to achieve a 20 minute turnaround time at legal road speeds; • Hardstand and turn-around areas suitable for a type 3.4 fire appliance (i.e. kerb to kerb 17.5 metres) are provided within three metres of each water tank; and • Water tanks and associated facilities are vested in the relevant local government	C		The site does not have access to a reticulated water supply. The nearest hydrant is located 950 m west of the site on Safety Bay Road. There is no community water tank provided for emergency services that is closer to the hydrant. The minimum requirement for an emergency services water supply is a 50 000 L tank placed near, so as not to obstruct or confuse vehicle evacuating from the main carpark. The applicant proposed two tanks 75 000 L to be located close to the Temple and close to the multi-purpose hall. The supply of water for Structural Fire Fighting will be required by the National Construction Code, to address a structural fire. The requirement for bushfire is a supply to replenish emergency service vehicles. When designing the system for approval for a structural fire the solutions should be designed to serve both a bushfire and a structural fire. As an example the placement of fire hoses to serve both the interior and exterior of buildings and the area around the buildings. <u>Development response</u> Two 75 000 L water supply (tank) will be provided with couplings to City of Rockingham specification and signposted as exclusively for use by emergency services.

Bushfire Protection Criteria	Method of Compliance	AS	PP	Proposed Bushfire Management Strategies
	A4.3 Individual lots within non-reticulated areas (Only for use if creating 1 additional lot and cannot be applied cumulatively) Single lots above 500 square metres need a dedicated static water supply on the lot that has the effective capacity of 10,000 litres.	N/A		

5.3 Bushfire Management Strategies

The proposal is not a high-risk land use (likely to increase the risk of starting a bushfire), but it may attract people who are unfamiliar with bushfire prevention. Prevention necessitates the restriction of some activities that contribute to ignitions, including the disposal of cigarettes or outside fires (torches, wood fired barbeques).

The principles of Emergency Management (listed below) that may apply to the proposal can be divided across the BMP and BEEP working in unison – the BMP determines the suitability of the location, and the BEEP describes the management actions. The two align with emergency management principles as follows:

- Prevention – avoidance and mitigation works undertaken in advance i.e. (Planned Asset protection Zone).
- Preparation – education, procedures, training i.e. Seasonal maintenance APZ, regular review of (BEEP)requirements, contacts , responsibilities, and warning systems
- Response – actions taken in an event for saving lives (primary) - early evacuation if safe or shelter as a last resort with survival procedures described (BEEP).
- Recovery – return and restoration procedures described (BEEP).

5.3.1 Vulnerable Development Emergency Evacuation (Cl 6.6)

In regard to this proposal the additional bushfire management strategies to the Bushfire Protection Criteria, relates to the management of the facility to preserve life, and for a Vulnerable class of development this is to be addressed in the BEEP.

The proposed BEEP is attached in Appendix 2 and follows the State Government's *A Guide to developing a Bushfire Emergency Evacuation Plan* October 2019 and the *Emergency Evacuation Plan template* V1.1. The BEEP has been developed consistent with the Australian Standard AS 3745-2010, Planning for Emergencies in facilities.

The attached BEEP incorporates the requirements listed under section 5.5.2 V1.3 Guidelines for Planning in Bushfire Prone areas and acknowledged in **Table 4.**

Table 4: Compliance with Cl. 5.5.2 *Guidelines for Planning in Bushfire Prone Areas*

The emergency evacuation plan should be concise and consider:	**Addressed in Emergency Evacuation Plan**
The number of guests at the facility	400 maximum *Average attendance is 100 - 150 people.* *A long term projection is fortnightly attendance by up to 400 people for weddings or festivals.*
Whether the occupants are permanent or transient	Transient
Whether there is a caretaker on site	The site is supervised at all times
Whether there are people with a disability, medically dependant, young children, or the elderly	Visitors are able-bodied or expected to be in the care of a patron.
Identification of a safe alternative location if there was a need for evacuation/relocation	Visitors are expected to return to their homes through the urban road network.
A proposed method of movement of occupants to a safe location(s)	Private vehicles

Details of suitable access/egress routes for the expected type/volume of traffic, including alternatives when suitable roads are inaccessible, insufficient or inappropriate	Folly Road to Kwinana Freeway, Perth Urban area road network.
Transport options for those without access to private vehicles	Guests are expected to arrive by private vehicle.
Options to shelter in place as a last resort	Evacuation is the preferred response as per DFES instruction however if it is not safe to leave a contingency has been made for shelter as a last resort in the Temple building
Roles and responsibilities of facility personnel and emergency services.	Sri Balaji Temple will be responsible for the preparation of the facility before the commencement of each bushfire season. Sri Balaji Temple will have members present at all times who are familiar with the locality. The facility manager will have the responsibility as the Chief fire Warden. Emergency procedures and responsibilities shall be clearly displayed within the buildings.

The emergency evacuation plan should consider if actions will change based on a series of triggers, such as:	Addressed in Emergency Evacuation Plan
Effective warning methods appropriate for the occupants (including consideration of at-risk persons and the demographics of the occupants)	The Chief Warden will monitor the media for Fire Danger Rating information and be trained in the triggers and procedure for evacuation.
Closure of facility and early relocation of occupants appropriate to the fire danger rating (FDR) and bushfire warnings	
Any local government bushfire requirements (for example, harvest and vehicle movement bans)	N/A
A suitably qualified emergency management professional should prepare the emergency evacuation plan in collaboration with relevant stakeholders including the landowner/developer and the local government (refer to section 6.14 of the Guidelines)	Anthony Rowe Accreditation Level 3 Accreditation Number: 36690

5.4 Spatial representation of the bushfire management strategies

Further to the assessment against the bushfire protection criteria, the key features demonstrating compliance should be represented spatially in the *Spatial representation of the bushfire management strategies*. It represents the required bushfire risk management measures that must be implemented and maintained.

The Spatial representation of the bushfire management strategies is provided in Figure Ex1.

6. RESPONSIBILITIES FOR IMPLEMENTATION AND MANAGEMENT OF THE BUSHFIRE MEASURES

The responsibilities for implementation and management of the bushfire measures, summarises the measures identified to achieve compliance with the bushfire protection measures following SPP 3.7. This has been provided in the Executive Summary. The details contained within the planning application authorised by the responsible decision maker are enforceable under section 214 of the *Planning and Development Act 2005*. The items addressed in the table responsibilities for implementation and management of the bushfire measures form part of the planning authorisation and where there is conflict supersede the detail of the planning application.

The responsibilities assigned to the City of Rockingham reflect the current activities of the City and are not to be relied upon nor are they binding upon the City as a consequence of this Bushfire Management Plan.

Owner

1.	The adoption of the Bushfire Emergency Evacuation Plan (Appendix 2 here in).	Ongoing
2.	The development site (extent shown on Fig Ex1), within the area identified as Asset Protection Zone is to be maintained compliant with the Asset Protection Zone Standard described in Element 2, Schedule 1 of the Guidelines v1.3.	Prior to occupation and ongoing
3.	The habitable buildings are to be constructed commensurate to BAL level at their location on the site.	Prior to occupation
4.	The internal roads (private driveway and supplementary road (Emergency and Service Access) are to be constructed and maintained in accordance with Guidelines for Planning in Bushfire Prone Areas, Appendices, Element 3 Table 6, Column 3 (private driveway).	Prior to occupation
5.	Firebreaks to be installed and maintained in accordance with the City of Rockingham Annual Fire Control Notice.	Prior to occupation
6.	Two 75 000 L water supply (tanks)are proposed, accessible to the emergency and service access, with couplings to City of Rockingham specification and signposted as exclusively for the use by emergency services.	Prior to occupation
7.	A notification, pursuant to Section 70A *Transfer of Land Act 1893* is to be placed on the certificate(s) of title of the proposed lot(s) with a Bushfire Attack Level (BAL) rating of 12.5 or above, advising of the existence of a hazard or other factor. The notification is to state as follows: "This land is within a bushfire prone area as designated by an Order made by the Fire and Emergency Services Commissioner and is subject to a Bushfire Management Plan Additional planning and building requirements may apply to development on this land"	Prior to occupation

APPENDIX 1 - Emergency Evacuation Plan

BUSHFIRE EMERGENCY EVACUATION DOCUMENTS

Sri Balaji Temple

67 Folly Road, Baldivis

February 2022

This document contains two parts:

1. The preparation compliance with the WAPC A *Guide to developing a BUSHFIRE EMERGENCY EVACUATION PLAN October 2019: and*

2. The Emergency Evacuation Plan contained in Appendix 1. The Emergency Evacuation Plan incorporates the requirement of AS3745-2010 where relevant in the WAPC Emergency Evacuation Plan Template.

Section 1 does not form part of Emergency Plan

1. ESTABLISHING THE EMERGENCY MANAGEMENT TEAM

In accordance with the Guidelines for preparing a bushfire emergency evacuation plan an accredited bushfire practitioner was engaged (Anthony Rowe BPAD L3 36690).

The bushfire planning practitioner has been responsible for assisting the emergency management team with

- The establishment and implementation of emergency plans and procedures
- Formulation of emergency procedures
- Reviewing the local emergency services

The Emergency Planning Committee with feedback from the Emergency Management Team should regularly review the emergency evacuation plan to ensure it remains practical and current.

Emergency Planning Committee (EPC)

The **Emergency Planning Committee** (The Sri Balaji Temple management team) is responsible for overseeing the preparation of the site buildings and grounds and any supporting facilities required for protection in a bushfire, prior to the approaching bushfire season. This includes attendance to any maintenance required to minimise the risk of damage from bushfire attack and extends to ensuring that site mobile phones are registered on the Emergency Alert System.

The Emergency Planning Committee should regularly review the emergency evacuation plan to ensure it remains practical and current.

The Committee is responsible for reviewing the BEEP and overseeing the undertaking of education and training. It evaluates the outcomes of any drills and ensure appropriate resources are provided to prepare for the bushfire season.

The Committee is responsible for establishing the Emergency Management Team and assigning roles and responsibilities to staff.

The difference between the **Emergency Planning Committee** and the **Emergency Management Team** is the Emergency Planning Committee is responsible for all things in planning for the occurrence of a bushfire and preparing the facility to minimise any adverse effects. The priority is human safety. The Emergency Management Team responds to the bushfire event, it comprises the people expected to be in attendance at the time of a bushfire event. Its priority is human safety, and secondary may also include firefighting if trained. There should be no expectation upon any visitor to the facility to participate in firefighting.

Emergency Management Team (EMT)

The Emergency Management Team shall comprise staff assigned to the following positions:

- Chief Warden
- Area Warden Communication
- Area Warden Traffic

The Chief Warden will be responsible for responding to a bushfire event and ensuring the safety of visitors.

Section 1 - does not form part of Emergency Plan

2. PREPARING THE EMERGENCY PLAN

The emergency plan applies to the facility, **The Sri Balaji Temple,** at 67 Folly Road, Baldivis.

The Bushfire Management Plan dated **22 February 2022** articulates bushfire safety measures that include:

- Identification of the Asset Protection Zone and maintenance
- Provision of firefighting equipment

This Emergency Plan has been prepared in response to bushfire threats identified in the BMP.

The Sri Balaji Temple is within a rural area of Baldivis, 400 m east of the residential area of Baldivis.

- Monitor the DFES Alerts and Warnings web page https://www.emergency.wa.gov.au
  The Chief Warden is responsible for monitoring this site at regular intervals.

Evacuate before the fires arrival when safe to do so.

- If directly advised to leave by DFES or the police (Chief Warden)

Shelter on site

- If DFES has advised it is not safe to leave

3. DETERMINE EMERGENCY ACTION

The **primary action** in response to bushfire threat is early **evacuation**

In a bushfire event, announcements will be made via electronic media and online, regarding bushfire incidents and potential threats to the site.

- Monitor the DFES Alerts and Warnings web page **https://www.emergency.wa.gov.au**
  The Chief Warden is responsible for monitoring this site at regular intervals during the bushfire season

The Trigger to evacuate.

- If the day has been forecast to be Severe, Extreme or Catastrophic.
- If directly advised to leave by DFES or the Police.

Time Required to Evacuate – 50 minutes

Suitable Access Routes: from Folly Road travel west to Safety Bay Road and on to Warnbro or north on Kwinana Freeway then west on Kulija Road/Dixon Road to Rockingham

Transportation Arrangements: Private Vehicles.

Section 1 - does not form part of Emergency Plan

4. EVACUATION / SHELTER REQUIREMENTS

Visitors to The Sri Balaji Temple will arrive by their own transport and it is expected they would evacuate via their own transport back to the Perth Urban area.

The City of Rockingham has four primary evacuation centres which may be activated in a bushfire emergency, however in an emergency, announcement will be made via electronic media and online confirming locations of evacuation centres.

Whilst shelter on site is not recommended the owner should ensure the Asset Protection Zone is maintained.

PRIMARY AND SECONDARY EMERGENCY PROCEDURES

The **Primary procedure** is to EVACUATE when safe to do so.

Evacuation should be in the direction advised by Emergency Services, usually in the opposite direction to the approaching fire.

Head west on Folly Road and on to Safety Bay Road if a fire will arrive from the north.

Head west on Folly Road then north on Kwinana Freeway if a fire will arrive from the south.

The Emergency Evacuation Plan must be reviewed annually, ensuring all information, procedures, contact details and any attached publications (e.g. DFES) are current.

A current copy must be kept at the facility, and an A3 size copy of the evacuation diagram is to be displayed at all exit doors in all buildings.

If advised by DFES or emergency services that it is not safe to leave, either directly or by public information, or if fire/flames are visible from the site, then shelter in the Temple.

Assemble all visitors and staff, close all doors and windows, block smoke ingress, keep hydrated, observe the passing of the fire front, then exit the building when survivable conditions establish outside or if the building is failing.

The **Secondary procedure** is to Shelter if evacuation is not safe

- If a fire is within 5 km of the site (Chief Warden) and DFES has advised it is not safe to leave
- If smoke or a fire is seen nearby (Chief Warden)
- If evacuation cannot be completed before the fire's arrival.
  - the fire will arrive in under 50 minutes – not safe
  - movement onto Folly Road is slow and the fire may arrive before evacuation has been completed

Section 1 - does not form part of Emergency Plan

5. TRAINING REQUIREMENTS

The Emergency Planning Committee is responsible for:

- The written procedures applicable to the site.
- Individual roles and responsibilities.
- Identifying Response Actions
    - Access and egress routes and managing evacuation.
    - Assembly point location and shelter procedures.

The Emergency Management Team is responsible for:

- Acknowledging the emergency response plan and the evacuation procedures.
- Acknowledging the location of facilities
- The allocation of responsibilities.
    - Nominating the chief warden
    - Nominating the traffic management responsibility
    - First aid responsibility

Section 1 - does not form part of Emergency Plan

Emergency Evacuation Plan Preparation Checklist

The following questions will assist the individual in developing or reviewing the Emergency Evacuation Plan to identify an off-site location. For an appropriate off-site location ***Note that the majority of visitors to the facility will be day visitors and as such will return to their homes unless their home is within the area being evacuated due to the bushfire; in that instance they would attend an evacuation (welfare) centre as per public advice.***		
If there are occupants with support needs that require a similar facility to support them, is the off-site location suitable?	Yes No	☒ ☐
Comment: Visitors with support needs may attend the facility but would have a carer or family member in attendance with them to provide the required support.		
Is the off-site location in an area away from the effects of a bushfire?	Yes No	☒ ☐
Comment: City nominated emergency evacuation facility		
Are there amenities (toilets, food, water etc.) available at the off-site location? (if applicable)	Yes No	☒ ☐
Can the off-site location accommodate the number of occupants?	Yes No	☒ ☐
Comment: City nominated emergency evacuation facility		
Does the route to the off-site location require transporting through bushfire affected areas or areas that may be affected by an approaching bushfire?	**Yes** **No**	☒ ☐
Has the owner of the off-site location advised that they are happy to accommodate occupants if evacuation from a bushfire emergency occurs?	Yes No	☒ ☐
Comment: City nominated emergency evacuation facility		

Section 1 - does not form part of Emergency Plan

Consider the following questions to assist in planning transport arrangements.	
Do you have your own transport for all occupants? **If no what transport provider will you use?** Visitors will have their own transport	Yes ☐ No ☒
Are private vehicles to be used?	Yes ☒ No ☐
If using private vehicles will there be sufficient vehicles to transport all the occupants, will they be available when you need them, and will there be drivers available? **If no, consider another mode of transport**	Yes ☒ No ☐
Will there be sufficient vehicles to transport all occupants? All visitors will arrive by private transport	Yes ☒ No ☐
Have occupants with support needs been considered when determining transport types and necessary timing to evacuate?	Yes ☒ No ☐
Do you require ambulances? **If yes, St John Ambulance Australia needs to be consulted.**	Yes ☐ No ☒
Is a community bus available?	Yes ☐ No ☒
Will community buses be available when you need them and will drivers be available?	Yes ☐ No ☒
Are other means of transport available?	Yes ☐ No ☒
Do you need any other type of special transport?	Yes ☐ No ☒

Section 1 - does not form part of Emergency Plan

The following questions will assist the individual in developing or reviewing the Emergency Evacuation Plan to identify an on-site building. For an appropriate building, the answers to the below questions should receive a 'yes'.	
Is the property well maintained and kept free from a build-up of fuel and leaf litter in gutters and around buildings?	Yes ☒ No ☐
• The standards for Asset Protection Zones in The Guidelines for Planning in Bushfire Prone Areas should be used as a reference	
Is there a building on-site that is away from bushland and is unlikely to be impacted by bushfire?	Yes ☐ No ☒
NA	
Is the building constructed in a manner that minimises bushfire attack with appropriate Asset Protection Zones?	Yes ☐ No ☐
NA	
Can the building accommodate the number of occupants and visitors?	Yes ☐ No ☐
NA	
Is there ease of accessibility to the building, and is it easily identifiable?	Yes ☐ No ☐
NA	
Is there access to amenities (toilets, food, water, etc.) away from the effects of a bushfire?	Yes ☒ No ☐
NA	

Section 1 - does not form part of Emergency Plan

BUSHFIRE EMERGENCY PLAN

NAME OF FACILITY	The Sri Balaji Temple
ADDRESS	67 Folly Road, Baldivis
PREPARED BY	Anthony Rowe, L3 BPAD 36690
OWNER/OPERATOR	Jeeyars Acharya Peetham Ltd
DATE	22 February 2022
VERSION NUMBER	3

Document Control

Version	Date	Details	Undertaken by
1	20/09/2021	DRAFT	Anthony Rowe
2	29/11/2021	FINAL	Anthony Rowe
3	22/02/2022	FINAL	Anthony Rowe

Emergency Management Team

Name	Role	Identification Colour	Contact Details
	Chief Warden		
	Area Warden (Communication)		
	Area Warden (Traffic)		

FACILITY DETAILS

This Plan is for the Sri Balaji Temple and has been designed to assist management in protecting life and property in the event of a bushfire.

The plan outlines procedures for both **evacuation** and **shelter-in-place** to enhance the protection of occupants from the threat of a bushfire.

The primary action to follow in a bushfire emergency is to:

Evacuate ☒ Shelter in place ☐

NAME OF CONTACT PERSON		tbc	
POSITION / ROLE OF CONTACT PERSON		Sri Balaji Temple facility manager	
PHONE NUMBER		tbc	
FACILITY TYPE	Place of Worship	NUMBER OF BUILDINGS	5
NUMBER OF STAFF	tbc	NUMBER OF OCCUPANTS	400
NUMBER OF OCCUPANTS WITH SUPPORT NEEDS		0	
DESCRIPTION OF SUPPORT NEEDS		Not applicable	

RESPONSIBILITIES

The following outlines who has responsibility for implementing emergency procedures in the event of a bushfire.

Position	Role	Responsibility
OWNER or MANAGER Emergency Planning Committee (EPC)		• Daily - check www.emergency.wa.gov.au for any warnings or alerts • Monitor Fire Danger Ratings at all times when visitors are at the site and ensure precautionary evacuation (closure) occurs on days of Extreme or Catastrophic Fire Danger Rating (FDR) • Ensure the site is prepared for the bushfire season • Maintain the Asset Protection Zone • Establish a first aid store.
Sri Balaji Temple Staff Emergency Management Team	Chief Warden	• Monitor conditions on Severe plus FDR days o Local ABC Radio 720 am o emergency.wa.gov.au • Determine with DFES/emergency services that safe evacuation is available • Determine to Evacuate- advise visitors to evacuate due to an emergency warning and if DFES advise the evacuation route is safe • Remain contactable (mobile phone) at all times • If a fire is within 5 km of the site or if an Emergency or Watch and Act warning has been issued confirm the safe evacuation (route) and destination and oversee evacuation • Advise visitors of the safe route and destination • Ensure all visitors have been accounted for and have evacuated • evacuate staff

EMERGENCY CONTACTS

Name of Organisation	Office / Contact	Contact details
Fire / Police / Ambulance	Fire or Emergency	**000 (112 from a mobile)**
Department of Fire & Emergency Services	Emergency Information	**13 33 37 (13 DFES)**
Emergency WA	Warnings and incidents	**www.emergency.wa.gov.au**
Bureau of Meteorology	Weather information	**1300 659 213**

Secondary Contacts

Name of Organisation	Office / Contact	Contact details

PREPAREDNESS

CHECKLIST – ongoing, prior to and during the bushfire season		
BUSHFIRE SEASON: DECEMBER TO MAY OF EVERY YEAR (refer to the Citys Annual Fire Hazard Reduction Notice for precise start and finish dates as they vary each season)		
Action	**Frequency**	**Responsibility**
To be completed during the bushfire season from December to May each year by the Emergency Planning Committee (facility owner and/or manager). **Please refer to the City's Annual Fire Hazard Reduction Notice for precise start and finish dates as they vary each season.**		
1. The Asset Protection Zone is maintained as per the Standards for Asset Protection Zones (*Schedule 1 Guidelines for planning in bushfire prone areas)*	Ongoing	EPC
2. The evacuation diagram is clearly displayed at the exit doors of all buildings		
3. Emergency Contacts details are current and identified on the Evacuation Diagram		
4. First aid kits are stocked.		

AWARENESS AND PRE-EMPTIVE PROCEDURES

The following outlines the actions that must be taken to ensure occupants maintain an awareness of the bushfire threat and the appropriate procedures to follow.

Actions	Frequency	Responsible Person
Days forecast Very High, Severe, Extreme or Catastrophic		
Check the Emergency WA website **hourly** for alerts and warnings **www.emergency.wa.gov.au**	Monitor for alerts. Close / evacuate the facility evacuate if advised to do so by Emergency Services or if a fire is observed nearby.	Chief Warden
Throughout the Bushfire Season		
Check the Emergency WA website **daily** for alerts and warnings **www.emergency.wa.gov.au**	Check for alerts prior to opening each day. Actively monitor any incidents within 10 Km.	Chief Warden

The Department of Fire and Emergency Services provides community and emergency advice about predicted and current conditions that advise about the level of bushfire threat.

The Fire Danger Rating (**FDR)** is based on the forecast weather conditions, the higher the rating, the higher the threat.

Extreme or Catastrophic ratings are the highest level and represent unsafe conditions.



Fire Danger Rating (DFES)

CATASTROPHIC	EXTREME

The worst conditions for a fire. Homes are not designed or built to withstand a fire in these conditions. The only safe place is away from bushfire risk areas.

SEVERE	VERY HIGH

Seek out information and be ready to leave or stay and actively defend your property if a fire starts. Only stay if you are 100% prepared.

HIGH	LOW - MODERATE

Be vigilant. Check your fire plan and continue to monitor conditions as they can change quickly.

Emergency Warnings and Actions

EMERGENCY WARNING

An out of control fire is approaching very fast. You must leave now if it is safe to do so or act immediately to survive.

WATCH AND ACT

A fire is approaching and is out of control. You must leave now check it is safe to do so.

ADVICE

A fire has started, but there is no immediate danger. Stay alert and watch for signs of a fire.

EMERGENCY PROCEDURE, LOCATION, AND TRANSPORT DETAILS

Evacuation

Designated evacuation assembly point/s

1. The carpark

Primary off-site location

It is expected that visitors would return to their homes via the urban road network unless home is in a location which is affected by the bushfire. In that case visitors would follow Emergency Services advice on the location of evacuation welfare centres.

The following are two of the Welfare centres nominated by the City of Rockingham.

Name of venue	**Warnbro Community Recreation Centre**		
Address of venue	Okehampton Rd, Warnbro		
Nearest cross street	Warnbro Sound Avenue	Map reference	MQ93+P2 Warnbro
Venue phone number	(08) 9528 0333		
Primary route to location	Head **WEST** on Folly Road and continue onto Safety Bay Road. After 7.8 km turn left onto Warnbro Sound Avenue and after 577 m turn right onto Okehampton Road. The entry to Warnbro Community Recreation Centre is on the right after 570 m.		
Secondary route to location	Head **WEST** on Folly Road and continue onto Safety Bay Road then turn right to merge onto Kwinana Freeway. After 3.4 km take the Mundijong Road exit and after 7.4 km turn left onto Dixon then turn left onto Ennis Avenue. Follow Ennis Avenue to Safety Bay Road turn right then turn left onto Warnbro Sound Avenue and right onto Okehampton Road. The entry to Warnbro Community Recreation Centre is on the right after 570 m.		

Primary transportation arrangements

Visitors will have transport adequate for all members of their party.

Required Safe Evacuation Time	50 minutes - from awareness to clearing the premise
Estimated travelling time to destination	12 minutes (individual vehicle)

Secondary off-site location

Name of venue	**Mike Barnett Sports Complex**		
Address of venue	Goddard St, Rockingham		
Nearest cross street	Dixon Road	Map reference	PPCW+H5 Rockingham
Primary route to location	Head **WEST** on Folly Road and continue onto Safety Bay Road then turn right to merge onto Kwinana Freeway. After 3.4 km take the Mundijong Road exit and after 7.4 km turn left onto Dixon Road – stay on Dixon Road for 4 km then turn left on to . Follow Ennis Avenue to Safety Bay Road turn right then turn left to the Mike Barnett Sports Complex.		
Secondary route to location	na		

Secondary transportation arrangements

Visitors will have their own transport adequate for all members of the party.

Required Safe Evacuation Time	50 minutes - from awareness to clearing the premise
Estimated travelling time to destination	15 minutes

EVACUATE OR SURVIVAL

The **primary action** to follow if there is an imminent bushfire threat is to **EVACUATE** following confirmation (DFES or emergency services) that a safe evacuation route is available.

Shelter in place is not recommended. Early evacuation by vehicle to the urban area will be available however if DFES or emergency services have advised it is too late to leave then Survival procedures are to be activated. Visitors and staff should assemble in the temple for as long as it is safe to do so and until the fire has passed. If it becomes unsafe to stay in the temple visitors and staff should assemble outside at the furthest point from the approaching fire.

Designated on-site building: The temple.
Refer to DFES publication (attachment 2) for survival instructions.

Procedures for evacuation and shelter-in-place in the event of a bushfire.

Trigger	Action	Responsible Person
EVACUATE		
WATCH and ACT – EVACUATE **A fire is within 10 km** DFES have advised to evacuate and confirmed the route is safe **OR** **A fire is within 5 km** And DFES have advised to evacuate and confirmed the route is safe – EVACUATE via SAFE ROUTE	• Assemble at the temple • Advise visitors of safe route/s and destinations • Ensure all visitors have been accounted for and have evacuated • evacuate staff	**Chief Warden**
SURVIVAL – only if advised by DFES it is not possible to leave and shelter in place as a last resort is to be taken		
EMEGENCY – SURVIVAL **A fire is approaching 5km** and DFES have advised it is not safe to to evacuate **OR** **A fire is within 5 km** **OR** **A fire is observed to be approaching** and DFES have advised it is not safe to evacuate **SHELTER on SITE**	• Contact emergency services to advise you are sheltering in place. • Remain calm and advise all guests and staff to assemble in the temple. • If it becomes unsafe to stay in the temple visitors and staff will move to an area outside that is furthest from the fire front. • Keep visitors calm and stay hydrated. • Evacuate when a safe evacuation route becomes available as advised by DFES/emergency services	**Chief Warden**

RECOVERY

Action	Responsible Person
Following an evacuation when the area has been deemed safe by emergency services the owner/manager will: • return to the site • check grounds for any smouldering objects • determine when it will be safe to re-open	**Chief Warden**
Debrief - assess the severity of the event; - would the actions taken be sufficient to ensure the safety of staff and visitors in an extreme event; - were there any unexpected problems not accounted for in the existing emergency plan; - update the emergency plan to include any learnings from the event.	**Emergency Planning Committee (owner) with the Emergency Management Team (Chief Warden)**

Attachment 1 – Emergency Plan and Evacuation Map

BUSHFIRE EMERGENCY RESPONSE PLAN

FACILITY DETAILS

Location : Sri Balaji Temple
67 Folly Road, Baldivis

Facility: Place of Worship

Guests : **Maximum 400**

CONTACT PERSONS	ROLE	CONTACT NO.
Facility Manager	Chief Warden	Tbc

Chief Warden

- Monitor Alerts, Determine with DFES (emergency services) that evacuation is safe, or shelter is necessary
- Alert and Instruct visitors
- Advise visitors to evacuate and confirm the evacuation destination and route
- Ensure all visitors have been accounted for and evacuation is complete
- **If not safe to evacuate** – Advise visitors of safety procedures, maintain confidence and keep calm.
- Remain contactable (mobile phone) at all times

INFORMATION SOURCES

Local ABC radio	720 am
DFES information line	13 33 37
Emergency WA	www.emergency.wa.gov.au
Bureau of Meteorology	1300 659 213

EMERGENCY CONTACTS

Fire, Police or Ambulance 000

EMERGENCY WARNINGS (DFES)

ADVICE – PREPARE TO EVACUATE

Trigger: Fire is greater than 5 km away

An ADVICE warning has been issued across telecommunications media of an incident nearby (within 10 km).

Response:

The Chief Warden will take the following information into consideration when determining if and when to evacuate:

- The severity of the bushfire incident.
- Approximate time for the bushfire to impact the facility.

If the decision is made to evacuate, follow the procedure under Watch and Act.

WATCH AND ACT - EVACUATE

Trigger: Fire is within 5 km

DFES or Police have advised **EVACUATION IS REQUIRED** (Public Notice)

or

Smoke or fire is observed and DFES have confirmed safe evacuation along Folly Road is available.

Confirm with DFES or police the direction in which evacuation should be taken (public information).

Response:

- Advise visitors of evacuation destination and route.
- Oversee evacuation of visitors by private vehicles.

EMERGENCY - SURVIVAL

Trigger: Fire is within 2 km

DFES or Police have advised **EVACUATION IS NOT SAFE**
or
Smoke or fire is observed near by

Response

Survival Plan – only to be enacted in the event that DFES or police have advised a safe evacuation route is not available

- Visitors and staff remain undercover in the temple whilst it is safe to do so.
- Close all doors and windows, block smoke ingress, keep patons hydrated.
- Monitor the passing of the firefront.
- Monitor the building condition, if it becomes unsafe to stay in the building move outside to an area as far as possible from the fire front.

ALL CLEAR

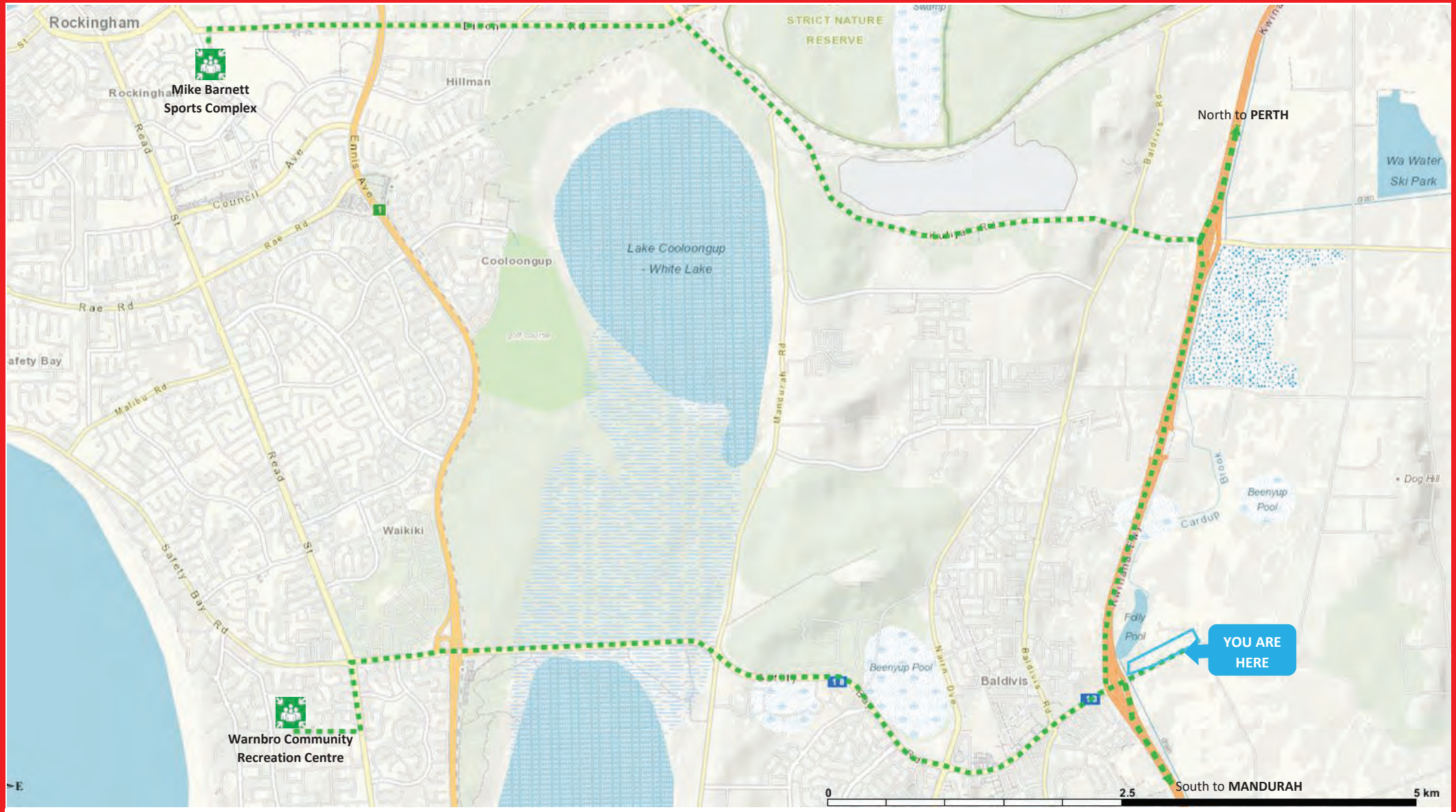
When emergency services have deemed the area safe:

- Return to the site (chief warden)
  - check buildings and grounds for any smouldering objects.
  - determine if it is safe for visitors to return
- Monitor grounds and buildings, particularly roofs for smouldering material for 24 hours after the event. Extinguish small fires.

Vehicle Management

Staff and visitors are expected to arrive by private vehicle and whilst at the facility must ensure they keep a vehicle at the site to facilitate their own evacuation.

EMERGENCY EVACUATION DIAGRAM



Your Location Is **The Sri Balaji Temple 67 Folly Road, Baldivis**

EVACUATE if DFES or Police advise evacuation is required or if you see an uncontrolled fire

Follow instructions from the Emergency Services Incident Controller (the DFES officer managing the fire).

- Assemble at the Temple building closest to the carpark
- Evacuate to destination and via route as directed by Emergency Services either directly or by public announcement.

DO NOT TRAVEL THROUGH FIRE

Monitor Emergency Information: ABC Radio 720AM; DFES information 13 33 37;
Emergency WA - www.emergency.wa.gov.au

SURVIVAL - if it is not safe to leave - advise DFES (ph. 13 33 37) of your location and the number of persons present

- keep fire extinguishers close by
- Soak towels to block smoke ingress
- Monitor the building condition for smoke and heat.
- Keep hydrated and monitor the fire's passing.
- Leave the building when safe to do so and shelter to avoid heat
- Evacuate the site when DFES/Emergency Services confirm a safe route is available

DO NOT STAY IN A BURNING BUILDING

Attachment 2 – DFES Sheltering Fact Sheet

Information captured from https://www.dfes.wa.gov.au/site/bushfire/during.html 220122

Prepare to shelter

- Seal all doors and windows as best as possible.
- Let people know you are staying, if they are expecting you to leave.
- Soak towels and rugs in water, and lay them along the inside of external doorways.
- Soak woollen blankets and keep them handy for protection against radiant heat.
- Take down curtains and push furniture away from windows.
- Get down low to limit your exposure to smoke.
- Put out any spot fires on your property.
- Remember to check your roof cavity for any spot fires.
- Drink plenty of water to avoid becoming dehydrated.
- Wear long sleeves, long trousers and leather boots in case you need to leave.

If you have to evacuate

Shelter for as long as possible. But if your home catches fire and the conditions inside become unbearable, you should leave to avoid toxic smoke and fumes. Leave through the exit door furthest from the approaching fire. The majority of people die in a bushfire from radiant heat, so wear protective clothing and go to an area that has already been burnt.

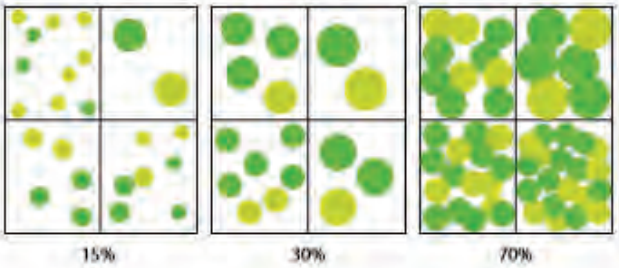
APPENDIX 2 - APZ Guidelines cl. 2.2.3.2(f)

ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT

SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES

- **Fences:** within the APZ are constructed from non-combustible materials (e.g. iron, brick, limestone, metal post and wire). It is recommended that solid or slatted non-combustible perimeter fences are used.
- **Objects:** within 10 metres of a building, combustible objects must not be located close to the vulnerable parts of the building i.e. windows and doors.
- **Fine Fuel load:** combustible dead vegetation matter less than 6 millimetres in thickness reduced to and maintained at an average of two tonnes per hectare.
- **Trees (> 5 metres in height):** trunks at maturity should be a minimum distance of 6 metres from all elevations of the building, branches at maturity should not touch or overhang the building, lower branches should be removed to a height of 2 metres above the ground and or surface vegetation, canopy cover should be less than 15% with tree canopies at maturity well spread to at least 5 metres apart as to not form a continuous canopy.

Figure 18: Tree canopy cover – ranging from 15 to 70 per cent at maturity



- **Shrubs (0.5 metres to 5 metres in height):** should not be located under trees or within 3 metres of buildings, should not be planted in clumps greater than 5m² in area, clumps of shrubs should be separated from each other and any exposed window or door by at least 10 metres. Shrubs greater than 5 metres in height are to be treated as trees.
- **Ground covers (<0.5 metres in height):** can be planted under trees but must be properly maintained to remove dead plant material and any parts within 2 metres of a structure, but 3 metres from windows or doors if greater than 100 millimetres in height. Ground covers greater than 0.5 metres in height are to be treated as shrubs.
- **Grass:** should be managed to maintain a height of 100 millimetres or less.

APPENDIX 3 – Access Standard

Table 6: Vehicular access technical requirements

TECHNICAL REQUIREMENTS	1 Public road	2 Cul-de-sac	3 Private driveway	4 Emergency access way	5 Fire service access routes
Minimum trafficable surface (m)	6*	6	4	6*	6*
Horizontal clearance (m)	6	6	6	6	6
Vertical clearance (m)	4.5	N/A	4.5	4.5	4.5
Maximum grade <50 metres	1 in 10	1 in 10	1 in 10	1 in 10	1 in 10
Minimum weight capacity (t)	15	15	15	15	15
Maximum crossfall	1 in 33	1 in 33	1 in 33	1 in 33	1 in 33
Curves minimum inner radius (m)	8.5	8.5	8.5	8.5	8.5

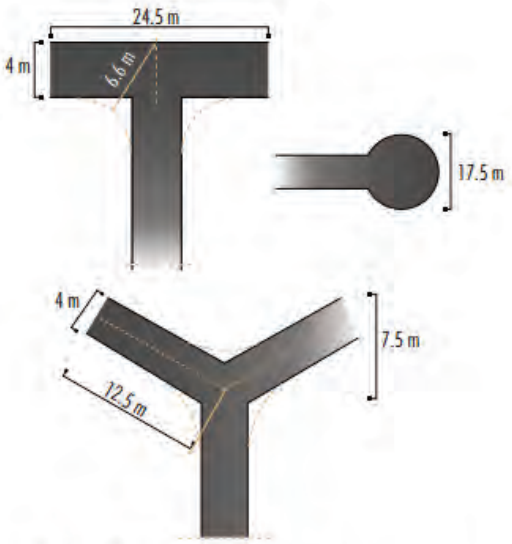


Figure 22: Design requirements for a private driveway longer than 50 metres
Turning areas should allow type 3.4 fire appliances to turn safely

APPENDIX 4 – Water Tank

Specification for Water Tanks

A capacity of not less than 10,000 L is maintained solely for fire-fighting purposes.

The water supply must be stored in an above ground water tank constructed of concrete, steel or corrugated iron.

The water supply outlet/s must be fixed to the water tank.

The outlets should provide a gate valve with 100 mm cam loc fitting, with a 50 mm adaptor for use by the brigade.

All fixed above-ground water pipelines and fittings must be of non-corrodible and non-combustible materials.

Be located so that fire brigade vehicles are able to get to within 4 metres of the water supply outlet

The water supply must be readily identifiable.

APPENDIX 5 – References

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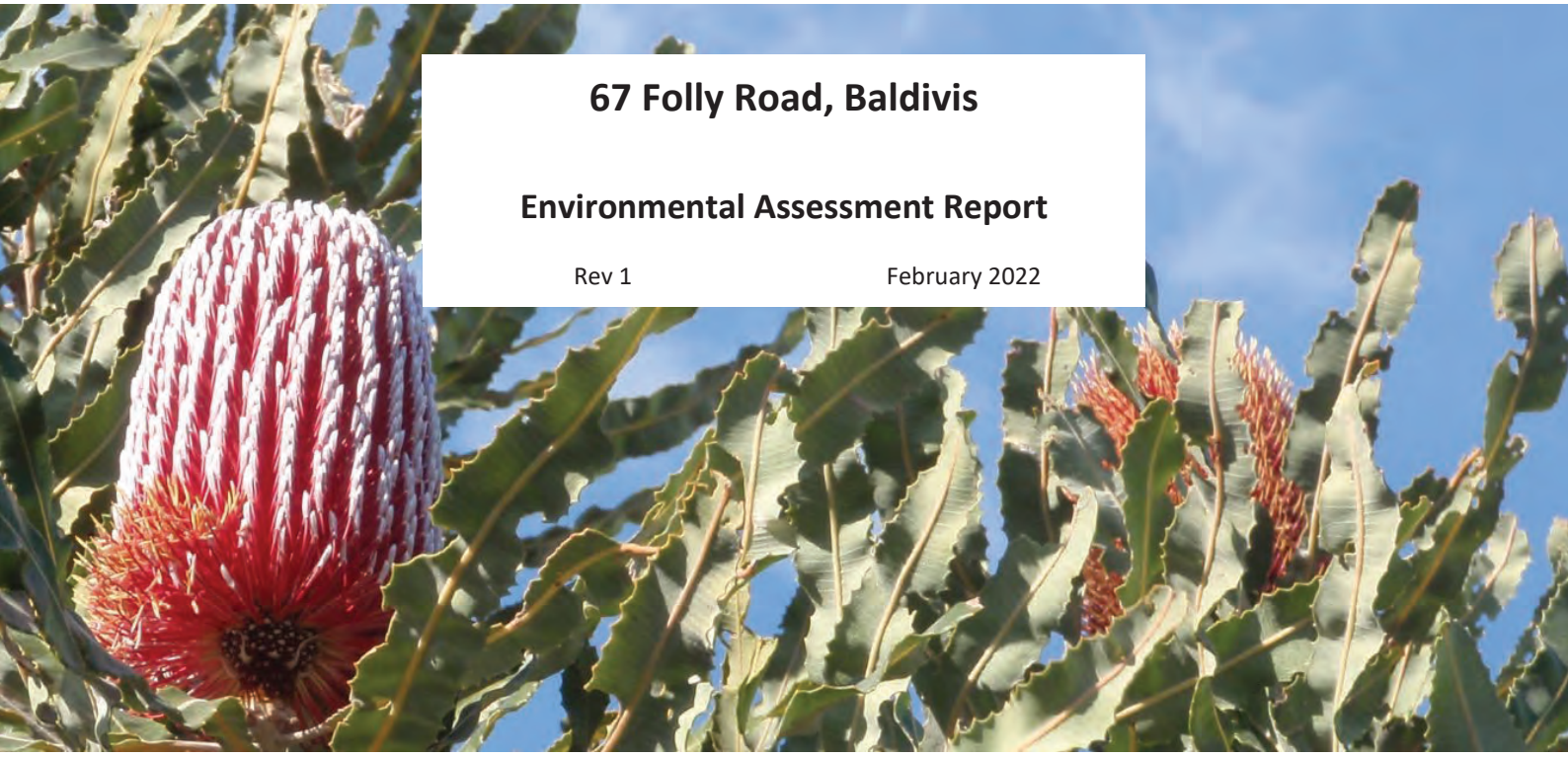

67 Folly Road, Baldivis

Environmental Assessment Report

Rev 1 February 2022

CALIBRE | COMMITMENT | COLLABORATION

This report was prepared by: Coterra Pty Ltd trading as COTERRA ENVIRONMENT
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Report Version: Rev 1
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Contents

1 Introduction 6
1.1 Planning Context 6
1.2 Purpose of this Report 6
2 Environmental Guidance and Policies 7
2.1 Town Planning 7
2.1.1 City of Rockingham Town Planning Scheme No. 2 7
2.1.2 City of Rockingham Local Planning Policies 7
2.2 Land Use Planning 7
2.2.1 EPA Guidance Statement No. 33 – Environmental Guidance for Planning and Development 7
2.2.2 Draft State Planning Policy 2.9 Planning for Water 8
2.2.3 State Planning Policy 3.7: Planning in Bushfire Prone Areas and Guidelines for Planning in Bushfire Prone Areas 8
3 Site Characteristics 9
3.1 Soils and topography 9
3.1.1 Geology and soils 9
3.1.2 Acid sulfate soils 9
3.1.3 Topography 9
3.2 Hydrology 10
3.2.1 Groundwater 10
3.2.2 Surface water and wetlands 10
3.2.3 Drainage 10
3.3 Vegetation and flora 11
3.3.1 Vegetation complexes 11
3.3.2 Current state of vegetation 11
3.3.3 Bush Forever 11
3.3.4 Conservation-significant flora 12
3.3.5 Bush Fire Risk 12
3.4 Fauna 13
3.4.1 Fauna habitat 13
3.4.2 Conservation-significant fauna 13
3.4.3 Black Cockatoo Habitat Tree Assessment 14
3.4.4 Mosquitoes 15
3.5 Historical land uses 15
3.5.1 Aerial imagery 15
3.5.2 Site visit 15
3.6 Potential contamination 17
4 Potential Environmental Impacts and Management 19
4.1 Soils 19
4.1.1 Potential Impacts 19
4.1.2 Management Measures 19
4.2 Groundwater and Stormwater 19
4.2.1 Potential Impacts 19

4.2.2 Management Measures 19
4.3 Surface Water and Wetlands 20
4.3.1 Potential Impacts 20
4.3.2 Management Measures 20
4.4 Vegetation 20
4.4.1 Potential Impacts 20
4.4.2 Management Measures 20
4.5 Fauna 21
4.5.1 Potential Impacts 21
4.5.2 Management Measures 21
4.6 Bushfire Management 22
4.7 Potential Contamination 22
4.7.1 Unexpected Finds 22
4.8 Construction Impacts 22
5 Conclusion 24
6 References 25

Tables

Table 1: Wetlands 10
Table 2: Wetland management categories 10
Table 3: Potential conservation-significant flora species 12
Table 4: Potential conservation-significant fauna species 13
Table 5: Habitat trees 15
Table 6: Potentially contaminating activities 17

Plates

Plate 1 Soil profile 9
Plate 2: *Eucalyptus rudis* 11
Plate 3: *Melaleuca rhaphiophylla* 11
Plate 4: Inundated land in western portion of site (flood plain) 16
Plate 5: On-site infrastructure (shed/residence) 16
Plate 6: On-site infrastructure (shed and rainwater tank) 16
Plate 7: Powerlines (northern boundary) 16
Plate 8: Septic tank 17
Plate 9: Scattered native vegetation 17
Plate 10: Planted pine trees 17
Plate 11: Degraded site condition due to grazing 17

Figures

Figure 1 Site location

Figure 2 Aerial photography

Figure 3 Development plan

Figure 4 Soils and topography

Figure 5 Hydrological features

Figure 6 Floodplain mapping

Figure 7 Potential habitat trees

Appendices

Appendix 1 Fauna Habitat Assessment (Harewood, 2021)

Appendix 2 ASS Self-Assessment Form (WAPC, 2020)

1 Introduction

Japa Limited is proposing a site redevelopment at 67 (Lot 53) Folly Road, Baldivis (Figure 8). The site is located in the City of Rockingham, approximately 45 kilometres (km) from Perth city. The site is currently vacant and has been used for rural purposes (Figure 9).

Japa Limited propose to develop the site as a Sri Balaji Hindu temple (Figure 10). This will require development within the eastern end of the site, with the western end (beyond the 1 in 100-year flood plain level) not being altered from its current state.

1.1 Planning Context

The site is currently zoned 'Rural' under the Metropolitan Region Scheme (MRS) and 'Rural' under the City of Rockingham Town Planning Scheme (TPS) No. 2 (DPLH, 2004).

To proceed with development of the site, development must be approved as a discretionary land use in the 'Rural' zone, by the City of Rockingham (Section 2.1.1).

1.2 Purpose of this Report

This Environmental Assessment Report (EAR) is being prepared to support a Development Application for the site, to identify matters of environmental concern and management measures to avoid impact to the environment, to ultimately facilitate development of the site. This EAR is intended for submission to the City of Rockingham.

2 Environmental Guidance and Policies

2.1 Town Planning

2.1.1 City of Rockingham Town Planning Scheme No. 2

The City of Rockingham TPS No 2 details provisions for development within the City of Rockingham. TPS No. 2 details objectives for 'rural' zones as follows:

"To preserve land for farming and foster semi-rural development which is sympathetic to the particular characteristics of the areas in which it is located, having due regard to the objectives and principles outlines in the Rural Land Strategy and supported by any other Plan of Policy that the Local Government may adopt from time to time as a guide to future development within the Zone" (DPLH, 2004).

Development in rural zones must adhere to the following provisions, specific to the proposed site redevelopment:

- Setbacks – all development, including clearing of land, shall be setback a minimum 30 m from the primary street and 10 m from all other boundaries, other than a firebreak or vehicular accessway
- Clearing of vegetation – no native or remnant vegetation shall be removed or cleared unless approved by the Local Government, and other than for the purpose of a fire break, fire protection within an asset protection zone, dwelling, outbuilding, fence and vehicular access or where such vegetation is dead, diseased or dangerous

In relation to proposed development at the site, TPS No. 2 details that places of worship are not permitted unless the Local Government has exercised its discretion by granting development approval after giving special notice in accordance with Clause 64 of the deemed provisions, which requires that the application for development on the site be advertised and undertaken in accordance with a development approval.

The site is also subject to Development Contribution Area No. 2 under TPS No. 2, which requires financial contribution by site owners to the City of Rockingham for the implementation of various plans.

2.1.2 City of Rockingham Local Planning Policies

The City of Rockingham has developed a number of Local Planning Policies which may have relevance to development at the site, including but not limited to the following:

- Planning Policy No. 3.1.1 – Rural Land Strategy (City of Rockingham, 2020)
- Planning Policy No 3.4.3 – Urban Water Management (City of Rockingham, 2019).

2.2 Land Use Planning

2.2.1 EPA Guidance Statement No. 33 – Environmental Guidance for Planning and Development

This guidance statement provides an overview of environmental protection processes and information, to assist land use planning and development in Western Australia. It provides specific information on (EPA, 2008):

- Environmental protection processes in Western Australia including referral and environmental impact assessment procedures that apply to land use planning and development under the *Environmental Protection Act 1986*
- EPA's advice on protecting a range of biophysical factors, to assist land use planning

- EPA's advice on managing potential pollutants, waste and water (pollution management factors), to assist land use planning
- EPA's advice on protecting aspects of the biophysical environment of cultural and social significance to the community (social surroundings factors), and the EPA's position on risk.

2.2.2 Draft State Planning Policy 2.9 Planning for Water

Draft State Planning Policy 2.9 (SPP 2.9) – Planning for Water (WAPC, 2021) is intended to guide development in consideration of water resource management with the aims of:

- Protecting and improving the environmental, social, cultural and economic values of the State's water resources
- Protecting public health and the long-term supply of good quality and affordable drinking water
- Managing the risk of riverine flooding to people, property and infrastructure
- Ensuring the secure and sustainable supply, use and re-use of water resources
- Ensuring future development is resilient to the water-related impacts of climate change
- Minimising future costs and protection public health by ensuring health by ensuring that appropriate wastewater infrastructure is provided (WAPC, 2021).

2.2.3 State Planning Policy 3.7: Planning in Bushfire Prone Areas and Guidelines for Planning in Bushfire Prone Areas

State Planning Policy 3.7 (SPP 3.7) – Planning in Bushfire Prone Areas (WAPC, 2015) and the associated Guidelines for Planning in Bushfire Prone Areas (WAPC, 2017) have been developed to implement effective risk-based land use planning and development to preserve life and reduce the impact of bushfire on property and infrastructure (WAPC, 2015).

SPP 3.7 applies to all strategic planning, subdivision and development applications in bushfire prone areas, and aims to support development through an assessment of bushfire hazard. The aims of SPP 3.7 are to:

- Avoid increases in the threat of bushfire to people, property and infrastructure
- Reduce vulnerability to bushfire through identification and consideration of bushfire risks
- Ensure higher order strategic planning documents, proposals, subdivision and development applications take into account bushfire protection requirements
- Achieve an appropriate balance between bushfire risk management measures, biodiversity conservation values, environmental protection and biodiversity management and landscape amenity, with consideration to climate change (WAPC, 2015).

The Guidelines for Planning in Bushfire Prone Areas (WAPC, 2017) provides guidance on the implementation of SPP 3.7, and assist in:

- Determining appropriate land use planning in relation to bushfire prone areas across Western Australia
- Specifying the requirements to be met at each stage of the planning process
- Ensuring that necessary bushfire protection measures are incorporated into development (WAPC, 2017).

3 Site Characteristics

3.1 Soils and topography

3.1.1 Geology and soils

Two geological units are represented at the site

- Mc2: clayey silt – dark greyish brow, mottled in part, soft when wet, plastic in part, blocky, variable clay content, of alluvial origin
- S10: sand – as S8 as relatively thin veneer over C2, M4 and Mc2, noting S8: sand – very light grey at surface, yellow at depth, fine to medium-grained, sub-rounded quartz, moderately well sorted, of eolian origin (Gozzard, 1983).

These soils are typically representative of Bassendean Sands over Guildford Formation (Gozzard, 1983).

Soils encountered on site by Water Insight (2021b) were sandy in nature and no clay was present (Plate 1).



Plate 1 Soil profile

Source: Coterra; 07/09/2021

3.1.2 Acid sulfate soils

The site is located in an area identified as having a 'moderate to low' risk of containing acid sulfate soils (Landgate, 2021).

3.1.3 Topography

The site is generally flat and ranges in topography from 4 m in the west to 6 m in the east (Landgate, 2021).

3.2 Hydrology

3.2.1 Groundwater

Groundwater at the site is located at 2 metres Australian Height Datum (m AHD), approximately 3 m below ground level (DWER, 2020). Groundwater salinity is approximated at 1000-1500 mg/L (DWER, 2020).

3.2.2 Surface water and wetlands

A multiple use wetland is located on the site (Table 1; Figure 12). Folly Pool, a conservation category wetland is located adjacent to the site (Figure 12). The wetland management category definitions are provided in Table 2. The western portion of the site is located within the floodplain for Folly Pool (Figure 13).

Table 1: Wetlands

Wetland Name	Wetland Unique Feature ID	Landform	Wetland Type	Management Category	Total Area (ha)	Area on site (ha)
Unnamed	16021	Flat	Palusplain	Multiple Use	27,603	5.7
Folly Pool	16015	Basin	Sumpland	Conservation	22.74	0

Table 2: Wetland management categories

Management Category	General Description	Management Objective
Conservation	Wetlands which support a high level of attributes and functions	Highest priority wetlands. Objective is to preserve and protect the existing conservation values of the wetlands through various mechanisms including: • reservation in national parks, crown reserves and State-owned land, • protection under Environmental Protection Policies, and • wetland covenanting by landowners. No development or clearing is considered appropriate. These are the most valuable wetlands and any activity that may lead to further loss or degradation is inappropriate.
Resource Enhancement	Wetlands which may have been partially modified but still support substantial ecological attributes and functions	Priority wetlands. Ultimate objective is to manage, restore and protect towards improving their conservation value. These wetlands have the potential to be restored to Conservation category. This can be achieved by restoring wetland function, structure and biodiversity. Protection is recommended through a number of mechanisms.
Multiple Use	Wetlands with few remaining important attributes and functions	Use, development and management should be considered in the context of ecologically sustainable development and best management practice catchment planning through landcare.

Source: EPA (2008)

3.2.3 Drainage

The Peel Main Drain runs down the Kwinana Freeway, adjacent to the eastern boundary of the site.

The Peel Main Drain ultimately discharges into the Serpentine River, which is located approximately 3 km southeast of the site (Figure 12).

3.3 Vegetation and flora

3.3.1 Vegetation complexes

Historically, the vegetation at the site would have been representative of the Serpentine River Complex, described as "closed scrub of *Melaleuca* species and fringing woodland of *Eucalyptus rudis* – *Melaleuca rhaphiophylla* along streams" (Heddle et al, 1980).

3.3.2 Current state of vegetation

In its current condition, land is the eastern portion of the site has largely been grazed, and contains grass seed and weeds. Scattered *E. rudis* trees dominate the remaining vegetation on site (Plate 2). Melaleuca species are also present (Plate 3).

Land in the western portion of the site contains grasses, scattered Melaleuca species and dense vegetation adjacent to Folly Pool. This portion of the site was not assessed further given no development is proposed within the floodplain/western portion of the site.



Plate 2: *Eucalyptus rudis*



Plate 3: *Melaleuca rhaphiophylla*

3.3.3 Bush Forever

Bush Forever (BF) Site 418 (Folly Pool, Baldivis) is located adjacent to the site on the western boundary. Vegetation in BF Site 418 is typical of the Pinjarra Plain and Serpentine River complexes (Heddle et al, 1980), and contains *E. rudis* woodland over *M. rhaphiophylla* low forest, and *Baumea sp.* sedgelands (DEP, 2000).

Bush Forever Site 369 (Doghill Road Bushland, Baldivis) is located approximately 1 km east of the site. Vegetation in BF Site 369 is typical of the Pinjarra Plain and Dardanup complexes (Heddle et al, 1980), and contains *Banksia attenuata, B. menziesii* and *Allocasuarina fraseriana* low woodland; scattered *Eucalyptus marginata* and/or *Eucalyptus gomphocephala* over *Banksia* species low woodland (DEP, 2000).

Bush Forever Site 419 (Maramanup Pool, Baldivis) is located approximately 1.5 km south of the site. Vegetation in BF Site 419 is typical of the Pinjarra Plain and Serpentine River complexes (Heddle et al, 1980), and contains similar vegetation to BF Site 418 (DEP, 2000).

3.3.4 Conservation-significant flora

A search was undertaken of the EPBC Protected Matters Search Tool to determine the presence of threatened ecological communities and conservation-significant flora on site (Table 3). No conservation-significant flora is expected to occur on the site as a result of historical land uses (Section 3.4.3) and a lack of vegetation (overstorey and understorey species) on the site.

Table 3: Potential conservation-significant flora species

Name	Status	Type of Presence	Likelihood of Occurrence
Threatened Ecological Communities			
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community may occur within area	Unlikely
Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community likely to occur within area	Unlikely
Plants			
Andersonia gracilis (Slender Andersonia)	Endangered	Species or species habitat may occur within area	Unlikely
Diuris drummondii (Tall Donkey Orchid)	Vulnerable	Species or species habitat may occur within area	Unlikely
Diuris micrantha (Dwarf Bee-orchid)	Vulnerable	Species or species habitat likely to occur within area	Unlikely
Diuris purdiei (Purdie's Donkey-orchid)	Endangered	Species or species habitat may occur within area	Unlikely
Drakaea elastica (Glossy-leaved Hammer Orchid, Warty Hammer Orchid)	Endangered	Species or species habitat may occur within area	Unlikely
Drakaea micrantha (Dwarf Hammer-orchid)	Vulnerable	Species or species habitat likely to occur within area	Unlikely
Eucalyptus x balanites (Cadda Road Mallee, Cadda Mallee)	Endangered	Species or species habitat may occur within area	Unlikely
Synaphea sp. *Fairbridge Farm* (D. Papenfus 696) (Selena's Synaphea)	Critically Endangered	Species or species habitat likely to occur within area	Unlikely
Synaphea sp. *Serpentine* (G.R. Brand 103)	Critically Endangered	Species or species habitat may occur within area	Unlikely

3.3.5 Bush Fire Risk

The site is located in a mapped bushfire prone area, as defined by the Department of Fire and Emergency Services (Landgate, 2021). These areas are defined as being subject to, or likely to be subject to, bush fire attack, and are identified by the presence of and proximity to bush fire prone vegetation and includes both the area containing the bush fire prone vegetation and a 100 m buffer zone immediately surrounding it (Landgate, 2021).

3.4 Fauna

3.4.1 Fauna habitat

Based on the limited amount of vegetation at the site, the quality of fauna habitat is considered limited. As such, with the exception of migratory species, fauna species are more likely to be present in areas of better-quality vegetation i.e. adjacent Bush Forever Site 418 (Section 3.3.3).

3.4.2 Conservation-significant fauna

A search was undertaken of the EPBC Protected Matters Search Tool to determine the presence of threatened fauna species on site (Table 4). No conservation-significant fauna are expected to occur on the site as a result of historical land uses (Section 3.4.3) and a lack of fauna habitat on the site.

Table 4: Potential conservation-significant fauna species

Name	Status	Type of Presence	Likelihood of Occurrence
Birds			
Apus pacificus (Fork-tailed Swift)	Migratory (Marine)	Species or species habitat likely to occur within area	Unlikely
Actitis hypoleucos (Common Sandpiper)	Migratory (Wetland)	Species or species habitat known to occur within area	Unlikely
Ardea ibis (Cattle Egret)	Other	Species or species habitat may occur within area	Unlikely
Botaurus poiciloptilus (Australasian Bittern)	Endangered	Species or species habitat likely to occur within area	Unlikely
Calidris acuminata (Sharp-tailed Sandpiper)	Migratory (Wetland)	Species or species habitat known to occur within area	Unlikely
Calidris canutus (Red Knot, Knot)	Endangered	Species or species habitat may occur within area	Unlikely
Calidris ferruginea (Curlew Sandpiper)	Critically Endangered Migratory (Wetland)	Species or species habitat likely to occur within area	Unlikely
Calidris melanotos (Pectoral Sandpiper)	Migratory (Wetland)	Species or species habitat likely to occur within area	Unlikely
Calyptorhynchus banksii naso (Forest Red-tailed Black Cockatoo	Vulnerable	Species or species habitat likely to occur within area	Unlikely
Calyptorhynchus baudinii (Baudin's Cockatoo, Long-billed Black-Cockatoo)	Endangered	Species or species habitat likely to occur within area	Unlikely
Calyptorhynchus latirostris (Carnaby's Cockatoo, Short-billed Black-Cockatoo)	Endangered	Breeding may occur within area	Unlikely
Haliaeetus leucogaster (White-bellied Sea-Eagle)	Other	Species or species habitat likely to occur within area	Unlikely
Leipoa ocellata (Malleefowl)	Vulnerable	Species or species habitat may occur within area	Unlikely

Name	Status	Type of Presence	Likelihood of Occurrence
Merops ornatus (Rainbow Bee-eater)	Other	Species or species habitat may occur within area	Unlikely
Motacilla cinerea (Grey Wagtail)	Other	Species or species habitat may occur within area	Unlikely
Numenius madagascariensis (Eastern Curlew, Far Eastern Curlew)	Critically Endangered Migratory (Wetland)	Species or species habitat may occur within area	Unlikely
Pandion haliaetus (Osprey)	Migratory (Wetland)	Species or species habitat likely to occur within area	Unlikely
Rostratula australis (Australian Painted Snipe)	Endangered	Species or species habitat likely to occur within area	Unlikely
Sternula nereis nereis (Australian Fairy Tern)	Vulnerable	Species or species habitat may occur within area	Unlikely
Tringa nebularia (Common Greenshank)	Migratory (Wetland)	Species or species habitat likely to occur within area	Unlikely
Mammals			
Dasyurus geoffroii (Chuditch, Western Quoll)	Vulnerable	Species or species habitat likely to occur within area	Unlikely
Pseudocheirus occidentalis (Western Ringtail Possum)	Critically Endangered	Species or species habitat may occur within area	Unlikely

3.4.3 Black Cockatoo Habitat Tree Assessment

Harewood (2021) conducted a Black Cockatoo habitat tree assessment across the site, to identify trees potentially suitable for black cockatoo use as nesting habitat (Appendix 1). The assessment was considered in respect of Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*), Baudin's Black Cockatoo (*Calyptorhynchus baudinii*) and the Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*). Trees assessed included:

- *Eucalyptus rudis* (Flooded Gum)
- *Melaleuca* species (two species)
- Conifer (exotic) species.

Whilst *E. rudis* is identified as a potential roosting tree for Carnaby's Black Cockatoo (Groom 2011), Melaleuca and conifer species are not.

The existing trees (*Eucalyptus rudis* and *Melaleuca rhaphiophylla*) are also typically not representative of foraging species for Carnaby's Black Cockatoos (Groom, 2011). Conifer trees (unidentified species) can potentially be used for foraging; however, no evidence of use was recorded on site.

In addition, the existing vegetation is not known to be used Baudin's Black Cockatoo or the Forest Red-tailed Black Cockatoo for nesting or foraging (DEWHA, 2009, TSSC, 2018).

Criteria used to assess potential habitat were trees with a diameter breast height (DBH measurement of > 10 cm (Table 5). Of the 97 trees identified, 43 trees have a DBH of ≥ 50 cm, most of which did not contain any hollows (Harewood, 2021). Of the 7 trees observed to contain hollows of various sizes, none of these trees were considered potentially suitable for black cockatoo species for nesting purposes (Harewood, 2021).

Table 5: Habitat trees

Total Number of Trees (DBH > 10 cm)	# Trees with DBH > 10 cm and < 50 cm	# Trees with DBH ≥ 50 cm with NO hollows	# Trees with DBH ≥ 50 cm with hollows considered UNSUITABLE for nesting Black Cockatoos	# Trees with DBH ≥ 50 cm with hollows considered SUITABLE for nesting Black Cockatoos	Tree Species		
					Flooded Gum	Paperbark (two species)	Conifer (exotic)
97	54	36*	7	0	65	13	19

Source: Harewood, 2021

** 4 of these trees were identified as Paperbark trees, which do not represent black cockatoo breeding habitat*

3.4.4 Mosquitoes

No assessment has been made for mosquitoes at the site, however given the proximity of the site to Folly Pool, it may be beneficial for the project design to incorporate features which avoid attracting mosquitoes and nuisance insects (e.g. lighting design to avoid attracting mosquitoes and midge, avoid creating standing water etc).

3.5 Historical land uses

3.5.1 Aerial imagery

An assessment was made of historical land use on the basis of aerial photography (Landgate, 2020). The site has largely only been used for rural/agricultural purposes, with changes/development evidenced as follows:

1953: the site has been partially cleared. Vegetation remains in the western portion of the site, in association with Folly Pool, and is scattered throughout the eastern portion of the site.

1965: the site remains unchanged.

1970: the majority of vegetation throughout the site has been cleared.

1974 – 1995: the site remains unchanged.

2000: a driveway has been constructed in the eastern portion of the site, leading to a large shed structure. Evidence of some ground disturbance (i.e. cropping) is located adjacent the shed. A dam is evident in the eastern portion of the site.

2005: additional structures have been constructed in the eastern portion of the site, including possible septic tanks and a large rainwater tank. The land seems to be used for agricultural purposes. Pine trees have been planted as a windbreak in a portion of the site adjacent to the southern boundary and the driveway.

2010 - 2020: the site remains unchanged.

3.5.2 Site visit

A site visit conducted by Coterra in August 2021 confirmed:

- The western portion of the site was inundated, consistent with flood plain mapping associated with Folly Pool (Plate 4)
- On-site infrastructure comprises two sheds (corrugated steel), one stock feeder, one rainwater tank, and a partially-paved accessway (Plate 5 and Plate 6)

- Powerline distribution poles (~33kV) are located on the northern boundary of the site (Plate 7) that connects to a distribution network along Young Road
- A septic tank is also present on site, adjacent to one of the sheds (Plate 8)
- Scattered native vegetation was observed, largely around the perimeter of the site (Plate 9)
- Planted pine trees form a wind screen on part of the site adjacent to the accessway and along the southern boundary (Plate 10)
- The overall site condition was degraded due to rural land use activities (grazing) (Plate 11).



Plate 4: Inundated land in western portion of site (flood plain)



Plate 5: On-site infrastructure (shed/residence)



Plate 6: On-site infrastructure (shed and rainwater tank)



Plate 7: Powerlines (northern boundary)



Plate 8: Septic tank



Plate 9: Scattered native vegetation



Plate 10: Planted pine trees



Plate 11: Degraded site condition due to grazing

Source: Coterra; 07/09/2021

3.6 Potential contamination

Consideration has been given to any potentially contaminating activities, industries and land uses, in accordance with relevant guidance (DER, 2014; Table 6).

Although the site has been used for agricultural (rural) activities, these do not appear to have been intensive (Section 3.5), and no visual evidence of point sources of contamination, including hazardous materials, Potential Asbestos Containing Materials (ACM), uncontrolled fill, soil staining or odour, was observed during the site visit.

Table 6: Potentially contaminating activities

Industry, activity or land use	Potential contaminant types
Asbestos production or disposal	ACM Asbestos fibres
Intensive agriculture* (including feedlots and saleyards)	Carbamates Organochlorine pesticides (e.g. Endrin, Methoxychlor, Pentachlorophenol)

Industry, activity or land use	Potential contaminant types
	Organophosphate pesticides Herbicides (e.g. Triazine, Atrazine, 2,4,5-T 2,4-D, MCPA, Picloram) Insecticides DDT, DDE and DDD, Bifenthrin Aldrin and Dieldrin Nitrates Salinity Metals (e.g. aluminium, arsenic, cadmium, copper, iron, lead, magnesium, potassium) Nutrients (e.g. nitrogen, phosphorus) Toxaphene

Source: DER, 2014

4 Potential Environmental Impacts and Management

4.1 Soils

4.1.1 Potential Impacts

The site is located in an area 'moderate to low' risk ASS area (Section 3.1.2). Disturbance to ASS has the potential to create an acidic environment, which may impact groundwater if not appropriately managed.

4.1.2 Management Measures

Once detailed engineering and construction details are available an ASS self-assessment form (WAPC, 2020; Appendix 2) should be completed, and if there is potential for ASS to be impacted by the development, an ASS investigation should be undertaken. The ASS investigation and management plan should be undertaken in accordance with the following:

- Identification and Investigation of Acid Sulfate Soils and Acidic Landscapes (DER, 2015a)
- Treatment and Management of Soils and Water in Acid Sulfate Soil Landscapes (DER, 2015b).

These investigations and management plans could be undertaken as a condition of the Development Application approval.

It is expected that a detailed geotechnical assessment will also be undertaken as a condition of the Development Application approval, to accurately define soil properties at the site.

4.2 Groundwater and Stormwater

4.2.1 Potential Impacts

The proposed development must be managed to avoid adverse impacts to groundwater which could then have an impact on the adjacent CCW and its ecological values.

4.2.2 Management Measures

A Water Management Strategy and a Site and Soil Evaluation are being prepared to support the Development Application.

The Water Management Strategy demonstrates water is able to be appropriately managed on site to support the proposed development (Water Insight, 2021a).

As opposed to typical urban developments, this site does not include large areas of single private lots or public open space (Water Insight, 2021a).

A conceptual stormwater management strategy has been developed to mimic the natural hydrological regime and manage the 15 mL, minor and major rainfall events (Water Insight, 2021a). This strategy ensures that stormwater from the development will not cause site flooding and will not impact the surrounding community.

The Site and Soil Evaluation has been prepared to confirm the site's suitability for onsite wastewater management and to recommend the type of onsite wastewater management system required for the proposed development (Water Insight, 2021b).

4.3 Surface Water and Wetlands

4.3.1 Potential Impacts

Based on the proximity of the CCW adjacent to the site, potential risks and pressures to wetlands and waterways from development include:

- Development may have the potential to increase nutrient loading to the sites surface and groundwater, influencing wetland nutrient balancing and ecology
- Clearing of vegetation associated with wetlands and/or wetland buffers may have the potential to impact on wetland values
- Potential risk of ASS-related impacts to groundwater regime, if not managed appropriately during construction.

4.3.2 Management Measures

In relation to wetland buffers the EPA provides the following advice: '*Wetlands that are to be protected require a minimum 50m buffer distance'* (EPA, 2008).

Although the development is proposed adjacent to the Folly Pool flood plain, it is not expected that development will affect the CCW. The proposed development is located approximately 350 m from the Folly Pool CCW, so no additional buffers are required to be considered for this development.

The development also avoids any land use changes within the floodplain extent.

4.4 Vegetation

Existing vegetation within the eastern (proposed development) area on site is limited to a scattering of native and introduced trees with no understorey present (Section 3.3). Native vegetation in the western portion of the site is limited to the western boundary, in association with Folly Pool. This vegetation was not assessed as part of this assessment as it is not proposed to be disturbed.

4.4.1 Potential Impacts

Although vegetation is scattered throughout the development area, it will be retained where possible. The potential for bushfire risks associated with retained and planted vegetation should also be considered.

4.4.2 Management Measures

Existing vegetation (native and introduced species) will be retained where possible. Of the existing trees, only 2 trees are proposed to be removed.

In addition, trees will be planted around the site boundary (Figure 10). These trees should be considered in the context of providing screening to surrounding land users and also fauna habitat opportunities (Section 4.5) while not generating an additional bushfire risk through appropriate spacing and understorey design/management (Section 4.6). In general, the following species are recommended to be considered:

- *Eucalyptus rudis*
- *Melaleuca rhaphiophylla*
- *Banksia attenuata*
- *Banksia litoralis*
- *Banksia menziesii*
- *Allocasuarina fraseriana*

- *Eucalyptus marginata*
- *Eucalyptus gomphocephala.*

These species represent historical vegetation complexes on the site, and nearby Bush Forever sites. In addition, they provide habitat opportunities for black cockatoo species (Groom, 2011). Specific species should be determined for suitability by a Landscape Architect.

4.5 Fauna

4.5.1 Potential Impacts

Potential impacts to fauna during vegetation clearing, should be considered and managed. Impacts to fauna from construction are associated with removal of habitat, and animal injury/fatality from the use of machinery.

4.5.2 Management Measures

Given the lack of fauna habitat on site, there does not appear to be a requirement for the preparation of a Fauna and Relocation Management Plan associated with the development. Some fauna management actions should still be included within the Construction Management Plan (Section 4.7), as follows:

- Clearing outside of the main avifauna breeding season is recommended, if possible.
- Prior to the commencement of clearing the clearing and construction boundary will be surveyed to ensure it is accurately located and demarcated.
- Potential fauna habitat trees with hollows should be retained where possible (Figure 14). Based on the proposed development layout, five of the seven trees containing hollows appear likely to be able to be retained. These trees will be tagged to ensure accidental damage does not occur.
- A fauna relocator will be engaged to inspect the tree and to undertake fauna relocation, *if deemed necessary*. A Licence to Take or Disturb Fauna for the purpose of Relocating will be submitted to the Department of Biodiversity, Conservation and Attractions (DBCA) prior to tree removal commencing so this approval is in place, should it be required. A copy of the approved DBCA licence will be provided to the City of Rockingham prior to the commencement of works.
- Clearing will be undertaken in the direction of retained vegetation in order to encourage any remaining fauna to move in this direction.
- Any vehicles on site will be restricted to the clearing and construction area footprint to minimise impact to vegetation beyond this boundary. Vehicle movements will be restricted to speeds of 30 km/hour
- If any fauna is located and/or injured, contact the Project Superintendent or Environmental Consultant for instructions. If these representatives cannot be reached, contact the DBCA Wildcare helpline (9474 9055).

The proposed site development does not appear likely to result in a significant impact on a fauna species protected under the EPBC Act, therefore referral of the project under this legislation does not appear warranted.

Mosquito management, including mosquito habitat mapping and monitoring, may need to be addressed as part of the building design and approval process to minimise risk to people from diseases such as Ross River Virus or Barmah Forest Virus, which are known to occur in the Peel Region, involved in site development.

4.6 Bushfire Management

Given the site is in a bush fire prone area (Section 3.3.5), a Bushfire Management Plan has been prepared by Envision Bushfire Protection for the site, in accordance with the following:

- *State Planning Policy 3.7 – Planning in Bushfire Prone Areas* (WAPC, 2015)
- *Guidelines for Planning in Bushfire Prone Areas* (WAPC, 2017).
- The Bushfire Management Plan (Envision Bushfire Protection, 2021) recommends the following actions in relation to the existing environment and the proposed development:
- No clearing of existing vegetation is required for the purpose of bushfire protection
- Future landscaping of the site will be for amenity purposes only and will be planted as low-threat, in accordance with Australian Standard AS 3959:2018 – Construction in Bushfire Prone Areas
- Firebreaks to be installed 3 m inside the site perimeter, and maintained in accordance with the City of Rockingham Fire Control Notice
- Installation of a minimum 50,000 L water supply tank for fire-fighting purposes, located convenient to the service entry from Folly Road, in accordance with City of Rockingham specifications.

4.7 Potential Contamination

4.7.1 Unexpected Finds

If, during earthworks, potential point sources of contamination are identified (i.e. asbestos or uncontrolled fill), an Unexpected Finds Protocol should be enacted, as follows:

1. Stop Works.
2. An experienced contamination professional should be contacted for advice and potential investigation of point sources of contamination, in accordance with the DWER's Contamination Sites Management Series, including:
    - *Assessment and Management of Contaminated Sites* (DER, 2014)
    - Identification, Reporting and Classification of Contaminated Sites in Western Australia (DER, 2017).
3. If contamination is confirmed to be present above guideline levels, management and remediation works should be undertaken to the satisfaction of DWER.

4.8 Construction Impacts

Construction activities need to be managed to minimise the impact to adjacent residents. Impacts can include:

- Dust generation from excavation activities
- Noise generation from machinery
- Uncontrolled sediment/surface water run-off during site works
- Inadvertent damage to trees marked for retention
- Inappropriate disposal of waste/wind-blown litter.
- Inadvertent access to areas beyond the development footprint.

All of these potential impacts are manageable through appropriate site management practices. A site Construction Management Plan could be required as a condition of the Development Application approval, which would detail specific management measures to avoid and/or mitigate these potential impacts prior site works commencing.

5 Conclusion

Based on review of the key environmental features of the site and surrounds, no environmental constraints have been identified which would prevent development as proposed.

A number of relevant environmental factors may trigger management requirements prior to and during construction. Assessment works in relation to these matters can undertaken post-development approval, prior to works on site commencing.

The following further investigations and/or management plans may be required, as conditions to the development approval:

- ASS investigation and/or ASS and Dewatering Management Plan (if required)
- Construction Management Plan, including fauna management and Unexpected Finds Protocol.

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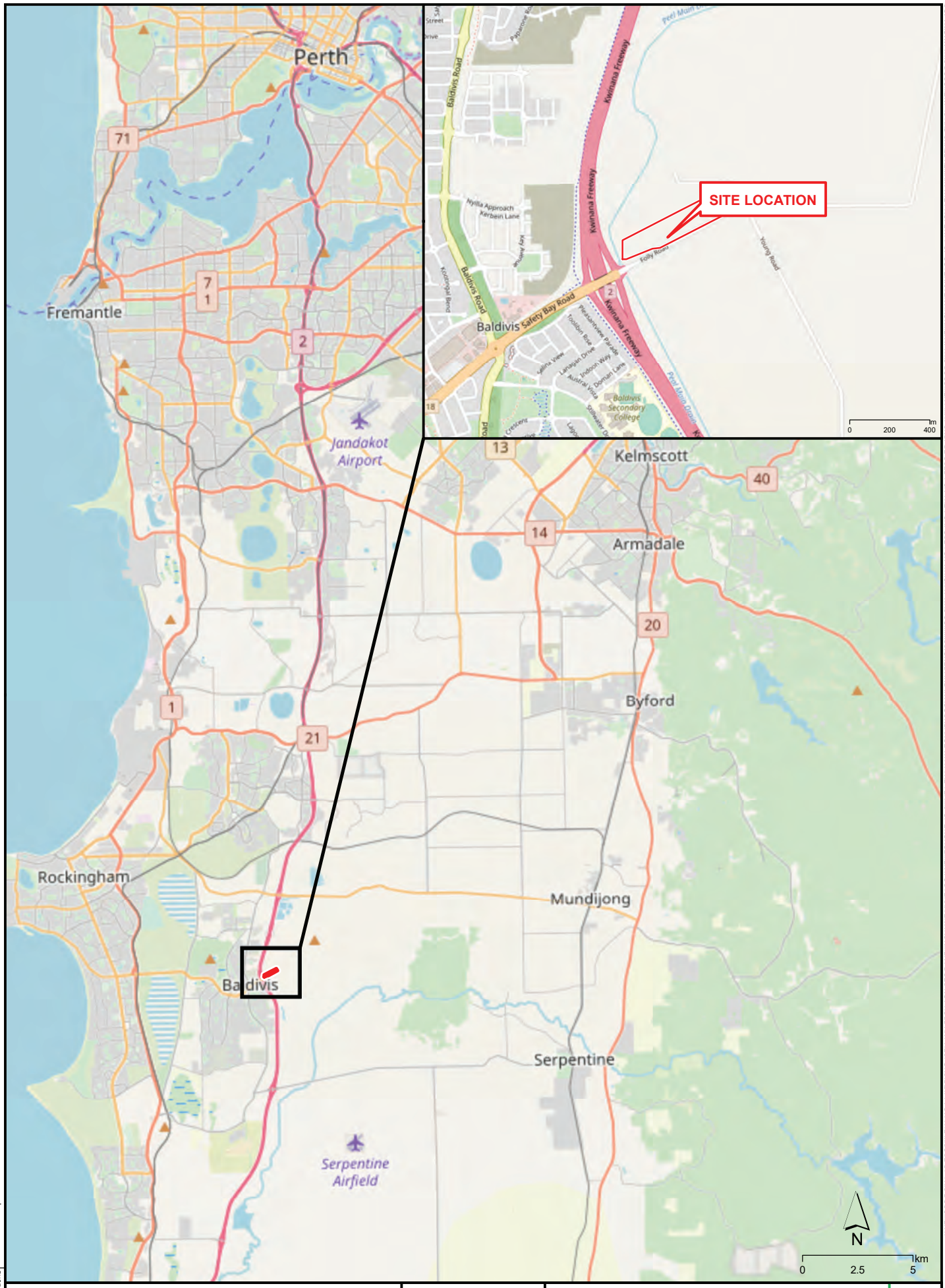

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ENVIRONMENTAL ASSESSMENT REPORT
67 FOLLY ROAD, BALDIVIS

SITE LOCATION

Figure 1

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AERIAL PHOTOGRAPHY

Figure 2



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DEVELOPMENT PLAN

Figure 3

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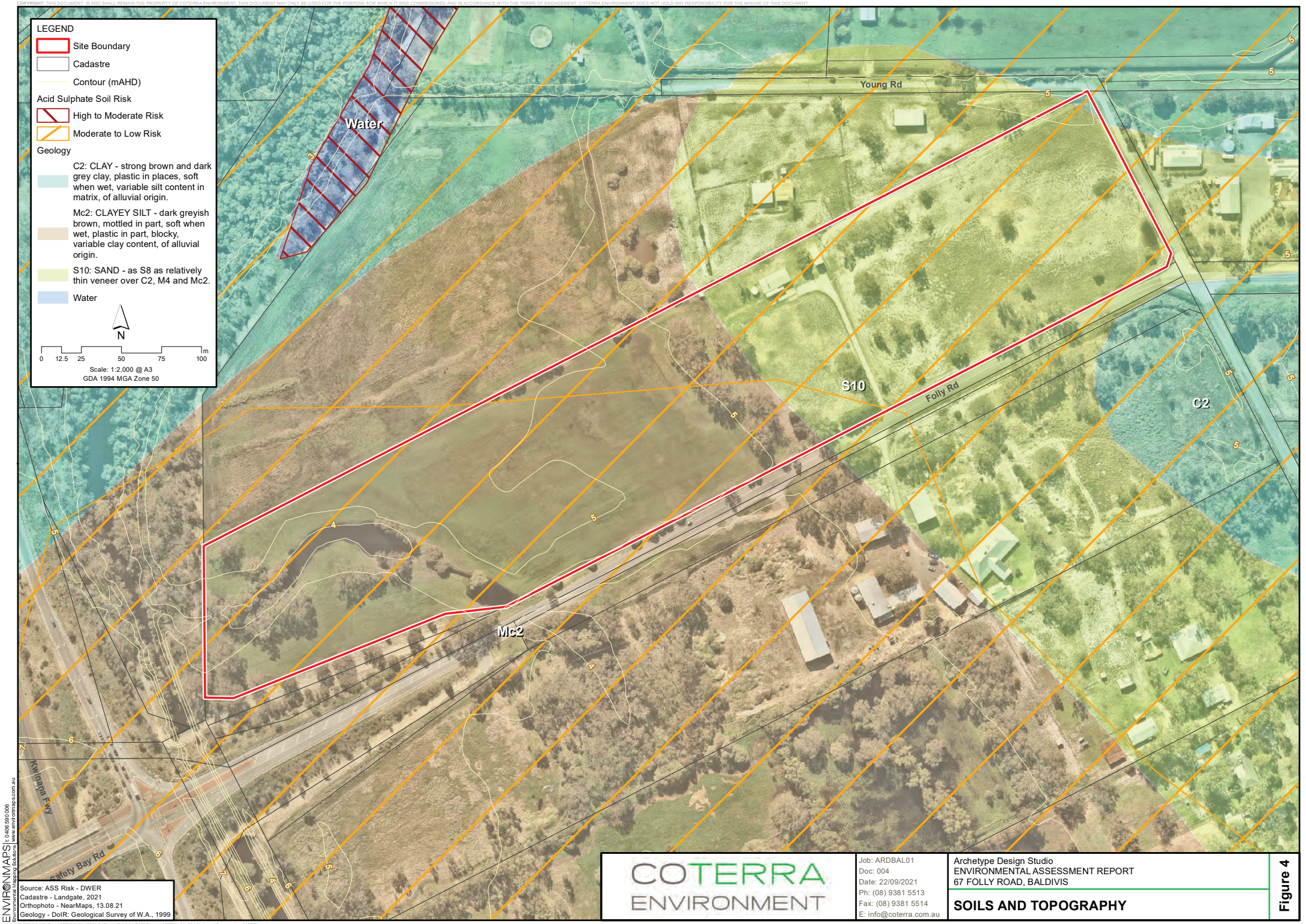

Source: ASS Risk - DWER
Cadastre - Landgate, 2021
Orthophoto - NearMaps, 13.08.21
Geology - DoIR: Geological Survey of W.A., 1999

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SOILS AND TOPOGRAPHY

Figure 4

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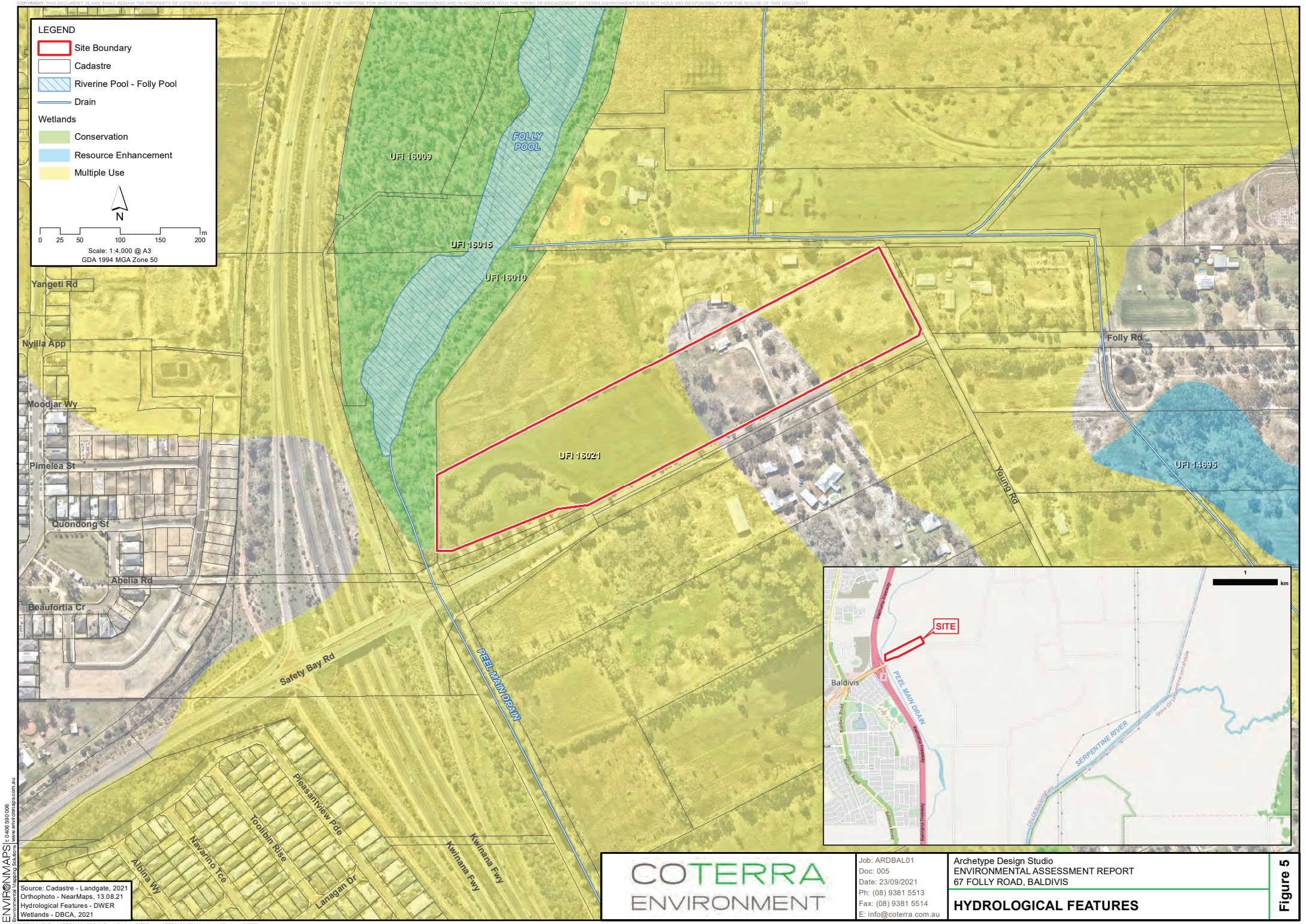

Source: Cadastre - Landgate, 2021
Orthophoto - NearMaps, 13.08.21
Hydrological Features - DWER
Wetlands - DBCA, 2021

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HYDROLOGICAL FEATURES

Figure 5

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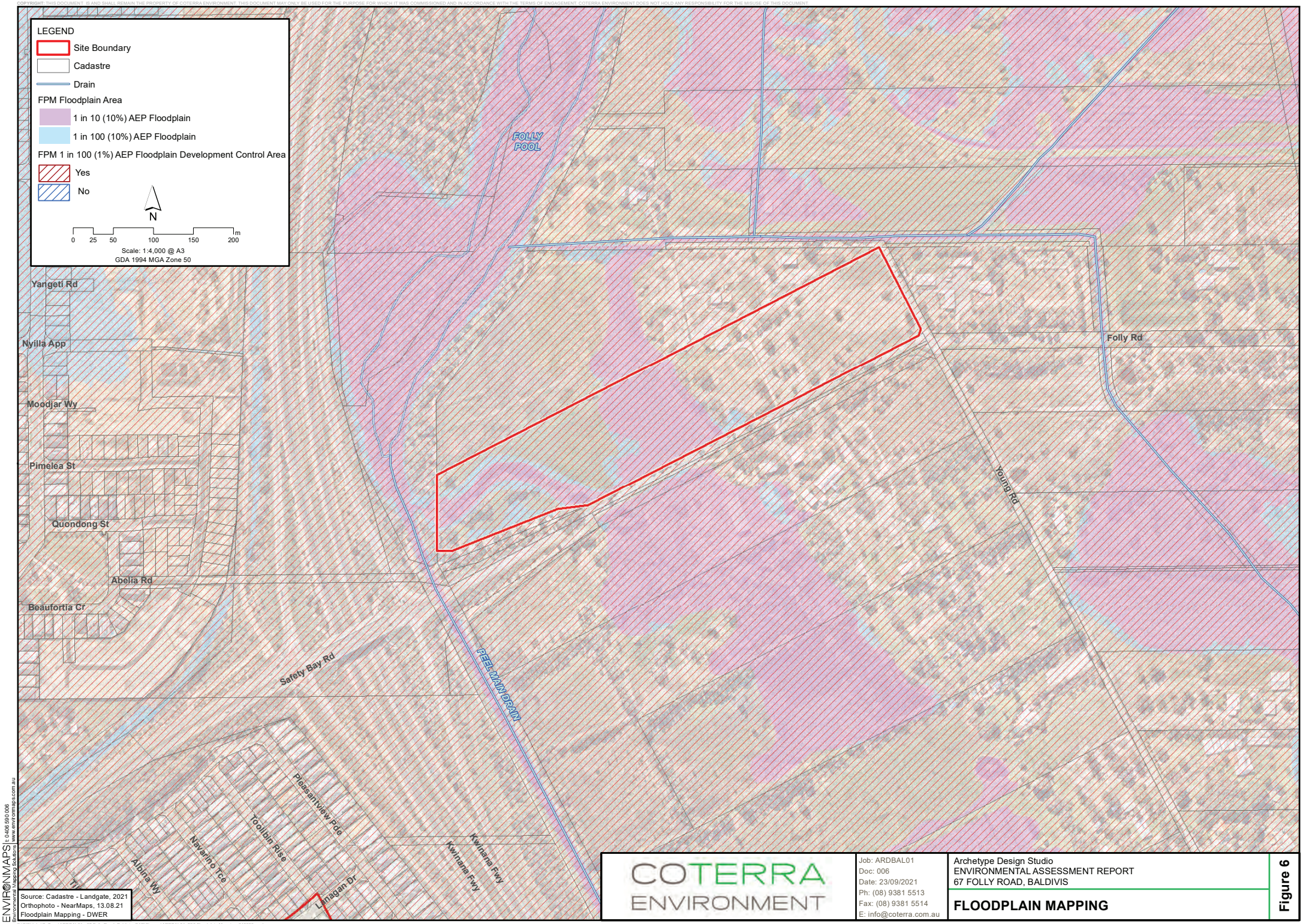

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ENVIRONMENTAL ASSESSMENT REPORT
67 FOLLY ROAD, BALDIVIS

FLOODPLAIN MAPPING

Figure 6

Appendix 1 Fauna Habitat Assessment (Harewood, 2021)

Black Cockatoo Habitat Tree Assessment



67 Folly Road Baldivis

September 2021

Version 1

On behalf of:
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TABLE OF CONTENTS

SUMMARY

1. INTRODUCTION 1
2. SCOPE OF WORKS 1
3. METHODS 1
4. SURVEY CONSTRAINTS 3
5. RESULTS 3
6. CONCLUSION 4
7. REFERENCES 5

TABLES

TABLE 1: Summary of Trees (DBH >10cm)

FIGURES

FIGURE 1: Survey Area - Aerial Photograph

FIGURE 2: Survey Area - Trees (DBH>10cm)

APPENDICES

APPENDIX A: Tree (DBH ≥10cm) Details

SUMMARY

This report details the results of a targeted black cockatoo habitat tree assessment of a section of 67 Folly Road, Baldivis. It is understood that the area is being investigated for suitability as a site for a proposed Balaji temple and cultural centre. The proposed development will be centred on the eastern half of the property which makes up about 3.5 hectares (ha) of the 7.6 ha property (Figure 1).

The assessment was primarily undertaken to provide information on the extent of black cockatoo breeding habitat present within the survey area.

The survey area contains 97 trees with a DBH of $\geq$ 10cm, with a small number containing possible small to medium sized hollows considered unsuitable for black cockatoos to use for nesting purposes. No trees present within the survey area appear to contain hollows that can be considered suitable or potentially suitable for black cockatoos to use for nesting purposes.

Based on the results of this assessment it is concluded that any clearing within the survey area is unlikely to have any significant direct or indirect impact on black cockatoos. Nonetheless planning should take into account the presence of some existing or potential hollow bearing trees which should be considered for retention wherever possible.

1. INTRODUCTION

This report details the results of a targeted black cockatoo habitat tree assessment of a section of 67 Folly Road, Baldivis. It is understood that the area is being investigated for suitability as a site for a proposed Balaji temple and cultural centre. The proposed development will be centred on the eastern half of the property which makes up about 3.5 hectares (ha) of the 7.6 ha property (Figure 1).

In addition to open grassland the survey area contains scattered and small groves of flooded gum and paperbark trees (some planted) in addition to a small number of planted exotic conifers.

Information obtained as part of this fauna assessment report will be used in conjunction with other environmental investigations to guide project planning which will aim to minimise potential environmental impacts. The information presented may also be used by regulatory authorities to assess the potential impact of the proposal on fauna and fauna habitats at the site during the project evaluation and approval process if required.

2. SCOPE OF WORKS

The scope of works was to:

1. Undertake a survey of the trees within the eastern end of the site (i.e. up to the floodplain line) to note species, the diameter at breast height and the presence of any hollows which could provide habitat opportunities for black cockatoos.

   The tree survey should identify all trees with a diameter at breast height (DBH) that measures 10 centimetres (cm) or more. Potential black cockatoo breeding trees (DBH $\geq$50cm) that contain hollows must also be indicated; and

2. Prepare a report detailing methods and results.

Note: For the purposes of this report the term black cockatoo is in reference to Baudin's black cockatoo *Calyptorhynchus baudinii*, Carnaby's black cockatoo *Calyptorhynchus latirostris* and the forest red-tailed black cockatoo *Calyptorhynchus banksii naso*.

3. METHODS

The tree assessment has involved the identification of all tree species within the survey area that have a DBH of equal to or over 10 cm. The DBH of each tree was estimated using a pre-made 10cm "caliper".

In addition, "black cockatoo breeding habitat trees" (i.e. trees with a DBH of ≥50 cm as defined by criteria published by the Department of Agriculture, Water and the Environment (Commonwealth of Australia 2012) were specifically identified.

Target black cockatoo breeding habitat trees species included marri, jarrah, wandoo and flooded gum or any other *Corymbia/Eucalyptus* species of a suitable size that may have been present. Peppermints, banksia, sheoak and melaleuca tree species (for example) even if of a suitable size were not recorded as potential breeding trees as they typically do not develop hollows that are used by black cockatoos.

The location of each tree identified as being over the threshold DBH was recorded with a GPS and details on tree species, number and size of hollows (if any) noted. Trees observed to contain hollows (of any size/type) were marked with "H" using spray paint.

Potential hollows were placed into one of four categories, based on the size of the apparent hollow entrance, these being:

- Small = ~<5cm diametre (i.e. entrance too small for a black cockatoo);
- Medium = ~5cm-10cm diametre (i.e. entrance too small for a black cockatoo);
- Large = ~>10cm diametre (entrance large enough for a black cockatoo but possible hollow appears to be unsuitable for nesting i.e. wrong orientation, too small, too low or too shallow); or
- Large (cockatoo) = ~>10cm diametre (entrance appears big enough to provide access to a possible hollow that maybe suitable for a black cockatoo to use for nesting).

Based on this assessment trees present within the survey area were then placed into one of six categories:

- Tree <10cm DBH (tree not recorded);
- Tree ≥10cm DBH but <50cm DBH - tree assessed as not suitable for black cockatoos;
- Tree ≥50cm DBH - unsuitable tree species (e.g. paperbark) – assessed as not suitable for black cockatoos;
- Tree ≥50cm DBH - suitable tree species (e.g. flooded gum) – assessed as suitable for black cockatoos but no hollows seen;
- Tree ≥50cm DBH - suitable tree species (e.g. flooded gum) - one or more hollows seen, none of which were considered suitable for black cockatoos to use for nesting; or
- Tree ≥50cm DBH – suitable tree species (e.g. flooded gum) one or more hollows seen, with at least one considered potentially suitable for black cockatoos to use for nesting.

For the purposes of this assessment a tree containing a potential cockatoo nest hollow was defined as:

Generally, any tree which is alive or dead that contains one or more visible hollows (cavities within the trunk or branches) or possible hollows considered potentially suitable for occupation by a black cockatoo for the purpose of nesting/breeding. Hollows that had an entrance greater than about 10cm in diameter and would allow the entry of a black cockatoo into a suitably orientated and sized branch/trunk were recorded as a "potential black cockatoo nest hollow".

Identified hollows were examined using binoculars for evidence of actual use by black cockatoos (e.g. chewing around hollow entrance, scarring and scratch marks on trunks and branches).

A wireless pole mounted camera and drone were available for use if closer inspection of suspect hollows were required.

4. SURVEY CONSTRAINTS

No seasonal sampling has been carried out as part of this fauna assessment. The conclusions presented are based upon field data and the environmental monitoring and/or testing carried out over a limited period of time and are therefore merely indicative of the environmental condition of the site at the time of the field assessments. It should also be recognised that site conditions can change with time.

During the survey trees with hollows were searched for. It should be noted that identifying hollows suitable for fauna species from ground level has limitations. Generally, the full characteristics of any hollow seen are not fully evident (e.g. internal dimensions). It is also difficult to locate all hollows within all trees as some are not observable from ground level.

5. RESULTS

A summary of the trees observed within the survey area with a DBH >10cm is provided in Table 1 and their location shown in Figure 2. Additional details on each tree recorded can be found in Appendix A.

The survey area contains 97 trees with a DBH of equal to or greater than 10 cm. Of these, 43 have a DBH of $\geq$50cms, most of which were not observed to contain hollows (Note: Four paperbarks with a DBH $\geq$50cm are included in this figure – these do not represent potential black cockatoo breeding habitat).

Seven trees (including one paperbark) were observed to contain possible hollows with various sized entrances but none were considered by the Author to be potentially suitable for black cockatoos to use for nesting purposes. This conclusion was in most cases based on entrances

to possible hollows being too small, branches being of an unfavourable orientation and/or hollows being too low or shallow.

No trees present within the survey area appear to contain hollows that can be considered suitable or potentially suitable for black cockatoos to use for nesting purposes.

Table 1: Summary of Trees (DBH >10cm)

Total Number of Trees (DBH >10cm)	Number of Trees with DBH >10cm and <50cm	Number of Trees with DBH ≥50cm with no hollows	Number of Trees with DBH ≥50cm with Hollows Considered Unsuitable for Nesting Black Cockatoos	Number of Trees with DBH ≥50cm with Hollows Considered Suitable for Nesting Black Cockatoo	Tree Species		
					Flooded Gum	Paperbark (two species)	Conifer (exotic)
97	54	36	7	0	65	13	19

6. CONCLUSION

The assessment reported on here was primarily undertaken to provide information on the extent of black cockatoo breeding habitat present within the survey area.

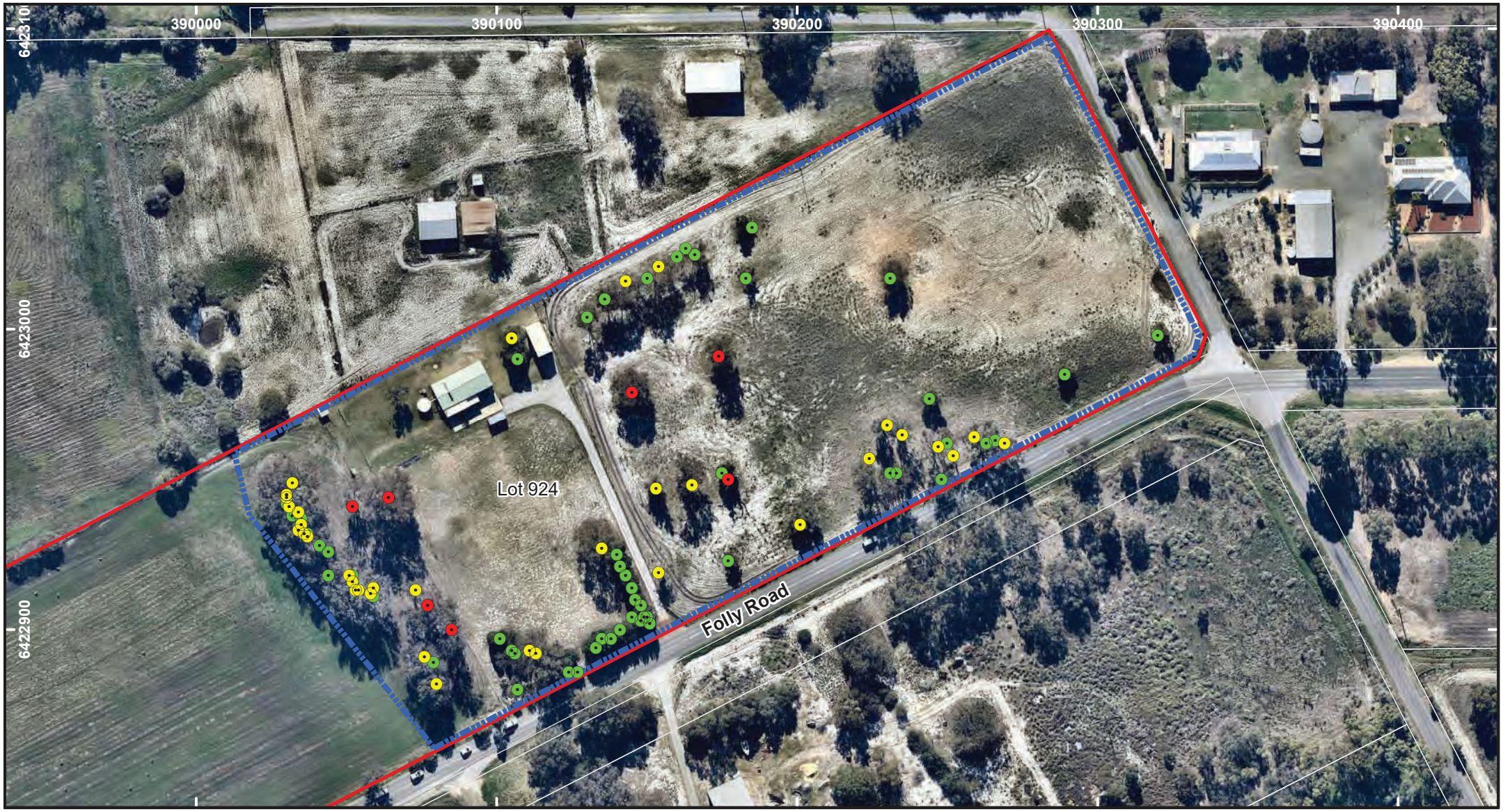
The survey area contains 97 trees with a DBH of ≥ 10cm, with a small number containing possible small to medium sized hollows considered unsuitable for black cockatoos to use for nesting purposes. No trees present within the survey area appear to contain hollows that can be considered suitable or potentially suitable for black cockatoos to use for nesting purposes.

Based on the results of this assessment it is concluded that any clearing within the survey area is unlikely to have any significant direct or indirect impact on black cockatoos. Nonetheless planning should take into account the presence of some existing or potential hollow bearing trees which should be considered for retention wherever possible.

7. REFERENCES

Commonwealth of Australia (2012). *EPBC Act* Referral guidelines for three threatened black cockatoo species: Carnaby's cockatoo (endangered) *Calyptorhynchus latirostris*, Baudin's cockatoo (vulnerable) *Calyptorhynchus baudinii*, Forest red-tailed black cockatoo (vulnerable) *Calyptorhynchus banksii naso*.

FIGURES



Legend

- Cadastral Boundaries (Existing)
- Lot Boundary
- Survey Area
- Tree <50cm DBH - No hollows seen
- Tree >50cm DBH - No hollows seen
- Tree >50cm DBH - One or more hollows unsuitable for black cokatoos

N

0 25 50 75 100

Metres

Fauna Survey

Drawn: G Harewood

Date: Sept 2021

Scale: 1:1,750

Projection/Coordinate System: UTM/MGA Zone 50

Figure: 2

67 Folly Road
Baldivis

Survey Area Trees (DBH >10cm)



Legend

- Cadastral Boundaries (Existing)
- Lot Boundary
- Survey Area

0 25 50 75 100

Metres

Fauna Survey

67 Folly Road
Baldivis

Survey Area
Aerial Photograph

Drawn: G Harewood	
Date: Sept 2021	
Scale: 1:1,750	
Projection/Coordinate System: UTM/MGA Zone 50	Figure: 1

APPENDIX A

TREE (DBH >10CM) DETAILS

Trees
DBH >10cm
Datum - GDA94
Entrance Size Ranges - Small = >5cm, Medium = 5 to 10cm, Large = >10cm

Waypoint Number	Zone	mE	mN	Tree Species	DBH (cm)	Tree Height (m)	Number of Hollows	Estimated Hollow Entrance Size	Occupancy	Chew Marks	Potential Cockatoo Nest Hollow	Comments
wpt001	50H	390154	6422919	Stout Paperbark (M. preisiana)	>50	5-10	0					
wpt002	50H	390177	6422923	Stout Paperbark (M. preisiana)	<50	0-5	0					
wpt003	50H	390201	6422935	Stout Paperbark (M. preisiana)	>50	5-10	0					
wpt004	50H	390224	6422957	Flooded Gum	>50	15-20	0					
wpt005	50H	390231	6422952	Flooded Gum	<50	15-20	0					
wpt006	50H	390233	6422952	Flooded Gum	<50	15-20	0					
wpt007	50H	390235	6422965	Flooded Gum	>50	15-20	0					
wpt008	50H	390230	6422968	Flooded Gum	>50	15-20	0					
wpt009	50H	390247	6422961	Flooded Gum	>50	15-20	0					
wpt010	50H	390250	6422962	Flooded Gum	<50	15-20	0					
wpt011	50H	390248	6422950	Flooded Gum	<50	15-20	0					
wpt012	50H	390252	6422958	Flooded Gum	>50	15-20	0					
wpt013	50H	390244	6422977	Swamp Paperbark (M. rhaphiophylla)	<50	5-10	0					
wpt014	50H	390259	6422964	Flooded Gum	>50	15-20	0					
wpt015	50H	390263	6422962	Flooded Gum	<50	15-20	0					
wpt016	50H	390266	6422963	Flooded Gum	<50	15-20	0					
wpt017	50H	390269	6422962	Flooded Gum	>50	15-20	0					
wpt018	50H	390289	6422985	Swamp Paperbark (M. rhaphiophylla)	<50	5-10	0					
wpt019	50H	390320	6422998	Swamp Paperbark (M. rhaphiophylla)	<50	0-5	0					
wpt020	50H	390231	6423017	Flooded Gum	<50	5-10	0					
wpt021	50H	390185	6423034	Stout Paperbark (M. preisiana)	<50	0-5	0					
wpt022	50H	390183	6423017	Stout Paperbark (M. preisiana)	<50	0-5	0					
wpt023	50H	390166	6423025	Flooded Gum	<50	5-10	0					
wpt024	50H	390163	6423027	Flooded Gum	<50	0-5	0					
wpt025	50H	390160	6423024	Flooded Gum	<50	5-10	0					
wpt026	50H	390154	6423021	Flooded Gum	>50	10-15	0					
wpt027	50H	390150	6423017	Flooded Gum	<50	0-5	0					
wpt028	50H	390143	6423016	Flooded Gum	>50	10-15	0					
wpt029	50H	390136	6423010	Flooded Gum	<50	15-20	0					
wpt030	50H	390130	6423004	Flooded Gum	<50	15-20	0					
wpt031	50H	390174	6422991	Flooded Gum	>50	15-20	2+	Small	No Signs	No Signs	No	
wpt032	50H	390145	6422979	Flooded Gum	>50	15-20	2+	Small	No Signs	No Signs	No	
wpt033	50H	390177	6422950	Swamp Paperbark (M. rhaphiophylla)	>50	10-15	2+	Small	No Signs	No Signs	No	
wpt034	50H	390175	6422952	Flooded Gum	<50	5-10	0					
wpt035	50H	390165	6422948	Flooded Gum	>50	15-20	0					
wpt036	50H	390153	6422947	Flooded Gum	>50	5-10	0					
wpt037	50H	390105	6422997	Stout Paperbark (M. preisiana)	>50	5-10	0					
wpt038	50H	390107	6422990	Stout Paperbark (M. preisiana)	<50	0-5	0					

Waypoint Number	Zone	mE	mN	Tree Species	DBH (cm)	Tree Height (m)	Number of Hollows	Estimated Hollow Entrance Size	Occupancy	Chew Marks	Potential Cockatoo Nest Hollow	Comments
wpt039	50H	390064	6422944	Flooded Gum	>50	15-20	2+	Small & Medium	Galahs	No Signs	No	
wpt040	50H	390052	6422941	Flooded Gum	>50	15-20	2+	Small	No Signs	No Signs	No	
wpt041	50H	390032	6422949	Flooded Gum	>50	15-20	0					
wpt042	50H	390030	6422945	Flooded Gum	>50	15-20	0					
wpt043	50H	390030	6422945	Flooded Gum	>50	15-20	0					
wpt044	50H	390032	6422949	Flooded Gum	<50	10-15	0					
wpt045	50H	390030	6422944	Flooded Gum	>50	15-20	0					
wpt046	50H	390030	6422942	Flooded Gum	<50	10-15	0					
wpt047	50H	390031	6422941	Flooded Gum	>50	15-20	0					
wpt048	50H	390032	6422938	Flooded Gum	<50	0-5	0					
wpt049	50H	390034	6422939	Flooded Gum	>50	15-20	0					
wpt050	50H	390033	6422939	Flooded Gum	<50	10-15	0					
wpt051	50H	390035	6422937	Flooded Gum	<50	10-15	0					
wpt052	50H	390034	6422933	Flooded Gum	>50	15-20	0					
wpt053	50H	390037	6422931	Flooded Gum	>50	5-10	0					
wpt054	50H	390037	6422932	Flooded Gum	<50	15-20	0					
wpt055	50H	390036	6422932	Flooded Gum	>50	15-20	0					
wpt056	50H	390035	6422935	Flooded Gum	>50	5-10	0					
wpt057	50H	390041	6422928	Flooded Gum	<50	10-15	0					
wpt058	50H	390044	6422926	Flooded Gum	<50	0-5	0					
wpt059	50H	390044	6422918	Flooded Gum	<50	5-10	0					
wpt060	50H	390051	6422918	Flooded Gum	>50	5-10	0					
wpt061	50H	390052	6422918	Flooded Gum	<50	5-10	0					
wpt062	50H	390052	6422916	Flooded Gum	>50	15-20	0					
wpt063	50H	390053	6422913	Flooded Gum	>50	15-20	0					
wpt064	50H	390054	6422913	Flooded Gum	>50	15-20	0					
wpt065	50H	390058	6422912	Flooded Gum	>50	15-20	0					
wpt066	50H	390059	6422911	Flooded Gum	<50	10-15	0					
wpt067	50H	390059	6422914	Flooded Gum	>50	15-20	0					
wpt068	50H	390073	6422913	Flooded Gum	>50	10-15	0					
wpt069	50H	390077	6422908	Flooded Gum	>50	15-20	2+	Small & Medium	No Signs	Galahs	No	
wpt070	50H	390085	6422900	Flooded Gum	>50	15-20	2+	Small	No Signs	No Signs	No	
wpt071	50H	390076	6422891	Flooded Gum	>50	15-20	0					
wpt072	50H	390079	6422889	Stout Paperbark (M. preisiana)	<50	0-5	0					
wpt073	50H	390080	6422882	Flooded Gum	>50	15-20	0					
wpt074	50H	390101	6422897	Conifer (exotic)	<50	0-5	0					
wpt075	50H	390106	6422892	Conifer (exotic)	<50	0-5	0					
wpt076	50H	390111	6422893	Flooded Gum	>50	15-20	0					
wpt077	50H	390113	6422892	Flooded Gum	>50	15-20	0					
wpt078	50H	390105	6422893	Flooded Gum	<50	0-5	0					
wpt079	50H	390107	6422880	Swamp Paperbark (M. rhaphiophylla)	<50	0-5	0					
wpt080	50H	390124	6422886	Conifer (exotic)	<50	0-5	0					

Waypoint Number	Zone	mE	mN	Tree Species	DBH (cm)	Tree Height (m)	Number of Hollows	Estimated Hollow Entrance Size	Occupancy	Chew Marks	Potential Cockatoo Nest Hollow	Comments
wpt081	50H	390127	6422886	Conifer (exotic)	<50	0-5	0					
wpt082	50H	390133	6422894	Conifer (exotic)	<50	0-5	0					
wpt083	50H	390135	6422897	Conifer (exotic)	<50	0-5	0					
wpt084	50H	390138	6422897	Conifer (exotic)	<50	0-5	0					
wpt085	50H	390141	6422900	Conifer (exotic)	<50	0-5	0					
wpt086	50H	390145	6422904	Conifer (exotic)	<50	0-5	0					
wpt087	50H	390148	6422903	Conifer (exotic)	<50	0-5	0					
wpt088	50H	390150	6422904	Conifer (exotic)	<50	0-5	0					
wpt089	50H	390151	6422902	Conifer (exotic)	<50	0-5	0					
wpt090	50H	390149	6422904	Conifer (exotic)	<50	0-5	0					
wpt091	50H	390148	6422908	Conifer (exotic)	<50	0-5	0					
wpt092	50H	390146	6422910	Conifer (exotic)	<50	0-5	0					
wpt093	50H	390145	6422914	Conifer (exotic)	<50	0-5	0					
wpt094	50H	390143	6422918	Conifer (exotic)	<50	0-5	0					
wpt095	50H	390141	6422921	Conifer (exotic)	<50	0-5	0					
wpt096	50H	390140	6422925	Conifer (exotic)	<50	0-5	0					
wpt097	50H	390135	6422927	Flooded Gum	>50	15-20	0					

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This fauna assessment report ("the report") has been prepared in accordance with the scope of services set out in the contract, or as otherwise agreed, between the Client and Greg Harewood ("the Author"). In some circumstances the scope of services may have been limited by a range of factors such as time, budget, access and/or site disturbance constraints. In accordance with the scope of services, the Author has relied upon the data and has conducted environmental field monitoring and/or testing in the preparation of the report. The nature and extent of monitoring and/or testing conducted is described in the report.

The conclusions are based upon field data and the environmental monitoring and/or testing carried out over a limited period of time and are therefore merely indicative of the environmental condition of the site at the time of preparing the report. Also it should be recognised that site conditions, can change with time.

Within the limitations imposed by the scope of services, the field assessment and preparation of this report have been undertaken and performed in a professional manner, in accordance with generally accepted practices and using a degree of skill and care ordinarily exercised by reputable environmental consultants under similar circumstances. No other warranty, expressed or implied, is made.

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The Author will not be liable to update or revise the report to take into account any events or emergent circumstances or facts occurring or becoming apparent after the date of the report.

Appendix 2 ASS Self-Assessment Form (WAPC, 2020)

GOVERNMENT OF WESTERN AUSTRALIA

Western Australian Planning Commission

Acid Sulfate Soils Self-Assessment Form

Version: 6.1 (August 2020)

Applicant

The applicant is the person with whom the WAPC will correspond and, if the application is approved, the person to whom the approval will be sent.

WAPC reference no.

Full name

Postal address

Town / suburb

Postcode

Email

Phone number

Applicant signature

Date

Application property details

Step 1

Assess the possibility of acid sulfate soils disturbance

Question 1: Are any dewatering or drainage works (either temporary or permanent) proposed to be undertaken? ☐ yes ☐ no

Question 2: Is excavation of 100 cubic metres or more of soil proposed?
(100 cubic metres is about 10 standard-sized dump truck loads.) ☐ yes ☐ no

If you have answered no to both question 1 and question 2 then no further investigation is required at this stage. Please sign this form and submit it, together with any supporting information, to the Department of Water and Environmental Regulation (DWER).

If you have answered yes to either question 1 or question 2 go on to step 2.

Step 2

Conduct an acid sulfate soils investigation in accordance with the guideline, *Identification and investigation of acid sulfate soils,* available on DWER's website at https://dwer.wa.gov.au/

Question 3: Did the acid sulfate soils investigation indicate that there are acid sulfate soils present? ☐ yes ☐ no

If no to question 3, then no further investigation is required at this stage. Please sign this form and submit it, together with the written results of the investigation (in the form of an acid sulfate soils report) and supporting information to DWER with a request for clearance of the acid sulfate soils condition.

If yes to question 3, please sign this form and submit it, together with the written results of the investigation (in the form of an acid sulfate soils report), an acid sulfate soils management plan and a copy of the approved subdivision plan, to DWER with a request for approval of the management plan.

Note: After completion of site works in accordance with the approved management plan you will be required to submit a closure report, prepared in accordance with DWER's acid sulfate soils guidelines, to DWER together with a request for clearance of the acid sulfate soils condition.

Tick box for attachments as appropriate

- ☐ copy of current deposited plan
- ☐ copy of approved subdivision plan
- ☐ copy of approved development plan
- ☐ acid sulfate soils investigation report
- ☐ acid sulfate soils management plan

Declaration

I declare that the information provided is true and correct to the best of my knowledge.

Applicant signature: ..... Date: .....

Submit form and required attachments to the
Department of Water and Environmental Regulation

By email: info@dwer.wa.gov.au

Or by mail:
Department of Water and Environmental Regulation
Locked Bag 10,
Joondalup DC, WA 6919

If you have any questions relating to the Acid Sulfate Soils Self-Assessment form, please contact DWER on 1300 762 982 or email info@dwer.wa.gov.au

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MARSHALL DAY Acoustics

BALAJI TEMPLE AND CULTURAL CENTRE
ACOUSTIC PLANNING REPORT

Rp 001 r02 20210485 | 24 March 2022



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Attention: **Gorki Bogdanich**

Report No.: **Rp 001 r02 20210485**

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Document Control

Status:	Rev:	Comments:	Date:	Author:	Reviewer:
Submitted	-	DA stage	29 Nov. 2021	L. Kemp	B. Beverley
Revision	1	Additional modelling added	01 Mar. 2022	B. Beverley	B. Wilson
Revision	2	Operating hours updated	24 Mar. 2022	B. Beverley	B. Wilson

TABLE OF CONTENTS

1.0 INTRODUCTION 5
1.1 Report revision notes 5
2.0 SITE DESCRIPTION 6
2.1 Site location 6
2.2 Development description 7
2.2.1 Proposed uses 7
2.2.2 Operating hours and occupancy 8
3.0 LEGISLATION AND GUIDELINES 8
3.1 Environmental Protection (Noise) Regulations 1997 9
3.1.1 Assigned noise levels 9
3.2 Road noise to the development 10
4.0 EXISTING NOISE ENVIRONMENT 11
5.0 NOISE ASSESSMENT 12
5.1 Multipurpose hall 12
5.1.1 Weddings 12
5.1.2 General activity 13
5.2 Carparks 14
5.2.1 Maximum noise levels from carparks 14
5.2.2 Overall noise from the carpark 15
6.0 RECOMMENDATIONS FOR NOISE MANAGEMENT 16
6.1 Building envelope design 16
6.2 Carpark design and management 16
6.3 General operational noise 17
6.4 Event noise 17
6.5 Additional noise sources 17
6.5.1 Mechanical services noise 17
7.0 CONCLUSIONS 18

APPENDIX A GLOSSARY OF TERMINOLOGY

APPENDIX B PLANNING MAP

APPENDIX C PROPOSED SITE PLAN

APPENDIX D ASSIGNED NOISE LEVEL CALCULATIONS

APPENDIX E NOISE MODELLING DETAILS

APPENDIX F NOISE CONTOUR MAPS

1.0 INTRODUCTION

Archetype Design Studio, on behalf of JAPA Australia Foundation, has engaged Marshall Day Acoustics (MDA) to provide preliminary acoustic advice as part of the Development Application (DA) stage for the proposed Balaji Temple development located at Lot 53 Folly Road, Baldivis.

The requested advice is for the following items:

- Freeway noise affecting the building(s)
- Noise emanating from carparks to surrounding residences
- Noise emanating from the temple and multipurpose hall to surrounding residences

This assessment includes details of the site, relevant noise criteria, an assessment of noise levels at the nearest receivers, and preliminary design and noise management recommendations to be developed during detailed design.

A glossary of acoustic terminology used in this report is provided in Appendix A.

1.1 Report revision notes

The original version of this report was prepared to accompany the DA submission to the City of Rockingham. The proposed design and operations of the development have since been refined and additional technical details have been requested by the City of Rockingham.

This revised report (r01) includes the following key changes:

- Potential future noise-sensitive receiver at 547 Young Road has been considered in the assessment
- Changes to the proposed operating hours (opening time changed from 0600 to 0700 hours)
- Additional noise modelling scenarios added including assessment of carpark noise against L_{A10} assigned levels
- Multipurpose hall modelling updated based on more detailed analysis of the building envelope and revised source levels. Associated building envelope treatments revised accordingly.
- Noise contour maps included as Appendix F
- Minor site layout changes

2.0 SITE DESCRIPTION

2.1 Site location

The Balaji Temple is proposed for Lot 53 Folly Road, Baldivis. An aerial photograph showing the site and surrounds is presented in Figure 1. The nearest noise-sensitive receivers are numbered and described in Table 1.

Figure 1: Aerial photograph of the site and surrounds (Image: Nearmap)

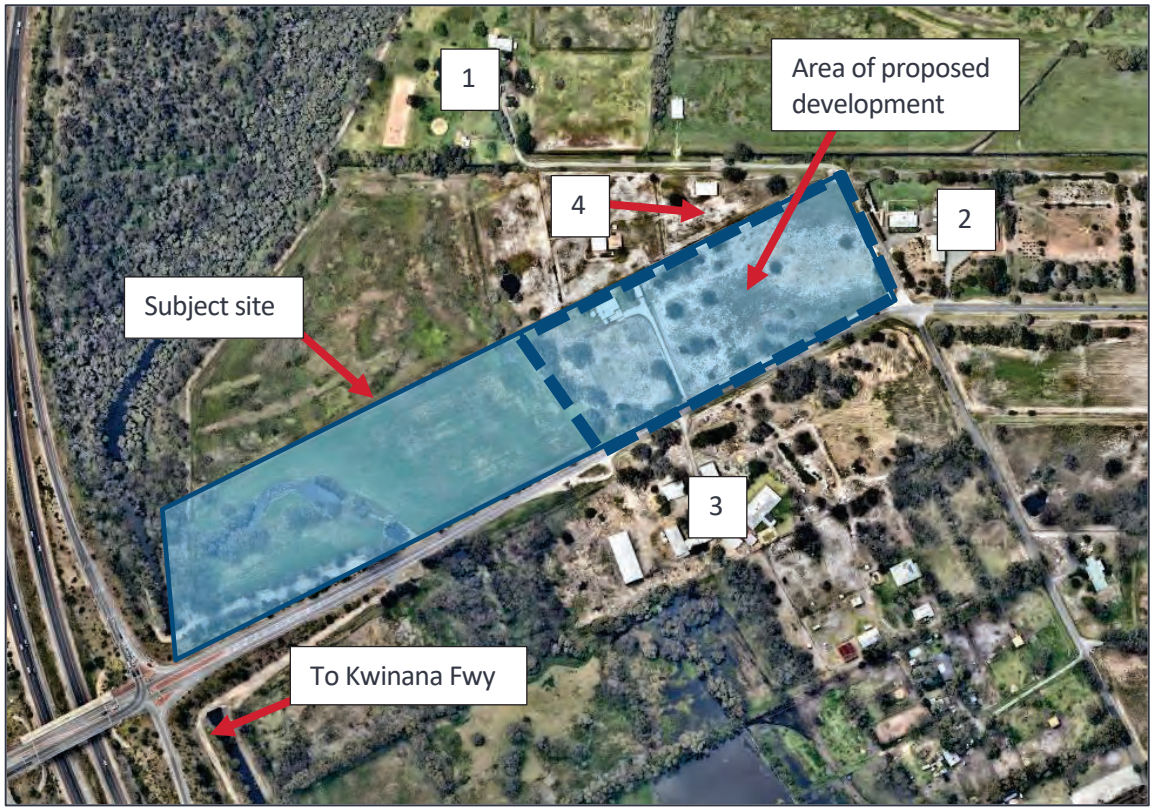


Table 1: Nearest representative receivers

Receiver ID	Address	Description
1	574 Young Road	Residence
2	542 Young Road	Business and residence
3	66 Folly Road	Residence
4	547 Young Road	Potential future residence (exact location TBC

The surrounding area is zoned Rural and Special Rural.

A planning map showing the land use zoning is provided in Appendix B.

For the purposes of this assessment the potential future residence at 547 Young Road (#4) has been located approximately 8 m from the boundary (as marked on Figure 1).

2.2 Development description

The proposed development includes the following new buildings and facilities:

- Temple, with kitchen and toilet facilities
- Multipurpose cultural hall
- Dining hall
- Library
- Short stay facility
- Priest residences
- Open air carparking with 109 parking bays.

A copy of the proposed site plan is included in Appendix C.

2.2.1 Proposed uses

The main proposed uses for the new facilities on the site are summarised in Table 2.

Table 2: Proposed uses

Facility	Proposed uses
Temple	Religious practices (e.g. prayer, sermons, devotional singing)
Multi-purpose hall – regular use	Study of scriptures Chanting and Bhajans (devotional singing) Indian classical dance Sanskrit language classes Administration and meetings
Multi-purpose hall – occasional use	Wedding ceremonies and receptions
Priest residence	Residential accommodation
Short stay facility	Visiting guests from overseas
Library	Study of Vedic scriptures and texts
Temple kitchen	Preparation of food offerings at altar

2.2.2 Operating hours and occupancy

The proposed operating hours and occupancy for the development are summarised in Table 3.

Table 3: Proposed operating hours and occupancy

Day	Activity	Anticipated attendance	Time
Monday – Friday	Prayers	25 – 50	0700 – 1200 hrs
		25 – 50	1700 – 2100 hrs
Monday – Friday	Yoga classes	20	1800 – 1900 hrs
Saturday – Sunday	Prayers	100 – 150	0700 – 1200 hrs
		100 – 150	1700 – 2100 hrs
Saturday – Sunday	Scripture classes	50 – 75	1500 – 1800 hrs
Once per month on average	Special Hindu festival days:		
	- If on a weekday	50 – 75	0700 – 1200 hrs
		200 – 250	1700 – 2100 hrs
	- If on a weekend	200	0700 – 1200 hrs
		200 – 250	1700 – 2100 hrs
Friday nights or weekends, 6 times per year on average	Hindu weddings	300 – 400	1800 – 0000 hrs

3.0 LEGISLATION AND GUIDELINES

The guidance documents relevant to this assessment are summarised in Table 4.

Table 4: Relevant legislation and guidelines

Document	Status	Relevance to assessment
Western Australian *Environmental Protection (Noise) Regulations 1997* (Noise Regulations)	Statutory requirement	Sets limits for noise from the development, e.g. mechanical plant equipment, patrons and music
State Planning Policy No. 5.4 *Road and Rail Noise* (SPP 5.4)	Planning policy	SPP 5.4 and the associated Implementation Guidelines are referred to with regard to traffic noise to noise-sensitive land uses within the proposed development
AS/NZS 2107:2016 *Acoustics - Recommended design sound levels and reverberation times for building interiors* (AS 2107)	Guideline	AS 2107 is referred to in SPP 5.4 and MDA recommends that the buildings be designed to meet internal noise levels and reverberation time criteria recommended in AS 2107

3.1 Environmental Protection (Noise) Regulations 1997

External noise emission is governed by the *Western Australia Environmental Protection (Noise) Regulations 1997* (the Noise Regulations). The Noise Regulations are a "prescribed standard" under the *Environmental Protection Act 1986*.

The assessment of noise emission under the Noise Regulations is based on external noise level limits that apply at a receiver position. The calculation of the noise level limits takes into account the local road network, the land use in the surrounding area and the time of day. These calculated noise level limits are known as 'assigned noise levels.'

Noise emissions from a proposed development site are assessed over an assessment period which can vary between fifteen minutes and four hours. The assessment period must be appropriate for the assessment of the emission and depends on the type and character of the noise source(s).

The assigned noise levels are defined in terms of statistical A-weighted and Slow-weighted sound pressure levels as follows:

- L_{AS10}, this is the noise level not to be exceeded for more than 10% of the assessment period
- L_{AS1}, this is the noise level not to be exceeded for more than 1% of the assessment period
- L_{ASmax}, this is the noise level not to be exceeded at any time.

In determining the assigned noise levels applicable to the development, reference has been made to the town planning scheme map available from the City of Rockingham Local Planning Scheme provided in Appendix B.

3.1.1 Assigned noise levels

The assigned noise levels applicable to the representative most-affected receivers are presented in Table 5. Full details of the parameters used in the calculation of the assigned noise levels are provided in Appendix D.

Table 5: Summary of assigned noise levels

Type of premises receiving noise	Time of day	Assigned noise level (dB)		
		L_{A10}	L_{A1}	L_{Amax}
Noise sensitive premises: highly sensitive area	0700-1900 – Monday to Saturday	45	55	65
	0900-1900 – Sunday and public holidays	40	50	65
	1900-2200 – All days	40	50	55
	2200-0700 – Monday to Saturday, or 2200-0900 – Sunday and public holidays	35	45	55
Noise sensitive premises: any area other than highly sensitive area	All hours	60	75	80

In addition, the noise emissions must be free of annoying characteristics such as: impulsiveness, modulation and tonality. Adjustments are also applicable where the noise emission is music. These adjustments are presented in Table 6.

Table 6: Adjustments for annoying characteristics

Adjustment where noise emission is not music. These adjustments are cumulative to a maximum of 15 dB			Adjustment where noise emission is music	
Where tonality is present	**Where modulation is present**	**Where impulsiveness is present**	**Where impulsiveness is not present**	**Where impulsiveness is present**
+5 dB	+5 dB	+10 dB	+10 dB	+15 dB

Division 5 of the Noise Regulations states that "Regulation 7 does not apply to community noise". Community noise is defined in Schedule 2 and includes:

> 3. Noise emitted from an assembly convened solely for the purpose of divine worship where —
>
> (a) the noise is not noise of a kind referred to in regulation 15(2); and
>
> (b) the premises or public place on which the worship takes place is land which is referred to in section 6.26(2)(d), (e) or (f) of the *Local Government Act 1995*.

Some activities on the site are considered to be 'community noise' and therefore would not be assessable against the assigned levels.

Other activities proposed for the site would not be exempt and these are also likely to have the highest associated noise levels. Estimated noise levels from these activities are described and compared with the assigned levels criteria below.

3.2 Road noise to the development

The relevant policy for the assessment of road traffic noise in Western Australia is *State Planning Policy No. 5.4 Road and Rail Noise* (SPP 5.4). A screening assessment has been undertaken using the Noise Exposure Forecast table in the SPP 5.4 *Road and Rail Noise Guidelines*. The outcomes are summarised in Table 7.

Table 7: Forecast noise exposure category

Road name	Number of lanes (total)	Vehicles per day	Distance to noise sensitive receiver	Forecast noise exposure	Noise exposure category
Kwinana Fwy	8	>60 000	>300 m*	<53	None

* the receiver location has been taken to be the nearest noise-sensitive building (the priest's residence)

The forecast noise exposure level is below the SPP 5.4 external noise target and therefore no further measures are required to address traffic noise intrusion under SPP 5.4.

The distance and forecast noise levels presented in Table 7 are the furthest distance possible in the SPP 5.4 Noise Exposure Forecast table. The actual separation distance between the Kwinana Fwy and the nearest noise-sensitive buildings proposed for the site is >500 m. As such, external traffic noise levels at the buildings will be lower than 53 dB, particularly at night (noting that the forecast noise exposure levels are daytime levels).

Based on the forecast exposure level, internal noise levels of AS 2107 are expected to be achievable with typical facade designs that allow for natural ventilation.

4.0 EXISTING NOISE ENVIRONMENT

A noise survey of the site has not yet been carried out; however, the noise environment is expected to mainly consist of road noise from the nearby Kwinana Freeway. The average weekday traffic volumes on this section of the freeway are greater than 73,000 vehicles (AADT).

While the Freeway is not close enough to warrant any specific sound insulation requirements for the project, the ambient noise levels at surrounding properties are an important consideration, since they affect how noise will be perceived by neighbours. They also affect how noise is assessed, noting that certain 'annoying characteristics adjustments' depend largely on audibility.

High level noise modelling has been undertaken to estimate noise levels during one of the more sensitive time periods (2300 to 0000 hours on weekends). The predictions are based on hourly traffic data obtained from Main Roads.

A noise contour map is included for reference and can be found in Appendix F6.

We recommend that a logging survey be included during detailed design to confirm the existing environmental noise levels.

5.0 NOISE ASSESSMENT

The following noise sources associated with the operation of the temple have been considered in the noise assessment:

- Noise from the multipurpose hall
- Noise from cars and patrons using the carparks

To estimate potential noise transmission from site activity, a 3-dimensional model of the proposed hall and surrounding environment was created using SoundPLAN proprietary noise modelling software (version 8.2).

Details on the modelling, including source levels, are provided in Appendix E.

5.1 Multipurpose hall

Breakout noise from the multipurpose hall has been modelled for the following two scenarios:

1. Weddings (occasional use) – likely worst-case scenario for noise
2. General activity – presented as the likely range for regular hall uses.

5.1.1 Weddings

For assessment purposes an internal reverberant level of 90 dB L_{A10} has been assumed within the hall. This level is based on survey data obtained by MDA staff from another function venue. The level was measured at the peak of the night and is considered representative of the upper levels that could sometimes occur when the hall is fully occupied with music playing. The noise source includes both patrons and music.

Refer to Appendix E3 for the sound spectra.

The estimated noise levels at the nearest representative receivers are provided in Table 8. The levels are based on the building envelope recommendations provided in Section 6.0 and assume windows and doors to the hall are all closed.

Table 8: Multipurpose hall predicted levels from weddings (dB)

Receiver	Address	Predicted level (L_{A10})	Assigned level (L_{A10})	Compliance	Margin (evening/night)
1	574 Young Road	17	Evening: 40 dB Night: 35 dB	✓	-23 / -18
2	542 Young Road	25		✓	-15 / -10
3	66 Folly Road	23		✓	-17 / -12
4	547 Young Road	29		✓	-11 / -6

The predicted levels from weddings within the multipurpose hall show:

- Compliance is demonstrated at all existing receivers (#1-3) with margins of at least 15 dB and 10 dB for the evening and night periods respectively
- Compliance is demonstrated to the potential future receiver (#4) at 547 Young Road with margins of 11 dB and 6 dB for the evening and night periods respectively

Under a compliance survey assessment, noise levels measured at nearby receivers would be assessed to determine whether any 'annoying character adjustments' are appropriate. While ambient noise levels at the time would need to be factored in (see discussion in Section 4.0), if the noise was clearly identified to be music, it would typically attract a +10 dB adjustment.

While these are preliminary estimates only at this stage, the following can be determined:

- Music levels during weddings will need to be carefully managed to meet the assigned levels, particularly during night-time hours (i.e. after 2200 hrs)
- Windows and doors will likely need to be closed at times to contain noise. While doors will inevitably need to open and close for ingress and egress, the main entry doors open to a lobby (rather than the main hall), which will help reduce noise breakout via open doors.
- The building envelope design will require careful consideration during detailed design so that the building is capable of sufficiently containing noise when required. See Section 6.1 for preliminary recommendations.
- Should a future receiver be introduced at 547 Young Road, additional noise management controls may need to be included, particularly if music were found to be audible.

The scenario modelled is expected to be the highest noise activity in the multipurpose hall and it has been modelled with doors and windows closed to demonstrate that under a typical worst-case use noise can be controlled, provided that provisions are made in the design.

A noise management plan should be developed so that any operational procedures that are found necessary to achieve compliance are clearly documented for staff to follow.

Preliminary design and management recommendations are outlined in Section 6.0.

5.1.2 General activity

Internal sound levels in the multipurpose hall under regular use are expected to be significantly below those for a wedding. The internal levels will vary depending on the activity, number of patrons, etc. An estimated sound level range between 70-80 dB L_{A10} has been assumed, which is likely representative of most typical uses.

Refer to Appendix E3 for the sound spectra.

For this scenario, the building envelope is assumed to be open (natural ventilation mode). Window locations are not yet known; for simplicity, the modelling assumes all doors around the hall are open (total 32 m^2 openings).

Table 9: Multipurpose hall predicted levels from general activity (dB)

Receiver	Address	Predicted levels (L_{A10})	Assigned level (L_{A10})	Compliance
1	574 Young Road	22-32	Day: 45 dB Evening: 40 dB Night: 35 dB	✓
2	542 Young Road	30-40		Potential exceedances at night
3	66 Folly Road	28-38		Potential exceedances at night
4	547 Young Road	34-44		Potential exceedances evening and night

The predictions in Table 9 show there is potential for the assigned noise level criteria to be exceeded for some noisier uses, however it must be reiterated that the modelling assumes the hall is in open mode (all doors open). Options to reduce noise include:

- Hall timetabling – scheduling noisier activities for daytime hours
- Reducing sound levels at the source (e.g. lower music levels at night or if natural ventilation is desired)
- Closing some windows and doors during sensitive periods.

Managerial controls are described further in Section 6.0.

With appropriate consideration for these variables, it is expected that noise can be managed, and the venue operated successfully.

5.2 Carparks

The proposed development includes:

- A main carpark with 60 parking bays between the temple and multipurpose hall towards the northern boundary of the site
- A row of 31 car parking bays along the northern boundary of the site
- A secondary carpark with 15 bays to the north of the multipurpose hall
- 4 additional bays near the short stay accommodation

5.2.1 Maximum noise levels from carparks

An assessment against the 55 dB L_{Amax} evening and night-time assigned noise level has been undertaken to address short duration sounds from:

- Noise from individual vehicles within the carpark
- Vehicle start-ups, doors being opened and closed
- Voices from car park users

The maximum sound levels would generally be from car door slams. Sound power data used for the calculations is provided in Appendix E. The levels are based on a range of measurements taken by MDA and are considered to represent typical maximum levels from parking bays. Excessive noise resulting from anti-social or non-typical behaviour could generate higher noise levels than those considered in the assessment; however, it is expected that this would be unlikely for this type of development and management procedures could be used to control this if required.

The maximum noise level calculation is conservative, in that the level at each receiver is the highest predicted from any point in the carpark – i.e. it is assumed the maximum noise source occurs at the worst possible location for each receiver.

The predicted noise levels are provided in Table 10.

Table 10: Carpark predicted levels (dB)

Receiver	Address	Predicted level (L_{Amax})	Assigned level (L_{Amax})*	Compliance
1	574 Young Road	37	55	✓
2	542 Young Road	44	55	✓
3	66 Folly Road	44	55	✓
4	547 Young Road	55	55	✓

The estimated levels show that noise from typical maximum sources in the parking bays nearest the surrounding receivers would meet the assigned levels.

The potential for car door slams to attract a +10 dB adjustment for impulsiveness is noted, although this would not affect compliance to existing receivers. Only the potential future receiver (#4) is within a 10 dB margin for compliance. Furthermore, this adjustment would typically apply to persistent and consistent impulsive noise rather occasional intermittent events. This risk may need to be addressed in future – a potential noise barrier option, which could be used to address this, is described in the subsequent section.

5.2.2 Overall noise from the carpark

An assessment has also been undertaken of overall noise against the L_{A10} assigned level criteria for two potential worst-case scenarios. The scenarios and assumptions are described below.

Scenario 1 – Morning prayer service (weekly)

- Morning prayer service on a Sunday prior to 0900 hours (within the "night period")
- Assumes 150 attendees arrive within a 2-hour period
- 75 vehicle movements (based on an average of 2 patrons per vehicle)
- Vehicles all park in the main Temple car park

Scenario 2 – Special Hindu festival days (monthly)

- Special Hindu festival day, assuming on a Sunday prior to 0900 hours (within the "night period")
- Assumes 200 attendees arrive within a 2-hour period
- 100 vehicle movements (based on an average of 2 patrons per vehicle)
- Vehicles using all available parking bays on site

Scenario 3 – Weddings (6 per year)

- Wedding scenario after 2200 hours on a Friday or Saturday night
- Assumes all 109 carparking bays empty within a 1-hour period
- 109 vehicle movements
- Vehicles using all available parking bays on site

The results for these scenarios are presented as noise contour maps in Appendix F3, Appendix F4 and Appendix F5.

The results show:

- Noise from Scenario 1 (weekly use) is predicted to meet the assigned levels at all existing and the potential future residence
- Noise from Scenario 2 (monthly use) and Scenario 3 (6 per year) is predicted to meet the assigned levels at all existing receivers; however, if a future residence were to be developed on 547 Young Road, the assigned levels would likely be exceeded unless additional noise controls were included (discussed below).

An additional modelling scenario is included as Appendix F6. The scenario includes a conceptual noise barrier along the northern boundary between the carpark and 547 Young Road. The scenario is provided to demonstrate that this noise can be successfully managed, in the event that a future residential premises is developed at 547 Young Road.

General recommendations to help manage carpark noise are provided in Section 6.2.

6.0 RECOMMENDATIONS FOR NOISE MANAGEMENT

The noise assessment detailed above demonstrates that noise from the multipurpose hall and carpark can meet the assigned levels. The design should allow for the provisions outlined below, to be developed during detailed design. Managerial controls will also be an important factor for the successful operation of the site, and these should be developed into a noise management plan to be maintained by the operator.

Preliminary recommendations for the design and management of the site are outlined below.

6.1 Building envelope design

At this stage of the design, the materials and designs for the building envelope are not yet determined. The noise modelling presented for the multipurpose hall is nominally based on:

- Closed and sealed R_w 36 (e.g. 10.38 mm laminated) acoustic glazing. The extents and locations of external windows will need to be factored in when designing the facade. If larger extents are used (i.e. entire facades), higher ratings should be considered. Similarly, smaller windows to more shielded facades could accommodate lower ratings.
- External walls being solid masonry (e.g. precast or double brick), rated around R_w 50. Lightweight facade elements could be considered but should be designed to contain music noise.
- Acoustically rated roof and suspended ceiling build-up (min. R_w 54).
- For external doors, the modelling assumes min. R_w 30.

Doors are weak points acoustically, particularly since they cannot remain closed at all times. For event noise, it would be beneficial if the design allows for the option to close and seal some doors at times (e.g. during any late night hours for events).

It is noted that the main entry doors are located in a relatively shielded position on the building relative to the nearby receivers and open to a lobby/airlock, rather than direct to the hall. This is a good design and should allow greater operational flexibility.

6.2 Carpark design and management

The following general design recommendations are made to reduce car park noise:

- The surface of the carpark should be a low noise asphalt or bitumen type
- Although primarily a safety consideration, vehicle speeds should be restricted to control noise. Signage, line markings and chicanes should be considered in lieu of speed humps, as speed humps can be a cause of nuisance noise
- Loose road coverings such as drains should be avoided

Managerial options that could be implemented include:

- Attendees being made aware of the need to be respectful of residential neighbours, including encouragement not to loiter in the carpark and to depart from site in a quiet manner.
- Directing attendees to park in less sensitive areas on site first and/or restricting access to certain parts of carparks. Although it is noted that carparks nearest the buildings are likely to fill up first and these are also furthest from the residents.

6.3 General operational noise

For managing noise from general operations, the following options will be available and should be considered:

- Hall timetabling, with quieter activities such as scripture and language classes scheduled for more noise sensitive times wherever possible (refer to the assigned levels hours in Table 5)
- Any third parties hiring the hall should be made aware of the proximity of noise sensitive neighbours and their responsibility to manage their activity levels
- Staff and volunteers being informed of noise management responsibilities

While some of these would not typically need to be formalised in a noise management plan, managerial controls related to large events would.

6.4 Event noise

The assessment of event noise demonstrates that noise can be contained within the multipurpose hall when required, provided that music levels are controlled, particularly for any events after 2200 hours.

The assessment is a simplified review and does not account for the variables that would need to be considered in further detail before any large events such as weddings are held on the site.

The following would need to be considered:

- Number of patrons
- Event times / durations
- Proposed music, activities, etc.
- Event layouts

Once these are determined, more specific noise management procedures should be developed to manage noise risks associated with events.

Noise from patrons arriving and leaving from the venue should be controlled through appropriate patron management procedures. Assessment of noise from patrons in the car park has been assessed in Section 5.2.1.

6.5 Additional noise sources

The following additional noise sources on site were identified. These will also need to be considered in the design and managed by the operator.

6.5.1 Mechanical services noise

At this stage of the project, the mechanical services design strategy is not yet confirmed; however, services will need to be designed so that compliance with the Noise Regulations is achieved.

Noise from mechanical services equipment is typically controlled using design and engineering methods such as:

- Plant equipment siting and selection to reduce noise impacts
- Barriers/screens around plant equipment
- Duct attenuators and acoustic louvres

In addition, equipment will need to be appropriately vibration isolated.

Based on the layout, siting of the buildings, and buffer distances to nearby receivers, it is expected that services noise can be adequately controlled using typical noise control approaches.

Noise to within the development itself should also be considered and we recommend the internal noise level criteria of AS 2107 be targeted in the design.

7.0 CONCLUSIONS

This reported has been prepared as part of the Development Application (DA) for the proposed Balaji Temple development located at Lot 53 Folly Road, Baldivis.

The original version of this report was prepared to accompany the DA submission to the City of Rockingham. The proposed design and operations of the development have since been refined and additional technical details have been requested by the City of Rockingham. Changes are described in Section 1.1.

Assessment of specific noise considerations was requested and includes:

- Freeway noise affecting the building(s)
- Noise emanating from carparks to surrounding residences
- Noise emanating from multipurpose hall to surrounding residences

Descriptions and assessment of these aspects is provided to a level of detail considered appropriate for this stage of the development.

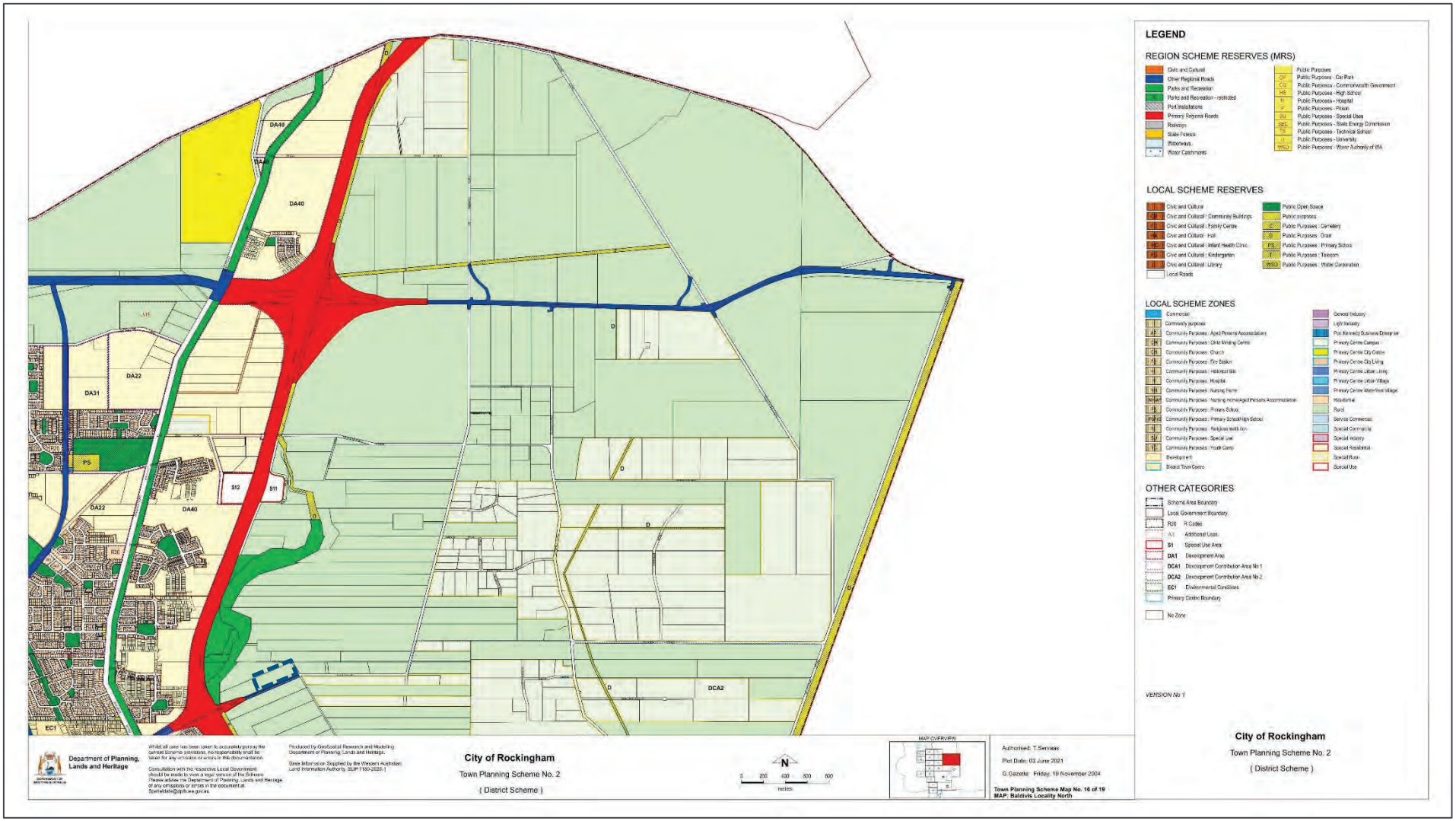
Preliminary recommendations for the design are provided, which should be developed during detailed design. The extent of noise controls that can be incorporated in the design will ultimately determine the scope of any operational noise management procedures that are required.

With appropriate development of the design and implementation of management strategies, the development is expected to meet the relevant noise standards and appropriately function in the surrounding noise environment.

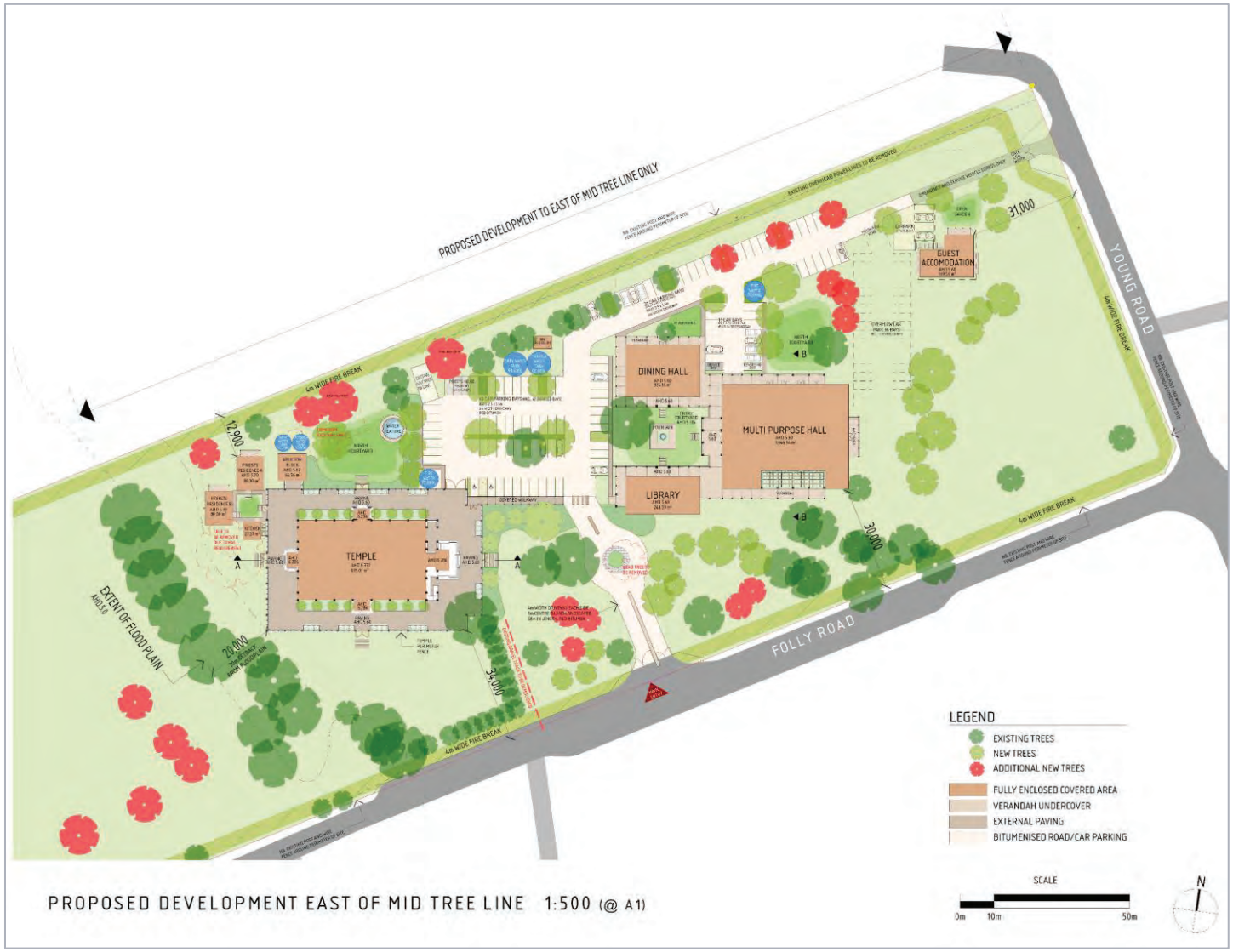
APPENDIX A GLOSSARY OF TERMINOLOGY

A-weighting	The process by which noise levels are corrected to account for the non-linear frequency response of the human ear.
dB	Decibel The unit of sound level. Expressed as a logarithmic ratio of sound pressure P relative to a reference pressure of Pr=20 μPa i.e. dB = 20 x log(P/Pr)
Frequency	The number of pressure fluctuation cycles per second of a sound wave. Measured in units of Hertz (Hz).
Hertz (Hz)	Hertz is the unit of frequency. One hertz is one cycle per second. One thousand hertz is a kilohertz (kHz).
L_{A1}	The noise level exceeded for 1% of the assessment period, measured in dBA.
L_{A10}	The noise level exceeded for 10% of the assessment period, measured in dBA.
L_{Amax}	The A-weighted maximum noise level, measured in dBA.
Octave band	A range of frequencies where the highest frequency included is twice the lowest frequency. Octave bands are referred to by their logarithmic centre frequencies, these being 31.5 Hz, 63 Hz, 125 Hz, 250 Hz, 500 Hz, 1 kHz, 2 kHz, 4 kHz, 8 kHz, and 16 kHz for the audible range of sound.
SPL or L_P	Sound Pressure Level A logarithmic ratio of a sound pressure measured at distance, relative to the threshold of hearing (20 μPa RMS) and expressed in decibels.
SWL or L_W	Sound Power Level A logarithmic ratio of the acoustic power output of a source relative to 10^{-12} watts and expressed in decibels. Sound power level is calculated from measured sound pressure levels and represents the level of total sound power radiated by a sound source.

APPENDIX B PLANNING MAP



APPENDIX C PROPOSED SITE PLAN



APPENDIX D ASSIGNED NOISE LEVEL CALCULATIONS

The determination of the Influencing Factor (IF) which affects the assigned levels applicable at the nearest residential receivers is based on the following:

- The number of major and secondary roads in proximity to the receiver
- The area of commercial and industrial zoned land surrounding the receiver

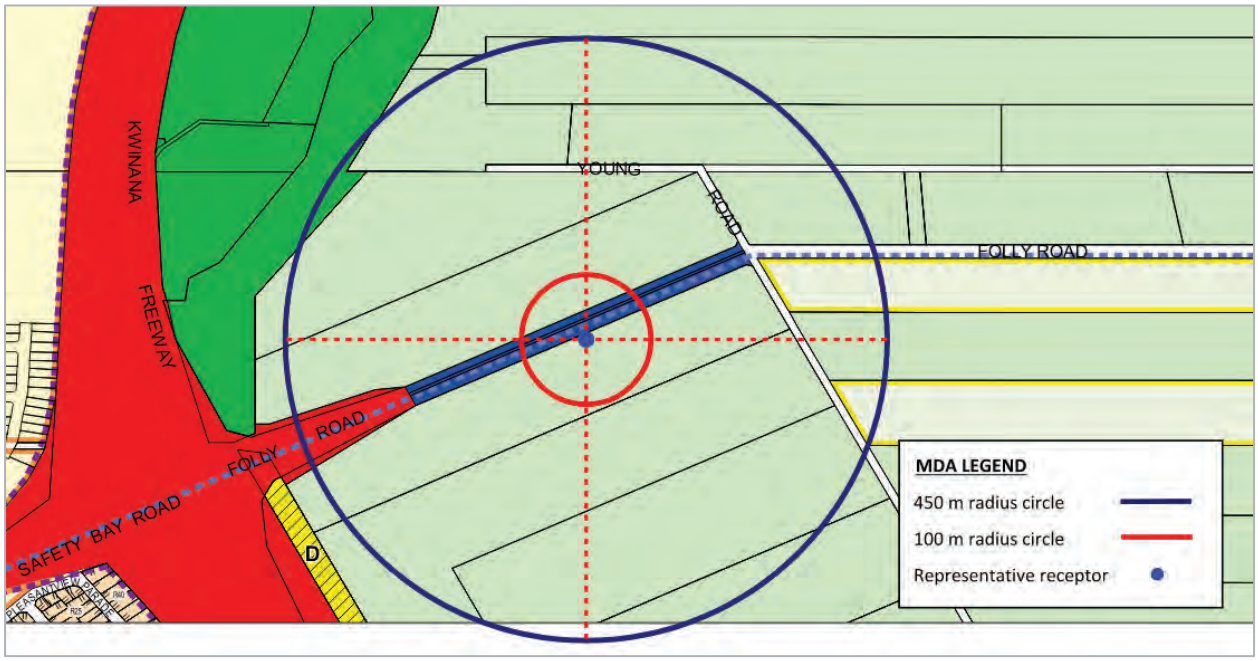
The procedure defined in the Noise Regulations considers the land use and road types with two circles centred on the receiver location, one of 450 m radius, and one of 100 m radius.

The land use has been determined from:

- City of Rockingham Local Planning Scheme (accessed 21/09/2021)

An extract of the City of Rockingham planning map showing the 100 m and 450 m radius circles centred at the nearest sensitive receiver at 66 Folly Road is presented in Figure 2.

Figure 2: Extract of planning map with 100 m and 450 m radius areas used to determine the IF shown



Transport factors of 6 dB and 2 dB apply if there are any Major Roads (a road carrying in access of 15,000 vpd) within the 100 m and 450 m circles respectively. For each Secondary Road (a road carrying in between 6,000 - 15,000 vpd) within the 100 m circle, a 2 dB transport factor applies. The total transport factor that is included in the IF is limited to 6 dB.

Traffic data for the nearby roads obtained from Main Roads is presented in Table 11.

Table 11: Traffic data and classifications for nearby roads (source: Main Roads)

Road	Average weekday traffic volume (AADT/VPD)	Classification
Folly Road (West of Young Road)	2,592 (2020/2021)	-

Based on the data presented in Table 11 and noting that the Kwinana Fwy is more than 450 m away from the nearest noise sensitive receivers, the transport factor is 0 dB.

A summary of the input parameters used to determine the IF is presented in Table 12.

Table 12: Influencing Factor (IF) calculation parameters

	100 m circle	450 m circle	IF
Land use:			
Industrial %	0%	0%	-
Commercial %	0%	>3%	-
Transport Factor:			
Major road	0	0	-
Secondary roads	0	n/a	-
		Influencing Factor:	**0 dB**

Based on the parameters above, the IF is calculated to be 0 dB.

APPENDIX E NOISE MODELLING DETAILS

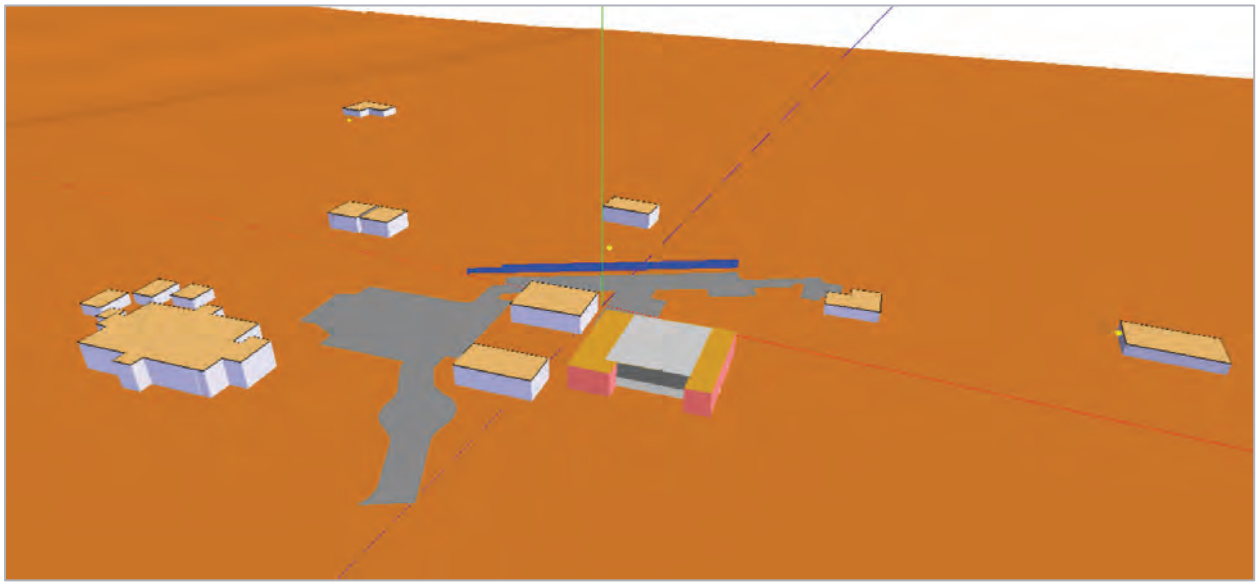
E1 Modelling method

A 3-dimensional model of the proposed building, carpark and surrounding environment has been created using SoundPLAN proprietary noise modelling software (version 8.2).

Geometry data for the model has been sourced from public aerial photography and building heights defined on the basis of standard assumed heights per floor level. The geometries in the model are simplified representations of the built environment that have been configured to a level of detail that is appropriate for noise calculation purposes.

A screenshot from the noise model is shown in Figure 3.

Figure 3: Screenshot from SoundPLAN noise model



The SoundPLAN model has been used to calculate noise levels in accordance with the International Standard *ISO 9613-2: 1996 Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation* (ISO 9613-2). ISO 9613-2 is a general environmental noise calculation standard that has been used extensively throughout Australia, New Zealand, and Europe since its publication in 1996.

The implementation of ISO 9613-2 within proprietary noise modelling software enables multiple sound transmission paths, including reflected and screened paths, to be accounted for in the calculated noise levels.

The ISO 9613-2 predicts noise levels for conditions which favour the propagation of noise. The meteorological conditions assumed in the noise modelling are 10°C with 70% humidity.

Overall noise from carparks (L_{A10} predictions) are modelled based on the Bavarian[1] prediction method.

[1] Bavarian State Agency for the Environment 2007, Parking Area Noise, 6th Edition, Bavarian State Ministry for the Environment, Germany

E2 Noise modelling inputs

Selected key inputs for the noise model are presented in Table 13.

Table 13: Noise modelling inputs

Parameter	Input
Noise source data	Refer to Table 14 below
Topography data	Sourced from Geoscience Australia
Noise source heights:	
Cars	0.5 m above ground
Voices	1.5 m above ground
Receiver details:	
Height	1.5 m above ground
Location	- 15 m from nearest facade - At the facade of 542 Young Road (based on proximity to boundary) - Assumed 8 m in from boundary for 547 Young Road
Ground attenuation	G = 0.5 (50% absorptive)

E3 Noise source levels

In order to undertake the acoustic assessment, noise level data has been sourced from the MDA noise database. The MDA noise database is a comprehensive compilation of noise measurements of numerous sources performed by staff at MDA. These measurements have been used to calculate suitable inputs for the noise model.

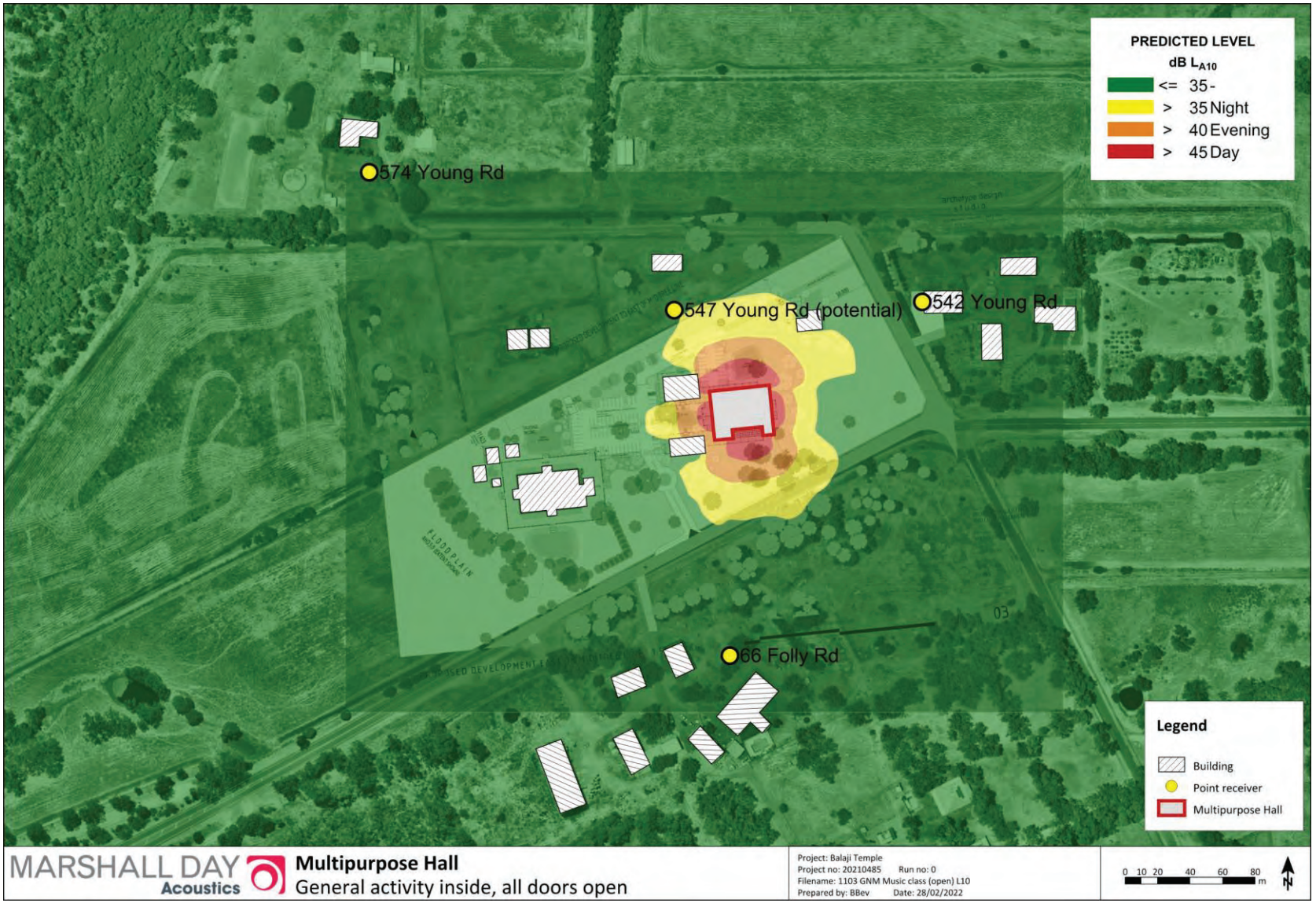
The sound levels presented in Table 14 have been used in this assessment.

Table 14: Sound levels for noise sources used in assessment

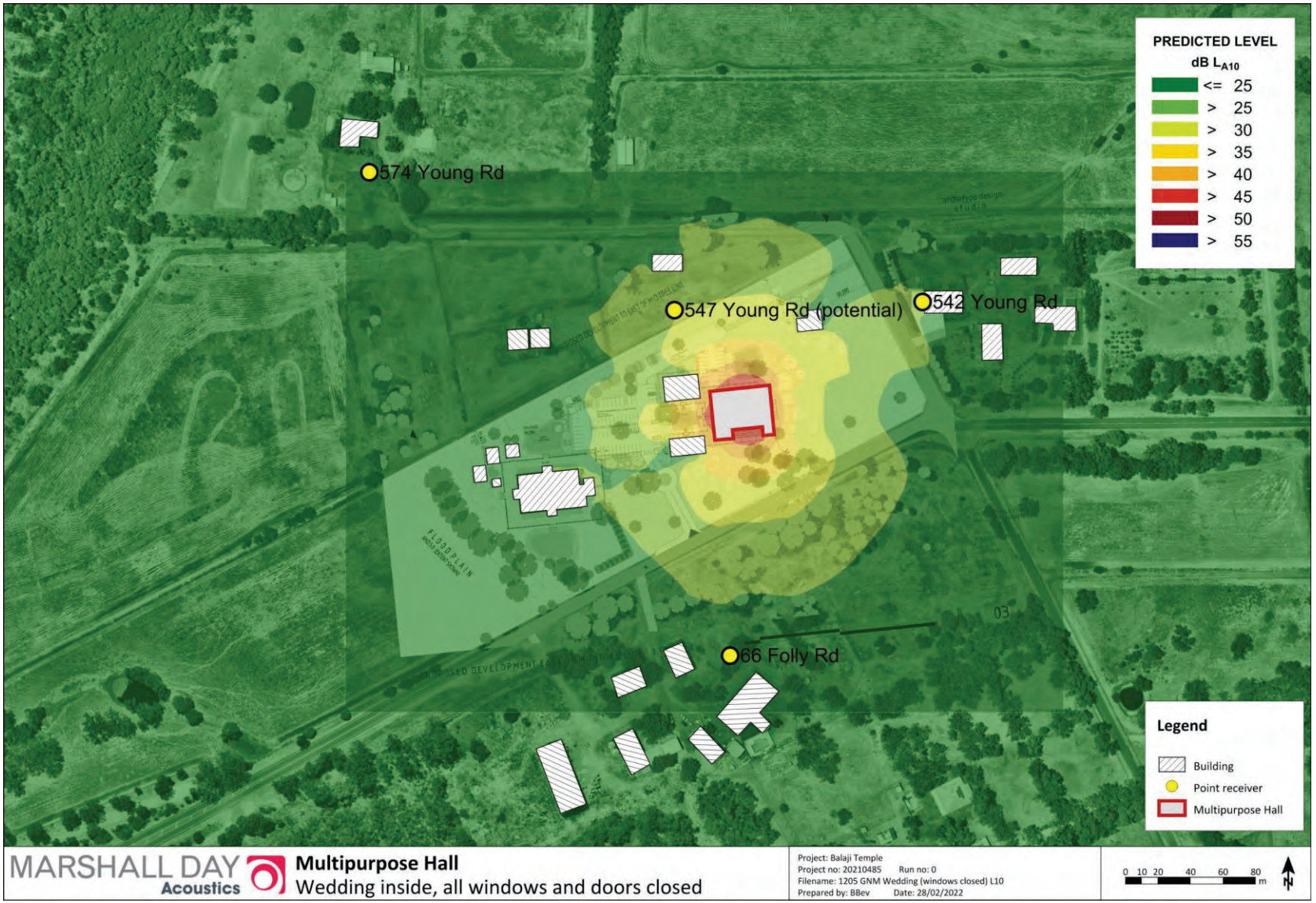
		Octave band centre frequency, Hz (dB)							
Noise source	**Metric**	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**dBA**
Car door slam	$L_{wS,Max}$	108	104	94	88	85	83	80	93
Wedding music and patrons	$L_{10,rev}$	88	88	88	83	83	83	83	90
General hall activity (low)	$L_{10,rev}$	51	53	59	68	65	63	58	70
General hall activity (high)	$L_{10,rev}$	61	63	69	78	75	73	68	80

APPENDIX F NOISE CONTOUR MAPS

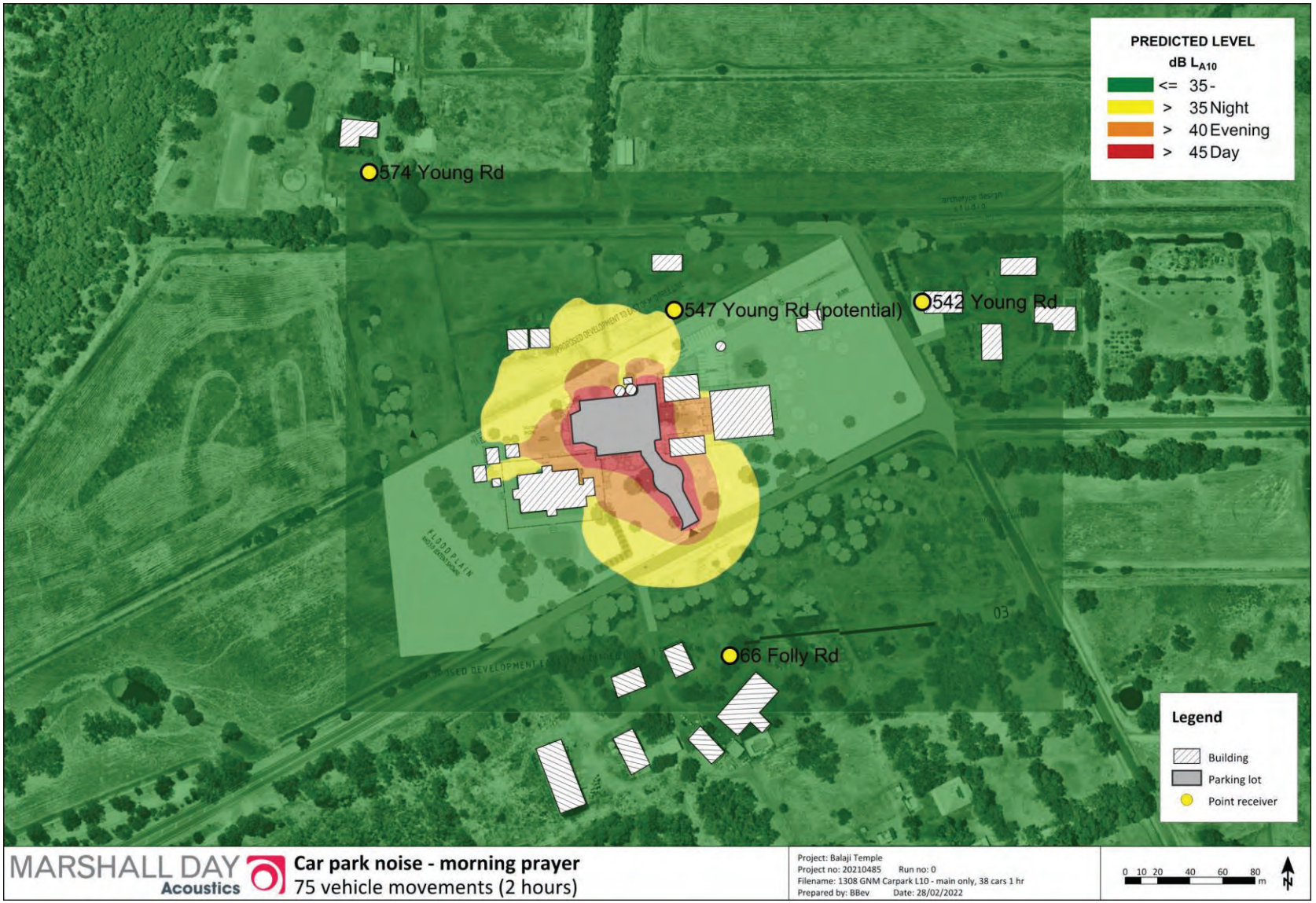
F1 Multipurpose hall noise – General activity (all doors open)



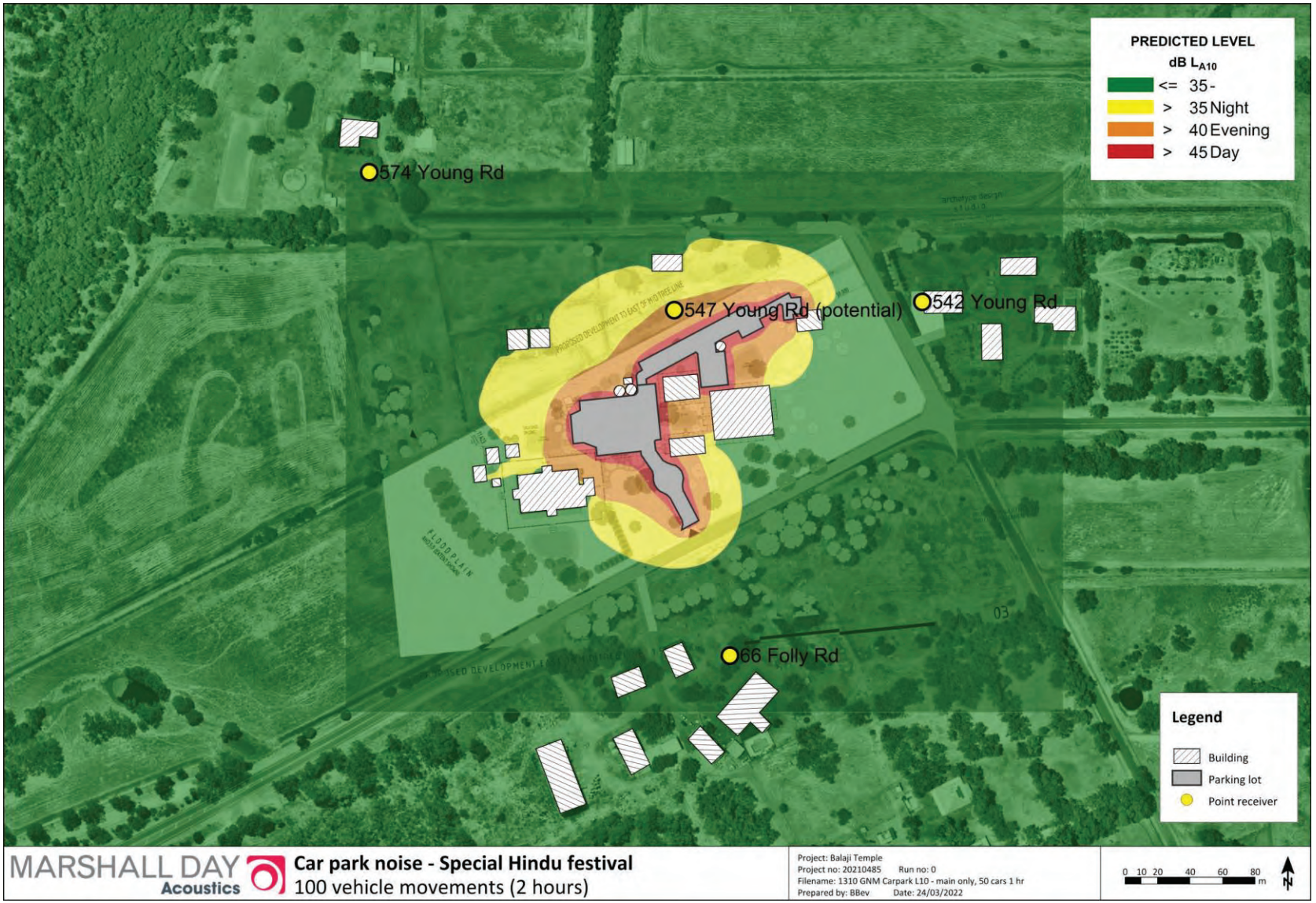
F2 Multipurpose hall noise – Weddings (windows closed)



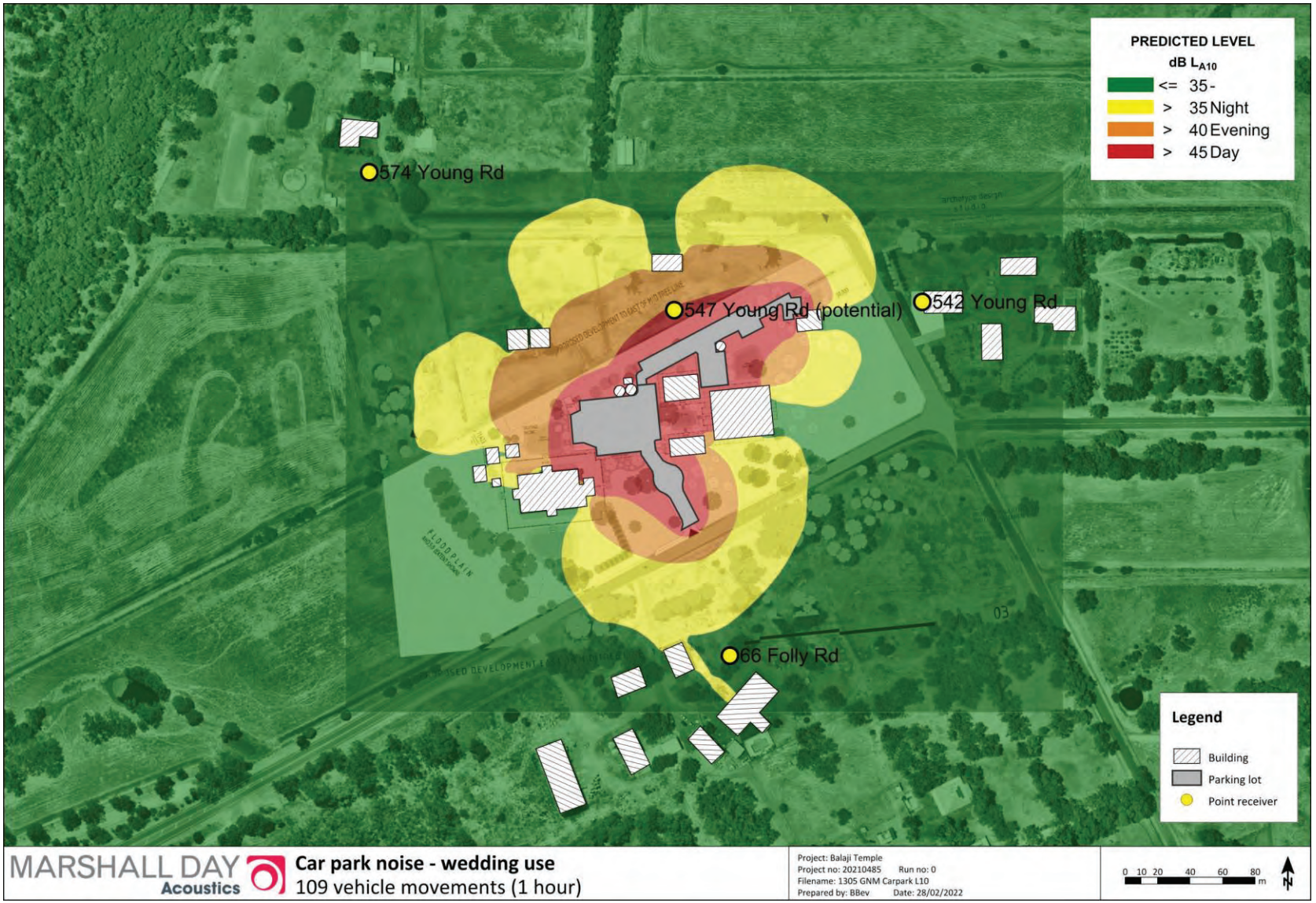
F3 Carpark noise – Morning prayer service (weekly)



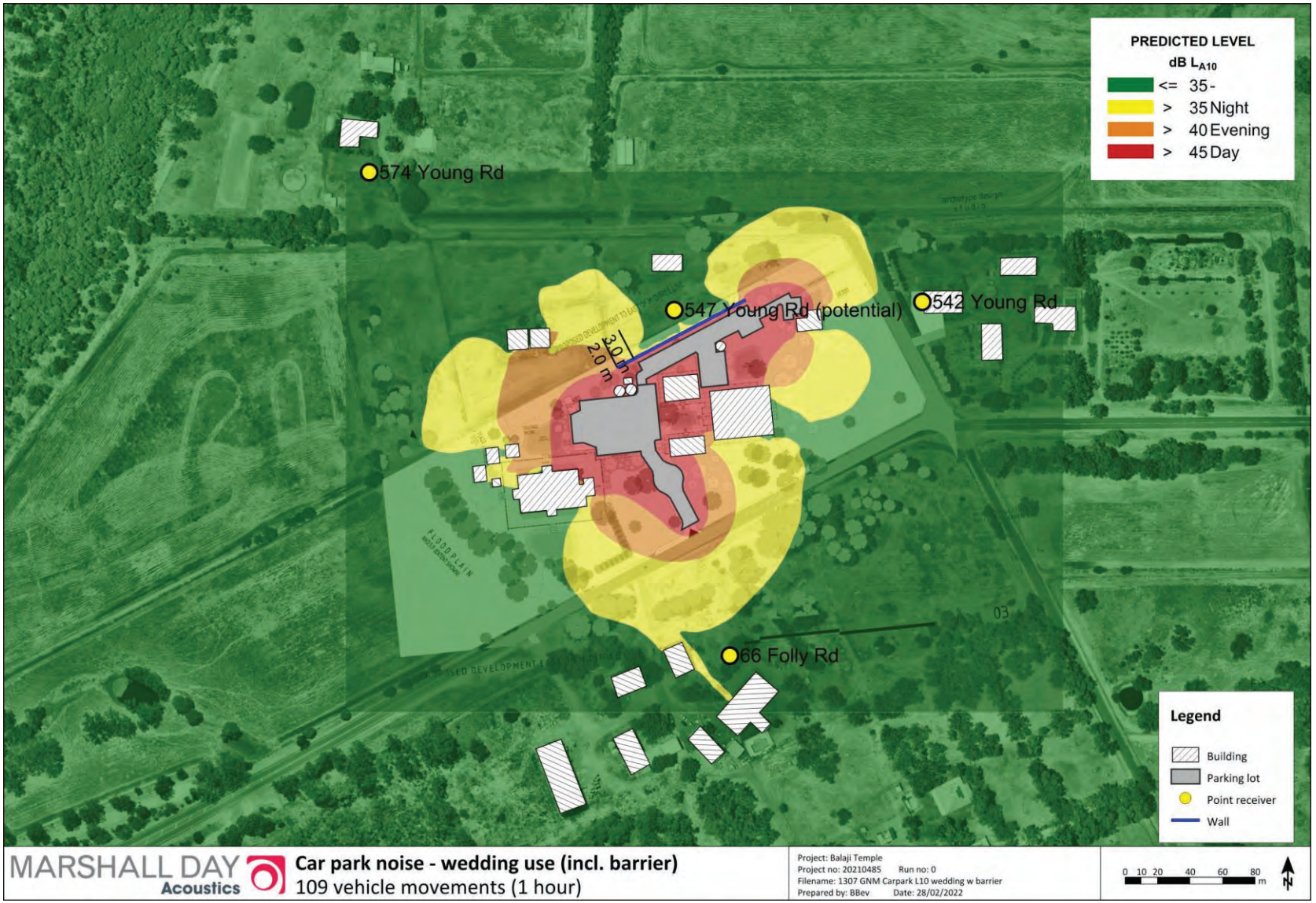
F4 Carpark noise – Special Hindu festival days (monthly)



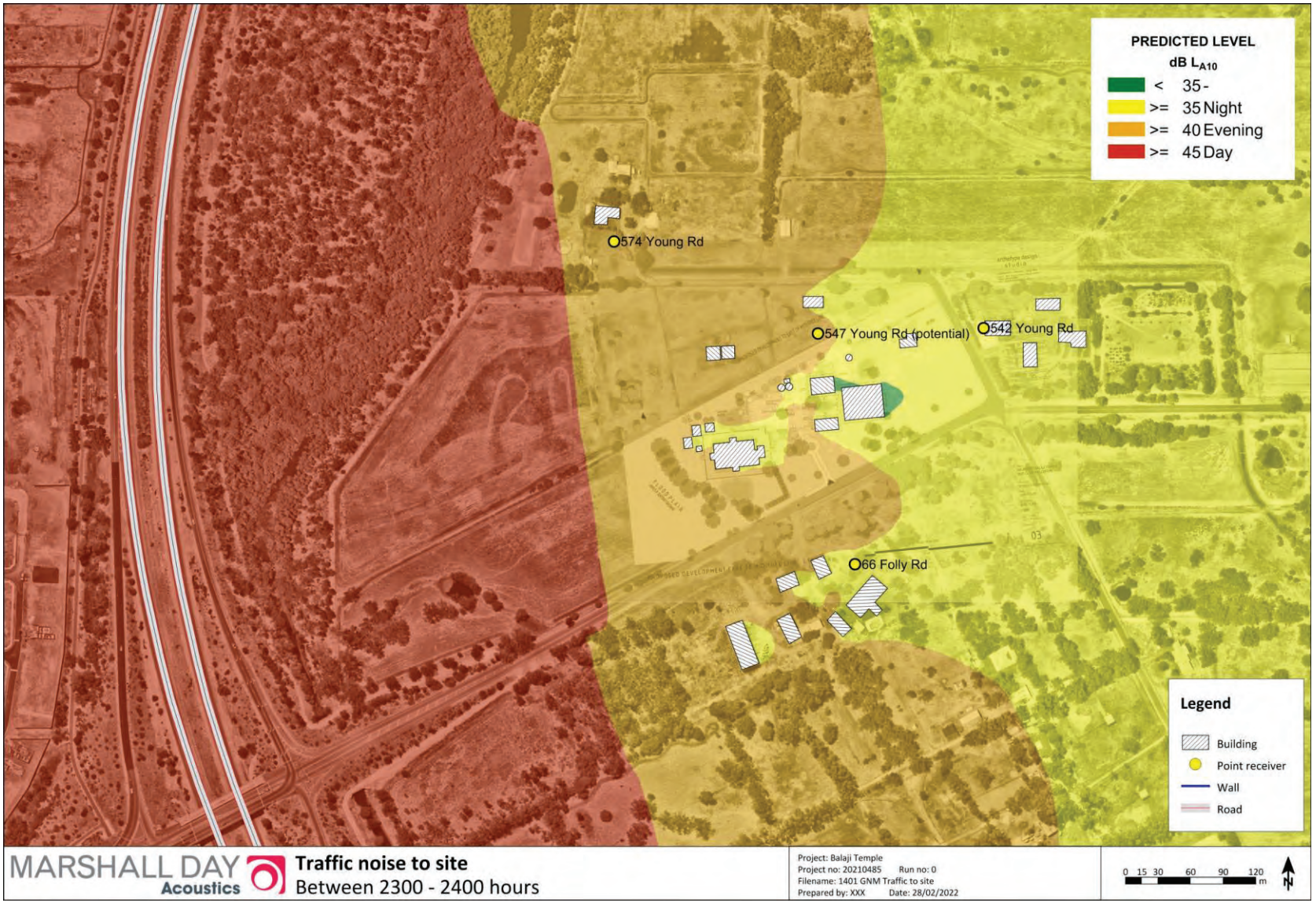
F5 Carpark noise – Weddings (6 per year)



F6 Carpark noise – Weddings (6 per year) – incl. barrier



F7 Traffic noise to site (2300 to 2400 hours weekends)



67 Folly Road, Baldivis

Site and Soil Evaluation

Prepared for
Jeeyars Archarya Peettam Australia Ltd

February 2022

waterinsight

Executive Summary

This Site and Soil Evaluation (SSE) has been prepared to support a Development Application for 67 Folly Road, Baldivis (the site) to confirm the sites suitability for onsite wastewater management and to provide advice relating to the required wastewater management system.

The site is 7.44 ha and is in the City of Rockingham. A reticulated sewerage service is not available at the site and an onsite wastewater management system is required.

The site is proposed to be developed into a Place of Worship and cultural centre. The site is anticipated to provide permanent accommodation for the priests, a place of worship (temple) and facilities to hold large religious events and weddings. The development plan includes.

- A Hindu Temple
- Multipurpose hall
- Dining hall
- Library
- Short stay accommodation
- Priest's Residences
- Carparking
- Landscaped gardens

The site is in the Peel Harvey Catchment and a Sewerage Sensitive Area. A secondary treatment unit (STS) (previously termed an aerobic treatment unit) with nutrient removal capabilities will be used at the site to receive and treat all wastewater generated at the site.

This SSE has been prepared in accordance with the Government Sewerage Policy (DPLH, 2019). The environmental aspects of the site in relation to sewerage collection, treatment and onsite disposal have been considered. The SSE includes a description of the

- Soil profile to a depth of 2m
- Results of soil infiltration testing
- Maximum groundwater levels

Site topography, soil type and other features affecting the design and use of an STS including the location of waterways, wetlands and drains has been assessed. This SSE demonstrates the site can accommodate a suitable wastewater management system and not impact public health or the environment.

Table of Contents

1 Introduction 1
1.1 Background 1
1.2 Proposed Development 1
1.3 Planning Context 2
1.4 Guidance Documents 2
1.5 Objectives of the Site and Soil Evaluation 3
2 Existing Environment 4
2.1 Site Location and Landuse 4
2.2 Climate 5
2.3 Topography 5
2.4 Soil Types 6
2.5 Public Drinking Water Source Areas 7
2.6 Wetland Mapping 7
2.7 Surface Water and Flooding 7
2.8 Groundwater 8
3 Site Investigation 12
3.1 Site Visit 12
3.2 Soil Profile 12
3.3 Permeability Assessment 15
4 Wastewater Management 17
4.1 Site Requirements 17
4.2 Proposed Treatment System 18
4.3 Discharge Loading Rates 19
4.4 Disposal Area 20
4.5 Land Application Area 21
5 References 23

List of Figures

Figure 1: Site Location
Figure 2: Sewerage Sensitive Area Mapping
Figure 3: Topography
Figure 4: Soil Type and Sampling Locations
Figure 5: Wetland Mapping
Figure 6: Hydrological Features
Figure 7: Flood Mapping
Figure 8: Indicative Land Application Area

List of Tables

Table 1: PRI Classification of Western Australian Soils....6
Table 2: PRI Results of Onsite Soils....7
Table 3: DWER Groundwater Monitoring Data....11
Table 4: On site Permeability Test....15
Table 5: Manufacturers of Domestic Approved Secondary Treatment Systems with Nutrient Removal Capabilities (certified to AS546.3.2017)....18
Table 6: Hydraulic Loading....19
Table 7: Wastewater Management Summary....22

List of Plates

Plate 1: Typical site view (from southern boundary, looking north)....4
Plate 2: Typical site view (centre of development area, looking northeast)....5
Plate 3: Perth Groundwater Map – Minimum Groundwater Level Contours....8
Plate 4: Perth Groundwater Map – Minimum Groundwater Level Contours....9
Plate 5: DWER Groundwater Monitoring Locations, AAMGL and MGL....10
Plate 6: Test Pit FR1....13
Plate 7: Test Pit FR2....13
Plate 8: Test Pit FR3....14
Plate 9: Test Pit FR4....14
Plate 10: Test Pit FR5....15

List of Appendices

Appendix A Development Plans
Appendix B Feature Survey
Appendix C PRI Laboratory Analysis
Appendix D WIN Bore Hydrographs
Appendix E Soil Logs
Appendix F Determination of Soil Category

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1 Introduction

1.1 Background

This Site and Soil Evaluation (SSE) has been prepared on behalf of Jeeyars Acharya Peettam Australia Ltd (the proponent) to support a Development Application for 67 Folly Road, Baldivis (the site, Figure 1).

The site is 7.44 ha and is in the City of Rockingham (CoR). The site is proposed to be developed into a Place of Worship and cultural centre. A reticulated sewerage service is not available at the site and an onsite wastewater management system is required.

The site is mapped as being in a Sewage Sensitive Area (Figure 2) for the following reasons

- Estuary catchment on the Swan and Scott Coastal Plain
- Within 1 km of significant wetland.

The SSE is an important part of the land development permitting process for on-site wastewater systems. The site evaluation is used to determine if site and soil conditions are suitable for installation of an on-site wastewater system, the size of the land application area and if any physical features such as waterways, drinking water bores, drainages, or wells that may require setbacks to prevent possible contamination.

1.2 Proposed Development

The site is anticipated to provide permanent accommodation for the priests, a place of worship (Hindu temple), and facilities to hold religious events and weddings. The proposed Development Plans are provided in Appendix A and include.

- A Hindu Temple
- Multipurpose hall
- Dining hall
- Library
- Short stay accommodation
- Priest's Residences
- Carparking
- Landscaped gardens

Although the site is 7.44 ha, the proposed development is expected to occupy approximately 3.2 ha of the site only. The development will occur on the eastern half of the site to avoid environmental constraints including main drains, a Conservation category wetland and the 1% AEP floodplain.

1.3 Planning Context

The site is zoned Rural under the Metropolitan Region Scheme and Rural under the CoR Local Town Planning Scheme No.2 (DPLH,2004).

1.4 Guidance Documents

This report has been prepared in accordance with the Government Sewerage Policy 2019 and has been developed with reference to the following guidance documents.

- Australian Standard AS/NZS1547:2012 *On-site Domestic Wastewater Management* Australia/New Zealand Standard.
- *Guidance on Site and soil evaluation for onsite sewerage management*, Department of Health 2019
- *Government Sewerage Policy,* State Government of Western Australia 2019.

Relevant Planning Policy's applicable to the site and management of wastewater include.

- State Planning Policy 2.1 Peel Harvey Coastal Catchment, and
- State Planning Policy 2.9 Water Resources

1.4.1 Government Sewerage Policy

The Government Sewerage Policy establishes the WA Government's position on the provision of sewerage services in the State through the planning and development of land.

The Policy includes specific requirements for the onsite sewage system and disposal for developments located in the sewerage sensitive areas. The requirements that are relevant to the site include:

- The discharge point of the onsite sewage system should be at least 1.5 metres above the highest groundwater level
- The site will require an unencumbered land application area for the disposal of sewage in accordance with Schedule 2 of the Policy
- Secondary treatment systems with nutrient removal are required in sewage sensitive areas.

Statement of Planning Policy No.2.1

One of the objectives of the *Statement of Planning Policy No. 2.1 The Peel-Harvey Coastal Plain Catchment* is to ensure that changes to landuse within the catchment to the Peel Harvey estuarine system are controlled as to avoid and minimise environmental damage.

SPP No.2.1 includes policy provisions for several landuses including Rural residential lots over 4000m^2. The applicable provisions relating to wastewater management are discussed in Section 6.2.1 of SPP 2.1 and include:

Lots that are created in this category should only use conventional on-site effluent disposal if:

- Factors such as slope, soil type, permeability, vegetation cover and system design have been addressed (the onus of proof rests with the subdivider to justify that on-site disposal and/or any associated site modifications would be acceptable to remove any adverse effects on public health, water resources or the environment while not detrimentally impacting on the character of the area).
- There is at least 100m horizontal separation between the disposal system and the nearest water body.
- Development within public groundwater resource areas utilising on-site effluent disposal will require approval from the Water Authority of Western Australia. Disposal systems require Health Department approval.
- On-site effluent disposal will be limited to densities of no more than one effluent disposal system per hectare.
- Existing vegetation should be retained except where there are defined building envelopes, approved utility requirements and firebreaks. Where lots do not have defined building envelopes existing vegetation may be removed from an area of up to 1000m^2 for the construction of approved buildings except where special approval is granted for a greater area of clearing.

1.5 Objectives of the Site and Soil Evaluation

In line with the objectives of the Government Sewerage Policy, the objective of preparing the SSE is to.

- Demonstrate the site can manage wastewater onsite
- Protect public health and amenity
- Protect the environment and local water and land resources
- Promote efficient use of infrastructure and developable land, and
- Minimise the costs to the boarder community and proponent by ensuring an appropriate level and form of sewerage servicing is provided.

2 Existing Environment

2.1 Site Location and Landuse

The site is predominately cleared and used for rural purposes and contains two large sheds. The main large shed has a septic tank and rainwater tank. The Kwinana Freeway is west of the site a rural business in located south of the site and rural properties are located north and east (Figure 1). Plate 1 and Plate 2 provide a typical view of the site.



Plate 1: Typical site view (from southern boundary, looking north)



Plate 2: Typical site view (centre of development area, looking northeast)

2.2 Climate

2.3 Topography

The site is very flat and planar. For this reason, the 1m topographic contours indicate the topography at the site is approximately 4 mAHD in the west to 5 mAHD in the east (Figure 3). A feature survey, provided in Appendix B, indicates the area where the existing sheds are located has the highest elevation of 5.95 mAHD and the lowest elevation of approximately 5.04 mAHD occurs on the southeast corner of the site. The site has a change in height of 0.91m over 205m (0.44% slope).

2.4 Soil Types

2.4.1 Regional Soil Mapping

The soil types and land units are mapped on Figure 4.

The western half of the site is mapped as.

- Pj_P4: Poorly drained flats, sometimes with gilgai microrelief and with moderately deep to deep black, olive grey and some yellowish brown cracking clays and less commonly non-cracking friable clays with generally acidic subsoils

A gilgai is a small, ephemeral lake formed from a depression in the soil surface in expanding clay soils. Additionally, the term "gilgai" is used to refer to the overall micro-relief in such areas, consisting of mounds and depressions, not just the lakes themselves. The name comes from an Aboriginal word meaning small water hole. These pools are commonly a few metres across and less than 30 cm deep. Gilgais are found worldwide wherever cracking clay soils and pronounced wet and dry seasons are present.

The eastern half of the site, where development is proposed to occur mainly consists of.

- Pj_B1: Extremely low to very low relief dunes, undulating sandplain and discrete sand rises with deep bleached grey sands sometimes with a pale-yellow B horizon or a weak iron-organic hardpan at depths generally greater than 2 m; banksia dominant, and

Further details about the soil type and onsite investigations are provided in Section 3.0 Site Investigation.

2.4.2 Phosphorus Retention Index

The Phosphorus Retention Index (PRI) describes a soils ability to adsorb or 'lock up' applied phosphorus. Soils with a high PRI will quickly bind phosphorus, conversely soils with a low PRI will lock up only small amounts of phosphorus, leaving most of the phosphorus available for plant uptake or accumulation in the soil profile. Table 1 below provides an explanation of the PRI classification of the soils ability to adsorb applied phosphorus.

Table 1: PRI Classification of Western Australian Soils

PRI	Classification	Example Soil Type
<2	Very weakly adsorbing or desorbing	Grey sands, Bassendean sands, Badgingarra sands
2-5	Weakly desorbing	Grey-brown duplex, deep duplex sands, Lancelin sands
5-20	Moderately adsorbing	Grey loamy sands, yellow brown sands, Coolup loamy sands, Spearwood sands
20-70	Strongly adsorbing	Lateritic gravels and sandy loams, Kununurra clays, Darling Range gravels
>70	Very strongly adsorbing	Lateritic loams, iron rich peats, Karri loams

Soil samples from four test pits were taken to test for PRI. A drill rig was used to take a soil core to a depth of 2m to classify the soil type and soil samples were taken from each soil horizon. The test pit locations are shown on Figure 4 and the laboratory results of the soil PRI are provided in Appendix C and Table 2 below.

Table 2 indicates the soils at the site are generally very weakly to weakly desorbing. An unusual result of 989 was recorded at FR3 at a depth of 1.8m to 2.0m. These results are indicative of the Bassendean Sands on site.

Table 2: PRI Results of Onsite Soils

Site	Depth (m)		
	0-0.15	0.15 – 1.8	1.8 – 2.0
FR1	2.4	0.8	3.6
FR2	1.4	0.4	1.1
FR3	0.7	-0.2	989
FR4	-0.1	2.7	0.9

2.5 Public Drinking Water Source Areas

The Public Drinking Water Source Area (PDWSA) online mapping tool (DWER, 2021x) indicates the site is not in a PDWSA.

2.6 Wetland Mapping

The Department of Biodiversity Conservation and Attractions (DBCA,,) geomorphic wetland mapping is shown on Figure 5. Most of the site is mapped as a Multiple Use Palusplain wetland (Unique feature ID 16,021).

Folly Pool, located immediately west of the site is mapped as a Conservation category wetland (Unique Feature ID 16,015). The centre of Folly Pool is classified as a Sumpland while the perimeter of the wetland, including the portion of the wetland located nearest the site is classified as a Palusplain wetland.

Although not mapped as a wetland, there are two lying gilgai's located in the west of the site which contain water during winter.

The proposed development of the site is proposed to occur in the eastern half of the site, outside any necessary buffer to Folly Pool.

2.7 Surface Water and Flooding

There are no waterways or drains located in the site however the southern extent of Folly Pool and the Peel Main Drain is located adjacent to the site's western boundary. The Peel Main Drain flows in a southerly direction and discharges to the Serpentine River at Keralup Pool, approximately 10 km south of the site.

The Peel Main Drain typically flows between July and October each year and stops flowing during Summer and Autumn. Nutrient concentrations, both total nitrogen and total phosphorus are high due to the catchment of the PMD containing leached soils, and intensive agricultural landuses (DWER, 2018).

There are several Water Corporations drains located north and east of the site, as shown on Figure 6. The Serpentine River, Peel Main Drain and Water Corporation drains flood during major rainfall events.

The 10% Annual Exceedance Probability (AEP) and 1% AEP flood mapping at the site is provided on Figure 7. The 1% AEP flood level at the site is 5.0 mAHD and the floodplain traverses through the centre and western corner of the site.

Development of the site is proposed to occur in the eastern half of the site, outside the floodplain and is not prone to flooding.

2.8 Groundwater

2.8.1 Groundwater Licences

The online Water Register (DWER, 2021) indicates the site does not have a groundwater licence as shown in Plate 3 below.



Plate 3: Perth Groundwater Map – Minimum Groundwater Level Contours

The nearest properties with a groundwater licence are located at 574 Young Road, approximately 0.25 km north and 519 Young Road, located 0.27 km south of the site.

2.8.2 Groundwater Aquifers

The online Water Register (DWER, 2021) indicates the site is located within the Stakehill groundwater area and the Marama up and Stakehill Confined groundwater subareas. The Superficial Swan, Leederville and Yarragadee North aquifers are present.

2.8.3 Regional Groundwater Monitoring

The Perth Groundwater Map (DWER, 2020) maximum groundwater level contours do not extend to the site. The minimum groundwater level contours extend to the site, as shown in Plate 3 which indicate the minimum groundwater level at the site is approximately 2 mAHD on the west of the site to 2.5 mAHD on the east.

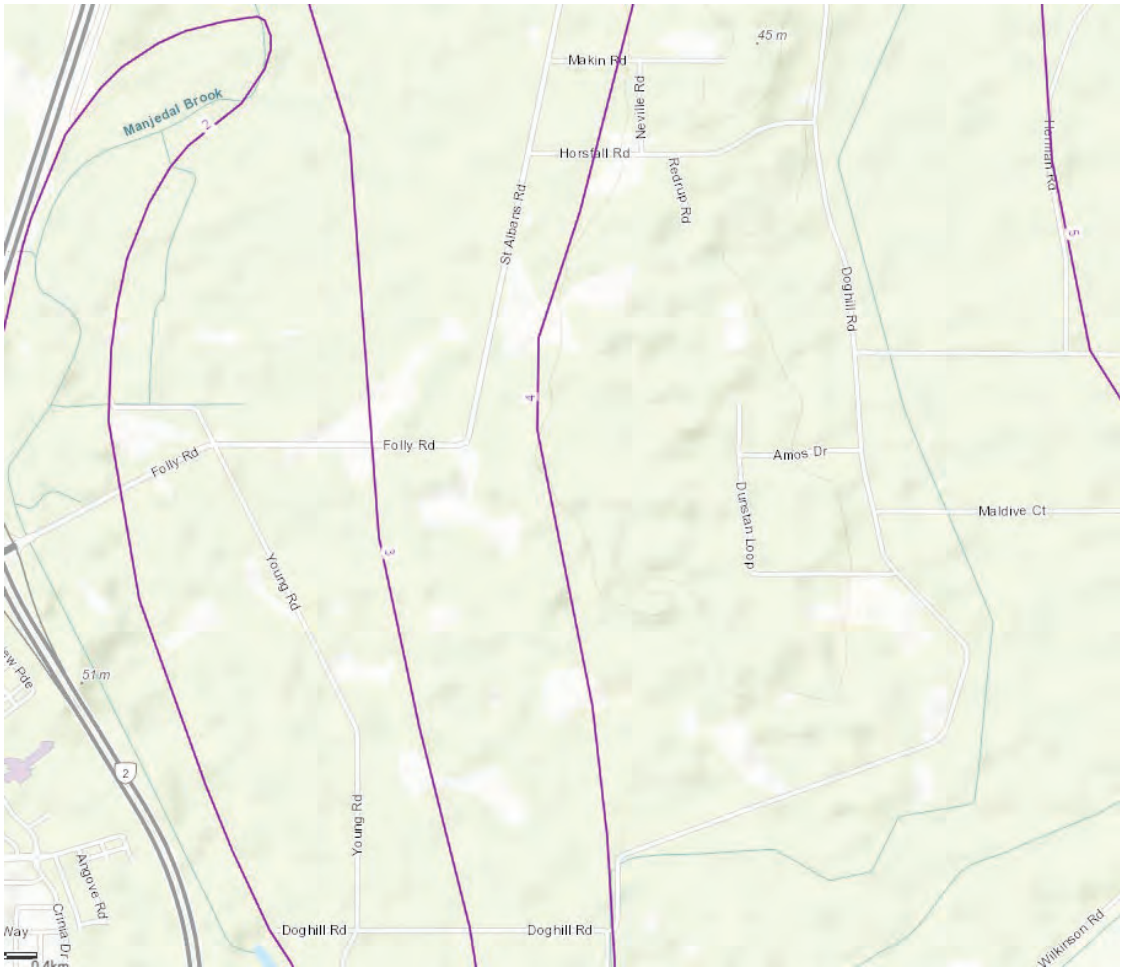

Plate 4: Perth Groundwater Map – Minimum Groundwater Level Contours

2.8.4 Local Groundwater Monitoring

During the onsite investigation completed on the 7th September 2021 (detailed further in Section 3), groundwater was encountered at 0.6 m below ground level (bgl) at FR3 and 0.8 m bgl at soil sampling locations FR5 (Figure 4). Peak groundwater levels generally occur in September to October each year, these levels are therefore close to representing of the peak 2021 groundwater levels.

The Water Register (DWER, 2021) indicates the nearest DWER groundwater monitoring bores are located 1.66 km south (WIN 61410478) and 2.45 km east of the site (WIN 61410093), both on Doghill Road.

WIN 61410478 has 46 years of groundwater level data from 1975 to 2021 and WIN 61410093 has groundwater levels recorded from 2011 to 2021. The water level hydrographs are provided in Appendix D.

Plate 3 and Table 1 below provides the Average Annual Maximum Groundwater Level and Maximum Groundwater Level for WIN 61410478 and WIN 61410093, and an estimated MGL for the site.

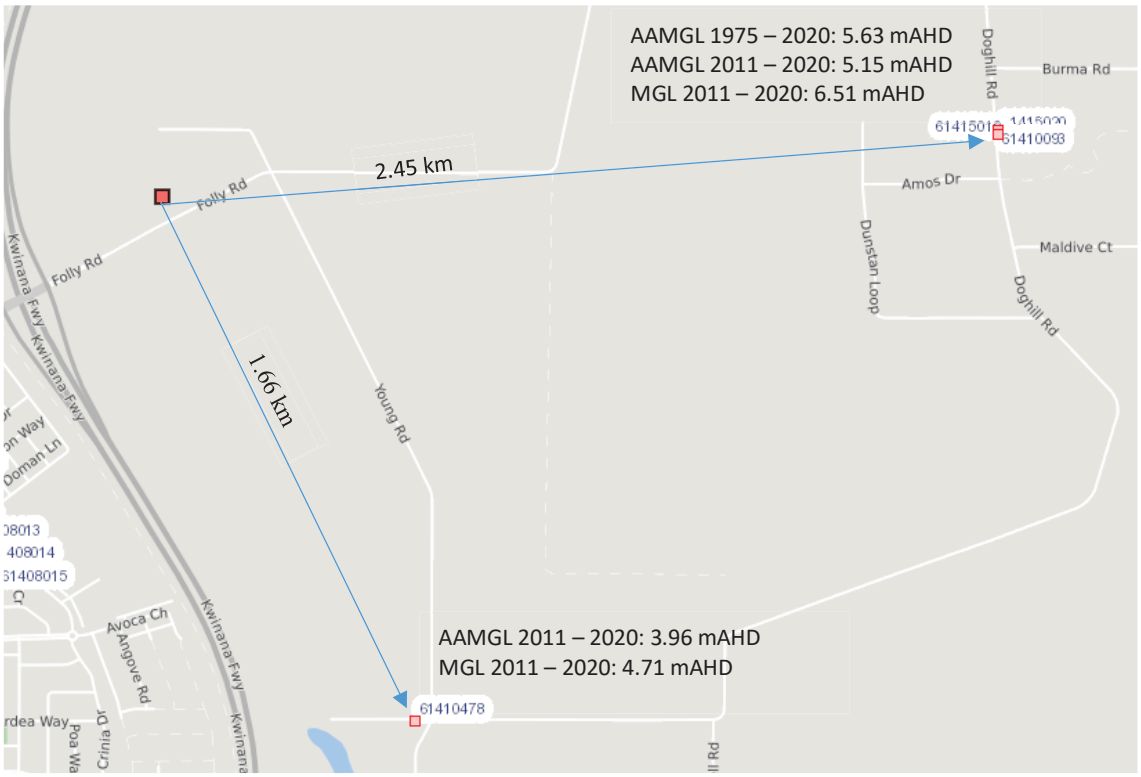

Plate 5: DWER Groundwater Monitoring Locations, AAMGL and MGL

Table 3: DWER Groundwater Monitoring Data

WIN Site	Long term AAMGL (mAHD) 1975 - 2020	10yr AAMGL (mAHD) 2011 - 2020	MGL* (mAHD)	Perth Groundwater Map (PGM) Minimum Groundwater Levels (mAHD)	Difference MGL – PGM (m)
61410478	n/a	3.96	4.71 Recorded in 2018	2.4	2.31
61410093	5.63	5.63	6.51 Recorded in 1984	4.6	1.91

*MGL 61410478 1975 – 2020 and 61410093 2011 – 2020.

2.8.5 Estimated Site Maximum Groundwater Level

Given the absence of onsite groundwater monitoring data and limited local data, an estimate of the onsite maximum groundwater levels has been derived by calculating the maximum groundwater level at the nearest DWER monitoring bores and comparing this data to the minimum groundwater contours shown at the same locations in the Perth Groundwater Map. The MGL at the DWER monitoring bores was an average of 2.11 m (2.31+1.91/2) higher than the minimum groundwater levels contours shown in the Perth Groundwater Map.

As discussed in Section 2.8.1, the minimum groundwater contours in the Perth Groundwater Map indicate the minimum groundwater level at the site is approximately 2 mAHD on the west of the site to 2.5 mAHD on the east.

The peak groundwater levels at the site are approximately 4.11m AHD on the west and centre of the site and 4.61 mAHD on the east of the site. This results in a clearance to peak groundwater levels of approximately 1.49m in the west and centre and 0.59m in the east of the site.

Winter rainfall in Baldivis in 2021 was above average. Groundwater was encountered during the site visit and on-site drilling in September at two locations (0.6 m bgl at FR3 and 0.8 m bgl at FR5 (Figure 4). Further geotechnical investigations will be completed at the site, groundwater levels will be recorded as part of this investigation and will need to be used to inform the detailed design of the wastewater system for the effluent disposal areas to achieve a minimum clearance to groundwater of 1.5m.

3 Site Investigation

3.1 Site Visit

WaterInsight completed a site visit on the 7th September 2021. The proposed development is to occur on the eastern half of the site, outside the floodplain area. The site visit and soil sampling concentrated on the proposed development area only.

The soils were examined and described from 5 test sites (FR1 to FR5). Southwest Drilling used a GeoProbe drill rig to take a soil core to a depth of 2m. Due to the soil's consistency across the proposed development area, WaterInsight completed infiltration testing at three locations (FR2, FR4 and FR5). The drilling was completed easily, with no resistance and all test sites were drilled to a depth to 2m. The proposed development area did not contain fill material, gravel, or rocky outcrops. Figure 4 provides the soil sampling and infiltration test locations.

A site walk over was completed to identify any other features which may impact the use of an STS.

3.2 Soil Profile

The soil profile of each test pit is shown in Plate 6 to 10 below and the soils logs are included in Appendix E. The soil profile for all test sites was similar comprising of pale deep sands.

Test site FR1 contained a dark grey/black layer at a depth of 1.8 – 2.0 which was more prominent that at the other test locations.

The drainage of the proposed development area is classified as 'rapid draining', with no signs of localised ponding at the time of the investigation.

The soil profile can be described as:

- 0-15: SAND light grey to brown, fine to medium grained, loose, well graded, moist
- 15-1.8 SAND white, fine to medium grained, loose, well graded, moist
- 1.8-2.0 SAND dark grey to black fine to medium grained, well graded, moist.

A detailed Geotechnical Investigation will be completed as a condition of development approval to determine the site classification and site preparation requirements. The outcomes of this investigation will also be used to confirm the detailed design of the wastewater management system.



Plate 6: Test Pit FR1

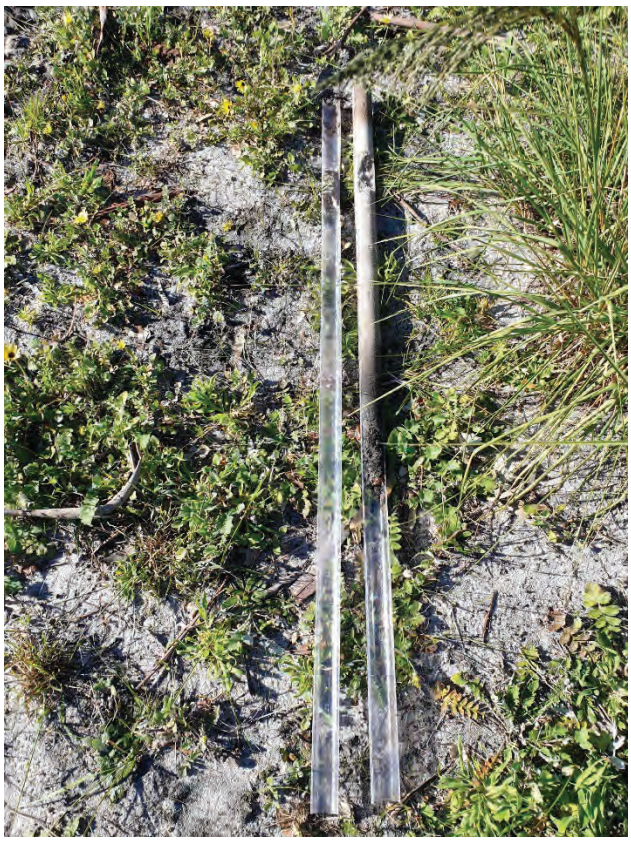

Plate 7: Test Pit FR2



Plate 8: Test Pit FR3



Plate 9: Test Pit FR4



Plate 10: Test Pit FR5

3.3 Permeability Assessment

In accordance with AS/NZS1547 permeability testing was completed in the field at FR2, FR3 and FR5. Table 3 below indicates the average saturated hydraulic conductivity for the deep sands was 4.49 m/day which is representative of a 'rapidly drained' soil, (AS/NZS 1547, refer Appendix F).

Table 4: On site Permeability Test

Test Site	Field Saturated Hydraulic Conductivity (m/d)
FR2	5.86
FR3	4.23
FR5	3.37

The values of indicative permeability are based on the movement of water, not effluent through the soil. They are estimates only and shall be used with caution in assisting the determination of the Soil Category. In the field soil permeability is strongly influenced by the presence of biological channels such as root holes.

As this site is expected to be used for large functions and events, it is advised that additional permeability testing is completed at the final location of the leach drains/land application areas once detailed design of the wastewater management system has been completed.

4 Wastewater Management

4.1 Site Requirements

The Government Sewerage Policy outlines the minimum site requirements for onsite sewage disposal to protect public health and the environment. An onsite sewage system is not to be located within.

- a wellhead protection zone or on Crown land within a reservoir protection zone
- 30 metres of a private bore used for household/ drinking water purposes
- 100 metres of a waterway or significant wetland and not within a waterway foreshore area or wetland buffer.
- 100 metres of a drainage system that discharges directly into a waterway or significant wetland without treatment
- any area subject to inundation and/or flooding in a 10% AEP rainfall event.
- 1.5 metres above the highest groundwater level (in sewerage sensitive area)

Smaller setbacks may be considered where a proponent demonstrates, to the satisfaction of the responsible authority in consultation with the relevant advisory agencies (Department of Water and Environmental Regulation and/or Department of Biodiversity, Conservation and Attractions, Department of Health and/or Local Government) that the reduced setbacks will not have a significant impact on the environment or public health.

Additional setbacks to structures which impact the sizing and location of the available land application areas include.

- 1.2 metres between treatment tanks to buildings, property boundaries, driveways, paths, and other tanks
- 1.2 metres between tranches, beds and soak wells to trafficable areas
- 1.8 metres between tranches, beds and soak wells to boundary, building, tanks and other land application systems
- Sub surface dripper to
    - Boundaries, building, treatment tanks, driveways 0.5m
    - Open drain 3.0m
    - Garden bore 10m

4.2 Proposed Treatment System

As the site is in the Peel Harvey Catchment and a Sewerage Sensitive Area, and near open major drains which drain to a significant wetland. A secondary treatment system with nutrient removal will be required to treat wastewater to a higher standard and will principally be disposed via leach drains.

Secondary wastewater management systems, with nutrient removal capabilities can produce treated effluent of secondary standard, that is ≤20 mg/L of Biochemical Oxygen Demand (BOD), ≤30 mg/L of Total suspended solids (TSS) and ≤10 cfu/100 mL of *Escherichia (E) coli*.

The Department of Health have confirmed that they do not keep record of any manufacturers with approved commercial secondary treatment systems with nutrient removal capabilities (certified to AS1546.3.2017), however have advised that the manufacturers with approved domestic secondary treatment systems with nutrient removal capabilities (certified to AS1546.3.2017) should be contacted. Table 5 below provides a list of the domestic approved secondary treatment systems with nutrient removal capabilities (certified to AS1546.3.2017) that are listed on the Department of Health website (accessed December 2021). A brochure from

Table 5: Manufacturers of Domestic Approved Secondary Treatment Systems with Nutrient Removal Capabilities (certified to AS546.3.2017)

Manufacturer/Distributor	Contact Details
BioSeptic	Phone (02) 4629 6666 Email: sales@bioseptic.com.au
Biomax	Phone 9250 7733 Email: info@biomax.com.au
Everhard Industries	Phone 9417 8222 Email: waorders@everhard.com.au
Fuji Clean Australia	Phone 9561 2927 Email: dwain@fujiclean.com.au
Taylex Australia	Phone 1300 829 539 Email: info@taylex.com.au
Toowoomba Tanks	Phone (07) 4634 2860 Email: sales@tanks.com.au

Due to the treatment and disinfection process, the treated wastewater may be used for garden irrigation. In this instance however, the available unrestricted land application area is limited. Disposal of the treated wastewater via leach drains requires less space and is recommended as the primary means of disposing the treated effluent.

The site does not have a groundwater licence for irrigation and the groundwater aquifers at the site are over allocated, meaning the development may not receive a groundwater allocation for irrigation of landscaping and turf.

As a secondary treatment system with nutrient removal capabilities is being provided, the treated wastewater could be used to irrigate the landscaping and turf, instead of the water being directly infiltrated and wasted through the leach drains.

A disposal system which uses a combination of leach drains and sub surface irrigation could be investigated at the detailed design stage as a means of irrigating the proposed landscaping and turf to provide recreational areas. Groundwater levels during summer will be close to their lowest, allowing irrigation of the landscaping to occur.

4.3 Discharge Loading Rates

The site includes domestic (priests' residences) and commercial landuses. The site is expected to cater for religious festivals and weddings with a maximum of 400 guests. The weddings will likely require up to 20 catering staff. In addition, the site may be used during the day for various events, including yoga classes and use of the library or temple. The hydraulic loading assumes a further 80 people may use the venue during the day in addition to the weddings which may be held at nighttime. The commercial hydraulic load has been based on a maximum capacity of 500 persons and the short stay accommodation will be treated the same as residential homes.

Despite the Site Plans indicating the priests' residences and short stay accommodation will be 3 to 4 bedrooms, the Department of Health have been requesting that the hydraulic loading for dwellings be based on a worst case scenario of 6 people occupying a 5 bedroom residence, which results in a hydraulic loading of 900l/day (150l/person/day).

To demonstrate to the Department of Health that the site is capable of managing wastewater on site, a design hydraulic loading of 900l/day has been considered for the two priests' residence and short stay accommodation. These details however should be reassessed at the detailed design stage as part of the building application to ensure an appropriately sized wastewater management system is designed and installed to suit the dwelling to be constructed.

Table 6 below details the developments maximum daily hydraulic loading.

Table 6: Hydraulic Loading

Type of Premise	Combined Flow (L/Person/day)	Total Daily Hydraulic Load (L/day)
Domestic		
Priest residence A	150	900
Priest residence B	150	900
Sub Total Domestic		1800

Type of Premise	Combined Flow (L/Person/day)	Total Daily Hydraulic Load (L/day)
Commercial		
Short stay accommodation	150	900
Place of worship (with cooking and catering facilities), temple, dining hall, multipurpose hall, library)	30	15,000
Sub Total Commercial		15,900
Total		**17,700**

The septic tank located at the existing shed will be decommissioned.

The site will use a single secondary treatment system to collect, treat and dispose of the effluent.

4.4 Disposal Area

While secondary treated effluent has undergone chlorination and is treated to a higher standard than septic tank effluent, it can still contain pathogenic microorganisms some of which are chlorine resistant. Therefore, the effluent:

- is unsuitable for human contact or consumption
- must only be used on a dedicated irrigation area
- must not be surface irrigated on areas such as lawns or areas used for recreational purposes; and
- is unsuitable for irrigation onto vegetable gardens or food crops.

If the effluent is used for irrigation, the irrigation area (size and location) forms part of the approved wastewater system. It is illegal for owners to modify the location or size of the approved irrigation area without approval from the local government.

Irrigation areas must:

- have warning signs displayed advising that effluent is being used and is not suitable for human contact or consumption
- achieve minimum setbacks from certain features such as buildings, boundaries and paved areas, to avoid human exposure to the effluent
- not be altered or reduced in size without approval
- be looked after so that irrigation lines are accessible for maintenance
- be planted out with salt and nutrient resistant plants to avoid puddling or run off of effluent.

Activities within the land application area shall not interfere with the function of the current and future land application system and people should avoid potential contact with effluent residues. Unless allowed for in the design, the land application area) should:

- not be built on or paved in a manner which precludes reasonable access
- not be subject to vehicular traffic (other than a pedestrian-controlled lawnmower)
- not be subject to regular foot traffic such as pathways and clothesline areas; and
- should be kept in a manner which enables servicing and maintenance of the disposal area

4.5 Land Application Area

4.5.1 Flatbed Leach Drains

Due to the scale of the development, flat bed leach drains are recommended to dispose of the treated effluent as they require less space to infiltrate the effluent, when compared to surface or sub surface irrigation.

As mentioned, a combination of leach drains and sub surface irrigation could be considered at the detailed design stage to provide irrigation water for the proposed landscaping.

For secondary treated effluent, the following calculation is used to determine the length of leach drains required for both domestic and commercial applications.

- Land application area for leach drains (m2) in sand, gravel and loam soils is:

= Hydraulic loading (L/day) ÷ 50 ÷ IA

The IA of Atlantis Corporation flatbed leach drains = 2.6 m2/m.

The IA of leach drains varies depending on the manufacturer chosen and the land application area will need to be calculated to suit the leach drains used, a list of the approved leach drains is available on the Department of Health website (https://ww2.health.wa.gov.au/Articles/A_E/Approved-leach-drains).

The minimum length of leach drains required to dispose of the effluent via leach drains is 136 m (17,700 l/day ÷ 50 ÷ 2.6).

A minimum of two rows of leach drains are required to allow for maintenance to be completed. The leach drains are 2.5m wide and require 1.8m separation between each bed.

The possible configuration of leach drains would be 7 drains x 20m long. The footprint required for installation is approximately 29m x 20m, plus setback clearances. The leach drains will need to be semi inverted to achieve a clearance of 1.5m to the maximum groundwater level year-round.

4.5.2 Irrigation

Irrigation requires significantly larger land application areas than leach drains to dispose of the effluent. As mentioned the site could use a combination of leach drains and irrigation including shallow subsurface drip irrigation and covered surface drip irrigation.

The Government Sewerage Policy provides the following calculation to determine the required irrigation land application area as follows:

- Land application area for irrigation (m2)

= hydraulic load (L/day) X conversion factor for the soil texture.

The conversion factor for secondary treated effluent for gravels and sands and sandy loams is 0.2.

The minimum application area required to dispose of the treated effluent via irrigation alone is 3,540m^2 excluding setbacks) (17,700 l/day x 0.2).

A summary of the above information is provided in Table 7.

Table 7: Wastewater Management Summary

Discharge Rate L/day	Proposed System	Disposal Area	
		Irrigation (m^2)	*Leach Drains (m)
17,700	Secondary with nutrient removal	3,540	136 (Footprint of 29m x 20m)

***The length of the leach drains will vary slightly depending on the type of leach drain used**

An *Application to Construct or Install An Apparatus for the Treatment of Sewerage* will need to be submitted to the City of Rockingham by the lot owners following detailed design to specify the final design and wastewater management system to be installed.

4.5.3 Indicative Disposal Area

Figure 8 has been created to provide indicative effluent disposal areas to demonstrate the development is able to adequately dispose of the treated wastewater on site. The proposed leach drain location is located on the higher area of the site to achieve clearance to groundwater and comply with the required buffers, including providing a 100m buffer to the Water Corporation drains, Folly Pool and the Peel Main Drain.

The feature survey indicates the ground level in the south of the site at the proposed leach drain location is 5.80 mAHD. The maximum groundwater levels at this location are estimated to be 4.11 mAHD. Depending on the outcomes of future geotechnical investigation, a partially inverted leach drain may be required to ensure the base of the leach drains achieve a clearance to peak groundwater of 1.5m.

5 References

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Figures



Legend

- Lot Boundary
- Cadastral Lines

N

0 60 120 180 240 300 m

waterinsight
W: www.waterinsight.net.au
E: kelly@waterinsight.com.au
P: +61 411 354 463

Site Boundaries: Landgate
Imagery: Landgate/ESRI
GDA 1994 MGA Zone 50

NOTE: All areas and dimensions are subject to survey, engineering and detailed design and may change without notice.

SITE AND SOIL EVALUATION

67 Folly Road, Baldivis

Figure 1

Site Location

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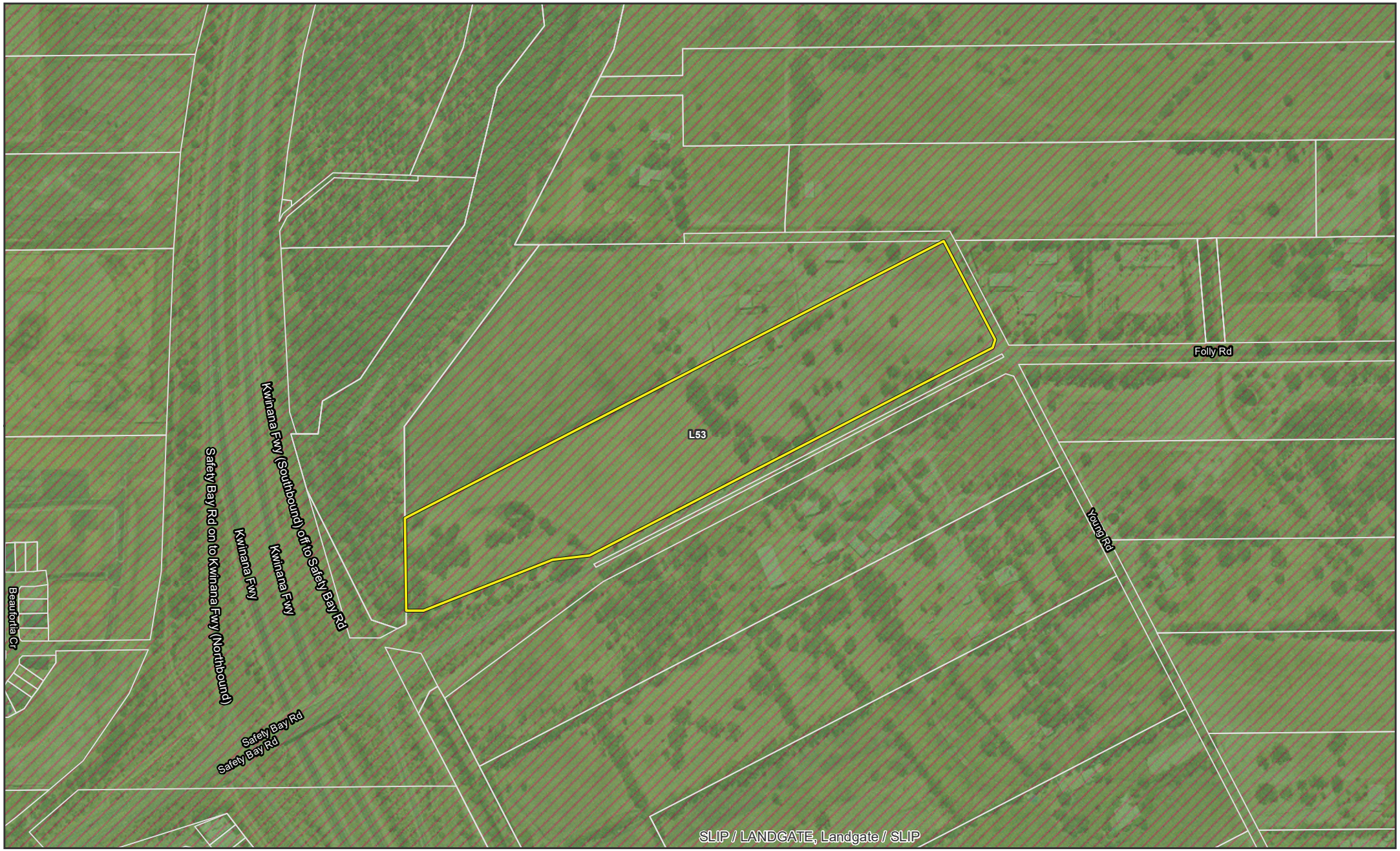
1:5,000 @ A4 **Date: 20/09/2021**



Legend

- Lot Boundary
- Cadastral Lines

Government Sewerage Policy (DPLH-062)

- a) Estuary catchments on the Swan and Scott Coastal Plains
- f) Within 1km of significant wetlands

N

0 60 120 180 240 300 m

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SITE AND SOIL EVALUATION

67 Folly Road, Baldivis

Figure 2

Sewerage Sensitive Area Mapping

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Legend

- Lot Boundary
- Cadastral Lines
- Contours 1m interval (mAHD)

N

0 60 120 180 240 300 m

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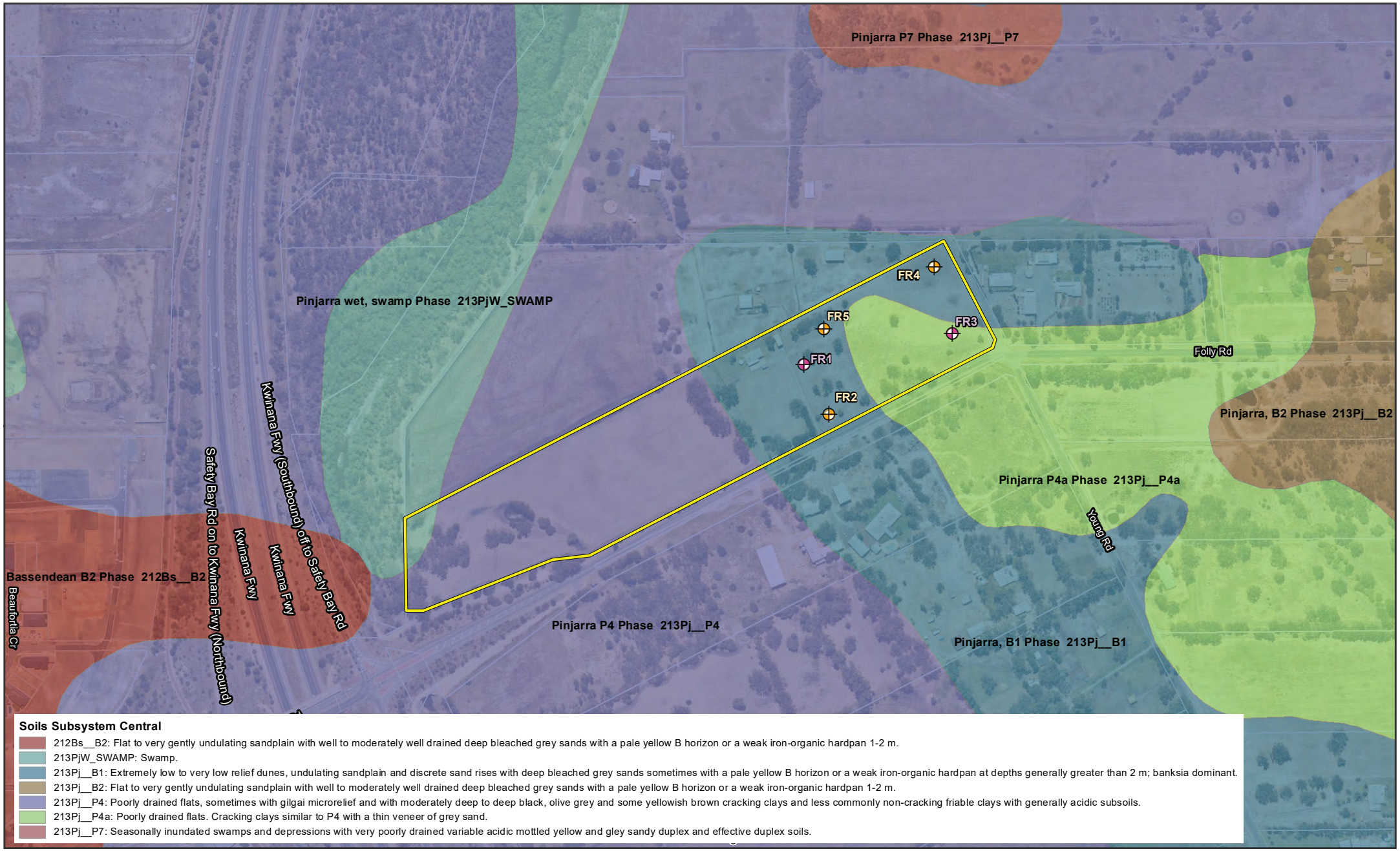
SITE AND SOIL EVALUATION

Balaji Temple and Cultural Centre
67 Folly Road, Baldivis

Figure 3

Topography



Soils Subsystem Central

- 212Bs__B2: Flat to very gently undulating sandplain with well to moderately well drained deep bleached grey sands with a pale yellow B horizon or a weak iron-organic hardpan 1-2 m.
- 213PjW_SWAMP: Swamp.
- 213Pj__B1: Extremely low to very low relief dunes, undulating sandplain and discrete sand rises with deep bleached grey sands sometimes with a pale yellow B horizon or a weak iron-organic hardpan at depths generally greater than 2 m; banksia dominant.
- 213Pj__B2: Flat to very gently undulating sandplain with well to moderately well drained deep bleached grey sands with a pale yellow B horizon or a weak iron-organic hardpan 1-2 m.
- 213Pj__P4: Poorly drained flats, sometimes with gilgai microrelief and with moderately deep to deep black, olive grey and some yellowish brown cracking clays and less commonly non-cracking friable clays with generally acidic subsoils.
- 213Pj__P4a: Poorly drained flats. Cracking clays similar to P4 with a thin veneer of grey sand.
- 213Pj__P7: Seasonally inundated swamps and depressions with very poorly drained variable acidic mottled yellow and gley sandy duplex and effective duplex soils.

Legend

- Lot Boundary
- Cadastral Lines
- Soil Sampling Location
- Soil Sampling and Infiltration Test Location

N

0 60 120 180 240 300 m

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P: +61 411 354 463

Site Boundaries: Landgate
Imagery: Landgate/ESRI
GDA 1994 MGA Zone 50

NOTE: All areas and dimensions are subject to survey, engineering and detailed design and may change without notice.

SITE AND SOIL EVALUATION

Balaji Temple and Cultural Centre
67 Folly Road, Baldivis

Figure 4

Soil Type and Sampling Locations



Legend

- Lot Boundary
- Cadastral Lines

Geomorphic Wetlands Swan Coastal Plain DBCA_019

- Conservation
- Resource Enhancement
- Multiple Use

N

0 60 120 180 240 300 m

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SITE AND SOIL EVALUATION

Balaji Temple and Cultural Centre
67 Folly Road, Baldivis

Figure 5

Wetland Mapping



Legend

Lot Boundary

Hydrography

- Watercourse - minor
- Drain - major (Water Corporation)
- Area Subject to Inundation

N

0 60 120 180 240 300 m

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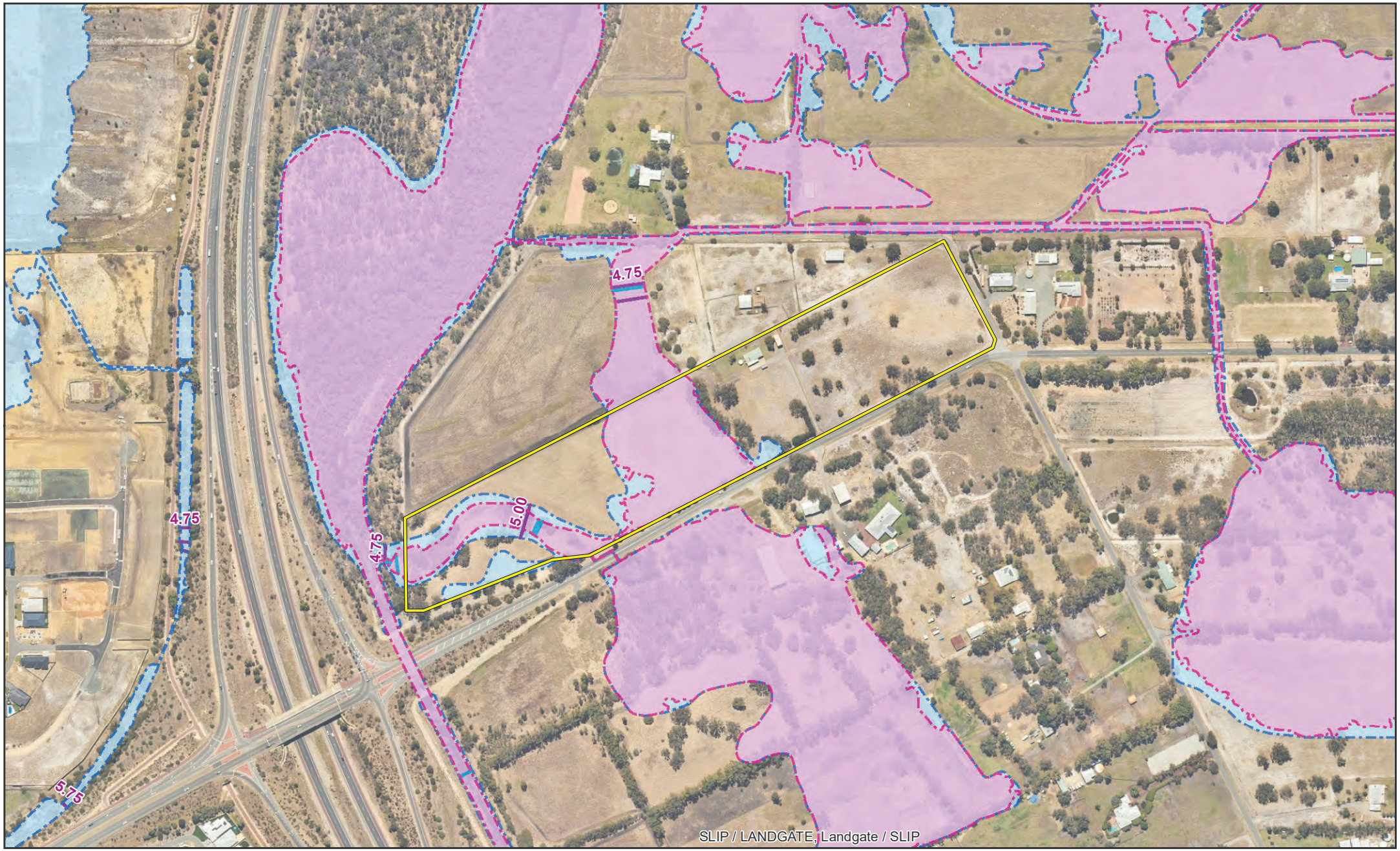
SITE AND SOIL EVALUATION

Balaji Temple and Cultural Centre
67 Folly Road, Baldivis

Figure 6

Hydrological Features



Legend

Lot Boundary

Floodplain Area (DWER-020)

1 in 10 (10%) AEP floodplain

1 in 100 (1%) AEP floodplain

Flood Level Contours (m AHD) (DWER-018)

1 in 10 (10%) AEP flood level contour

1 in 100 (1%) AEP flood level contour

N

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Site Boundaries: Landgate
Imagery: Landgate/ESRI
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Site and Soil Evaluation

Balaji Temple and Cultural Centre
67 Folly Road, Baldivis

Figure 7

Flood Mapping

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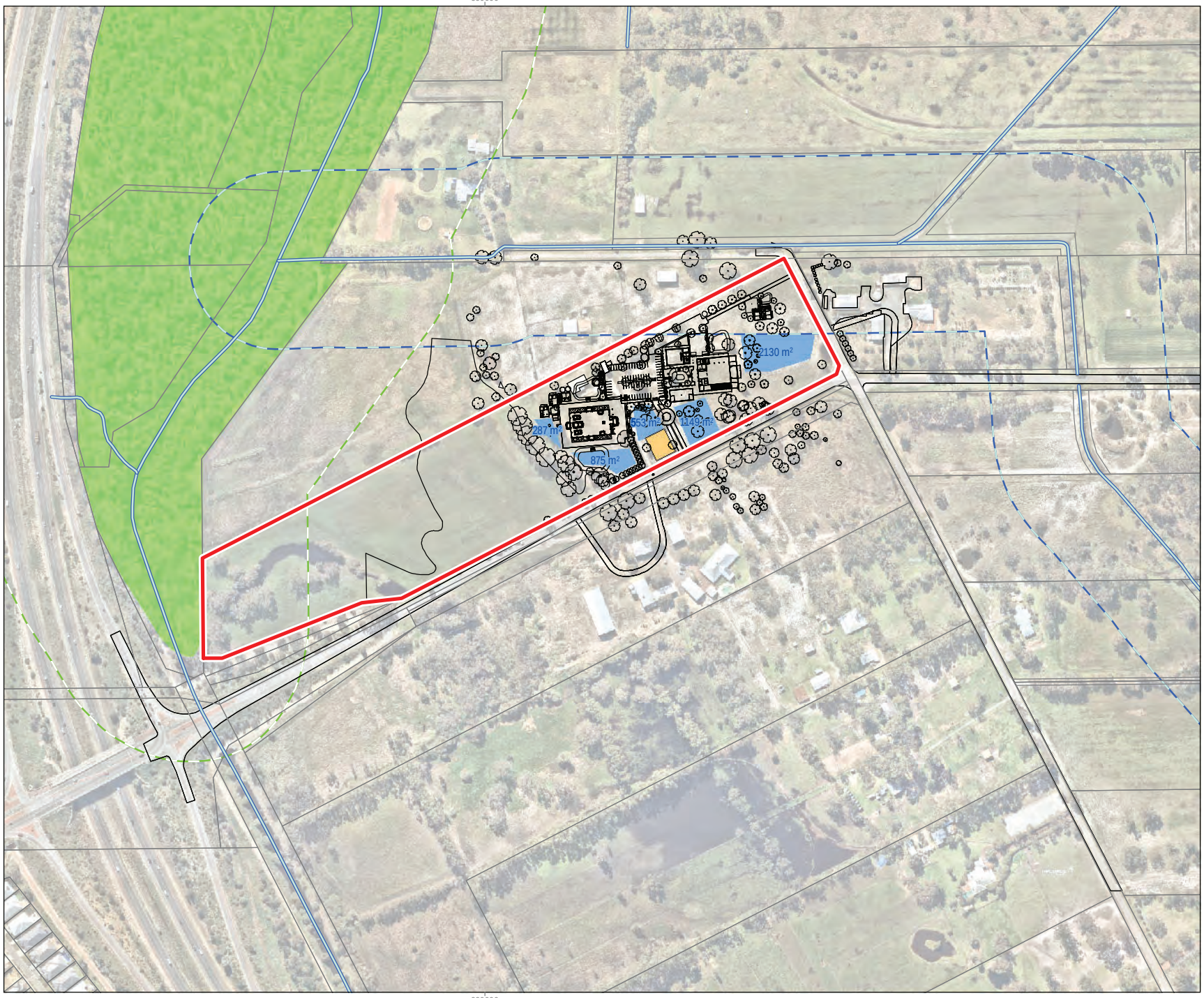


Legend

- Site Boundary
- Cadastre
- Proposed Development
- Indicative Irrigation
- Indicative Leach Drain Location (29m x 20m)
- Folly Pool - Conservation Category Wetland
- 100m Folly Pool CCW Buffer
- Drainage - Open Channel
- 100 m Peel Drain Buffer

- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS
- CADASTRE SOURCED LANDGATE 2021
- AERIAL PHOTOGRAPHY SOURCED NEARMAPS 13.08.21

waterinsight

0 37.5 75 150
Metres
N

Scale: 1:5,000 @ A4

LOCALITY MAP



CREATED	JOB	DATE	REVISION
ENVIRONMAPS	2130	7/12/2021	0

SITE AND SOIL EVALUATION

Balaji Temple and Cultural Centre
67 Folly Road, Baldivis

FIGURE 8

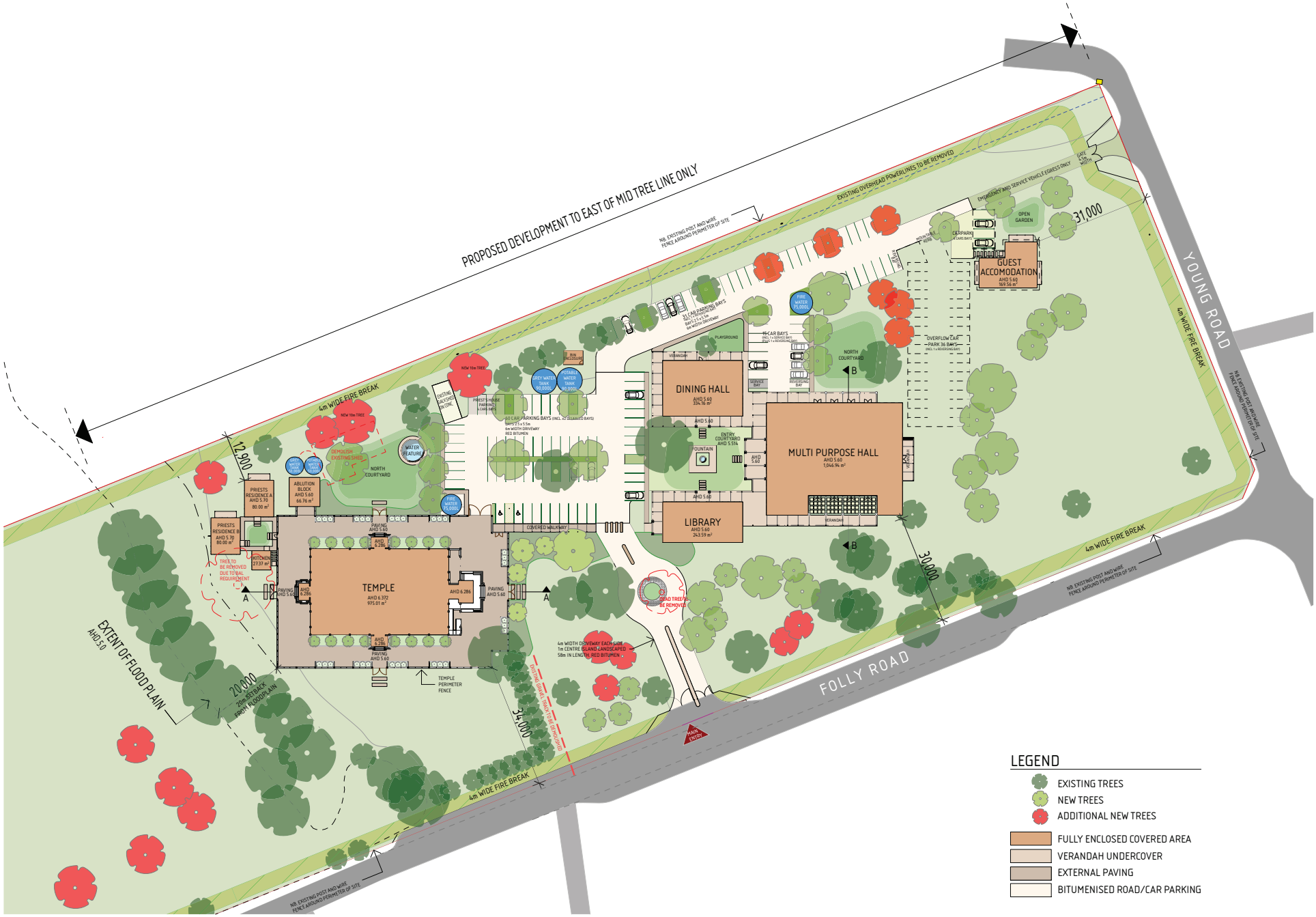
INDICATIVE LAND APPLICATION AREAS

ENVIRONMAPS | Environmental Mapping Solutions | t: 0406 590 006 | www.environmaps.com.au

C:\GIS\Jobs\Water Insight\2130 - Folly Rd, Baldivis\Figures\2130_F08 Indicative Land Application Areas_211207.mxd

Appendices

Appendix A
Development Plans



PROPOSED DEVELOPMENT EAST OF MID TREE LINE 1:500 (@ A1)

archetype
|design studio|
architecture - interiors - feng shui
level 12, 68 St Georges Terrace Perth WA 6000
Phone : (08) 9486 8866
email: studio@archetypedesign.com.au

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GENERAL NOTES :

1. All works are to comply with The Building Code of Australia, all relevant Australian Standards, Worksafe requirements & all relevant Local Authority By-Laws
2. Do not scale from these drawings. Dimensions shown on larger scale drawings take precedent over smaller scaled drawings
4. The contractor shall check and verify all dimensions on site, both new and existing, prior to commencement of any phase of the building work or ordering any materials
5. In case of any discrepancy whatsoever, the contractor shall check with the architect prior proceeding
6. Contractor shall carry out works in accordance with Council Building License and conditions stipulated thereon
7. Contractor shall carry out works in accordance with requirements of Western Power with respect the easements on the site.
8. Contractor is advised that the site is a Registered Aboriginal Heritage Site to which the Aboriginal Heritage Act and all its legal requirements apply.
9. Contractor is to strictly adhere to Recommendations made in the Anthropological Report prepared by De Gand Pty Ltd May 2011

Revision	Description	Date

Project :
SRI BALAJI TEMPLE DEVELOPMENT

Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

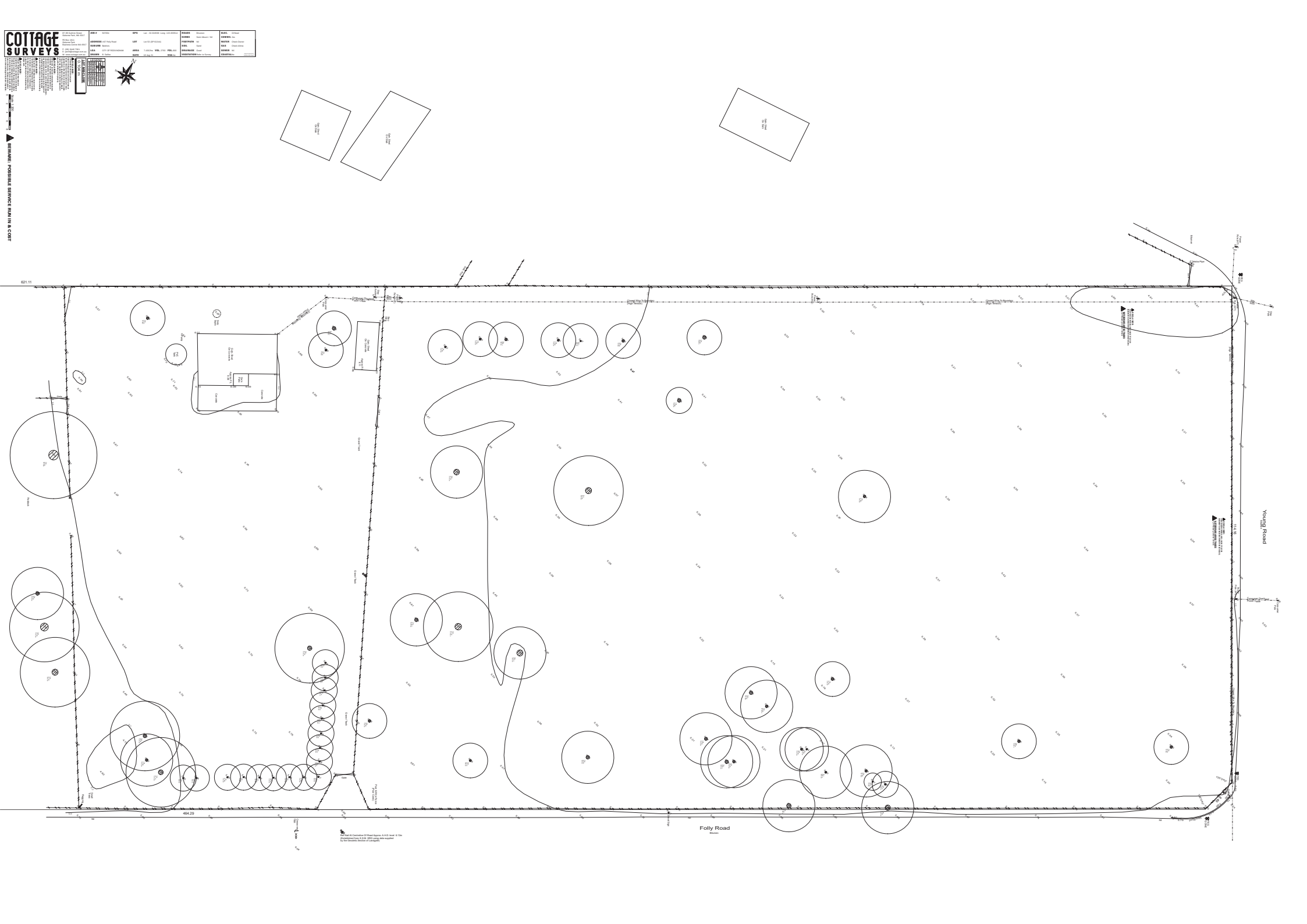
Drawing Title:
SITE PLAN 1.500

Scale :
Status: #Project Status

Drawing Nº
03

Date issued: Tuesday, 22 February 2022
Time 1:16 pm
Revision

Appendix B
Feature Survey


COTTAGE SURVEYS
Folly Road
Young Road
BEWARE: POSSIBLE SERVICE RUN IN & CORT
621.11
464.29

Appendix C
PRI Laboratory Analysis

Analysis Results

CSBP Soil and Plant Laboratory

97227
Water Insight Pty Ltd

Lab No	4IS21053	4IS21054	4IS21055	4IS21056	4IS21057	4IS21058	4IS21059	4IS21060
Name	FR1	FR1	FR1	FR2	FR2	FR2	FR3	FR3
Code	0-0.15	0.15-1.8	1.8-2.0	0-0.15	0.15-1.8	1.8-2.0	0-0.10	0.10-1.8
Customer	Water Insight Pty Ltd	Water Insight Pty Ltd	Water Insight Pty Ltd	Water Insight Pty Ltd	Water Insight Pty Ltd	Water Insight Pty Ltd	Water Insight Pty Ltd	Water Insight Pty Ltd
Depth	0-10	0-10	0-10	0-10	0-10	0-10	0-10	0-10
Phosphorus Retention Index	2.4	0.8	3.6	1.4	0.4	1.1	0.7	-0.2

CSBP Lab. Extract Value.

Analysis Results

CSBP Soil and Plant Laboratory

Lab No	4IS21061	4IS21062	4IS21063	4IS21064
Name	FR3	FR4	FR4	FR4
Code	1.8-2.0	0-0.15	0.15-1.8	1.8-2.0
Customer	Water Insight Pty Ltd	Water Insight Pty Ltd	Water Insight Pty Ltd	Water Insight Pty Ltd
Depth	0-10	0-10	0-10	0-10
Phosphorus Retention Index	989.0	-0.1	2.7	0.9

CSBP Lab. Extract Value.

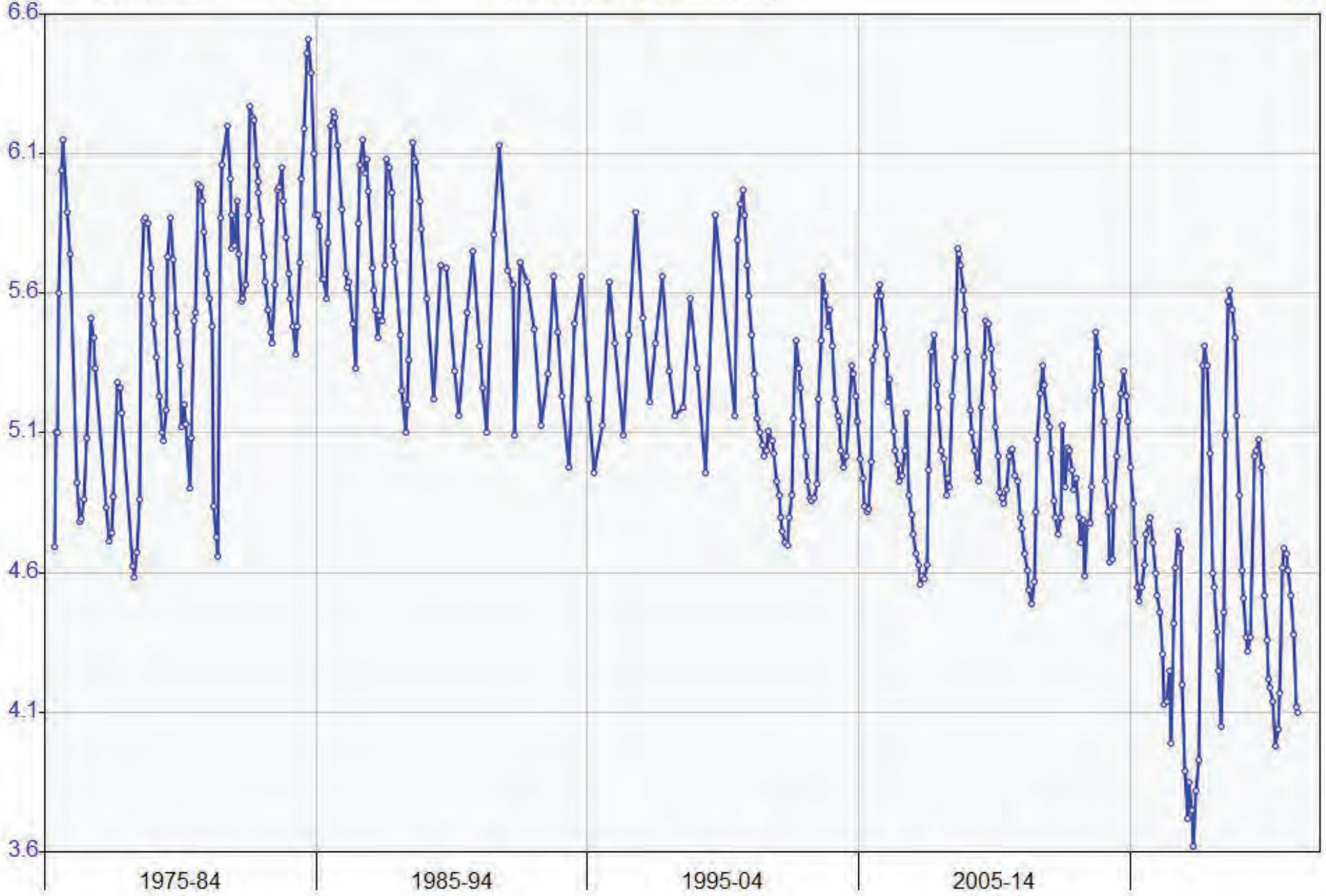
Appendix D
WIN Bore Hydrographs

Department of Water and Environmental Regulation

HYPLOT V134 Output 06/03/2021

Period 47 Year 01/01/1975 to 01/01/2022 1975-2021

61410093 T350 115.00 Water Level (mAHD) GW

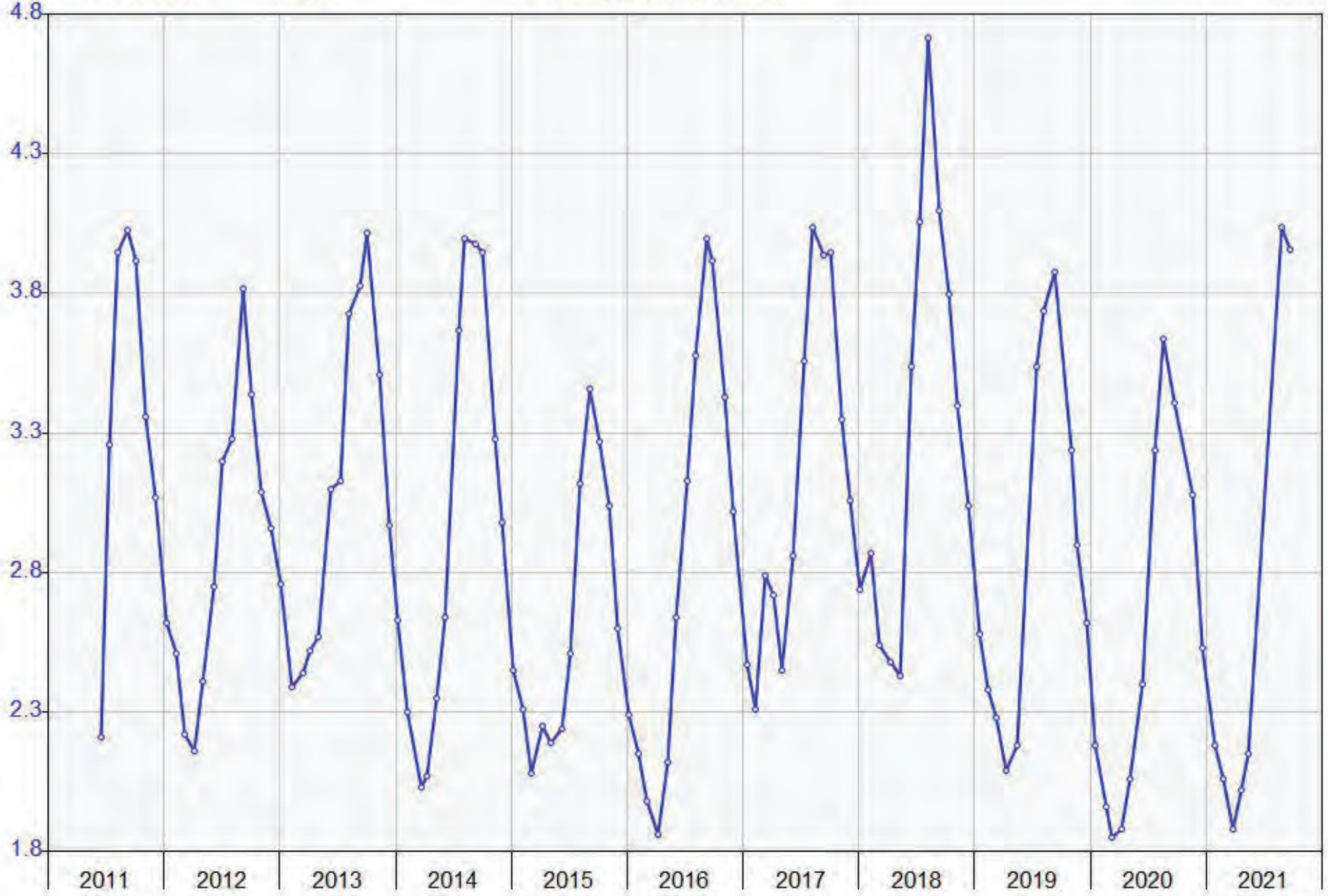


Department of Water and Environmental Regulation

HYPLOT V134 Output 24/09/2021

Period 11 Year 01/01/2011 to 01/01/2022 2011-21

61410478 SSB4 115.00 Water Level (mAHD) GW



Appendix E
Soil Logs

Test Pit Log
Test Pit: FR1
Sheet: 1/5

Project		Excavation/Drilling		Coordinates	
Job	2130	Contractor	South West Drilling	Latt	-32.3247
Client	Jeeyars Acharya Peetam	Equipment	Geoprobe Drill Rig	Long	115.8328
Project	67 Folly Rd SSE	Bucket/Auger	Auger	Weather	fine, no rain
Location	Baldivis	Logged By	KL		
Date	7/09/2021	Time	am		

Depth (m)	Ease of Excavation	Material Description Soil Type Particle Characteristics, colour, secondary components	Moisture Condition	Groundwater Level	Comments
0.15	Easy	SAND fine to medium grained, light brown to dark brown, loose, well graded	Moist		
0.5	Easy	SAND fine to mediumg grained, white, loose, well graded	Moist		
1.0					
1.5					
1.8					
2.0	Easy	SAND fine to mediumg grained, dark grey to black, well graded	Moist		
		Test pit termintaed at target depth of 2.0			

Test Pit Log
Test Pit: FR2
Sheet: 2/5

Project		Excavation/Drilling		Coordinates	
Job	2130	Contractor	South West Drilling	Latt	-32.3250
Client	Jeeyars Acharya Peetam	Equipment	Geoprobe Drill Rig	Long	115.8330
Project	67 Folly Rd SSE	Bucket/Auger	Auger	Weather	fine, no rain
Location	Baldivis	Logged By	KL		
Date	7/09/2021	Time	am		

Depth (m)	Ease of Excavation	Material Description Soil Type Particle Characteristics, colour, secondary components	Moisture Condition	Groundwater Level	Comments
0.15	Easy	SAND fine to medium grained, light grey, loose, well graded	Moist		
1.8		SAND fine to mediumg grained, white, loose, well graded	Moist		
2.0		SAND fine to mediumg grained, dark grey, well graded	Moist		
		Test pit termintaed at target depth of 2.0m			

Test Pit Log
Test Pit: FR3
Sheet: 3/5

Project		Excavation/Drilling		Coordinates	
Job	2130	Contractor	South West Drilling	Latt	-32.3244
Client	Jeeyars Acharya Peetam	Equipment	Geoprobe Drill Rig	Long	115.8344
Project	67 Folly Rd SSE	Bucket/Auger	Auger	Weather	fine, no rain
Location	Baldivis	Logged By	KL		
Date	7/09/2021	Time	am		

Depth (m)	Ease of Excavation	Material Description Soil Type Particle Characteristics, colour, secondary components	Moisture Condition	Groundwater Level	Comments
0.15	Easy	SAND fine to medium grained, dary grey, loose, well graded	Moist		
1.8	Easy	SAND fine to mediumg grained, white to light grey, loose, well graded	Moist	▼	
2.0	Easy	SAND fine to mediumg grained, dark grey, well graded	Moist		
		Test pit termintaed at target depth 2.0m			

Test Pit Log
Test Pit: FR4
Sheet: 4/5

Project		Excavation/Drilling		Coordinates	
Job	2130	Contractor	South West Drilling	Latt	-32.3238
Client	Jeeyars Acharya Peetam	Equipment	Geoprobe Drill Rig	Long	115.8342
Project	67 Folly Rd SSE	Bucket/Auger	Auger	Weather	fine, no rain
Location	Baldivis	Logged By	KL		
Date	7/09/2021	Time	am		

Depth (m)	Ease of Excavation	Material Description Soil Type Particle Characteristics, colour, secondary components	Moisture Condition	Groundwater Level	Comments
0.25	Easy	SAND fine to medium grained, dary grey to brown, loose, well graded	Moist		
0.5	Easy	SAND fine to mediumg grained, white to light grey, loose, well graded	Moist		
1.0					
1.5					
1.9					
2.0	Easy	SAND fine to mediumg grained, dark grey, well graded	Moist		
		Test pit termintaed at target depth 2.0m			

Test Pit Log
Test Pit: FR5
Sheet: 5/5

Project		Excavation/Drilling		Coordinates	
Job	2130	Contractor	South West Drilling	Latt	-32.32436
Client	Jeeyars Acharya Peetam	Equipment	Geoprobe Drill Rig	Long	115.83304
Project	67 Folly Rd SSE	Bucket/Auger	Auger	Weather	fine, no rain
Location	Baldivis	Logged By	KL		
Date	7/09/2021	Time	am		

Depth (m)	Ease of Excavation	Material Description Soil Type Particle Characteristics, colour, secondary components	Moisture Condition	Groundwater Level	Comments
0.1	Easy	SAND fine to medium grained, light brown to dark brown, loose, well graded	Moist		
0.2	Easy	SAND fine to mediumg grained, white, loose, well graded	Moist	▼	
0.5					
1.0					
1.5					
1.8					
	Easy	SAND fine to mediumg grained, dark grey, well graded	Moist		
2.0					
		Test pit termintaed at target depth of 2.0			

Appendix F
Determination of Soil Category

TABLE 4.1.1
DETERMINATION OF SOIL CATEGORY

Soil category (see Note 1)	Soil texture	Structure	Indicative permeability (K_{sat}) (m/d) (see Note 2)	Indicative drainage class (see Note 3)
1	Gravels and sands	Structureless (Massive)	>3.0	Rapidly drained
2	Sandy loams	Weakly structured	> 3.0	Well drained
		Massive	1.4-3.0	
3	Loams	High/moderate structured	1.5-3.0	Moderately well drained
		Weakly structured or massive	0.5-1.5	
4	Clay loams	High/moderate structured	0.5-1.5	Imperfectly drained
		Weakly structured	0.12-0.5	
		Massive	0.06-0.12	
5 (Note 4)	Light clays	Strongly structured	0.12-0.5	Poorly drained
		Moderately structured	0.06-0.12	
		Weakly structured or massive	< 0.06	
6 (Note 4)	Medium to heavy clays	Strongly structured	0.06-0.5	Very poorly drained
		Moderately structured	< 0.06	
		Weakly structured or massive	< 0.06	

NOTES:

1 Soil Category determination shall take into account the soil horizons within the depth range into which effluent is absorbed (see Clause 4.1.4 and Paragraph 4.1A8). Figure 4.1A1 may be used to report on the overall soil category determined from the inspection of the individual soil layers.

2 The values of indicative permeability K_{sat} are based on the movement of water, not effluent, through the soil. They are estimates only and shall be used with caution in assisting the determination of the Soil Category. In the field, soil permeability is strongly influenced by the presence of biological channels such as old root holes, termite, ant and worm passages, as well as shrinkage cracks, and not merely by soil texture. A virgin clay-based soil under native bush could easily be ten times as permeable as the same soil under frequent cultivation or compacted by heavy traffic.

3 Indicative drainage classes are based on the assumption that drainage is governed only by the indicative permeability and that external factors play no role.

4 For clay-dominated soils having dispersive (sodic) or shrink/swell behaviour, specialist soil advice and special design techniques will be required to enable their utilization for land-application systems. Generally these soils will have very poor drainage.

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TABLE L1
RECOMMENDED DESIGN LOADING RATES FOR TRENCHES AND BEDS

Soil category	Soil texture	Structure	Indicative permeability (K_{sat})(m/d)	Design loading rate (DLR) (mm/d)			
				Trenches and beds			ETA/ETS beds and trenches
				Primary treated effluent		Secondary treated effluent	
				Conservative rate	Maximum rate		
1	Gravels and sands	Structureless (massive)	> 3.0	20 (see Note 1)	35 (see Note 1)	50 (see Note 1)	(see Note 4)
2	Sandy loams	Weakly structured	> 3.0	20 (see Note 1)	30 (see Note 1)	50 (see Note 1)	
		Massive	1.4 – 3.0	15	25	50	
3	Loams	High/ moderate structured	1.5 – 3.0	15	25	50	
		Weakly structured or massive	0.5 – 1.5	10	15	30	
4	Clay loams	High/ moderate structured	0.5 – 1.5	10	15	30	12
		Weakly structured	0.12 – 0.5	6	10	20	8
		Massive	0.06 – 0.12	4	5	10	5
5	Light clays	Strongly structured	0.12 – 0.5	5	8	12	8
		Moderately structured	0.06 – 0.12	(see Notes 2 & 3)	5	10	5 (see Notes 2, 3, & 5)
		Weakly structured or massive	< 0.06			8	
6	Medium to heavy clays	Strongly structured	0.06 – 0.5				
		Moderately structured	< 0.06				
		Weakly structured or massive	< 0.06				

NOTES:
1 The treatment capacity of the soil and not the hydraulic capacity of the soil or the growth of the clogging layer govern the effluent loading rate in Category 1 and weakly structured Category 2 soils. Land application systems in these soils require design by a suitably qualified and experienced person, and distribution techniques to help achieve even distribution of effluent over the full design surface (see L6.2 and Figure L4 for recommended discharge method by discharge control trench). These soils have low nutrient retention capacities, often allowing accession of nutrients to groundwater.
2 To enable use of such soils for on-site wastewater land application systems, special design requirements and distribution techniques or soil modification procedures will be necessary. For any system designed for these soils, the effluent absorption rate shall be based upon soil permeability testing. Specialist soils advice and special design techniques will be required for clay dominated soils having dispersive (sodic) or shrink/swell behaviour. Such soils shall be treated as Category 6 soils. In most situations, the design will need to rely on more processes than just absorption by the soil.
3 If K_{sat} < 0.06 m/d, a full water balance for the land application can be used to calculate trench/bed size (see Appendix Q).
4 ETA/ETS systems are not normally used on soil Categories 1 to 3.
5 For Category 6 soils ETA/ETS systems are suitable only for use with secondary treated effluent.

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67 Folly Road, Baldivis

Water Management Strategy

Prepared for
Jeeyars Archarya Peettam Australia Ltd

February 2022

waterinsight

Executive Summary

This Water Management Strategy (WMS) has been prepared to support a Development Application for 67 Folly Road, Baldivis (the site). The WMS assesses the local water resources, provides recommendations about how water will be managed on site and makes commitments to complete further studies which will be completed as part of the future Urban Water Management Plan (or similar). It is envisaged that the WMS will provide technical guidance to inform the UWMP and detailed engineering design.

The site is 7.44 ha and is in the City of Rockingham. The site is proposed to be developed into a Place of Worship and cultural centre. The site is anticipated to provide permanent accommodation for the priests, a place of worship (temple) and facilities to hold religious events and weddings. The development plan includes.

- A Hindu temple
- Multipurpose hall
- Dining hall
- Library with short stay accommodation
- Priest's Residence
- Storage sheds
- Carparking, both permanent and overflow carparking
- Basketball court/ playground
- Landscaped courtyards.

This WMS has been prepared with consideration of the Better Urban Water Management Guidelines (WAPC, 2008) and demonstrates that water is able to be appropriately managed to support the proposed landuse and provides the concept water management strategies for the site. Table 1 provides a summary of the site environmental characteristics and proposed water management strategies.

Table 1: LWMS Summary

Section	Description
Background Section 1.0	The WMS has been prepared to accompany a Development Application for 67 Folly Road, Baldivis.
Proposed Development Section 1.2	The site is proposed to be developed into a Place of Worship and cultural centre. The development is anticipated to provide permanent accommodation for the priests, a place of worship (Hindu temple), and facilities to hold religious events and weddings.
Planning Context Section 1.3	The site is zoned Rural under the Metropolitan Region Scheme and Rural under the City of Rockingham Local Town Planning Scheme No.2

Section	Description
Existing Landuse Section 2.1	The site was predominately cleared in the 1970's (Coterra Environment, 2021) and used for rural purposes. The site contains a driveway to the rear of the property where two sheds are located. The main larger shed has a rainwater tank and septic tank. The Kwinana Freeway is west of the site a rural business in located south of the site and rural properties are located north and east
Topography Section 2.3	The site is very flat. A feature survey, provided in Appendix B, indicates the area where the existing sheds are located has the highest elevation of 5.95 mAHD and the lowest elevation of approximately 5.04 mAHD occurs on the southeast corner of the site.
Soil Type Section 2.4	Extremely low to very low relief dunes, undulating sandplain and discrete sand rises with deep bleached grey sands sometimes with a pale-yellow B horizon or a weak iron-organic hardpan at depths generally greater than 2 m
Wetland Mapping Section 2.8	Most of the site is mapped as a Multiple Use Palusplain wetland. Folly Pool, located immediately west of the site is mapped as a Conservation category wetland. The centre of Folly Pool is classified as a Sumpland while the perimeter of the wetland, including the portion of the wetland located nearest the site is classified as a Palusplain wetland.
Surface Water Section 2.9	There are no waterways or drains located in the site however the southern extent of Folly Pool and the Peel Main Drain is located adjacent to the site's western boundary. The Peel Main Drain flows in a southerly direction and discharges to the Serpentine River at Keralup Pool, approximately 10 km south of the site. Several Water Corporation drains are located north and east of the site. The 1% AEP flood level at the site is 5.0 mAHD and the floodplain traverses through the centre and western corner of the site.
Groundwater Section 2.10	Given the absence of onsite groundwater monitoring data and limited local data, an estimate of the onsite maximum groundwater levels has been derived by calculating the maximum groundwater level at the nearest DWER monitoring bores and comparing this data to the minimum groundwater contours shown at the same locations in the Perth Groundwater Map. The MGL at the DWER monitoring bores was an average of 2.11 m (2.31+1.91/2) higher than the minimum groundwater levels contours shown in the Perth Groundwater Map. The minimum groundwater contours in the Perth Groundwater Map indicate the minimum groundwater level at the site is approximately 2 mAHD on the west of the site to 2.5 mAHD on the east.

Section	Description
	The peak groundwater levels at the site are approximately 4.11m AHD on the west and centre of the site and 4.61 mAHD on the east of the site. This results in a clearance to peak groundwater levels of approximately 1.49m in the west and centre and 0.59m in the east of the site. The site has a bore (unlicenced) which will be used to irrigate upto 0.2ha of turf and landscaping. A Water Allocation report obtained from DWER indicates there is no additional groundwater allocation available for licencing.
Water Servicing and Wastewater Disposal Section 3.0	The Water Corporation potable water and reticulated wastewater network does not extend to the site. As a result, potable water will come from rainwater (rainwater tanks) and water being carted into the site, as required. The site is in a sewerage sensitive area. A secondary treatment system with nutrient removal capability will be used. As the site is in a Sewage Sensitive Area, treated wastewater is required to be disposed in an area with at least 1.5m separation to maximum groundwater levels. A slightly raised (inverted) effluent disposal areas will be required to provide adequate clearance to groundwater from the natural surface.
Water Conservation Strategy Section 3.5	The site will need to conserve potable water wherever possible. Measures include • The use of water efficient fixtures and fittings within the site • Installation of rainwater tanks on all building to collect rainfall • Rainwater tanks plumbed into toilets • Signage around the property asking guests to conserve water • The use of waterwise landscaping and efficient irrigation design • Recycling treated wastewater from the secondary treatment system for irrigation of landscaping/turf where site conditions permit.
Stormwater Management Section 4.1	A conceptual stormwater management strategy has been developed which demonstrates that the site can effectively manage stormwater generated during minor and major rainfall events. Pre and post development catchment boundaries and directions of flow have been maintained as closely as possible. Rainwater tanks will collect most of the rainfall from roof areas for potable water supply. Swales/rain gardens and landscaped areas will collect and infiltrate stormwater from impervious areas. The site has a sandy soil profile to at least 2m below natural surface. Peak groundwater levels however during Spring are within approximately 1m of the natural surface. Overland flow and infiltration of stormwater within swales is recommended over using large scale underground storage tanks. A Geotechnical Investigation will be completed to further confirm the sites drainage capacity.
Flood Management	The proposed development area is located outside the floodplain of Folly Pool and the Peel Main Drain. The minimum habitable floor level will be

Section	Description
Section 4.2	5.5 mAHD to provide adequate flood protection to all sources of flooding including from the Water Corporation drains.
Groundwater Management Section 4.3	No active groundwater controls, including sub soil drainage will be provided however a Geotechnical Investigation will be prepared as a condition of the Development Application approval which will advise on the required site preparation and building pad design requirements. Depending on the proponent's preference, a small amount of fill may be applied to the lowest areas of the site, located in the southeast to increase the clearance to groundwater during Spring and limit the risk of waterlogged pockets potentially limiting the use of the site in Winter and Spring. As the site will be used for large religious events and weddings, the site should be kept useable year-round. The detailed engineering and earthworks will be completed following approval of the Development Application and detailed in the UWMP (or equivalent).
Implementation of the Water Management Strategy Section 5.0	The preparation of an Urban Water Management Plan (UWMP) (or similar) is likely to be required to present the detailed design information including: • The final Development Concept Plan • Landscape plans • Geotechnical Investigation • Detailed stormwater drainage design including the location and sizing of drainage infrastructure and required storage for the first flush and minor (10% AEP) and major (1% AEP) rainfall events • Engineering plans including earthworks, roads, and drainage infrastructure • Potable water supply confirmed, and detailed design of all rainwater tanks and greywater recycling systems completed • Evidence that required approvals to use rainwater and greywater have been obtained.

Table of Contents

1 Introduction 1
1.1 Background 1
1.2 Proposed Development 1
1.3 Planning Context 1
1.4 Guidance Documents 1
1.5 Related Studies 2
2 Existing Environment 3
2.1 Site Location and Landuse 3
2.2 Climate 4
2.3 Topography 4
2.4 Soil Types 5
2.5 Acid Sulphate Soils 7
2.6 Contaminated Sites 7
2.7 Public Drinking Water Source Areas 7
2.8 Wetland Mapping 7
2.9 Surface Water and Flooding 8
2.10 Groundwater 8
2.11 Flora and Fauna 12
3 Water Servicing and Wastewater Disposal 13
3.1 Potable Water 13
3.2 Fire Water 13
3.3 Irrigation Water13
3.4 Wastewater Disposal 13
3.5 Water Conservation Measures 13
4 Water Management Strategy 15
4.1 Stormwater Management 15
4.2 Flood Management 19
4.3 Groundwater Management 19
5 Implementation of the Water Management Strategy 21
6 References 22

List of Figures

Figure 1: Site Location
Figure 2: Topography
Figure 3: Soil Type and Sampling Locations
Figure 4: Wetland Mapping
Figure 5: Hydrological Features
Figure 6: Flood Mapping
Figure 7: Pre development Surface Water Catchments and Directions of Flow
Figure 8: Post development Stormwater Catchments and Directions of Flow
Figure 9: Drainage Plan

List of Tables

Table 1: LWMS Summary i
Table 2: PRI Classification of Western Australian Soils 6
Table 3: PRI Results of Onsite Soils 7
Table 4: Groundwater Resource Availability 9
Table 5: DWER Groundwater Monitoring Data 12
Table 6: Groundwater Aquifer Properties 16
Table 7: Catchment Parameters 16
Table 8: Stormwater Storage Requirements 17

List of Plates

Plate 1: Typical site view (from southern boundary, looking north) 3
Plate 2: Typical site view (centre of development area, looking northeast) 4
Plate 3: Test Pit FR2 6
Plate 4: Perth Groundwater Map – Minimum Groundwater Level Contours 8
Plate 5: Perth Groundwater Map – Minimum Groundwater Level Contours 10
Plate 6: DWER Groundwater Monitoring Locations, AAMGL and MGL 11
Plate 7: Catchment Landuse Breakdown 16

List of Appendices

Appendix A: Development Plans
Appendix B: Feature Survey
Appendix C: PRI Laboratory Analysis
Appendix D: Groundwater Allocation Plan
Appendix E: DWER Bore Hydrographs
Appendix F: Stormwater Modelling Hydrographs

1 Introduction

1.1 Background

This Water Management Strategy (WMS) has been prepared on behalf of Jeeyars Acharya Peettam Australia Ltd (the proponent) to support a Development Application for 67 Folly Road, Baldivis (the site, Figure 1).

The site is 7.44 ha and is in the City of Rockingham (CoR).

1.2 Proposed Development

The site is anticipated to provide a place of worship (Hindu temple), permanent accommodation for the priests and facilities to hold religious events and weddings. The proposed Development Plans are provided in Appendix A and include.

- A Hindu Temple
- Multipurpose hall
- Dining hall
- Library
- Short stay accommodation
- Priest's Residences
- Carparking
- Landscaped gardens

Although the site is 7.44 ha, the proposed development will occupy approximately 3.2 ha of the site. Development will occur on the eastern half of the site to avoid environmental constraints including main drains, a Conservation category wetland and the 1% AEP floodplain.

1.3 Planning Context

The site is zoned Rural under the Metropolitan Region Scheme and Rural under the CoR Local Town Planning Scheme No.2 (DPLH,2004).

1.4 Guidance Documents

This report has been prepared in accordance with State Planning Policy 2.9: Water Resources (Government of Western Australia 2006) and will guide future development of the site. This report has been developed with reference to the following guidance documents:

- Better Urban Water Management (WAPC 2008)
- Floodplain Management Water facts 14 (Water and Rivers Commission 2000)
- Government Sewarage Policy (DPLH, 2019)
- Stormwater Management Manual for Western Australia (DoW 2004 – 2007).

This report details the water resources located at the site and the integrated water management strategies that will be implemented to appropriately manage and conserve water resources. Integrated water management will be achieved at the site through the following design objectives:

- Manage the risk to human life and damage to infrastructure from surface water flooding
- Manage the impacts of the relatively high groundwater table
- Mimic the pre-development hydrological regime by maintaining the pre development catchment boundaries and peak flow rates leaving the site to pre-development conditions
- Maintain water quality (surface and groundwater) within the development in relation to predevelopment conditions
- Provide fit-for-purpose water supply and wastewater disposal options

1.5 Related Studies

An Environmental Assessment Report (Coterra Environment, 2021) has been completed in support of the development application for this site.

A Site and Soil Evaluation (WaterInisght,2021) has been completed to detail the proposed onsite wastewater management system and disposal requirements. The results of the SSE are detailed in Section 3.0.

2 Existing Environment

2.1 Site Location and Landuse

The site was predominately cleared in the 1970's (Coterra Environment, 2021) and used for rural purposes. The site contains a driveway and two sheds located in the rear of the property. The main large shed has a septic tank and rainwater tank. The Kwinana Freeway is west of the site, a rural business in located south and rural properties are located north and east (Figure 1). Plate 1 and Plate 2 provide a typical view of the site.



Plate 1: Typical site view (from southern boundary, looking north)



Plate 2: Typical site view (centre of development area, looking northeast)

2.2 Climate

The climate in Baldivis is warm and temperate. Climate and weather statistic from the Jandakot Airport (Site No. 009172), indicates the mean maximum and minimum temperature of 31.5^{oC} and 7.1^{oC} are experienced in February and July respectively. The area receives a mean annual rainfall of 816 mm/yr.

2.3 Topography

The site is very flat. For this reason, the 1m topographic contours indicate the topography at the site is approximately 4 mAHD in the west to 5 mAHD in the east (Figure 3). A feature survey, provided in Appendix B, indicates the area where the existing sheds are located has the highest elevation of 5.95 mAHD and the lowest elevation of approximately 5.04 mAHD occurs on the southeast corner of the site.

2.4 Soil Types

2.4.1 Regional Soil Mapping

The soil types and land units are mapped on Figure 4.

The western half of the site is mapped as.

- Pj_P4: Poorly drained flats, sometimes with gilgai microrelief and with moderately deep to deep black, olive grey and some yellowish brown cracking clays and less commonly non-cracking friable clays with generally acidic subsoils

A gilgai is a small, ephemeral lake formed from a depression in the soil surface in expanding clay soils. Additionally, the term "gilgai" is used to refer to the overall micro-relief in such areas, consisting of mounds and depressions, not just the lakes themselves. The name comes from an Aboriginal word meaning small water hole. These pools are commonly a few metres across and less than 30 cm deep. Gilgais are found worldwide wherever cracking clay soils and pronounced wet and dry seasons are present.

The eastern half of the site, where development is proposed to occur mainly consists of.

- Pj_B1: Extremely low to very low relief dunes, undulating sandplain and discrete sand rises with deep bleached grey sands sometimes with a pale-yellow B horizon or a weak iron-organic hardpan at depths generally greater than 2 m; banksia dominant.

Further details about the soil type and onsite investigations are provided in Section 3.0 Site Investigation.

2.4.2 Onsite Investigation

WaterInsight completed a site visit on the 7thSeptember 2021 to prepare the Site and Soil Evaluation. The soils were examined and described from 5 test sites (FR1 to FR5) as shown on Figure 3. The soil profile for all test sites was similar comprising of pale deep sands as shown in Plate 3 below.

Southwest Drilling used a GeoProbe drill rig to take a soil core to a depth of 2m. The drilling was completed easily, with no resistance and all test sites were drilled to a depth of 2m. The proposed development area did not contain fill material, gravel, or rocky outcrops.

A Geotechnical Investigation will be completed as a condition of development approval to determine the site classification and required site preparation.

Onsite infiltration testing was completed at 3 locations (FR2, FR3 and FR5) to assist with preparing the Site and Soil Evaluation. The filed saturated hydraulic conductivity ranged from 3.37m/day at FR5 to 5.86m/day at FR2.

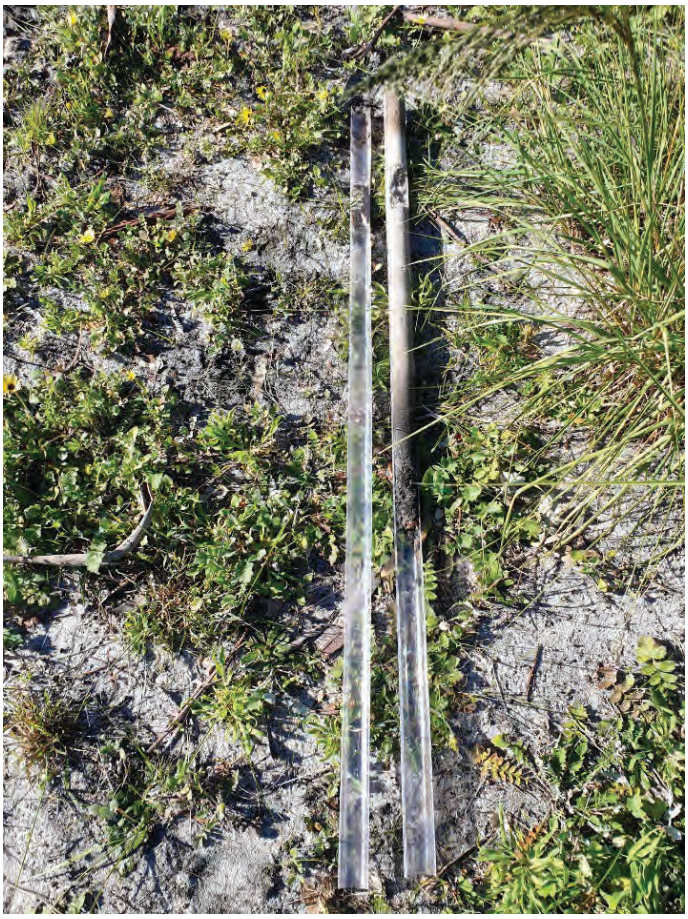

Plate 3: Test Pit FR2

2.4.3 Phosphorus Retention Index

The Phosphorus Retention Index (PRI) describes a soils ability to adsorb or 'lock up' applied phosphorus. Soils with a high PRI will quickly bind phosphorus, conversely soils with a low PRI will lock up only small amounts of phosphorus, leaving most of the phosphorus available for plant uptake or accumulation in the soil profile. Table 2 below provides an explanation of the PRI classification of the soils ability to adsorb applied phosphorus.

Table 2: PRI Classification of Western Australian Soils

PRI	Classification	Example Soil Type
<2	Very weakly adsorbing or desorbing	Grey sands, Bassendean sands, Badgingarra sands
2-5	Weakly desorbing	Grey-brown duplex, deep duplex sands, Lancelin sands
5-20	Moderately adsorbing	Grey loamy sands, yellow brown sands, Coolup loamy sands, Spearwood sands
20-70	Strongly adsorbing	Lateritic gravels and sandy loams, Kununurra clays, Darling Range gravels
>70	Very strongly adsorbing	Lateritic loams, iron rich peats, Karri loams

Soil samples from four test pits were taken to test for PRI. A drill rig was used to take a soil core to a depth of 2m to classify the soil type and soil samples were taken from each soil horizon. The test pit locations are shown on Figure 4 and the laboratory results of the soil PRI are provided in Appendix C and Table 3 below.

Table 3 indicates the soils at the site are generally very weakly to weakly desorbing. An unusual result of 989 was recorded at FR3 at a depth of 1.8m to 2.0m. These results are indicative of the Bassendean Sands on site.

Table 3: PRI Results of Onsite Soils

Site	Depth (m)		
	0-0.15	0.15 – 1.8	1.8 – 2.0
FR1	2.4	0.8	3.6
FR2	1.4	0.4	1.1
FR3	0.7	-0.2	989
FR4	-0.1	2.7	0.9

2.5 Acid Sulphate Soils

The site is mapped as having a low to moderate risk of acid sulphate soils (ASS) occurring within 3m of the natural soil surface but high to moderate risk of ASS beyond 3m of the natural soil surface.

2.6 Contaminated Sites

A search of the DWER Contaminated Sites Database (DWER) indicates the site does not contain any contaminated sites.

2.7 Public Drinking Water Source Areas

The Public Drinking Water Source Area (PDWSA) online mapping tool (DWER, 2021) indicates the site is not in a PDWSA.

2.8 Wetland Mapping

The geomorphic wetland mapping is shown on Figure 5. Most of the site is mapped as a Multiple Use Palusplain wetland (Unique feature ID 16,021).

Folly Pool, located immediately west of the site is mapped as a Conservation category wetland (Unique Feature ID 16,015). The centre of Folly Pool is classified as a Sumpland while the perimeter of the wetland, including the portion of the wetland located nearest the site is classified as a Palusplain wetland.

Although not mapped as a wetland, there are two lying gilgai's located in the west of the site which contain water during winter.

The proposed development of the site is proposed to occur in the eastern half of the site, outside any necessary buffer to Folly Pool.

2.9 Surface Water and Flooding

There are no waterways or drains located in the site however the southern extent of Folly Pool and the Peel Main Drain is located adjacent to the site's western boundary. The Peel Main Drain flows in a southerly direction and discharges to the Serpentine River at Keralup Pool, approximately 10 km south of the site.

The Peel Main Drain typically flows between July and October each year and stops flowing during Summer and Autumn. Nutrient concentrations, both total nitrogen and total phosphorus are high due to the catchment of the PMD containing leached soils, and intensive agricultural landuses (DWER, 2018).

There are several Water Corporations drains located north and east of the site, as shown on Figure 6. The Serpentine River, Peel Main Drain and Water Corporation drains flood during major rainfall events.

The 10% Annual Exceedance Probability (AEP) and 1% AEP flood mapping at the site is provided on Figure 7. The 1% AEP flood level at the site is 5.0 mAHD and the floodplain traverses through the centre and western corner of the site.

Development of the site is proposed to occur in the eastern half of the site, outside the floodplain and is therefore not at risk of flooding.

2.10 Groundwater

2.10.1 Groundwater Licences

The online Water Register (DWER, 2021) indicates the site does not have a groundwater licence as shown in Plate 4 below. The site does however have a bore (unlicenced).



Plate 4: Perth Groundwater Map – Minimum Groundwater Level Contours

2.10.2 Groundwater Aquifers and Allocation

The online DWER Water Register (DWER, 2021) indicates the site is located within the Stakehill groundwater area and the Maramanup and Stakehill Confined groundwater subareas. The Superficial Swan, Leederville and Yarragadee North aquifers underly the site.

An Aquifer Allocation Report (Appendix D) was obtained from DWER on the 27th September 2021. It indicates that there is currently 214,180 kL of groundwater allocation available for licencing in the Superficial Swan aquifer. There are however applications currently being assessed requesting 266,273 kL of groundwater which would use all the groundwater allocation currently available.

Table 4: Groundwater Resource Availability

Management Area	Management Sub Area	Resource	Allocation Limit (kL)	Allocated Volume (kL)	Remaining Volume (kL)	% Allocated and Committed	Additional Requested
Stakehill	Maramanup	Superficial Swan	1,421,950	1,207,770	214,180	84.9%	266,273
Stakehill	Stakehill Confined	Cattamarra Coal Measures	0	0	0	0	
Stakehill	Stakehill Confined	Leederville	389,620	503,878	-159,258	140.88%	10,000
Stakehill	Stakehill Confined	Yarragadee North	0	0	0	0	

2.10.3 Regional Groundwater Monitoring

The Perth Groundwater Map (DWER, 2020) maximum groundwater level contours do not extend to the site. The minimum groundwater level contours extend to the site, as shown in Plate 5 which indicate the minimum groundwater level at the site is approximately 2 mAHD on the west of the site to 2.5 mAHD on the east.

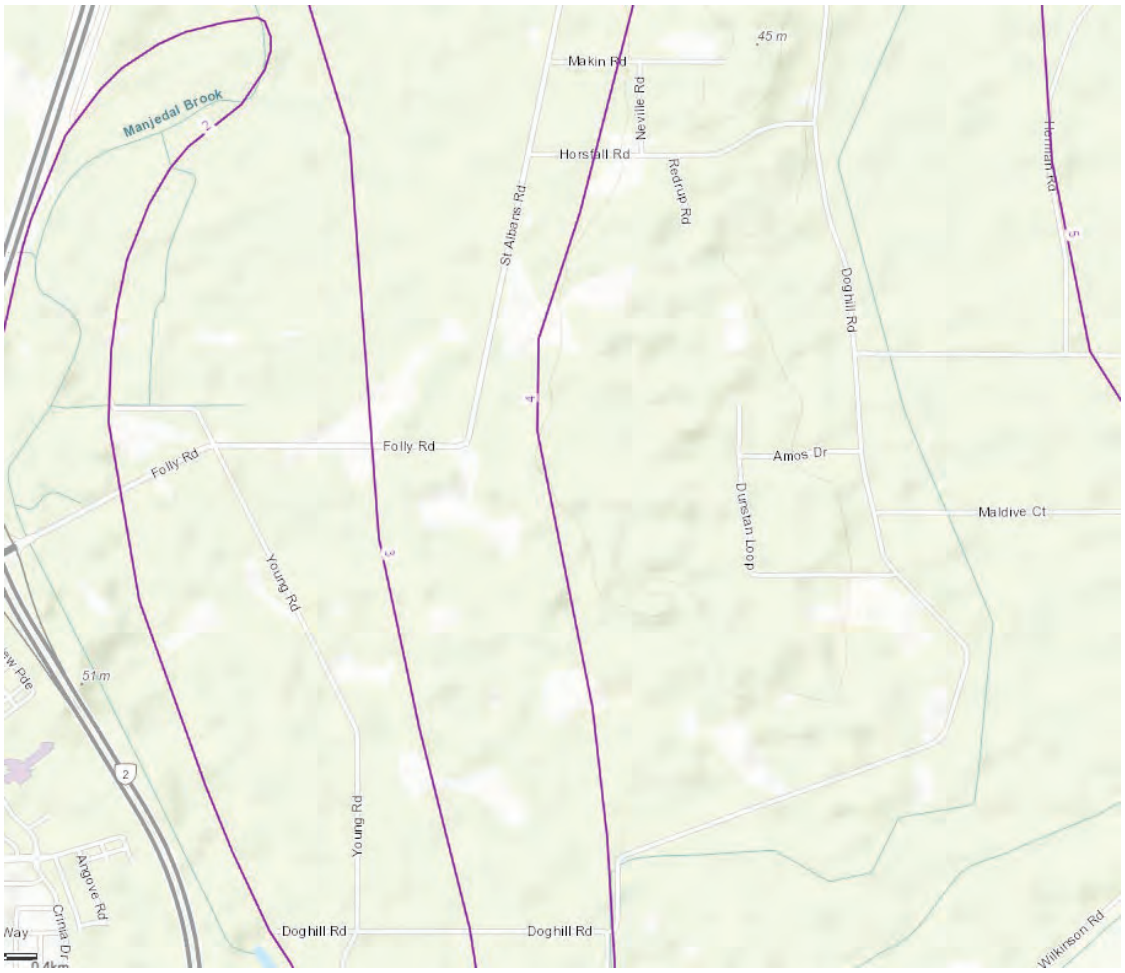

Plate 5: Perth Groundwater Map – Minimum Groundwater Level Contours

2.10.4 Local Groundwater Monitoring

During the onsite investigations (detailed further in Section 3), groundwater was encountered at 0.6 m below ground level (bgl) at FR3 and 0.8 m bgl at soil sampling locations FR5 (Figure 4). Peak groundwater levels generally occur in September to October each year, these levels are therefore not representative of peak groundwater levels.

The Water Register (DWER, 2021) indicates the nearest DWER groundwater monitoring bores are located 1.66 km south (WIN 61410478) and 2.45 km east of the site (WIN 61410093), both on Doghill Road.

WIN 61410478 has 46 years of groundwater level data from 1975 to 2021 and WIN 61410093 has groundwater levels recorded from 2011 to 2021. The water level hydrographs are provided in Appendix E.

Plate 6 and Table 5 below provides the Average Annual Maximum Groundwater Level and Maximum Groundwater Level for WIN 61410478 and WIN 61410093, and an estimated MGL for the site.

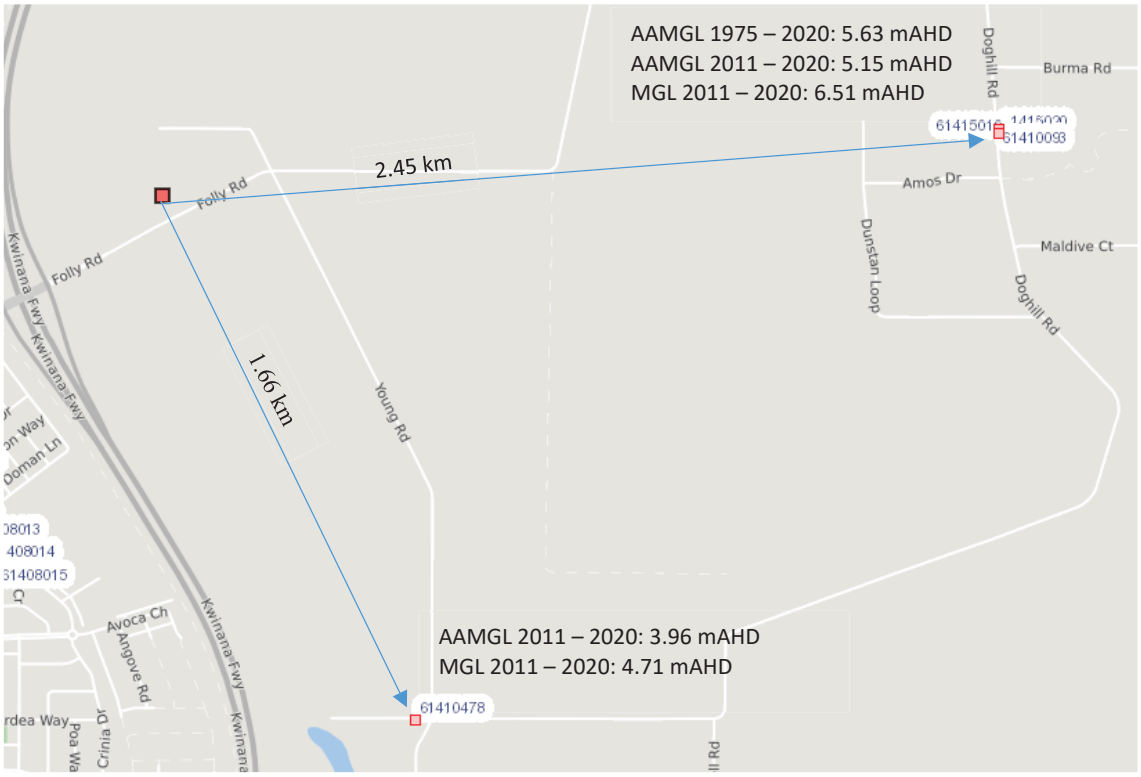

Plate 6: DWER Groundwater Monitoring Locations, AAMGL and MGL

Table 5: DWER Groundwater Monitoring Data

WIN Site	Long term AAMGL (mAHD) 1975 - 2020	10yr AAMGL (mAHD) 2011 - 2020	MGL* (mAHD)	Perth Groundwater Map (PGM) Minimum Groundwater Levels (mAHD)	Difference MGL – PGM (m)
61410478	n/a	3.96	4.71 Recorded in 2018	2.4	2.31
61410093	5.63	5.63	6.51 Recorded in 1984	4.6	1.91

*MGL 61410478 1975 – 2020 and 61410093 2011 – 2020.

2.10.5 Estimated Site Maximum Groundwater Level

Given the absence of onsite groundwater monitoring data and limited local data, an estimate of the onsite maximum groundwater levels has been derived by calculating the maximum groundwater level at the nearest DWER monitoring bores and comparing this data to the minimum groundwater contours shown at the same locations in the Perth Groundwater Map. The MGL at the DWER monitoring bores was an average of 2.11 m (2.31+1.91/2) higher than the minimum groundwater levels contours shown in the Perth Groundwater Map.

As discussed in Section 2.8.1, the minimum groundwater contours in the Perth Groundwater Map indicate the minimum groundwater level at the site is approximately 2 mAHD on the west of the site to 2.5 mAHD on the east.

The peak groundwater levels at the site are approximately 4.11m AHD on the west and centre of the site and 4.61 mAHD on the east of the site. This results in a clearance to peak groundwater levels of approximately 1.49m in the west and centre and 0.59m in the east of the site.

2.11 Flora and Fauna

An Environmental Assessment Report (Coterra Environment, 2021) has been completed, which included a search of the EPBC Protected Matters Search Tool, no conservation significant flora or fauna is expected to occur on the site because of the historical clearing and agricultural landuse.

3 Water Servicing and Wastewater Disposal

3.1 Potable Water

The total water requirements for the development are estimated to be 2,646,640 L/year. Potable water will be sourced from installing rainwater tanks on all buildings and potable water will also be tanked into the site as required.

3.2 Fire Water

Envision Bushfire Protection have advised that the site will require a 50,000 L water tank to provide water for fire suppression.

The existing bore (unlicenced) located on site will be used to fill this tank. Groundwater used for firefighting is exempt from requiring a licence from DWER.

3.3 Irrigation Water

The site contains an unlicenced bore which has been used for watering stock. This bore can be used to irrigate small areas of turf and landscaping. Irrigating an area of turf and landscaping which is less than 0.2ha is exempt from requiring a licence.

In addition, the site will install a secondary treatment system for the management of wastewater. This system will consider the use of using a combination of leach drains and irrigation including shallow subsurface drip irrigation and covered surface drip irrigation. As the groundwater aquifers at the site are over allocated it seems a waste to simply infiltrate the treated effluent via leach drains.

3.4 Wastewater Disposal

A reticulated sewerage service is not available at the site and an onsite wastewater management system is required.

A Site and Soil Evaluation (WaterInsight, 2021) has been completed to confirm the sites suitability for onsite wastewater management and to provide recommendations about the type and sizing of the required onsite wastewater management system.

The site is mapped as being in a Sewage Sensitive Area for the following reasons

- Estuary catchment on the Swan and Scott Coastal Plain
- Within 1 km of significant wetland.

For this reason, a secondary treatment system with nutrient removal capabilities will be used. The leach drains are proposed to be located on one of the highest areas of the site to provide adequate separation to groundwater and will achieve a 100m buffer to the Water Corporation drains and floodplain boundary.

3.5 Water Conservation Measures

The development of the site will incorporate the following water conservation strategies:

- The use of waterwise landscaping and efficient irrigation design: The proposed Development Plan includes small areas of soft landscaping and open space which will limit the amount of water required outside of the building envelopes. The site also contains mature vegetation which can be retained to reduce the need to establish newly planted vegetation which requires higher rates of irrigation to become established
- Groundwater and treated wastewater will be used as the water source for irrigation. Potable water will not be used for irrigation to reduce potable water consumption.
- The use of water efficient fixtures and fittings within the site: water efficient shower heads and tap fittings are already mandated as part of the Building Code of Australia
- Rainwater tanks will be installed on all buildings and possibly plumbed to toilets.
- A 'water supply assessment' will be completed as part of the future UWMP, to assess the volume of rainfall which is likely to be collected from all building roof areas in order to quantify the size and number of rainwater tanks required.

4 Water Management Strategy

4.1 Stormwater Management

Development of the site will result in additional impervious areas and runoff into downstream environments. Therefore, stormwater management will address this with specific measures for various stormwater events, to maintain pre-development flow paths and peak flow rates leaving the site to pre-development conditions.

A conceptual stormwater management strategy has been developed which demonstrates that the site can effectively manage stormwater generated during minor and major rainfall events.

As opposed to typical urban developments, this development will not include large areas of single private lots or public open space. A stormwater management strategy which manages stormwater to prevent the site from flooding and does not increase the risk of flooding to third parties is required.

Due to the sandy soil profile but relatively shallow groundwater table, the objective of the drainage design is to install a 'disconnected' drainage network which minimises the use of pipes and underground infiltration (underground storage tanks), and relies on at source surface infiltration and storage, to replicate the current hydrological regime and minimise constructions costs and maintenance.

4.1.1 Drainage Catchments

Based on the existing topography, the site has been divided into four sub catchments as shown on Figure 6. The post development catchments have been estimated on Figure 7. The site is flat and the earthworks and building plans are not available yet, the post development catchments will need to be refined further and presented in the UWMP, when these details are available.

A drainage plan is provided on Figure 9 to provide indicate locations as to where drainage swales and shallow soakwells can be located onsite. As an earthworks plan is not available, the post development catchment boundaries and indicative drainage areas have been located to match the predevelopment conditions, as closely as possible.

PCSump has been used to model the sites drainage requirements. A saturated hydraulic conductivity of 3m/day and a groundwater level of 4.11 mAHD has been used. Tables 6 to 8 provide further detail of the site's drainage requirements.

The details provided in Table 8, do not account for the use of rainwater tanks. An assessment of the number and size of rainwater tanks will be completed at the detailed design stage. Table 8 demonstrates the site is capable of managing stormwater without rainwater tanks (worst case scenario).

Table 6: Groundwater Aquifer Properties

Aquifer Parameter	Result
K sat	3
Porosity	0.15
Base of Aquifer (mAHD)	-12
Design Groundwater Level (mAHD)	4.11



Plate 7: Catchment Landuse Breakdown

Table 7: Catchment Parameters

Landuse	Initial Loss	Percentage Loss	Areas (ha)			
			Catchment 1	Catchment 2	Catchment 3	Catchment 4
Structures/Buildings	0	0.1	0.106	0.087	0.0	0.139
Roads/paths/hardstand	0	0.1	0.106	0.032	0	0.183
Carpark	0	0.1	0.104	0.022	0	0.161
Open Space	0	0.9	0.886	0.653	0.091	0.663

Table 8: Stormwater Storage Requirements

Storage Requirements	Areas (ha)				
	Catchment 1	Catchment 2	Catchment 3	Catchment 4	Catchment 4 carpark
Swale invert level (mAHD)	4.50	4.50	4.90	4.50	4.50
Base width (m)	2.5 (swale)	5 (swale)	vdrain	7	10
Base Length (m)	150	35	40	55	13
Batter (1:h)	4	4	2	4	4
Storage depth (m)	0.50	0.50	0.10	0.50	0.50
15mm Event					
Critical storm (hr)					
Rainfall (mm)	15	15	15	15	15
Volume (m^3)	44	22	0	40	19
Area (m^2)	499	212	0	433	155
Depth (m)	0.1	0.11	0	0.10	0.13
20% AEP					
Critical storm (hr)	9 min	6 min	30 min	12 min	6
Rainfall (mm)	56.1	48.8	20.1	61.7	48.8
Volume (m^3)	104	50	0	101	37
Area (m^2)	630	254	0	502	178
Depth (m)	0.29	0.24	0	0.23	0.24

Note: Catchment 3 does not require any storage as the area remains undeveloped and there are no other site flows passing through the catchment, a swale however could be placed within Catchment 3 if required at detailed design stage.

1% AEP					
Critical storm (hr)	24	12	30min	24	9
Rainfall (mm)	142	117	24.5	142	106
Volume (m^3)	276	126	0	244	89
Area (m^2)	910	346	0	637	236
Depth (m)	0.43	0.49	0	0.48	0.49

4.1.2 First 15mm

The first 15mm of runoff from buildings will be retained in rainwater tanks for potable water supply. The first 15mm from all other impervious surfaces including roads, carparking and paved areas will be retained and infiltrated on site using landscaped treatments including landscaped features, swales and tree pits.

Due to the low-density nature of the development, roads will not include kerbs to allow for direct runoff and infiltration.

The site contains sandy soils to a depth of at least 2.0m which are suitable for onsite infiltration. The high groundwater table however will limit infiltration in Spring when groundwater levels are at their peak. Overland flowpaths, directing water away from the building envelope during larger rainfall events should be incorporated at the detailed design stage.

4.1.3 Minor Events

Runoff from up to the 20% AEP event will be detained within rain gardens and swales If incorporated, any piped network will be designed to covey the 20% AEP rainfall event.

4.1.4 Major Events

For rainfall events greater than the 20% AEP up to the 1 % AEP, stormwater will be conveyed as overland flow to swales located around the perimeter of the property. A series of open swales will be used to convey water through the site using predominately existing flow paths.

Further stormwater modelling will be completed and detailed in the UWMP (or equivalent). Final dimensions of all drainage infrastructure will be detailed prior to construction.

The hydrographs for each catchment are provided in Appendix F to indicate that all drainage infrastructure are expected to be dry well within 96 hrs to prevent mosquito breeding.

As mentioned in Section 3.1, the site will be required to install large rainwater tanks to collect most of the rainfall falling on roofs to provide a potable water supply. The design on any future drainage infrastructure needs to consider the volume of water to be held in the rainwater tanks.

4.1.5 Water Quality Treatment

Clean roof runoff will be collected in rainwater tanks to provide potable water supply. Stormwater from impervious surfaces including road reserves and around the building envelopes will infiltrate the first flush as close to source as possible using landscaped features, swales and tee pits which will be dispersed throughout the site.

Plant species in the landscape features will comprise of native and or waterwise species to reduce irrigation demand as well as fertiliser and pesticide use. The site is not expected to generate any nutrient source or other sources of contamination likely to impact the water quality of groundwater or surface water.

4.2 Flood Management

The proposed development area is located outside the floodplain of Folly Pool and the Peel Main Drain. The Department of Water and Environmental Regulation have requested that the finish floor levels of proposed buildings be at a minimum height of 5.5 m AHD to ensure adequate flood protection is provided.

The Site Plans in Appendix A indicate the minimum habitable floor levels are proposed to be 5.60 mAHD.

4.3 Groundwater Management

No active groundwater controls, including sub soil drainage will be provided however a Geotechnical Investigation will be prepared as a condition of the Development Application approval which will advise on the required site preparation and building pad design requirements. Generally, a minimum clearance of 0.5m from natural surface to maximum groundwater levels is required to prevent damage to infrastructure due to waterlogging and rising damp. The finish level of the building envelopes will be detailed in the UWMP (or equivalent).

As the site is in a Sewage Sensitive Area, treated wastewater is required to be disposed in an area with at least 1.5m separation to maximum groundwater levels. A slightly raised (less than 0.5m) effluent disposal areas will be required to provide adequate clearance to groundwater from the natural surface. The Geotechnical Investigation will assess groundwater levels at the site when the work is being completed and this information will be used to confirm the required leach drain and building elevations.

Depending on the proponent's preference, a small amount of fill may be applied to the lowest areas of the site, generally located in the southeast corner to increase the clearance to groundwater during Spring and limit the risk of waterlogged soils potentially limiting the use of the site in Winter and Spring. As the site will be used for large religious events and weddings, the site should be always kept useable.

The two key strategies include retention of existing vegetation where possible and the infiltration of the first flush of rainfall at source to replicate current (pre-development) conditions and the recharge of groundwater.

Other key strategies for managing groundwater quality at the site include:

- Use of reticulated sewerage
- Maximising native vegetation within POS
- Fertiliser and pesticide use on site to be minimised using waterwise and or native landscaping, minimal community open space and private gardens due to the style of development.

5 Implementation of the Water Management Strategy

The preparation of an Urban Water Management Plan (UWMP) or Stormwater Management Plan (SMP) as a condition of the Development Application approval is to be expected and will provide the following information.

- The final Development Concept Plan
- Landscape plans
- Geotechnical Investigation
- Detailed stormwater drainage design including the location and sizing of all drainage infrastructure and required storage for the first flush and minor (20% AEP) and major (1% AEP) rainfall events
- Engineering plans including earthworks, roads and drainage infrastructure
- Potable water supply confirmed and detailed design of all rainwater tanks on all buildings completed
- Evidence that required approvals to recycle water if required have been obtained.

6 References

CoTerra Environment (2021) Environmental Assessment Report – 67 Folly Road, Baldivis

Department of Health (2015). *Code of Practice for the Design, Manufacture, Installation and Operation of Aerobic Treatments Units (ATU's) Serving Single Dwellings*

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Department of Planning, Lands and Heritage (2004). *City of Rockingham Town Planning Scheme No. 2.*

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Government of Western Australia, 2006, State Planning Policy 2.9: Water Resources, Government Gazette, 19 December 2006.

Landgate (2021). Shared Land Information Platform – Locate V5. Government of Western Australia, Perth, Western Australia.

State Government of Western Australia (2019). Government Sewerage Policy.

Western Australian Planning Commission and Department of Planning and Infrastructure. (2008). Better Urban Water Management.

Figures



Legend

- Lot Boundary
- Cadastral Lines

N

0 60 120 180 240 300 m

waterinsight

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E: kelly@waterinsight.com.au
P: +61 411 354 463

Site Boundaries: *Landgate*
Imagery: *Landgate/ESRI*
GDA 1994 MGA Zone 50

NOTE: All areas and dimensions are subject to survey, engineering and detailed design and may change without notice.

WATER MANAGEMENT STRATEGY

Balaji Temple and Cultural Centre
67 Folly Road, Baldivis

Figure 1

Site Location

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1:5,000 @ A4 ***Date: 23/09/2021***



Legend

- Lot Boundary
- Cadastral Lines
- Contours 1m interval (mAHD)

N

0 60 120 180 240 300 m

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Figure 2

Topography

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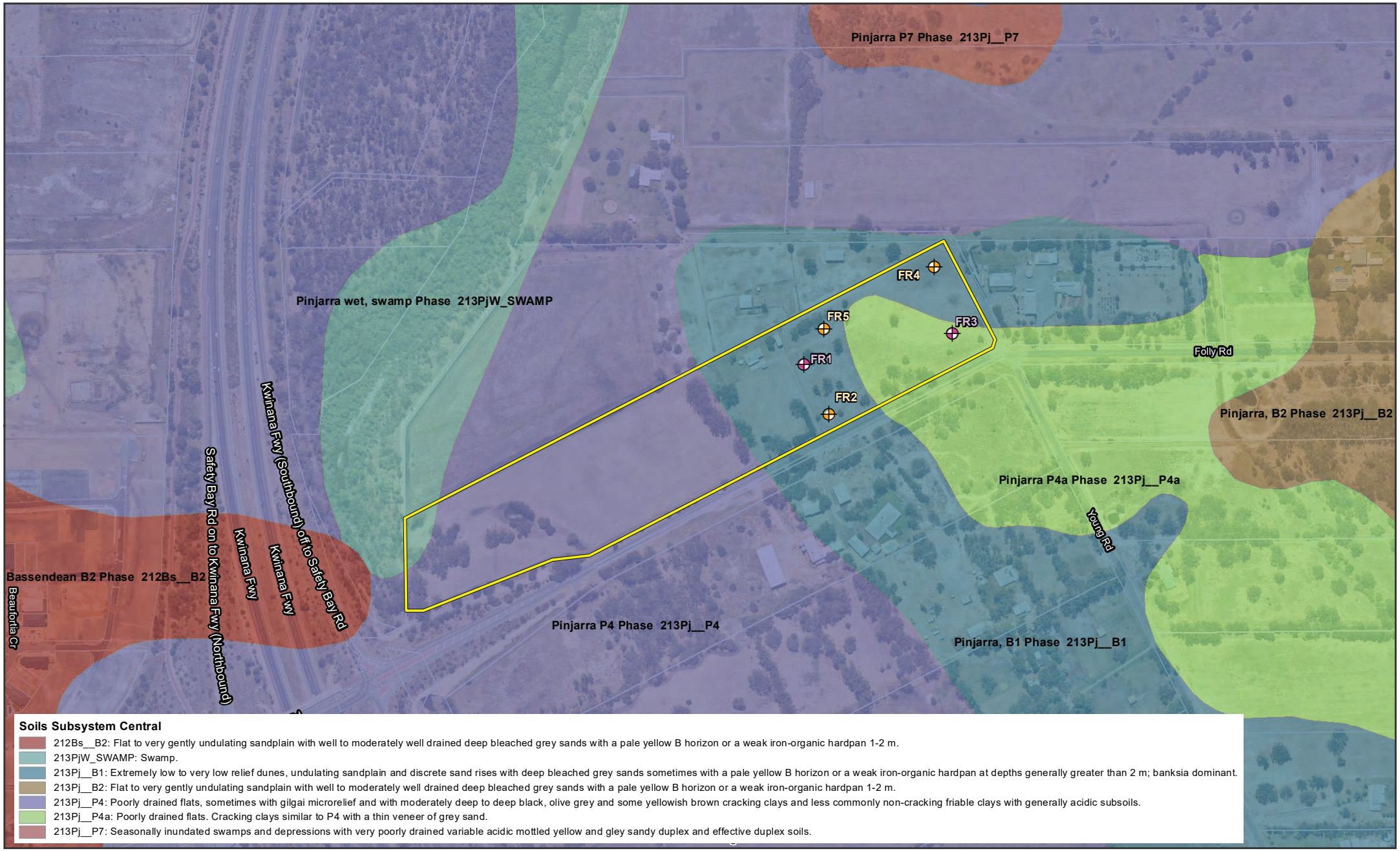
1:5,000 @ A4 **Date: 23/09/2021**



Soils Subsystem Central

- 212Bs__B2: Flat to very gently undulating sandplain with well to moderately well drained deep bleached grey sands with a pale yellow B horizon or a weak iron-organic hardpan 1-2 m.
- 213PjW_SWAMP: Swamp.
- 213Pj__B1: Extremely low to very low relief dunes, undulating sandplain and discrete sand rises with deep bleached grey sands sometimes with a pale yellow B horizon or a weak iron-organic hardpan at depths generally greater than 2 m; banksia dominant.
- 213Pj__B2: Flat to very gently undulating sandplain with well to moderately well drained deep bleached grey sands with a pale yellow B horizon or a weak iron-organic hardpan 1-2 m.
- 213Pj__P4: Poorly drained flats, sometimes with gilgai microrelief and with moderately deep to deep black, olive grey and some yellowish brown cracking clays and less commonly non-cracking friable clays with generally acidic subsoils.
- 213Pj__P4a: Poorly drained flats. Cracking clays similar to P4 with a thin veneer of grey sand.
- 213Pj__P7: Seasonally inundated swamps and depressions with very poorly drained variable acidic mottled yellow and gley sandy duplex and effective duplex soils.

Legend

- Lot Boundary
- Cadastral Lines
- Soil Sampling Location
- Soil Sampling and Infiltration Test Location

N

0 60 120 180 240 300 m

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Water Management Strategy

Balaji Temple and Cultural Centre
67 Folly Road, Baldivis

Figure 3

Soil Type and Sampling Locations



Legend

- Lot Boundary
- Cadastral Lines

Geomorphic Wetlands Swan Coastal Plain DBCA_019

- Conservation
- Resource Enhancement
- Multiple Use

N

0 60 120 180 240 300 m

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WATER MANAGEMENT STRATEGY
Balaji Temple and Cultural Centre
67 Folly Road, Baldivis

Figure 4

Wetland Mapping



Legend

Lot Boundary

Hydrography

Watercourse - minor

Drain - major (Water Corporation Drains)

N

0 60 120 180 240 300 m

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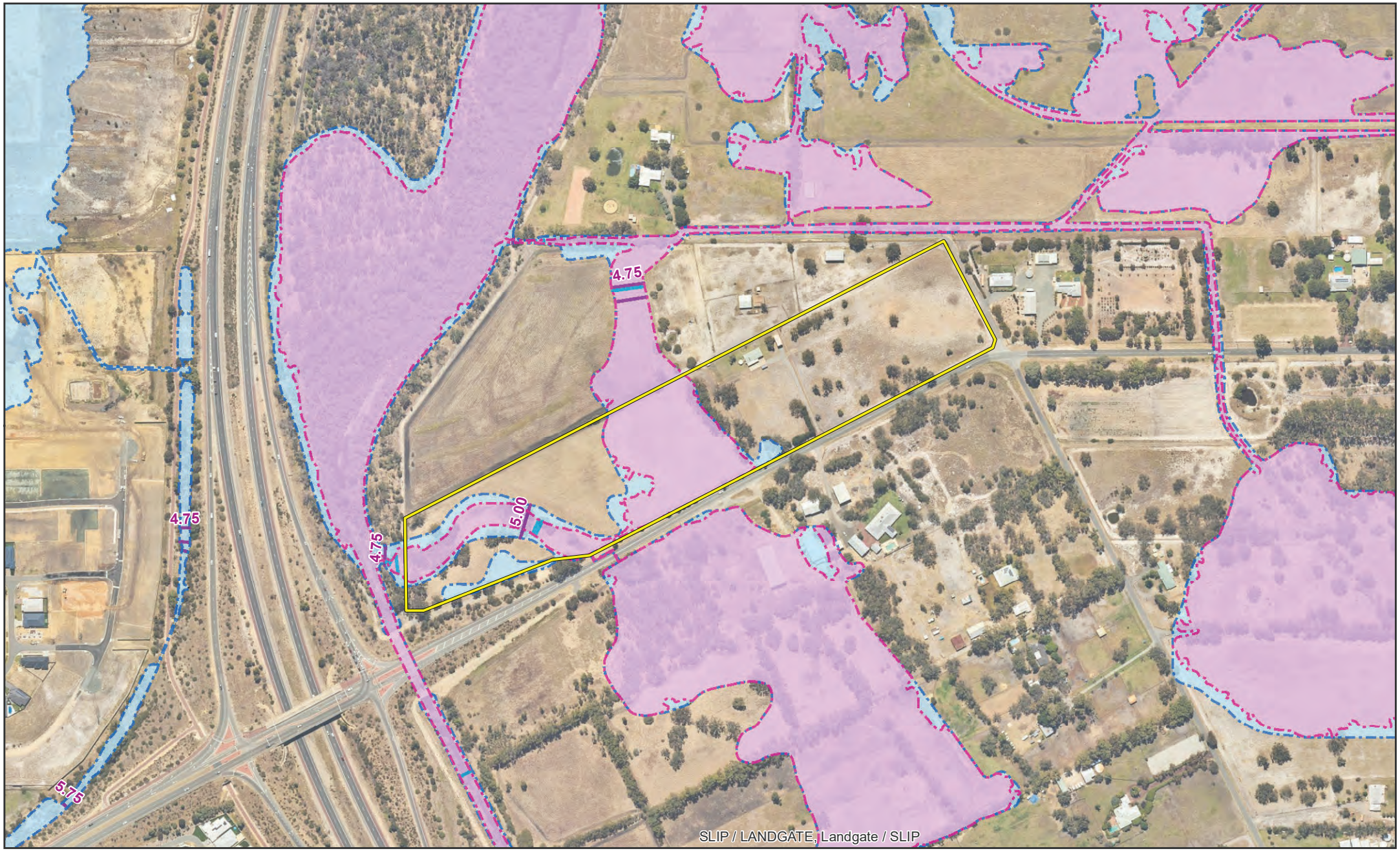
WATER MANAGEMENT STRATEGY

Balaji Temple and Cultural Centre
67 Folly Road, Baldivis

Figure 5

Hydrological Features



Legend

Lot Boundary

FPM Extent of Flooding

Extent of 1 in 100 (1%) AEP flooding

Extent of 1 in 10 (10%) AEP flooding

FPM Floodplain Area (DWER-020)

1 in 10 (10%) AEP floodplain

1 in 100 (1%) AEP floodplain

FPM Flood Level Contours (m AHD) (DWER-018)

1 in 10 (10%) AEP flood level contour

1 in 100 (1%) AEP flood level contour

N

0 60 120 180 240 300 m

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P: +61 411 354 463

Site Boundaries: Landgate
Imagery: Landgate/ESRI
GDA 1994 MGA Zone 50

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WATER MANAGEMENT STRATEGY

Balaji Temple and Cultural Centre
67 Folly Road, Baldivis

Figure 6

Flood Mapping

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Legend

- Site Boundary
- Cadastre
- Predevelopment Surface Water Direction Flow

Predevelopment Catchments

- Catchment 1
- Catchment 2
- Catchment 3
- Catchment 4

- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS
- CADASTRE SOURCED LANDGATE 2021
- AERIAL PHOTOGRAPHY SOURCED NEARMAPS 13.08.21

waterinsight

0 10 20 40
Metres
Scale: 1:1,500 @ A4

N

LOCALITY MAP



CREATED	JOB	DATE	REVISION
ENVIRONMAPS	2130	10/12/2021	0

SITE AND SOIL EVALUATION
Balaji Temple and Cultural Centre
67 Folly Road, Baldivis

FIGURE 7

PREDEVELOPMENT SURFACE WATER CATCHMENTS AND DIRECTION OF FLOW

ENVIRONMAPS Environmental Mapping Solutions | t: 0406 590 006 | www.environmaps.com.au

C:\GIS\Jobs\Water Insight\2130 - Folly Rd, Baldivis\Figures\2130_F07 Predevelopment Surface Water Catchments and Direction of Flow_211207.mxd

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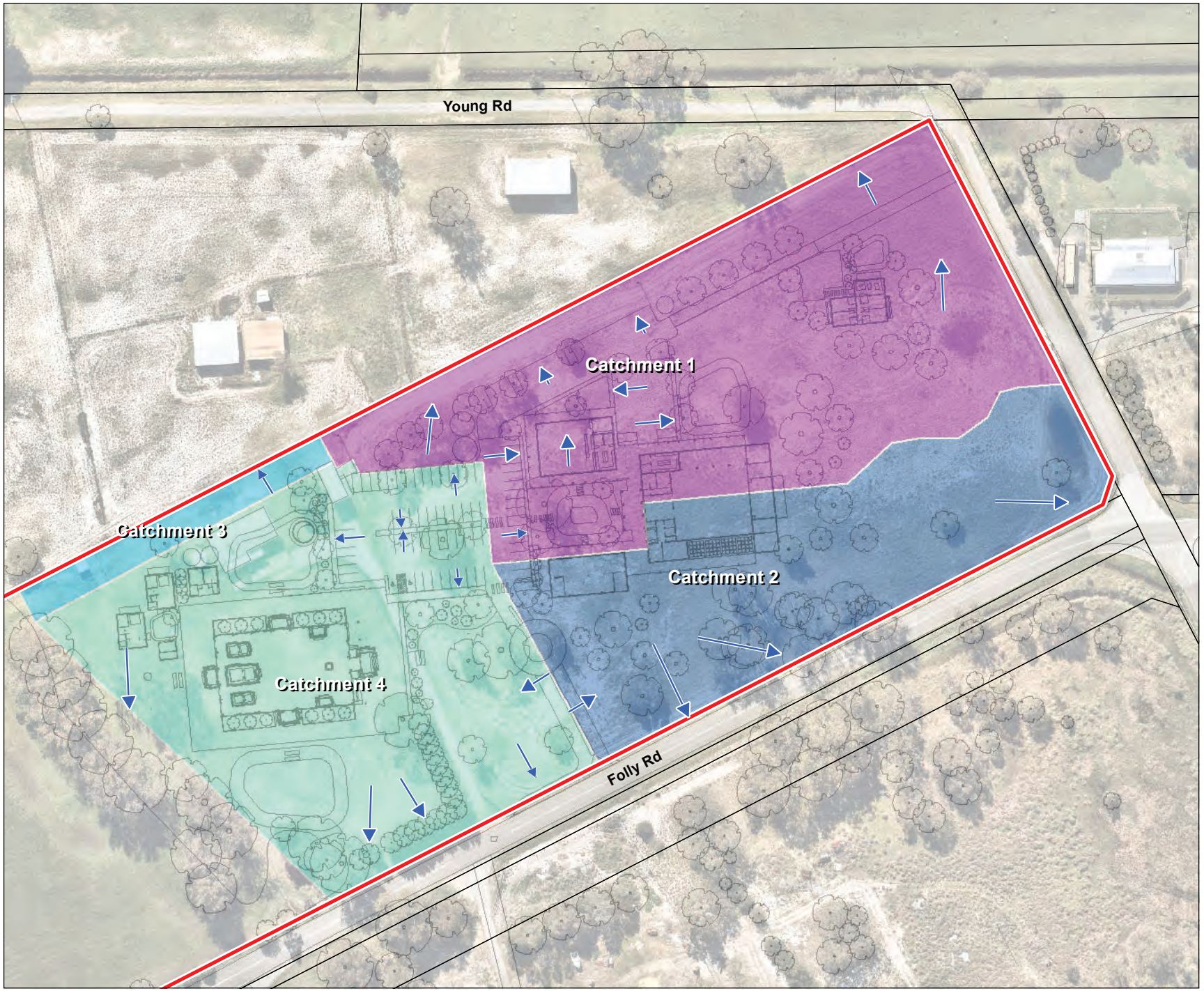

Legend

- Site Boundary
- Cadastre
- Proposed Development
- Post Development Surface Water Direction Flow

Post Development Catchments

- Catchment 1
- Catchment 2
- Catchment 3
- Catchment 4

- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS
- CADASTRE SOURCED LANDGATE 2021
- AERIAL PHOTOGRAPHY SOURCED NEARMAPS 13.08.21

waterinsight

0 10 20 40
Metres
Scale: 1:1,500 @ A4

N

LOCALITY MAP



CREATED	JOB	DATE	REVISION
ENVIRONMAPS	2130	10/12/2021	0

SITE AND SOIL EVALUATION
Balaji Temple and Cultural Centre
67 Folly Road, Baldivis

FIGURE 8

POST DEVELOPMENT SURFACE WATER CATCHMENTS AND DIRECTION OF FLOW

ENVIRONMAPS | t: 0406 590 006
Environmental Mapping Solutions | www.environmaps.com.au

C:\GIS\Jobs\Water Insight\2130 - Folly Rd, Baldivis\Figures\2130_F08 Post Development Surface Water Catchments and Direction of Flow_211207.mxd

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Legend

- Site Boundary
- Cadastre
- Proposed Development
- Indicative Soakwell Location
- Indicative Landscaped Turf Drainage Swale

- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS
- CADASTRE SOURCED LANDGATE 2021
- AERIAL PHOTOGRAPHY SOURCED NEARMAPS 13.08.21

waterinsight

0 10 20 40
Metres
N

Scale: 1:1,500 @ A4

LOCALITY MAP



CREATED	JOB	DATE	REVISION
ENVIRONMAPS	2130	25/02/2022	0

SITE AND SOIL EVALUATION
Balaji Temple and Cultural Centre
67 Folly Road, Baldivis

FIGURE 9

DRAINAGE PLAN

ENVIRONMAPS | t: 0406 590 006
Environmental Mapping Solutions | www.environmaps.com.au

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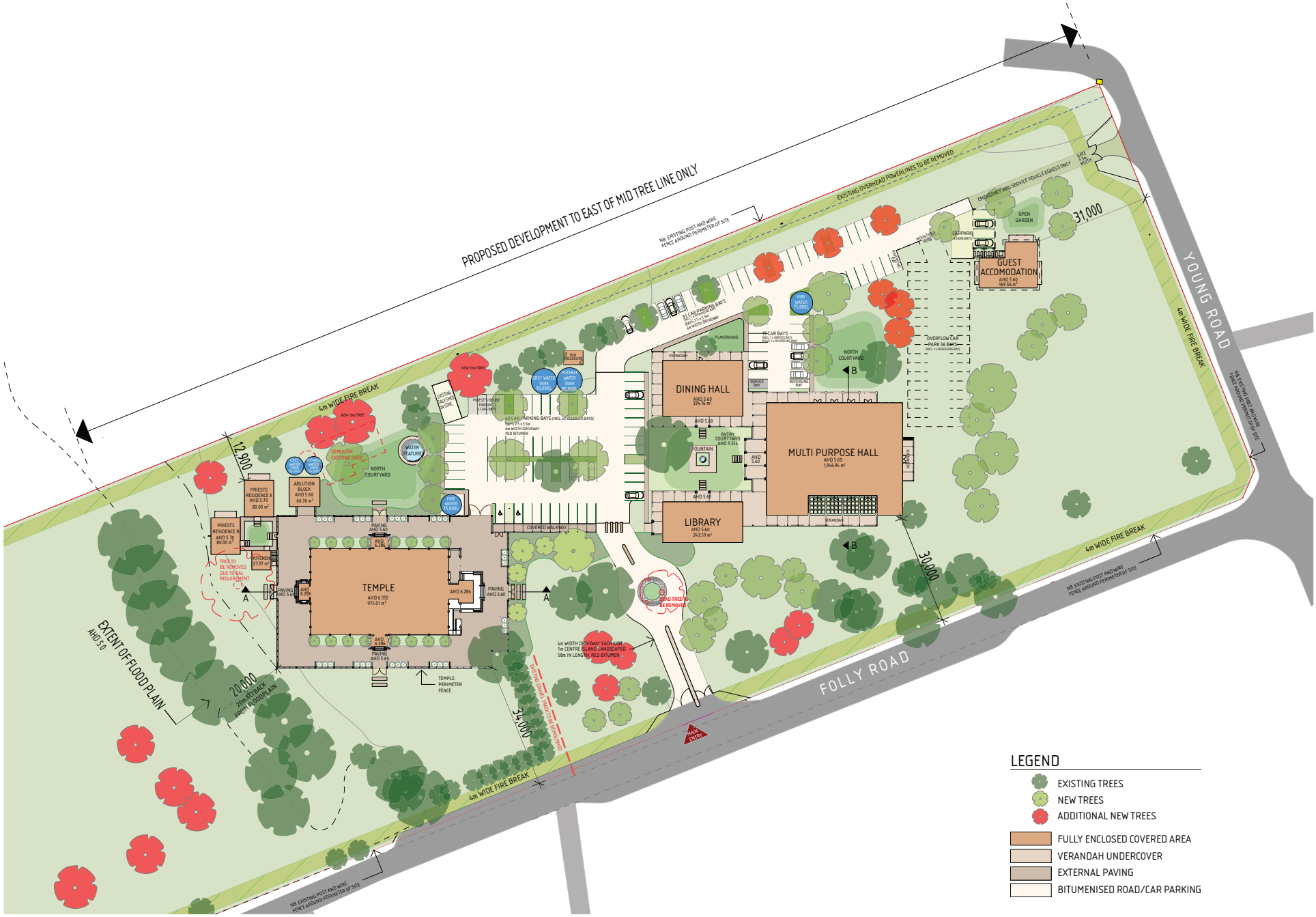
Appendices

Appendix A
Development Plans



PROPOSED DEVELOPMENT EAST OF MID TREE LINE 1:500 (@ A1)

archetype
|design studio|
architecture - interiors - feng shui
level 12, 68 St Georges Terrace Perth WA 6000
Phone : (08) 9486 8866
email: studio@archetypedesign.com.au

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GENERAL NOTES :

1. All works are to comply with The Building Code of Australia, all relevant Australian Standards, Worksafe requirements & all relevant Local Authority By-Laws
2. Do not scale from these drawings. Dimensions shown on larger scale drawings take precedent over smaller scaled drawings
4. The contractor shall check and verify all dimensions on site, both new and existing, prior to commencement of any phase of the building work or ordering any materials
5. In case of any discrepancy whatsoever, the contractor shall check with the architect prior proceeding
6. Contractor shall carry out works in accordance with Council Building License and conditions stipulated thereon
7. Contractor shall carry out works in accordance with requirements of Western Power with respect the easements on the site.
8. Contractor is advised that the site is a Registered Aboriginal Heritage Site to which the Aboriginal Heritage Act and all its legal requirements apply.
9. Contractor is to strictly adhere to Recommendations made in the Anthropological Report prepared by De Gand Pty Ltd May 2011

Revision	Description	Date

Project :
SRI BALAJI TEMPLE DEVELOPMENT

Site Address :
67 FOLLY ROAD,BALDIVIS

Client :
JAPA PTY LTD.

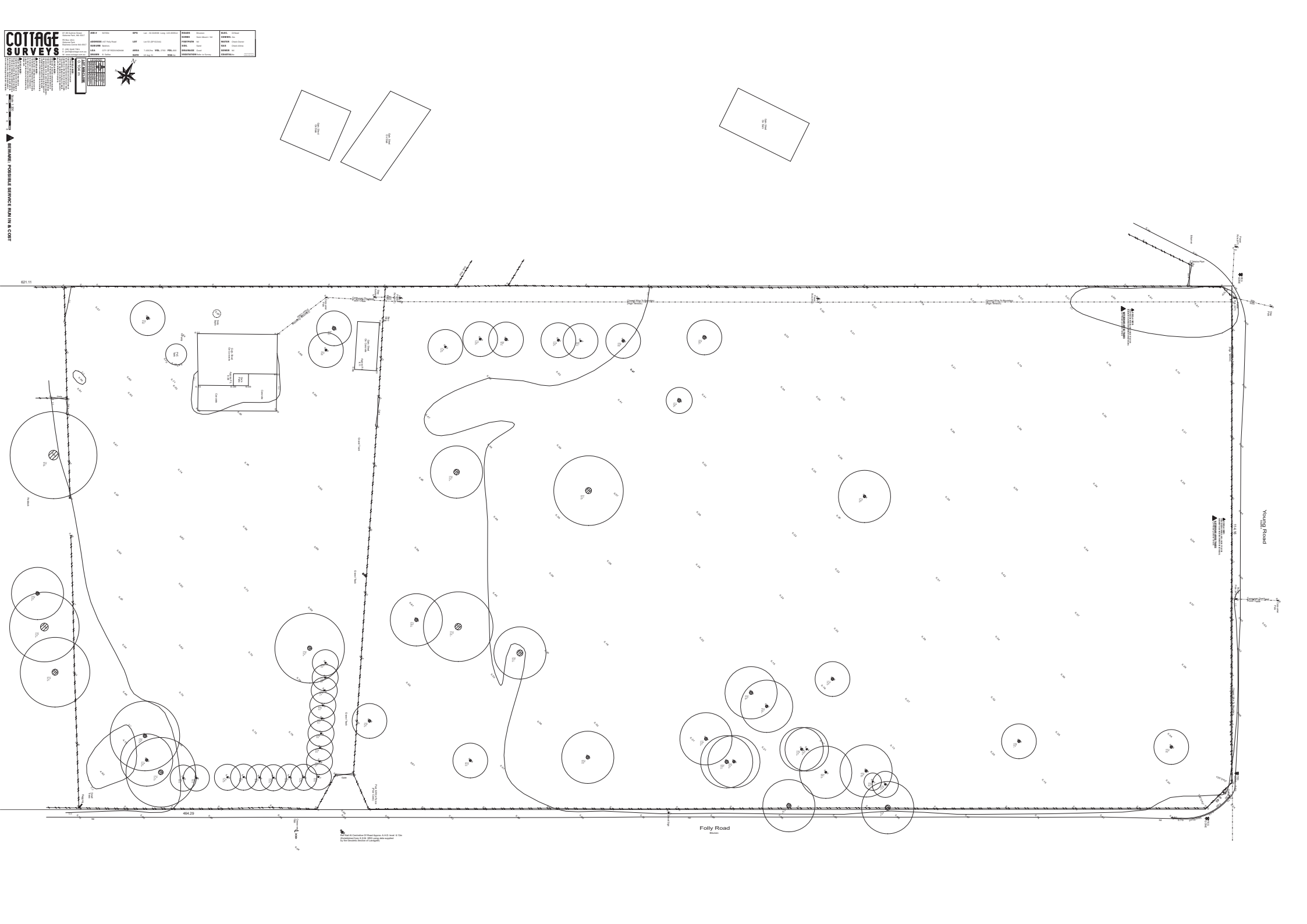
Drawing Title:
SITE PLAN 1.500

Scale :
Status: #Project Status

Drawing Nº
03

Date issued: Tuesday, 22 February 2022
Time 1:16 pm
Revision

Appendix B
Feature Survey


COTTAGE SURVEYS
Folly Road
Young Road
BEWARE: POSSIBLE SERVICE RUN IN & CORT
621.11
464.29

Appendix C
PRI Laboratory Analysis

Analysis Results

CSBP Soil and Plant Laboratory

97227
Water Insight Pty Ltd

Lab No	4IS21053	4IS21054	4IS21055	4IS21056	4IS21057	4IS21058	4IS21059	4IS21060
Name	FR1	FR1	FR1	FR2	FR2	FR2	FR3	FR3
Code	0-0.15	0.15-1.8	1.8-2.0	0-0.15	0.15-1.8	1.8-2.0	0-0.10	0.10-1.8
Customer	Water Insight Pty Ltd	Water Insight Pty Ltd	Water Insight Pty Ltd	Water Insight Pty Ltd	Water Insight Pty Ltd	Water Insight Pty Ltd	Water Insight Pty Ltd	Water Insight Pty Ltd
Depth	0-10	0-10	0-10	0-10	0-10	0-10	0-10	0-10
Phosphorus Retention Index	2.4	0.8	3.6	1.4	0.4	1.1	0.7	-0.2

CSBP Lab. Extract Value.

Analysis Results

CSBP Soil and Plant Laboratory

Lab No	4IS21061	4IS21062	4IS21063	4IS21064
Name	FR3	FR4	FR4	FR4
Code	1.8-2.0	0-0.15	0.15-1.8	1.8-2.0
Customer	Water Insight Pty Ltd	Water Insight Pty Ltd	Water Insight Pty Ltd	Water Insight Pty Ltd
Depth	0-10	0-10	0-10	0-10
Phosphorus Retention Index	989.0	-0.1	2.7	0.9

CSBP Lab. Extract Value.

Appendix D
Groundwater Allocation Plan

Government of Western Australia
Department of Water and Environmental Regulation

Resource Allocation Report

(All Volumes in kL)

Water Online

Data Last Refreshed : **27 Sep 2021**
Rows Returned :**4**

As Of Date : 27 Sep 2021
Resource Type : All
Allocation Planning Area : All
Management Area : Stakehill
Management Sub Area : Maramanup,Stakehill Confined
Allocation Category : All
Component : General

Management Area	Management Sub Area	Resource	Component	Component Status	Allocation Limit	Allocated Volume	Committed Volume	Remaining Volume	% Allocated and Committed	Additional Requested
Stakehill	Maramanup	Stakehill, Maramanup, Perth - Superficial Swan	General	G3	1,421,950	1,207,770	0	**214,180**	**84.94%**	266,273
Stakehill	Stakehill Confined	Stakehill, Stakehill Confined, Perth - Cattamarra Coal Measures.	General	G4	0	0	0	**0**	**0.00%**	
Stakehill	Stakehill Confined	Stakehill, Stakehill Confined, Perth - Leederville.	General	G4	389,620	503,878	45,000	**-159,258**	**140.88%**	10,000
Stakehill	Stakehill Confined	Stakehill, Stakehill Confined, Perth - Yarragadee North.	General	G4	0	0	0	**0**	**0.00%**	
					1,811,570	**1,711,648**	**45,000**	**54,922**	**96.97%**	**276,273**

REGISTER EXTRACT INFORMATION

The Department of Water and Environmental Regulation is committed to quality service to its customers and makes every attempt to ensure accuracy, currency and reliability of the data contained in this document. However changes in circumstances after time of publication may impact the quality of this information.

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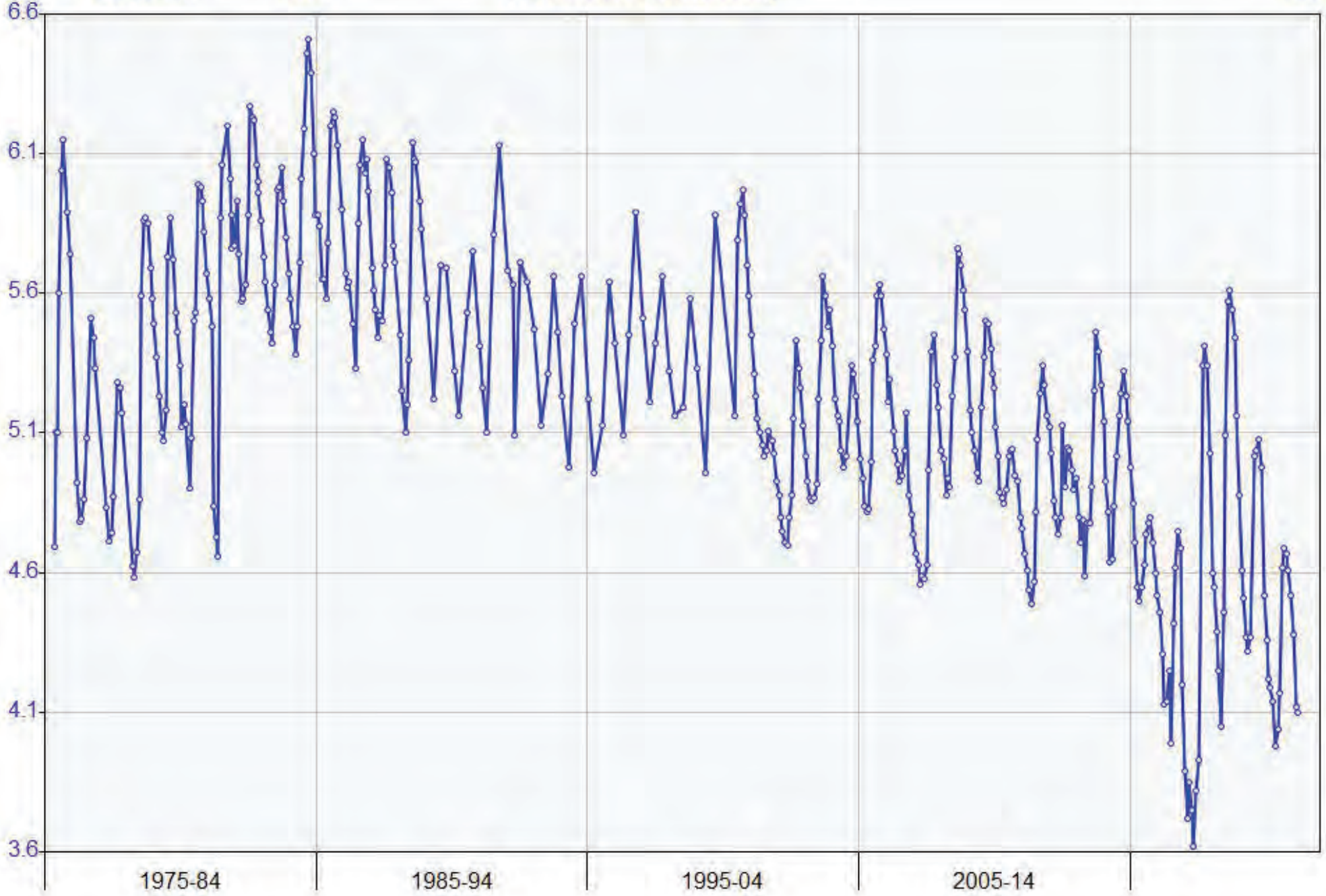
Appendix E
DWER Bore Hydrographs

Department of Water and Environmental Regulation

HYPLOT V134 Output 06/03/2021

Period 47 Year 01/01/1975 to 01/01/2022 1975-2021

61410093 T350 115.00 Water Level (mAHD) GW

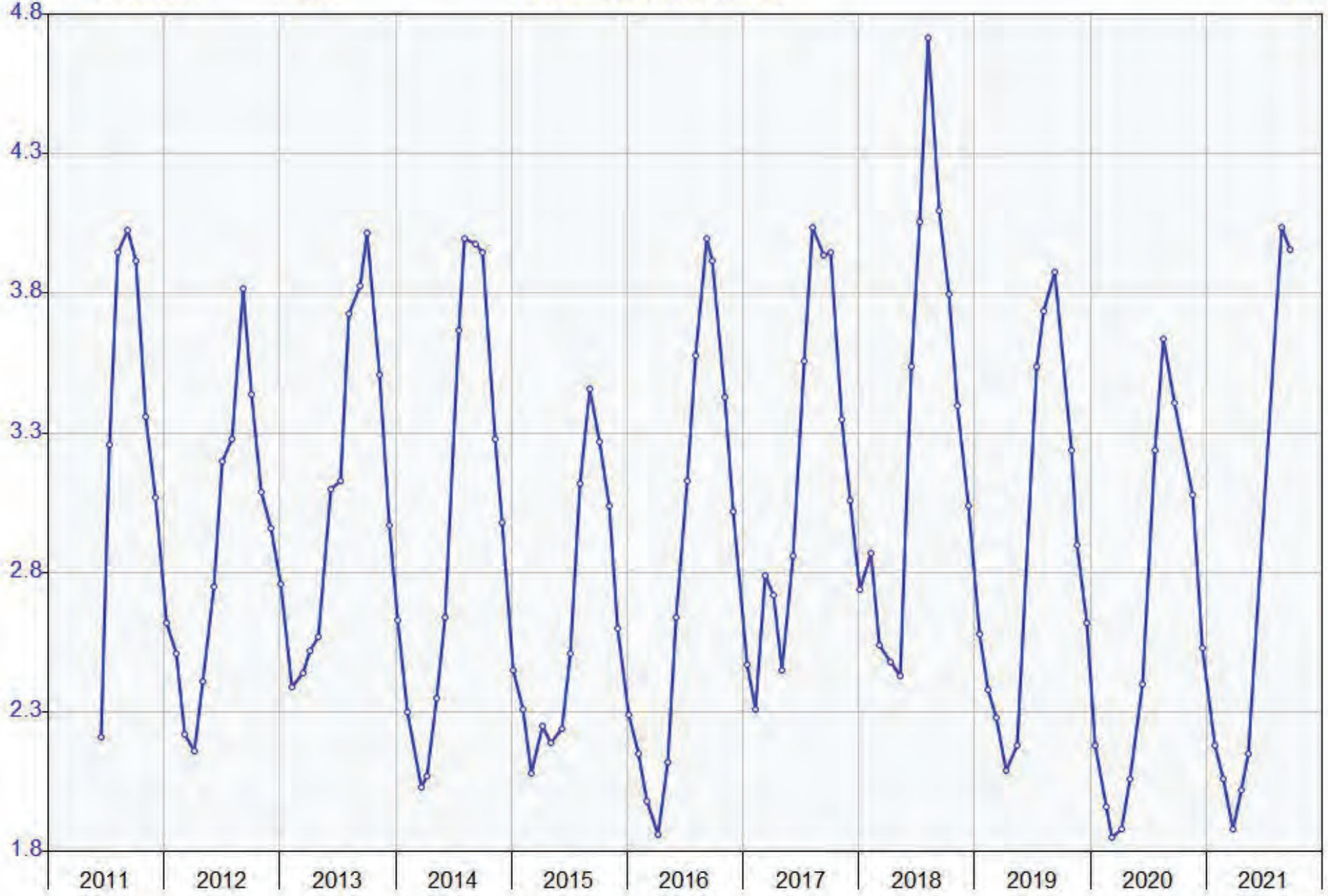


Department of Water and Environmental Regulation

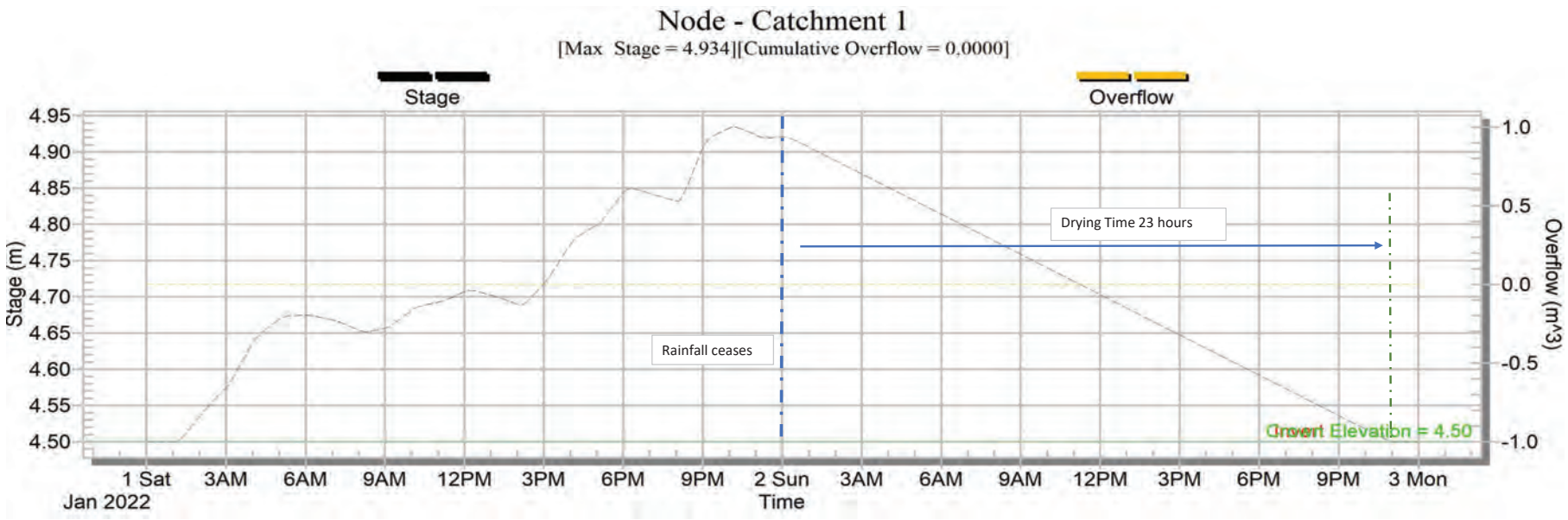
HYPLOT V134 Output 24/09/2021

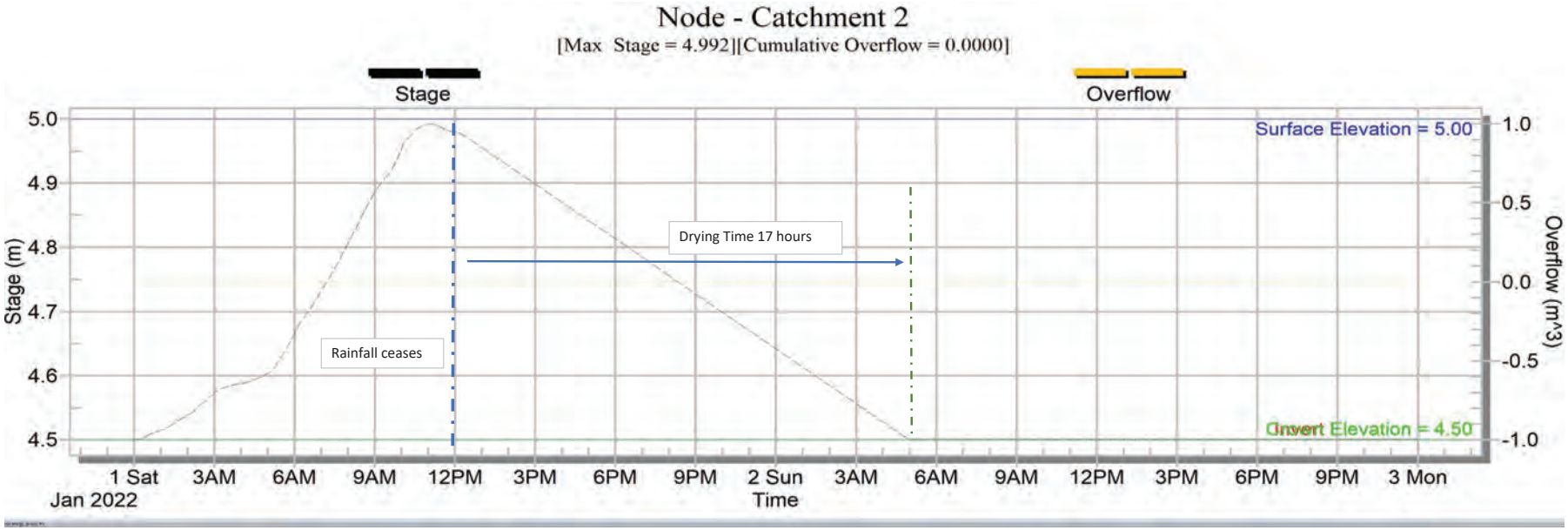
Period 11 Year 01/01/2011 to 01/01/2022 2011-21

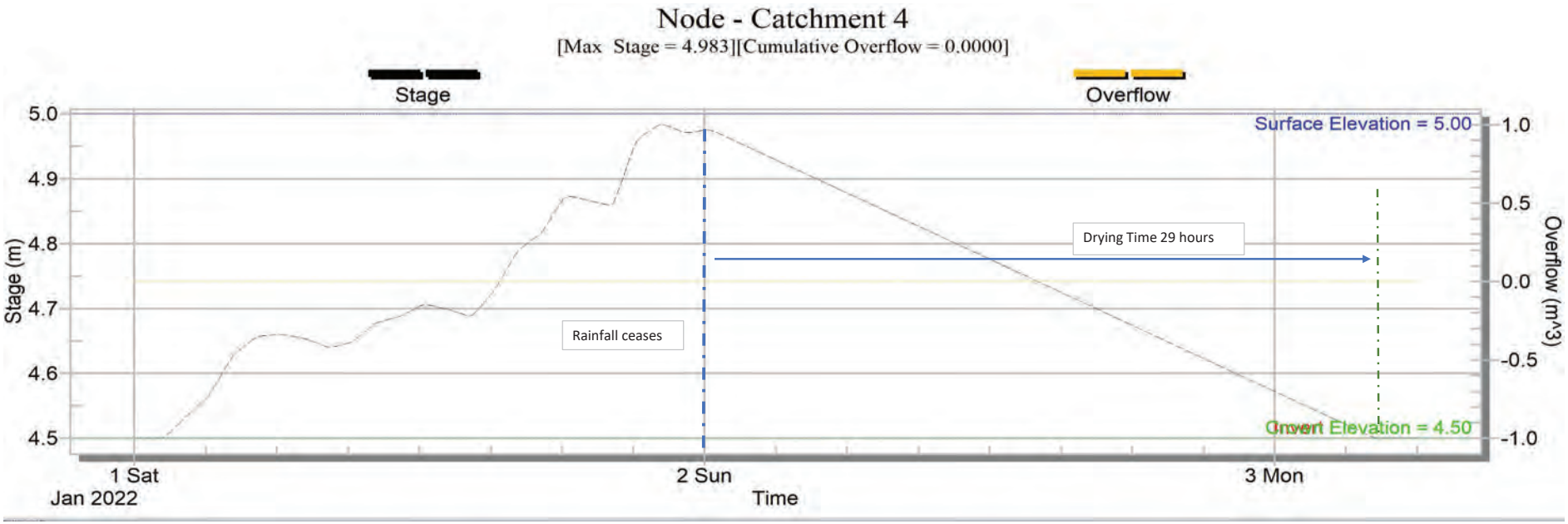
61410478 SSB4 115.00 Water Level (mAHD) GW



Appendix F
Stormwater Modelling Hydrographs


Node - Catchment 1
[Max Stage = 4.934][Cumulative Overflow = 0.0000]
Stage
Overflow
Stage (m)
Overflow (m^3)
Drying Time 23 hours
Rainfall ceases
Invert Elevation = 4.50
1 Sat
Jan 2022
Time
2 Sun
3 Mon


Node - Catchment 2
[Max Stage = 4.992][Cumulative Overflow = 0.0000]
Stage
Overflow
Surface Elevation = 5.00
Drying Time 17 hours
Rainfall ceases
Invert Elevation = 4.50
Stage (m)
Overflow (m^3)
1 Sat
Jan 2022
Time
2 Sun
3 Mon


Node - Catchment 4
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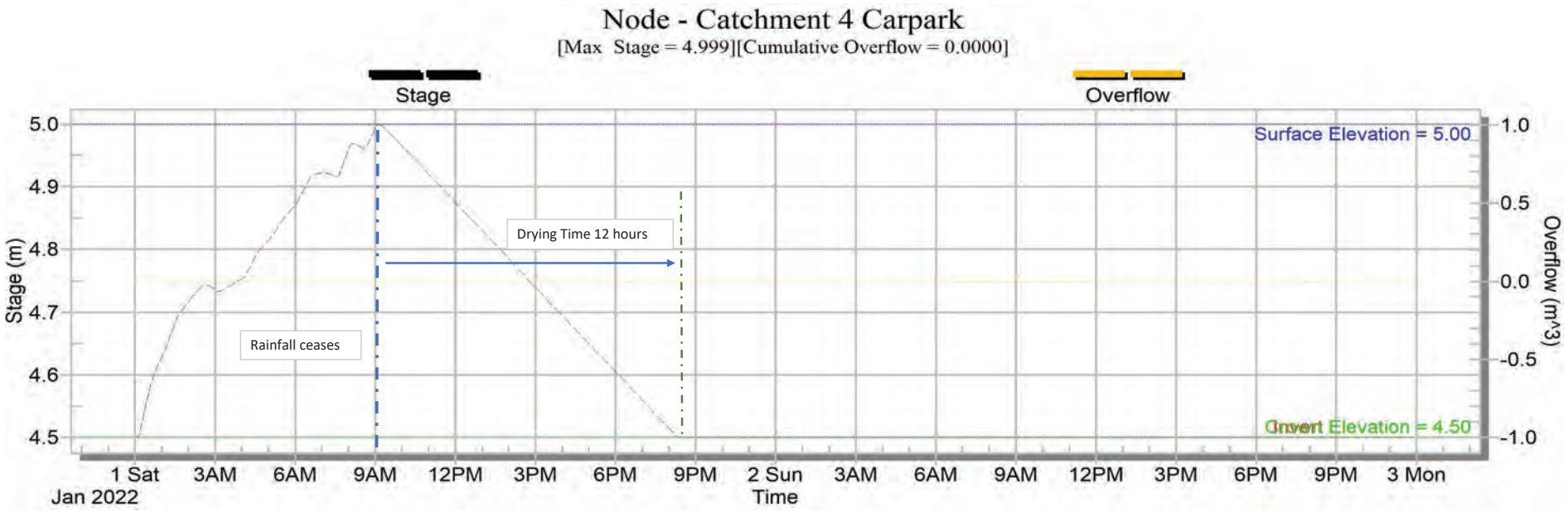
Stage
Overflow
Surface Elevation = 5.00
Drying Time 29 hours
Rainfall ceases
Invert Elevation = 4.50
Stage (m)
Overflow (m^3)
5.0
4.9
4.8
4.7
4.6
4.5
1.0
0.5
0.0
-0.5
-1.0
1 Sat
Jan 2022
2 Sun
3 Mon
Time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Stage
Overflow
Surface Elevation = 5.00
Drying Time 12 hours
Rainfall ceases
Invert Elevation = 4.50
Stage (m)
Overflow (m^3)
5.0
4.9
4.8
4.7
4.6
4.5
1.0
0.5
0.0
-0.5
-1.0
1 Sat
3AM
6AM
9AM
12PM
3PM
6PM
9PM
2 Sun
3AM
6AM
9AM
12PM
3PM
6PM
9PM
3 Mon
Jan 2022
Time



Transport Impact Assessment

Project:	Proposed Place of Worship 67 Folly Road, Baldivis
Client:	Jeeyars Acharya Peettam Australia Pty Ltd c/- Archetype Design Studio
Author:	Paul Nguyen
Date:	25th March 2022
Shawmac Document #:	2109004-TIA-001

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Contents

1. Introduction and Background 1

1.1. Proponent 1

1.2. Site Location 1

1.3. Scope 1

2. Development Proposal 2

2.1. Land Use 2

2.2. Activities 2

2.3. Access 2

3. Existing Situation 4

3.1. Land Uses 4

3.2. Road Network 4

3.2.1. Layout and Hierarchy 4

3.2.2. Traffic Counts 6

4. Changes to Surrounding Transport Networks 8

5. Transport Assessment 9

5.1. Time Periods for Assessment 9

5.2. Development Traffic Generation and Distribution 9

5.2.1. Regular Weekday 10

5.2.2. Regular Weekend 10

5.2.3. Special Hindu Festival Days 11

5.2.4. Hindu Weddings 11

5.3. Mid-Block Capacity 12

5.3.1. Peak Hour Traffic Capacity 12

5.3.2. Daily Traffic Capacity 12

5.4. Intersection and Access Capacity 13

6. Analysis of Development Access 17

6.1. Location 17

6.2. Access Width 18
6.3. Sight Distance 19
6.3.1. Folly Road 20
6.3.2. Young Road 21
6.4. Auxiliary Lanes 23
6.5. Service Vehicle Access 25
7. Road Safety 26
7.1. Crash History 26
8. Alternative Transport Modes 27
8.1. Public Transport 27
8.2. Pedestrian / Cycle Access 27
9. Parking 28
9.1. Car Parking Provision 28
9.2. Car Parking Requirements 28
10. Conclusions 29
Appendix A – SIDRA Analysis Results 30
Appendix B – Vehicle Swept Paths 52

Figures

Figure 1: General Site Location 1
Figure 2: Site Layout 3
Figure 3: Aerial View of Existing Site (June 2021) 4
Figure 4: Road Layout and Hierarchy 5
Figure 5: Speed Limits 5
Figure 6: Average Weekday Traffic 6
Figure 7: Average Weekend Traffic 7
Figure 8: Modelled Layouts 14
Figure 9: Proposed Access Arrangement 17
Figure 10: Existing Bunnings Baldivis Access Geometry 18
Figure 11: Sight Distance Requirements 19
Figure 12: Sight Distance Check – Folly Road 20
Figure 13: Sight Distance Requirements – Commercial Access 21
Figure 14: Sight Distance Check – Young Road 22
Figure 15: Major Road Traffic Volume Calculation 23
Figure 16: Warrants Assessment Results 24
Figure 17: AUL and CHR(S) Layout (Austroads) 25
Figure 18: Crash History January 2016 to December 2020 26

Tables

Table 1: SIDRA Results – Freeway Ramp Intersections 15
Table 2: SIDRA Results – Main Site Access 15

1. Introduction and Background

1.1. Proponent

Shawmac has been engaged by Archetype Design Studio on behalf of Jeeyars Acharya Peettam Australia Pty Ltd (JAPA Pty Ltd) to prepare a Transport Impact Assessment (TIA) for a proposed place of worship in Baldivis.

1.2. Site Location

The site address is Lot 53, Number 67 Folly Road, Baldivis and the local authority is the City of Rockingham.

The general site location is shown in Figure 1.

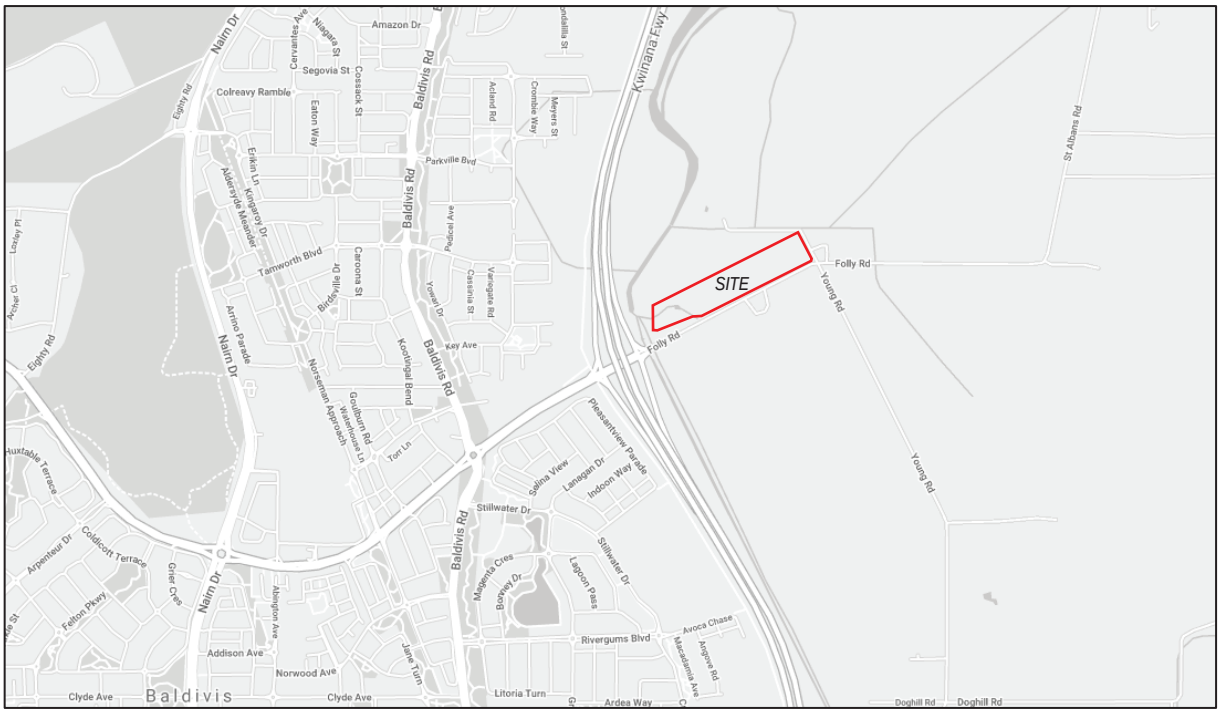


Figure 1: General Site Location

1.3. Scope

This TIA has been prepared in accordance with the Western Australian Planning Commission's (WAPC) *Transport Impact Assessment Guidelines*. According to the TIA guidelines, the key objectives of a TIA are to:

- assess the proposed internal transport networks with respect to accessibility, circulation and safety for all modes, that is, vehicles, public transport, pedestrians and cyclists;
- assess the level of transport integration between the development and the surrounding land uses;
- determine the impacts of the traffic generated by the development on the surrounding land uses; and
- determine the impacts of the traffic generated by the development on the surrounding transport networks.

2. Development Proposal

2.1. Land Use

The proposed development includes a main temple building, a multi-purpose hall, a dining hall, a library, a priests residence, car parking and other supporting amenities. The entire development will be located on the north-eastern half of the property closest to Young Road.

2.2. Activities

The main activity at the site will be daily prayer sessions, including a morning session and an evening session. Other activities include weekday yoga classes, weekend scripture classes, special Hindu Festival Days and Hindu Weddings. A summary of the expected activities, hours and attendance numbers as provided by the client is detailed below:

• Weekday Prayers (Mon-Fri)	25-50 people (morning session)	7:00am to 12:00pm
	25-50 people (evening session)	5.00pm to 9.00pm
Weekday Yoga Classes (2 per week)	20 people	6:00pm to 7:00pm
• Saturday/Sunday Prayers	100-150 people (morning session)	7:00am to 12:00pm
	100-150 people (evening session)	5.00pm to 9.00pm
Saturday/Sunday Scripture Classes	50-75 people (included in the above)	3:00pm to 6:00pm
• Special Hindu Festival Days occurring on average once per month		
If on a weekday	50-75 people (morning session)	7:00am to 12:00pm
	200-250 people (evening session)	5.00pm to 9.00pm
If on a weekend day	200 people (morning session)	7:00am to 12:00pm
	200-250 people (evening session)	5.00pm to 9.00pm
• Hindu Weddings occurring on average 6 times per year only on weekends		
	300-400 people	6:00pm to 12:00am

Hindu prayer sessions are relatively unstructured and so attendance is generally spread out over the session.

It is also noted that Hindu weddings will not occur on the same day as a special Hindu festival day.

2.3. Access

Vehicle access is proposed on Folly Road including a main entry crossover and a secondary service crossover.

The site layout and access arrangement is shown in Figure 2.

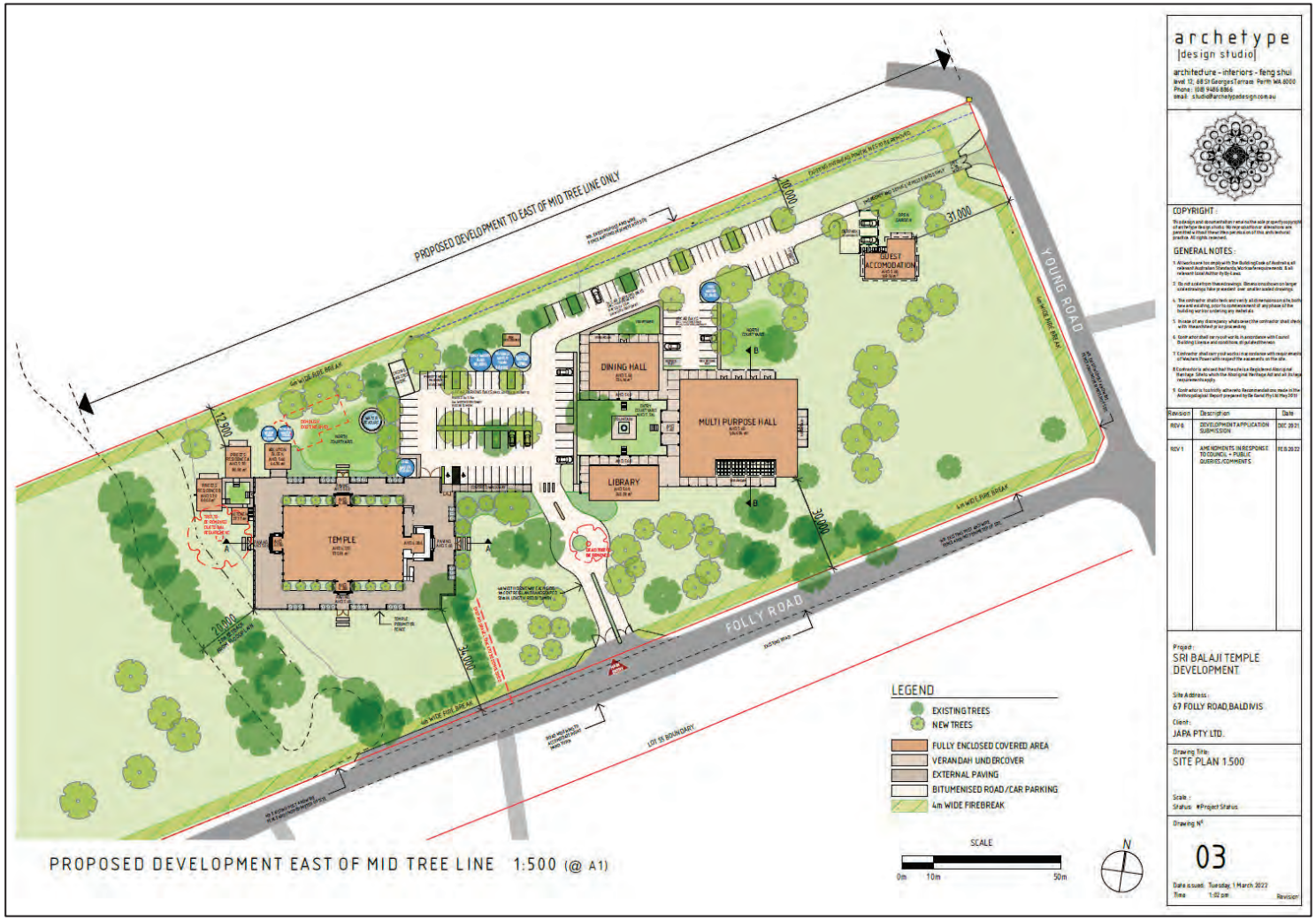


Figure 2: Site Layout

3. Existing Situation

3.1. Land Uses

The site currently has a warehouse type building and an outbuilding. An aerial view of the existing site is shown in Figure 3.



Figure 3: Aerial View of Existing Site (June 2021)

3.2. Road Network

3.2.1. Layout and Hierarchy

The current layout and hierarchy of the surrounding road network is shown in Figure 4.

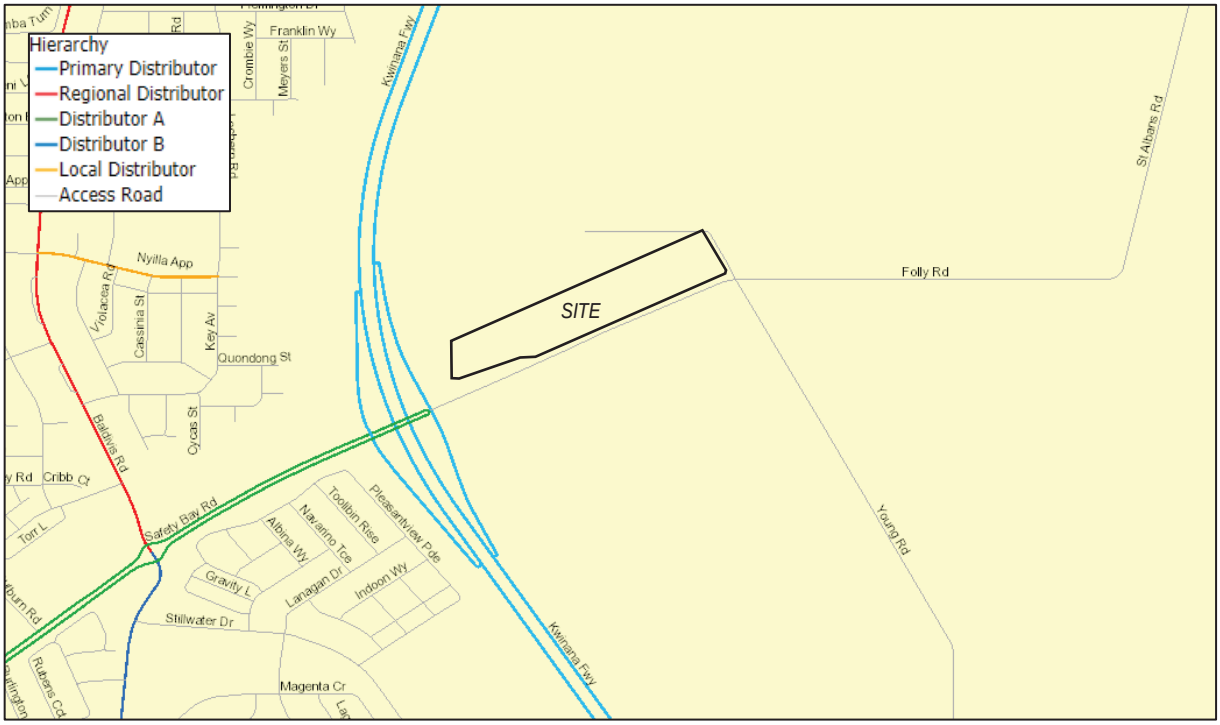


Figure 4: Road Layout and Hierarchy

The current speed limits are shown in Figure 5.

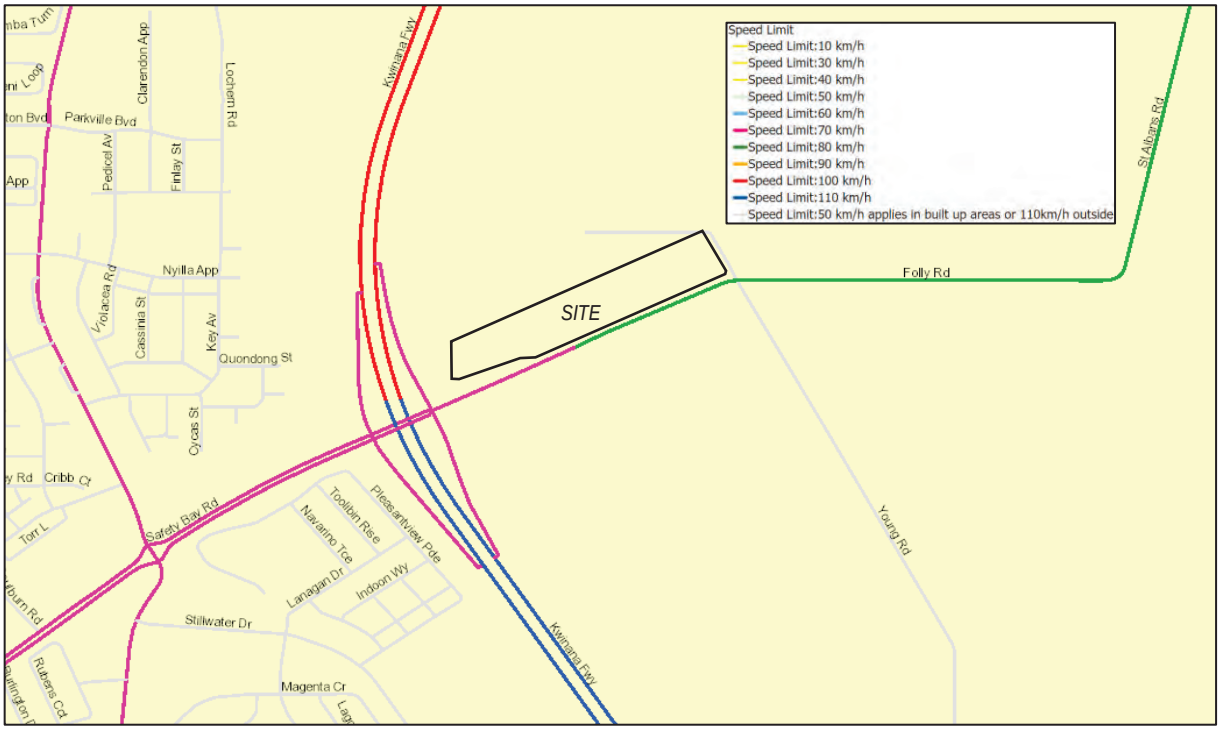
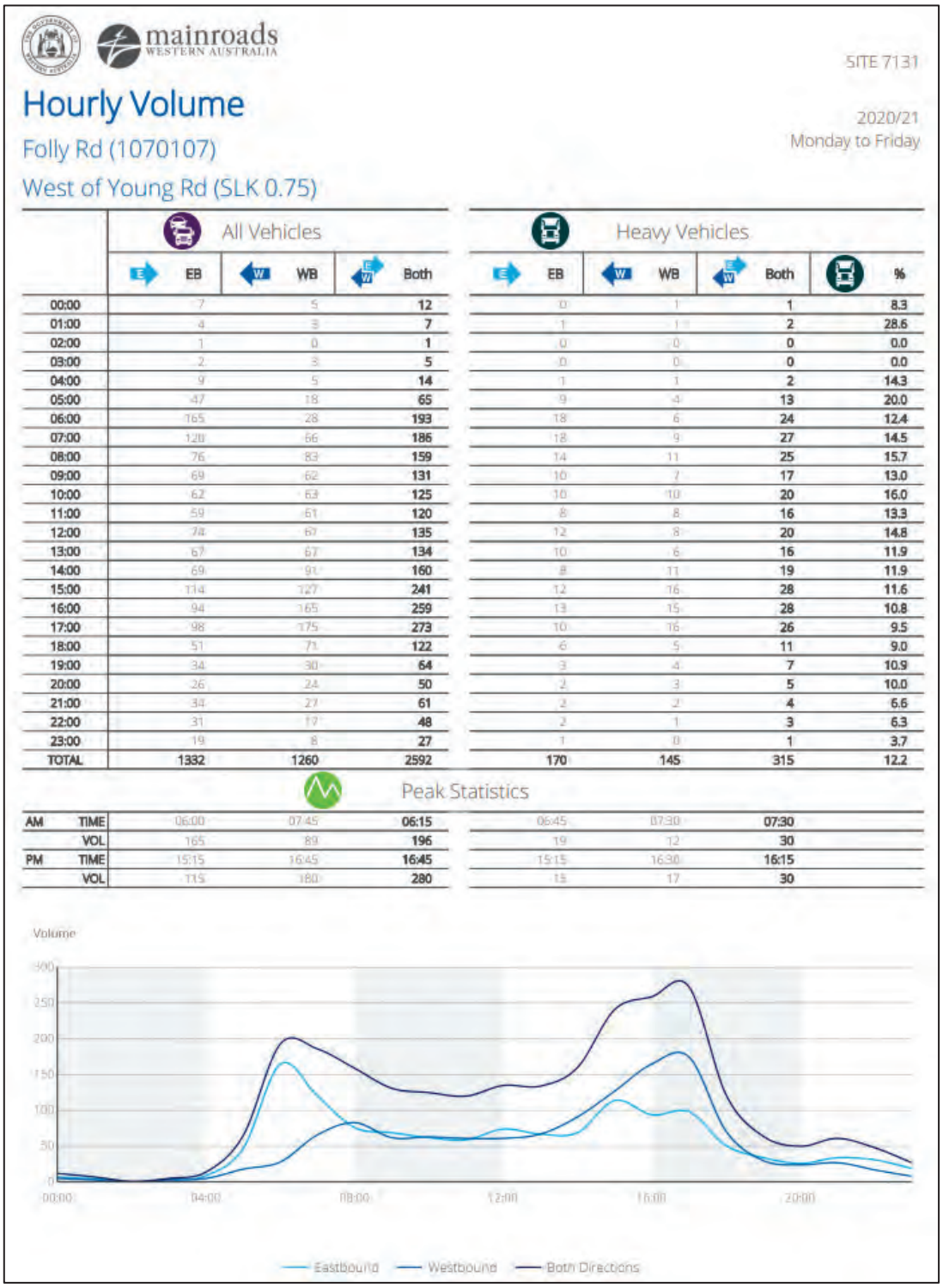


Figure 5: Speed Limits

3.2.2. Traffic Counts

The latest traffic counts for Folly Road were obtained from the Main Roads WA *Traffic Map* as shown in Figure 6 and Figure 7.



mainroads WESTERN AUSTRALIA

SITE 7131

Hourly Volume

Folly Rd (1070107)

West of Young Rd (SLK 0.75)

2020/21

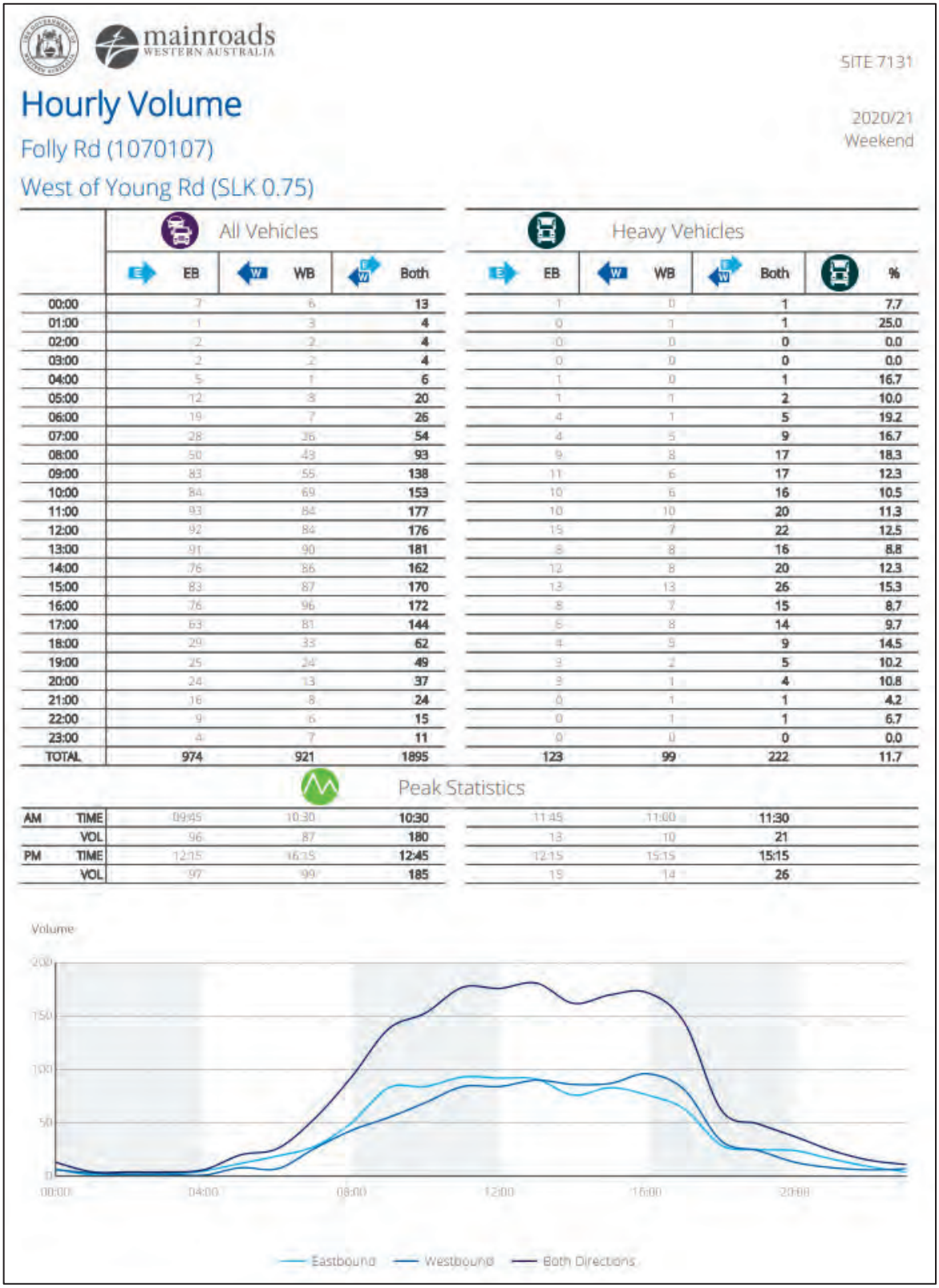
Monday to Friday

	All Vehicles			Heavy Vehicles			
	EB	WB	Both	EB	WB	Both	%
00:00	7	5	12	0	1	1	8.3
01:00	4	3	7	1	1	2	28.6
02:00	1	0	1	0	0	0	0.0
03:00	2	3	5	0	0	0	0.0
04:00	9	5	14	1	1	2	14.3
05:00	47	18	65	9	4	13	20.0
06:00	165	28	193	18	6	24	12.4
07:00	120	66	186	18	9	27	14.5
08:00	76	83	159	14	11	25	15.7
09:00	69	62	131	10	7	17	13.0
10:00	62	63	125	10	10	20	16.0
11:00	59	61	120	8	8	16	13.3
12:00	74	67	135	12	8	20	14.8
13:00	67	67	134	10	6	16	11.9
14:00	69	91	160	8	11	19	11.9
15:00	114	127	241	12	16	28	11.6
16:00	94	165	259	13	15	28	10.8
17:00	98	175	273	10	16	26	9.5
18:00	51	71	122	6	5	11	9.0
19:00	34	30	64	3	4	7	10.9
20:00	26	24	50	2	3	5	10.0
21:00	34	27	61	2	2	4	6.6
22:00	31	17	48	2	1	3	6.3
23:00	19	8	27	1	0	1	3.7
TOTAL	1332	1260	2592	170	145	315	12.2

Peak Statistics

AM	TIME	06:00	07:45	06:15	06:45	07:30	07:30
	VOL	165	89	196	19	12	30
PM	TIME	15:15	16:45	16:45	15:15	16:30	16:15
	VOL	115	180	280	15	17	30

Figure 6: Average Weekday Traffic



mainroads
WESTERN AUSTRALIA

SITE 7131

Hourly Volume

Folly Rd (1070107)

West of Young Rd (SLK 0.75)

2020/21
Weekend

	All Vehicles			Heavy Vehicles			
	EB	WB	Both	EB	WB	Both	%
00:00	7	6	13	1	0	1	7.7
01:00	1	3	4	0	1	1	25.0
02:00	2	2	4	0	0	0	0.0
03:00	2	2	4	0	0	0	0.0
04:00	5	1	6	1	0	1	16.7
05:00	12	8	20	1	1	2	10.0
06:00	19	7	26	4	1	5	19.2
07:00	28	26	54	4	5	9	16.7
08:00	50	43	93	9	8	17	18.3
09:00	83	55	138	11	6	17	12.3
10:00	84	69	153	10	6	16	10.5
11:00	93	84	177	10	10	20	11.3
12:00	92	84	176	15	7	22	12.5
13:00	91	90	181	8	8	16	8.8
14:00	76	86	162	12	8	20	12.3
15:00	83	87	170	13	13	26	15.3
16:00	76	96	172	8	7	15	8.7
17:00	63	81	144	6	8	14	9.7
18:00	29	33	62	4	5	9	14.5
19:00	25	24	49	3	2	5	10.2
20:00	24	13	37	3	1	4	10.8
21:00	16	8	24	0	1	1	4.2
22:00	9	6	15	0	1	1	6.7
23:00	4	7	11	0	0	0	0.0
TOTAL	974	921	1895	123	99	222	11.7

Peak Statistics

AM	TIME	09:45	10:30	10:30	11:45	11:00	11:30
	VOL	96	87	180	13	10	21
PM	TIME	12:15	16:15	12:45	12:15	15:15	15:15
	VOL	97	99	185	15	14	26

Figure 7: Average Weekend Traffic

4. Changes to Surrounding Transport Networks

The section of Folly Road between Kwinana Freeway and Young Road is reserved as a regional road under the Metropolitan Region Scheme.

According to the *Perth and Peel @ 3.5million* frameworks, the site and surrounding areas to the west of Kwinana Freeway are not flagged for development by 2050. Folly Road is also not identified as a proposed regional road or freight road by 2050. It is therefore considered that the upgrade of Folly Road is unlikely to occur in the foreseeable future.

5. Transport Assessment

5.1. Time Periods for Assessment

The assessment has been based on the peak hours on the road network. According to the traffic data at the Kwinana Freeway / Folly Road interchange, the weekday peak hours are from 7 to 8am and 4 to 5pm. The weekend peak period of traffic is more spread out and generally occurs from around 11am to 4pm. The single weekend peak hour is from 12 to 1pm.

The TIA guidelines recommends considering the following development horizons:

- The first year of full development opening which is currently estimated to be 2026.
- 10 years following the full development opening which is currently estimated to be 2036.

5.2. Development Traffic Generation and Distribution

The traffic generation has been estimated from the proposed activities, operating hours and expected attendance numbers as provided by the client and operator. Patrons are likely to include many families and so the average person to car ratio would be reasonably high. As instructed by the City, a conservative vehicle occupancy of 2 persons per car has been adopted. It is also conservatively assumed that the higher end of the attendance numbers will be reached during each activity session. The estimated traffic generation is detailed in the following sections.

5.2.1. Regular Weekday

• Weekday Prayers (Mon-Fri)	25-50 people (morning session)	7:00am to 12:00pm
	25-50 people (evening session)	5.00pm to 9.00pm
Weekday Yoga Classes (2 per week)	20 people	6:00pm to 7:00pm

On a regular weekday, the busiest day would be on a day that a yoga class is held with up to 120 people expected over the day. As mentioned previously, prayer sessions are unstructured and so arrivals and departures will typically be spread out over the session. The daily and hourly trip generation is as follows:

- Daily = 120 people or 60 vehicles per day (60 inbound trips / 60 outbound trips)
- Hourly: Morning Prayer (5 hours) = 10 people or 5 vehicles per hour (5 inbound trips / 5 outbound trips)
- Hourly: Evening Prayer (4 hours) = 13 people or 7 vehicles per hour (7 inbound trips / 7 outbound trips)
- Yoga = 20 people or 10 vehicles (10 inbound trips / 10 outbound trips)

The traffic generation during the road network peak hours is therefore:

- Morning peak hour (7 to 8am) = 10 trips (5 inbound / 5 outbound)
- Afternoon peak hour (4 to 5pm) = 7 trips (all inbound as this is the start of the evening prayer session)

The yoga class starts at 6pm and so arrivals would occur outside of the afternoon peak hour.

5.2.2. Regular Weekend

• Saturday/Sunday Prayers	100-150 people (morning session)	7:00am to 12:00pm
	100-150 people (evening session)	5.00pm to 9.00pm
Saturday/Sunday Scripture Classes	50-75 people (included in the above)	3:00pm to 6:00pm

On a regular weekend, up to 300 people are expected to attend the site per day over the various sessions. The daily and hourly trip generation is as follows:

- Daily = 300 people or 150 vehicles per day (150 inbound trips / 150 outbound trips)
- Hourly: Morning Prayer (5 hours) = 30 people or 15 vehicles per hour (15 inbound trips / 15 outbound trips)
- Hourly: Evening Prayer (4 hours) = 38 people or 19 vehicles per hour (19 inbound trips / 19 outbound trips)

The weekend peak hour of combined site traffic and background traffic is therefore likely to be from 12 to 1pm at the end of the morning prayer session.

The traffic generation during the weekend peak hour is therefore estimated to be approximately 15 outbound vehicle movements as the peak hour coincides with the end of the morning prayer session.

5.2.3. Special Hindu Festival Days

- Special Hindu Festival Days occurring on average once per month

If on a weekday	50-75 people (morning session)	7:00am to 12:00pm
	200-250 people (evening session)	5.00pm to 9.00pm
If on a weekend day	200 people (morning session)	7:00am to 12:00pm
	200-250 people (evening session)	5.00pm to 9.00pm

If occurring on a weekday, the daily and hourly trip generation is as follows:

- Daily = 325 people or 163 vehicles per day (163 inbound trips / 163 outbound trips)
- Hourly: Morning Prayer (5 hours) = 15 people or 8 vehicles per hour (8 inbound trips / 8 outbound trips)
- Hourly: Evening Prayer (4 hours) = 63 people or 32 vehicles per hour (32 inbound trips / 32 outbound trips)

The traffic generation during the road network peak hours is therefore:

- Morning peak hour (7 to 8am) = 16 trips (8 inbound / 8 outbound)
- Afternoon peak hour (4 to 5pm) = 32 trips (all inbound as this is the start of the evening prayer session)

If occurring on a weekend day, the daily and hourly trip generation is as follows:

- Daily = 450 people or 225 vehicles per day (225 inbound trips / 225 outbound trips)
- Hourly: Morning Prayer (5 hours) = 40 people or 20 vehicles per hour (20 inbound trips / 20 outbound trips)
- Hourly: Evening Prayer (4 hours) = 63 people or 32 vehicles per hour (32 inbound trips / 32 outbound trips)

The traffic generation during the weekend peak hour is therefore estimated to be approximately 20 outbound vehicle movements as the peak hour coincides with the end of the morning prayer session.

5.2.4. Hindu Weddings

- Hindu Weddings occurring on average 6 times per year only on weekends

	300-400 people	6:00pm to 12:00am

A higher average car occupancy of 3 persons per car has been assumed for Hindu weddings to account for a likely higher proportion of families. A wedding is therefore estimated to generate approximately 400 vehicle movements including 200 inbound movements before the wedding and 200 vehicle movements after the wedding.

5.3. Mid-Block Capacity

5.3.1. Peak Hour Traffic Capacity

As detailed in the previous section, the traffic generated from the development throughout the majority of the year (approximately 347 days per year) will be relatively low with an hourly traffic generation of about 7 to 38 vehicle movements expected. According to the WAPC TIA guidelines, an increase of between 10 to 100 peak hour vehicles is considered to have a low to moderate impact and is generally accepted as being acceptable without needing detailed capacity analysis. The estimated 7 to 38 vehicle movements is at the lower end of this range and so regular day-to-day usage of the site is considered to have a low traffic impact and the development traffic can be accommodated within the capacity of the existing road network. It is also noted that the peak periods of development traffic do not always coincide with the peak hours on the road network.

On special Hindu festival days occurring approximately 12 times per year, the expected traffic generation is also relatively low with a maximum hourly traffic generation of 32 vehicles or 63 movements. This volume of traffic is low to moderate can also be accommodated within the capacity of the existing road network.

A Hindu wedding (approximately 6 per year) is likely to be the highest peak hour traffic generator. However, the arrival and departure periods are likely to occur outside of the weekend peak period from 11am to 4pm. The traffic impact of this is assessed further in the following sections.

5.3.2. Daily Traffic Capacity

Folly Road is currently classified as an access road with a target daily traffic volume of 3,000 vehicles per day according to WAPC *Liveable Neighbourhoods*.

On a weekday, the maximum post-development daily traffic volume is estimated to be 2,918 vehicles per day on a Special Hindu Festival Day. The daily traffic will be much lower for the majority of the year.

On a weekend, the maximum post-development daily traffic volume is estimated to be 2,345 vehicles per day.

Both values are within the target value of 3,000 vehicles per day.

On Young Road, the development will only generate occasional service vehicle movements (outbound only).

The section of Young Road adjacent to the proposed service vehicle egress is approximately 3.2m wide which is only suitable for one-way traffic. As service vehicle movements are infrequent (estimated 3 collections weekly = 3 outbound movements on Young Road), widening of Young Road to accommodate two-way traffic is not warranted by the development. As discussed later, the proposed egress driveway on Young Road will be widened to accommodate the turning movement of exiting service vehicles.

5.4. Intersection and Access Capacity

The peak hour capacity has been undertaken in SIDRA Intersection 9.0. The assessment includes the main site crossover on Folly Road and the nearby Kwinana Freeway / Folly Road / Safety Bay Road signalised ramp intersections. The following critical peak hours have been assessed:

- Weekday morning peak hour on a special Hindu festival day
- Weekday afternoon peak hour on a special Hindu festival day
- Weekend mid-day peak hour on a special Hindu festival day
- Weekend 5 to 6pm on a Hindu wedding day

Three scenarios were assessed at the signalised intersections, including the current scenario (without development), the first year of full opening in 2026 (with and without development) and 10 years following full opening in 2036 (with and without development).

For the future scenarios, the background traffic volumes between Kwinana Freeway and Safety Bay Road were factored up to account for ongoing development to the west of the freeway. Historical traffic counts indicate an average growth rate of 4% per year between 2017 and 2021. As mentioned previously, development east of the freeway is unlikely to occur in the foreseeable future and so traffic volumes along Folly Road have not been factored up.

For the weekend analysis, the Saturday traffic volumes were used as the daily and peak hour volumes were higher than on Sunday. For the Hindu wedding days, it is conservatively assumed that all arrival traffic arrives within the single hour.

The intersection peak hour traffic flows, signal phasing, average cycle times and other key inputs were derived from Main Roads WA traffic count data and SCATS signal data and the model has been set up according to Main Roads WA's *Operational Modelling Guidelines*. For the existing scenario, the average existing cycle times were used. For the future scenarios, the cycle time was set to optimum cycle time with a maximum cycle time of 150 seconds.

The majority of site traffic is likely to be generated to and from the west along Folly Road and it is assumed that site traffic is split as follows:

- 10% east via Folly Road
- 15% west via Safety Bay Road
- 15% south via Kwinana Freeway
- 60% north via Kwinana Freeway

The modelled layouts are shown in Figure 8. The freeway ramps were modelled together as a network.

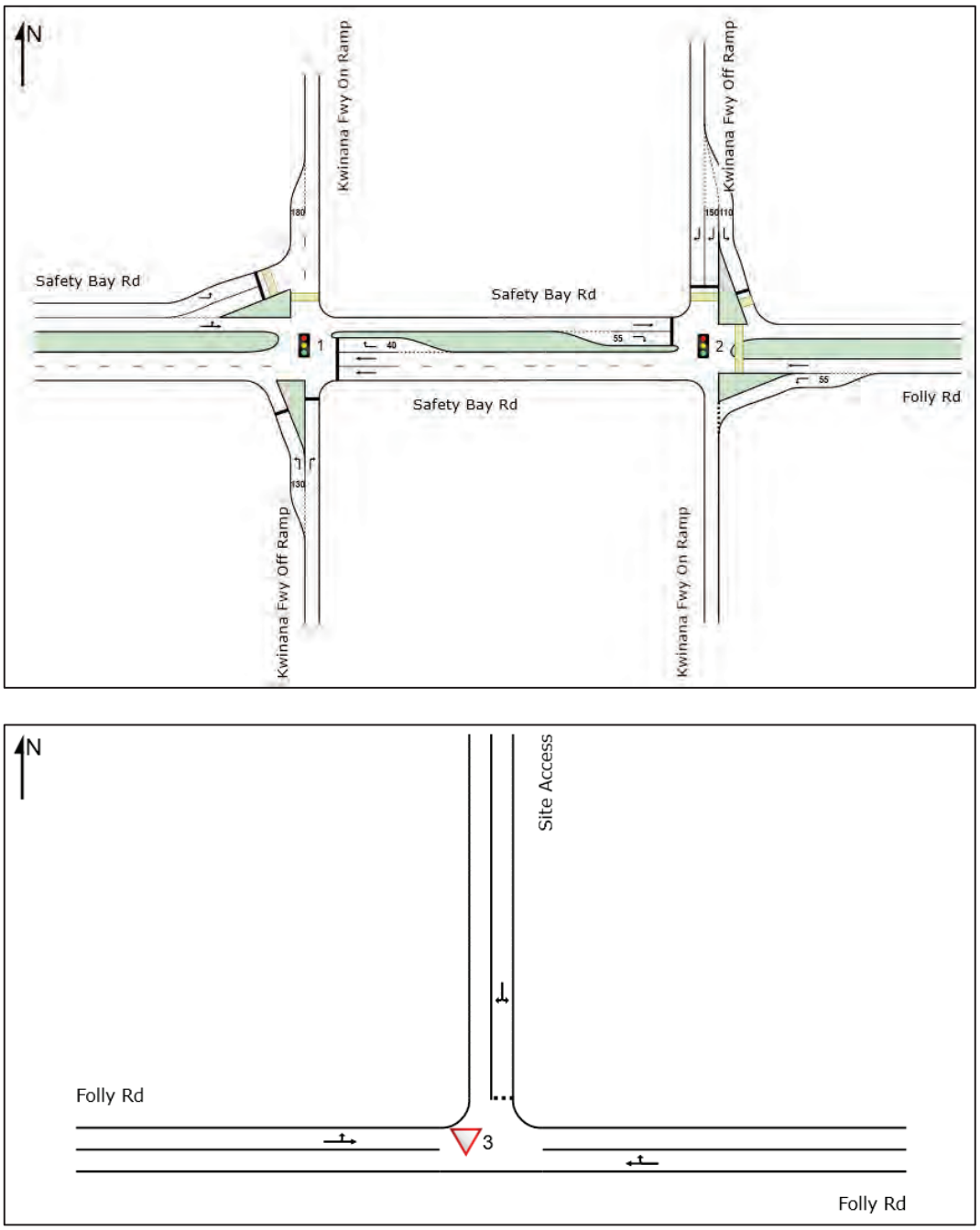


Figure 8: Modelled Layouts

The assessment results are included as Appendix A and summarised in Table 1 and Table 2.

Table 1: SIDRA Results – Freeway Ramp Intersections

Scenario	Peak Period	Average LOS	Worst LOS	DOS	Average Delay	Worst Delay	95%ile Queue
Existing	Weekday AM Peak	B	D	0.472	13.8s	47.2s	37.6m
	Weekday PM Peak	B	E	0.693	16.8s	59.2s	101.9m
	Weekend Mid-day Peak	B	D	0.531	15.6s	52.3s	58.9m
	Weekend 5-6PM	B	D	0.507	15.7s	51.6s	52.6m
2026	Weekday AM Peak – Base	B	D	0.505	14.3s	54.6s	50.6m
	Weekday AM Peak – Festival Day	C	D	0.505	14.5s	54.9s	50.7m
	Weekday PM Peak – Base	B/C	E	0.866	19.4s	62.4s	153.4m
	Weekday PM Peak – Festival Day	B/C	E	0.866	19.7s	62.4s	153.4m
	Weekend Mid-day Peak – Base	B	D	0.558	15.6s	54.5s	70.2m
	Weekend Mid-day Peak – Festival Day	B	D	0.734	18.1s	55.3s	89.2m
	Weekend 5-6PM – Base	B	E	0.632	16.4s	55.0s	70.4m
	Weekend 5-6PM – Wedding Day	B	E	0.632	16.9s	55.0s	71.8m
2036	Weekday AM Peak – Base	C	E	0.760	22.4s	55.7s	110.2m
	Weekday AM Peak – Festival Day	C	E	0.760	23.4s	56.1s	110.4m
	Weekday PM Peak – Base	E	F	1.331	259.9s	654.3s	1412.9m
	Weekday PM Peak – Festival Day	E	F	1.345	283.6s	680.6s	1483.2m
	Weekend Mid-day Peak – Base	D	E	0.978	40.6s	91.2s	308.5m
	Weekend Mid-day Peak – Festival Day	E	E	1.069	76.1s	210.3s	486.3m
	Weekend 5-6PM – Base	C	E	0.897	23.6s	72.9s	173.9m
	Weekend 5-6PM – Wedding Day	C	E	0.897	24.5s	72.9s	184.8m

Table 2: SIDRA Results – Main Site Access

Scenario	Average LOS	Worst LOS	DOS	Average Delay	Worst Delay	95%ile Queue
Weekday AM Peak – Festival Day	A	A	0.075	0.4s	10.0s	0.1m
Weekday PM Peak – Festival Day	A	A	0.080	0.1s	9.9s	0.4m
Weekend Mid-day Peak – Festival Day	A	A	0.055	0.1s	9.9s	0.3m
Weekend 5-6PM – Wedding Day	A	A	0.137	5.8s	10.0s	0.9m

Under the 2026 scenario, the freeway ramp intersections operate within capacity with and without the development traffic. All measures of performance The development traffic represents a small proportion of the background traffic and so the difference in performance is negligible.

Under the 2036 scenario, the weekday AM peak and the weekend wedding scenario both operate within capacity with negligible difference in performance with or without the proposed development traffic.

The 2036 weekday PM Peak and weekend mid-day peak are modelled as operating over capacity without the development traffic added. It is noted that when the intersection reaches capacity, delays and queues increase exponentially and may not be realistic. As above, with the development traffic added, although already over capacity, the intersection performance decreases minimally as development traffic represents a minor proportion of the background traffic flows.

The 2036 scenario is based on the broad assumption that traffic volumes between Safety Bay Road and Kwinana Freeway increase consistently by 4% per year between 2022 and 2036. In reality, growth in traffic may reduce over time as the amount of vacant land in the area reduces, the road network is developed and travel patterns change.

The proposed main site access will also operate well within capacity under all peak hour scenarios.

6. Analysis of Development Access

6.1. Location

The access arrangement of the development is shown in Figure 9.

The main access is located slightly to the east of the existing access on Folly Road. A secondary egress is proposed on Young Road which will only be used for service vehicle and emergency vehicles.

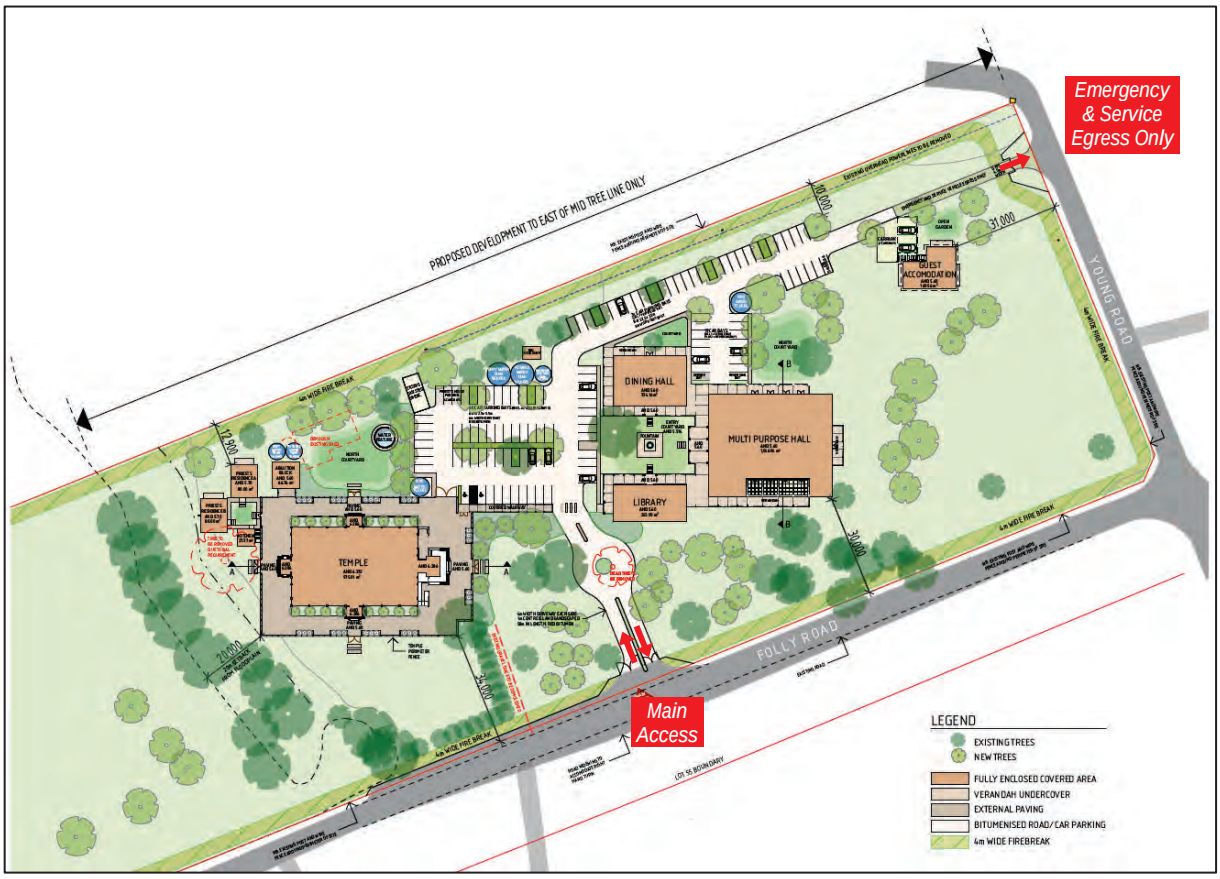


Figure 9: Proposed Access Arrangement

As mentioned previously, the section of Folly Road between Kwinana Freeway and Young Road is reserved as a regional road under the Metropolitan Region Scheme and according to regional road mapping, the frontage section of Folly Road is a Category 2 regional road on which frontage access may be allowed subject to approval.

6.2. Access Width

Clause 3.2.1 of AS2890.1 states that where traffic flow data on an access driveway is known or can be determined, such data may be used to determine driveway widths. In the absence of such data, the widths given in Table 3.2 shall be used. In this instance, the actual traffic flows have been determined with a reasonable level of accuracy and it has been concluded that a single entry lane and a single exit lane will be sufficient to accommodate the expected flows. This is supported by the results of the access capacity analysis which has been modelled with single entry and exit lanes.

The current design of the access includes 4m wide entry and exit lanes with a 1m wide separating island. As discussed later in this report, a swept path analysis has been undertaken and the results demonstrate that the proposed access width and geometry will accommodate the entry and exit movements of all proposed vehicles in a satisfactory manner.

Comment from the City noted that the entry lane should be widened to 6.0m to comply with Table 3.2 of AS2890.1. However, a 6.0m wide entry lane may confuse drivers as this would be wide enough for two lanes of traffic. It is also noted that other existing developments that would technically trigger the same requirement have not applied this width. An example is the existing Bunnings development on Safety Bay Road which also has 4.0m wide entry and exit lanes at the main access on Safety Bay Road which is shown in Figure 10.

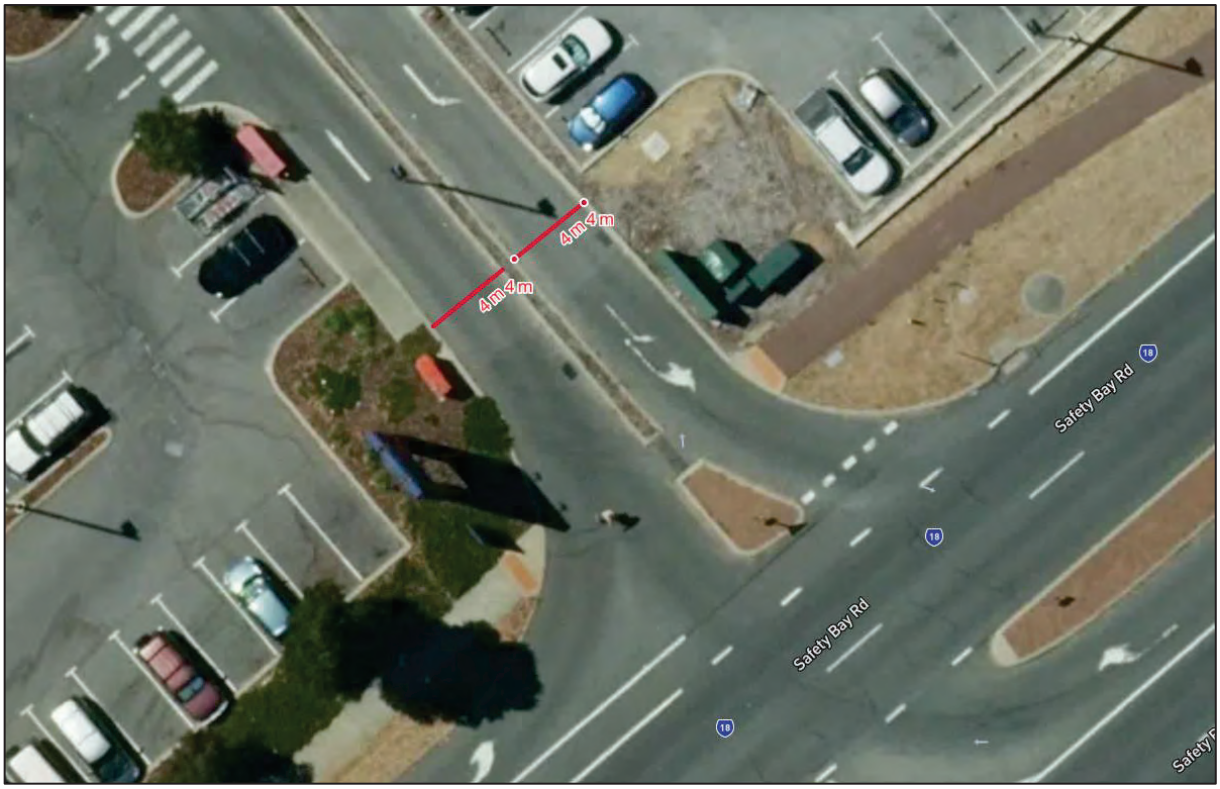
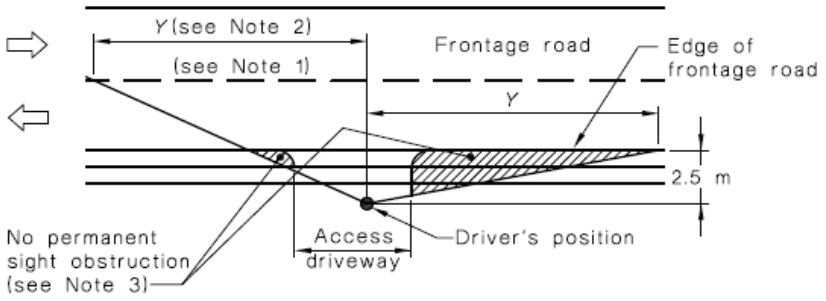


Figure 10: Existing Bunnings Baldivis Access Geometry

6.3. Sight Distance

Sight distance requirements from vehicle exit points is defined in Figure 3.2 of AS2890.1 as shown in Figure 11.



Frontage road speed (Note 4) km/h	Distance (Y) along frontage road m		
	Access driveways other than domestic (Note 5)		Domestic property access (Note 6)
	Desirable 5 s gap	Minimum SSD	
40	55	35	30
50	69	45	40
60	83	65	55
70	97	85	70
80	111	105	95
90	125	130	Use values from 2nd and 3rd columns
100	139	160	
110	153	190	

Figure 11: Sight Distance Requirements

6.3.1. Folly Road

Based on the 80km/h speed limit along the frontage section of Folly Road, the minimum required sight distance is 105m (111m desirable).

The sight distance check is shown Figure 12.

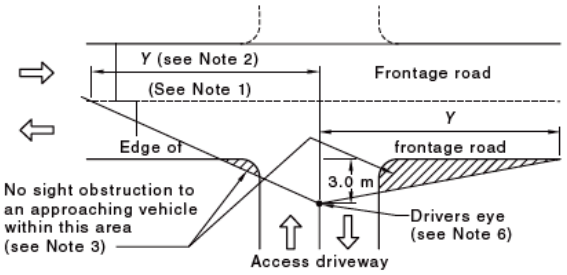


Figure 12: Sight Distance Check – Folly Road

As shown, the desirable sight distance is achieved in both directions. Vertically, the geometry of Folly Road near the proposed crossover is relatively flat with no crests that would impede sight distance.

6.3.2. Young Road

Sight distance requirements from vehicle exit points for commercial vehicles is defined in Figure 3.2 of AS2890.2 as shown in Figure 11.



Frontage road speed (see Note 4) km/h	Distance (*Y*) along frontage road (see Note 5) m	
	5 s gap	8 s gap
40	55	89
50	69	111
60	83	133
70	97	156
80	111	178
90	125	200
100	139	222
110	153	244

NOTE 1 Centre-line or centre of roadway (undivided road), or right-hand edge of right-hand through lane (divided road).

NOTE 2 A check to the left is not required at a divided road where the median is wide enough to shelter a vehicle leaving the driveway.

NOTE 3 Parking on this side of the frontage road may need to be restricted on either side of the driveway so that the sight distance required by the above table to an approaching vehicle is not obstructed.

NOTE 4 This is the posted or general speed limit unless the 85th percentile speed is significantly higher.

NOTE 5 These distances are equivalent to minimum gap sight distance (MGSD) for an exiting vehicle. The minimum requirement is a 5 s gap. A right turn exit into a six lane road may require up to an 8 s gap, unless the median is wide enough to shelter a vehicle leaving the driveway.

NOTE 6 When checking sight distance the height of the object (approaching vehicle) is to be taken as 1.15 m above the road surface. The driver's eye height is to be taken as any height in the range 1.15 m to 2.5 m, to cater for both car and commercial vehicle drivers.

Figure 13: Sight Distance Requirements – Commercial Access

Based on the layout and geometry of the adjacent section of Young Road, the likely operating speed south of the proposed egress is estimated to be 50km/h which requires a minimum of 69m based on the minimum gap sight distance (MGSD) for a 5 second gap (the 8 second gap requirement only applies to six lane roadways).

To the north of the egress is a relatively tight curve (approximately 17m radius) and the speed of vehicles approaching from this direction would be much lower. According to Figure 5.2 of Austroads *Guide to Road Design Part 4A: Unsignalised and Signalised Intersections* (AGRD04A), the approximate turning speed for a 17m radius and 3% crossfall would be about 26km/h. According to Table 3.6 of AGRD04A, the required MGSD for a speed of 26km/h would be about 28m.

The sight distance check is shown Figure 14.

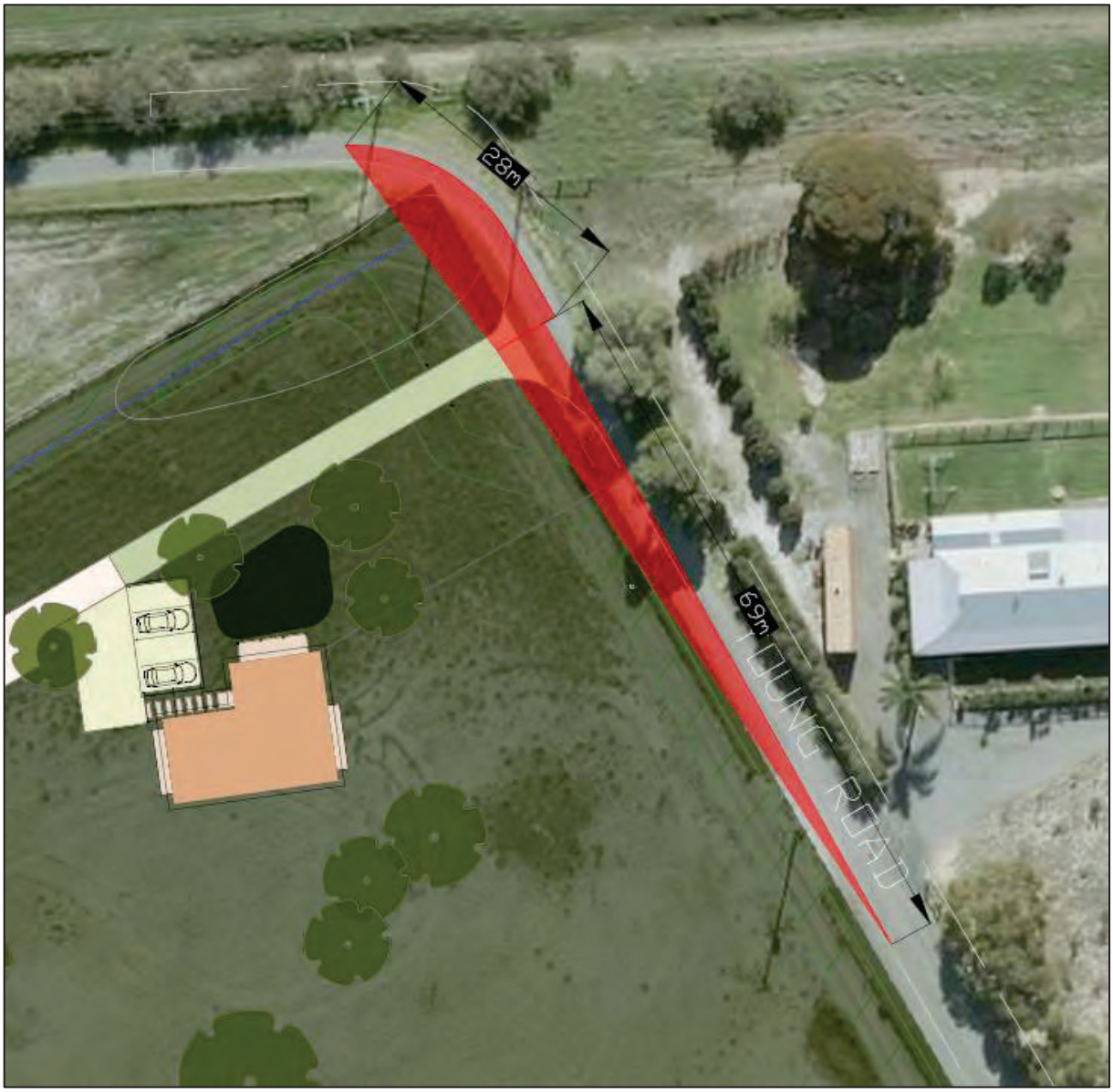


Figure 14: Sight Distance Check – Young Road

As shown, the required sight distance is achieved in both directions. The sight distance towards the north relies on the area inside the bend to be kept clear of obstructions. The area within the neighbours lot appears to be used as a driveway and so it is unlikely that any obstructions will be placed in this area. It is also noted that traffic from this direction will be minimal and so the risk of any incidents relating to sight distance would be negligible.

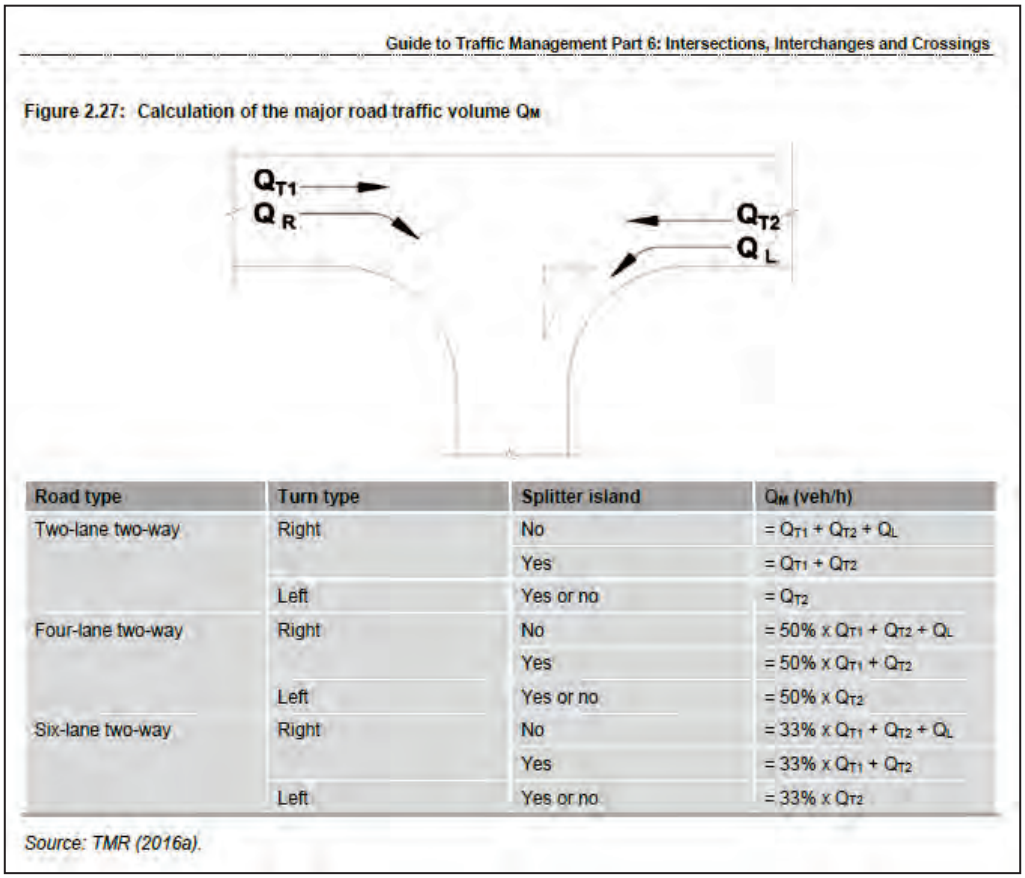
Vertically, the geometry of Young Road near the proposed crossover is also relatively flat with no crests that would impede sight distance.

6.4. Auxiliary Lanes

Considering the high speed environment and relatively high proportion of heavy vehicles along Folly Road, the Austroads warrants for turn treatments at intersections has been applied to the main access.

The warrants are outlined in Austroads *Guide to Road Design Part 4: Intersections and Crossings – General* (AGRD04) and are used to provide guidance on the provision of intersection turn treatments from the major road based on safety and capacity. The warrants assessment has been undertaken using the Main Roads WA Intersection Warrants Calculator spreadsheet which modifies the AGRD04 equation to account for the high percentage of heavy vehicles in WA.

The input traffic volumes have been calculated as per Figure 15.



Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings

Figure 2.27: Calculation of the major road traffic volume Q_M

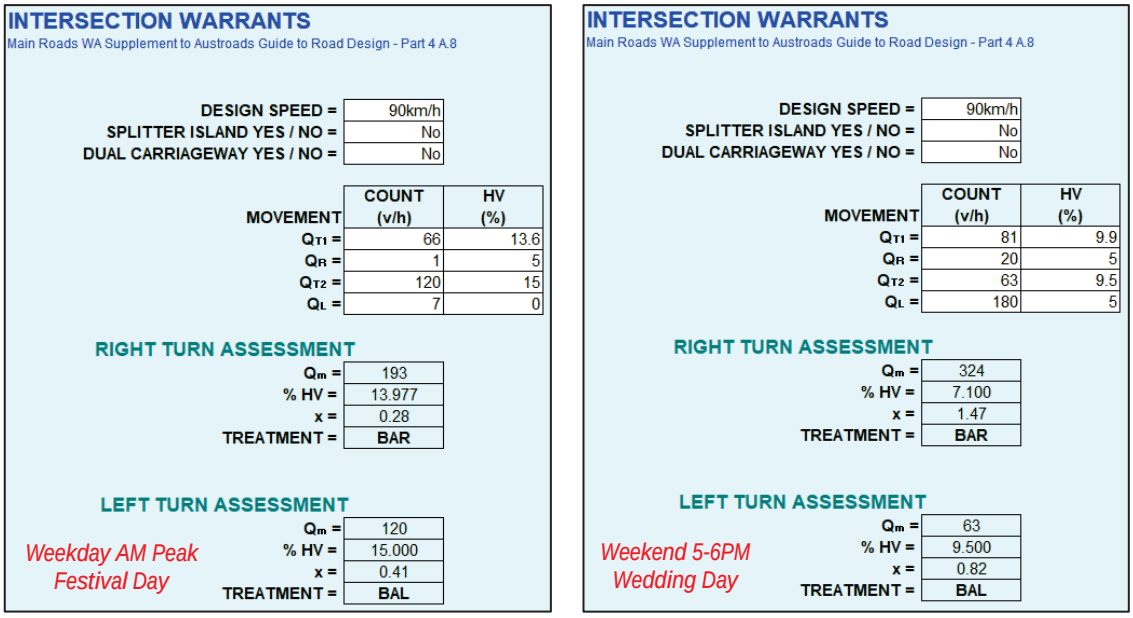
Road type	Turn type	Splitter island	Q_M (veh/h)
Two-lane two-way	Right	No	$= Q_{T1} + Q_{T2} + Q_L$
		Yes	$= Q_{T1} + Q_{T2}$
	Left	Yes or no	$= Q_{T2}$
Four-lane two-way	Right	No	$= 50\% \times Q_{T1} + Q_{T2} + Q_L$
		Yes	$= 50\% \times Q_{T1} + Q_{T2}$
	Left	Yes or no	$= 50\% \times Q_{T2}$
Six-lane two-way	Right	No	$= 33\% \times Q_{T1} + Q_{T2} + Q_L$
		Yes	$= 33\% \times Q_{T1} + Q_{T2}$
	Left	Yes or no	$= 33\% \times Q_{T2}$

Source: TMR (2016a).

Figure 15: Major Road Traffic Volume Calculation

The same critical scenarios used for the access capacity analysis have been used for this assessment except for the *Weekday PM Peak* and the *Weekend Mid-day Peak* as the majority of movements will be outbound during these periods.

The results of the warrants assessment are shown in Figure 16.



INTERSECTION WARRANTS

Main Roads WA Supplement to Austroads Guide to Road Design - Part 4 A.8

DESIGN SPEED =	90km/h
SPLITTER ISLAND YES / NO =	No
DUAL CARRIAGEWAY YES / NO =	No

MOVEMENT	COUNT (v/h)	HV (%)
Q_{T1} =	66	13.6
Q_R =	1	5
Q_{T2} =	120	15
Q_L =	7	0

RIGHT TURN ASSESSMENT

Q_m =	193
% HV =	13.977
x =	0.28
TREATMENT =	BAR

LEFT TURN ASSESSMENT

Weekday AM Peak
Festival Day

Q_m =	120
% HV =	15.000
x =	0.41
TREATMENT =	BAL

INTERSECTION WARRANTS

Main Roads WA Supplement to Austroads Guide to Road Design - Part 4 A.8

DESIGN SPEED =	90km/h
SPLITTER ISLAND YES / NO =	No
DUAL CARRIAGEWAY YES / NO =	No

MOVEMENT	COUNT (v/h)	HV (%)
Q_{T1} =	81	9.9
Q_R =	20	5
Q_{T2} =	63	9.5
Q_L =	180	5

RIGHT TURN ASSESSMENT

Q_m =	324
% HV =	7.100
x =	1.47
TREATMENT =	BAR

LEFT TURN ASSESSMENT

Weekend 5-6PM
Wedding Day

Q_m =	63
% HV =	9.500
x =	0.82
TREATMENT =	BAL

Figure 16: Warrants Assessment Results

As shown, both scenarios warrant a Basic Left (BAL) and Basic Right (BAR) treatment which are widened shoulders that allows left turning vehicles to move off the through carriageway or to allow through vehicles to overtake a vehicle turning right into the access. To maximise safety, the left turn treatment will be upgraded to a short Auxiliary Left (AUL(S)) turn treatment which is a sealed turning lane.

It is noted that for the wedding scenario, a slight increase in the right turning traffic will trigger the need for an Auxiliary Right (AUR) turn treatment. According to Austroads guidelines, the warrants show that it is not beneficial to provide AUR turn treatments and instead short Channelised Right (CHR(S)) treatments offer significantly better value for money in terms of safety benefits versus the construction costs. Although the need for this treatment is only triggered by the volume of traffic generated by weddings which only occur about 6 times per year, the client has opted to implement a right turning treatment to maximise safety along Folly Road in response to concerns raised in public submissions.

The typical layout of a an AUL and CHR(S) treatment is shown in Figure 17. An AUL(S) treatment is similar to an AUL treatment but shorter in length.

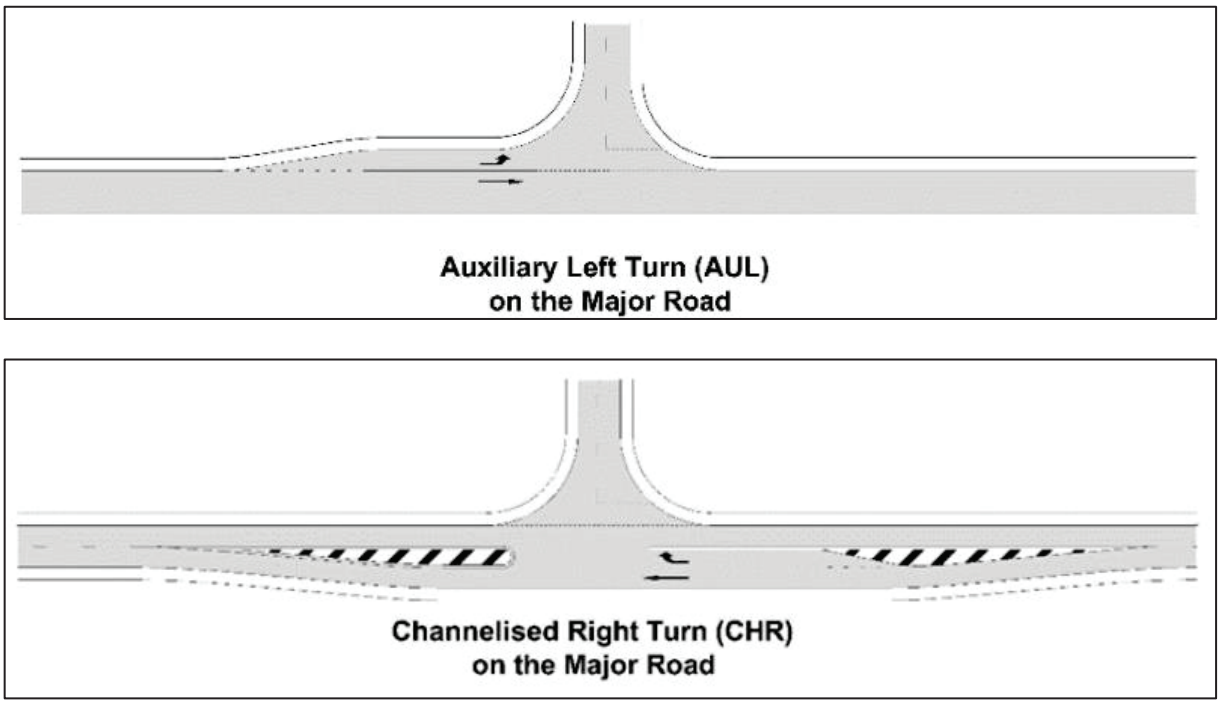


Figure 17: AUL and CHR(S) Layout (Austroads)

6.5. Service Vehicle Access

A swept path assessment has been undertaken using Autodesk Vehicle Tracking to check the manoeuvrability of trucks through the site. The Australian Standard 8.8m Medium Rigid Truck template has been used to check waste vehicle manoeuvrability to and from the bin compound area. A swept path has also been undertaken for the largest emergency vehicle which is understood to be a DFES 9.3m Combination Ladder Platform Truck. The emergency vehicle swept path was undertaken using a custom vehicle template created using the specifications noted on the DFES website. It is assumed that emergency vehicles are allowed to use the full width of the parking aisles as other vehicles will need to give way to this vehicle in an emergency.

The results of the swept path assessment are attached as Appendix B which demonstrate that the access and site layout provides adequate manoeuvrability for the expected service vehicles. As shown, the egress driveway on Young Road will need to be adequately widened to suit the turning movement of the service vehicles.

It is recommended that waste vehicle collection is scheduled outside of peak periods of traffic and operations where possible to minimise the impact on other users.

7. Road Safety

7.1. Crash History

The crash history of the adjacent road network was obtained from the MRWA Reporting Centre. The search included the length of Folly Road from Kwinana Freeway to Young Road and the section of Young Road north of Folly Road. A summary of the recorded incidents over the five-year period ending December 2020 is shown in Figure 18.

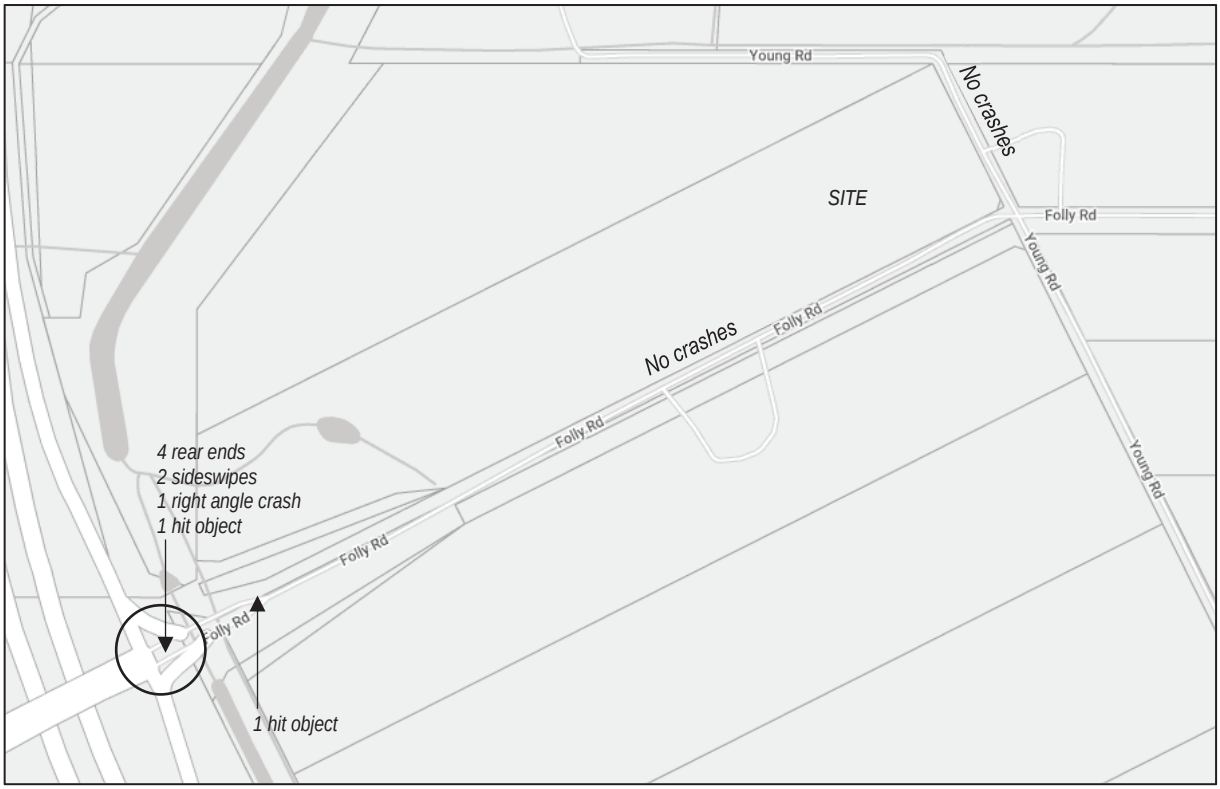


Figure 18: Crash History January 2016 to December 2020

The number and type of crashes do not indicate any major safety issues on the road network. There is no indication that the proposed development would increase the risk of crashes unacceptably.

8. Alternative Transport Modes

8.1. Public Transport

The closest public transport services are located approximately 1.6km towards the west on the opposite side of the freeway. The demand for public transport is generally low for places of worship and so the provision of new services for the development is not warranted.

8.2. Pedestrian / Cycle Access

There are no paths along and the nearest path begins at the freeway ramp intersections.

Based on the proposed use and the relatively remote location, the demand for pedestrian or cycle access would be minimal and so the provision of paths or cycling infrastructure is not considered necessary.

9. Parking

9.1. Car Parking Provision

The current plans indicate that the development will include a total of 110 on-site car parking including 60 bays in the main car park.

9.2. Car Parking Requirements

According to the City's Local Planning Scheme, the parking requirement for a Place of Worship is 1 bay per 4 persons accommodated.

Throughout the majority of the year, the typical attendance at any one time or session is up to 150 people and so the parking requirement would be 38 bays. The proposed 60 bays in the main car park is therefore sufficient on a regular day-to-day basis.

For the special Hindu festival days occurring on average once per month, the typical attendance at any one time or session is up to 250 people and so the parking requirement would be 63 bays. During these events, the main car park may become full and parking in the secondary car park will be utilised. The overall provision of 110 bays on the site will be adequate.

For Hindu weddings occurring approximately 6 times per year, the typical attendance is up to 400 people which would require 100 bays. For these events, the additional parking areas will also need to be used. The overall supply of 110 bays exceeds the calculated parking demand.

It is noted that the proposed dining hall will not generate traffic and will only be used by worshippers after regular prayer attendance if they wish to do so.

Overall, the proposed parking provision satisfies the requirements of the Local Planning Scheme and is considered to be adequate to meet the likely parking demand of the development.

10. Conclusions

A Transport Impact Assessment for the proposed place of worship at 67 Folly Road in Baldivis has concluded the following:

- The volume of traffic generated by the proposed development can be accommodated within the capacity of the road network.
- A detailed capacity analysis of the Kwinana Freeway / Folly Road signalised interchange indicates that this intersection will operate within capacity once the development is fully operating. The development traffic represents a relatively minor percentage of the background traffic and so the difference in pre- and post-development performance is negligible.
- Capacity analysis of a longer term scenario (2036) indicates that the signalised interchange may reach capacity during some peak periods. It is noted that the interchange would be over capacity without the development traffic and that the addition of development traffic only results in a negligible decrease in intersection performance. It is also noted that the long term analysis is based on a broad assumption that traffic volumes between Safety Bay Road and Kwinana Freeway would increase by 4% per year. In reality, growth in traffic may reduce over time as the amount of vacant land in the area reduces, the road network is developed and travel patterns change.
- The main site access warrants the provision of a Basic Left (BAL) and Basic Right (BAR) turn treatment which is a widened shoulder. To maximise safety and in response to safety concerns from the community, the client has opted to provide and AUL(S) and CHR(S) turning treatments at the main site access which are sealed turning lanes.
- The minimum and desirable sight distance is achieved from both crossovers in both directions.
- A swept path assessment demonstrates that the site layout will adequately accommodate the movement of service and emergency vehicles.
- The crash history does not indicate any major safety issues on the road network and there is no indication that the proposed development would increase the risk of crashes unacceptably.
- The demand for public transport is generally low for places of worship and so the provision of new services for the development is not warranted.
- Based on the proposed use and the relatively remote location, the demand for pedestrian or cycle access would be minimal and so the provision of paths or cycling infrastructure is not considered necessary.
- The provision of 110 car bays satisfies the requirements of the City's Local Planning Scheme.

Appendix A – SIDRA Analysis Results

Freeway Interchange – Existing Scenario

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [SCATS]

Network: N101 [Weekday AM Peak (Network Folder: Existing)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 79 seconds (CCG User-Given Cycle Time)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: 1 [West Ramps - Weekday AM Peak]														
South: Kwinana Fwy Off Ramp														
1	L2	98	4.1	98	4.1	*0.472	44.0	LOS D	2.3	16.6	0.98	0.77	0.98	37.0
3	R2	7	0.0	7	0.0	0.033	40.8	LOS D	0.2	1.1	0.91	0.66	0.91	27.6
Approach		105	3.8	105	3.8	0.472	43.8	LOS D	2.3	16.6	0.97	0.77	0.97	36.6
East: Safety Bay Rd														
5	T1	726	4.0	726	4.0	0.267	2.1	LOS A	1.5	10.6	0.17	0.15	0.17	65.6
6	R2	20	10.0	20	10.0	*0.150	47.2	LOS D	0.5	3.8	1.00	0.70	1.00	25.8
Approach		746	4.2	746	4.2	0.267	3.3	LOS A	1.5	10.6	0.19	0.16	0.19	63.0
West: Safety Bay Rd														
10	L2	966	1.0	966	1.0	0.432	11.4	LOS B	5.3	37.6	0.41	0.66	0.41	57.2
11	T1	231	3.0	231	3.0	*0.432	4.1	LOS A	5.3	37.6	0.42	0.58	0.42	53.6
Approach		1197	1.4	1197	1.4	0.432	10.0	LOS A	5.3	37.6	0.41	0.65	0.41	56.8
All Vehicles		2048	2.5	2048	2.5	0.472	9.3	LOS A	5.3	37.6	0.36	0.48	0.36	56.4
Site: 2 [East Ramps - Weekday AM Peak]														
East: Folly Rd														
10	L2	6	0.0	6	0.0	0.004	7.7	LOS A	0.0	0.1	0.24	0.61	0.24	59.2
11	T1	56	1.8	56	1.8	0.324	38.7	LOS D	1.3	9.4	0.98	0.73	0.98	28.4
Approach		62	1.6	62	1.6	0.324	35.7	LOS D	1.3	9.4	0.90	0.72	0.90	31.3
North: Kwinana Fwy Off Ramp														
1	L2	1	0.0	1	0.0	0.001	16.1	LOS B	0.0	0.1	0.49	0.60	0.49	52.2
3	R2	574	5.9	574	5.9	0.350	21.3	LOS C	4.4	32.3	0.69	0.78	0.69	38.8
Approach		575	5.9	575	5.9	0.350	21.3	LOS C	4.4	32.3	0.69	0.78	0.69	38.8
West: Safety Bay Rd														
5	T1	101	2.0	101	2.0	0.171	21.9	LOS C	1.7	12.2	0.75	0.60	0.75	41.4
6	R2	117	1.7	117	1.7	0.332	36.3	LOS D	2.4	17.1	0.89	0.77	0.89	30.9
Approach		218	1.8	218	1.8	0.332	29.6	LOS C	2.4	17.1	0.82	0.69	0.82	35.0
All Vehicles		855	4.6	855	4.6	0.350	24.4	LOS C	4.4	32.3	0.74	0.75	0.74	37.0

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [SCATS]

Network: N101 [Weekday PM Peak (Network Folder: Existing)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 101 seconds (CCG User-Given Cycle Time)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: 1 [West Ramps - Weekday PM Peak]														
South: Kwinana Fwy Off Ramp														
1	L2	148	0.0	148	0.0	0.664	55.1	LOS E	4.5	31.7	1.00	0.83	1.07	33.6
3	R2	9	0.0	9	0.0	0.040	49.5	LOS D	0.2	1.7	0.91	0.67	0.91	24.4
Approach		157	0.0	157	0.0	0.664	54.8	LOS D	4.5	31.7	0.99	0.82	1.06	33.3
East: Safety Bay Rd														
5	T1	1364	0.0	1364	0.0	0.466	1.9	LOS A	3.1	21.8	0.15	0.13	0.15	66.0
6	R2	9	22.2	9	22.2	0.094	59.2	LOS E	0.3	2.4	1.00	0.67	1.00	21.8
Approach		1373	0.1	1373	0.1	0.466	2.3	LOS A	3.1	21.8	0.15	0.14	0.15	65.2
West: Safety Bay Rd														
10	L2	785	2.0	785	2.0	0.343	10.0	LOS A	4.1	29.3	0.30	0.62	0.30	58.0
11	T1	224	0.9	224	0.9	*0.343	2.9	LOS A	4.0	28.7	0.32	0.50	0.32	56.1
Approach		1009	1.8	1009	1.8	0.343	8.4	LOS A	4.1	29.3	0.31	0.59	0.31	57.7
All Vehicles		2539	0.8	2539	0.8	0.664	7.9	LOS A	4.5	31.7	0.27	0.36	0.27	57.2
Site: 2 [East Ramps - Weekday PM Peak]														
East: Folly Rd														
10	L2	15	13.3	15	13.3	0.011	8.1	LOS A	0.1	0.5	0.22	0.61	0.22	55.5
11	T1	128	2.3	128	2.3	0.351	39.0	LOS D	3.4	24.4	0.91	0.73	0.91	28.3
Approach		143	3.5	143	3.5	0.351	35.8	LOS D	3.4	24.4	0.84	0.72	0.84	31.2
North: Kwinana Fwy Off Ramp														
1	L2	10	0.0	10	0.0	0.011	20.7	LOS C	0.2	1.1	0.54	0.65	0.54	49.1
3	R2	1244	1.0	1244	1.0	*0.688	27.7	LOS C	14.4	101.9	0.83	0.85	0.83	34.1
Approach		1254	1.0	1254	1.0	0.688	27.7	LOS C	14.4	101.9	0.83	0.85	0.83	34.3
West: Safety Bay Rd														
5	T1	103	1.9	103	1.9	0.141	22.1	LOS C	2.0	14.0	0.67	0.54	0.67	41.2
6	R2	153	1.3	153	1.3	*0.693	54.5	LOS D	4.7	32.9	1.00	0.83	1.07	24.7
Approach		256	1.6	256	1.6	0.693	41.5	LOS D	4.7	32.9	0.87	0.71	0.91	29.4
All Vehicles		1653	1.3	1653	1.3	0.693	30.5	LOS C	14.4	101.9	0.84	0.82	0.84	33.0

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [SCATS]

Network: N101 [Weekend Mid-day Peak (Network Folder: Existing)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 88 seconds (CCG User-Given Cycle Time)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: 1 [West Ramps - Weekend Mid-day Peak]														
South: Kwinana Fwy Off Ramp														
1	L2	147	8.8	147	8.8	*0.431	41.3	LOS D	3.5	26.4	0.93	0.79	0.93	37.5
3	R2	6	16.7	6	16.7	0.019	37.7	LOS D	0.1	1.0	0.83	0.66	0.83	29.0
Approach		153	9.2	153	9.2	0.431	41.2	LOS D	3.5	26.4	0.92	0.79	0.92	37.3
East: Safety Bay Rd														
5	T1	923	12.5	923	12.5	0.391	2.5	LOS A	2.0	15.8	0.16	0.14	0.16	64.8
6	R2	19	10.5	19	10.5	0.160	52.3	LOS D	0.5	4.0	1.00	0.70	1.00	24.3
Approach		942	12.4	942	12.4	0.391	3.5	LOS A	2.0	15.8	0.18	0.16	0.18	62.7
West: Safety Bay Rd														
10	L2	850	4.8	850	4.8	0.394	10.7	LOS B	4.7	34.1	0.37	0.64	0.37	56.7
11	T1	233	4.7	233	4.7	*0.394	3.6	LOS A	4.5	33.1	0.39	0.54	0.39	54.8
Approach		1083	4.8	1083	4.8	0.394	9.2	LOS A	4.7	34.1	0.37	0.62	0.37	56.4
All Vehicles		2178	8.4	2178	8.4	0.431	9.0	LOS A	4.7	34.1	0.33	0.43	0.33	55.7
Site: 2 [East Ramps - Weekend Mid-day Peak]														
East: Folly Rd														
10	L2	11	9.1	11	9.1	0.008	7.9	LOS A	0.0	0.3	0.22	0.61	0.22	56.7
11	T1	87	12.6	87	12.6	0.382	39.8	LOS D	2.2	17.1	0.96	0.75	0.96	27.9
Approach		98	12.2	98	12.2	0.382	36.2	LOS D	2.2	17.1	0.88	0.73	0.88	31.1
North: Kwinana Fwy Off Ramp														
1	L2	9	0.0	9	0.0	0.011	21.6	LOS C	0.1	0.9	0.59	0.65	0.59	48.5
3	R2	830	5.1	830	5.1	*0.531	26.1	LOS C	8.1	58.9	0.79	0.82	0.79	35.2
Approach		839	5.0	839	5.0	0.531	26.1	LOS C	8.1	58.9	0.79	0.82	0.79	35.4
West: Safety Bay Rd														
5	T1	88	4.5	88	4.5	0.112	16.8	LOS B	1.4	10.1	0.64	0.50	0.64	45.7
6	R2	144	4.9	144	4.9	0.388	38.9	LOS D	3.3	24.1	0.90	0.79	0.90	29.4
Approach		232	4.7	232	4.7	0.388	30.5	LOS C	3.3	24.1	0.80	0.68	0.80	34.0
All Vehicles		1169	5.6	1169	5.6	0.531	27.8	LOS C	8.1	58.9	0.80	0.78	0.80	34.7

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [SCATS]

Network: N101 [Weekend 5-6PM (Network Folder: Existing)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 86 seconds (CCG User-Given Cycle Time)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: 1 [West Ramps - Weekend 5-6PM]														
South: Kwinana Fwy Off Ramp														
1	L2	110	8.2	110	8.2	*0.485	46.1	LOS D	2.8	20.7	0.97	0.78	0.97	35.8
3	R2	3	0.0	3	0.0	0.012	42.0	LOS D	0.1	0.5	0.89	0.63	0.89	27.1
Approach		113	8.0	113	8.0	0.485	46.0	LOS D	2.8	20.7	0.97	0.78	0.97	35.7
East: Safety Bay Rd														
5	T1	844	9.7	844	9.7	0.321	1.9	LOS A	1.7	12.6	0.15	0.13	0.15	66.0
6	R2	27	11.1	27	11.1	0.223	51.6	LOS D	0.7	5.6	1.00	0.72	1.00	24.5
Approach		871	9.8	871	9.8	0.321	3.5	LOS A	1.7	12.6	0.17	0.15	0.17	62.7
West: Safety Bay Rd														
10	L2	709	4.2	709	4.2	0.317	10.3	LOS B	3.5	25.0	0.34	0.63	0.34	57.0
11	T1	168	4.2	168	4.2	*0.317	3.3	LOS A	3.4	24.6	0.36	0.54	0.36	54.7
Approach		877	4.2	877	4.2	0.317	9.0	LOS A	3.5	25.0	0.34	0.61	0.34	56.7
All Vehicles		1861	7.0	1861	7.0	0.485	8.6	LOS A	3.5	25.0	0.30	0.41	0.30	56.1
Site: 2 [East Ramps - Weekend 5-6PM]														
East: Folly Rd														
10	L2	10	10.0	10	10.0	0.007	7.8	LOS A	0.0	0.3	0.22	0.61	0.22	56.5
11	T1	107	9.3	107	9.3	0.261	30.4	LOS C	2.3	17.5	0.87	0.69	0.87	32.6
Approach		117	9.4	117	9.4	0.261	28.4	LOS C	2.3	17.5	0.81	0.68	0.81	34.9
North: Kwinana Fwy Off Ramp														
1	L2	10	0.0	10	0.0	0.013	22.6	LOS C	0.2	1.1	0.62	0.66	0.62	47.8
3	R2	754	3.8	754	3.8	*0.507	26.8	LOS C	7.3	52.6	0.80	0.82	0.80	34.7
Approach		764	3.8	764	3.8	0.507	26.8	LOS C	7.3	52.6	0.80	0.82	0.80	34.9
West: Safety Bay Rd														
5	T1	59	3.4	59	3.4	0.071	15.0	LOS B	0.9	6.2	0.60	0.47	0.60	47.4
6	R2	109	4.6	109	4.6	0.469	44.8	LOS D	2.7	19.6	0.96	0.78	0.96	27.3
Approach		168	4.2	168	4.2	0.469	34.4	LOS C	2.7	19.6	0.84	0.67	0.84	32.1
All Vehicles		1049	4.5	1049	4.5	0.507	28.2	LOS C	7.3	52.6	0.80	0.78	0.80	34.4

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [SCATS]

Network: N101 [Weekday AM Peak (Network Folder: 2026 Base (Without Development))]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 92 seconds (CCG Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: 1 [West Ramps - Weekday AM Peak]														
South: Kwinana Fwy Off Ramp														
1	L2	120	4.2	120	4.2	* 0.505	48.5	LOS D	3.2	23.3	0.98	0.79	0.98	35.4
3	R2	7	0.0	7	0.0	0.029	44.5	LOS D	0.2	1.2	0.90	0.66	0.90	26.2
Approach		127	3.9	127	3.9	0.505	48.2	LOS D	3.2	23.3	0.97	0.78	0.97	35.0
East: Safety Bay Rd														
5	T1	885	4.0	885	4.0	0.321	2.3	LOS A	2.0	14.7	0.17	0.15	0.17	65.2
6	R2	20	10.0	20	10.0	* 0.175	54.6	LOS D	0.6	4.4	1.00	0.70	1.00	23.8
Approach		905	4.1	905	4.1	0.321	3.5	LOS A	2.0	14.7	0.19	0.16	0.19	62.8
West: Safety Bay Rd														
10	L2	1177	1.0	1177	1.0	0.505	11.8	LOS B	7.2	50.6	0.39	0.66	0.39	57.4
11	T1	282	3.2	282	3.2	* 0.505	3.8	LOS A	7.1	50.2	0.40	0.57	0.40	53.9
Approach		1459	1.4	1459	1.4	0.505	10.2	LOS B	7.2	50.6	0.39	0.64	0.39	57.0
All Vehicles		2491	2.5	2491	2.5	0.505	9.7	LOS A	7.2	50.6	0.35	0.48	0.35	56.2
Site: 2 [East Ramps - Weekday AM Peak]														
East: Folly Rd														
10	L2	6	0.0	6	0.0	0.004	7.9	LOS A	0.0	0.2	0.22	0.61	0.22	59.1
11	T1	56	1.8	56	1.8	0.378	46.3	LOS D	1.6	11.1	0.99	0.74	0.99	25.4
Approach		62	1.6	62	1.6	0.378	42.5	LOS D	1.6	11.1	0.91	0.73	0.91	28.3
North: Kwinana Fwy Off Ramp														
1	L2	1	0.0	1	0.0	0.001	18.0	LOS B	0.0	0.1	0.50	0.60	0.50	50.9
3	R2	699	5.9	699	5.9	0.388	21.6	LOS C	5.9	43.6	0.66	0.79	0.66	38.6
Approach		700	5.9	700	5.9	0.388	21.5	LOS C	5.9	43.6	0.66	0.79	0.66	38.6
West: Safety Bay Rd														
5	T1	101	2.0	101	2.0	0.154	22.3	LOS C	1.9	13.5	0.72	0.57	0.72	41.0
6	R2	142	1.4	142	1.4	0.391	41.1	LOS D	3.4	24.3	0.90	0.79	0.90	29.0
Approach		243	1.6	243	1.6	0.391	33.3	LOS C	3.4	24.3	0.83	0.70	0.83	33.0
All Vehicles		1005	4.6	1005	4.6	0.391	25.7	LOS C	5.9	43.6	0.72	0.76	0.72	36.1

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [SCATS]

Network: N101 [Weekday AM Peak (Network Folder: 2026 (With Development))]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 92 seconds (CCG User-Given Cycle Time)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: 1 [West Ramps - Weekday AM Peak]														
South: Kwinana Fwy Off Ramp														
1	L2	120	4.2	120	4.2	*0.505	48.5	LOS D	3.2	23.3	0.98	0.79	0.98	35.4
3	R2	8	0.0	8	0.0	0.033	44.4	LOS D	0.2	1.4	0.90	0.67	0.90	26.0
Approach		128	3.9	128	3.9	0.505	48.2	LOS D	3.2	23.3	0.97	0.78	0.97	35.0
East: Safety Bay Rd														
5	T1	886	4.0	886	4.0	0.321	2.3	LOS A	2.0	14.7	0.17	0.15	0.17	65.2
6	R2	25	8.0	25	8.0	*0.216	54.9	LOS D	0.7	5.4	1.00	0.71	1.00	23.6
Approach		911	4.1	911	4.1	0.321	3.7	LOS A	2.0	14.7	0.19	0.16	0.19	62.2
West: Safety Bay Rd														
10	L2	1177	1.0	1177	1.0	0.505	11.8	LOS B	7.2	50.7	0.39	0.66	0.39	57.4
11	T1	283	3.2	283	3.2	*0.505	3.8	LOS A	7.1	50.3	0.40	0.57	0.40	53.9
Approach		1460	1.4	1460	1.4	0.505	10.3	LOS B	7.2	50.7	0.39	0.64	0.39	57.0
All Vehicles		2499	2.5	2499	2.5	0.505	9.8	LOS A	7.2	50.7	0.35	0.48	0.35	56.1
Site: 2 [East Ramps - Weekday AM Peak]														
East: Folly Rd														
10	L2	7	0.0	7	0.0	0.005	7.7	LOS A	0.0	0.2	0.22	0.60	0.22	58.3
11	T1	62	1.6	62	1.6	0.418	46.5	LOS D	1.7	12.3	0.99	0.75	0.99	25.3
Approach		69	1.4	69	1.4	0.418	42.5	LOS D	1.7	12.3	0.91	0.73	0.91	28.2
North: Kwinana Fwy Off Ramp														
1	L2	6	0.0	6	0.0	0.006	17.3	LOS B	0.1	0.6	0.51	0.62	0.51	47.2
3	R2	699	5.9	699	5.9	0.388	21.6	LOS C	5.9	43.6	0.66	0.79	0.66	38.6
Approach		705	5.8	705	5.8	0.388	21.5	LOS C	5.9	43.6	0.66	0.78	0.66	38.7
West: Safety Bay Rd														
5	T1	103	1.9	103	1.9	0.157	22.9	LOS C	1.9	13.6	0.71	0.57	0.71	40.5
6	R2	142	1.4	142	1.4	0.391	41.1	LOS D	3.4	24.3	0.90	0.79	0.90	29.0
Approach		245	1.6	245	1.6	0.391	33.4	LOS C	3.4	24.3	0.82	0.70	0.82	32.9
All Vehicles		1019	4.5	1019	4.5	0.418	25.8	LOS C	5.9	43.6	0.72	0.76	0.72	36.0

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [SCATS]

Network: N101 [Weekday PM Peak (Network Folder: 2026 Base (Without Development))]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 104 seconds (CCG Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h]	HV] %	ARRIVAL FLOWS [Total veh/h]	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh]	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: 1 [West Ramps - Weekday PM Peak]														
South: Kwinana Fwy Off Ramp														
1	L2	180	0.0	180	0.0	0.831	62.4	LOS E	6.1	43.0	1.00	0.93	1.30	31.5
3	R2	9	0.0	9	0.0	0.042	51.1	LOS D	0.3	1.8	0.91	0.67	0.91	23.9
Approach		189	0.0	189	0.0	0.831	61.9	LOS E	6.1	43.0	1.00	0.92	1.28	31.3
East: Safety Bay Rd														
5	T1	1662	0.0	1662	0.0	0.562	2.2	LOS A	4.6	32.5	0.18	0.17	0.18	65.5
6	R2	9	22.2	9	22.2	0.096	60.9	LOS E	0.3	2.4	1.00	0.67	1.00	21.4
Approach		1671	0.1	1671	0.1	0.562	2.5	LOS A	4.6	32.5	0.18	0.17	0.18	64.7
West: Safety Bay Rd														
10	L2	957	2.1	957	2.1	0.415	10.4	LOS B	5.5	38.9	0.32	0.63	0.32	57.8
11	T1	273	0.7	273	0.7	*0.415	3.1	LOS A	5.4	38.1	0.34	0.52	0.34	55.8
Approach		1230	1.8	1230	1.8	0.415	8.8	LOS A	5.5	38.9	0.33	0.60	0.33	57.6
All Vehicles		3090	0.8	3090	0.8	0.831	8.6	LOS A	6.1	43.0	0.29	0.39	0.31	56.5
Site: 2 [East Ramps - Weekday PM Peak]														
East: Folly Rd														
10	L2	15	13.3	15	13.3	0.011	8.6	LOS A	0.1	0.6	0.24	0.61	0.24	55.0
11	T1	128	2.3	128	2.3	0.343	39.7	LOS D	3.5	25.0	0.91	0.73	0.91	28.0
Approach		143	3.5	143	3.5	0.343	36.4	LOS D	3.5	25.0	0.84	0.72	0.84	30.8
North: Kwinana Fwy Off Ramp														
1	L2	10	0.0	10	0.0	0.011	20.8	LOS C	0.2	1.1	0.53	0.65	0.53	49.0
3	R2	1517	1.0	1517	1.0	*0.831	34.3	LOS C	21.7	153.4	0.93	0.91	0.99	30.4
Approach		1527	1.0	1527	1.0	0.831	34.2	LOS C	21.7	153.4	0.93	0.91	0.98	30.6
West: Safety Bay Rd														
5	T1	103	1.9	103	1.9	0.141	22.8	LOS C	2.0	14.5	0.68	0.54	0.68	40.6
6	R2	186	1.1	186	1.1	*0.866	62.3	LOS E	6.4	45.0	1.00	0.91	1.31	22.7
Approach		289	1.4	289	1.4	0.866	48.2	LOS D	6.4	45.0	0.88	0.78	1.08	27.0
All Vehicles		1959	1.2	1959	1.2	0.866	36.4	LOS D	21.7	153.4	0.91	0.88	0.99	29.9

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [SCATS]

Network: N101 [Weekday PM Peak (Network Folder: 2026 (With Development))]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 104 seconds (CCG User-Given Cycle Time)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: 1 [West Ramps - Weekday PM Peak]														
South: Kwinana Fwy Off Ramp														
1	L2	180	0.0	180	0.0	0.831	62.4	LOS E	6.1	43.0	1.00	0.93	1.30	31.5
3	R2	9	0.0	9	0.0	0.042	51.1	LOS D	0.3	1.8	0.91	0.67	0.91	23.9
Approach		189	0.0	189	0.0	0.831	61.9	LOS E	6.1	43.0	1.00	0.92	1.28	31.3
East: Safety Bay Rd														
5	T1	1667	0.0	1667	0.0	0.564	2.2	LOS A	4.7	32.6	0.18	0.17	0.18	65.4
6	R2	28	7.1	28	7.1	0.272	62.1	LOS E	0.9	6.8	1.00	0.72	1.00	21.5
Approach		1695	0.1	1695	0.1	0.564	3.2	LOS A	4.7	32.6	0.19	0.17	0.19	63.3
West: Safety Bay Rd														
10	L2	957	2.1	957	2.1	0.415	10.5	LOS B	5.5	38.9	0.32	0.63	0.32	57.8
11	T1	273	0.7	273	0.7	*0.415	3.1	LOS A	5.4	38.1	0.34	0.52	0.34	55.8
Approach		1230	1.8	1230	1.8	0.415	8.8	LOS A	5.5	38.9	0.33	0.60	0.33	57.6
All Vehicles		3114	0.8	3114	0.8	0.831	9.0	LOS A	6.1	43.0	0.29	0.39	0.31	56.0
Site: 2 [East Ramps - Weekday PM Peak]														
East: Folly Rd														
10	L2	20	10.0	20	10.0	0.014	8.3	LOS A	0.1	0.8	0.24	0.60	0.24	54.5
11	T1	152	2.0	152	2.0	0.406	40.3	LOS D	4.2	30.0	0.92	0.75	0.92	27.5
Approach		172	2.9	172	2.9	0.406	36.6	LOS D	4.2	30.0	0.84	0.73	0.84	30.6
North: Kwinana Fwy Off Ramp														
1	L2	10	0.0	10	0.0	0.011	20.8	LOS C	0.2	1.1	0.53	0.65	0.53	49.0
3	R2	1517	1.0	1517	1.0	*0.831	34.3	LOS C	21.7	153.4	0.93	0.91	0.99	30.4
Approach		1527	1.0	1527	1.0	0.831	34.2	LOS C	21.7	153.4	0.93	0.91	0.98	30.6
West: Safety Bay Rd														
5	T1	103	1.9	103	1.9	0.141	22.8	LOS C	2.0	14.5	0.68	0.54	0.68	40.6
6	R2	186	1.1	186	1.1	*0.866	62.3	LOS E	6.4	45.0	1.00	0.91	1.31	22.7
Approach		289	1.4	289	1.4	0.866	48.2	LOS D	6.4	45.0	0.88	0.78	1.08	27.0
All Vehicles		1988	1.2	1988	1.2	0.866	36.4	LOS D	21.7	153.4	0.91	0.87	0.99	29.9

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [SCATS]

Network: N101 [Weekend Mid-day Peak (Network Folder: 2026 Base (Without Development))]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 92 seconds (CCG Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: 1 [West Ramps - Weekend Mid-day Peak]														
South: Kwinana Fwy Off Ramp														
1	L2	179	8.9	179	8.9	*0.549	44.5	LOS D	4.6	34.7	0.96	0.81	0.96	36.3
3	R2	6	16.7	6	16.7	0.019	39.8	LOS D	0.1	1.1	0.84	0.66	0.84	28.1
Approach		185	9.2	185	9.2	0.549	44.3	LOS D	4.6	34.7	0.95	0.80	0.95	36.1
East: Safety Bay Rd														
5	T1	1125	12.4	1125	12.4	0.465	2.8	LOS A	3.0	22.9	0.19	0.17	0.19	64.2
6	R2	19	10.5	19	10.5	0.167	54.5	LOS D	0.5	4.2	1.00	0.70	1.00	23.7
Approach		1144	12.4	1144	12.4	0.465	3.7	LOS A	3.0	22.9	0.20	0.18	0.20	62.5
West: Safety Bay Rd														
10	L2	1036	4.8	1036	4.8	0.479	11.4	LOS B	6.4	46.7	0.40	0.66	0.40	56.5
11	T1	284	4.6	284	4.6	*0.479	3.8	LOS A	5.8	42.4	0.45	0.58	0.45	54.5
Approach		1320	4.8	1320	4.8	0.479	9.7	LOS A	6.4	46.7	0.41	0.65	0.41	56.2
All Vehicles		2649	8.4	2649	8.4	0.549	9.5	LOS A	6.4	46.7	0.36	0.45	0.36	55.3
Site: 2 [East Ramps - Weekend Mid-day Peak]														
East: Folly Rd														
10	L2	11	9.1	11	9.1	0.008	8.2	LOS A	0.0	0.4	0.24	0.61	0.24	56.4
11	T1	87	12.6	87	12.6	0.550	46.3	LOS D	2.4	19.0	1.00	0.78	1.02	25.4
Approach		98	12.2	98	12.2	0.550	42.0	LOS D	2.4	19.0	0.91	0.76	0.93	28.6
North: Kwinana Fwy Off Ramp														
1	L2	9	0.0	9	0.0	0.010	18.7	LOS B	0.1	0.8	0.52	0.64	0.52	50.4
3	R2	1011	5.0	1011	5.0	*0.558	23.4	LOS C	9.6	70.2	0.75	0.82	0.75	37.1
Approach		1020	5.0	1020	5.0	0.558	23.3	LOS C	9.6	70.2	0.74	0.82	0.74	37.3
West: Safety Bay Rd														
5	T1	88	4.5	88	4.5	0.132	22.0	LOS C	1.6	12.0	0.72	0.57	0.72	41.3
6	R2	176	5.1	176	5.1	0.526	43.1	LOS D	4.5	32.6	0.94	0.81	0.94	27.8
Approach		264	4.9	264	4.9	0.526	36.1	LOS D	4.5	32.6	0.87	0.73	0.87	31.2
All Vehicles		1382	5.5	1382	5.5	0.558	27.1	LOS C	9.6	70.2	0.78	0.80	0.78	35.0

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [SCATS]

Network: N101 [Weekend Mid-day Peak (Network Folder: 2026 (With Development))]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 92 seconds (CCG User-Given Cycle Time)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: 1 [West Ramps - Weekend Mid-day Peak]														
South: Kwinana Fwy Off Ramp														
1	L2	179	8.9	179	8.9	*0.718	50.8	LOS D	5.1	38.2	1.00	0.86	1.12	34.2
3	R2	6	16.7	6	16.7	0.025	43.8	LOS D	0.1	1.2	0.89	0.66	0.89	26.5
Approach		185	9.2	185	9.2	0.718	50.5	LOS D	5.1	38.2	1.00	0.86	1.11	34.0
East: Safety Bay Rd														
5	T1	1128	12.4	1128	12.4	0.438	2.4	LOS A	2.8	21.4	0.18	0.16	0.18	65.1
6	R2	31	6.5	31	6.5	0.265	55.3	LOS E	0.9	6.7	1.00	0.72	1.00	23.4
Approach		1159	12.3	1159	12.3	0.438	3.8	LOS A	2.8	21.4	0.20	0.17	0.20	62.1
West: Safety Bay Rd														
10	L2	1036	4.8	1036	4.8	0.473	11.4	LOS B	6.3	45.7	0.39	0.65	0.39	56.5
11	T1	284	4.6	284	4.6	*0.473	3.7	LOS A	6.0	43.9	0.42	0.56	0.42	54.5
Approach		1320	4.8	1320	4.8	0.473	9.7	LOS A	6.3	45.7	0.40	0.63	0.40	56.3
All Vehicles		2664	8.3	2664	8.3	0.718	10.0	LOS A	6.3	45.7	0.35	0.45	0.36	54.8
Site: 2 [East Ramps - Weekend Mid-day Peak]														
East: Folly Rd														
10	L2	14	7.1	14	7.1	0.010	8.1	LOS A	0.1	0.5	0.25	0.61	0.25	55.6
11	T1	102	10.8	102	10.8	0.222	29.9	LOS C	2.3	17.2	0.83	0.67	0.83	32.6
Approach		116	10.3	116	10.3	0.222	27.3	LOS C	2.3	17.2	0.76	0.66	0.76	35.7
North: Kwinana Fwy Off Ramp														
1	L2	9	0.0	9	0.0	0.013	25.3	LOS C	0.2	1.1	0.64	0.66	0.64	46.2
3	R2	1011	5.0	1011	5.0	*0.734	33.4	LOS C	12.2	89.2	0.92	0.87	0.94	30.9
Approach		1020	5.0	1020	5.0	0.734	33.3	LOS C	12.2	89.2	0.92	0.87	0.94	31.1
West: Safety Bay Rd														
5	T1	88	4.5	88	4.5	0.098	14.2	LOS B	1.3	9.5	0.58	0.46	0.58	48.3
6	R2	176	5.1	176	5.1	0.688	48.8	LOS D	4.9	35.6	0.99	0.84	1.08	26.0
Approach		264	4.9	264	4.9	0.688	37.3	LOS D	4.9	35.6	0.86	0.71	0.91	30.7
All Vehicles		1400	5.4	1400	5.4	0.734	33.6	LOS C	12.2	89.2	0.89	0.82	0.92	31.3

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [SCATS]

Network: N101 [Weekend 5-6PM (Network Folder: 2026 Base (Without Development))]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 92 seconds (CCG Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: 1 [West Ramps - Weekend 5-6PM]														
South: Kwinana Fwy Off Ramp														
1	L2	134	8.2	134	8.2	*0.632	50.9	LOS D	3.7	28.0	1.00	0.82	1.06	34.2
3	R2	3	0.0	3	0.0	0.013	45.2	LOS D	0.1	0.5	0.90	0.63	0.90	25.9
Approach		137	8.0	137	8.0	0.632	50.7	LOS D	3.7	28.0	1.00	0.82	1.05	34.1
East: Safety Bay Rd														
5	T1	1029	9.7	1029	9.7	0.381	2.0	LOS A	2.2	16.8	0.15	0.14	0.15	65.9
6	R2	27	11.1	27	11.1	0.238	55.0	LOS E	0.8	6.0	1.00	0.72	1.00	23.6
Approach		1056	9.8	1056	9.8	0.381	3.3	LOS A	2.2	16.8	0.17	0.15	0.17	63.0
West: Safety Bay Rd														
10	L2	865	4.3	865	4.3	0.379	10.6	LOS B	4.5	32.8	0.34	0.64	0.34	57.0
11	T1	205	4.4	205	4.4	*0.379	3.3	LOS A	4.4	32.2	0.36	0.55	0.36	54.7
Approach		1070	4.3	1070	4.3	0.379	9.2	LOS A	4.5	32.8	0.35	0.62	0.35	56.7
All Vehicles		2263	7.1	2263	7.1	0.632	9.0	LOS A	4.5	32.8	0.31	0.41	0.31	55.8
Site: 2 [East Ramps - Weekend 5-6PM]														
East: Folly Rd														
10	L2	10	10.0	10	10.0	0.007	8.0	LOS A	0.0	0.3	0.22	0.61	0.22	56.3
11	T1	107	9.3	107	9.3	0.252	31.7	LOS C	2.4	18.5	0.86	0.68	0.86	31.8
Approach		117	9.4	117	9.4	0.252	29.7	LOS C	2.4	18.5	0.81	0.68	0.81	34.1
North: Kwinana Fwy Off Ramp														
1	L2	10	0.0	10	0.0	0.013	22.7	LOS C	0.2	1.1	0.60	0.65	0.60	47.7
3	R2	919	3.8	919	3.8	*0.593	28.2	LOS C	9.7	70.4	0.82	0.83	0.82	33.8
Approach		929	3.8	929	3.8	0.593	28.2	LOS C	9.7	70.4	0.82	0.83	0.82	34.0
West: Safety Bay Rd														
5	T1	59	3.4	59	3.4	0.072	16.5	LOS B	0.9	6.8	0.61	0.48	0.61	46.0
6	R2	133	4.5	133	4.5	0.612	49.4	LOS D	3.7	26.6	0.99	0.81	1.03	25.9
Approach		192	4.2	192	4.2	0.612	39.3	LOS D	3.7	26.6	0.88	0.71	0.90	29.9
All Vehicles		1238	4.4	1238	4.4	0.612	30.0	LOS C	9.7	70.4	0.83	0.80	0.83	33.2

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [SCATS]

Network: N101 [Weekend 5-6PM (Network Folder: 2026 (With Development))]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 92 seconds (CCG User-Given Cycle Time)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: 1 [West Ramps - Weekend 5-6PM]														
South: Kwinana Fwy Off Ramp														
1	L2	134	8.2	134	8.2	*0.632	50.9	LOS D	3.7	28.0	1.00	0.82	1.06	34.2
3	R2	33	0.0	33	0.0	0.147	46.0	LOS D	0.8	5.9	0.93	0.72	0.93	24.3
Approach		167	6.6	167	6.6	0.632	49.9	LOS D	3.7	28.0	0.99	0.80	1.03	32.8
East: Safety Bay Rd														
5	T1	1029	9.7	1029	9.7	0.381	2.0	LOS A	2.2	16.8	0.15	0.14	0.15	65.9
6	R2	27	11.1	27	11.1	0.238	55.0	LOS E	0.8	6.0	1.00	0.72	1.00	23.6
Approach		1056	9.8	1056	9.8	0.381	3.3	LOS A	2.2	16.8	0.17	0.15	0.17	63.0
West: Safety Bay Rd														
10	L2	865	4.3	865	4.3	0.391	10.6	LOS B	4.7	34.2	0.35	0.64	0.35	56.9
11	T1	235	3.8	235	3.8	*0.391	3.4	LOS A	4.6	33.5	0.37	0.53	0.37	54.8
Approach		1100	4.2	1100	4.2	0.391	9.1	LOS A	4.7	34.2	0.35	0.61	0.35	56.6
All Vehicles		2323	6.9	2323	6.9	0.632	9.4	LOS A	4.7	34.2	0.32	0.42	0.32	55.2
Site: 2 [East Ramps - Weekend 5-6PM]														
East: Folly Rd														
10	L2	10	10.0	10	10.0	0.007	8.0	LOS A	0.0	0.3	0.22	0.61	0.22	56.3
11	T1	107	9.3	107	9.3	0.241	30.8	LOS C	2.4	18.2	0.85	0.68	0.85	32.3
Approach		117	9.4	117	9.4	0.241	28.8	LOS C	2.4	18.2	0.79	0.67	0.79	34.7
North: Kwinana Fwy Off Ramp														
1	L2	130	0.0	130	0.0	0.168	23.9	LOS C	2.2	15.7	0.67	0.73	0.67	43.1
3	R2	919	3.8	919	3.8	*0.609	29.1	LOS C	9.9	71.8	0.84	0.84	0.84	33.3
Approach		1049	3.3	1049	3.3	0.609	28.4	LOS C	9.9	71.8	0.82	0.82	0.82	35.1
West: Safety Bay Rd														
5	T1	119	1.7	119	1.7	0.140	14.3	LOS B	1.5	10.5	0.48	0.40	0.48	45.8
6	R2	133	4.5	133	4.5	0.612	49.4	LOS D	3.7	26.6	0.99	0.81	1.03	25.9
Approach		252	3.2	252	3.2	0.612	32.8	LOS C	3.7	26.6	0.75	0.61	0.77	32.6
All Vehicles		1418	3.8	1418	3.8	0.612	29.3	LOS C	9.9	71.8	0.80	0.77	0.81	34.5

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [SCATS]

Network: N101 [Weekday AM Peak (Network Folder: 2036 Base (Without Development))]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 94 seconds (CCG Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: 1 [West Ramps - Weekday AM Peak]														
South: Kwinana Fwy Off Ramp														
1	L2	177	4.0	177	4.0	*0.760	53.8	LOS D	5.2	38.0	1.00	0.89	1.18	33.7
3	R2	7	0.0	7	0.0	0.029	45.5	LOS D	0.2	1.2	0.90	0.66	0.90	25.8
Approach		184	3.8	184	3.8	0.760	53.5	LOS D	5.2	38.0	1.00	0.88	1.17	33.5
East: Safety Bay Rd														
5	T1	1315	4.0	1315	4.0	0.473	2.8	LOS A	3.8	27.8	0.21	0.19	0.21	64.3
6	R2	20	10.0	20	10.0	*0.179	55.7	LOS E	0.6	4.5	1.00	0.70	1.00	23.5
Approach		1335	4.1	1335	4.1	0.473	3.6	LOS A	3.8	27.8	0.23	0.20	0.23	62.7
West: Safety Bay Rd														
10	L2	1749	1.0	1749	1.0	0.746	33.6	LOS C	15.6	110.2	0.56	0.74	0.56	55.9
11	T1	419	3.1	419	3.1	*0.746	5.4	LOS A	15.0	106.9	0.56	0.67	0.56	51.6
Approach		2168	1.4	2168	1.4	0.746	28.1	LOS C	15.6	110.2	0.56	0.73	0.56	55.4
All Vehicles		3687	2.5	3687	2.5	0.760	20.5	LOS C	15.6	110.2	0.46	0.54	0.47	54.9
Site: 2 [East Ramps - Weekday AM Peak]														
East: Folly Rd														
10	L2	6	0.0	6	0.0	0.004	8.3	LOS A	0.0	0.2	0.25	0.61	0.25	58.6
11	T1	56	1.8	56	1.8	0.450	49.0	LOS D	1.6	11.6	1.00	0.74	1.00	24.5
Approach		62	1.6	62	1.6	0.450	45.1	LOS D	1.6	11.6	0.93	0.73	0.93	27.3
North: Kwinana Fwy Off Ramp														
1	L2	1	0.0	1	0.0	0.001	17.2	LOS B	0.0	0.1	0.48	0.60	0.48	51.4
3	R2	1040	6.0	1040	6.0	0.566	23.2	LOS C	10.0	73.7	0.74	0.82	0.74	37.2
Approach		1041	6.0	1041	6.0	0.566	23.2	LOS C	10.0	73.7	0.74	0.82	0.74	37.3
West: Safety Bay Rd														
5	T1	101	2.0	101	2.0	0.163	24.3	LOS C	2.0	14.3	0.74	0.59	0.74	39.6
6	R2	212	1.9	212	1.9	0.566	42.9	LOS D	5.5	38.8	0.94	0.82	0.94	28.3
Approach		313	1.9	313	1.9	0.566	36.9	LOS D	5.5	38.8	0.88	0.74	0.88	31.2
All Vehicles		1416	4.9	1416	4.9	0.566	27.2	LOS C	10.0	73.7	0.78	0.80	0.78	35.0

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [SCATS]

Network: N101 [Weekday AM Peak (Network Folder: 2036 (With Development))]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 94 seconds (CCG User-Given Cycle Time)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h]	HV] %	ARRIVAL FLOWS [Total veh/h]	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh]	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: 1 [West Ramps - Weekday AM Peak]														
South: Kwinana Fwy Off Ramp														
1	L2	177	4.0	177	4.0	*0.760	53.8	LOS D	5.2	38.0	1.00	0.89	1.18	33.7
3	R2	1	0.0	1	0.0	0.004	44.8	LOS D	0.0	0.2	0.89	0.60	0.89	26.0
Approach		178	3.9	178	3.9	0.760	53.7	LOS D	5.2	38.0	1.00	0.88	1.18	33.7
East: Safety Bay Rd														
5	T1	1316	4.0	1316	4.0	0.474	2.8	LOS A	3.8	27.8	0.21	0.19	0.21	64.3
6	R2	25	8.0	25	8.0	*0.221	56.1	LOS E	0.7	5.5	1.00	0.71	1.00	23.3
Approach		1341	4.1	1341	4.1	0.474	3.8	LOS A	3.8	27.8	0.23	0.20	0.23	62.3
West: Safety Bay Rd														
10	L2	1749	1.0	1749	1.0	0.746	36.4	LOS D	15.6	110.4	0.56	0.74	0.56	55.9
11	T1	420	3.1	420	3.1	*0.746	5.4	LOS A	15.0	107.0	0.56	0.67	0.56	51.6
Approach		2169	1.4	2169	1.4	0.746	30.4	LOS C	15.6	110.4	0.56	0.73	0.56	55.4
All Vehicles		3688	2.5	3688	2.5	0.760	21.8	LOS C	15.6	110.4	0.46	0.54	0.47	54.9
Site: 2 [East Ramps - Weekday AM Peak]														
East: Folly Rd														
10	L2	6	0.0	6	0.0	0.004	8.3	LOS A	0.0	0.2	0.25	0.61	0.25	58.6
11	T1	62	1.6	62	1.6	0.498	49.2	LOS D	1.8	12.9	1.00	0.75	1.00	24.3
Approach		68	1.5	68	1.5	0.498	45.6	LOS D	1.8	12.9	0.93	0.74	0.93	26.9
North: Kwinana Fwy Off Ramp														
1	L2	6	0.0	6	0.0	0.006	16.6	LOS B	0.1	0.5	0.48	0.62	0.48	47.7
3	R2	1040	6.0	1040	6.0	0.566	23.2	LOS C	10.0	73.7	0.74	0.82	0.74	37.2
Approach		1046	5.9	1046	5.9	0.566	23.2	LOS C	10.0	73.7	0.74	0.82	0.74	37.3
West: Safety Bay Rd														
5	T1	103	1.9	103	1.9	0.166	24.7	LOS C	2.1	14.7	0.75	0.60	0.75	39.2
6	R2	212	1.9	212	1.9	0.566	42.8	LOS D	5.5	39.1	0.95	0.82	0.95	28.3
Approach		315	1.9	315	1.9	0.566	36.8	LOS D	5.5	39.1	0.89	0.75	0.89	31.2
All Vehicles		1429	4.8	1429	4.8	0.566	27.3	LOS C	10.0	73.7	0.78	0.80	0.78	34.9

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [SCATS]

Network: N101 [Weekday PM Peak (Network Folder: 2036 Base (Without Development))]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 116 seconds (CCG Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: 1 [West Ramps - Weekday PM Peak]														
South: Kwinana Fwy Off Ramp														
1	L2	268	0.0	268	0.0	1.274	559.7	LOS F	39.6	277.3	1.00	2.35	4.68	5.9
3	R2	9	0.0	9	0.0	0.086	58.8	LOS E	0.8	5.9	0.92	0.69	0.92	21.8
Approach		277	0.0	277	0.0	1.274	543.4	LOS F	39.6	277.3	1.00	2.29	4.56	6.0
East: Safety Bay Rd														
5	T1	2470	0.0	1805	0.0	0.599	5.3	LOS A	11.9	83.1	0.40	0.37	0.40	59.9
6	R2	9	22.2	7	22.4	0.079	67.3	LOS E	0.2	2.0	1.00	0.66	1.00	20.1
Approach		2479	0.1	1811[N1]	0.1	0.599	5.5	LOS A	11.9	83.1	0.40	0.37	0.40	59.5
West: Safety Bay Rd														
10	L2	1421	2.0	1421	2.0	0.772	14.1	LOS B	38.2	270.7	0.55	0.76	0.55	55.6
11	T1	406	1.0	406	1.0	*0.772	6.8	LOS A	38.2	270.7	0.67	0.70	0.67	52.0
Approach		1827	1.8	1827	1.8	0.772	12.4	LOS B	38.2	270.7	0.58	0.75	0.58	55.1
All Vehicles		4583	0.8	3915[N1]	0.9	1.274	46.8	LOS D	39.6	277.3	0.52	0.68	0.78	31.9
Site: 2 [East Ramps - Weekday PM Peak]														
East: Folly Rd														
10	L2	15	13.3	15	13.3	0.011	8.4	LOS A	0.1	0.6	0.21	0.61	0.21	55.2
11	T1	128	2.3	128	2.3	0.755	59.9	LOS E	4.7	33.6	1.00	0.88	1.18	21.4
Approach		143	3.5	143	3.5	0.755	54.5	LOS D	4.7	33.6	0.92	0.85	1.08	24.2
North: Kwinana Fwy Off Ramp														
1	L2	10	0.0	10	0.0	0.009	16.1	LOS B	0.1	0.9	0.41	0.64	0.41	52.2
3	R2	2253	1.0	2253	1.0	*1.303	606.2	LOS F	200.2	1412.9	1.00	2.20	4.80	2.9
Approach		2263	1.0	2263	1.0	1.303	603.6	LOS F	200.2	1412.9	1.00	2.20	4.78	2.9
West: Safety Bay Rd														
5	T1	103	1.9	103	1.9	0.192	34.4	LOS C	2.7	19.4	0.80	0.64	0.80	33.5
6	R2	277	1.4	277	1.4	*1.331	654.3	LOS F	14.1	100.0	1.00	2.20	5.09	3.1
Approach		380	1.6	380	1.6	1.331	486.3	LOS F	14.1	100.0	0.95	1.77	3.93	4.2
All Vehicles		2786	1.2	2786	1.2	1.331	559.4	LOS F	200.2	1412.9	0.99	2.07	4.47	3.2

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [SCATS]

Network: N101 [Weekend Mid-day Peak (Network Folder: 2036 (With Development))]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 112 seconds (CCG User-Given Cycle Time)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: 1 [West Ramps - Weekend Mid-day Peak]														
South: Kwinana Fwy Off Ramp														
1	L2	267	9.0	267	9.0	*1.060	197.6	LOS F	19.7	148.8	1.00	1.51	2.63	14.3
3	R2	6	16.7	6	16.7	0.050	53.3	LOS D	0.2	1.5	0.89	0.68	0.89	23.3
Approach		273	9.2	273	9.2	1.060	194.5	LOS F	19.7	148.8	1.00	1.49	2.59	14.4
East: Safety Bay Rd														
5	T1	1674	12.4	1580	12.9	0.604	7.2	LOS A	12.0	92.9	0.50	0.46	0.50	56.9
6	R2	31	6.5	30	6.5	0.312	66.5	LOS E	1.1	7.8	1.00	0.72	1.00	20.9
Approach		1705	12.3	1610[N1]	12.7	0.604	8.3	LOS A	12.0	92.9	0.51	0.46	0.51	55.2
West: Safety Bay Rd														
10	L2	1539	4.8	1539	4.8	0.861	18.8	LOS B	25.8	187.9	0.70	0.84	0.72	52.4
11	T1	422	4.7	422	4.7	*0.861	19.2	LOS B	14.0	102.1	0.83	0.87	0.95	38.5
Approach		1961	4.8	1961	4.8	0.861	18.9	LOS B	25.8	187.9	0.72	0.85	0.77	50.2
All Vehicles		3939	8.4	3844[N1]	8.6	1.060	26.9	LOS C	25.8	187.9	0.65	0.73	0.79	41.9
Site: 2 [East Ramps - Weekend Mid-day Peak]														
East: Folly Rd														
10	L2	14	7.1	14	7.1	0.010	9.2	LOS A	0.1	0.7	0.27	0.61	0.27	54.8
11	T1	102	10.8	102	10.8	0.732	58.7	LOS E	3.6	27.9	1.00	0.87	1.19	21.6
Approach		116	10.3	116	10.3	0.732	52.7	LOS D	3.6	27.9	0.91	0.84	1.08	24.8
North: Kwinana Fwy Off Ramp														
1	L2	9	0.0	9	0.0	0.009	19.7	LOS B	0.1	1.0	0.49	0.64	0.49	49.7
3	R2	1503	5.1	1503	5.1	*1.069	210.3	LOS F	66.6	486.3	1.00	1.42	2.51	7.7
Approach		1512	5.0	1512	5.0	1.069	209.1	LOS F	66.6	486.3	1.00	1.42	2.50	7.8
West: Safety Bay Rd														
5	T1	88	4.5	88	4.5	0.132	26.5	LOS C	2.1	15.2	0.76	0.60	0.76	38.0
6	R2	261	5.0	261	5.0	0.774	56.1	LOS E	8.8	64.6	1.00	0.88	1.12	23.9
Approach		349	4.9	349	4.9	0.774	48.6	LOS D	8.8	64.6	0.94	0.81	1.03	26.4
All Vehicles		1977	5.3	1977	5.3	1.069	171.6	LOS F	66.6	486.3	0.98	1.28	2.16	9.6

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [SCATS]

Network: N101 [Weekend Mid-day Peak (Network Folder: 2036 Base (Without Development))]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 112 seconds (CCG Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: 1 [West Ramps - Weekend Mid-day Peak]														
South: Kwinana Fwy Off Ramp														
1	L2	267	9.0	267	9.0	* 0.942	82.9	LOS F	11.7	87.9	1.00	1.10	1.63	26.3
3	R2	6	16.7	6	16.7	0.045	51.1	LOS D	0.2	1.4	0.87	0.68	0.87	24.0
Approach		273	9.2	273	9.2	0.942	82.2	LOS F	11.7	87.9	1.00	1.09	1.61	26.3
East: Safety Bay Rd														
5	T1	1671	12.4	1644	12.6	0.638	9.1	LOS A	12.9	100.0	0.59	0.55	0.59	54.3
6	R2	19	10.5	19	10.6	0.200	65.9	LOS E	0.7	5.0	1.00	0.70	1.00	21.1
Approach		1690	12.4	1663 N1	12.5	0.638	9.7	LOS A	12.9	100.0	0.60	0.55	0.60	53.4
West: Safety Bay Rd														
10	L2	1539	4.8	1539	4.8	0.879	21.6	LOS C	29.5	215.2	0.73	0.86	0.77	50.2
11	T1	422	4.7	422	4.7	* 0.879	25.0	LOS C	14.5	106.0	0.88	0.93	1.05	34.5
Approach		1961	4.8	1961	4.8	0.879	22.3	LOS C	29.5	215.2	0.76	0.88	0.83	47.5
All Vehicles		3924	8.4	3897 N1	8.4	0.942	21.1	LOS C	29.5	215.2	0.71	0.75	0.79	45.9
Site: 2 [East Ramps - Weekend Mid-day Peak]														
East: Folly Rd														
10	L2	11	9.1	11	9.1	0.009	9.1	LOS A	0.1	0.5	0.26	0.61	0.26	55.7
11	T1	87	12.6	87	12.6	0.546	55.3	LOS E	2.9	22.8	1.00	0.78	1.00	22.6
Approach		98	12.2	98	12.2	0.546	50.1	LOS D	2.9	22.8	0.92	0.76	0.92	25.7
North: Kwinana Fwy Off Ramp														
1	L2	9	0.0	9	0.0	0.010	23.4	LOS C	0.2	1.1	0.56	0.65	0.56	47.3
3	R2	1503	5.1	1503	5.1	* 0.978	91.2	LOS F	42.2	308.5	1.00	1.10	1.57	15.7
Approach		1512	5.0	1512	5.0	0.978	90.8	LOS F	42.2	308.5	1.00	1.10	1.57	15.8
West: Safety Bay Rd														
5	T1	88	4.5	88	4.5	0.112	21.3	LOS C	1.8	12.9	0.64	0.51	0.64	41.8
6	R2	261	5.0	261	5.0	0.556	44.6	LOS D	7.7	56.4	0.93	0.83	0.93	27.3
Approach		349	4.9	349	4.9	0.556	38.7	LOS D	7.7	56.4	0.86	0.75	0.86	30.0
All Vehicles		1959	5.4	1959	5.4	0.978	79.5	LOS E	42.2	308.5	0.97	1.02	1.41	17.9

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [SCATS]

Network: N101 [Weekend Mid-day Peak (Network Folder: 2036 (With Development))]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 112 seconds (CCG User-Given Cycle Time)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: 1 [West Ramps - Weekend Mid-day Peak]														
South: Kwinana Fwy Off Ramp														
1	L2	267	9.0	267	9.0	*0.998	119.2	LOS F	14.5	109.1	1.00	1.26	2.03	20.9
3	R2	6	16.7	6	16.7	0.047	52.2	LOS D	0.2	1.4	0.88	0.68	0.88	23.7
Approach		273	9.2	273	9.2	0.998	117.7	LOS F	14.5	109.1	1.00	1.25	2.00	20.9
East: Safety Bay Rd														
5	T1	1674	12.4	1618	12.7	0.624	8.5	LOS A	12.9	100.0	0.57	0.52	0.57	55.1
6	R2	29	6.9	28	7.0	0.296	66.6	LOS E	1.0	7.4	1.00	0.72	1.00	20.9
Approach		1703	12.3	1646[N1]	12.6	0.624	9.5	LOS A	12.9	100.0	0.58	0.53	0.58	53.6
West: Safety Bay Rd														
10	L2	1539	4.8	1539	4.8	0.871	20.3	LOS C	27.7	201.9	0.71	0.85	0.75	51.2
11	T1	422	4.7	422	4.7	*0.871	22.2	LOS C	14.3	104.2	0.86	0.90	1.01	36.3
Approach		1961	4.8	1961	4.8	0.871	20.7	LOS C	27.7	201.9	0.74	0.86	0.80	48.8
All Vehicles		3937	8.4	3880[N1]	8.5	0.998	22.8	LOS C	27.7	201.9	0.69	0.75	0.79	44.7
Site: 2 [East Ramps - Weekend Mid-day Peak]														
East: Folly Rd														
10	L2	13	7.7	13	7.7	0.010	8.9	LOS A	0.1	0.6	0.26	0.61	0.26	55.2
11	T1	100	11.0	100	11.0	0.563	54.4	LOS D	3.3	25.6	1.00	0.78	1.00	22.8
Approach		113	10.6	113	10.6	0.563	49.2	LOS D	3.3	25.6	0.91	0.76	0.91	25.9
North: Kwinana Fwy Off Ramp														
1	L2	9	0.0	9	0.0	0.010	23.4	LOS C	0.2	1.1	0.56	0.65	0.56	47.3
3	R2	1503	5.1	1503	5.1	*0.967	81.8	LOS F	39.5	288.6	1.00	1.08	1.49	17.1
Approach		1512	5.0	1512	5.0	0.967	81.4	LOS F	39.5	288.6	1.00	1.07	1.49	17.2
West: Safety Bay Rd														
5	T1	88	4.5	88	4.5	0.112	21.3	LOS C	1.8	12.9	0.64	0.51	0.64	41.8
6	R2	261	5.0	261	5.0	0.576	45.6	LOS D	7.8	57.3	0.94	0.83	0.94	27.0
Approach		349	4.9	349	4.9	0.576	39.5	LOS D	7.8	57.3	0.87	0.75	0.87	29.7
All Vehicles		1974	5.3	1974	5.3	0.967	72.2	LOS E	39.5	288.6	0.97	1.00	1.34	19.2

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [SCATS]

Network: N101 [Weekend 5-6PM (Network Folder: 2036 Base (Without Development))]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 112 seconds (CCG Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: 1 [West Ramps - Weekend 5-6PM]														
South: Kwinana Fwy Off Ramp														
1	L2	199	8.0	199	8.0	* 0.897	72.9	LOS E	7.8	58.5	1.00	1.02	1.47	28.4
3	R2	3	0.0	3	0.0	0.013	52.6	LOS D	0.1	0.6	0.90	0.63	0.90	23.5
Approach		202	7.9	202	7.9	0.897	72.6	LOS E	7.8	58.5	1.00	1.01	1.47	28.4
East: Safety Bay Rd														
5	T1	1528	9.7	1528	9.7	0.557	3.1	LOS A	5.9	44.6	0.23	0.21	0.23	63.6
6	R2	27	11.1	27	11.1	0.290	66.5	LOS E	1.0	7.3	1.00	0.72	1.00	21.0
Approach		1555	9.7	1555	9.7	0.557	4.2	LOS A	5.9	44.6	0.24	0.22	0.24	61.5
West: Safety Bay Rd														
10	L2	1283	4.2	1283	4.2	0.533	11.8	LOS B	8.3	60.2	0.36	0.65	0.36	56.9
11	T1	305	4.3	305	4.3	* 0.533	3.4	LOS A	8.2	59.5	0.37	0.56	0.37	54.6
Approach		1588	4.2	1588	4.2	0.533	10.2	LOS B	8.3	60.2	0.36	0.63	0.36	56.7
All Vehicles		3345	7.0	3345	7.0	0.897	11.2	LOS B	8.3	60.2	0.34	0.46	0.37	54.0
Site: 2 [East Ramps - Weekend 5-6PM]														
East: Folly Rd														
10	L2	10	10.0	10	10.0	0.007	8.6	LOS A	0.1	0.4	0.23	0.60	0.23	55.8
11	T1	107	9.3	107	9.3	0.222	35.2	LOS D	2.8	21.3	0.83	0.66	0.83	30.0
Approach		117	9.4	117	9.4	0.222	32.9	LOS C	2.8	21.3	0.78	0.66	0.78	32.4
North: Kwinana Fwy Off Ramp														
1	L2	10	0.0	10	0.0	0.012	25.8	LOS C	0.2	1.3	0.59	0.66	0.59	45.9
3	R2	1366	3.9	1366	3.9	* 0.874	46.9	LOS D	24.0	173.9	0.99	0.95	1.12	25.2
Approach		1376	3.9	1376	3.9	0.874	46.7	LOS D	24.0	173.9	0.98	0.94	1.12	25.4
West: Safety Bay Rd														
5	T1	59	3.4	59	3.4	0.069	18.5	LOS B	1.1	7.9	0.59	0.46	0.59	44.1
6	R2	197	4.6	197	4.6	0.867	67.7	LOS E	7.4	54.0	1.00	0.94	1.37	21.3
Approach		256	4.3	256	4.3	0.867	56.3	LOS E	7.4	54.0	0.91	0.83	1.19	24.2
All Vehicles		1749	4.3	1749	4.3	0.874	47.2	LOS D	24.0	173.9	0.96	0.91	1.11	25.5

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [SCATS]

Network: N101 [Weekend 5-6PM (Network Folder: 2036 (With Development))]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 112 seconds (CCG User-Given Cycle Time)

Vehicle Movement Performance (CCG)

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
Site: 1 [West Ramps - Weekend 5-6PM]														
South: Kwinana Fwy Off Ramp														
1	L2	199	8.0	199	8.0	*0.897	72.9	LOS E	7.8	58.5	1.00	1.02	1.47	28.4
3	R2	33	0.0	33	0.0	0.141	53.6	LOS D	1.0	7.0	0.92	0.72	0.92	22.1
Approach		232	6.9	232	6.9	0.897	70.1	LOS E	7.8	58.5	0.99	0.97	1.40	27.8
East: Safety Bay Rd														
5	T1	1528	9.7	1528	9.7	0.559	3.7	LOS A	6.7	51.1	0.27	0.25	0.27	62.5
6	R2	27	11.1	27	11.1	0.290	66.5	LOS E	1.0	7.3	1.00	0.72	1.00	21.0
Approach		1555	9.7	1555	9.7	0.559	4.8	LOS A	6.7	51.1	0.28	0.26	0.28	60.5
West: Safety Bay Rd														
10	L2	1283	4.2	1283	4.2	0.544	11.9	LOS B	8.6	62.4	0.36	0.65	0.36	56.9
11	T1	335	3.9	335	3.9	*0.544	3.5	LOS A	8.5	61.6	0.38	0.55	0.38	54.6
Approach		1618	4.1	1618	4.1	0.544	10.1	LOS B	8.6	62.4	0.36	0.63	0.36	56.6
All Vehicles		3405	6.9	3405	6.9	0.897	11.8	LOS B	8.6	62.4	0.37	0.48	0.40	53.2
Site: 2 [East Ramps - Weekend 5-6PM]														
East: Folly Rd														
10	L2	10	10.0	10	10.0	0.007	8.6	LOS A	0.1	0.4	0.23	0.60	0.23	55.8
11	T1	107	9.3	107	9.3	0.222	35.2	LOS D	2.8	21.3	0.83	0.66	0.83	30.0
Approach		117	9.4	117	9.4	0.222	32.9	LOS C	2.8	21.3	0.78	0.66	0.78	32.4
North: Kwinana Fwy Off Ramp														
1	L2	130	0.0	130	0.0	0.162	26.5	LOS C	2.6	18.4	0.65	0.72	0.65	41.8
3	R2	1366	3.9	1366	3.9	*0.890	49.9	LOS D	25.5	184.8	0.99	0.96	1.16	24.2
Approach		1496	3.5	1496	3.5	0.890	47.8	LOS D	25.5	184.8	0.96	0.94	1.12	26.0
West: Safety Bay Rd														
5	T1	119	1.7	119	1.7	0.137	16.6	LOS B	1.8	12.4	0.47	0.39	0.47	43.7
6	R2	197	4.6	197	4.6	0.867	67.7	LOS E	7.4	54.0	1.00	0.94	1.37	21.3
Approach		316	3.5	316	3.5	0.867	48.5	LOS D	7.4	54.0	0.80	0.74	1.03	26.4
All Vehicles		1929	3.9	1929	3.9	0.890	47.0	LOS D	25.5	184.8	0.92	0.89	1.08	26.3

MOVEMENT SUMMARY

▽ Site: 3 [Site Access - Weekday AM Peak - Festival Day (Site Folder: Site Access)]

Site Category: -
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Folly Rd														
5	T1	57	0	60	0.0	0.031	0.0	LOS A	0.0	0.0	0.01	0.02	0.01	79.7
6	R2	1	0	1	0.0	0.031	8.6	LOS A	0.0	0.0	0.01	0.02	0.01	37.1
Approach		58	0	61	0.0	0.031	0.2	NA	0.0	0.0	0.01	0.02	0.01	78.7
North: Site Access														
7	L2	1	0	1	0.0	0.006	0.3	LOS A	0.0	0.1	0.17	0.07	0.17	33.0
9	R2	7	0	7	0.0	0.006	0.3	LOS A	0.0	0.1	0.17	0.07	0.17	32.8
Approach		8	0	8	0.0	0.006	0.3	LOS A	0.0	0.1	0.17	0.07	0.17	32.9
West: Folly Rd														
10	L2	7	0	7	0.0	0.075	10.0	LOS A	0.0	0.0	0.00	0.06	0.00	39.3
11	T1	120	17	126	14.2	0.075	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	78.9
Approach		127	17	134	13.4	0.075	0.6	NA	0.0	0.0	0.00	0.06	0.00	76.3
All Vehicles		193	17	203	8.8	0.075	0.4	NA	0.0	0.1	0.01	0.05	0.01	74.4

MOVEMENT SUMMARY

▽ Site: 3 [Site Access - Weekday PM Peak - Festival Day (Site Folder: Site Access)]

Site Category: -
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Folly Rd														
5	T1	147	0	155	0.0	0.080	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	79.9
6	R2	1	0	1	0.0	0.080	8.5	LOS A	0.0	0.0	0.00	0.01	0.00	37.2
Approach		148	0	156	0.0	0.080	0.1	NA	0.0	0.0	0.00	0.01	0.00	79.5
North: Site Access														
7	L2	3	0	3	0.0	0.024	0.2	LOS A	0.1	0.4	0.18	0.10	0.18	33.0
9	R2	29	0	31	0.0	0.024	0.4	LOS A	0.1	0.4	0.18	0.10	0.18	32.8
Approach		32	0	34	0.0	0.024	0.4	LOS A	0.1	0.4	0.18	0.10	0.18	32.9
West: Folly Rd														
10	L2	1	0	1	0.0	0.055	9.9	LOS A	0.0	0.0	0.00	0.01	0.00	39.7
11	T1	94	10	99	10.6	0.055	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	79.8
Approach		95	10	100	10.5	0.055	0.1	NA	0.0	0.0	0.00	0.01	0.00	79.3
All Vehicles		275	10	289	3.6	0.080	0.1	NA	0.1	0.4	0.02	0.02	0.02	71.9

MOVEMENT SUMMARY

▽ Site: 3 [Site Access - Weekend Mid-day Peak - Festival Day (Site Folder: Site Access)]

Site Category: -
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Folly Rd														
5	T1	85	11	89	12.9	0.050	0.0	LOS A	0.0	0.0	0.01	0.01	0.01	79.8
6	R2	1	0	1	0.0	0.050	8.5	LOS A	0.0	0.0	0.01	0.01	0.01	37.2
Approach		86	11	91	12.8	0.050	0.1	NA	0.0	0.0	0.01	0.01	0.01	79.1
North: Site Access														
7	L2	3	0	3	0.0	0.015	0.2	LOS A	0.0	0.3	0.16	0.07	0.16	33.0
9	R2	18	0	19	0.0	0.015	0.3	LOS A	0.0	0.3	0.16	0.07	0.16	32.8
Approach		21	0	22	0.0	0.015	0.3	LOS A	0.0	0.3	0.16	0.07	0.16	32.9
West: Folly Rd														
10	L2	1	0	1	0.0	0.055	9.9	LOS A	0.0	0.0	0.00	0.01	0.00	39.7
11	T1	93	12	98	12.9	0.055	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	79.8
Approach		94	12	99	12.8	0.055	0.1	NA	0.0	0.0	0.00	0.01	0.00	79.2
All Vehicles		201	23	212	11.4	0.055	0.1	NA	0.0	0.3	0.02	0.02	0.02	72.4

MOVEMENT SUMMARY

▽ Site: 3 [Site Access - Weekend 5-6PM - Wedding Day (Site Folder: Site Access)]

Site Category: -
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Folly Rd														
5	T1	81	7	85	8.6	0.057	0.2	LOS A	0.1	0.9	0.15	0.18	0.15	76.0
6	R2	20	0	21	0.0	0.057	8.9	LOS A	0.1	0.9	0.15	0.18	0.15	35.8
Approach		101	7	106	6.9	0.057	1.9	NA	0.1	0.9	0.15	0.18	0.15	66.3
North: Site Access														
7	L2	1	0	1	0.0	0.001	0.1	LOS A	0.0	0.0	0.13	0.04	0.13	32.8
9	R2	1	0	1	0.0	0.001	0.4	LOS A	0.0	0.0	0.13	0.04	0.13	32.6
Approach		2	0	2	0.0	0.001	0.2	LOS A	0.0	0.0	0.13	0.04	0.13	32.7
West: Folly Rd														
10	L2	180	0	189	0.0	0.137	10.0	LOS A	0.0	0.0	0.00	0.77	0.00	35.1
11	T1	62	5	65	8.1	0.137	0.0	LOS A	0.0	0.0	0.00	0.77	0.00	68.6
Approach		242	5	255	2.1	0.137	7.4	NA	0.0	0.0	0.00	0.77	0.00	42.7
All Vehicles		345	12	363	3.5	0.137	5.8	NA	0.1	0.9	0.05	0.59	0.05	48.7

Appendix B – Vehicle Swept Paths


PROPOSED DEVELOPMENT TO EAST OF MID TREE LINE ONLY
YOUNG ROAD
FOLLY ROAD
GREY WATER TANK 90,000L
POTABLE WATER TANK 90,000L
FIRE WATER 70,000L


PROPOSED DEVELOPMENT TO EAST OF MID TREE LINE ONLY
FOLLY ROAD
GREY WATER TANK 90,000L
POTABLE WATER TANK 90,000L
FIRE WATER TANK 70,000L

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	**Address**	**Comment**
1. Mr David Large	BALDIVIS	I have no problem whatsoever with the above proposal, good people deserve good rewards, My experience with most people of that faith has always been positive.
2. Mr Satish Kumar	WELLARD	There is nothing wrong with the temple to be build on folly road. I would love it. And there is no bell noise outside and you can't even hear outside of temple. So no problem for horses.
3. Mr Bradley Tokomikahere-Layton	BALDIVIS	Awesome initiative for the local Hindu community - Welcome!
4. Mr Pked Dad	No address provided	I think the Hindu temple is a wonderful idea that will increase diversity, culture and tolerance in Baldivis.
5. Mr Bruce & Ms Julie Davey	BALDIVIS	**Submission 1** We live on 66 Folly road Baldivis and no way in hell do we want this monstrosity built across the road from us!! We brought rural for a reason…not to have a religious sect across the road with cars coming and going and bells ringing and festivals etc. How is that even possible that you would consider something like that to be built here? We have had no notice or warning or phone calls…nothing! One day I saw a sign go up in the neighbours driveway and that's it, a proposal for a "place of worship" for goodness sake! We will be opposing this application through every available channel and are willing to go to court about this as well. Never ever would we have thought our rural lifestyle would be ruined in this way. Please let me know what other avenues I can take to get this proposal scrapped for good? **Submission 2** I'm writing to voice my concerns over the proposed Hindu Temple application for Folly Road Baldivis. I live DIRECTLY opposite to the proposed site and cannot agree with this being a suitable location. We all chose rural for a reason. Most people have saved for many years to obtain the rural dream of land, serenity, wildlife and a peaceful lifestyle. This would all be taken away if allowed to proceed with the Temple. Its absurd to think a Hindu Temple is going to "blend in" with a rural setting ! It would be much better suited to a light industrial/industrial area so the sheer volume of people and the noise and interruption that comes with that, doesn't impact on those around them. Now I know there has been some testing and reports for this proposal, but of course they will be biased towards the Temple as after all that's who's paying them! Also most of these reports are hypothetical because how would they, in all reality, know what an impact noise for a start, make on neighbouring properties?? YES, that's me!

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	**Address**	**Comment**
5. cont…		According to the noise report, indoor noise can be contained provided its controlled...by who??? Who is going to police that and enforce it ? Same as a 3rd party hirer, they have to manage their own noise levels. Once again who? Surely you can see the problems that will arise here? It also states “outdoor noise has not been reviewed” obviously, but it’ll be too little too late by the time they do a review once its built and then realise it exceeds limits. In their conclusion, “the proposed development is feasible for the site, provided that noise is managed, particularly from events”. So I ask again who will manage it? Will there be a dedicated number for anyone to contact should events go for longer than expected, or louder than anticipated or any number of other issues relating to them self managing the noise? Then we can move onto the water table and how much that will be affected and in turn Folly Pool and all the flora and fauna that rely on the non polluted source. There is no sewer or water running past the property, so what kind of septic/waste water system do you think will be acceptable and not harm the environment or nature, with the amount of estimated patrons through the gates 24/7? Weddings there could be up to 400 guests!! Then there’s the road issue. Folly Road has one street light, no verges as such, a dangerous bend and is narrow in places. The intersection of Young and Folly is an accident waiting to happen, which has already claimed the life of a young girl a few years back. The traffic report only went back 5 years and unless accidents aren’t getting reported properly, this isn’t a true indication of what’s happened locally. There wasn’t even mention of traffic lights been taken out in an accident last year. Folly Road would not be able to cope with the amount of traffic coming and going in a dimly lit area with some steep ditches in places, and with no provisions for any upgrades until at least 2050, according to Main Roads. Next is the power issue. You may not be aware, but from Christmas eve until Boxing Day most of us east of the freeway were without power. Yes 3 days, and 3 days during a heatwave! Now because we all run off rainwater/bores to make matters worse there was no water either. Which makes it very unsanitary especially during these Covid times. So 3 days without power because our current infrastructure cannot cope with our power usage, let alone something on the scale the Temple wants to build. Whether they are aware of this or not, I’m not sure as there doesn’t seem to be any mention of that in any reports. Now I’m not against the Hindu religion, but I am against the location they are proposing. There already is another Hindu Temple not far away in Mandogalup (11kms) and I’m thinking the Hindu population in the Rockingham district isn’t that sizeable to warrant another one so close. Im sure you can appreciate the constant bell ringing/chanting going on would be annoying in a quiet rural setting. Here we’re talking daily too, not just weekends like a lot of religions do. And all day starting at 6am ! That’s after putting up with 4 years of construction too. You can kiss goodbye any quiet rural lifestyle then! So in conclusion I hope you take all these points into consideration when casting your votes. **Submission 3** I am writing to you about the proposed Temple wanting to be built next door to me.

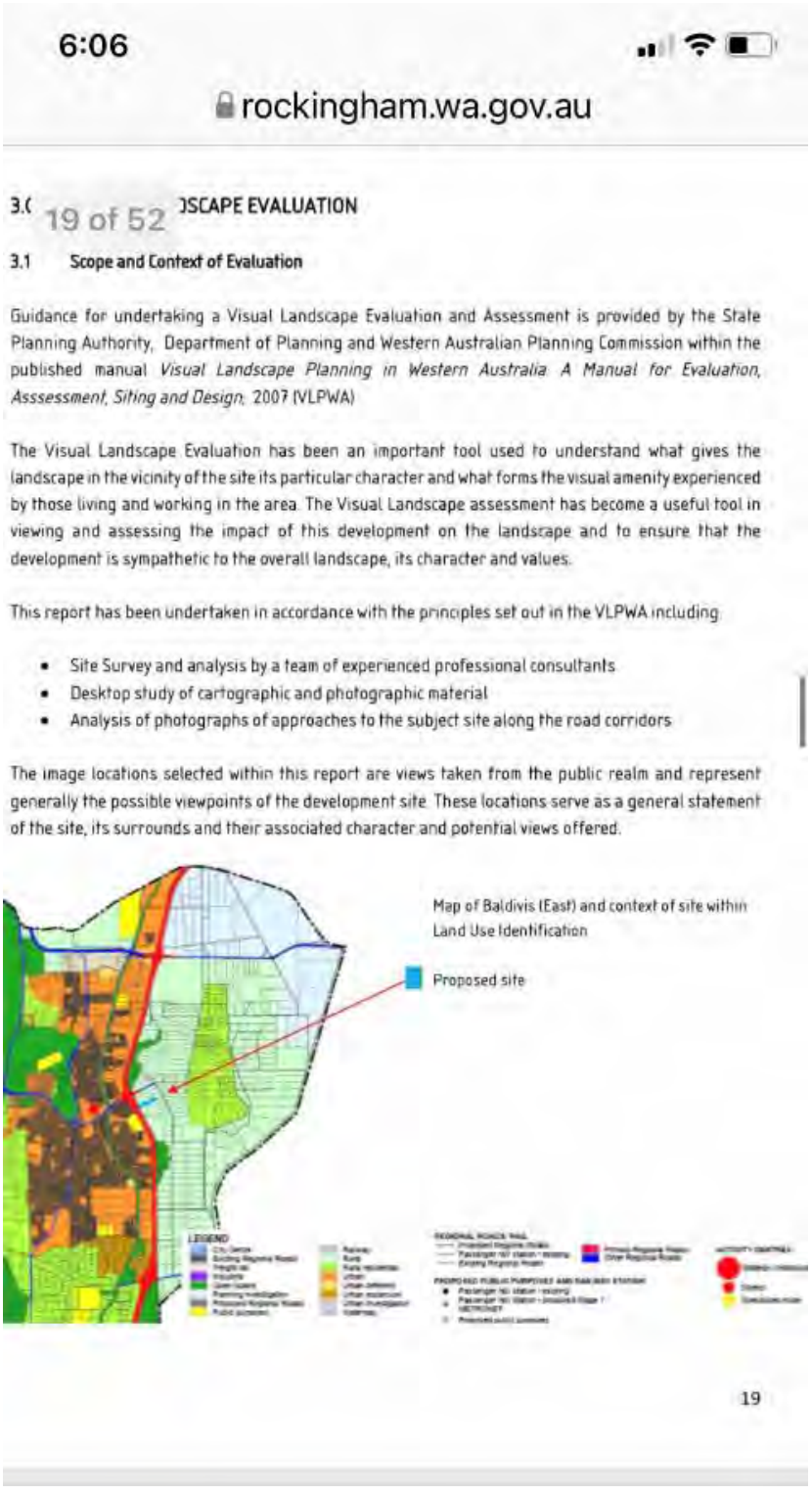
Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	**Address**	**Comment**
5. cont…		As in my previous emails I want to mention I'm not against the Hindu religion, but merely the location they wish to build their community complex. First of all I'm wondering why as rate payers, we aren't allowed to build more than one dwelling, apart from sheds and lean to's, but they are requesting to build not only a Temple but TWO double storey houses for the priests and their families, a kitchen, ablution block, library, dining room, multi purpose hall, guest accommodation PLUS car parking for 11 cars??? All this and NO rates coming from them to help contribute to the degradation of the roads, waterways, wildlife and amenity of the area! WHY?? Surely the amount of people and effluent they will produce will be detrimental to the health of our fragile water system, as the water table isn't that far below the surface, especially in a wet winter. Not to mention the wildlife that reply on said water including the long necked turtle who frequent the area in large numbers. See attached photo of one on our property. As much as they say no development is proposed on the flood plain area, you can not possibly deny the ground water would be affected with the constant 24/7 usage of that volume of people. How realistically, can a noise report be accurate in regards to non existent buildings? And when, as it most definitely will, it breaches the noise pollution or go over the allotted allowed time frames and disrupt many residents, who do we complain to and who is held accountable? Guaranteed I will be onto this and will not let ANYTHING slide. To say they are going to plant trees to screen or provide a "natural" flow of vegetation among the development is laughable and downright insulting to our intelligence! How can that many buildings, with some soaring 14.7 METERS in the air EVER blend in? It will be the BIGGEST eyesore and result in a massive downgrading on our properties worth, besides the visual amenity will be gone forever for us fortunate enough to have purchased rural land for that very reason. The report even states the Temple is "different and unfamiliar in aesthetics to a rural setting in Baldivis". According to their trust JET who purchased the land, the Perth community has 500 JET families. So why on earth even contemplate building this massive complex for the minority especially when there's another such set up in Mandogolup only 11kms away? How is the lighting they propose for all the numerous buildings and carparks going to be "low level sensitivity located"? Seriously? Not a chance. It will be lit up like a damn Christmas tree! None of the buildings on that grand a scale are ever going to be sympathetic to the visual amenity of the rural area. Its that simple! Yes we have all got sheds and houses on our properties, but that's what make up RURAL living. No where does that include all the above mentioned buildings and hoping its all going to "blend" in. Its like a whole community is going to be built and living right next door to us when we purchased a RURAL block.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	**Address**	**Comment**
5. cont…		20 years ago when we brought our property we assumed Baldivis would grow over the time and yes it has, but we have retained our rural lifestyle east of the freeway and love it like that! Should we have wanted neighbours and the noise and disruption that comes with them we would've brought townside. I hope you take on board some of these questions when making your decision.  For Submission No.3 a similar submission was lodged to the JDAP Secretariat. **Submission No.4** Just wanted to bring it to your attention that the attached report has the wrong property as the proposed location for the Hindu Temple. The property they have highlighted is definitely NOT Lot 53 (66 Folly RD) Baldivis. It isn't even Folly Road, its Young Road! Seems like they just went on Google Maps and thought that one looked ok. How many other reports have discrepancies like this? We as laymen don't really understand all their jargon and technical wording and hoping this isn't deliberate on their behalf? This is just one page of a 52 page report. Now who honestly has the time and inclination to read every single page in every single report? Well I hope you all do, because we are counting on it as ratepayers (which they wont be!) to do the right thing for the area. I can not think of one possible positive to come from them building their complex in RURAL Baldivis...can you? There are plenty of alternative options for them which wouldn't get any objections from neighbouring properties if they took it to a more industrial area. No neighbours there especially at night to be constantly complaining. And most importantly no damage to our ecosystem here that our flora and fauna rely heavily on. Plus they would have water and sewerage going past the location unlike where they want to build!

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	**Address**	**Comment**
5. cont…		
6. Mr Brad Woolley	BALDIVIS	I am totally against this proposal. Honestly, how could anyone think that location is suitable. I am disappointed in council for allowing this to get this far. Folly road is not suitable for this traffic & dangerous cornering with people turning into a 111 car facility. It will be an eyesore to the area.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	**Address**	**Comment**
7. Ms Emma Walker	BALDIVIS	I oppose the plans to build a Hindu Temple in Baldivis in the location stipulated. We already have significant traffic issues when exiting the freeway at safety bay road and regularly have to queue to exit on the freeway which is dangerous. Plus I live on rivergums estate and already experience significant noise pollution from the freeway and general traffic and do not wish to add to this with additional traffic, noise, bells, music etc from a Hindu temple. This is a highly populated area and I do not believe this is the best location for this to be built.
8. Ms Melissa Kelsall	BALDIVIS	Although I do not live on young road, I keep my 2 horses at 509 young road and have done for 5 years now. The area despite being so close to suburbia is a beautiful quiet rural area and the locals would like to keep it that way. Not only would this proposed addition to the neighbourhood destroy the quiet for the human populace but it will cause issues for the surrounding horses and farm animals. Then there is the roads, bringing more city minded people into the area is dangerous, there are horses ridden on the surrounding roads regularly and city people do not understand the road rules when it comes to horses. Surrounding roads are unable to sustain any additional traffic as they are single lane. The corner of folly road and young road is dangerous on a quiet day with people speeding around it (I've been pushed into the gutter on multiple occasions by people losing control around the corner at speed) there will be an accident there with regular stopping/ turning traffic. There is plenty of room on the other side of the freeway for such a proposal, please don't destroy the tranquility before it's time.
9. Mrs Tracey Primrose	BALDIVIS	<u>Submission 1</u> There is a number of places of worship in baldivis already. This is a rural area and folly rd is already dangerous enough without a heap of car's trying to pull out onto it. The design is also a eyesore. Put it in a light industrial area. <u>Submission 2</u> Definitely against it we have enough churches around and I don't fancy my views looking at that. It's not an appropriate setting for a Hindu Temple in a Rural setting! I'm sure their is plenty other places to put it! Big NO from us.
10. Mr Jarl Andersen	SHOALWATER	The volume of planning documentation testifies to the Sri Balaji Tempel proposal as having been thoroughly planned, researched and prepared. It is clear that the proposed temple design will, once established with maturing temple precinct parklands, complimentarily and tastefully blend into the location and preserve its environmental values. The open field vista will visually benefit from the attractively placed Dravidian South India temple style architecture in the landscape, partially obscured by vegetation canopies, hinting to its presence. Not unlike classic church structures, so common and cherished in historic landscapes which, apart from being places of worship, play to the observer as focal points and visual pleasure. I support the local Hindu community in this endeavour and have no objections to the Sri Balaji Temple and supporting infrastructure being constructed.
11. Miss Poppy Benzies	BALDIVIS	I entirely encourage and support another place of worship in our community. The City of Rockingham hosts an abundance of belief systems and another local place of worship is always welcome to further the feeling of togetherness.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	**Address**	**Comment**
12. Mr Steve Belohlawek	ROCKINGHAM	why can't the council have a policy to consolidate all places of worship. Say at Rockingham Beach. - much of the land is unused. Why can't the council negotiate to have the western end of the lot added to the 'bush for ever' and increase the wetland area. - what protection is there against pollution runoff from entering the wetland?
13. Mr Thomas Seymour	BALDIVIS	I don't believe this road to be suitable for the potential of 111 cars leaving at once. This is a quiet area and adding this to such a place would only cause disruption and traffic issues for the residents and families.
14. Mr Ashwyn Fernandes	BALDIVIS	I vote against having this here. If churches are being closed down, I don't see why we require a temple. Also, having lived many years in India, I know how noisy it can get. Especially during festival times.
15. Ms Dristy Padberg	BALDIVIS	This will provide significant disruption to the people already on this street and in the area. I am strongly opposed to this.
16. Ms Caroline Meeusen	BALDIVIS	Submission 1 This is NOT the place to be putting any house of worship or any other big industry or development in general. The people living on this side of the freeway moved there and spent a lot of money to be in a quiet rural area and a big development like that is going to completely disrupt that. The impact of this big development on the wild life and the wetlands is going to cause such an overload, it won't be able to recover from. We've had enough problems with unsuccessful relocation of wild life an impact on the environment due to over development in the last 5 years, surely they've learned their lesson. I'm honestly very disappointed with the council for even considering ruining our beautiful landscape and I'm sure there's a better place for this project on the west side of the freeway. Submission 2 I have messaged you via the Rock Port link already but I wanted to add a few more objections after doing some research on the proposed development on lot 53 Folly road. In addition to the impact on the landscape, the wild life, traffic in the are and the feeling of living rural, it will also greatly impact on the serenity of the area. I have spoken to a few people who live closely to similar venues and they advised me that the noise of such a temple is terrible and not only when they are having celebrations. I am opposed to this development going ahead and I think the council needs to find another suitable location for this temple further away from residences and more into industrial areas or somewhere with no existing housing. If people choose to live near their place of worship after it is built that is their choice but we built away from the hustle and bustle for the lifestyle, the feel of living in the country side and the serenity, we did not choose to live near a temple.
17. Miss Hannah Perry	BALDIVIS	As residents of Young Road, we have the following comments on this proposal, in which we are not in support of: 1. This proposed temple could decrease the value of properties in the area, future sales could be reduced due to potential buyers not wanting to live near a temple. 2. Traffic on Folly Road can already be an issue - the amount of near misses at the intersection of Young Road/Folly Road experienced by myself is high. Increasing the traffic in this area would only have a negative impact towards this. 3. Traffic already banks up at the intersection when driving eastbound on Folly Road, to turn right onto Young Road, as there is no slip lane for vehicles turning to pull into.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	**Address**	**Comment**
17 - Cont…		The angle of the road is also in a way that when slowing down to turn right, there is often not enough room for a car or heavy vehicle continuing on Folly Road, to get around the car/s and heavy vehicles that are turning right. 4. The noise of the temple would be a disturbance to the people living in the area, the wildlife and also the horses who are sensitive to noise. 5. The area is farmland/rural, the temple would be an eyesore in comparison to the surrounding landscape. 6. We purchased property in this area to live a quiet, rural lifestyle - not to drive past and hear the sounds associated with a hindu temple every day. 7. The traffic impact reports state there will be no negative impact on the area, however when you live and drive these roads every day, the increase in traffic is not sustainable and will only be increasing with regular residential developments. We oppose this proposal.
18. Mr James Tainton	3HILLMAN	Is required to increase diversity in the region.
19. Ms Nicole Thom	BALDIVIS	Its too noisy and too much traffic.
20. Ms Lyn Quilty	No address provided	I wish to voice my support for the building of a Hindu temple in Baldivis. We are a vibrant multi cultural area and such a building would only enhance the diversity of our area. It would send a clear message of tolerance and respect for freedom of worship, and for acceptance of differences. I hope the council will vote to approve this application.
21. Mr Brandon Hinton	No address provided	**Submission 1** I have heard there is plans to build a Hindu temple on Folly road. I am not against the religion at all. I am against the location. I know a lot of people who live in that rural area and have worked incredibly hard to live there. They are devastated as this will impact the quietness and secluded area. Baldivis is such a nice place and I do not want to see it ruined. Folly road is already quite busy and has a tight bend. Having an extra 111 vehicles could cause accidents. Please consider re locating. I appreciate allowing us to voice our opinion. **Submission 2** I am quite disappointed on the proposal to build the Hindu temple on Folly rd. This area is quite and secluded and I feel very strongly that it should be kept that way. This is rural land and should not have a huge complex with festivals and bells disrupting the community. This is already a very busy road and people have lost there lives. With the extra traffic it will only get worse. Others opinions that do not live in this area should not be considered as it will not affect them. There is lots of wild life (turtles and kangaroos) that will also be affected by this huge build. Places of worship are usually built in semi industrial areas and away from housing. You wouldnt put a shopping centre or theme park on rural land would you? I know a lot of people who have worked incredibly hard to live in this area and they are absolutely devistated. I believe baldivis is one of the few nice places left and I dont want it to be ruined. Thankyou for listening to my opinion and please consider what is best for us.
22. Mr Greg Hinton	No address provided	I am a resident of Baldivis and I do not want this place of worship to go ahead . Regards !! Greg Hinton . Baldivis resident
23. Mrs Kym Hinton	No address provided	As a resident of Baldivis I would like to submit my opinion of no, I do not want this place of worship built.
24. Ms Peta Sims	BALDIVIS	I am writing to voice my opinion on the proposed Hindu Temple for Baldivis.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	**Address**	**Comment**
24. cont…		I want to start by making it clear that I am not against any religion or the temple, just the location. My husband and I have lived in our house for 5 years. We worked and sacrificed a lot to be able to buy in the area we have always wanted too – RURAL. We have worked hard to achieve this, as have all the residents in the vicinity of the proposed temple. The impact this temple will have on the surrounding area will be quite significant in that we will have to tolerate bells at sun-rise every day, an appalling amount of traffic on an already "scary" piece of road and the financial impact it will have on our re-sale values could be devastating. I can not see any positives that it will bring to residents that bought on this area for the tranquilities and quiet environment. I travel that road every day and see the kangaroos, ducks, lizards, snakes and bird life……everything I love to see in my living environment…that disappears if the temple goes ahead. My lifestyle choice is now impacted by navigating hundreds of cars on a terrible stretch of road. Being built in an industrial area would make more sense. The noise will not impact peoples home lives, nor will the traffic. According to the reports, most traffic will be after most workplaces finish for the day, so no impact. I am AGAINST the proposal of the Temple going ahead in Baldivis in the location on Folly Road. Please keep me informed of any council meetings as I will be there to also defend my opinion. <u>Submission 2</u> I am writing to voice my concerns regarding the proposed Hindu Temple on Folly Road in Baldivis. Me,along with many other local residents feel that this is the wrong location for such a construction. It raises many questions, all of which I am sure you consider to be answered in the thousands of pages in reports submitted along with their application – all of which I am making my way through reading. My view is, just because there was money paid to make this report, does not make it a correct report that is unbiased. The first of the basic concerns is, are they paying rates? I am a rate payer and have lived in the Rockingham area for almost 26 years. I pay my rates on my own dwelling, two rental properties and a commercial unit, almost $10,000 per year. I realise this is being called a "Place of Worship." I consider a Place of Worship to be somewhere you go to pray to your god. This is bordering on a commercial business with caretakers, a dining hall, library, yoga, short term accommodation, ablution blocks, weddings and functions. All of which when the patrons are leaving the premises will have an impact on the neighbouring properties as this can go into the late hours of the night and start in the early hours of the morning. The traffic report mentions that everything is good as it is, and no impact will be felt on Folly Road – clearly not a local wrote this and clearly not written by someone who travels the road multiple times a day. It is a difficult to navigate piece of road already and with over one hundred cars (the amount of car bays) leaving, entering into an 80km hr zone, it will cause havoc. It is already a short cut between Safety Bay Road and Mundijong Roads for many cars and trucks.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	**Address**	**Comment**
24. cont…		Folly Road is a poorly lit, single lane rural road with livestock bordering the roadway and wild kangaroos in the paddocks. It's potential for accidents will be dramatically increased. The construction period for this proposed site is estimated to happen over a 4-year period. So, before we are subject to an increase of vehicles from patrons, we have 4 years of trucks and a building site. Sewage Treatment – Even with a suitable sewage treatment plant capable of processing the waste for 400+ people, with its water going into leach drains, this is on a block that is so close to a natural water way, it will impact a sensitive environment. If something fails on the proposed sewage treatment, the outcome could be environmentally catastrophic for the surrounding natural waterway and Folly Pool. Who will be held responsible if this happens? This would be a disaster that would be irreversible. The average population of Hindu in the Rockingham area is 577 according to the 2016 census report. In the 2020 report, it states that the population in Rockingham grew by 1.8% in this 4-year period, meaning that the population of people who practice Hindu in the Rockingham area would average out to 587 people. Exceedingly small in comparison to Catholic or Christian religions which is around 62,000 in the Rockingham area. A Hindu Temple to the value of $5 million dollars being built to cater for the surrounding Hindu population of 587 is a little excessive considering 15.2km away (11 minutes by car) there is already a Hindu Temple in Mandogalup. This is a rural block. I realise the reports say that the land is not good for farming or agriculture, and this is why it is being considered. The concerning part (and there are many concerning parts) is that it is labelled a "Hindu Temple and Cultural Centre." It will not be something that will just "blend in" as it so often states in the reports. It will be an empire being built by a franchise (as they have temples in each major city in Australia). It will not be peaceful to the rural setting, it will be disruptive. We as residents paid good money and worked extremely hard to achieve our goals of living in a rural setting, surrounded by farmhouses, paddocks, trees, sheep, cows and kangaroos. Not to come over the crest of the freeway and enter our rural setting to be face with a Hindu Temple and Cultural Centre. I am not opposed to the Temple. I am opposed to the location. This kind of set up is more suited to light industrial, or very rural with no neighbouring properties with in a 5-6km radius. I will be submitting more concerning factors as I read more through the reports. Submission 3 I am writing with regard to the proposed Hindu Temple for Baldivis East. I am voicing my OPPOSAL to this application. One of my concerns is the reference used to describe the application. Hindu Temple and Cultural Centre. This is described as a "Place of Worship" yet the application describes anything but. A place of worship is a place to pray – yet this is going to have – * An Audio Room * A stage * Green Rooms * Meeting Room * A Children Playground * Yoga Classes * Multiple furniture storage rooms * Zebra Crossings

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	**Address**	**Comment**
24. cont…		* Chariots Entrance gates * Seating in a dining hall for 72 people (seating as shown on plans) * 2 commercial Kitchens and on semi commercial kitchen at the priest 2 story accommodations. * 28 toilets across the site This is not a place of worship – this is a Community Centre catering only for the Hindu Religion. This will destroy the amenity for those existing residents already settled in the area. Whose lively hood and peaceful rural life we have worked so hard to achieve. I should not have to compromise my amenity to accommodate a development that is not suited at such a location. In regard to the acoustic reports – no acoustic records show the noise and disturbance to residents, farming animals and wildlife during the festivals, weddings, prayer bells and chariot runs. This is Rural living – not a place of bells, tambourines and chanting – our rural amenity will be compromised. I would also like to highlight the affect it will have on the nearby Folly Pool. A sensitive waterway that homes many species, one being the threatened Quenda, along with the long neck turtle, blue billed duck, frogs, snakes, and bird life. The noise from bells, chanting and the amount of people will be very detrimental to their wellbeing. Conservation groups have been working at Folly Pool tirelessly over the years, which could be destroyed if this proposal goes ahead. I put to you that this location is not suitable for such a construction. It does not fit in with the Rural amenity. I ask that the Rockingham Council does not endorse this application. <u>Submission 4</u> I am writing to express my absolute disgust and disappointment that a Hindu Temple (or any Major construction to this magnitude) is even being considered in this location. The residents in East Baldivis have worked hard to attain their properties in a RURAL setting – that is – a setting of open space, peaceful living and a relaxed country amenity. This proposed temple is anything but that! Please let me make myself very clear – I am not against a Hindu Temple – I am against the location of which they propose to build it! I have found the reports that were submitted to council with the proposal to be very inaccurate – especially the acoustic report. No consideration was taken into account for the festivities and gatherings that take place over the period of a few days, or the fact they take place outside. Only the indoor activities were reported on – and apparently if you close the doors and windows, they wont disturb any of the neighbouring properties! The noise that will be expelled from this property on a very regular basis is a direct invasion on the peaceful amenity of surrounding residents life style. The proposed block is classed as a “Sewerage Sensitive Area.” It states that the proposed is required to be serviced by a secondary treatment unit with disposal via leach drains. My question is – no size has been stated for the treatment unit. As is needs to be an adequate size to cope with 400+ people, where will this be situated on the block? Have any tests or reports been conducted on the long term affects this will have on the natural waterway and Folly Pool? Have any contingency plans been put in place in case of unit failure and what the ramification of such occurrence will have on the natural waterway, Folly Pool and the wildlife?

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	**Address**	**Comment**
24. cont…		The traffic assessment was prepared by Shawmac. They state that the proposed construction is capable of being accommodated with the existing road network. I have not researched up the credibility of Shawmac, but did they even show up to write this report? To claim that having an influx of over 100 vehicles entering and exiting the premises on a part of Folly road that is single lane, tight bend and poorly lit wont cause any additional risk?? Not to mention the sad death that occurred a few years back! The report states that the short term accommodation on site is provided for occasional guests that will stay for 1 week. It also states that this is no different to having guests visiting and staying at a typical private residential property, therefore makes them exempt from the requirements of DC Policy 4.3. – My question is – who is going to govern this? Guests can stay for up to a week, but who is going to govern that the accommodation is not going to be 52 weeks of the year? This has the capability of turning into a motel if ungoverned. The report states that with the multiple other buildings fit into the category “Place of Worship – Multi purpose hall, which includes green rooms, meeting rooms, audio rooms, stage, yoga classes, library, storage rooms, a dining hall, 3 kitchens – the list goes on….The meaning of “Place of Worship” is - “A building where believers can practise their faith”. Not go to the library, go out to the eating hall, go to a concert, play on the playground, stay for a week, go have a yoga class. It feels like to report was written to try and make fools of us! The proposal states that the proposed Temple is being built to maximise its connection with the surrounding natural environment to ensure a positive environmental, social and economic outcome – My question is – When the submission presents so many, in fact – over one hundred Planning Justifications, on environment, sewerage solutions, acoustics etc – how is it that all these changes in such a huge scale are a positive affect on the environment in this location? This is a rural location that caters for family living. The environment in which we chose to live will be destroyed, our rural amenity will be gone and for some, our stress free environment is in question, which is already causing mental angst. How is this positive? With all this being written – I have one final question. Who do we, the residents and rate payers, hold accountable for any of the wrongdoings that will occur after the fact? If this gets through council and JDAP, all the concerned residents and environmental organisations that have put their concerns in writing, if are proved to be correct (environmental, noise, compliance etc) – who takes responsibility? Who pays for the rectifications? In closing of this email, I would like it noted that I am opposed to this Hindu Temple and Cultural Centre going ahead in this location. For it to be affecting so many residents – the proposal needs to go ahead in a different location – one with no neighbours within a 5km radius and a location with no severe environmental impacts.
25. Mr Geoff Roberts	BALDIVIS	I absolutely oppose the development of the block in Baldivis for the Hindu temple It’s a rural area, once you go developing blocks like this you make it easier for the next owner to sell up and subdivide. This kind of facility needs to be built in an industrial estate. It’s unfair to the residents in the area who bought their parcel of land intending to have a quiet rural existence. What choice do the folks across the road have if they oppose this. I feel you are allowing this on purpose, more development, more rates, better for the Rockingham council

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

26. Mr Greg Spencer	No address provided	I'm just submitting a NO to the above proposed place of worship(Hindi temple), I think all places of worship should be payed up by them selves, should not have any hand outs at all by government, also my worries of that dangerous bend, it will only get worse, by increased traffic by the hinds, plus the noise from their early early morning Chant / Song- hey this is a rural area with tranquillity, this is why people bought there. A Big No from me. Greg A Spencer.

27. Mr Mike Paton BALDIVIS

Submission 1

Item	Document	Reference	Statement	Residents Comments	Rockingham planner clarifications
1	Planning Proposal	Table 6	The subject site is identified as being within a 'sewerage sensitive area' due to its location being within the Estuary catchments of the Swan and Scott Coastal Plains and being within 1 kilometer of a significant wetland. The site is not located within a public drinking water source area. The following Table 6 confirms the compliance of the development with the relevant requirements of the Government Sewerage Policy (GSP).	Residents in the immediate vicinity utilise local bore water for house hold use including drinking water. It is not clear if an assessment of the sewerage generated during peek periods of use have been accounted for in the compliance to the GSP **Noting there is expected to be up to 400 people in attendance on a regular basis**	
2	Planning Proposal	General observation	Documents state the facility would attract up to 400 people during festivals and weddings	How will these numbers be controlled what restrictions are in place to police the numbers attending the facility and what is to stop the numbers growing in future	
3	Traffic Impact Report	5.2.2	The latest traffic counts for Folly Road was obtained from the Main Roads WA Traffic Map as shown in Figure 6 and Figure 7.	It is not clear when the traffic assessment was conducted. Recent travel and Covid Restrictions has reduced the traffic flow in the area, has this been taken into account	
4	Traffic Impact Report	4 Changes to surrounding Transport Networks	Folly Road is also not identified as a proposed regional road or freight road by 2050. It is therefore considered that the upgrade of Folly Road is unlikely to occur in the foreseeable future.	The statement in section 5.2.2 states *Folly Road is currently classified as an access road with a target daily traffic volume of 3,000 vehicles per day according to WAPC Livable Neighborhoods.* *On a weekday, the maximum post-development daily traffic volume is estimated to be 2,918 vehicles per day on a Special Hindu Festival Day. The daily traffic will be much lower for the majority of the year..* *On a weekend, the maximum post-development daily traffic volume is estimated to be 2,345 vehicles per day. Both values are within the target value of 3,000 vehicles per day.* This statement suggests that the traffic volume will be at capacity or very close to it post development with no plan for infostructure up grades until 2050 **It should also be noted that the document states a Festival once a month not including Weddings estimated at 1 in every 2 month (6 per year)**	

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	**Address**	**Comment**

27. cont…

5	Traffic Impact Report	5.4 Long Term Capacity	For development applications, it is standard practice to assess the long term capacity of the road network, typically 10 years following opening of the development. As mentioned previously, the site and surrounding areas to the west of Kwinana Freeway are not flagged for development by 2050 and so it is unlikely that traffic volumes would increase in the foreseeable future. On this basis, a long term capacity analysis is not considered necessary.	This statement does not cover the Folly road to the east, and the increasing traffic flow from Mundijong road through to Folly road traveling west.	
6	Traffic Impact Report	5.2.2	Daily Traffic Capacity Folly Road is currently classified as an access road with a target daily traffic volume of 3,000 vehicles per day according to WAPC Livable Neighborhoods. On a weekday, the maximum post-development daily traffic volume is estimated to be 2,918 vehicles per day on a Special Hindu Festival Day. The daily traffic will be much lower for the majority of the year.. On a weekend, the maximum post-development daily traffic volume is estimated to be 2,345 vehicles per day. Both values are within the target value of 3,000 vehicles per day.	We do not agree with this assumption the Young /Folly road intersection being on a bend is extremely dangerous in normal traffic periods. this will be made worse with increased traffic volume entering and exiting the proposed facility.	
7	Traffic Impact Report	7.1	The number and type of crashes do not indicate any major safety issues on the road network. There is no indication that the proposed development would increase the risk of crashes unacceptably.	This is not true, in any situation where traffic is slowing to perform a turn with or against the traffic flow or traffic entering a road there is increased risk of an accident, add the fact that a few hundred meters east is an intersection on a bend.	

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS

Name	Address	Comment

27. cont…

8	Traffic Impact Report	8.2	There are no paths along and the nearest path begins at the freeway ramp intersections. Based on the proposed use and the relatively remote location, the demand for pedestrian or cycle access would be minimal and so the provision of paths or cycling infrastructure is not considered necessary.	No assessment has been made for the general cyclists that use this route for training, and week end events that require traffic control restrictions approaching the Young / Folly road intersection from both the East and west directions along Folly road.	
9	Architectural /Visual /Landscape report	General Observation	The Report suggests existing and new trees will screen the temple and associated buildings	Temple Gaparum one being over 20mts in height is out of character with the rest of the area and will be visible from surrounding roads. Other Hindu temples are adorned with gaudy brightly colored figures , what restrictions are being enforced to ensure the facility blends in with local rural area this is also relevant with the Hall and other buildings on the site The Gaparum structures will be visibly obtrusive in this small rural community.	
10	Architectural /Visual /Landscape report	General Observation	Visual assessment and views	It is obvious that the report has optimized the photographic examples, suggesting that the existing trees already hide the proposed building. It is obvious that a general walk around the site, the buildings will be visible from most angles around the site . This is not a problem with the standard design accommodation buildings, but the height of the Temple 15 and 20m Goporum is not in keeping with the local community out look, which will present as alien to the rural out look of the community.	
11	Architectural /Visual /Landscape report	General Observation	Development Plans	The development plans show existing trees at an average height of 10 mts this is not depicted in the Architectural /Visual /Landscape report where the tops of the Goporum are shown as being level or just above the trees , when in fact the structures on the Temple are 15 to 20mts in height.	
12	Architectural /Visual /Landscape report	General Observation	Visual assessment and views	There are no visual examples from Young Road approaching 574 young or looking from 574 the whole area is clearly visible from these vantage points and the structure will be a visual eye sore for the current residents of over 25 years. Night time lighting will clearly aluminate the buildings and will be glaringly obvious to all surrounding residents. This is not acceptable as it will destroy the peace and tranquility of our current rural living experience.	
13	Architectural /Visual /Landscape report	Security		There is no mention of security measures being employed during festivals for crowd control	
14	Acoustic Report	General Observation	The noise assessment considers the following • Noise from amplified music as part of a private function within the multipurpose hall • Noise from cars and patrons using the carparks • Freeway noise affecting the site	There is no assessment on the noise created by the following. - Wedding crowds up to 400 people (chanting) - Hindu ceremonies including percussion instruments - bells whistles to mention a few - The assessment assumes all the noise will be in doors with doors and windows shut how is this controlled. - There is no mention of the Hindu call to prayer bells and how/if they will be used. And what the effect is on surrounding residents There is no mention of outside festivals and how the noise is controlled or what effect it has on the surrounding residents . **As a long term resident I would expect there would be no impact on my current rural way of life and I should not be expected to make any concessions for this proposal.** **If concessions are expected to be made by local residents what compensation process is there.**	
	Acoustic Report	General Observation	Noise impact on local wild life	There is no mention on the noise effecting local wild life or domestic pets. A lot of properties along Young road including 574 (being the closest) have horses which get spooked when confronted with loud noises causing them to bolt and making it difficult to pacify them, this could lead to additional vet bills if injury occurs.	

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS					
Name		**Address**	**Comment**		
27. cont…					
15		General Observation	Diwali is festival of lights and sound one of the major festivals celebrated by Hindus, Jains, and Sikhs. The festival usually lasts five days	I don't see anywhere were these festivals have been considered in the noise evaluation or in the environment assessment regarding the lights used in festivals Currently at night as soon as its dark there are no other lights in the area apart from the street light at the intersection this is part of the attraction of rural living where you get to see the nights sky and appreciate the peace and quite.	
16		General comments	Rockingham council	Has there been an assessment on the effect to local property values due to the prominence of a facility like this being constructed in a rural community.	
17		General comments	Rockingham council	What are we expected to do in the shorter to long term should we find we cannot cope with the intrusion inflicted on us by the development and its multiple festivals. What support assistance will the council provide should a dispute arise between the facility and local community.	
18		General Comments	Rockingham council	If this development is approved and local long term residents ignored how can the Rockingham council justify this decision. How do you justify the physical and mental health pressures this development could have on the local residents.	
19		General Comments	Rockingham council	What benefits do the Rockingham council get by approving this development.	
20		General comments	Rockingham council	Given there is a Hindu Temple within a half hour drive from the proposed site, what are the driving factors to rate this as an essential development in this area.	
21		General comments	Rockingham council	Why hasn't the proposal considered an industrial zoned area where there are no permanent residents	
22	Planning Policy 3.1.1Rural Land Strategy July 2020	General Planning	The Rural Land Strategy report 2020 states the desired future Character as Not withstanding the flat, low-lying nature of the area, the Baldivis (East) precinct contains multiple overlapping ecological values and linkages that need to be protected from the adverse impacts of development. These areas of environmental significance are fundamental to the remaining visual character and amenity of the area and their ongoing preservation is a key strategic objective of the RLS.	How is this objective being met if the approval for a Hindu Temple is granted. This site would clearly be out of character for the area which the council rural land strategy is trying to protect.	
	Planning Policy 3.1.1Rural Land Strategy July 2020	General Planning	The document referred to above also goes on to state • Clearing of remnant vegetation would have a major detrimental impact upon areas of environmental and landscape significance with resultant adverse impacts upon the visual character and amenity of the area. • Clearing along road frontages would have a major detrimental impact upon the visual character and amenity of the area. • Loss of Banksia woodland. • Loss of Carnaby's Cockatoo habitat. • Loss of LNAs. • Loss of ecological linkages. • Potential for CCWs, REWs, PECs, associated vegetation and buffers to be compromised by development. • Potential for the Bush Forever sites, Peel Main Drain and Serpentine River to be compromised by development.	Although some of these points have been addressed in the environmental study provided by the contractor, the emphasis on the visual character and amenity of the area which is of significate importants has been disregarded.	
	Planning Policy 3.1.1Rural Land Strategy July 2020	General Planning	Land Use General Standards in section 7.2.5 Policy Area Strategy states •A maximum of one (1) single house only per lot.	The development plans list 1x Place of worship (Temple) 1 x Library 1x Dining Hall 1 x Multi Purpose Hall 1 x Short stay 4 bedroom apartment 2 x 2 story Priest Apartments 1 x Ablution Block 1 x Kitchen How are these additional dwellings and other buildings evaluated (sewerage Reference item 1)	

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	**Address**	**Comment**
27. cont…		**Submission 2** Item Document Reference Statement Residents Comments Rockingham planner clarifications 1 Planning Proposal Table 6 "The subject site is identified as being within a 'sewerage sensitive area' due to its location being within the Estuary catchments of the Swan and Scott Coastal Plains and being within 1 kilometre of a significant wetland. The site is not located within a public drinking water source area. The following Table 6 confirms the compliance of the development with the relevant requirements of the Government Sewerage Policy (GSP). " "Residents in the immediate vicinity utilise local bore water for house hold use including drinking water. It is not clear if an assessment of the sewerage generated during peek periods of use have been accounted for in the compliance to the GSP Noting there is expected to be up to 400 people in attendance on a regular basis " 2 Planning Proposal General observation Documents state the facility would attract up to 400 people during festivals and weddings How will these numbers be controlled what restrictions are in place to police the numbers attending the facility and what is to stop the numbers growing in future 3 Traffic Impact Report 3.2.2 The latest traffic counts for Folly Road was obtained from the Main Roads WA Traffic Map as shown in Figure 6 and Figure 7. It is not clear when the traffic assessment was conducted. Recent travel and Covid Restrictions has reduced the traffic flow in the area, has this been taken into account 4 Traffic Impact Report 4 Changes to surrounding Transport Networks Folly Road is also not identified as a proposed regional road or freight road by 2050. It is therefore considered that the upgrade of Folly Road is unlikely to occur in the foreseeable future. "The statement in section 5.2.2 states Folly Road is currently classified as an access road with a target daily traffic volume of 3,000 vehicles per day according to WAPC Liveable Neighbourhoods. On a weekday, the maximum post-development daily traffic volume is estimated to be 2,918 vehicles per day on a Special Hindu Festival Day. The daily traffic will be much lower for the majority of the year.. On a weekend, the maximum post-development daily traffic volume is estimated to be 2,345 vehicles per day. Both values are within the target value of 3,000 vehicles per day. This statement suggests that the traffic volume will be at capacity or very close to it post development with no plan for infostructure up grades until 2050 It should also be noted that the document states a Festival once a month not including Weddings estimated at 1 in every 2 month (6 per year)" 5 Traffic Impact Report 5.4 Long Term Capacity For development applications, it is standard practice to assess the long term capacity of the road network, typically 10 years following opening of the development. As mentioned previously, the site and surrounding areas to the west of Kwinana Freeway are not flagged for development by 2050 and so it is unlikely that traffic volumes would increase in the foreseeable future. On this basis, a long term capacity analysis is not considered necessary. This statement does not cover the Folly road to the east, and the increasing traffic flow from Mundijong road through to Folly road traveling west. 6 Traffic Impact Report 5.2.2 "Daily Traffic Capacity Folly Road is currently classified as an access road with a target daily traffic volume of 3,000 vehicles per day according to WAPC Liveable Neighbourhoods. On a weekday, the maximum post-development daily traffic volume is estimated to be 2,918 vehicles per day on a Special Hindu Festival Day. The daily traffic will be much lower for the majority of the year.. On a weekend, the maximum post-development daily traffic volume is estimated to be 2,345 vehicles per day. Both values are within the target value of 3,000 vehicles per day. "

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	**Address**	**Comment**
27. cont…		"We do not agree with this assumption the Young /Folly road intersection being on a bend is extremely dangerous in normal traffic periods. this will be made worse with increased traffic volume entering and exiting the proposed facility. " 7 Traffic Impact Report 7.1 The number and type of crashes do not indicate any major safety issues on the road network. There is no indication that the proposed development would increase the risk of crashes unacceptably. This is not true, in any situation where traffic is slowing to perform a turn with or against the traffic flow or traffic entering a road there is increased risk of an accident, add the fact that a few hundred meters east is an intersection on a bend. 8 Traffic Impact Report 8.2 "There are no paths along and the nearest path begins at the freeway ramp intersections. Based on the proposed use and the relatively remote location, the demand for pedestrian or cycle access would be minimal and so the provision of paths or cycling infrastructure is not considered necessary." No assessment has been made for the general cyclists that use this route for training, and week end events that require traffic control restrictions approaching the Young / Folly road intersection from both the East and west directions along Folly road. 9 Architectural /Visual /Landscape report General Observation The Report suggests existing and new trees will screen the temple and associated buildings " Temple Gaparum one being over 20mts in height is out of character with the rest of the area and will be visible from surrounding roads. Other Hindu temples are adorned with gaudy brightly coloured figures , what restrictions are being enforced to ensure the facility blends in with local rural area this is also relevant with the Hall and other buildings on the site The Gaparum structures will be visibly obtrusive in this small rural community." 10 Architectural /Visual /Landscape report General Observation Visual assessment and views It is obvious that the report has optimised the photographic examples, suggesting that the existing trees already hide the proposed building. It is obvious that a general walk around the site, the buildings will be visible from most angles around the site . This is not a problem with the standard design accommodation buildings, but the height of the Temple 15 and 20m Goporum is not in keeping with the local community out look, which will present as alien to the rural out look of the community. 11 Architectural /Visual /Landscape report General Observation Development Plans The development plans show existing trees at an average height of 10 mts this is not depicted in the Architectural /Visual /Landscape report where the tops of the Goporum are shown as being level or just above the trees , when in fact the structures on the Temple are 15 to 20mts in height. 12 Architectural /Visual /Landscape report General Observation Visual assessment and views "There are no visual examples from Young Road approaching 574 young or looking from 574 the whole area is clearly visible from these vantage points and the structure will be a visual eye sore for the current residents of over 25 years. Night time lighting will clearly aluminate the buildings and will be glaringly obvious to all surrounding residents. This is not acceptable as it will destroy the peace and tranquillity of our current rural living experience." 13 Architectural /Visual /Landscape report Security There is no mention of security measures being employed during festivals for crowd control 14 Acoustic Report General Observation "The noise assessment considers the following

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	**Address**	**Comment**
27. cont…		Hindu ceremonies including percussion instruments - bells whistles to mention a few - The assessment assumes all the noise will be in doors with doors and windows shut how is this controlled. - There is no mention of the Hindu call to prayer bells and how/if they will be used. And what the effect is on surrounding residents There is no mention of outside festivals and how the noise is controlled or what effect it has on the surrounding residents. As a long term resident I would expect there would be no impact on my current rural way of life and I should not be expected to make any concessions for this proposal. If concessions are expected to be made by local residents what compensation process is there. " Acoustic Report General Observation Noise impact on local wild life "There is no mention on the noise effecting local wild life or domestic pets. A lot of properties along Young road including 574 (being the closest) have horses which get spooked when confronted with loud noises causing them to bolt and making it difficult to pacify them, this could lead to additional vet bills if injury occurs. " 15 General Observation Diwali is festival of lights and sound one of the major festivals celebrated by Hindus, Jains, and Sikhs. The festival usually lasts five days "I don't see anywhere were these festivals have been considered in the noise evaluation or in the environment assessment regarding the lights used in festivals Currently at night as soon as its dark there are no other lights in the area apart from the street light at the intersection this is part of the attraction of rural living where you get to see the nights sky and appreciate the peace and quite. " 16 General comments Rockingham council Has there been an assessment on the effect to local property values due to the prominence of a facility like this being constructed in a rural community. 17 General comments Rockingham council "What are we expected to do in the shorter to long term should we find we cannot cope with the intrusion inflicted on us by the development and its multiple festivals. What support assistance will the council provide should a dispute arise between the facility and local community. " 18 General Comments Rockingham council "If this development is approved and local long term residents ignored how can the Rockingham council justify this decision. How do you justify the physical and mental health pressures this development could have on the local residents. " 19 General Comments Rockingham council "What benefits do the Rockingham council get by approving this development. " 20 General comments Rockingham council Given there is a Hindu Temple within a half hour drive from the proposed site, what are the driving factors to rate this as an essential development in this area. 21 General comments Rockingham council Why hasn't the proposal considered an industrial zoned area where there are no permanent residents 22 Planning Policy 3.1.1Rural Land Strategy July 2020 General Planning "The Rural Land Strategy report 2020 states the desired future Character as Not withstanding the flat, low-lying nature of the area, the Baldivis (East) precinct contains multiple overlapping ecological values and linkages that need to be protected from the adverse impacts of development. These areas of environmental significance are fundamental to the remaining visual character and amenity of the area and their ongoing preservation is a key strategic objective of the RLS. " "How is this objective being met if the approval for a Hindu Temple is granted. This site would clearly be out of character for the area which the council rural land strategy is trying to protect. " Planning Policy 3.1.1Rural Land Strategy July 2020 General Planning "The document referred to above also goes on to state

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	**Address**	**Comment**
27. cont…		Clearing of remnant vegetation would have a major detrimental impact upon areas of environmental and landscape significance with resultant adverse impacts upon the visual character and amenity of the area. Clearing along road frontages would have a major detrimental impact upon the visual character and amenity of the area. Loss of Banksia woodland. Loss of Carnaby's Cockatoo habitat. Loss of LNAs. Loss of ecological linkages. Potential for CCWs, REWs, PECs, associated vegetation and buffers to be compromised by development. Potential for the Bush Forever sites, Peel Main Drain and Serpentine River to be compromised by development." Although some of these points have been addressed in the environmental study provided by the contractor, the emphasis on the visual character and amenity of the area which is of significate importants has been disregarded. Planning Policy 3.1.1Rural Land Strategy July 2020 General Planning "Land Use General Standards in section 7.2.5 Policy Area Strategy states A maximum of one (1) single house only per lot. " "The development plans list 1x Place of worship (Temple) 1 x Library 1x Dining Hall 1 x Multi Purpose Hall 1 x Short stay 4 bedroom apartment 2 x 2 story Priest Apartments 1 x Ablution Block 1 x Kitchen How are these additional dwellings and other buildings evaluated (sewerage Reference item 1) " **Submission 3** I am writing this email in the hope to bring to your attention and to voice in the strongest terms our objection to the below Hindu development in our Baldivis rural community. We have been advised that developers have submitted a proposal to the City of Rockingham to develop a Hindu Temple and associated out building including three residential dwellings on site 53 Folly Road. The Hindu temple development if approved, will consist of up to 7 separate building, the Temple being the largest structure approximately 40 metres long and 30 meters wide with a maximum height of 20 meters (approximately 6 stories) for one tower and 15 meters height on an additional two towers, the roof height on this building is around 13 meters, visually this development would be totally alien in our rural small farm environment and clearly be out of character for the area which the Rockingham city councils rural land strategy plan is trying to protect. The developer has provided reports for the environment, traffic, noise, and a visual environment report all of which are heavily biased in favour of the development. The development proposal loosely documents festivals and Hindu weddings approximately 1 festival a month and a wedding every second month both attracting up to 400 guests. This area is zoned rural and is generally made up of small farms and equestrian type properties, the properties themselves in general have a single dwelling and associated farming out buildings made up of equipment sheds and in some cases small animal shelters and stables, the proposal is clearly out of character with the visual character and amenity of the area. Residents are extremely upset about this proposal, we see it as an invasion on our rural lifestyle which we have enjoyed for over 25 years, residents in most cases have worked and planned to retire in this rural environment, this proposed development is already causing emotional and mental stress on some of the residents that will be directly affected by this development.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	**Address**	**Comment**
27. cont…		Additionally, there is a real concern for the noise created during weddings and festivals when held outside affecting the horses and other animals in the area. We as residents should not be expected to make concessions to a development that is clearly out of character with the area. If this development is necessary for the Rockingham, Baldivis area considering there are multiply Hindu temples within a half hour drive of 53 Folly Road, the development should be placed in an industrial zoned area where there is no impact to local residents or the environment. We hope we can count on your support in this matter as it is extremely concerning and jeopardises our future in the area. Please feel free to call if you need additional information, I have also attached a spread sheet detailing additional concerns for clarification, this is by no means a full list of our concerns. **Submission 4** I am writing this email to bring to your attention the proposed Hindu Temple Development in East Baldivis at 53 Folly Road , I would ask that you consider supporting our objection to this development as I believe it will conflict with the indigenous significance of Folly Pool and the issue to indigenous culture by placing a conflicting religious organization next to Folly Pool. this a discussion you could have with the local indigenous elders, the Walley family. Please feel free to contact me for any further information or comment. I have attached a copy of the proposal for your convenance. **Submission 5** With regards to our opposition the Hindu Temple development please see below submission for clarification on local government guidelines. The SP 2-5 Rural Planning guidelines section 5.11 Regional Facilities provide guidance below Some rural land may be suitable to accommodate facilities that serve a regional or sub-regional catchment. This could include regional attractors or facilities such as sporting or entertainment venues, places of worship, prisons, cemeteries and waste facilities. As these land uses serve a regional or sub-regional function, the WAPC recommends that sites for regional facilities be subject to scheme amendment processes to allow for early environmental referral and public advertising. Where amendments are proposed, or in situations where a development application is lodged, the following requirements apply: (a) Facilities should be located on a main road or on a road that is of a suitable standard and treatment, to accommodate significant increase in traffic volumes and freight tasks which may be generated by the proposal; Question: The traffic management reports state the Folly Road will be at maximum capacity, post development of the facility and no plans to upgrade the road until 2050 how will the council manage this in regards to traffic safety. (b) Facilities should contain or satisfactorily manage potential environmental (including water resources), noise, amenity and air quality impacts on the landholding without affecting nearby rural land uses; Question: The Acoustic Report does not adequately cover the noise amenity in relation to activities to be held on a regular basis at the facility how is this being assessed.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
27. cont…		(c) Facilities should not be visually dominant within key viewsheds, and should be visually compatible with surrounding land uses and development; Question: The development will be totally alien to the character and amenity of the area substantial structures, double story buildings, being visually out of place in the rural environment, on what justification would this be deemed acceptable with in the local visual amenity of the area by council. **Submission 6** Further to my objection to the Hindu Temple Development, I would like to point out that this development will have an adverse impact on the current social environment in our community. It is noted that any proposed development may affect our existing rural amenity, what is unacceptable, and seen as unreasonable is the detrimental effect this development will have on the rural character of the area and the expectation that the residents will accept this intrusion. **Submission 7** This development lists multiply buildings gardens wedding venues , All being outside the description of "a place of worship" the submission does not state how the other facility's will be managed and maintained, • Will the catering services be on a volunteer basis or will the JET organisation employ staff to manage the facility. • Is there a Health and Safety Guideline to manage personnel whether employed or volunteer when working on the facility grounds. • How many personnel would be working on the premises at any one time. • How many days a week are maintenance or volunteer activities expected to occur • Will volunteer work force be accommodated on the grounds • Will the facilities comply with the legal requirements for health and hygiene required in the food handling businesses? • How will this be monitored • What is the expected occupancy for the priest and short term accommodation • What are the council's guidelines / restrictions if any for this short term accommodation. **Submission 8** In regard to the sewerage plan for the Baldivis Hindu Development what metric have been used to qualify the appropriate sewerage design given casual occupancy of the site will be up to 400 people. and are the metrics consistent with the environmental report. **Submission 9** The Acoustic Planning Report recommends multiple noise reduction plans from engineering designs, to management procedures, how is the council addressing these recommendations and what is the review process. How will the procedures be implemented, and compliance monitored. The noise assessment for weddings has not been fully considered in the report, it states. "The assessment is a simplified review and does not account for the numerous variables that would need to be considered in further detail before any large events such as weddings are held on the site". Will this be completed before the final review of the application is completed.

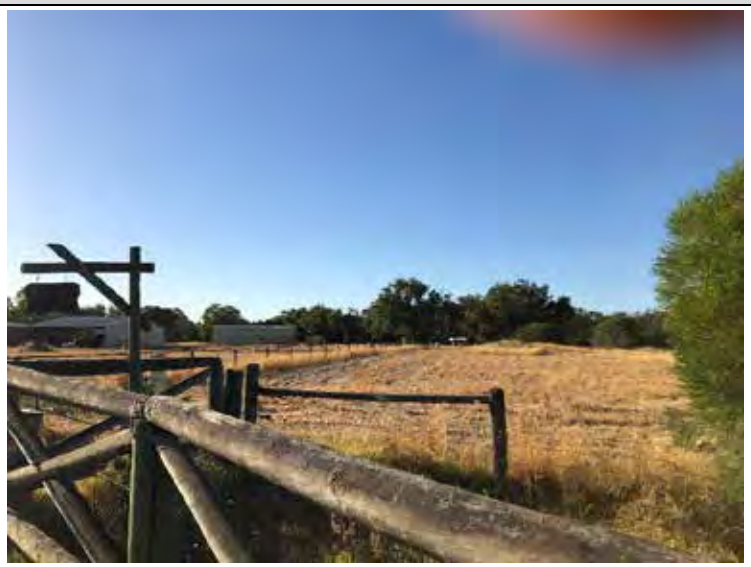
Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
27. cont…		In the end the onus is on the operator to determine appropriate noise levels this leaves the existing residents at the mercy of the facility operator. **Submission 10** Further to my objection to the Hindu Temple Development, I would like to point out that this development will have an adverse impact on the current social environment in our community. It is noted that any proposed development may affect our existing rural amenity, what is unacceptable, and seen as unreasonable is the detrimental effect this development will have on the rural character of the area and the expectation that the residents will accept this intrusion. **Submission 11** With regards to our opposition the Hindu Temple development please see below submission for clarification on local government guidelines. The SP 2-5 Rural Planning guidelines section 5.11 Regional Facilities provide guidance below Some rural land may be suitable to accommodate facilities that serve a regional or sub-regional catchment. This could include regional attractors or facilities such as sporting or entertainment venues, places of worship, prisons, cemeteries and waste facilities. As these land uses serve a regional or sub-regional function, the WAPC recommends that sites for regional facilities be subject to scheme amendment processes to allow for early environmental referral and public advertising. Where amendments are proposed, or in situations where a development application is lodged, the following requirements apply: (a) Facilities should be located on a main road or on a road that is of a suitable standard and treatment, to accommodate significant increase in traffic volumes and freight tasks which may be generated by the proposal; **Question: The traffic management reports state the Folly Road will be at maximum capacity, post development of the facility and no plans to upgrade the road until 2050 how will the council manage this in regards to traffic safety.** (b) Facilities should contain or satisfactorily manage potential environmental (including water resources), noise, amenity and air quality impacts on the landholding without affecting nearby rural land uses; **Question: The Acoustic Report does not adequately cover the noise amenity in relation to activities to be held on a regular basis at the facility how is this being assessed.** (c) Facilities should not be visually dominant within key viewsheds, and should be visually compatible with surrounding land uses and development; **Question: The development will be totally alien to the character and amenity of the area substantial structures, double story buildings, being visually out of place in the rural environment, on what justification would this be deemed acceptable with in the local visual amenity of the area by council.** **Submission 12** Will the council and JDAP decisions be influenced by the current government's relationship with the Indian community.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
27. cont…		**Submission 13** The development proposal states, approximately one festival a month and approximately 6 weddings a year. There are multiple Hindu Festivals that last up to a week or more and wedding are traditionally held over three days (the first day being a small private affair) this will significantly impact the traffic noise, car lights, facility lights and general activity noise over these periods, the visual reports and the acoustic reports do not account for these extended activities. All this activity will detract from our existing peaceful rural character and amenity of the area. **Submission 14** Please see below photo showing the current view from my property looking south from young road , please note that the proposal and the visual land scape reports, have both been very quiet on the visual and environmental damage this proposal will have on the vista (day and Night) of Young road (North). I have also attached a file showing the impact on our current amenity. Can you please explain how the JDP can make a decision without having a site visit, considering the JDP committee do not live in the area and will not be affected by their decisions but will adversely affect the current residents of over 25 years.  

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
27. cont…		 **Submission 15** As I understand the approval process and the JDAP involvement, which is of considerable concern to us as the JDAP committee members will be making a decision that will not impact them directly and as I understand it, the decision will be made based on a desk top review without a site visit. How can the JDAP committee make an informed decision without a site visit. Time issues should not be a factor when making decisions that will adversely affect the local amenity and health and welfare of the long standing residents of the area. **Submission 16** Black Cockatoo's amongst others from the Cockatoo family flock into this area including the site proposed for the Hindu Temple, This typically happens during spring and early summer and coincides with the birds breading cycle, although the environmental reports suggests there are no hollows on the site, male cockatoos will travel up to 12 klm for feed during this time which they take back to the female during the nedting period. It is feared that if this development is approved the birds will not return to the area due to the constant activity, noise and lights surrounding the development. It would be reasonable to deduct that if the birds are having to look elsewhere for the food, it is possible the local breeding attempts will fail, or the chick will be underweight when it leaves the nest and less likely to survive. Carnaby's black cockatoo have been known to go locally extinct in areas where food sources are too far away from the nesting hollows. This development plan for the Hindu Temple will jeopardise the seasonal migration of these birds in the area.
28. Ms Sophie Seymour	BALDIVIS	Submission 1 I don't comment on these things as I'm not one to say much normally. I personally don't have anything against anyone's religion's/ choice's etc. As it doesn't affect me as a person so I don't complain. I'm not complaining about what this is nor have an issue with the proposal, I'm more concerned about this location choice. We live on the rural side of Baldivis and that corner is already difficult at times with people who are too comfortable with the traffic flow and their speeds. Adding the potential of 111 cars and coming or going in groups is just asking for accidents and I don't believe the ability to see turning from Young Road onto Folly is suitable as it is around the bend and some speeds that people do let alone adding traffic and a large buildings. Sort the corner and traffic flow first before adding 111 cars to the quiet, peaceful area.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
28. cont…		Submission 2 There are a number of concerns with this proposal. The wildlife within that area, will it all be dealt with appropriatel/ relocated etc.? The noise, will it be managed suitability or will the festivals, bells etc. Occur freely and disturb the peaceful rural lifestyle so many have worked so hard to achieve and relocate away from the everyday hustle and bustle. Have the local families and animals been taken into consideration for what the noise may do to them? Disturb and cause distress to the nearby horses and sheep. Will the potential 111 cars all travel by the same road on Folly or will some be travelling via Young Road? Young Road can barely manage 6 cars in each direction at the same time let alone adding in 20+ potential vehicles, as well as any of the residents requiring to move their horses in the floats, how distressing for our residents and their animals. How about the bicycle club, they already require traffic management, how stressful adding in additional traffic, this will only cause congestion, confusion and frustration. I do not dispute religion, I do not dispute a temple, in the correct setting. I am disputing this location. It is unacceptable for those who have worked so hard to have a peaceful quite location, to potentially be disturbed by noise, additional traffic and have stressed caused by these items or to their animals. It is unfair and quite heartbreaking to say the least.
29. Ms Kathrine Gear	BALDIVIS	We live on young rd just down from the proposed sight due to the area being a horse area the sound of bells going off could spook horses and people riding them on the road.
30. Mr Brett Kuhnold	BALDIVIS	I believe a temple and associated buildings, dwellings located at this site will take away the rural aspect of Baldivis on the eastern side of the Kwinana Freeway. I also believe that with the amount of traffic this will incur at this site will cause traffic problems and congestion, therefore a major upgrade of the surrounding roads will need to happen. As Young road seems very narrow from Folly Rd to Doghill rd this major upgrade needed will cost the council a huge amount of money. Folly rd will need to be upgraded also and this will incur more costs. I love the rural feel away from the western side of the freeway and we should keep it that way. Thankyou
31. Mrs Lisa Evans	BALDIVIS	Submission 1 No thanks as a resident of young rd I strongly oppose this. Submission 2 Definite no from young rd resident Please ensure you notify us how we oppose this if we need to all attend meetings etc.
32. Mr Subrah Yadlapalli	BALDIVIS	We support the development in principle is adequate, this is a much needed facility in the area, It is sensitively designed and sympathetic to the urban landscape. We look forward to undertaking worship and community service activities from the development.
33. Ms Glenda Cooper	BALDIVIS	I am NOT in favour of the Hindu Temple, Out buildings, Residential housing and Multi purpose Hall on the corner of Folly and Young rd Baldivis. As in your proposal most of the structures will have a minimal effect on the landscape and this is not a concern. In the Hindu faith a bell is placed within the temple and as each worshiper who enters the Temple for prayer must ring the bell which would mean Bell ringing would occur at 6 am and then again at 4pm Monday to Friday anticipated attendance 25-50 which if at full capacity collates to100 times a bell will be rung per day and on Saturday and Sunday prayers at 150 capacity twice a day collates to 300 times a bell will be rung, not to mention 400 attendees at a wedding ringing the bell so I am concerned about the size of the bell as in India they are very large and can be heard over a large expanse of area.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
33. cont…		The sound of a large bell will echo through the rural properties here in Baldivis and I for one don't like my weekends disturbed by excess noise especially of a large bell being rung continuously from 6am through the weekend not to mention the festival days , plus the chanting and music from 400 attendees at a wedding echoing through the pastures. My family and I moved to Baldivis Rural to encapsulate the serenity, peace and tranquility of the area which I and my family have cherished and enjoyed over the past 25 years so you can imagine that we as rate payers and long term rural property owners are reluctant to have this disturbance of our peaceful existence interrupted. This letter is of my own opinion and should be duly noted as a Submission Response to the proposed Place of Worship(Hindu Temple) Folly Rd Baldivis.
34. Mr Daniel Jackson	BALDIVIS	My family and I are welcoming of this proposal for a place of worship and encourage this type of development in our community.
35. Mr Rajkumar Kokkula	WANDI	Part of the Indian community.
36. Mr Ravi Morisetty	BOORAGOON	I am very excited about this project. This will be a big asset for local Indian community. I will be attending this Temple very regularly.
37. Mrs Snigha Amreddy	WELLARD	Great step towards building a harmonious and multicultural society.
38. Mr Kashinath Gabbula	HEATHRIDGE	I will support for this as it good for Society in terms of Unity, Availability, culturally and economically.
39. Mrs Santosh Kumari Devata	PIARA WATERS	They look forward to undertaking worship and community service activities from the development.
40. Mr Jehanbux Wadia	AUBIN GROVE	There is a sizeable Indian population around Baldivis which is ever growing. Having a temple around helps people to connect spiritually to themselves. There will be awareness among the local population about different cultures creating harmony and new synergies.
41. Ms Shreedevi Mahesh	BALDIVIS	This is much needed facility in the area for our Indian community.
42. Mr Arvind Kondisetti	WELLARD	Looking forward to the project to start, this helps future generations to see other cultures and values, helps in becoming global citizens not just Australian.
43. Mr Upendra Marri	VICTORIA	Really appreciate the council for accepting the proposal and supporting this multi cultural society.
44. Mrs Suneetha Yadlapalli	BALDIVIS	Great step towards building a harmonious and multicultural society.
45. Mr Surya Ambati	WELLARD	It's a great step towards building a harmonious and multicultural society. I fully support this initiative.
46. Mr Dilip Jambula	WANDI	Just brilliant and would be great to have a temple in Baldivis.
47. Mr Suresh Mani	CLOVERDALE	Its God for all community members.
48. Mr Subramanya Pailoor	SOUTHERN RIVER	A Hindu temple is meant to encourage reflection, facilitate purification of one's mind, and trigger the process of inner realization within the devotee. The specific process is left to the devotee's school of belief. The primary deity of different Hindu temples varies to reflect this spiritual spectrum.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	**Address**	**Comment**
48. cont…		Lots of Hindu people migrated from a number of countries particularly India, Sri Lanka, Malaysia, Singapore, Fiji, South Africa, Kenya, Uganda and the United Kingdom. In fact temple allows any religion n belief people inside the temple. This is place for meditation, purification and inner development of any individual. This will surely have positive impact on well being of all people in and around Perth. I personally feel this will be vibrant and excellent proposal for the community.
49. Mr Rajendra Valakanti	WELLARD	It will be a great step towards building a harmonious and multicultural society.
50. Mr Murali Sanapala	SUCCESS	This is very important for Hindu people to have a temple for Lord Balaji. Please consider and approve. Thanks
51. Mrs Umamaheswari Muthuswamy	SHELLEY	This is a much needed temple in that area.
52. Mr Vasant Rajaram	WILLETTON	I fully support this proposed place of worship(hindu temple) as per the development plans. This will bring the hindu community together and allow cultural values to flourish.
53. Mr Vipul Langalia	SHELLEY	Very good opportunity for the devotees in south of River.
54. Mr Bachili	BALDIVIS	This Temple project is itself a great way of building a harmonious and multicultural society. I strongly believe building a temple in this area will give a scope to provide community services from the donations received through worshipers. Also great architecture of the temple will definitely attract visitors which will add value to developing suburb like Baldivis.
55. Mr Santosh Chitneni	NOLLAMARA	Much needed worship centre for the local community. Years in the planning and finally taking shape. Much welcome the proposal.
56. Mr Brendon van Rensburg	BALDIVIS	Thank you for your letter dated 6th January 2022. I have reviewed the Development Plan, Traffic Impact Assessment, Landscape Report and Acoustic Report. I am not familiar with the ritual practises of the Hindu faith, so please excuse my ignorance, but would appreciate clarification on a single subject. In none of the reports did I see specific information related to any potential “bell ringing”, “calls to prayer” or any similar source of noise related to this development. If these sources of noise do indeed occur at Hindu Temples: · What is the likely time and frequency of the above (i.e. isolated periods or all day/night)? · What is the likely pitch (high or low) and loudness of the above? · Are there any known impacts on animals/pets; e.g. could this lead to nuisance dog barking (in response to bells or similar)? Thank you and I look forward to your reply.
57. Mrs Marion Hones	BALDIVIS	A great step for diversity in our community.
58. Mr Kiran Howe	No address provided	I fully support the plan for a Hindu temple in Folly Road, Baldivis. The suburb needs a temple to cater for the growing Hindu community in Baldivis and the surrounding suburbs and to promote multiculturism in Baldivis. It also makes a welcome change from yet another junk food outlet !
59. Mr P Palani	AUBIN GROVE	The proposed temple not only will serve the local community but also the surrounding suburbs. I fully support the plan as it can be used as educate the young ones the religious and cultural values. It is also good for the multicultural society we have now.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
60. Mrs Leane Demamiel	BALDIVIS	I am strongly opposed to the Hindu Temple proposal on Lot 53 Folly road. I firmly believe that this development will have a serious and adverse effect on the lifestyle and serenity of our rural/special rural properties. I purchased and built in this area of Rockingham for its unique location with a bush land and quiet space The build of a Hindu temple and all the ancillary structures that is proposed plus the car park and volume of people that it's suggested will be using this structure is definitely going to have an impact To the way of life that we envisaged when purchasing these rural/semi rural blocks I ask that council do not allow this development to go ahead and destroy the peaceful natural habitat that we have.
61. Mr Ashwin Rao	WELLARD	It would be a great thing to have a temple that brings peace and kindness in the suburb.
62. Mr Sarath Kumar Reddy Moosani	SOUTHERN RIVER	I am excited about the proposal for this Hindu temple. It mean a lot to me and my family to go to a temple to offer our prayers. I feel like being home when I visit a temple. I will be thankful to rockingham council if approved this proposal so we can follow still our traditions and customs.
63. Ms Helen Neumann	BALDIVIS	I am writing regarding the proposed building of a Hindu Temple in Folly Rd, Baldivis. My husband and I are ratepayers in Baldivis and while we are not in the nearest vicinity a building and faith community of this nature will have a bearing on the wider Baldivis community. We would like to voice our objection to this proposal. A building of this nature has an imposing, dominating nature and while I support multi-racial integration I am hesitant towards some multi-cultural aspects. I note that most people who voice their support seem to affirm the idea from little spiritual understanding of any faiths at all. This aspect cannot be disregarded in consideration of this type of establishment; it is not only a building that we need to consider. Just wanted to take the opportunity to have our day, thank you.
64. Sri Sridharan & Hemalatha Sridharan	MURDOCH	With immense pleasure we welcome the development application of Balaji Temple in Baldivis. We sincerely feel it is a much needed facility in the area. It would be a great step towards building a harmonious and multicultural society. We look forward to the Council's approval of the development and we wish to undertake worship and other community service activities from this development.
65. Mr Vijayakumar Vijayaratnam	WELLARD	This is a welcome development down South from the CBD. As the suburbs sprawl further south, this will encourage residents of the Hindu faith to settle in these areas. As residential properties get more expensive in the city, this will be an additional drawcard to the city of Rockingham. As we know, there are increasing number of Indians migrating into Perth mostly as skilled migrants.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
66. Mrs Shirisha Ds	BALDIVIS	It is sensitivity designed and appropriate to the urban landscape
67. Mrs Sunita Lohan	1BALDIVIS	Temple is needed close by for worshiping. At moment nearest one is in canningvale which is too far from here.
68. Mr Suresh Kaja	HARRISDALE	Wonderful place for the Hindu community which will help people gain better mental health.
69. Ms Lakshmi Ramalingam	PIARA WATERS	The temple brings peace and harmony to the people. Much needed for the multicultural and diverse population.
70. Mr Wilfrid Evans	BALDIVIS	No thanks OPPOSED
71. Dr Arpita Ghosh	FLOREAT	It will be a much needed place not only in Baldivis but for the entire Perth. Balaji temple everywhere in the world is an abode of peace, tranquillity, spiritualism and harmony. It will add a lot of positivity for the youth & the community and will be an asset for the city.
72. Mr Philip Foster	BALDIVIS	I think the location of the proposed development is flawed from a road safety perspective given the narrow nature of Folly Road and the hazardous bend on the nearby cross road of Folly Road and Young Street. Whilst the traffic report attached to proposal paints a rosy picture there are several reasons to think otherwise. St Albans Road is already quite busy and this proposal will add to it. Folly / St Albans Road also become a major highway when any problem occurs on the nearby Freeway. Folly Road is a major access for emergency traffic in the event of a bushfire and has been blocked by police along with St Albans Road during fires. The proponents should also consider the threat of inundation of the site from nearby drains and Folly Pool. Other than the road situation I have no problem with the proposal. Considering the problems I have outlined I would like to off an alternative site that give the proponents the same amenities and access if they were able to acquire the land. However I have no interest or knowledge of ownership of my suggested alternative. The alternative site that I think would be more appropriate would be bounded by Mundijong Road, St Albans Road, Kwinana Freeway and the drain shown in the attached *.jpg I have submitted with this comment. I trust you find my comments useful and will take them into account. 

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
73. Mr David Smith & Ms Rosemary Coppen	BALDIVIS	We are not in agreement with the proposed building at Lot 53 (No.67) Folly road Baldivis . This is a rural area and it's not in keeping with the natural setting Rockingham council has decided it should stay as .So why you would you propose a building of this size in a area Adjacent to rural homesteads and rural farming . There is not enough water in the area for this project .The waste Systems for 400 to 500 people traffic concerns as there has been multiple accidents and a death adjacent to this property and it's not in keeping with our peaceful area
74. Mr John Cameron	BALDIVIS	I found out the other day from a local chat line, that there are plans of building a monstrous Hindu Temple on Folly Rd, do you know they will be screaming through a loud speaker from 7am till late, every day of the year, this is not my idea of a peaceful and quite suburb, they have a temple at Mandogalup already, which is 12 minutes away on the freeway, I for one will not be happy if this Temple gets the go ahead.
75. Mr Shyam Gattu	No address provided	With regards to the proposed place of worship, I would like to thank the team who is planning to build the temple, local community and City of Rockingham for their support. I look forward to undertaking worship and community service activities from the development. This is a great step towards building a harmonious and multicultural society.
76. Mr Pramod Beeram	HAMMOND PARK	It's a nice thought to establish a place like this in the specified area as it would help the area to develop faster and in a sustainable way. We can take an example of Canningvale, also places like this would always bring the communities together and achieve common goals which are desired by local councils.
77. Mr Hao Deng	BALDIVIS	I am writing to express concerns regarding the said proposal and would like to see it being rejected. The proposed development is located right at the start of Folly Road which itself is the gateway to Young Rd. Having such a development that is totally unrelated and different to the existing peaceful and quite theme of the surrounding area, located in a place that would be seen by everyone living nearby everyday, is highly inappropriate. More over, if the development is being approved and finished, the noise emitted by the bell could be an issue. The noise from a bell is drastically different from any other sound or noise that can be heard around the area, although its amplitude may not be very high and duration could be short, it could still potentially cause disturbance. Lastly, I believe most of the people living around the area will be very concern about the de-value of their own property caused by the proposed development. It is awkward and cannot be integrated into the neighbourhood smoothly, it also does not fit in the peaceful and quite settings of the rural Baldivis area. I would hope the above comments be reviewed and considered.
78. Mr Swaroop Muralidhar	PIARA WATERS	Great step towards building a harmonious and multicultural society.
79. Mr Ravi Mariappa	ATWELL	In strong support to the Place of Worship. The Hindu temple proposed in the suburb of Baldivis will positively benefit people living across Perth both NOR and SOR. The temple is very significant to our beliefs and will benefit many of us with good mental health. The culture and tradition practised and imparted through the temple cultural committee will keep the vibrancy of the community and will create positive atmosphere to the entire population. Our sincere request as an entire community and as well as individuals, to the council members, and to the local residents that your support will come along to see the project take shape and benefit the entire population in one way or the other.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
80. Mr Praveen Kumar Rachakonda	BALDIVIS	Perth especially City of Rockingham does not have many multi-cultural worship places. With expected population growth, having the above temple/place of worship will certainly help in increasing the suitablity of Perth in particular City of Rockingham as a preferred location for families from Asian countries. Also the temple designed does take into consideration of surrounding environment as well as flora and fauna and is much needed faciltlity. I am looking forward to undertaking worship as well as prticipating in community services to be organised by the temple community/management from time to time. In summary, I support the development in principle.
81. Mr Shyam Gattu	WELLARD	I look forward to undertaking worship and community service activities, great step towards building a harmonious and multicultural society.
82. Mr Darren Oatway	BALDIVIS	The construction of such a temple will decrease the surrounding land value and the possibility of current land owners in the area un able to sub divide in the future as no one in their right mind would want to build and live near a temple that will create traffic and noise. Such a place should not be near residential areas.
83. Mr Brian Sims	No address provided	I am emailing the council to show my strong objection to the proposed Hindu Temple on Folly Road in Baldivis. I have been living in this rural area of Baldivis for 5 years. This is our forever home that we have worked extremely hard for. The word I would like to emphasise here is RURAL. A rural setting is that of nature, farming, peace, animals and tranquillity. The construction of a Hindu Temple will be an invasion of my amenities and again voice my strong objection. The proposal, along with all of the reports submitted to council with this application are very biased in favour of the Temple. Of course being paid a significant amount of money to write such reports, this is what we would expect. In all of the reports, absolutely no regard has been taken into account for the lively hoods of the already existing residents, their lifestyle, their animals, their amenity. There is a very large horse community in this part of Baldivis. Horses are flighty animals at the best of times. The danger, grief and stress that the Temple bells and chanting will cause to them will be catastrophic. Also many horse floats travel this road with Baldivis Vet Clinic being an equine hospital. Horse floats travelling past the proposed temple could cause serious harm to themselves inside the floats is subjected to such sounds while travelling. Who will be held accountable for such injuries? No report has been made on the cycle groups that frequent the area on weekends for training where traffic controlled restrictions are put in place on the Folly Road and Young Road Intersection. The added traffic that will be inflicted on the cyclists on the weekends (when Temple patrons are at their highest) will add to the high possibility of an accident. On closer inspection of the scale drawings in the proposal, the Temple is proposed to be 20metres high. This is equivalent to a 5 or 6 story building. It is noted multiple times throughout the report that it will “Blend In”. I’m sorry, but a 20metre building in the middle of a rural paddock, no matter how many trees they want to plant around it, will not make it “Blend In”. On closer inspection, it seems the report has been made to play down the enormous size of the Temple. The report has also failed to mention the bells and chanting of the Hindu faith. According to the report if the windows are closed at the temple and surrounding buildings, no one will be disturbed by the noise.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
83. cont…		If the proposal does get through, who will monitor this and hold them accountable to the reports. Will the council or Temple give compensation to the residents who have pointed out the concerns in their public submissions? The population forecast on the Rockingham Council Website for Rockingham is 142,472 people. To be considering a Hindu Temple to service only those who practice Hindu, with a population of 587 people seems to be very unreasonable when there is a Hindu Temple only 15.2 km away, which is an 11 minute car drive. What is the Rockingham Council benefiting from approving such a large scale development ($5 million dollars) for such a minority? No where in the application or the reports does it mention the Hindu Temple will bring anything to the Rockingham community as a whole. There has been a report on the Black Cockatoo and how it wont be affected. I believe this to be false. The Black Cockatoos do use the trees on the proposed site as a feeding ground. If a Temple is constructed, the noise and surroundings will scare them and are no longer suitable. There has been no assessment done on the Quenda population that inhabit the area. The Quenda is a threatened species and a lot of work has been put into conserving the wetlands for their habitat. Although the Temple is not proposed for the wetland block, the noise and movement that will be generated by the patrons of the Temple could be very damning on their existence around this area. The residents of Baldivis East should not have to compromise their way of life to accommodate a Hindu Temple that clearly will not fit in to the Rural farming setting way of their/our chosen life. The financial impact a Temple will have on properties in this area will prove to be catastrophic, not to mention the stress and anxiety that will be caused by all of the implications that this temple will bring to the area. I would be disappointed to see Rockingham Council endorse this application to JDAP when there are clearly more Cons than Pros.
84. Mrs Catherine Paton	BALDIVIS	**Submission 1** I'm writing again because I feel my concern about mine and all the horses in young road and there is a lot in agistment centres. Horses are a flight animal and the very loud noise of bell, drums, chanting is going to be so frightening for them and they just won't be able to cope. These monthly festivals are held outside of the temples with up to 300 attending. You only have to google the Hindu festival in Perth and you can see for yourself the noise. (please do) I am worried sick with what will happen to the horses in this rural area. I am afraid my horse will run through the fence as this Temple is only 150 metres from my paddocks and front door this is the north side of the temple which they really haven't mention anything about how this will affect me. I ask you to PLEASE consider the horses in this rural area. **Submission 2** Dear Sir I am writing this email in the hope to bring to your attention and to voice in the strongest terms our objection to the below Hindu development in our Baldivis rural community. We have been advised that developers have submitted a proposal to the City of Rockingham to develop a Hindu Temple and associated out building including three residential dwellings on site 53 Folly Road.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
84. cont…		The Hindu temple development if approved, will consist of up to 7 separate building, the Temple being the largest structure approximately 40 metres long and 30 meters wide with a maximum height of 20 meters (approximately 6 stories) for one tower and 15 meters height on an additional two towers, the roof height on this building is around 13 meters, visually this development would be totally alien in our rural small farm environment and clearly be out of character for the area which the Rockingham city councils rural land strategy plan is trying to protect. The developer has provided reports for the environment , traffic, noise, and a visual environment report all of which are heavily biased in favour of the development. The development proposal loosely documents festivals and Hindu weddings approximately 1 festival a month and a wedding every second month both attracting up to 400 guests. This area is zoned rural and is generally made up of small farms and equestrian type properties, the properties themselves in general have a single dwelling and associated farming out buildings made up of equipment sheds and in some cases small animal shelters and stables, the proposal is clearly out of character with the visual character and amenity of the area. Residents are extremely upset about this proposal, we see it as an invasion on our rural lifestyle which we have enjoyed for over 25 years, residents in most cases have worked and planned to retire in this rural environment, this proposed development is already causing emotional and mental stress on some of the residents that will be directly affected by this development. Additionally, there is a real concern for the noise created during weddings and festivals when held outside affecting the horses and other animals in the area. We as residents should not be expected to make concessions to a development that is clearly out of character with the area. If this development is necessary for the Rockingham, Baldivis area considering there are multiply Hindu temples within a half hour drive of 53 Folly Road, the development should be placed in an industrial zoned area where there is no impact to local residents or the environment. We hope we can count on your support in this matter as it is extremely concerning and jeopardises our future in the area. Please feel free to call if you need additional information, I have also attached a spread sheet detailing additional concerns for clarification, this is by no means a full list of our concerns. **Submission 3** I am strongly opposed to the Hindu Temple. I have a question for council and JDAP. How can you justify taking away a way of life of this community who have mostly lived here for over 30 years to give to another which is deviously masquerading as a place of Worship which it clearly isn't. It's a community centre who's followers do not live or have lived in this immediate area. The monthly festival's held outside of the temple will be hugely disruptive to the locals and horses in this quiet and peaceful environment. The Hindu facility will never blend into this rural setting and will destroy our current way of life. **Submission 4** I strongly oppose of the Place of worship Hindi Temple hiding as a Hindu community centre.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
84. cont…		Another question I would liked asked. Has the developer followed the guidelines to ensure no impact to aboriginal heritage and that they have examined for no artefacts on the site. Not all sites are marked but this is very close to one. I can't see anything about aboriginal hertitage in there report. I will also be asking the Aboriginal heritage due diligence. **Submission 5** I strongely disapprove of this huge development in the middle of a paddock 150 m from my front door. These are my last question I would like addressed in your comments when this application is reviewed. 2.0 Architectural outlined of the proposed development. 2.6 lighting on temple and in the car parks are not to be lit up with massive spot lights as seen in other temples and car parks in Perth. Is this correct ? What happens if these lights are added after if application gets approved and who do we call to get them removed because you know it's going to happen. 2.4 Hindu Festivals Are to be held not once but twice a day once a month outside during week days and weekends from 6-12pm and 5-9pm. This volume of noise will be so disruptive to rural living and please take into account our feelings and worries on this and would you the panel who vote on this like this disruption to your lives. Also I can't see anything mentioned on the "calling to prayer bells " does this mean that they won't be happening and if so what do we do if this does happen since no mention in application on noise. Volume on noise on the festival held outside has not been measured so when they become too noisey does the police or rangers get called out to check the volume? Is this also going to effect the value of my rural property because it will be hard to sell with such a development on my doorstep. These are very important questions to me as I am most effected by this development if goes ahead being right on my doorstep . There application mentions Folly road all the time about the visual view but nothing about us on the north side where they plan to build Everything. Please someone has to come and have a walk around to see as the developer has been very bias in this . I am physically sick over this and the mental stress it is taking on my family is over overwhelming. **Submission 6** As this is our last day to voice our disapproval of this development I have a question that has not been mentioned and as a person who has lived in this area for over 26 years and have experienced this every year as we sit on the border of the Folly pool as does this property. Tiger snakes are rampant in this area from September till June being 10 month of the year. Are they aware of this and that they will have to stay alert and watch were they walk. Everyone in rural Baldivis are aware of the snakes and are prone to seeing them before we stand on them. A stick is not a stick, 9 times out of 10 it's a snake.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
84. cont…		Just something for you to think about as they are our most venomous snake and protected snakes in WA and will kill a small child within 30 minute .
85. Mrs Beverley Bennett	BALDIVIS	My husband and I wish to object to the proposed plan to build a Hindu Temple and associated buildings at Lot 53 Folly Rd Baldivis. We are of the opinion that it is an unsuitable use of the site for this rural area and will mean a large increase of traffic, and noise associated with the activities. We have lived at 427 Doghill Rd in rural Baldivis since 1977 and have enjoyed the rustic, peaceful and rural environment of the area since then, and think that the noise, extra traffic and non rural use of this site will impact peaceful and quiet enjoyment of this area. Traffic will increase markedly as well. We ask that you will seriously consider how this project would change this quiet and rustic neighbourhood which we have enjoyed for so long. I know that other residents are also very alarmed at this proposed huge departure from a rural use of that site and all the changes to amenity of the area it would bring.
86. Mrs Gail Hayden	BALDIVIS	No I don't oppose a temple being built but not where it is to be built...I think it is too close to other homes in the community especially the property's next to it and also around it. The noise from the praying and the singing and ringing off the bells and all the traffic will be terrible, I think it should be built away from the community on land away on its own, then it won't bother anyone and they can pray and enjoy there own temple. But it is at the present in the wrong place.
87. Name withheld	(no email or postal address provided)	Hi, I am against this temple being built. I don't believe it is in the best interest of the people or the area and issues such as significantly increased traffic will have a negative impact on the local community.
88. Mrs Alyssa Pettit	BALDIVIS	I am against this temple being built. I don't believe it is in the best interest of the people or the area and issues such as significantly increased traffic will have a negative impact on the local community
89. K & B Johnson	BALDIVIS	We are very concerned that the proposed Hindu Temple will seriously degrade the quality of life in properties on Folly, Young and St Albans roads for quite some distance from the proposed Temple. We envisage this degradation to consist of: 1. Noise pollution – especially from traffic at times that are currently quiet. The volume of through traffic on Folly road is increasing steadily, especially from that traffic turning into St Albans Road from Mundijong road and using Folly road as a Freeway entry. This traffic is almost exclusively work related and would coincide with attendance times at the Temple. Also there is normally bell ringing on a daily basis, generally early morning, associated with prayer meetings. The traffic assessment provided only considered the past five years and comments on the lack of road accidents in the area and states that no fatalities have occurred in that time but does not mention the fatal collision that occurred on the corner of Folly and Young Roads perhaps about ten years ago. 2. Visual pollution - We consider that the visual aspect of the proposed Temple will be completely out of character in this area as no other buildings on Folly or Young Roads are anything other than normal rural type housing and outbuildings. One part of the application showed photographs of the buildings on the south side of Folly road on the property used for chaff and other stockfeed products stating that they were tall shed structures.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
89. cont…		Both the sheds and grain silo are completely normal structures found anywhere in WA's agricultural regions. We note that drawings of the proposed Temple were provided but no artists impression of it 3. Increased traffic will degrade the amenity of the area for recreational activities such as horse riding and bicycle riding. The traffic assessment document did not take much account of cyclist activities, and none of horses, in the area but the authors might be surprise at the number of cyclists that have to be avoided (this does not include organised and approved cycling events). 4. Light pollution which would be inevitable from evening events. Currently this area is completely unlit except for house lighting, which makes for very pleasant ambience at night. We certainly hope that it can continue this way. In considering all of the above we are strongly opposed to this proposal.
90. Mrs Trudi Mataiti	ROCKINGHAM	I welcome this proposal. I admire the Hindu religion & those who practice it. I think it will be great culturally to have this within our community & will inspire residents who are looking for more joy within to connect with such a beautiful religion. Especially to help with what is going on in the world today.
91. Mr Donald Allanach	BALDIVIS	We consider the application should be approved. Australia is a multicultural society that encourages freedom of religion and places to practise religion. The temple will have little or no impact on the surrounding areas. Anyone who has been to Bali will be familiar with the quiet dignified ceremonies of the Hindu religion. If the proposed buildings meet all the required codes we see no reason to not approve the application.
92. Ms Jacqueline Smith	BALDIVIS	I fully support this proposal. Our community is made up of many faiths and this would show religious inclusivity I am a resident of Baldivis and would love to see the embracing of multiculturalism and respect for other faiths.
93. Mr James Niven	BALDIVIS	I welcome the proposal to develop a Hindu temple in Baldivis. There is a large, growing Hindu population in the area and having this facility will help foster stronger community ties and breakdown barriers between us.
94. Mr Arvind Tippirneni	BALDIVIS	Proposed place of worship of Hindu Temple is most welcome in Baldivis. Considering the places of existing worships of various religions studying at micro level comparatively all over WA, the location is best suited with none/little hindrances to normal life, due to the temples location which is in a location away from main Baldivis area of living and this temple will not be as much a disturbance than the many others existing (Not to name), if this is what is considered a disturbance to locals. All over very busy areas, there are religious buildings constructed and these does not highlight any hindrance to disturbances of normal life of locals. A big 'yes' to this temple, that brings Peace and God to Baldivis. A must for Baldivis.
95. Mrs Carol Young	BALDIVIS	I would be against this development partly due to the fact that it would increase traffic along an already oversubscribed safety Bay Rd. I believe it would be far more than your model of 20% I live close to Safety Bay Rd and let me tell you the traffic is already horrendous and also I believe their will be far more people visiting this site than the plans have indicated this is a rural setting and should be left for rural properties.
96. Mr Lindsay and Mrs Glena Maitland	BALDIVIS	I do not believe it would be a suitable are for a Temple, the traffic would be a major issue also the noise this area was a farm one of our friends came as a child with his father in the tractor over hills and dales his great memories!! We also chose the area because of the abundance of parks and trees also close to (our) beach

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
96. cont…		We tell everyone who visits how close we are to the water and that is why it is so much cooler here. Bragging a bit I know. I also recall someone wanted to build a Mosque near Spearwood and the council rejected this also on safety issues because they would come by car and the numbers would have grown in size just as they would with the Temple. There is quite a lot of large properties in the area of Folly road Horse properties and the like also fruit and vegetable farms. so please give this your most careful consideration.
97. Mr Manish Meelu	BALDIVIS	We support this and it will be good for the community. More multicultural places need to be built as we are a multicultural society.
98. Ms Sukhi Singh	BALDIVIS	Hi Im in favour of this proposed Hindu Temple, as it will help Hindu community to worship within the area of reach and also boost up Baldivis property market.
99. Mr S Saravan	No address provided	Great initiative to towards building multicultural and harmonious society.
100. Ms Rajitaa Siddireddy	BERTRAM	I would like to support the temple proposal. It will be the closest temple to us and people who live in Mandurah.
101. Mr Sreekar Purmandla	BERTRAM	I support this temple proposal because Hindu temple is good for meditation and brings mental peace and harmony in human being.
102. Mr Venkateswar Rao Ayinala	WELLARD	We strongly support above proposal.
103. Mrs Sireesha Ayinala	WELLARD	Strongly support above proposal.
104. Mrs Akanksha Challagonda	WANDI	Such a communal place in the specified area is a wonderful idea for various communities living in surrounding areas and across Perth. It will make the area look wonderful and more lively.
105. Mr Keerthichowdary K Kuppuru	WELLARD	Much needed for the place. I strongly agree.
106. Mr Saket Podisetty	WELLARD	Hello Council, The proposal for the place of worship is welcomed and will provide several pros for the City of Rockingham and its members. It is also a place of gathering for the community members and spend quality time with family and friends. The multi purpose hall would allow the community (not just temple goers) to access the facility for celebrations like birthdays, weddings and others adding value to existing facilities. The concerns of impacting the rural setting by some community members are not accurate. A place of worship always provides a calm environment around its premises with a heavy presence of natural aspects including diverse plants and birds etc. This will only enhance the rural ambience and the livability of Baldivis and its surrounding suburbs. The concerns of noise and activity are probably justified on one or two big cultural celebrations annually no different to other celebrations across the country. The above mentioned can be witnessed by several other suburbs in WA and nationally where places of worship have become an integral part of multicultural societies and continue to play a vital role in Australia's success as one of the most desired places to live in the world. I'd request the council to accept my strong support in going ahead with the proposed place of worship in Baldivis which will not only have direct but numerous indirect benefits to the community as a whole.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
107. Mr Paul N Lyons	BALDIVIS	I am against this proposal as it will ruin the rural look, feel and quietness of the region. The building is massive and the traffic will be terrible blocking up the flow from Folly Road onto the Freeway. The intersection of Folly and Young roads is already dangerous (there have been many accidents and even deaths over the years) and the bend and blindness concerns from entering Folly road from Young road south is currently terrible but will be even worse if this application is passed. A church in this location is not acceptable or appropriate for local land owners.
108. Mr Sanjay Mandali	HAMMOND PARK	This is a much needed facility in the area.
109. Antitha Mahesh	1BALDIVIS	I think it would help promote diversity within the Rockingham community as the temple would be more accessible for those practice Hinduism down south.
110. Mr Dilip J Jambula	WANDI	We would love to have a Balaji temple.
111. Mr Sanikommu Vengala	PIARA WATERS	Great step towards a building Harmonious and multicultural society in that area
112. Mr Satnam Singh	BALDIVIS	I fully support the proposed place of Worship (Hindu Temple). Baldivis is very fast growing suburb with people living from different backgrounds. Hindu temple fulfills the gap being away from home country. It will provide cultural and religious benefits to people living in the Baldivis and surrounding suburbs,
113. Mr Venkat Gondesi	WILLETTON	Hindu temple - Baldivis - Please approve.
114. Mr Niket Patel	BYFORD	We would highly recommend this proposal to be passed by local authorities so that a place of worship for Hindu people can be established. Please approve.
115. Mr Keerthy Ramasamy	WELLARD	Much needed facility in the area.
116. Mrs Rosemary Morgan	BALDIVIS	I would like to register my concern with the proposed Place of Worship - Hindu Temple on Folly Rd, Baldivis. I am concerned with potential increased traffic in the area particularly near the intersection on Folly and Young Road, as the intersection is already a concern with narrow roads and the curve of the road causing many near misses in terms of car crashes. The increased traffic and people in the area will also effect the rural nature of the area, with a direct impact on the peaceful serenity that originally attracted people to the area in the first place. The proposed temple will include the ringing of bells and the resulting noise pollution is of great concern. Many of the local properties also have horses and ride horses in the area, and the increased traffic and noise is a safety concern as the horses may be spooked. I also assume that the people attending the proposed place of worship will be entering from outside the area, with the majority of local residents not attending the Hindu temple. This leads me to question what value the temple would add to to those in the immediate local community.
117. Mr Luke Morgan	CANNING VALE	I would like to register my concern with the proposed Place of Worship - Hindu Temple on Folly Rd, Baldivis. I am concerned with potential increased traffic in the area particularly near the intersection on Folly and Young Road, as the intersection is already a concern with narrow roads and the curve of the road causing many near misses in terms of car crashes.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
117. cont…		The increased traffic and people in the area will also effect the rural nature of the area, with a direct impact on the peaceful serenity that originally attracted people to the area in the first place. The proposed temple will include the ringing of bells and the resulting noise pollution is of great concern. Many of the local properties also have horses and ride horses in the area, and the increased traffic and noise is a safety concern as the horses may be spooked. I also assume that the people attending the proposed place of worship will be entering from outside the area, with the majority of local residents not attending the Hindu temple. This leads me to question what value the temple would add to to those in the immediate local community.
118. Mr Gajendrasinh Gadhavi	LAKELANDS	That's very good move towards humble Hindu community.
119. Mr Raj R	STIRLING	Please allow to build the Balaji temple to support multicultural growth!
120. Mr Saikumar Beera	VICTORIA 3336	A temple is required for the hindu community.
121. Mr Shanmugasundaram Poologapandian	CANNING VALE	This is just a belief of particular community which we wish to be supported by council & government.
122. Mrs Anahita W Wadia	AUBIN GROVE	Baldivis is a perfect location further south of the river. It'll act as a spiritual centre and add value to the suburb.
123. Mr Ravikumar R K	LANDSDALE	Need Hindu temple.
124. Mr Saravanan Munusamy	ROSSMOYNE	Required.
125. Miss Sangeetha Puliadi Varadarachari	EDENHILL	I'm pleasing to build a Hindu temple there.
126. Mrs Vijayalakshmi V Vanniya Rajan	LEDA	Properly planned and needed for our community Great steps towards building a harmonious and multicultural society
127. Mr Amit Sharma	WELLARD	Good to have a place in nearby area to support religous sentiments and attract multicultural people in our area.
128. Dr Majula Morisetty	BOORAGOON	I feel that this is an excellent proposal. I thank Rockingham council for this opportunity. I am sure it will be immense pleasure for our family to attend the Temple.
129. Mr Rajanikanth D Daram	WELLARD	Don't have Hindu temple near Baldivis. Please construct one in Baldivis. This is my sincere request. Thanks
130. Dr Mahalakshmi Ragunath	SALTER POINT	Having a Balaji temple is of paramount importance to the Hindus of the region and will also enable and foster close community relationships as well as make commercial sense as it will provide jobs and attract revenue
131. Ms Swarna Pechetty	No address provided	We would like to be build it Atwell or Aubingrove
132. Ms Lara Blom	No address provided	I am writing to voice my concern about the development proposed on the land identified as 53 Folly Rd in Baldivis.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
132. cont…		My family came to this area more than ten years ago for the peaceful lifestyle that it gives. A unique community that still has a country feel yet is close enough to amenities without being overrun by suburban influence. A lovely greenbelt among the birds and the bees and the kangaroos and other wildlife including the endangered Black Cockatoo. We feel that this choice we made is now under threat and we would like you to put yourselves in our shoes and imagine if you'd like to have such a change to your ideal landscape imposed upon you by asking you the following questions: Will our peaceful neighbourhood be interrupted by services, events and festivals at all hours of the day and any day of the week? What sort of noise are we expected to hear and how frequently? Will our quiet narrow country roads be congested with the numbers of vehicles that we have observed in other similar scenarios, where they will line the streets after the very inadequate parking has been filled at all hours of the day? Will there be increased traffic on our streets that are not suited to much more than the local traffic that they already carry? How will such a facility cope with the regular power failures and ground water issues of the area? Residents all use the ground water for their stock and for their homes, so with large numbers of people needing to utilise a sewage system, what measures will be taken to consider the environment that this facility will impact upon as it is low laying wetland with a high water table among others? Will the kitchen will be regulated via the Health Department like any other commercial kitchen? What impact would this facility have on the other amenities in the area, for eg with the many horses boarded in the area by residents of suburban Baldivis and surrounds? Will the hundreds of patrons respect all the reasons that we chose to live here? It's not as if WE the people, the taxpayers have moved into an area already knowing the facility existed. Why is there need another huge facility in Baldivis, when there is already one not even fifteen minutes away in Mandogalup? While we are all for freedom of religion, the nature of this facility does not appear to be a humble place for reflection. With the multiple residences, and commercial nature of the other buildings. Indeed it is a very different development to what exists in the area currently and it will not at all complement the rural surrounds. Therefore, I and others in the area feel such a development would be more suitably located somewhere that is not impacted by the noise, congestion, general keeping of the rural feel of this part of Baldivis, and the potential future changes and expectations that come from large groups of people arriving into and environment that doesn't match the purpose of their ideals at the expense of those who already live there. Perhaps an industrial or commercial precinct - NOT a rural lifestyle area were people seek serenity and pay a hefty premium to get away from the hustle and bustle of more cramped communities that these sort of developments inevitably facilitate. In conclusion, we do not want this sort of facility in our area.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
133. Mr Nick Unmack	COTTESLOE	My mother in Law Margaret Smith owns the property directly adjacent to the proposed Hindu Temple on Folly Rd. Baldivis being Lot 923 Young Rd. We have used this rural property and its stables, sheds and natural amenity to bring up our children and Margaret's Grandchildren For many years she has talked about finally retiring to her dream rural block. Any proposed mass religious compound immediately on her boundary - even a scaled back version is not in keeping with the amenity of the area. Margaret, my wife and our children deserve the right to the quiet enjoyment of this property in keeping with its permitted and zoned use(s). I employ 250 people in the hospitality sector so these comments do not come from a place of religious intolerance or ignorance, just common sense. A large scale Hindu Temple would be a fantastic addition to the Rockingham/Mandurah/Kwinana precinct. I would implore the council work with the planners in this instance to provide a more suitable location other than a semi built up rural setting.
134. Mr Bala Inkollu	No address provided	We are expecting Armadale council or near Aubingrove surroundings.
135. Mr Prasanna P Manikka Dinakaran	ASHFIELD	Please consider our request to construct the temple.
136. Mr Satish T Tarale	WELLARD	Much required project. This project supports multiculturalism and will be very beneficial to the locals and residents of surrounding councils. This has a potential to make it a place to visit for people residing across the Perth metro area.
137. Mrs Swathi Gattu	WELLARD	Much needed facility for our children and families! Specially as there is none in the near by suburbs.
138. Mrs Sampurna Vadlamani	AUBIN GROVE	To whom it may concern I am quite appalled by the comments and the article published in the newspaper report against the construction of a place of worship. I really wonder how ignorant some people are or mislead by some imaginary fear mongering thoughts. The allotted land is Geographically no where located to the densely populated areas unlike other places of worship which are located amid Baldivis residential areas. The article elevates their luxuries like vacant land for their motorbike races or ruining life styles and other absurd comments which are baseless. India is a land of temples that brought the beauty and glory to its every street and suburb and so does this structure will bring prosperity to the suburb profile in the near future. I am sure every place of worship in Australia follows the basic norms set by the council which is an approved building structure. I hope the council and the state government will do justice in this matter. ??? ???
139. Mr Nikunj Thakar	BYFORD	Beautiful idea. Please allow it.
140. Mr Raj Moturu	PIARA WATERS	We wish to have the Hindu temple erected in the premises as planned please!
141. Dr Sreeja Kothapally & Mr Raj Moturu	PIARA WATERS	Hindu temple has been a dream for many of the Indians in Perth. I believe the policies and regulations to not disrupt the people living around the suburb and environment have been and will be followed accordingly.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
142. Miss Bhagyashri Katambale	WELLARD	Very well designed and much needed facility in the area.
143. Mr Subramaniam Chinnasamy	SHELLEY	We wish Hindu temple will give positive energy and more business opportunities. Loneliness is not solution, social function will reduce mental sickness. Meeting people will promote happiness.
144. Mr George & Rosemary Morgan	BALDIVIS	I would like to register my concern with the proposed Place of Worship - Hindu Temple on Folly Rd, Baldivis. I am concerned with potential increased traffic in the area particularly near the intersection on Folly and Young Road, as the intersection is already a concern with narrow roads and the curve of the road causing many near misses in terms of car crashes. The increased traffic and people in the area will also effect the rural nature of the area, with a direct impact on the peaceful serenity that originally attracted people to the area in the first place. The proposed temple will include the ringing of bells and the resulting noise pollution is of great concern. Many of the local properties also have horses and ride horses in the area, and the increased traffic and noise is a safety concern as the horses may be spooked. I also assume that the people attending the proposed place of worship will be entering from outside the area, with the majority of local residents not attending the Hindu temple. This leads me to question what value the temple would add to to those in the immediate local community.
145. Dr Parthasarathy Ramesh	BUNBURY	Fantastic initiative for Indian diaspora living south of perth.
146. Mr Nihar Rai	AUBIN GROVE	Excellent proposal and plan for a much needed Place of Worship (Hindu Temple) for community development and cultural activities for the vibrant Hindu community who have offered/provided so much wellbeing to Western Australia.
147. Mr Mazundar Reddy Kallam	BYFORD	We can pray and take time to make our wishes a dream. Going there for a occasion is very happy for u.
148. Mrs Ramya Kallam	BYFORD	This would absolutely be a wonderful addition to our existing multicultural society. It adds positivity and aura to our suburb.
149. Krishnakumar Hariharan	BALDIVIS	The community can learn all the different cultural things. It shows respect to our culture.
150. Mr Ravikumar Vaka	HARRISDALE	Multicultural activity.
151. Mrs Margaret Smith	ROCKINGHAM	My husband and I purchased our property 547 (Lot 923) Young Road Baldivis, over 35 years ago in 1987. I am the listed owner given a land gate title search. This proposed development will stop me from enjoying my property in peace, privacy, and comfort. I have the legal right as an immediate neighbour to the quiet enjoyment of my property of 35 years. We purchased this beautiful property to have a hobby farm and eventually build a dwelling on it with the view to live a peaceful Rural existence in our retirement. Over the years we have saved and added electricity, bore, replaced fences, gates, built a large 4 horse stable, 4 horse yards, a large multi-purpose shed , bought tractors and farm equipment all to enjoy along the way and to set the property up for our retirement and build our dream home. Our home, which I am currently designing, is to be built along the side of our multi-purpose shed.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
151. cont…		We have enjoyed this property with our children and now our grandchildren. Clean open spaces, great for tractor rides, cutting hay, picnic days and enjoying sheep and horses. We have wonderful days out there. We all spend most weekends enjoying our rural property. Our sons often use the shed during the week. This property is to be kept in the family for generations to enjoy the rural amenity it provides. This proposed development is right next to me. We will share the same fence line. I am beyond shattered at the thought of this proposal. With all the buildings being erected, in some parts 4 towers one being nearly 18 mtrs high. A rural environment such as the one we five and operate in is not suitable for a large scale multi-faceted religious complex. This type of proposal - even if scaled back in any form- is best suited for a medium density industrial area. The fact they want to build in this area purely to save money (given the large land parcel required) should not be forced on long term residents. With hundreds of people coming and going, during the week, day and night 365 days of the year then add weddings and a festival every month. How will this not grossly affect myself and others in our rural community? We have paid our rates for 35 years to enjoy our rural setting. How can someone come in with this size development and ruin the peaceful rural setting. If this goes ahead our 35 years of planning our retirement with be destroyed. How can a compound of this size NOT have a visual impact, it is not minimal. It is not going to enhance the rural area with a 17.55mtr tower. The proposed development states a place of worship can be considered in a rural zone. A place of worship is a temple or church, not multiple buildings, library, dining hall, 2 double story homes, 4 home units for volunteers, a multi-purpose hall for weddings and festivals. This is all outside any description of a place of worship. The noise level report has disappointed me and I strongly disagree with their findings. I am the closest neighbour. My proposed dwelling is approximately 50m away from their compound and located directly downwind from prevailing SW breezes. Noise from the car park. temple and food hall will travel directly onto my block of land and into my dwelling. I am mortified at the proposed level of noise from light vehicles., trucks in the loading zone., music from celebrations and the smells coming from commercial kitchens, grease traps and bin stores, exhaust fans etc etc. We spend most weekends out there and family members use the machine shed some weekdays. It is our second home of sorts. Yet no noise level was given to my property. This concerns me greatly. Noise levels in the report by Marshall Day acoustics stating all windows and doors would be closed to prevent noise travel. That statement is as silly as saying you have doors and windows but will not open them. The noise from this development will affect me greatly. Bells chanting during the day and evening and loud music. Festivals with hundreds of people inside and outside the temple. Weddings with 400 people. Service vehicles going alongside my property. Vehicles parking alongside my property. This will be intolerable for myself but also for other rural properties. My main entrance is right at the boundary fence of the proposed development. Their service entrance is very close to my entrance. Again a rural 1 lane un-bituminised road. I have photos of this road attached. What is going to be delivered on this service road? Will it be many delivery vehicles at times? What delays could I experience and what damage over time to this section on Young Road? Who is going to maintain this portion of road and the only gazetted road access to my property?

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
151 - cont…		I notice on the plans of the service road that it continues on into the carparks. What is to stop multiple cars using this service road when the Folly road entrance is backed up with cars? Having read a lot of the proposed development submissions, I find they have been very loose or breezed over many points. I have trouble with the number of people who will be using this facility. Taking in the highest number of people attending a once a month Hindu festival. They say 450 in one weekend day. If a festival went for 2 days that's 900 people, I have researched that some Hindu festivals go for 5 days. Then you have weddings, prayer meetings, yoga, library etc. This volume of people and cars is not rural living by any standard. In the proposal for Hindu Weddings they estimate 266 vehicles, 133 inbound and 133 outbound. The proposal has only 103 parking bays for public use. Plus 4 for priests, plus 4 for volunteers and 2 disabled bays totalling 111 bays. With 133 inbound wedding guests and 103 bays, where do the other 30 cars park? On the proposal, the lower part of the property {the floodplains) will be retained, so they cannot park there. That leaves 30 cars to park on the roadside of Folly Rd and or down Young Rd. Young Rd is a single lane un-bituminised road, it is not 2 Janes. Am I going to be able to come and go from my property? Then you have the very real possibility of fires. The sides of Young Rd is high vegetation. In summer it is very dry. Cars parking on that vegetation with hot exhaust pipes could be a Fire disaster. So I ask again where do the 30 cars go or more cars if more guests are at the wedding? The four home units for guests and volunteers. The proposal says volunteers will stay no more than 5 days, again very loosely stated and how would this be controlled. There could be a revolving door of volunteers so the units could be full 365 days of the year. I am not opposed to building a temple somewhere in Baldivis but not lot 53 Folly Road, a peaceful rural area is just not the location to do it. This proposed development will prevent me from enjoying my property in complete peace, privacy, and comfort. I have the legal right as an immediate neighbour to the quiet enjoyment of my property of 35 years. Please see my attached letter and photographs regarding the proposed Hindu Temple compound in Baldivis.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
151. cont…		 

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
151. cont…		
152. Dr Naga Ganjikunta	BYFORD	It will be a great facility for well integrated Hindu community. It helps to kickstart a great community development in the area. We need to look at it as a community centre rather than a simple religious structure. It will be a great education place for younger generations about culture, respect, values etc.,
153. Mr Hafeez Abdulaziz	SOUTHERN RIVER	This is good for Indian community across Perth. Balaji temple is a good initiative which will bring all other communities together as well.
154. Mr Srikanth Kambhampati	BYFORD	I support building this place of worship.
155. Mr Sajith Arayadath	SUCCESS	I strongly support to build the proposed temple.
156. Mr Bipin B Malkan	ROCKINGHAM	This is much needed facility for harmony n multicultural development of the society
157. Mr Venkateswara Jillellamudi	HARRISDALE	Re balaji temple
158. Mr Sri Raghu	CANNING VALE	Place of worship for prayers & to learn Hindu culture.
159. Mr Venkata Veerla	ARDROSS	Great step towards building an Harmonious and multicultural society.
160. Mrs Jyitibala B & Mr B Malkan	ROCKINGHAM	This is much needed facility for harmony n multicultural development of the society.
161. Mr Ashok Buchiboyina	WEMBLEY	Excellent proposal, It will be great place for growing multicultural and harmonious society, we look forward to see this happens

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
162. Mr Diwakar	CANNING VALE	The Hindu community is growing and needs this temple to cater to their needs. The Hindu community is serving the WA community in all fields and is contributing positively.
163. Miss Gowthama Sangami Vijayalayan	MOSMAN PARK	We support this Hindu Temple proposal. It will be great place to pray, connect with other like minded people. We wish to see this project go ahead. Thank you for the opportunity to comment.
164. Mr Pankaj Kapur	CANNING VALE	The project is good for the community. This will bring people together, diversity is the necessity.
165. Mr Arun Chacad	HILLARYS	No objection
166. Dr Sachin Vishwanath	ROCKINGHAM	Great initiative, fully support the Hindu temple project. Good for inclusive nature of the community.
167. Mr Santhosh M Mulky	HARRISDALE	A temple is a place of worship as well as a place where the consecrated energies help them find the physical and psychological well being This has become a strong cultural aspect only because of the positive experience of people over many centuries I truly believe this will bring well being to the people around the temple and strongly encourage the construction of the temple.
168. Mr Kondaiya Ramaraj	BYFORD	That is good for community devilment and increase local small business.
169. Mr Chirag Patel	BALCATTA	Really good to have this temple to support community and to keep helping support and grow Australia's diversity.
170. Mr Srikanth Mutpuri	PIARA WATERS	I strongly recommend this proposal, I have seen there developments in different countries. They bring positivity to community and vibrant look.
171. Mr Sunil Tota	LANDSDALE	Great step towards building a harmonious and multicultural society.
172. Mr Dinakar Sanagapalli	PIARA WATERS	Hinduism is one of the ancient and surviving religions in the world. The principles of the religion are mainly harmony and support. This can be seen from the main stage of Yoga and Meditation given by rishis which the modern and Western World started to appreciate. Having a temple in the area and allowing people to practice these can not only benefit the society as a whole but also assist in development of local areas. Planning to have a library and community kitchen can be shared with the council to bring these adventures much closer than normal to local residents. This will also provide much needed income stream to the council. In all and all, I support the construction of Hindu temple on the proposed site.
173. Mr Ramesh Atikum	EATON	Submission 1 I am in support of building the temple Submission 2 Strongly support the building if the temple
174. Mr Naga Cheppalli	BUNBURY	We need this place to be built helpful for community.
175. Mrs Nayanabahen Patel	WELLARD	Good to go.
176. Mr Bhupendra Patel	WELLARD	Good to go.
177. Dr Samba Siva Reddy Pulusu	CHURCHLANDS	Great step towards building a harmonious and multi cultural society.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
178. Mr Vikram Mody	GLENDALOUGH	It is a great step towards building a harmonious and multicultural society. It is good to have a temple.
179. Ms Sowjanya Kajjam	DAYTON	Temple in Baldivis really supports with religious things in the local community.
180. Mr Nilesh Vidhate	KARAWARA	Great initiative. It would be amazing to see a Hindu temple come up soon.
181. Mr Sivakumar Somangili	CANNING VALE	With belief and faith that I am living in a society which is tolerant and respecting other religious practices, I request you to consider construction of Hindu Temple, with necessary restrictions on traffic and noise pollution (as cited locals for opposing). One of the attractions of Perth is its proximity to Asian countries, Allowing to construct religious worship places, etc will certainly attract many Asian migrants to settle in Perth.
182. Mr Sachin Verma	SUCCESS	Having temple is a great idea.
183. Mr Merril Mathias	PARKWOOD	We are in desperate need to have a temple local to where I work and hence pledge our support for this project.
184. Dr Srujana Sarikonda	CHURCHLANDS	Great step towards building a harmonious and multi cultural society
185. Mr Vinod K Kumar	WELLARD	A huge initiative not only for Hindu community but for all those too who believe in Sanatan Dharma . It will facilitate whole Hindu community living in WA from across the world to strengthen the bond with their culture and almighty, by accomplishing all spiritual activities properly.
186. Mr Chandrashekar Siddappa	WILLETTON	Very good project. Devine works to keep tradition.
187. Mr Jagan Repala & Mrs Swathi Tadakamalla	ROSSMOYNE	It is sensitivity designed & appropriate to the urban landscape.
188. Mr Jagan Repala	ROSSMOYNE	Great step towards building harmonious & multicultural society.
189. Mr Elvio Ruggiero	BALDIVIS	I wish to note an objection against the proposal at Lot 53 (No.67) Folly Road Baldivis WA. Currently there are only 210 people in Baldivis (South) and 52 in Baldivis (North) according to the last census conducted by the City of Rockingham source: https://profile.id.com.au/rockingham/religion?WebID=100 Given the size and scale of this proposal (the applicants are proposing a $5,000,000 construction cost development with ancilliary uses including, yoga rooms, libraries, dining halls, wedding reception facilities, car parking for 100+ cars etc then; i) it is clear this proposal is not designed to meet the census Baldivis Hindu population; ii) it is clear that this proposal is in a fact a regional 'Community Centre' masked under the guise of a 'Place of Worship' in order to skirt around Local Government planning regulations. iii) The fact that the applicants wish to refer this matter to 'JDAP' indicates an intention to involve a regional assessment to this proposal indicating the proposal is really to serve Hindus from outside the City of Rockingham.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
189. cont…		Given the above, it is obvious that; iv) the rural amenity of neighbouring or close Baldivis landowners will be affected v) that the design, size and scale is wildly out of sympathy with existing built form vi) that traffic congestion will increase as Hindus from a far greater area than the local community may attend (a number which is indeterminate despite the numbers alleged by the applicant. Finally, the Baldivis Hindus have other existing places of worship which they can attend such as in Mandogolup and as such, it makes no sense to approve another place of worship when the population of that faith does not support it and it offers no benefit to the local community.
190. Mr Bharat Shenoy	SOUTHERN RIVER	All that occurs within the walls of a temple is uplifting and enobling'. Building this temple will imbibe the spirit of righteousness which will benefit current & future generations of our land.
191. Mrs Bindusri Anantula	EATON	We strongly support the building of Hindu temple.
192. Dr Karthik L	BALCATTA	Excellent service to community, we need to encourage multicultural community, tolerance
193. Mr Yagnesh Rajendran	HARRISDALE	We highly support this proposal and we this will be a great step in getting the communities south of the river even more engaged with the city of Rockingham.
194. Dr Rajanikar T Tota	BRENTWOOD	Hindu community in WA as a whole would be grateful to this council in developing this place of worship. This will be a tremendous opportunity for local community to live and work with a great team and obtain assistance with psychological well-being in these uncertain times with the pandemic defining the way we all have to lead our lives.
195. Mr Amar Thakkar	HAMMOND PARK	Great opportunity for locals to worship and carry out community services. Also paves way for developing multicultural society in south.
196. Mr Geoffrey Tomlinson	No address provided	**Submission 1** Groundwater is the lifeblood that sustains our local lakes, wetlands and connected bushland. Very relevant in regards to the untreated effluent grey water leaching into groundwater from the building of The proposed Hindu Temple uphill from the Folly Pool drain These groundwater-dependent ecosystems are an integral part of our state. They create cool, green spaces in our community, as well as habitats for native wildlife. It's important we all do our part to protect our groundwater, and protect our wetlands. #WorldWetlandsDay **Submission 2** Please read in full !! Like to enlighten fellow Baldivis East ratepayers to what the real hidden negatives too the planned proposed building of the Hindu Temple on Lot 53 Folly Rd Baldivis and the rampant disregard for the future impact of this in years to come ! Costing an estimated $7 million if passed ! It's the first rural block over the freeway on the left going east before turning right into Young Rd !!

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
196. cont…		Researched and prepared by Debbie macKenzie,much appreciated Debbie thanking you for the hours of time effort and research that went into this detailed written report Ok here is my very long email □□□…. Happy to recieve feed back… will be sending it to all tomorrow To whom it may concern As a resident of 8 years, within the east Baldivis rural estates, I am writing in opposition to the application seeking approval to build a Place of Worship (Hindu Temple) , located at Lot 53, (No 67) Folly Road Baldivis. First and foremost , I want it to be stated that I am not opposed to any community / religious group having a place to congregate or worship – my opposition is based on the location, size of development, environmental concerns – wetlands / noise, as well as logistics with roads and traffic congestion. Firstly, I am disappointed and concerned that Rockingham City Council would support an application that based on the proposal as worded:- • a temple building for religious worship of the Hindu faith, and ancillary structures; • a multi-purpose hall and associated amenities; • a dining hall; • a library building; • two double-storey caretaker's dwellings, for the priests' accommodation; • a single-storey ancillary dwelling for temple guest accommodation; • on-site parking for up to 111 cars; • vehicle access is proposed predominantly from Folly Road, while an emergency access point is provided to Young Road. which is in total contraction of the ‘rural ‘ lifestyle that is identified and classified within the South Metropolitan Sub –Regional Framework and recognised by Rockingham City in the Rural Land Strategy for its environmental significance and visual amenity. The clause 4.11.1 states ‘to preserve land for farming and foster semi-rural development which is sympathetic to the particular characteristics of the area in which it is located. As such, I question how the proposed Hindu Temple and Cultural Centre which describes an exceptionally large ‘village’ comprising of:- • a temple, • separate ablution block in addition to all the toilet and bath / shower facilities housed within accommodation across the site. o 29 toilets o 15 urinals o 2 disabled toilets o 7 bathrooms / shower facilities • Kitchens o 6 fully functioning kitchens across the site (2 at commercial level) • multipurpose hall, • multipurpose library, • dining hall (seating 108 – 18 tables with 6 seats as shown on plans),

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
196. cont…		• 2 double story houses (3 designated bedrooms - housing up to 6 couples, however with a large study and downstairs shower / toilet this could host another couple as well) • guest accommodation (housing up to 8 couples) – of concern is that guests can stay up to 5 days. This is more like short stay 'B and B' – for 52 weeks a year. • multiple furniture storage rooms • playgrounds • water features and • numerous parking facilities can possibly fall under the category of rural or semi rural. I refer to the terminology used a 'place of worship' – my understanding of and a definition of 'a place of worship' is described as "a specially designed structure or space where individuals or a group of people such as a congregation come to perform acts of devotion, veneration, or religious study". I fail to see how this 'village proposal' falls within this category. Other concerns with this proposal are:- 1. Environmental – my understanding is that this rural area is under the banner of 'sewerage sensitive' – as I know that our waste system for a single story , 4 bedroom with 3 toilets had very stringent rules and restrictions in place when we were building. My concern is for the water levels / sewerage / drainage and damage to the flora and fauna of the area. Having lived in the Baldivis area for a total of 17 years - 8 of which have been on my rural property, I have seen a number of changes to the Baldivis area –what was once a well thought out suburb with open parkland and areas of large natural bush, home to a number of species of flora and fauna has now rapidly become a 'city'. The Folly Pool area – a natural waterway which includes the link to the Alcoa wetlands is an extremely important one. The local conservation groups have for a number of years been working to ensure that this waterway and stretch of natural bus supports and homes many species, including the threatened Quenda, along with the long neck turtle, blue billed duck, frogs, snakes, and bird life. The environmental impact of over 400 people using the numerous toilets / bathrooms/ laundries and kitchens on a very regular basis is of utmost concern. After the huge variation in the water levels that I have noticed – driving past this land at least twice a day over the last 8 year leads me to ask the following questions:- • What are the sizes and designs of the sewerage systems? • What are the requirements for the leach drains and treatment units? • Who will monitor the food and water wastage that goes into the sewerage systems? • Who will monitor the impact of the various species of wildlife is the water and bush land is affected? As such I would like to see documentation on this – from an unbiased source – The Environmental Protection Authority - as well as information on any emergency and restoration plans for Folly Pool waterways, the land surrounding the area and wildlife (birds / animals and reptiles that inhabit the area) should any issues arise with failures of the system.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
196. cont…		2. Noise / acoustics – the report shows that a number of activities ranging from prayer groups, Yoga to monthly festivals and weddings will be held within the complex. My knowledge and understanding of the Hindu religion is that most of the festivals are held over a number of days (some up to consecutive 9 days) and most running through the day with fasting and then celebrating after midnight to 'break the fast' . Most of these festivals are held outside using a variety of musical instruments, singing, ringing of bells and in some instances are using bonfires, colourful powder and fireworks. This is in direct contrast to the statement in the Acoustic report that states that "Windows and doors may need to be closed at times to contain noise." This appears to be a misdirection on behalf of the proposal which infers that activities of any sort will be held inside. Therefore I ask the following questions:- • Who will be monitoring the length of these festivals? • Who will be monitoring the noise levels of daily prayer groups, festivals and weddings? • Who wll be monitoring the number of people attending (surely more than the 400 implied) • What about the impact and monitoring of bonfires (Lohri is one of the most zestful festivals of Punjab and always falls on 13th January - this is celebrated with a bonfire) and Fireworks during the Diwali festival ? These all fall within our summer months … again who monitors the impact on the physical environment / wildlife and the compliance with the total fire bans and use of fireworks on private property. I believe that the Acustic report proposed is one which is highly misleading and does not present a true and clear picture of the reality of the noise / length and times of the everday events - let alone festivals and weddings. I would add that should any of the 'halls / venues' that the City of Rockingham has 'ownership of 'be used in any of the above ways that the permission to use said premise would be opposed. 3. Visual Impact of the temple and buildings. Again I call into question the authenticity of the architectural design and statements that states this entire complex will " sit comfortably within the natural landscape and align with locality builds". A two story house is reported to be approximately 5 – 6 meters in height - the temple on its own is approximately 18 m high at its tallest point , length at 46m and width at 23m and again I fail to see how something this large and imposing will 'blend and maintain the visual amenity of the landscaped area' let alone be ' obscured by trees. This visual impact is only looking at the temple itself and not all the other buildings within this complex. I refer to photos and maps of other temples within the Perth region and cannot mesh the ' blending into the natural environment' with buildings of this nature. 4. The Section 2.2.2 Operating hours and occupancy as summarised in Table 3 is unacceptable. I truly believe that there is no other religious or non-religious building within the City of Rockingham that has operating hours to this extent. The opening hours, expected activities during those times and the attendance numbers (especially over a weekend) clearly shows that this is not a place of worship but rather a community / village / housing complex that is will be in use everyday and for up to 18 out of 24 hours a day. This will clearly impact the quiet, rural setting that Baldivis East is known for.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
196. cont…		5. Traffic concerns are based around the operating hours. Folly Road and the adjoining St Albans Road are not designed for the influx of traffic that it is being used for at the moment. The increase in the last 8 years – and in particular with the Water Park opening has seen the traffic and flow increased monumentally. The roads are narrow, have no shoulder with the current road edges crumbling, have no pedestrian or cycle paths, very poor road lighting and most importantly have two extremely unsafe and dangerous turns in the road. The bend between Folly and St Albans has had numerous incidents with minor car accidents, run offs into the bush or onto private property due to in misjudgement of speed and sharpness of the turn. The unfortunate death on the corner of Young and Folly is point in case for the poor road design . As a resident who travels these roads daily at the hours that the temple will be busiest in incoming and outgoing traffic concerns me immensely! I already get drivers speeding past , tail gating and demonstrating signals of discontent as I sit on the speed limit , slow down on the bends and drive to the conditions of the road . My concerns being that adding over 100 more cars on roads that are not known to the drivers, at various times of the day and night is only a disaster waiting to happen. As I stated at the beginning of this email, I am not opposed to a community celebrated their beliefs however the positioning of and size of this “village“ proposal is detrimentally the natural environment and the rural / semi rural lifestyle that exists. I would further add that the Bala Murugan Temple in Mandoglaup is only 12 minutes away. The temple has been in place since 1995, with limited housing nearby and anyone buying into the area would have knowledge of the activities from the Temple. It is near a fire station, has good road road access and appears to have a large underdeveloped site around the temple which could be used to build some, if not all of the suggested cultural and housing needs as suggested in this proposal. There appears to be a strong following and good reviews about the priest and community, including costs associated with services which would suggest a way of supporting and funding further development. I question as to why this opportunity has not been presented and request that it needs to be looked into further. Lastly, as residents and rate payers we are held accountable for any issues or concerns within our property. I then ask, as this is a religious undertaking and will be exempt from paying rates … will our rates increase to cover the extra costs that a large village will encurr? And what if any environmental issue or damage occurs even if the impact is only seen 25 years later who will be held responsible and made to pay for damages or repair any environmental impact? Please may this be noted that I and my partner are opposed to the building of the Hindu Temple and Cultural Centre in the proposed location Folly Road, Baldivis East. NB **** Geoffrey Tomlinson's additional address !! The above submission fills in all the reasons why this ill proposed , not asked for, not consulted about with, as look at all the benefits it'll give you !! none and tax free !! Sorry don't dump it on somebody that has family good neighbours and a beautiful serene rural lifestyle !! Vote no if you agree to all that has been submitted too you in the above submission if you have any questions as too why it's upsetting to be unreasonably dictated too about an environmental cockup !!□□

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
197. Mr Rajiv Singh	No address provided	With reference to the above application, I am delighted to hear of this new development. Given the relative increase and spread of the community, it is important that it has a focal point for its spiritual, social, educational and cultural needs, for that part of the city. I support this proposal
198. Ms Emma Davey	BALDIVIS	I am astounded at the proposal for the Place of Worship on Folly Rd. With construction going on for 4+ years on a very dangerous road where people have died? How is this even being considered? Loud building construction everyday for over 4 years and then once that's done, large festivals and crowds etc everyday, forever? Places like this that bring so much noise and crowds should not be constructed in such an area. This should be built in an industrial area so no homes are affected. Plus the rental/selling value of its surrounding homes will drop dramatically as no one wants to live near this. There's already a Hindu Temple 11 minutes away and the population of this religion isn't very large based on statistics so there's no need to build another. It will not blend in at all. A huge 14.7m high building in the middle of a paddock right off the freeway? They can use the already built Mandogalup Temple in the middle of a paddock just off the freeway. The report states noise will be controlled. By who? This is going to completely ruin the rural side of living. The peace and serenity is why we all brought rural out here. Events and festivals, people coming and going, it would be a matter of time before another major incident occurs on this road. Not to mention there's no plans of it being upgraded anytime soon. The noise will not be policed, no matter how much you tell us it will be. Constant bells, loudspeakers etc going all day everyday. Please do not go ahead with this.
199. Mr Greg Brumby	BALDIVIS	I would like to Register my concern regarding the proposed Place of Worship, Hindu Temple, located on Folly Rd, Baldivis as a local resident, frequent driver and cyclist on the local roads. A Place of Worship will create a terrible situation in our lovely part of Baldivis. This proposal is causing great stress and anxiety in our community. We have a peaceful rural community of horse lovers and farmers who have been working the land peacefully for many years as well as newcomers looking for the peace and quiet that our area delivers. Seeing this proposal has turned our community upside down. We will no longer be able to ride and care for our horses safely due to the increased traffic, along with being so close to a dangerous intersection where a young lady was killed in a car accident in the recent past. As an avid cyclist, this will also create increased risk due to the same issues. Our peace and security will be disrupted due to the increased amount of people and traffic traversing our area. The ringing of the bells will upset pets and horses and the peaceful nature of our area. With these sudden and foreign noises this will create a great risk of a horse being spooked and someone falling of resulting in serious injury to the person or the horse. I can foresee significant unrest in this area of the community should you let this proposal go ahead. Please consider this carefully.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
200. Mrs Krishna Kumar	No address provided	Yes very much needed from the vast Hindu community in the Perth and Peel regions hope this goes ahead Thanks.
201. Mr Syam Gokavarapu	SUCCESS	I support this proposal for Place of worship as they bring harmony and peace, help in community service with community kitchen.
202. Mrs Anitha Kandukuri	GREENLEIGH NSW	Thanks to the council for supporting the construction of the Temple. It will benefit a number of Hindu practitioners living in and around the region, who have made Australia their home. Good work. Customer Details NAR Number707251
203. Mr Anonymous	CLAREMONT	The committee people are not at all transparent in this dealing with the relevant stakeholders specifically in money dealings. It's a project for them to make money - not at all with real community or spiritual feeling. Hindu's don't need temples for each and every council separately. This project should not go ahead against the will of locals.
204. Mrs Cassandra Hutchinson	BALDIVIS	To whom it may concern, my husband and I are writing in response to the application to build a Hindu Temple on Folly Road in Baldivis. There are many reasons why this development should NOT take place. We have great concerns as to how this will impact the residents in the area, including our family. There will be a large increase of traffic and congestion around the entrance to the temple, which will also impact the young road intersection. The increased noise and disturbance created by the use of the temple and associated buildings is also of concern. The rural side of Baldivis is a quiet and serene area and the development we feel will impact on many residents' lifestyle and the way of life in this area and will also de value properties. Please do not approve this development.
205. Mr Jeevan B Bhoga	PERTH	Whole heartedly welcome, awaiting the bliss be upon all of us soon.
206. Mr Ravikumar R Pericherla	QUEENS PARK	Very very helpful to have lord venkateshwara temple.
207. Mr Naveen Jayaraja	WELLARD	The site is a welcome addition to the city of Rockingham as it enhances the diversity and vibrancy of the community.
208. Mr Navin N Nonabur	BAYSWATER	It will be great and special place for worship. Also will bring local hindu community together, beneficial and opportunity to local australian to know about the culture, thoughts, principles and to build a stronger bonding with local hindu community for a bright safe environment for future generations to come. Kindly help and encourage us. Thanks
209. Mr Anoop Bhasibhavan Aravindakshan	EDEN HILL	I second this proposal as it facilitates people to have a common place of worship, for meditation and for the community to come together.
210. Mr Shekhar Tidke	PIARA WATERS	A much needed facility for promoting diversity within the community. It will help propogate sense of belonging and oneness for the extended family i.e. All West Australians. It will facilitate multiculturalism. Facilities included like the library, the hall and temple will enhance the much needed cultural links between the different groups of people. A speedy approval with due deligence and beginning of the construction is requested.
211. Mr Mahesh Shivaswamy	BALDIVIS	The proposed facility will be of much benefit to hindu community providing essential spiritual and cultural services. It will facilitate worship and community events which essential for the mental wellbeing. The proposed facility has been carefully designed avoid any adverse impact to surrounding land use and infrastructure. I urge the City to support the proposal and very much look forward to completion of the temple.
PUBLIC SCHEDULE OF SUBMISSIONS		

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

Name	Address	Comment
212. Mr Srinivas Reddy Suravaram	HARRISDALE	Sensitively designed duly acknowledging local residents requirements with main motto of community service along with an attempt to preserve Indian culture and heritage for future generations.
213. Mr Kevin & Mrs Ruth Else	BALDIVIS	We object to the development proposal to build a Hindu temple on Folly Road for these reasons: - Fire evacuation Folly Road is the primary evacuation road from our property. The extra traffic from the development will cause congestion during a fire event and slow the response of emergency services. - Traffic flow Folly Road is our primary exit westward. The proposed 400+ people coming and going daily will cause traffic to back up around the Kwinana Freeway entrances and exits. - Amenity This is a rural area and attracts people seeking to experience a rural lifestyle. This includes ratepayers such as ourselves as well as visitors who come here to cycle, ride horses and 'go for a country drive'. We do not believe this proposal fits with the amenity or common land uses of this area. We request that this proposal be rejected.
214. Mr Jonathon & Mrs Sue Adams	BALDIVIS	We have become aware of the proposal for the building of the above temple. We feel that this is a totally inappropriate site to place such a building for the following reasons:- - This is a semi rural farming area with residents who chose this area many years ago to escape the busyness and noise of suburbia. The establishment of this temple would draw many people to the area, thus upsetting many residents as well as horses and livestock. - Residents ride their horses in this area and an increase in traffic could lead to horrific accidents. - Horse trucks and heavy equipment are often negotiating the roads here with livestock. - This is by no means a predominantly Hindu residential area. No Hindu, if very few residents live on the eastern side of the Kwinana freeway in Baldivis. It would surely make more sense to situate it closer to a larger Hindu population than to make them drive so far. - This intersection has been a very dangerous one for years as the road bends at the T junction and there have already been fatalities there. - Bushfires are a constant threat in this area with two fires in recent times having passed through this very site, one devastating many properties in the area. There is a lot of grassland with a chaff making business directly across the road. Hindu religious fire ceremonies are totally inappropriate in this area and as Hindus they are entitled to hold these which would increase the fire risk.
215. Mr Bel Turrav	No address provided	Very much needed.
216. Mrs Meera Mohanan	DIANELLA	It will be a great support for Indian community in Perth to continue their culture and to give that culture to future generation.
217. Mr Srinivas Yellampalli Kidambi	DIANELLA	Great initiative
218. Mr Saumil Joshi	AVELEY	Very much needed for the community. Thank you.
219. Mr Vikram r Ravula	WELLARD	We need hindu worship temple in our area. there is no temple in our area to worship.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
220. Mr Shashi 0 Holla	3BYFORD	This is required for Hindu community in and around of this suburb. Temple is always a good vibe.
221. Mr Ashwin Murthy	CANNING VALE	Great step towards building a harmonious and multicultural society.
222. Mr Giridhar Aruri	WELLARD	The proposal for the place of worship is welcomed and will provide several pros for the City of Rockingham and its members. It is also a place of gathering for the community members and spend quality time with family and friends. The multi purpose hall would allow the community (not just temple goers) to access the facility for celebrations like birthdays, weddings and others adding value to existing facilities. The concerns of impacting the rural setting by some community members are not accurate. A place of worship always provides a calm environment around its premises with a heavy presence of natural aspects including diverse plants and birds etc. This will only enhance the rural ambience and the livability of Baldivis and its surrounding suburbs. The concerns of noise and activity are probably justified on one or two big cultural celebrations annually no different to other celebrations across the country. The above mentioned can be witnessed by several other suburbs in WA and nationally where places of worship have become an integral part of multicultural societies and continue to play a vital role in Australia's success as one of the most desired places to live in the world. I'd request the council to accept my strong support in going ahead with the proposed place of worship in Baldivis which will not only have direct but numerous indirect benefits to the community as a whole.
223. Ms Nicole Unmack	No address provided	Please see my comments related to the proposed Hindu Temple development which I strongly oppose. My mother, Margaret Smith, shares a fence line and single lane road alongside the proposed Hindu Temple. This proposed development will stop her from enjoying her property in peace, privacy, and comfort. She has the legal right as an immediate neighbour to the quiet enjoyment of her property of 35 years. My mother purchased this beautiful property to have a hobby farm and eventually build a dwelling on it with the view to live a peaceful Rural existence in her retirement. My mother is in the process of designing her dream home. I am not off the idea of a temple being built in the suburb but the location is completely wrong. The blind corner coming off Young road onto Folly Road will cause MANY fatalities. I know this as I have seen many close calls and accidents over many years. If this and other such developments are allowed to continue then, over time, the Rural aspect which gives Folly road its Rural charm and character will disappear completely. I strongly oppose the development and urge the council to retain the rural peaceful setting that the ratepayers have loved and enjoyed for many years.
224. Mr Kamal Desai	No address provided	This is a much needed facility in this area. Thanking you in advance.
225. Mrs Choi Cheng	BALDIVIS	I don't approved the Hindu temple should be build in a residential area.
226. Mr Harish Madhusudan	WELLARD	I am living in Wellard and there are many other big devotee of Lord Venkateshwara Living in surrounding suburbs. This project will bring in huge economic development in the area. The demand in houses and other services will be high. Local businesses can take huge advantage of such development in the area.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
227. Mr Dawarkesh Panchal	HAMMOND	They look forward to undertaking worship and community service activities from the development.
228. Mr Kalyan K Kotta	MARANGAROO	Temple will add more diversity and growth to the locality.
229. Mr Abhi Reddy	PIARA WATERS	We should support the DA as it will benefit people living in Perth in many ways. Australia is a multicultural country and by having these type of developments Perth would be one of the best places to live and settle down. The activities run by these organisations will benefit local people in many ways and this is already being proved at other places around Perth. I strongly support this DA.
230. Mr Dev Rastogi	CONNOR WA	Much needed facility in this area, great work by the members.
231. Mr Sandeep Goyal	WILLETTON	Please go ahead.
232. Mr Dinakar Cheyyur	HAMMOND PARK	Strongly support it. Places of worship in Hindu faith are in consonance with nature and support environment.
233. Neeraj Sharma	No address provided	This Hindu temple is much need to service need of HINDU community around city of Rockingham.
234. Devendra Patel	No address provided	We would be grateful to the city of Rockingham for this peaceful Hindu community temple approval. It is much needed temple in the area.
235. Ms Babitha Naveen	No address provided	Hi there I would really appreciate a hindu temple coming to Rockingham. Hindu temples are usually a very peaceful place of worship. It attracts a lot of families from indian origin. People from indian origin are hard working migrants and their usually children strive to achieve high standards in education. This is an opportunity for Rockingham suburb to further develop and attract a lot more of hard working people. We hardly hear anything suspicious about hindu community and their places of worship is always serene and peaceful. I hope city of Rockingham could really approve this temple and bring more revenue to this suburb. I sincerely hope you would accommodate the needs of a minority community.
236. Mr Jordan & Mrs Fiona Tassell	ROCKINGHAM	**Submission 1** We are writing to the council to voice our strong opposal to the proposed Hindu Temple development on Folly Road in Baldivis. This area east of Kwinana Freeway is classed as RURAL and as such we feel this is not the appropriate location for such a development. The increase in traffic that this will bring to an already dangerous section of Folly Road where there have been numerous accidents, near misses and a fatality, will not be solved by simply adding a basic left turn at the driveway as proposed in the traffic impact assessment. Heavy equipment such as trucks, cranes, farming machinery etc use this road to connect between Mundijong, Safety Bay and Karnup roads. In addition to this is the large horse community in the area transporting animals in floats daily. Adding another 100-200 cars (as there seems to be a discrepancy between reports) not to mention ride share vehicles, will heavily impact drivers and animals in the area. There are also cycle clubs who train and hold events along this road who would be impeded by additional vehicles coming, going and pulling out of this proposed temple. As mentioned in the traffic impact report, there is no upgrade marked for Folly Road in the foreseeable future.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
236. cont…		This means the likelihood of an accident along this road which is single lane, poorly lit with an extremely close tight bend, is very much increased with this added traffic. The development itself is far more than just a “Place of Worship” which by definition is “a building for religious services”. Therefore the temple is a place of worship but a multipurpose hall with amenities, 2 commercial kitchens, a dining hall, 2 double story residences, guest residences, a library and 34 toilets is not. In the Development Application SPP 7.0 Design of the Built Environment, Table 7, 1. Context and character- “Good design responds to and enhances the distinctive characteristics of a local area, contributing to a sense of place.” The report suggests that “The design sensitively addresses and visually connects with the surrounding natural environment through the proposed use of traditional building materials and colours for the buildings and the clustering of the built form. The design of the buildings with sweeping verandas and pitched roofs further connects the development to the semi-rural character of this location.” We fail to see how the use of limestone, timber and colourbond is going to make the 20m and 18.5m Goparums (monumental entrance tower, usually ornate) as well as the 14.5m roof parapets and chariot entrances blend in to the rural setting. The report also describes what can currently be seen from all aspects of Folly Road of the proposed site and surrounding properties. RURAL sheds, RURAL residences and RURAL silo bins. This is because it is a RURAL area, not an area for development of temples and multipurpose halls to host numerous fest ivies. This DA report also states on page 11 that “that the built form outcome visually absorbs into the site in a manner which does not detract from the semi-rural character of this location.” Again we fail to see how a 20m Hindu Temple will blend in to and not detract from the semi- rural character of this area. The area for development is extremely close to the very sensitive Folly Pool and surrounding waterways. These are home to many species of wildlife including the threatened Quenda. With the chanting, bells, dancing, festivals, weddings etc that will take place all these animals will most certainly be affected by the vibrations, music, vehicle movements, waste water leeching to name a few. This is on top of a 4 year building process seeing numerous trucks, cranes, heavy building equipment and the substantial noise, vibrations and earth moving that will be produced from this. If this development of the Hindu Temple goes ahead the years of work that many conservation groups have put in will be totally undone. We have worked extremely hard for many years to be able to purchase our land and build our semi-rural life to raise our children. We want a peaceful lifestyle and this temple proposal is now causing major concerns for what we had envisioned. Also of concern, for all the hard work and sacrifice we have made, is the effect this Hindu Temple could have on our property value in the future. **Submission 2** We are writing to the Rockingham Council to register our strong objection to the proposed Hindu Temple development on Folly Road in Baldivis. We are extremely concerned about the excess noise this temple will bring to the surrounding areas. After reading the Marshall Day Acoustics Report we feel there are many points to consider.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
236. cont…		Devotional singing in the temple, chanting and singing in the multipurpose hall, Indian classical Bhajan dancing in the multipurpose hall, weddings and receptions in the multipurpose hall. The report states all of these levels have been based on the assumption that windows and doors to these buildings are closed. There is no mention in this report of any outside noise created when open air areas are in use. On page 6 of the report it states “In addition to the above, Hindu weddings are proposed to be held on occasion. We understand these would be held within the hall on weekends, with an average of six events per year. The maximum number of attendees at weddings is 400. Further detailed consideration of these proposed events will be required so that potential noise impacts can be managed.” We find it hard to believe that a celebration with 400 people would be completely contained within a hall for the entire day/night. People would use the outdoor areas during this time and there has been no reporting made on the noise impact this would have. Also the wording, “an average of six events per year” is quiet vague and we highlight the word AVERAGE. There is no indication that these events are capped at this number. The report meets appropriate levels as it is an assumption that the design of the buildings will meet the recommendation that windows and doors are placed away from neighbouring properties and are closed when the building is in use – our question here is who actually checks this has taken place within the design (especially as the designs have already been produced) and how will the closure of windows and doors be policed? If noise complaints were made, this would then put further pressure on our law enforcement services where their time could be better spent elsewhere in our community. The carparks have a recommendation that operational staff remind attendees when leaving they are to be respectful of residential neighbours and encourage them not to loiter in carparks. This is hardly a manageable solution. The report states on page 13 that “The assessment is a simplified review and does not account for the numerous variables that would need to be considered in further detail before any large events such as weddings are held on the site” and also that “. Outdoor patron noise has not been reviewed in detail as part of this preliminary assessment.” We are extremely concerned that the outdoor patron usage has not been measured or even estimated as we feel this will cause considerable raised noise levels, yet this has not been considered in the final findings. There has been no mention in this report about the significance that wind direction and strength would make to the acoustics of this temple. The winds that sweep through this area would make a considerable difference in carrying noise over the surrounding properties, yet this has not been mentioned at all. With the conservative numbers of attendees stated across multiple reports for this development, we can’t understand why this would be considered when there is a Hindu Temple in Mandogalup 15kms (11 mins drive) down the road.
237. Mr Meetu Sharma	No address provided	This is a much needed facility in the area.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
238. Mr Krish N Naren	WILLETTON	I welcome the proposal to build a place of worship for Hindus. This will reinforce government's initiative of supporting and nurturing cultural values Hindu people in Australia. This will enable people coming together for arts, music, dance and paintings together as Hindus believe temples as their second homes. Thank you very much for allowing to table this proposal.
239. Mr Pratik Kumar	PERTH	This temple will help in harmonious and multi cultural society development.
240. Mr William Raymond	BALDIVIS	Objection to planning submission place of worship (Hindu Temple) - Baldivis Rural Land Policy I am of the opinion that the proposed application does not meet the intent of the city of Rockingham Planning Policy No.3.1.1 - Rural Land Strategy for the area at Precinct 2A - Baldivis (East). The Rural land strategy indicates at 7.2.1 - Desired future character that (I quote) "These areas of environmental significance are fundamental to the remaining visual character and amenity of the area and their ongoing preservation is a key strategic objective of the RLS" The construction of this facility has an irrevocable impact upon the current and future character of this area. These impacts include but are not limited to: Clearing along road frontages would have a major detrimental impact upon the visual character and amenity of the area. Alteration to the remaining landform would have a major detrimental impact upon areas of environmental and landscape significance with resultant adverse impacts upon the visual character and amenity of the area. Potential for the Bush Forever site, CCW, PEC, associated vegetation and buffers to be compromised by development. Areas of remnant vegetation (patches >4ha). The proposed application generated report does not meet the following requirements set out Rural land strategy indicates at para 7.2.5: That the siting and height of built form be restricted so that roof lines fall sufficiently below ridgelines, high points and/or tree lines. A maximum of one (1) single house only per lot. This proposed place of worship will have an irrevocable impact upon the Special Rural properties within the area and will not facilitate the council in (I quote para 4.12.1 part a. of TPS 2) "providing a rural lifestyle that is not associated with large scale, intensive rural activities, whilst also allowing for the effective management of the land to ensure the retention of the rural land". I would consider that the addition of a place of worship is a large-scale activity which will change the quiet rural and special rural area that I adore to something more akin to a commercial area. I also note that there have been many places of worship built within the Rockingham Council areas that do not impact upon other landowners. I would ask why this application did not consider the Rockingham guidance and provide an application for an area which would not have an expected impact upon existing rural and community activities. Traffic Having lived within the locality and a proud owner of a bush forever within my site I am of the considered opinion that the Road Traffic assessment was generated by individuals with no real understanding of the traffic conditions, animal and local community use at the Folly/Young Road junction. The report does not take into account current uses of the area by Cyclists, pedestrians/runners and horses. These uses take place during the proposed peak movements (morning cyclists, morning and afternoon horses, runners at various time). Folly road is a narrow area and the addition of a slip lane in one specific area is unlikely to mitigate the increased Risk to these current recreational and rural uses. The junction of Folly Road and Young road is also blind spot. I have experienced a number of near accidents which have largely been mitigated due to the very low level of traffic in the area.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
240. cont…		The addition of up to 166 additional traffic movements (with an acknowledged peak periods) is likely to result in accidents in an area with no recorded accidents. To safely accommodate this additional traffic further roadworks (in excess of that suggested in the Traffic impact assessment) would need to be considered to ensure that the Risk is mitigated as low as practicable. I would suggest that the installation of a round-about and reduction in speeds to 50 and widening of the road from the freeway exit ramp would be required as a minimum. The report also does not consider the likely impact to remnant populations of native animals within the wetland areas. Many of these animals are under increasing pressures such as pest animals and a drying environment. I have already seen a small number of animals such as snakes, Wallabies and birds who have been injured or killed from the existing low-level traffic within the area. Increasing traffic will only exacerbate the situation. Noise The report makes mention that control measures will need to be made on the proposed "occasional use" weddings. The proposed use of weddings occasionally up to midnight will have an irreversible impact upon adjacent rural and special rural landowners' way of life. The Special Rural lots in the vicinity will be impacted by the proposed activities. The Acoustic report also does not provide sufficient information regarding amplified calls (if used) to worship, bellringing, or other calls to worship during normal activities, festivals and weddings for the proposed activity times between 0600 to midnight. Summary I am of the understanding that there is surprise, anger and a sense of betrayal within the local rural and special rural community that this application is even being considered. I understand that it has to be assessed but the concern is so real for those adjacent to the proposal that some are already placing their properties onto the market, so they won't have to live next to it. I have not been able to (or afford) to have professionals to assess the application. I have also been unable to obtain the time (as I work full time) to navigate my way through the details and minutiae of local and state government policy regarding this application or permitted uses of rural property near special rural landholdings. However, I am of the firm opinion that the impacts of this proposed application are not accurately covered as they show no real understanding of the current community use. Rather it seems to be a data gathering exercise that has been created to provide the answers that the applicant needs to progress this application. I would ask if the applicant has made any tangible activity to approach the local community to explain the application. I know that I have not been approached. I also do not consider that the proposed water use, effluent treatment and impacts to the adjacent wetlands are detailed enough and take into consideration the short term and long-term impacts of this application. I would ask that this submission be refused and that these applicants be encouraged to provide an application in a zoning area that does not have an irrevocable impact upon existing rural and special rural landowners' way of life, existing community activities and the highly probable decrease in native animal numbers within the area
241. Mr Annamalai S Subramanian	HARRISDALE	Really appreciate the effort to consider our comments, this is a very good initiative and proposal to build a Hindu temple in Baldivis, I wholeheartedly support the proposal. Really wish this comes through.
242. Mrs Jeevita Munirathnam	BALDIVIS	This is to let the council know that I would really appreciate to approve the plan. Hindu Temple is a place where we worship peacefully with family and friends. Going to temple helps me to relax and free from stress.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
243. Mr Ranjeet Kumar Ramu	BALDIVIS	Hi this is to let the council know that i would really appreciate to approve the plan .temple is a place where we spend time peacefully with family and friends. Going to temple relax me from stress.
244. Mr Harish Kumar	BALDIVIS	It's Amazing initiative by city of Rockingham to bring city of Baldivis in to global map and also bring diversity and iconic Hindu temple I'm proud to be one of them as I live in baldivis
245. Mr Peter & Mrs Deirdre McCoy	BALDIVIS	We strongly oppose and do not support the application for this Hindu Temple. Please as Councillor's that are elected by the community to support the community, respect the people who actually live here and consider our amenity which we have enjoyed for many years. Major concerns are in relation to noise, increased traffic and visual impact on size of the buildings height in a semi-rural residential part of Baldivis. We note that many of the comments and statistics in the acoustic and traffic reports use the words approximately, estimated and anticipated. Ie with an average of six weddings per year – there could actually be several months were there are a greater number – however if the other months have one that is then determined an average. How have you calculated the average, what figures have you used? Have you taken that into consideration and how are you going to 'police' the use? Please consider us and do not approve this proposal it is only going to cause on-going issues which Council will have to continually deal with at great expense to ratepayers. Our main objections are listed below: Noise emanating from the site 1.The noise levels from amplified music from the speakers calling to prayer and from the wedding bands until 2200 - unacceptable. Rural living is a quiet, peaceful and tranquil, which is why people moved here. 2.The noise levels would be continuous day and night from vehicles arriving well before 6am for prayers, 7 days per week - unacceptable. 3.Festivals and weddings will generate carpark noise and voices which will disturb anyone who lives in close proximity. The activities might be scheduled to finish at 2100 or 2200 hours but there will be catering, photographers, bands and hospitality staff leaving after that time. 4.Plant equipment vibration – constant. 5.Sound travels in this area as we are semi-rural. Although we live around 1.5 km from the freeway we can hear the traffic. We also hear the freight train and that is approx. 5km from our residence. **Traffic Impact** Increased vehicles on a quiet road - Is Foley Road going to be realigned on the bend which is near the proposed main entrance to the site? It is a dangerous bend where a young girl lost her life a few years ago. Not all traffic will be via the freeway and Safety Bay Road. You have not mentioned or allowed for traffic that will also be generated from the EAST inwards and outwards which means travelling along Mundijong Road, St Albans Road to Foley Road. There are cycling events early on weekends that travel down St Albans Road safely and will be impacted by increased traffic. Traffic congestion during arrivals and departures for approx. 225 vehicles will cause a huge impact on local traffic.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
245. cont…		**Building** This proposal will not blend into the rural setting and make it an eyesore with also the possibility of causing traffic accidents, due to inattention of drivers looking at such a massive structure in the middle of a rural living setting. The height of the towers will be a visual eyesore for such a peaceful rural setting. **Rates** Will they be affected and increased due to this development? Bushfire threat Have you considered during summer months when the fire danger is extreme – evacuation of premises with a huge volume of traffic exiting. In the last few years there have been fires close to this location.
246. Ms Debbie MacKenzie	BALDIVIS	As a resident of 8 years, within the east Baldivis rural estates, I am writing in opposition to the application seeking approval to build a Place of Worship (Hindu Temple) , located at Lot 53, (No 67) Folly Road Baldivis. > First and foremost , I want it to be stated that I am not opposed to any community / religious group having a place to congregate or worship – my opposition is based on the location, size of development, environmental concerns – wetlands / noise, as well as logistics with roads and traffic congestion. > Firstly, I am disappointed and concerned that Rockingham City Council would support an application that based on the proposal as worded:- • a temple building for religious worship of the Hindu faith, and ancillary structures; • a multi-purpose hall and associated amenities; • a dining hall; • a library building; • two double-storey caretaker's dwellings, for the priests' accommodation; • a single-storey ancillary dwelling for temple guest accommodation; • on-site parking for up to 111 cars; • vehicle access is proposed predominantly from Folly Road, while an emergency access point is provided to Young Road. > which is in total contraction of the ‘rural ‘ lifestyle that is identified and classified within the South Metropolitan Sub –Regional Framework and recognised by Rockingham City in the Rural Land Strategy for its environmental significance and visual amenity. The clause 4.11.1 states ‘to preserve land for farming and foster semi-rural development which is sympathetic to the particular characteristics of the area in which it is located. > As such, I question how the proposed Hindu Temple and Cultural Centre > which describes an exceptionally large ‘village’ comprising of :- • a > temple, • separate ablution block in addition to all the toilet and > bath / shower facilities housed within accommodation across the site o > 29 toilets o 15 urinals o 2 disabled toilets o 7 bathrooms / shower > facilities • Kitchens o 6 fully functioning kitchens across the site (> 2 at commercial level) • multipurpose hall, • multipurpose library, • > dining hall (seating 108 – 18 tables with 6 seats as shown on plans), > • 2 double story houses (3 designated bedrooms - housing up to 6 > couples, however with a large study and downstairs shower / toilet this could host another couple as well) • guest accommodation (housing up to 8 couples) – of concern is that guests can stay up to 5 days. This is more like short stay ‘B and B’ – for 52 weeks a year.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
246. cont…		> • multiple furniture storage rooms > • playgrounds > • water features and > • numerous parking facilities > can possibly fall under the category of rural or semi rural. > I refer to the terminology used a ‘place of worship’ – my understanding of and a definition of ‘a place of worship’ is described as “a specially designed structure or space where individuals or a group of people such as a congregation come to perform acts of devotion, veneration, or religious study”. I fail to see how this extended ‘village proposal’ falls within this category. > Other concerns with this proposal are:- 1. Environmental – my > understanding is that this rural area is under the banner of ‘sewerage sensitive’ – as I know that our waste system for a single story , 4 bedroom with 3 toilets had very stringent rules and restrictions in place when we were building. My concern is for the water levels / sewerage / drainage and damage to the flora and fauna of the area. Having lived in the Baldivis area for a total of 17 years - 8 of which have been on my rural property, I have seen a number of changes to the Baldivis area –what was once a well thought out suburb with open parkland and areas of large natural bush, home to a number of species of flora and fauna has now rapidly become a ‘city’. > The Folly Pool area – a natural waterway which includes the link to the Alcoa wetlands is an extremely important one. The local conservation groups have for a number of years been working to ensure that this waterway and stretch of natural bus supports and homes many species, including the threatened Quenda, along with the long neck turtle, blue billed duck, frogs, snakes, and bird life. The environmental impact of over 400 people using the numerous toilets / bathrooms/ laundries and kitchens on a very regular basis is of utmost concern. > After the huge variation in the water levels that I have noticed – driving past this land at least twice a day over the last 8 year leads me to ask the following questions:- • What are the sizes and designs of the sewerage systems? > • What are the requirements for the leach drains and treatment units? > • Who will monitor the food and water wastage that goes into the sewerage systems? > • Who will monitor the impact of the various species of wildlife is the water and bush land is affected? > As such I would like to see documentation on this – from an unbiased source – The Environmental Protection Authority - as well as information on any emergency and restoration plans for Folly Pool waterways, the land surrounding the area and wildlife (birds / animals and reptiles that inhabit the area) should any issues arise with failures of the system. > 2. As a resident who supports the annual bird count in the area I have grave concerns about the threatened species of Carnaby Cockatoos, Red Tail Parrots, Mopokes, Kookaburras, variety of duck species and numerous smaller parrot species - all of which we have nesting and utilising the natural bushland and waterways around our area. As my partner is a regular (weekly) volunteer at the Rockingham branch of "Men of the Trees", we have consciously and deliberately replanted trees within our property to maintain and encourage more bird life, over the last 8 years we have counted up to 15 different species that nest and / or return to this area every year.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
246 – cont…		I am again concerned about the waterways, the extra noise pollution (both through extra cars but also activities on the cultural site) and how numerous visitors every day will impact the breeding / nesting and safe environment of the above mentioned birds, let alone other species of animals and reptiles. > 3. Noise / acoustics – the report shows that a number of activities ranging from prayer groups, Yoga to monthly festivals and weddings will be held within the complex. My knowledge and understanding of the Hindu religion is that most of the festivals are held over a number of days (some up to consecutive 9 days) and most running through the day with fasting and then celebrating after midnight to 'break the fast' . Most of these festivals are held outside using a variety of musical instruments, singing, ringing of bells and in some instances are using bonfires, colourful powder and fireworks. This is in direct contrast to the statement in the Acoustic report that states that "Windows and doors may need to be closed at times to contain noise" . This appears to be a misdirection on behalf of the proposal which infers that activities of any sort will be held inside. > Therefore I ask the following questions:- • Who will be monitoring the length of these festivals? > • Who will be monitoring the noise levels of daily prayer groups , festivals and weddings? > • Who wll be monitoring the number of people attending (surely more than the 400 implied) • What about the impact and monitoring of bonfires (Lohri is one of the most zestful festivals of Punjab and always falls on 13th January - this is celebrated with a bonfire) and Fireworks during the Diwali festival? These all fall within our summer months … again who monitors the impact on the physical environment / wildlife and the compliance with the total fire bans and use of fireworks on private property. > I believe that the Acustic report proposed is one which is highly misleading and does not present a true and clear picture of the reality of the noise / length and times of the everday events - let alone festivals and weddings. I would add that should any of the 'halls / venues' that the City of Rockingham has 'ownership of 'be used in any of the above ways that the permission to use said premise would be opposed. > 4. Visual Impact of the temple and buildings. Again I call into question the authenticity of the architectural design and statements that states this entire complex will " sit comfortably within the natural landscape and align with locality builds". A two story house is reported to be approximately 5 – 6 meters in height - the temple on its own is approximately 18 m high at its tallest point , length at 46m and width at 23m and again I fail to see how something this large and imposing will 'blend and maintain the visual amenity of the landscaped area' let alone be ' obscured by trees. > This visual impact is only looking at the temple itself and not all the other buildings within this complex. I refer to photos and maps of other temples within the Perth region and it is obvious that these structures do not fit within the brief of 'blending into the natural environment'.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
246. cont…		> 5. The Section 2.2.2 Operating hours and occupancy as summarised in Table 3 is unacceptable. I believe that there is no other religious or non-religious building within the City of Rockingham that has operating hours to this extent. The opening hours, as well as the expected activities during those times and the attendance numbers (especially over a weekend) clearly shows that this is not a place of worship but rather a community / village / housing complex that is will be in use everyday and for up to 18 out of 24 hours a day. This will clearly impact the quiet , rural setting that Baldivis East is known for. > 6. Traffic concerns are based around the operating hours. Folly Road and the adjoining St Albans Road are not designed for the influx of traffic that it is being used for at the moment. The increase in the last 8 years – and in particular with the Water Park opening has seen the traffic and flow increased monumentally. The roads are narrow, have no shoulder with the current road edges crumbling, have no pedestrian or cycle paths, very poor road lighting and most importantly have two extremely unsafe and dangerous turns in the road. > The bend between Folly and St Albans has had numerous incidents with minor car accidents, run offs into the bush or onto private property due to in misjudgement of speed and sharpness of the turn. The unfortunate death on the corner of Young and Folly is point in case for the poor road design . As a resident who travels these roads daily at the hours that the temple will be busiest in incoming and outgoing traffic concerns me immensely! I often have drivers speeding past , tail gating and demonstrating signals of discontent as I sit on the speed limit , slow down on the bends and drive to the conditions of the road . My concerns being that by adding over 100 more cars (possibly on a daily occurrence and more on weekends) on roads that are not known to the drivers, at various times of the day and night is only a disaster waiting to happen. > As I stated at the beginning of this email, I am not opposed to a community celebrated their beliefs however the positioning of and size of this " village " proposal is detrimentally the natural environment and the rural / semi rural lifestyle that exists. > I would further add that the Bala Murugan Temple in Mandoglaup is only 12 minutes away. The temple has been in place since 1995, with limited housing near by and anyone buying into the area would have knowledge of the building and the activities from the Temple. It is near a fire station, has good road access (with turning access) to and from the freeway and appears to have a large underdeveloped site around the temple which could be used to build some, if not all of the suggested cultural and housing needs as suggested in this proposal. There appears to be a strong following and good reviews about the priest and community, including costs associated with services which would suggest a way of supporting and funding further development. I question as to why this opportunity has not been presented and request that it needs to be looked into further. > Lastly, as residents and rate payers we are held accountable for any issues or concerns within our property . I then ask, as this is a religious undertaking and will be exempt from paying rates … will our rates increase to cover the extra costs that a large village will encurr? And what if any environmental issue or damage occurs - even if the impact is only seen 25 years later - who will be held responsible and made to pay for damages or repair any environmental impact? > Please may this be noted that I and my partner are opposed to the building of the Hindu Temple and Cultural Centre in the proposed location Folly Road, Baldivis East.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
246. cont…		 

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
246. cont…		 Please note that these are just 3 of the many photos I have in regard to the numerous species of birds we have that nest / roost and live on our property and surrounding environments. I send this email as evidence to support my claims with a previous email. Carnaby cockatoos and family of mopokes.
247. Mrs Rebecca J Colledge	BALDIVIS	As a resident of nearly 10 years, within the east Baldivis rural estates, I am writing in opposition to the application seeking approval to build a Place of Worship (Hindu Temple) located at Lot 53, (No 67) Folly Road Baldivis. Please note I am not opposed to any community / religious group having a place to congregate or worship – my opposition is based on the location, size of development, environmental concerns – wetlands / noise, as well as logistics with roads and traffic congestion. I am concerned that Rockingham City Council would support an application that based on the proposal as worded:- • a temple building for religious worship of the Hindu faith, and ancillary structures; • a multi-purpose hall and associated amenities; • a dining hall; • a library building; • two double-storey caretaker's dwellings, for the priests' accommodation; • a single-storey ancillary dwelling for temple guest accommodation; • on-site parking for up to 111 cars; • vehicle access is proposed predominantly from Folly Road, while an emergency access point is provided to Young Road.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
247. cont…		This proposal is contradiction of the 'rural ' lifestyle that is identified and classified within the South Metropolitan Sub–Regional Framework and recognised by Rockingham City in the Rural Land Strategy for its environmental significance and visual amenity. The clause 4.11.1 states 'to preserve land for farming and foster semi-rural development which is sympathetic to the particular characteristics of the area in which it is located. My concerns with this proposal are; Environmental – We had very stringent rules and restrictions in place when building our home due to being located within the Serpentine River catchment area. We were required to install an environmental waste system for a single story 4 bedroom 2 bathroom home. My concern is how the water levels / sewerage / drainage will be maintained for this proposal and the damage it will cause to the flora and fauna of the area. The environmental impact of using the numerous toilets / bathrooms/ laundries and kitchens on a very regular basis is of utmost concern. The Folly Pool area – a natural waterway which includes the link to the Alcoa wetlands is an extremely important one. The local conservation groups have for a number of years been working to ensure that this waterway and stretch of natural bush supports and homes many species, including the threatened Quenda, along with the long neck turtle, blue billed duck, frogs, snakes, and bird life. I personally have had to rescue a number of turtles from getting run over when attempting to cross these roads. Noise / acoustics – I believe that the Acoustic report proposed is highly misleading and does not present a true and clear picture of the reality of the noise / length and times of everyday events including festivals and weddings which may be held. We chose to live in this rural location for the peace and quiet. Traffic concerns - Folly Road and St Albans Road are not designed for the traffic that is currently occurring. The past few years with the Cable/Aqua Park opening and more and more people using the "back roads" to get to and from work has seen the traffic increased on these roads dramatically. The roads are narrow, have no pedestrian or cycle paths, very poor road lighting and have two very dangerous turns in the road. Both of these bends have had numerous incidents. The unfortunate death on the corner of Young and Folly Road highlights the danger of this stretch of road. Adding over 100 plus more cars on roads at various times of the day and night is a disaster waiting to happen. As residents and rate payers of this Baldivis East Rural area may this be noted that we are both opposed to the building of the Hindu Temple and Cultural Centre in the proposed location on Folly Road, Baldivis East. I am certain there would be plenty more suitable areas of land that this proposal would be more suitable for.
248. Ms Lynn Taylor	BALDIVIS	I would like to formally submit my objection to the Hindu Temple, planned for Lot 53 (No. 67) Folly Road, Baldivis. As a resident of The Edge estate in Baldivis, I understood at the time of buying & building in this estate that there would be a certain amount of freeway noise. This was not a problem at the time & it has not been a problem at all for the past 3 years. I need to pre-empt my objection by advising that I have lived near newly built temples (both Hindu & Muslim) before & was subsequently left with no choice, other than to sell & move away.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
248. cont…		At that time, I was also living near a railway line, which was also understood at that time & also had no impact on my daily life. In fact, the railway line was a block away from my house & the temples were 4-6 blocks beyond than that. The railway line was no issue, but the temples were unbearable. What I had a problem with then & what I can foresee now is the intrusion into daily life, at all hours of the day. Prayers from 7am to 9pm (7 days a week), plus festivals at least once a month, not to mention special events at random times. It may seem silly for me to foresee any annoyance, when I am further away than others who are obviously so much closer. I can't even imagine their frustration at having this unexpected, unwanted & intrusive development on their very peaceful, rural doorsteps. There are facts & figures that have been omitted, erroneous & just plain misleading in the Council's proposal. There are those who feel that we are being unfair, judgemental, even to the point of being called racist in our objections. None of this has any basis in fact, nor could it be any further from the truth. I know of many residents who are for/pro the temple development, that live quite a distance from the site & haven't done sufficient (if any at all) research into the possible affect on the daily life of residents who live close to the site. For those of us who are close enough to have our lives disrupted, this is a very personal & passionate objection. My objection is coming purely from a place of not wanting the inevitable disturbance of peace. As well as the inherent anger that the proposed site is completely unsuitable for this development's intended purpose. I thank you for the time you have taken to read this & I can only hope for a positive outcome for the residents of a peaceful rural community. The Hindu Temple proposal needs to be quashed.
249. Oriel Douglas	BALDIVIS	I wish to lodge an objection to the proposed temple building and associated dwellings on the corner of Foley and Young road. The additional traffic involved on worship events will add to the congestion on Foley and Young Roads. Young Road in particular, is already difficult to traverse when large trucks are using it. The lights at the freeway overpass are already on limited timings so back up congestion of traffic will occur. The turn right arrow to the Freeway North is already held up, so extra traffic leaving the proposed venue will be backed up considerable for motorists wishing to turn right to head North on the freeway. The noise on worship days with vehicles will be a constant in this rural area. I note that the car park is large enough to cater for 111 cars. This type of building and all associated infrastructure would be better sited on a much larger area of land. I note that there will be no access to a water license and for this area, licenses are already restricted. The rural zonings of this area do not match with this proposed development. Therefore , I wish to raise objections to this proposed development on the corner of Foley and Young Road.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
250. Mrs Parikh Parikh	WELLARD	We don't have any temple near baldivish it would be nice to have a Hindu temple it gives Hindu religion peace and harmonious It is great to go and have some pice if we have temple so we can visit with our kids and family
251. Mr Prakash Gonthina	HAMMOND PARK	Very Good to have in Western Australia.
252. Mrs Deborah J Davidson	BALDIVIS	This development would cause traffic chaos, the road could not take the large amount of concentrated traffic in the area and i can empathize with the residents of that quiet and rural area of Baldivis who are against it.
253. Ms Katie Lindquist Secretary Waterbird Conservation Group	No address provided	The Waterbird Conservation Group objects to the development of a Place of Worship (Hindu temple and the multiple associated dwellings, buildings and carparks) on 67 Folly Road Baldivis. The best use for the site is for it to be revegetated to restore the wetland vegetation on the west part of the site, Banksia woodland to the central and eastern part of the site and wetland vegetation at the most eastern part. This site is currently zoned rural and has been previously managed sensitively to be compatible with the conservation of Folly Pool wetland and the surrounding properties. The Waterbird Conservation Group (Group) is a volunteer and not for profit organisation thatformed in 1984. The Group has been managing crown reserve Folly Pool and southern drain and Maramanup Reserve since 1993 for ligconservation of flora and fauna. The Group does not receive any annual funding from government to manage this land. All work conducted on the land is from volunteersor small grants. The Group has worked tirelessly to rehabilitate the areas to enable the flora and fauna to thrive for 29 years. There has been numerous developments to the north (eg petrol station) and west (eg freeway and urban expansion) of the reserve that have impacted on the wetland and its ecosystem. Fauna havebeen pushed out of these areas and now the reserves and the rural areas are the only remaining refuges for them. The area to the east of the wetland is zoned rural and when managed sensitively these land usesare compatible with the conservation of the wetland. The development application describes Folly Pool as a parks and recreational reserve which is misleading and down plays its high conservation significance. Folly Pool is a conservation area managed for the protection of native vegetation and wildlife. It is a Bush Forever site and a conservation category wetland. Folly Pool supports a diverse population of 90 species of bird, thethreatened southern brown bandicoot quenda, the native Rakali, western grey kangaroos, many reptiles (eg dugite, tiger and blind snakes), Rosenberg and Gould monitors, Carter’s mussel (Westralunio carteri, WA’s only freshwater mussel) and many species of frogs.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
253. cont…		The vision for Folly Pool is for it to be managed in perpetuity as a conservation reserve for thelocal flora and fauna. The vision also includes the The building of a Hindu temple at 67Folly Rd will seriously impact on this vision. Water tanks should be adequately located and sized and listed as a condition. Evacuation routes are unsuitable for 400+ people and 109 cars and will be a major safety risk for all local residents and visitors. Bush fire prone areas are not a suitable location for large numbers of people and/or vulnerable land uses. These is inconsistent reference to water tank requirements for fire fighting in the BMP. The report must be consistent throughout to avoid confusion and misinterpretation. Water tanks for fire fighting purposes should be minimum 50,000L as the area is subject to fires and in a bushfire prone area. The last fire on that site was in June 2019 and originated north of Folly Pool and then spread to the site from the west. The fire did not come from the east as indicated as the likely direction expected in the BMP. Fires can come from any direction and any time of the year. Firebreaks must be indicated in the BMP mapping for around the entire site and not just around the temple and building. The BMP must show this. The evacuation plan only indicated evacuating past Folly Pool towards the west. The temple is proposed to cater for over 400+ visitors and 109 carparking bays. There should be other escape options as 109 cars evacuating at once all in the one direction will be a catastrophic issue for everyone evacuating. The freeway bridge is managed by traffic lights and so traffic can not freely leave the area through that route and drive directly to the urban areas as indicated. Driving north onto the freeway is also managed through traffic lights and do not change frequentlyenough to manage 109 cars. It takes a while with normal traffic. There may be many sets of light changes needed to disperse 109 cars plus the existing residents. The only free movement passing Folly Pool is to drive south along the freeway. This may be an issue if the fire is south of Folly Pool and on the eastern side of the freeway. The freeway is oftenclosed for safety reasons if the fire is close to the freeway. The time taken for 109 vehicles passing through traffic lights should be factored in. This would bea major safety issue as the cars leaving the temple will be backed up to the temple and many will not be able to exit the carpark due to the traffic jam. It is unclear where the service entry is. There is the main entry off Folly Road and the emergencyvehicle entrance off Young Rd.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
253. cont…		Is the emergency entry via Young Rd also to be used for patrons during an emergency as it is necessary to have two exits for a large number of people? Is there room for emergency service vehicles to be able to enter if the Young Rd entry was used for an emergency exit. Young Rd however is a cul-de-sac and is not appropriate for 109 vehicles to exit as this would impede the escape for the several landowners on that part of Young Rd. This is also the same access way indicated for the emergency services to reach the water tank although the water tank is situated next to main carpark in various documents. This exit would be blocked by emergency services orblocked by visitors leaving. Has there been any calculation on how long it would take to evacuate 400 people with 109 carsfrom the site? By placing a development built to mostly BAL 12.5 it is limiting the rest of the site to be revegetated and adjacent areas to be revegetated. The buildings should be built to BAL 29 at thevery least to allow revegetation of the adjacent site and west of the development area. It is clear that this land use that allows up to 400+ visitors is not suitable for a bushfire prone zone.This land use is more suited for urban areas where there is infrastructure in place that can deal with large numbers of people. --- Folly Reserve is a conservation category wetland and an environmentally sensitive area. It appears the proponent does not understand the requirements for wetland buffers and what theyare. These are areas upland of the wetlands. If an area between the wetland boundary and the dryland have been cleared of vegetation then these areas should be revegetated with native endemic plants and provide habitat for the upland life cycles of the wetland fauna and this becomes the wetland buffer. For conservation category wetlands government policy recommends a minimum of a 50 metre vegetated buffer should be provided from the outer edge of a wetland to provide for the life cyclesof animals that require dryland vegetation to survive, such as the turtle. The wetland associated with Folly Pool Reserve extends to the tree line of the proposed development. A development application is the appropriate time to ensure environmental policies are implemented. The 50-metre line would fall roughly where the existing driveway is. Any futuredevelopment should only be considered to the east of this 50 m line. All wetlands on 67 Folly Rd and the 50-metre dryland buffer should be rehabilitated with the appropriate native endemic plant species. All development proposals should aim to achieve the best environmental outcome possible. A protected and revegetated 50 metre dryland buffer would also go some way to protecting thenesting sites for the snake-necked south-western turtle that nests in sandy soils. --- The environmental report provided two sentences and a table on conservation significant faunaindicating they were unlikely to be present.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
253. cont…		Contrary to the environmental report rainbow bee-eater, baudins, carnabys and red tailed black cockatoos have all been recorded at Folly Pool and as the development site is only 350m to the east of Folly Pool then it is highly likely they will have been present at the subject site. Disturbance of soils will impact on the rainbow bee-eaters nesting. Any lost of trees will impact the black cockatoos for feeding, roosting and future nesting when the trees are mature enough to have developed the large sized hollows. The Rakali is a priority 4 species and has been recorded at Folly Pool and is not recognised in any of the reports. Any nutrient enriched drainage into Folly will impact on the habitat of the Rakali. The quenda is a priority 4 species and is also present at Folly Pool and the surrounding areas. The quenda have often been sighted on or near the development site. The quenda is active at night and will be greatly impacted by the increased night traffic that will occur on the site with more than 100 cars travelling to and from the site and this will increase mortality by car strike. The environmental report addressed black cockatoo habitat but only in the form of nesting hollows. None were suitable from the ground only survey undertaken. The consultants did not assess the foraging or roosting habitat values of the site for black cockatoos. All three species of black cockatoo are regularly recorded in bird surveys undertaken by bird specialists at Folly and Maramanup Reserves and adjacent neighbour's trees each year. Carnaby's cockatoo's most important natural food resource on the Swan Coastal Plain is Banksia species (predominantly B. attenuata, B. menziesii and B. sessilis), and it also feeds frequently on Corymbia callophylla (Marri) (Groom et al., 2014). The importance of Banksia woodland habitat for Carnaby's cockatoo has been demonstrated through foraging studies, which determined that Carnaby's cockatoo exploit all areas of available Banksia food resources on the Swan Coastal Plain (Johnson et al., 2016). Mosquitoes are not addressed in the proposal however with close proximity to Folly Pool, the creek and the drainage systems this will be an issue. The report makes mention to avoiding lighting and standing water both of which are proposed to occur in the application. A vegetated buffer of the creek and surrounding land is a part solution for mosquito management. No chemical control is permitted as it will impact on all invertebrate species and cause environmental impacts on the fauna and wetlands. Revegetating the creek will go some way to assisting with this. Locating the development further away from wetlands is the only real solution as mosquitoes and midges can travel for more than a kilometre. The freeway extension and urban sprawl to the west of reserve has increased the impacts to the vegetation and fauna of the reserve. The freeway extension severed the reserve from any fauna movement to the west, removing access to sandy nesting areas for turtles and increased nutrients and contaminants from the freeway.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
253. cont…		• The urban expansion has also impacted the reserve through increased pressures for public use of the land. The reserve is managed for conservation and the public are not permitted. The Group has ongoing issues related to the increase in human population such as with rubbish dumping, vandalism, unauthorised access and increased traffic. Placing a development of this large scale on the east side of the reserve will greatly increase these impacts. • The snake-necked south-western turtle, Chelodina colliei, (turtle) is gradually being wiped out across the swan coastal plain due to development encroachment on wetlands. Turtles require sand to dig out a nest to lay their eggs in. • Ecological linkages are very important for small wetlands and bushland. When wetlands are surrounded by development then these linkages are disconnected and fauna reliant on land movement will die out due to no potential recruitment. The application report states that ecological linkages are not required. This is not acceptable when ecological linkages are necessary to support the fauna living in the area. • As the sandy areas available to the snake-necked south-western turtle (turtle) have been greatly reduced over the past 10 years any further loss of sandy areas for nesting will be a significant loss. The site on which the temple development is proposed lies on a sandy area. This development occupies 2/3 of the sandy area available to turtles from Folly wetland without crossing Folly Road or Young Roads, see Figure 4 of the Environmental Report. Figure 5 indicates the sandy area remaining is smaller. Recruitment of young turtles will be severely impacted as the traffic on Folly Road will continue to rise and females turtles and hatchlings attempting to cross will unlikely survive the crossing. • Anthony Santoro's studies on urban encroachment to the wetlands in Perth and the reproduction impacts have shown that that surrounding land use has a direct effect on the turtles. This has important implications for wetland management and Anthony's papers suggest protection and restoration of fringing bushland around urban wetlands is crucial for enhancing the viability of remnant C. colliei populations. Terrestrial fauna • The report did not address other fauna. • The report did make note of some other hollows present. • Hollows are vitally important as they provide a refuge for animals from predators and weather (including fire) as well as safe sites for roosting and breeding. Animals that use hollows and are present at Folly Pool and likely inhabit the proposed site include, but not limited to, bats, possums, owls, pardalotes, cockatoos, parrots, galahs, ducks and kingfishers as well as numerous species of snakes, frogs and skinks. Hollows take many years to develop. For example, small hollows suitable for small animals can take hundred years to form, medium hollows suitable for parrots and ducks can take 200 years to form and larger and deeper hollows suitable for black cockatoos can take longer. Retaining remaining habitat and revegetation • As there are limited trees on the site and are sparsely located, no clearing should occur and all native trees with hollows must be avoided. The dead tree on the proposed driveway should be kept and avoided as should the tree to the west of the temple. Planting must be for a wide variety of native fauna and must be native vegetation suitable for this site. Only native endemic plants (no exotic plants) should be planted.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
253. cont…		• The environmental report states that no removal of trees are required for bushfire reasons however the development application states one of the trees is removed for bushfire protection reasons. These contradictions make it difficult to understand the actual proposal. • A Landscape Master Plan prepared by the Project Architect is included with the application which identifies the existing vegetation to be retained and the proposed vegetation to be planted, together with the identification of the selection of native and waterwise species. The Environmental report states that the planting will be for amenity purposes only and will be planted as low-threat. This plan is inadequate. Revegetation is not just planting waterwise plants around the carparks. It means a revegetation project that restores the ecological function of the land to its natural original condition prior to clearing. Light pollution • Light pollution impacts on people and wildlife for up to 20 kilometres. • Uplighting of trees will disturb any birds and animals residing in the trees and should not be permitted. • Any lights at nighttime will interfere with the natural cycle of animals living at Folly Pool. • Uplighting of the temple is also an issue for wildlife. Attracting midgies and other insects and therefore spiders will build webs on the temple drawing them away from the wetlands and their natural habitat. It is likely that pest control action will be engaged to control the insects and spiders using pesticides which will impact on the fauna. • Lighting on the site should be consistent with the principles of the DPLH's Position Statement: Dark skies and astrotourism and the Commonwealth's National Light Pollution Guidelines for Wildlife. • Light pollution will have a major impact on wildlife, possums, reptiles, birds, insects etc. • Folly Pool has recorded conservation significant fauna as outlined in this submissions. • Scientific studies show that light pollution and sky glow can have indirect physiological and behavioural impacts on wildlife. Exposure to certain types of artificial light can result in changes to some animals feeding and breeding behaviour, reduced survivorship, and can attract invasive pests or predators. • Light pollution by car headlights in the evening will be a nuisance and will impact on night fauna such as quenda and kangaroos crossing Folly Road. Aboriginal cultural heritage • Aboriginal cultural heritage has not been addressed in the application. This is a major flaw. The Due Diligence guidelines should be followed and implemented. • The potential natural spring in the south-eastern portion of the site may be of significance to aboriginal culture heritage. • Scar trees and middens have been present at Folly Pool so it is likely this site will also have aboriginal culture heritage. Sewerage treatment system • There will be hundreds of people on site each day and the secondary treatment systems are not suitable for this capacity on a sewerage sensitive area and in close proximity to a conservation category wetland (Folly Pool).

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
253. cont…		• The proponent's reports outline that the proposal is both commercial use (short term stay and temple and associated buildings) and for domestic use (two Priest and family accommodation/homes). • Many days there is proposed to be 200-300 people including those living on site, working on site, attending prayers, yoga, café, festivals or scripture. There will be at times during a wedding more than 440 people on site. This includes 400 guests, 20 catering staff, other wedding staff, temple staff and the priests' families. • The Soil Report identified the amount of effluent estimated to be generated daily is 15,300 litres which is 17 times the amount of a domestic home situation (or the same as a house every 2000m2 of land on the 3.2 hectares site). This is clearly a large commercial development and can not be compared as similar to the current permitted rural land uses. • The Government Sewerage Policy promotes reticulated sewerage as the best disposal method for sewage. It requires all new subdivision and development to be connected to reticulated sewerage where available or considered necessary on health, environment or planning grounds. The proposed development is located on a sewerage sensitive area and close to a conservation category wetland (Folly Pool) so the method of sewerage treatment should be a reticulated sewerage system. • The proponent has proposed a secondary treatment system with nutrient removal capabilities to manage the estimated 15,300 litres of effluent per day. The Soil Report states that the Department of Health do not have a list of approved commercial secondary treatment systems with nutrient removal capabilities. As the major component of this proposed development is for commercial purposes then this is a huge concern that the Department of Health can not provide a manufacturer list that can produce a suitable system. The proponent has only listed approved domestic systems and has not investigated if there is a system that can support this commercial proposal. The proposal does not demonstrate that the sewerage can be managed as the proponent has not investigated the required system to be used. There is also concern that the proposal states there will be a single secondary treatment system to collect, treat and dispose of the effluent for all the uses across the entire site. • According to the Government Sewerage Policy website there have been issues with implementing secondary treatment systems. As this is a large commercial development with large sewerage loadings this implementation issue is a huge nutrient and environmental risk for Folly Pool, the Peel Harvey estuary and neighbouring bores. If a reticulated sewerage system is not available then this is another reason this site is not appropriate for this development. Sewerage treatment reuse on land • Treated sewerage should not be reused as irrigation on the land as the Department of Health advises this should not be used on areas where there is human contact due to the health concerns. • The proponent reports indicate the whole site will be accessible and used by patrons. • The area proposed for reuse is on sandy soils where the PRI is low and the nutrients will leach readily through the soil. • Treated sewerage would also impact on any native fauna feeding or nesting on the site.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
253. cont…		• The proposed development site should not be filled for sewerage reasons as the proposed development site is partly located on wetland. • There is possibly a natural spring on the south-eastern side near Young Rd that should be protected from fill and nutrients. Revegetation on the site and retention of native trees, shrubs and sedges • The two trees to be removed are valuable for roosting, feeding and nesting and should be retained. • The report also says there will be fill over the south eastern part of the site to enable the site to useable over all of the proposed development site. • It was noted from viewing from Young Road that in south-eastern corner there was standing water with healthy sedges and green grasses in January (summer) which indicates there is the potential for a natural spring. • There should be no fill over any of the site and all the revegetation should be endemic native plants not exotic (whether waterwise or not). Nutrient management (in addition to sewerage) from the site into the Peel Harvey Estuary and the Folly Pool • Wetlands (Folly Pool) and estuaries (Peel Harvey Estuary) are high conservation areas and sensitive to high nutrients of phosphorus and nitrogen. Developments in their catchments must be managed to prevent any further nutrient discharges and be improved overall. • The following government plans and policies support the objectives of nutrient reduction and protect Folly Pool and the Peel Harvey Estuary: Peel Harvey Estuary Protection Plan, The Environmental Protection (Peel Inlet – Harvey Estuary) Policy 1992, Peel Harvey Water Quality Improvement Plan for Phosphorus, State Planning Policy 2.1 and draft State Planning Policy 2.9. • The water strategy indicates a low Phosphorus retention index (PRI), which means the soil is low absorbing and that any phosphorus released to the soils will be transported readily through the watertable and will impact on Folly Pool and the Peel Harvey estuary. It is important that the objectives and the environmental intents of the government policies and plans are adhered to. Although some of the government reports have been referenced in the application they have only been superficially addressed. • The main government objectives are to: o reduce nutrient concentrations in runoff from the catchment. o reinstate the ecological function of streams through river restoration works and revegetation of the stream margins. • The proposal indicates the proponent will be revegetating the site but there is only an indication of waterwise plantings for aesthetic and landscaping reasons. The winder creek that runs through the west of the site should be revegetated with endemic native sedges, shrubs and trees to reinstate its ecological function and reduce nutrient runoff. The sandy area should be revegetated with Banksia woodland ecosystem species. The proposal does not provide any revegetation plans that will restore ecological function or reduce nutrients to any part of the whole lot. • No fertilisers should be used on any lawns as fertilisers contribute to high nutrients. Noise

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
253. cont…		• The Acoustic report states there will be 200 car parking bays. This is at odds with other reports and the plans. • The Report does not discuss the noise impacts of weddings where there will be 400 people present. This is a major flaw of the assessment as weddings will likely create the most impact of noise. • Third party hiring of the hall is mentioned. Who is this third party and is this reported anywhere? They are unlikely to be expected to adhere to the managerial responses to noise management. • They only seem to refer to controlling noise after 2200hours. As this is a rural area noise after dark is an issue for livestock and animals. Horses are particularly sensitive to noise and are more likely to bolt if they do not know what the noise is. Neighbouring horses at sensitive receptor 1 in the report will not be able to see where the noise is emanating from. Slamming car doors at nighttime, music playing and people talking loudly are all noises that will severely impact on the horses. • The report notes that “Outdoor patron noise has not been reviewed in detail as part of this preliminary assessment.” Patrons will not be confined to the hall with doors closed as suggested in the assessment. • Mechanical noise has not been assessed as there is no strategy provided for noise management. • There is no assessment of the noise on the environment and wildlife at Folly Pool. • Construction is proposed to be staged in 4 stages lasting 4 years. Has the noise impacts been reported for the construction phases? Parking • The site has allocated 109 parking bays. What happens when the carpark is full and there is nowhere to park. All patrons are expected to bring a vehicle for evacuation purposes according to the BMP. Will they be parking along Folly Rd? This is not acceptable as it a rural road with trucks and cars driving at 80 km/h. • Conflicting reports for the predicted vehicle usage. The Bushfire Management Plan states the City of Rockingham states that vehicles must be calculating using 2 people per car for events other than a wedding which 3 people per car is to be used. Traffic analysis document states 166 vehicles. • The traffic document states that LPS states that a Place of Worship should allocate 1 bay per 4 people. With 400 people it is stated that 100 bays are required. It is unclear if the 400 people includes staff. However the BMP states that everyone must have their own vehicle in case of fire emergency and the City of Rockingham expects to calculate vehicle use as 2 people per vehicle. The LPS of 1 bay per 4 people does not take into account that this place of worship is located in a bushfire prone area and the requirements of this site are not usual. • This document states that development will not happen in this area until after 2050 and so concludes that many analyses are not needed. However this proposal is a development proposal and if permitted to go ahead then there will be development in the area. These statements are misleading and do not make any sense. Social media findings of similar temples

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
253. cont…		• Information from social media relating to the Perth Bala Muragan Temple in Mandogalup was investigated as an indicator of a similar temple and activity around the proposed new temple and community centre. • Daily events of several hours morning and night are scheduled. • Festivals such as Sri Balamurugan Maha Kumbabhisheham attract large numbers of devotees over several hours. • The numbers of people including families and individuals attending will add significantly to road use to and from the area from the freeway and impact on the rural properties nearby. This includes but not limited to access and egress to neighbouring roads and properties, which house semi rural housing and host livestock. The potential for access to be further restricted in the event of another fire in the area for residents trying to ensure stock and properties are safe. Waste management • The numbers of patrons and the nature of the ceremonies held will add significantly to waste management both grey water and sewage related and ephemeral waste from the festivals held. • We have concerns regarding the spread of these waste products into the rural surrounding and the conservation wetland of Folly Pool and creek nearby. • From experience of other skip bins in commercial areas the bins lids are left open and rubbish is generally allowed to blow around. Folly Pool is a conservation category wetland that is managed for conservation and environmental purposes. Rubbish chokes the waterway and smothers plants and may choke animals. Conclusion • The City of Rockingham has acknowledged the conservation importance of Folly Pool through its support for the Waterbird Conservation Group and in its reports and conservation projects over a long period of time. • The Waterbird Conservation Group have spent many years revegetating and caring for this area to encourage and rebuild a safe and protected environment for the many native birds and • various wildlife to return to and enjoy after the impact of the roadworks from the freeway and other developments in the area. This proposed development will impact heavily on this secluded and protected corner of bushland. • There are many issues that will cause an unacceptable impact and can not be addressed adequately. This site is too close to the precious natural community at Folly Pool reserve and the lives of the animals that live there, and their future generations will suffer. In conclusion the Waterbird Conservation Group objects to this development and we are calling out to the City of Rockingham to refuse this development.
254. Ms Kylie Smith	COTTESLOE	I am writing to confirm that I strongly oppose the application seeking approval to build a Place of Worship (Hindu Temple), located at Lot 53, (No 67) Folly Road Baldivis. My mother owns the property next door, sharing a fence line to the proposed development - 547 (Lot 923) Young Road, Baldivis. My parents have owned the property for over 35 years and their dream has always been to build a country home on the property and enjoy their retirement in the peaceful, quiet, rural community of Baldivis East.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
254. cont…		Our family, 3 generations have used our property to ride our horses, ride motor bikes and have family picnics. It is enjoyed by everyone for the quietness and the natural, rural environment. I have marked an **X** where my parents always planned to build their dream home. 40 metres from the proposed development. If it goes ahead, they will be looking onto an ablution block, 111 car bays and woken at all hours of the morning / night by hundreds of people (6:00am – 9:00pm, 7 days per week and weddings 6pm – 12am on weekends), vehicles and loud festival music that goes on for days. Hardly a nice, quiet rural setting.  Would you like to look onto the building below from your front verandah?  In the Rockingham City "Rural Land Strategy" document, clause 4.11.1 states **'to preserve land for farming and foster semi- rural development which is sympathetic to the particular characteristics of the area in which it is located".** I am bewildered how this large 'Compound' comprising of the following fits in with a rural development sympathetic to the characteristics of the area: a temple, with structures almost 18m in height separate ablution block in addition to all the toilet and bath / shower facilities housed within accommodation across the site o 29 toilets o 15 urinals o 2 disabled toilets o 7 bathrooms / shower facilities

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
254. cont…		Kitchens o 6 fully functioning kitchens across the site (2 at commercial level) multipurpose hall, multipurpose library, dining hall (seating 108) 2 double story houses guest accommodation (housing up to 8 couples) multiple furniture storage rooms playgrounds water features and numerous parking facilities I am worried about the lack of mains water and sewerage disposal. The land is surrounded by conservative water ways. 111 car park means upwards of 444 people using the amenities. That's a lot of sewage and waste water. I am also very worried about the access roads into the Compound. Young Road in particular is a single lane road in very poor condition. I would like to clarify that I am not against a Hindu Temple Development, however I do not support the location of the proposed development on Folly Road. It would be much better suited to an industrial area so the sheer volume of people, traffic and noise and interruption that comes with that, doesn't impact those around them. I urge the Council to decline the development approval and support the local residents living within a 1km radius around the proposed development. I do not know of one resident who is in support of this development. It will severely impact the long term, local residents of Baldivis East.
255. Mr Jeffery Blundell	No address provided	To Whom it may concern I would like to apposs the sight on young road Baldivis The Hindu Temple needs to be built in a better location than Folly Rd & young Rd the traffic is bad enough at the moment with out a huge Temple with hundreds of people & cars will only make it more congestive, I used to go to the Hindu Temple in canningvale & it was a nightmare when the car park is full they park on the street & footpaths & thousands of people turn up for there big event's I stopped going as I couldn't get in & there was no where to park, I moved to Baldivis for peace & quite, That corner is definitely the wrong place for a temple i am against it please don't make me move again.
Late Submission 256. Mr Michael Gibbs	BALDIVIS	I protest at the proposed Hindu Temple at Lot 53 /folly /rd /baldivis. The development is large and will have associated noise and vehicle movements that will interfere with the rural amenity on the East side of the freeway. The area is zoned rural and this is not in any way appropriate for a rural setting.
Late Submission 257. Ms Colleen Spoonheim	BALDIVIS	I have lived at 91 Folly Rd for 11 years and this is what I have observed over that time; · I have seen the death of a young 17 year old who lost control of her vehicle after a car prematurely exited Young Rd in front of her. · I have seen a young man on a motorcycle crash after being hit by a truck that was going too fast, resulting in both hands being crushed.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
257. cont…		· I have seen a young Mother of two hit a tree resulting in head injuries. · I have seen two young men lose control of their vehicle and it rolled three times. They were fortunate not to be hurt however their vehicle was totalled. · I have seen and heard multiple close calls, screaming tyres and hard breaking. · I have seen the hoons ripping up the road burning rubber creating so much thick black smoke that we have to close the windows in our home. · I have seen the drag racing, dangerous overtaking and speeding. · I have seen children waiting for the bus nearly hit by crazy drivers. Close calls continue on a daily basis. On weekdays I have observed hundreds of cars pass by my home every morning and afternoon consisting of large trucks, farm equipment, cars and tradie vehicles, many speeding and crossing solid lines and cutting corners. On the weekends there are hundreds of cyclists. Most drivers give them space, but many overtake without care, endangering lives. There are also 20 to 30 groups of motorcycles that make their way down the narrow roads, some of them breaking the sound barrier. This is what I have seen and what I know and should be added to your traffic analysis for the new buildings which will add a significant increase to Folly Rd traffic, not to mention the numerous heavy equipment needed for the build itself. I would suggest that before any construction begins, that Folly Rd is widened with turning lanes on both sides of the main entrance to the temple as well as on both sides of the Young Rd cross road. The widening could continue to the end of Folly Rd including a bicycle lane. I am happy to discuss my concerns face to face with the proper authority if you are so inclined.
Late Submission 258. Mr Ross McCamish	BALDIVIS	As a longtime rural resident of Baldivis, and a rural rate payer since 1977, I wish to express my objection to the proposed application for a Hindu temple to located at 53 Folly Road Baldivis. The proposed construction of a large scale temple in the beautiful rural setting of Baldivis, would be a blight on the on the amenity of such a beautiful rural area. There are many issues that will impact on local residents, traffic volumes, visual aspects,water provision, waste disposal, effluent disposal, proposed buildings located close to flood zone, located close to Folly Pool and sensitive environment vegetation, total disruption to neighbouring land owners in terms of noise, visual effects, and a massive decrease in the enjoyment of there property, and land values. The size of the proposed application is far more than a place to worship, and would have ongoing activities such as weddings and religious festivals. I ask that this proposed application be rejected to protect what BALDIVIS is zoned for, rural pursuits and rural lifestyles, for now and the future. Many thanks for allowing me to make comments on the proposed application, my wish is for Baldivis to retain its current rural zoning, to retain its beautiful rural setting, to provide to provide rural lifestyles for future generations to come.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
Late Submission 259. Ms Michelle Harvey	BALDIVIS	I am lodging my opposition to the proposed Hindu Temple being situated in Baldivis East. My family and I recently moved to rural Baldivis 1 year ago after 18 years in residential Baldivis. We absolutely love the peace and quiet that we have achieved. I am so shocked and saddened that the Hindu temple is even being proposed to be built there! This is a RURAL area with many RURAL rules that we as a family have had to adhere to when moving here. Why are the rules so very different for other people? Unless there is obviously major financial gain to be made by someone??! If this venture goes ahead, the council will be inundated with requests to have the local residents RURAL rules changed too. The fact that there will be such an dramatic environmental impact is horrendous in itself! The nearest temple is literally just minutes away? In a much more well suited spot. It makes NO sense at all. As a registered nurse, working providing Covid vaccinations to our community and state, I beg you to reconsider this proposal. As a nurse working in a diverse multicultural society for the last 31 years, I have no problem at all with the Hindu religion or any religion or belief but please don't build it there! It makes no sense whatsoever.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

SERVICING AUTHORITIES SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
1. Mr Purcher **Water Corporation**	PO Box 100 LEEDERVILLE WA 6902	Thank you for your letter dated 22 December 2021. We offer the following comments regarding this proposal. <u>Drainage</u> The subject area falls within the Peel Drainage Catchment in the Mundijong Drainage District, a rural drainage system. The Peel Main Drain and the Peel Sub G Drain are in close proximity to the subject site to the West and North respectfully. Rural drains are not designed to give flood protection at all times and some inundation of land can be expected. Water Corporation maintains its existing rural drains to ensure they are capable of clearing water from adjacent rural properties within three days of a storm event, where contours and internal drainage make this physically possible. Developments within this catchment are required to contain the flows from a one in one-hundred-year storm event on site. Discharge to Water Corporation drains must be compensated to pre-development levels. Please note the following points regarding the Water Management Strategy prepared by Jeeyars Archarya Peettam Australia Ltd (December 2021) provided with the Development Application - Section 2.9 ·The developer needs to discuss the North East Baldivis Flood Study with the Department of Environmental Regulations (DWER) and the City of Rockingham to agree fill levels, existing regional flood storage volumes to be retained on site plus compensating basin sizes required to detain additional post development runoff on site. Section 2.10 ·Refer to DWER regarding regional groundwater modelling and the limited use of infiltration available on site due to the high winter groundwater levels. Section 4.1.1 ·The saturated hydraulic conductivity of 3m/day is considered high and does not allow for clogging and poor maintenance of the proposed drainage swales. ·Table 8 needs to include the regional flood storage volume that exists on eastern portion of the site and this needs to be discussed and agreed with DWER. <u>Water</u> The subject area falls outside a planned water scheme area and therefore a reticulated potable water supply is not immediately available. If a reticulated water connection is required, the development should arrange for water planning to be undertaken. Water Corporation normally schedules areas in the Statewide Planning Program for review when amendments to the Metropolitan Region Scheme indicate servicing is required. If the resulting planning indicates water is feasible then the development may require headworks infrastructure to be constructed. <u>Wastewater</u> The subject area falls outside a planned sewerage catchment. If a reticulated sewerage connection is required, the development should arrange for wastewater planning to be undertaken. Water Corporation normally schedules areas in the Statewide Planning Program for review when amendments to the Metropolitan Region Scheme indicate servicing is required.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

SERVICING AUTHORITIES SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
1. cont…		If the resulting planning indicates water is feasible then the development may require headworks infrastructure to be constructed. <u>General Comments</u> This proposal will require approval by our Building Services section prior to commencement of works. Infrastructure contributions and fees may be required to be paid prior to approval being issued. For further information about building applications, the developer should follow this link: https://www.watercorporation.com.au/home/builders-and developers/building/lodging-a-building-application In addition, the developer may be required to fund new works or the upgrading of existing works and protection of all works. The information provided above is subject to review and may change. If the proposal has not proceeded within the next 6 months, please contact us to confirm that this information is still valid. Please provide the above comments to the landowner, developer and/or their representative.
2. Mr Mark Hingston **Department of Water and Environmental Regulation**	PO Box 332 MANDURAH WA 6210	Thank you for providing the abovementioned development application for the Department of Water and Environmental Regulation (the Department) to consider. The Department has identified that the proposed Hindu Temple at Lot 53 Folly Road, Baldivis has the potential for impact on water resource values and/or management. In principle the Department does not object to the proposal however key issues, recommendations and advice are provided below and these matters should be addressed. **Issue: Flood Management** **Advice** The Department of Water and Environmental Regulation provides advice and recommends guidelines for development on floodplains with the object of minimising flood risk and damage. Our guiding principles for floodplain management are to ensure that: • Proposed development has adequate flood protection from a 1 in 100 Annual Exceedance Probability (AEP) flood; • Proposed development does not detrimentally impact on the existing flooding regime of the general area. The North-East Baldivis Flood Study shows that a proportion of the lot is subject to flooding during major events with the 1% AEP flood level expected to vary from 4.75 m AHD to 5.0 m AHD (refer to the attached plan). Based on our floodplain management strategy for the area: • It is recommended that any proposed development (i.e. filling, building, etc) be located outside of the 1% AEP floodplain and at a minimum habitable floor level of 500 mm above the estimated flood level (eg, 5.5 m AHD) to ensure adequate flood protection. • Proposed development (i.e. filling, building, etc) that is located within the floodplain (blue shaded area on the plan) will be assessed on its merits on a case-by-case basis. Based on the plan sent through the buildings have been located outside of the floodplain (see attached). The finished floor levels are provided in a relative level, so it's not clear if the buildings are built above 5.5mAHD. Please note that this advice is related to major flooding only and other planning issues such as local stormwater drainage and environmental and ecological considerations may also need to be addressed.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

SERVICING AUTHORITIES SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
2. cont…		**Issue: Stormwater management** **Recommendation: Stormwater Management Plan** The proponent should manage stormwater in accordance with the 'Decision process for stormwater management in WA (DoW 2016)' and the 'Stormwater Management Manual for Western Australia (DoW 2004–2007)'. Furthermore, the Department recommends the proponent prepare a detailed Stormwater Management Plan (SMP) as part of the development approval process. The SMP should include, but not be limited to, • required storage for each rainfall event (Stormwater runoff should be fully contained onsite for small and minor storm events). • permitted outflow of stormwater runoff from the site • confirmation that stormwater runoff storage areas are designed to drain within the Department's recommended 96 hours. • the first 15 mm of stormwater runoff from roads and carpark areas be designed to undergo water quality treatment via biofiltration. **Issue: Wastewater Systems** **Recommendation: Decommissioning** Any septic sewer systems including all tanks and pipes and associated drainage systems (soak wells or leach drains) on the property are to be decommissioned in accordance with the Health (Treatment of Sewerage and Disposal of Effluent and Liquid Waste) Regulations 1974. **Issue: Sewage Sensitive Area** **Advice** In accordance with the Government Sewerage Policy (Government of Western Australia, 2019), the subject land is located within a sewage sensitive area. As this land is not connected to the reticulated sewerage infrastructure, future development of the proposed lot must adhere to the Policy including the requirement for a secondary treatment system with nutrient removal as well as setback requirements from waterways, the maximum groundwater level and areas likely to be flooded in a 10% AEP flood and 1% AEP flood events. **Issue: Site and Soil Evaluation** **Advice** The Department recommends that the Site and Soil Evaluation (Waterinsight, December 2021) for the proposal be referred to the Department of Health for assessment. **Issue: Acid Sulphate Soils (ASS)** **Advice** Acid sulfate soils (ASS) risk mapping indicates that the site is located within an area identified as representing a moderate to low risk of ASS occurring within 3 metres of the natural soil surface. DWER advises that a model ASS related condition is deemed necessary in this instance, the following condition and advice is recommended to be applied to the relevant approval. Condition: An acid sulphate soils self-assessment form and, if required as a result of the self-assessment, an acid sulphate soils report and an acid sulphate soils management plan shall be submitted to and approved by the Department of Water and Environmental Regulation before any development works are commenced.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

SERVICING AUTHORITIES SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
2. cont…		Where an acid sulphate soils management plan is required to be submitted, all development work shall be carried out in accordance with the approved management plan. (Department of Water and Environmental Regulation). The self-assessment form can be obtained from the Department of Water and Environmental Regulation's website at: https://www.der.wa.gov.au/your-environment/acid-sulfate-soils/69-acidsulfatesoils-guidelines. **Issue: Peel Harvey Coastal Plain Catchment** **Advice** The proponent is to be advised that the proposal is located within the Peel-Harvey catchment and the provision of the Environmental Protection (Peel Inlet – Harvey Estuary) Policy 1992 and the Statement of Planning Policy No 2.1, Peel-Harvey Coastal Plain Catchment (SPP 2.1) shall apply. **Issue: Groundwater** **Advice** The subject property is located within the Stakehill Groundwater Area as proclaimed under the Rights in Water and Irrigation Act 1914. Any groundwater abstraction in this proclaimed area for purposes other than domestic and/or stock watering taken from the superficial aquifer, is subject to licensing by the Department of Water. The issuing of a groundwater licence is not guaranteed but if issued will contain a number of conditions that are binding upon the licensee. It is important to note there may be difficulties securing groundwater in the Stakehill Groundwater Area. Should the applicant be considering using groundwater for irrigation the applicant should contact the licensing section at the Department's Mandurah office on 9550 4222 for further advice. 
No.3 Mr Simon Luscombe **Department Planning, Lands and Heritage**	140 William Street PERTH WA 6000	Further to your correspondence dated 22 December 2021, the following comments are provided. This proposal seeks approval for a place of worship. **Land Requirements** A portion of Folly Road is reserved as an Other Regional Road (ORR) in the Metropolitan Region Scheme (MRS) in the subject location. The site is not affected by the MRS reservation.

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

<table>
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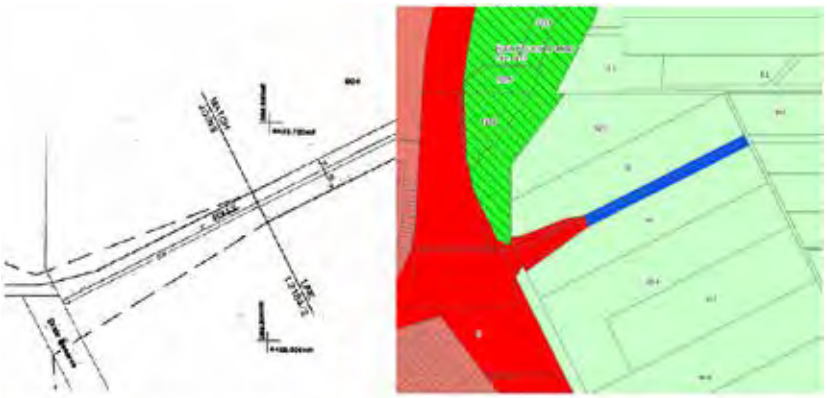
<tr><th>Name</th><th>Address</th><th>Comment</th></tr>
<tr><td>3. cont…</td><td></td><td>
Access
The site currently has one access point onto Folly Road. Access to Folly Road and a secondary access (for service and emergency vehicles) to Young Road are proposed. This is in accordance with the Commission's Regional Roads (Vehicular Access) Policy D.C. 5.1, which seeks to minimise the number of new access points to regional roads.
Transport Impact Assessment
The supporting transport report by Shawmac (December 2021) indicated that once a month, the site may generate the up to 450 attendees.
Recommendation
The Department of Planning, Lands and Heritage has no objection to the proposal on ORR planning grounds.

Land Requirement Plan No. 1.2389/1
</td></tr>
<tr><td>4. Ms Naomi Mynott
Department of Fire & Emergency Services</td><td>PO Box P1174
PERTH WA 6844</td><td>
I refer to your email dated 22 December 2021 regarding the submission of a Bushfire Management Plan (BMP) (Version 2), prepared by Envision Bushfire Protection and dated 29 November 2021, for the above development application. The BMP is accompanied by a report from the proponent dated 9 December 2021 for the above development application (DA).
This advice relates only to State Planning Policy 3.7: Planning in Bushfire Prone Areas (SPP 3.7) and the Guidelines for Planning in Bushfire Prone Areas (Guidelines). It is the responsibility of the proponent to ensure the proposal complies with relevant planning policies and building regulations where necessary. This advice does not exempt the applicant/proponent from obtaining approvals that apply to the proposal including planning, building, health or any other approvals required by a relevant authority under written laws.
<u>Assessment</u>
1. Policy measure 6.5 c) Compliance with the Bushfire Protection Criteria
<table>
<tr><th>Element</th><th>Assessment</th><th>Action</th></tr>
<tr><td>Water</td><td>A4.2 - not demonstrated
It has not been demonstrated that the proposed 50,000 litre water tank dedicated for fire-fighting purposes and adjacent hard-standing can achieve BAL-29 or below and is accessible to a type 3.4 appliance.</td><td>Modification to the BMP is required.</td></tr>
</table>
</td></tr>
</table>

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

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<tr><td>4. cont…</td><td></td><td>
2. Policy Measure 6.6.1 Vulnerable land uses
<table>
<tr><th>Issue</th><th>Assessment</th><th>Action</th></tr>
<tr><td>Bushfire Emergency Evacuation Plan (BEEP)</td><td>This referral has included a for the purposes of addressing the policy requirements. Consideration should be given to the Guidelines Section 5.5.2 ‘Developing a Bushfire Emergency Evacuation Plan’. This contains detail regarding what should be included in a BEEP ad will ensure the appropriate content is detailed when finalising the BEEP to the satisfaction of the City.</td><td>Comment only.</td></tr>
<tr><td>Building Construction Standards</td><td>Whilst is it acknowledged that the proposed class of building are not required to demonstrate compliance with AS3959 clause 3.2.3, it is suggested given the vulnerable persons on the site, the decision maker give consideration to the bushfire construction and fire separation standards.
This is consistent with Clause 78E(1) of Schedule 2 of the which requires the local government to have regard to the bushfire construction requirements of the Building Code of Australia. In addition, Clause 5.8.3 of the Guidelines reads as follows:
Although BAL construction standards do not guarantee the survival of the occupants or building. DFES does support the improved bushfire resilience provided by AS3959 construction standards.</td><td>Comment only.</td></tr>
<tr><td>Building Regulations 2012</td><td>As the proposal includes both Class 9 buildings over 500m^2 total floor area, plans are required to be submitted to DFES Built Environment Branch for assessment in accordance with regulation 18(A) of the</td><td>Comment Only.</td></tr>
</table>
</td></tr>
</table>

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

SERVICING AUTHORITIES SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
4. cont…		<table><tr><td></td><td>Unless it is demonstrated otherwise, DFES Built Environment Branch advises that hydrant coverage will be required to both the proposed Temple (975m^2) and Multi-purpose Hall (1047m^2). Hydrant coverage may also be required to the Dining Hall and Library if it is deemed that they are linked to the Multi-purpose Hall by awnings/verandahs. Adequate fire separation (to ensure that the proposed structures are less than 500m^2) or a compliant reticulated hydrant supply to the site should be provided. If neither are provided, then a dedicated hydrant system from an on-site pump and tank set-up will be required. Any such system will need to be designed and installed in accordance with the FES Commissioner's Operational Requirements. Built Environment Branch advises that the proposed 50,000 litre water tank for bush fire-fighting/intervention purposes cannot be considered for use for the protection of structures where hydrant coverage is deemed to be required (as per BCA Clause E1.3).</td><td></td></tr></table> **<u>Recommendation – supported subject to modifications</u>** The development application and the BMP have adequately identified issues arising from the bushfire risk assessment and considered how compliance with the bushfire protection criteria can be achieved. However, modifications to the BMP are necessary to ensure it accurately identifies the bushfire risk and necessary mitigation measures. As these modifications will not affect the development design, these modifications can be undertaken without further referral to DFES. The required modifications are listed in the table(s) above. As this planning decision is to be made by a Joint Development Assessment Panel please forward notification of the decision to DFES for our records.
No.5. Mr Steven Fernandes **Main Roads**		Main Roads has no objection to the application subject to the following conditions being imposed: <u>Conditions</u> 1. Attendance and times of operation for worship are to be limited to the following:

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

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<tr><th>Name</th><th>Address</th><th>Comment</th></tr>
<tr><td>5. cont…</td><td></td><td>
<table>
<tr><td rowspan="2">Weekday Prayers (Mon-Fri)</td><td>25-50 people (morning session)</td><td>7:00am to 12:00pm</td></tr>
<tr><td>25-50 people (evening session)</td><td>5:00pm to 9:00pm</td></tr>
<tr><td>Weekday Yoga Classes (2 per week)</td><td>20 people (evening session)</td><td>6:00pm to 7:00pm</td></tr>
<tr><td rowspan="2">Saturday/Sunday Prayers</td><td>100-150 people (morning session)</td><td>7:00am to 12:00pm</td></tr>
<tr><td>100-150 people (evening session)</td><td>5:00pm to 9:00pm</td></tr>
<tr><td>Saturday/Sunday Scripture Classes</td><td>50-75 people</td><td>3:00pm to 6:00pm</td></tr>
<tr><td colspan="3">Special Hindu Festival Days occurring on average once per month</td></tr>
<tr><td rowspan="2">Weekday</td><td>50-75 people (morning session)</td><td>7:00am to 12:00pm</td></tr>
<tr><td>200-250 people (evening session)</td><td>5:00pm to 9:00pm</td></tr>
<tr><td rowspan="2">Weekend</td><td>200 people (morning session)</td><td>7:00am to 12:00pm</td></tr>
<tr><td>200-250 people (evening session)</td><td>5:00pm to 9:00pm</td></tr>
<tr><td colspan="3">Hindu Weddings up to a maximum 6 times per year on weekends only</td></tr>
<tr><td>Weekend</td><td>300-400 people</td><td>6:00pm to 12:00am</td></tr>
</table>
<u>Justification for Condition</u>
This condition reflects the scale of development the applicant has applied and is the basis of the Traffic Impact Assessment.
Should the City disagree with or resolve not to include as part of its conditional approval any of the above conditions or advice, Main Roads requests an opportunity to meet and discuss the application further, prior to a final determination being made.
Main Roads advises that it offers a free of charge pre-lodgement consultation service. Main Roads encourages both the Local Government in liaising with applicants to promote and capitalise on this free advisory service offered by the road authority prior to lodgement of strategic or statutory planning proposals, especially where development plans involve land adjacent to or have the potential to impact on the State road network.
Further information on the pre-lodgement consultation process can be found on Main Roads website at mainroads.wa.gov.au > Technical & Commercial > Planning & Development
Main Roads requests a copy of the City's final determination on this proposal to be sent to planninginfo@mainroads.wa.gov.au.</td></tr>
<tr><td>6. Dr Michael Lindsay
Executive Director,
Environmental Health Directorate
Department of Health</td><td>PO Box 8172
PERTH BC
WA 6849</td><td>Thank you for your letter of 22 December 2021 requesting comments from the Department of Health (DOH) on the above proposal.
The DOH provides the following comments:
1. Water Supply
The drinking water supply must be suitably disinfected and fit for purpose, and deliver safe drinking water that complies with the health-related microbiological and chemical health criteria set out in the and also be compatible with https://www.healthywa.wa.gov.au/Articles/U_Z/Water-tanks-on-your-property</td></tr>
</table>

Schedule of Submissions
Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis (20.2021.340.1)

SERVICING AUTHORITIES SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
6. cont…		It is recommended that the facility have a drinking water management plan that is approved by the City of Rockingham to ensure that risks associated with drinking water are adequately addressed and mitigated. Should any nasal irrigation practices be carried out consideration should be given to the information contained at - https://www.healthywa.wa.gov.au/Articles/N_RNasal-irrigation-is-it-safe Drinking water infrastructure to comply with all relevant aspects of the BCA. Any food premises on site is to be supplied with potable drinking water to the satisfaction of the City of Rockingham under the food safety regulatory framework. Any non-drinking water on site must be suitably labelled to ensure it cannot be reasonably mistaken for drinking water. **2. Wastewater Disposal** In relation to the management of sewage, the DOH has no objection to the proposed, subject to the following: Compliance with the Government Sewerage Policy (2019). It is noted the land is subject to high seasonal water tables and the proposal refers to using leach drains. Considering this, up to 2 metres of fill may be required to ensure the 1.5 metre separation from the water table is achieved to the base of the disposal area, including the depth of the leach drain and soil cover; A secondary wastewater treatment system should comply with and demonstrate meeting WA health legislation water volumes, water quality and disposal criteria; Submission of a plan detailing the proposed building envelopes, land application area/s, all parking bays, setbacks and exclusion zones for the proposal; Submission of a formal application for an onsite wastewater treatment system to the City of Rockingham for assessment prior to submission to the DOH. **3. Food Act Requirements** All food related areas (kitchen, preparation areas, etc.) to comply with the provisions of the and related code, regulations and guidelines. Details available for download from : https://ww2.health.wa.gov.au/Articles/S_T/Starting-a-food-business-in-WA **4. Health (Miscellaneous Provisions) Act Requirements** All public access areas are to comply with the provisions of the Health (Miscellaneous Provisions) Act 1911, related regulations and guidelines and in particular Part VI – Public Buildings.

Enquiries: Steve Fernandez on (08) 9323 4517
Our Ref: 21/1502 (D22#90432)
Your Ref: 20.2021.340.1

29 March 2022

Chief Executive Officer
City of Rockingham
PO Box 2142
ROCKINGHAM DC WA 6967

Email: customer@rockingham.wa.gov.au

Dear Sir/Madam,

PROPOSED DEVELOPMENT – LOT 53 (67) FOLLY ROAD, BALDIVIS – REF: 20.2021.340.1 [PLACE OF WORSHIP]

Main Roads has no objection to the application subject to the following conditions being imposed:

Conditions

1. Attendance and times of operation for worship are to be limited to the following:

Weekday Prayers (Mon-Fri)	25-50 people (morning session) 25-50 people (evening session)	7:00am to 12:00pm 5.00pm to 9.00pm
Weekday Yoga Classes (2 per week)	20 people (evening session)	6.00pm to 7.00pm
Saturday/Sunday Prayers	100-150 people (morning session) 100-150 people (evening session)	7:00am to 12:00pm 5.00pm to 9.00pm
Saturday/Sunday Scripture Classes	50-75 people (included in the above)	3:00pm to 6:00pm
Special Hindu Festival Days occurring on average once per month		
Weekday	50-75 people (morning session) 200-250 people (evening session)	7:00am to 12:00pm 5.00pm to 9.00pm
Weekend	200 people (morning session) 200-250 people (evening session)	7:00am to 12:00pm 5.00pm to 9.00pm
Hindu Weddings up to a maximum 6 times per year only on weekends only		
Weekend	300-400 people	6:00pm to 12:00am

Justification for Condition

This condition reflects the scale of development the applicant has applied and is the basis of the Traffic Impact Assessment.

Should the City disagree with or resolve not to include as part of its conditional approval any of the above conditions or advice, Main Roads requests an opportunity to meet and discuss the application further, prior to a final determination being made.

Main Roads advises that it offers a free of charge pre-lodgement consultation service. Main Roads encourages both the Local Government in liaising with applicants to promote and capitalise on this free advisory service offered by the road authority prior to lodgement of strategic or statutory planning proposals, especially where development plans involve land adjacent to or have the potential to impact on the State road network.

Further information on the pre-lodgement consultation process can be found on Main Roads website at mainroads.wa.gov.au > Technical & Commercial > Planning & Development

Main Roads requests a copy of the City's final determination on this proposal to be sent to planninginfo@mainroads.wa.gov.au. If you have any queries please do not hesitate to contact Steve Fernandez

Yours sincerely

mthornely.

Maryanne Thornely
Road Access and Planning Manager/A

Our Ref: D22866
Your Ref: 20.2021.340.1 – D21/229924

Chris Parlane
City of Rockingham
customer@rockingham.wa.gov.au

Dear Mr Parlane

RE: VULNERABLE LAND USE – LOT 53 (67) FOLLY ROAD, BALDIVIS – PROPOSED PLACE OF WORSHIP (HINDU TEMPLE) – DEVELOPMENT APPLICATION

I refer to your email dated 22 December 2021 regarding the submission of a Bushfire Management Plan (BMP) (Version 2), prepared by Envision Bushfire Protection and dated 29 November 2021, for the above development application. The BMP is accompanied by a report from the proponent dated 9 December 2021 for the above development application (DA).

This advice relates only to *State Planning Policy 3.7: Planning in Bushfire Prone Areas* (SPP 3.7) and the *Guidelines for Planning in Bushfire Prone Areas* (Guidelines). It is the responsibility of the proponent to ensure the proposal complies with relevant planning policies and building regulations where necessary. This advice does not exempt the applicant/proponent from obtaining approvals that apply to the proposal including planning, building, health or any other approvals required by a relevant authority under written laws.

Assessment

1. Policy Measure 6.5 c) Compliance with the Bushfire Protection Criteria

Element	Assessment	Action
Water	**A4.2 – not demonstrated** It has not been demonstrated that the proposed 50,000 litre water tank dedicated for fire-fighting purposes and adjacent hard-standing can achieve BAL-29 or below and is accessible to a type 3.4 appliance.	Modification to the BMP is required.

2. Policy Measure 6.6.1 Vulnerable land uses

Issue	Assessment	Action
Bushfire Emergency Evacuation Plan (BEEP)	The referral has included a *'Bushfire Emergency Evacuation Plan'* for the purposes of addressing the policy requirements. Consideration should be given to the Guidelines Section 5.5.2 'Developing a Bushfire Emergency Evacuation Plan'. This contains detail regarding what should be included in a BEEP and will ensure the appropriate content is detailed when finalising the BEEP to the satisfaction of the City.	Comment only.

Building Construction Standards	Whilst it is acknowledged that the proposed class of buildings are not required to demonstrate compliance with AS3959 clause 3.2.3, it is suggested given the vulnerable persons on the site, the decision maker give consideration to the bushfire construction and fire separation standards. This is consistent with Clause 78E(1) of Schedule 2 of the *Planning and Development (Local Planning Schemes) Regulations 2015* which requires the local government to have regard to the bushfire construction requirements of the Building Code of Australia. In addition, Clause 5.8.3 of the Guidelines reads as follows: *The bushfire construction provisions of the Building Code of Australia do not apply to Class 4 to Class 9 buildings. In these instances, the applicant has the discretion to utilise any or all of the elements of AS3959 in the construction of the building that they deem appropriate.* Although BAL construction standards do not guarantee the survival of the occupants or building, DFES does support the improved bushfire resilience provided by AS3959 construction standards.	Comment only.
Building Regulations 2012	As the proposal includes both Class 9 buildings and buildings over 500m^2 total floor area, plans are required to be submitted to DFES Built Environment Branch for assessment in accordance with regulation 18(A) of the *Building Regulations 2012*. Unless it is demonstrated otherwise, DFES Built Environment Branch advises that hydrant coverage will be required to both the proposed Temple (975m^2) and Multi-purpose Hall (1047m^2). Hydrant coverage may also be required to the Dining Hall and Library if it is deemed that they are linked to the Multi-purpose Hall by awnings/verandahs. Adequate fire separation (to ensure that the proposed structures are less than 500m^2) or a compliant reticulated hydrant supply to the site should be provided. If neither are provided, then a dedicated hydrant system from an on-site pump and tank set-up will be required. Any such system will need to be designed and installed in accordance with the FES Commissioner's Operational Requirements. Built Environment Branch advises that the proposed 50,000 litre water tank for bush fire-fighting/intervention purposes cannot be considered for use for the protection of structures where hydrant coverage is deemed to be required (as per BCA Clause E1.3).	Comment only.

Recommendation – supported subject to modifications

The development application and the BMP have adequately identified issues arising from the bushfire risk assessment and considered how compliance with the bushfire protection criteria can be achieved. However, modifications to the BMP are necessary to ensure it accurately identifies the bushfire risk and necessary mitigation measures. As these modifications will not affect the development design, these modifications can be undertaken without further referral to DFES.

The required modifications are listed in the table(s) above.

As this planning decision is to be made by a Joint Development Assessment Panel please forward notification of the decision to DFES for our records.

If you require further information, please contact Richard Trinh – Senior Land Use Planning Officer on telephone number 9395 9709.

Yours sincerely



Naomi Mynott
DIRECTOR LAND USE PLANNING

3 February 2022

CC chris.parlane@rockingham.wa.gov.au

Department of **Planning, Lands and Heritage**

GOVERNMENT OF WESTERN AUSTRALIA

Chief Executive Officer
City of Rockingham
PO Box 2142
Rockingham DC WA 6967

Your Ref: DA – 20.2021.340.1

Our ref: DP/10/00551

Enquiries: Simon Luscombe (6551 9307)

31 January 2022

Attention: Chris Parlane

Dear Chris,

Re: Lot 53 (67) Folly Road, Baldivis – Proposed place of worship

Further to your correspondence dated 22 December 2021, the following comments are provided. This proposal seeks approval for a place of worship.

Land Requirements

A portion of Folly Road is reserved as an Other Regional Road (ORR) in the Metropolitan Region Scheme (MRS) in the subject location. The site is not affected by the MRS reservation.

Access

The site currently has one access point onto Folly Road. Access to Folly Road and a secondary access (for service and emergency vehicles) to Young Road are proposed. This is in accordance with the Commission's Regional Roads (Vehicular Access) Policy D.C. 5.1, which seeks to minimise the number of new access points to regional roads.

Transport Impact Assessment

The supporting transport report by Shawmac (December 2021) indicates that once a month, the site may generate the up to 450 attendees.

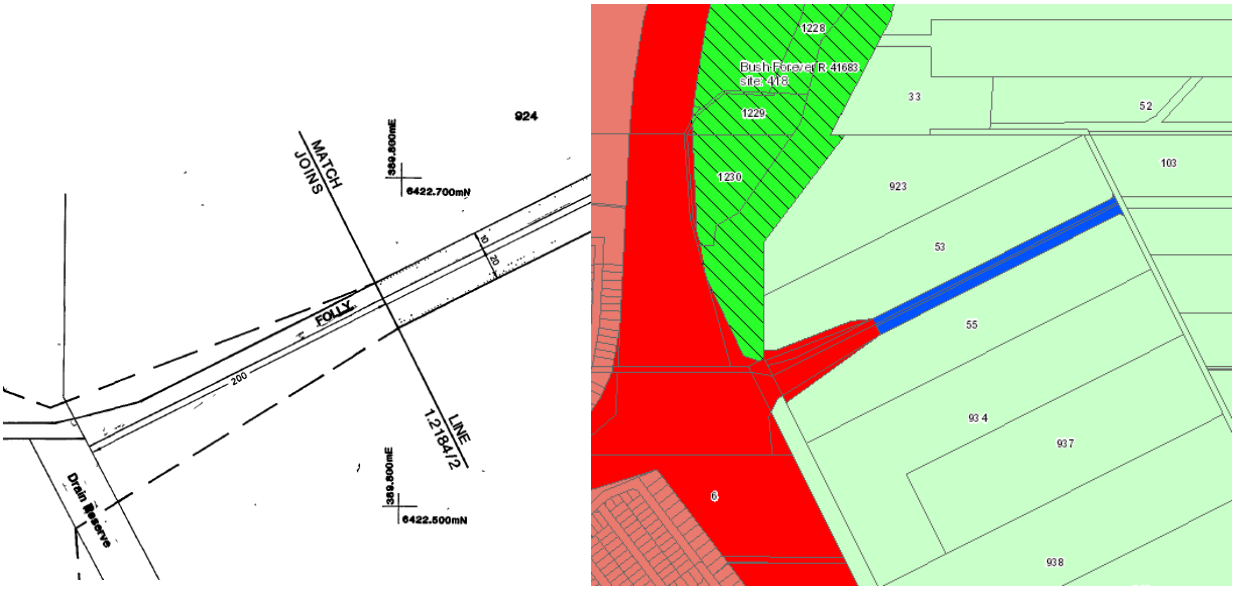
Recommendation

The Department of Planning, Lands and Heritage has no objection to the proposal on ORR planning grounds.

Thank you for your correspondence. Should you have any queries regarding this matter, please contact me on 6551 9307 or via email (simon.luscombe@dplh.wa.gov.au)
Regards,

SD Luscombe

Simon Luscombe
Principal Planning Officer
Strategy and Engagement



Land Requirement Plan No. 1.2389/1

Postal address: Locked Bag 2506 Perth WA 6001 Street address: 140 William Street Perth WA 6000
Tel: (08) 655 18002 Fax: (08) 655 19001 info@dplh.wa.gov.au www.dplh.wa.gov.au
ABN 68 565 723 484
wa.gov.au

Government of Western Australia
Department of Water and Environmental Regulation

Your ref: DD020.2021
Our ref: DWERT5842 & PA46723
Enquiries: Mark Hingston

City of Rockingham
PO Box 2142
ROCKINGHAM DC, WA, 6967

Attention: Chris Parlane

Dear Chris

RE: LOT 53 FOLLY ROAD, BALDIVIS – PROPOSED HINDU TEMPLE

Thank you for providing the abovementioned development application for the Department of Water and Environmental Regulation (the Department) to consider. The Department has identified that the proposed Hindu Temple at Lot 53 Folly Road, Baldivis has the potential for impact on water resource values and/or management. In principle the Department does not object to the proposal however key issues, recommendations and advice are provided below and these matters should be addressed.

Issue: Flood Management
Advice
The Department of Water and Environmental Regulation provides advice and recommends guidelines for development on floodplains with the object of minimising flood risk and damage. Our guiding principles for floodplain management are to ensure that:

- Proposed development has adequate flood protection from a 1 in 100 Annual Exceedance Probability (AEP) flood;
- Proposed development does not detrimentally impact on the existing flooding regime of the general area.

The North-East Baldivis Flood Study shows that a proportion of the lot is subject to flooding during major events with the 1% AEP flood level expected to vary from 4.75 m AHD to 5.0 m AHD (refer to the attached plan). Based on our floodplain management strategy for the area:

- It is recommended that any proposed development (i.e. filling, building, etc) be located outside of the 1% AEP floodplain and at a minimum habitable floor level of 500 mm above the estimated flood level (eg, 5.5 m AHD) to ensure adequate flood protection.

Kwinana Peel Region
107 Breakwater Parade Mandurah Ocean Marina Mandurah Western Australia 6210
PO Box 332 Mandurah Western Australia 6210
Telephone: 08 9550 4222 Facsimile: 08 9581 4560
www.dwer.wa.gov.au

• Proposed development (i.e. filling, building, etc) that is located within the floodplain (blue shaded area on the plan) will be assessed on its merits on a case-by-case basis.

Based on the plan sent through the buildings have been located outside of the floodplain (see attached). The finished floor levels are provided in a relative level, so it's not clear if the buildings are built above 5.5mAHD.

Please note that this advice is related to major flooding only and other planning issues such as local stormwater drainage and environmental and ecological considerations may also need to be addressed.

Issue: Stormwater management
Recommendation: **Stormwater Management Plan**
The proponent should manage stormwater in accordance with the *'Decision process for stormwater management in WA (DoW 2016)'* and the *'Stormwater Management Manual for Western Australia (DoW 2004–2007)'.*

Furthermore, the Department recommends the proponent prepare a detailed Stormwater Management Plan (SMP) as part of the development approval process. The SMP should include, but not be limited to,

- required storage for each rainfall event (Stormwater runoff should be fully contained onsite for small and minor storm events).
- permitted outflow of stormwater runoff from the site
- confirmation that stormwater runoff storage areas are designed to drain within the Department's recommended 96 hours.
- the first 15 mm of stormwater runoff from roads and carpark areas be designed to undergo water quality treatment via biofiltration.

Issue: Wastewater Systems
Recommendation: Decommissioning
Any septic sewer systems including all tanks and pipes and associated drainage systems (soak wells or leach drains) on the property are to be decommissioned in accordance with the *Health (Treatment of Sewerage and Disposal of Effluent and Liquid Waste) Regulations 1974*.

Issue: Sewage Sensitive Area
Advice
In accordance with the *Government Sewerage Policy* (Government of Western Australia, 2019), the subject land is located within a sewage sensitive area. As this land is not connected to the reticulated sewerage infrastructure, future development of the proposed lot must adhere to the Policy including the requirement for a secondary treatment system with nutrient removal as well as setback requirements from waterways, the maximum groundwater level and areas likely to be flooded in a 10% AEP flood and 1% AEP flood events.

Issue: Site and Soil Evaluation
Advice
The Department recommends that the Site and Soil Evaluation (Waterinsight, December 2021) for the proposal be referred to the Department of Health for assessment.

Issue: Acid Sulphate Soils (ASS)
Advice
Acid sulfate soils (ASS) risk mapping indicates that the site is located within an area identified as representing a moderate to low risk of ASS occurring within 3 metres of the natural soil surface. DWER advises that a model ASS related condition is deemed necessary in this instance, the following condition and advice is recommended to be applied to the relevant approval.

Condition: An acid sulphate soils self-assessment form and, if required as a result of the self-assessment, an acid sulphate soils report and an acid sulphate soils management plan shall be submitted to and approved by the Department of Water and Environmental Regulation before any development works are commenced. Where an acid sulphate soils management plan is required to be submitted, all development work shall be carried out in accordance with the approved management plan. (Department of Water and Environmental Regulation). The self-assessment form can be obtained from the Department of Water and Environmental Regulation's website at: https://www.der.wa.gov.au/your-environment/acid-sulfate-soils/69-acidsulfatesoils-guidelines.

Issue: Peel Harvey Coastal Plain Catchment
Advice
The proponent is to be advised that the proposal is located within the Peel-Harvey catchment and the provision of the *Environmental Protection (Peel Inlet – Harvey Estuary) Policy 1992* and the *Statement of Planning Policy No 2.1, Peel-Harvey Coastal Plain Catchment* (SPP 2.1) shall apply

Issue: Groundwater
Advice
The subject property is located within the Stakehill Groundwater Area as proclaimed under the *Rights in Water and Irrigation Act 1914*. Any groundwater abstraction in this proclaimed area for purposes other than domestic and/or stock watering taken from the superficial aquifer, is subject to licensing by the Department of Water. The issuing of a groundwater licence is not guaranteed but if issued will contain a number of conditions that are binding upon the licensee.

It is important to note there may be difficulties securing groundwater in the Stakehill Groundwater Area. Should the applicant be considering using groundwater for irrigation the applicant should contact the licensing section at the Department's Mandurah office on 9550 4222 for further advice.

Should you require any further information please contact Mark Hingston on 9550 4209.

Yours sincerely



Jane Sturgess
Acting Program Manager – Planning Advice
Kwinana Peel Region

12 / 01 / 2022

67 Folly Road
BALDIVIS

LOCALITY MAP



LEGEND

- #67 Folly Road
- 0.5m LiDAR Contours
- Stormwater Drains
- 1% AEP Flood Contour (m AHD)
- 1% AEP Floodplain
- Road

0 10 20 30 40 50
Metres

N

Datum and Projection Information
Vertical Datum: Australian Height Datum (AHD71)
Horizontal Datum: GDA94 MGAz50
Projection: Universal Traverse Mercator (UTM)
Spheroid: Geodetic Reference System (GRS80)

Project Information
Client: Lauren Greening
Map Author: Mark Hingston
Task ID: B1305
Compilation date: 23/12/2021
Edition: Version 1

SOURCES

The Department of Water and Environmental Regulation acknowledges the following datasets and their custodians in the production of this map:

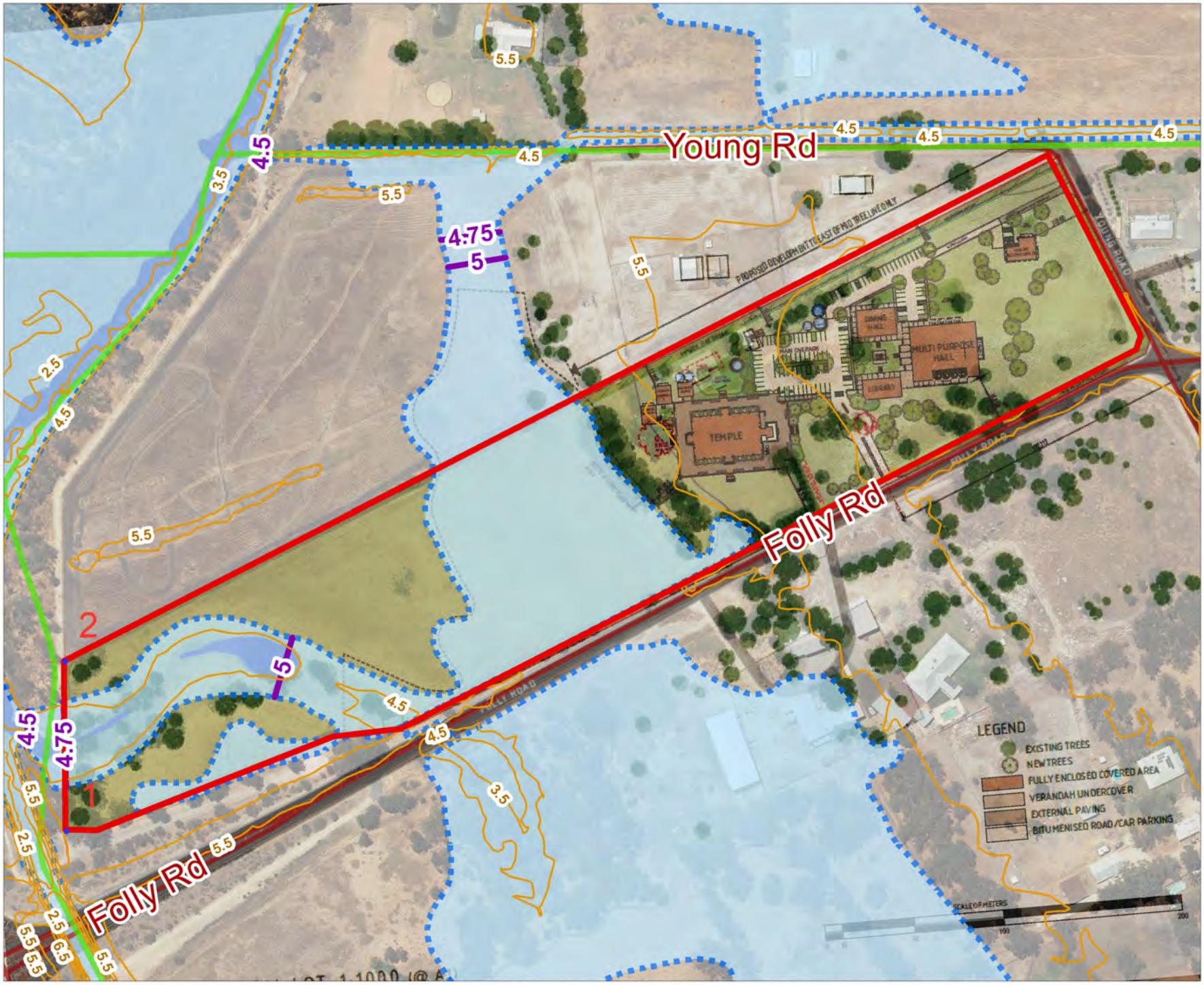
Road Centrelines, DLI - Landgate - 01/11/2014
Spatial Cadastral Database - Landgate – 01/10/2014
SwanCoastPlain_Central - Landgate - 02/05/2018

Government of Western Australia
Department of Water and Environmental Regulation

This map is a product of the Department of Water and Environmental Regulation and was printed on 23/12/2021.

This map was produced with the intent that it be used for display purposes at the scale of 1:4,685 when printing at A4.

While the Department of Water and Environmental Regulation has made all reasonable efforts to ensure the accuracy of this data, the department accepts no responsibility for any inaccuracies and persons relying on this data do so at their own risk.



Path: J:\gisprojects\Project\DWER\3000_SCI_PLA\3531_FLD_RISK_SC\0001_FPM_Enquires\mxd\Serpentine\Baldivis\FPM Serpentine #67 Folly Road BALDIVIS.mxd

Development Services
629 Newcastle Street Leederville WA 6007
PO Box 100 Leederville WA 6902
T (08) 9420 2099
F (08) 9420 3193

Your Ref: 20.2021.340.1 – D21/230068
Our Ref: 126510912 - DEV382063
Enquiries: Kevin Purcher
Direct Tel: 9420 2385
Email: land.planning@watercorporation.com.au

11 January 2022

Chief Executive Officer
City of Rockingham
PO Box 2142
ROCKINGHAM WA 6967

Attention of: Chris Parlane

Re: Proposed Place of Worship (Hindu Temple) - Lot 53 (No.67) Folly Road, Baldivis

Thank you for your letter dated 22 December 2021. We offer the following comments regarding this proposal.

Drainage

The subject area falls within the Peel Drainage Catchment in the Mundijong Drainage District, a rural drainage system. The Peel Main Drain and the Peel Sub G Drain are in close proximity to the subject site to the West and North respectfully.

Rural drains are not designed to give flood protection at all times and some inundation of land can be expected. Water Corporation maintains its existing rural drains to ensure they are capable of clearing water from adjacent rural properties within three days of a storm event, where contours and internal drainage make this physically possible.

Developments within this catchment are required to contain the flows from a one in one-hundred-year storm event on site. Discharge to Water Corporation drains must be compensated to pre-development levels.

Please note the following points regarding the Water Management Strategy prepared by Jeeyars Archarya Peettam Australia Ltd (December 2021) provided with the Development Application -

Section 2.9
- The developer needs to discuss the North East Baldivis Flood Study with the Department of Environmental Regulations (DWER) and the City of Rockingham to agree fill levels, existing regional flood storage volumes to be retained on site plus compensating basin sizes required to detain additional post development runoff on site.

Section 2.10
- Refer to DWER regarding regional groundwater modelling and the limited use of infiltration available on site due to the high winter groundwater levels.

Section 4.1.1
- The saturated hydraulic conductivity of 3m/day is considered high and does not allow for clogging and poor maintenance of the proposed drainage swales.

- Table 8 needs to include the regional flood storage volume that exists on eastern portion of the site and this needs to be discussed and agreed with DWER.

Water

The subject area falls outside a planned water scheme area and therefore a reticulated potable water supply is not immediately available.

If a reticulated water connection is required, the development should arrange for water planning to be undertaken. Water Corporation normally schedules areas in the Statewide Planning Program for review when amendments to the Metropolitan Region Scheme indicate servicing is required. If the resulting planning indicates water is feasible then the development may require headworks infrastructure to be constructed.

Wastewater

The subject area falls outside a planned sewerage catchment.

If a reticulated sewerage connection is required, the development should arrange for wastewater planning to be undertaken. Water Corporation normally schedules areas in the Statewide Planning Program for review when amendments to the Metropolitan Region Scheme indicate servicing is required. If the resulting planning indicates water is feasible then the development may require headworks infrastructure to be constructed.

General Comments

This proposal will require approval by our Building Services section prior to commencement of works. Infrastructure contributions and fees may be required to be paid prior to approval being issued.

For further information about building applications, the developer should follow this link:
https://www.watercorporation.com.au/home/builders-and-developers/building/lodging-a-building-application

In addition, the developer may be required to fund new works or the upgrading of existing works and protection of all works.

The information provided above is subject to review and may change. If the proposal has not proceeded within the next 6 months, please contact us to confirm that this information is still valid.

Please provide the above comments to the landowner, developer and/or their representative.

Should you have any queries or require further clarification on any of the above issues, please do not hesitate to contact the Enquiries Officer.

K Purcher

Kevin Purcher
Senior Planner
Development Services

Government of **Western Australia**
Department of **Health**

Your Ref: 20.2021.340.1 – D21/230034
Our Ref: F-AA-03231 D-AA-22/577023
Contact: Melanie Hogg 9222 2000

Michael Parker
Chief Executive Officer
City of Rockingham
PO Box 2142
Rockingham DC WA 6967

Attention: Chris Parlane – Senior Planning Officer

Via email: Chris. Parlane@rockingham.wa.gov.au

Dear Mr Parker

RE: PROPOSED PLACE OF WORKSHIP (HINDU TEMPLE) – LOT 53 (NO.67) FOLLY ROAD, BALDIVIS

Thank you for your letter of 22 December 2021 requesting comments from the Department of Health (DOH) on the above proposal.

The DOH provides the following comment:

1. Water Supply

The drinking water supply must be suitably disinfected and fit for purpose, and deliver safe drinking water that complies with the health-related microbiological and chemical health criteria set out in the *Australian Drinking Water Guidelines* and also be compatible with https://www.healthywa.wa.gov.au/Articles/U_Z/Water-tanks-on-your-property

It is recommended that the facility have a drinking water management plan that is approved by the City of Rockingham to ensure that risks associated with drinking water are adequately addressed and mitigated.

Should any nasal irrigation practices be carried out consideration should be given to the information contained at - https://www.healthywa.wa.gov.au/Articles/N_R/Nasal-irrigation-is-it-safe

Drinking water infrastructure to comply with all relevant aspects of the BCA.

Any food premises on site is to be supplied with potable drinking water to the satisfaction of the City of Rockingham under the food safety regulatory framework.

189 Royal Street East Perth Western Australia 6004
Telephone (08) 9222 2000 TTY 133 677
PO Box 8172 Perth Business Centre Western Australia 6849
ABN 28 684 750 332
www.health.wa.gov.au

Any non-drinking water on site must be suitably labelled to ensure that it cannot be reasonably mistaken for drinking water.

2. *Wastewater Disposal*

In relation to the management of sewage, the DOH has no objection to the proposed, subject to the following:

- Compliance with the Government Sewerage Policy (2019). It is noted the land is subject to high seasonal water tables and the proposal refers to using leach drains. Considering this, up to 2 metres of fill may be required to ensure the 1.5 metre separation from the water table is achieved to the base of the disposal area, including the depth of the leach drain and soil cover;
- A secondary wastewater treatment system should comply with and demonstrate meeting WA health legislation water volumes, water quality and disposal criteria;
- Submission of a plan detailing the proposed building envelopes, land application area/s, all parking bays, setbacks and exclusion zones for the proposal;
- Submission of a formal application for an onsite wastewater treatment system to City of Rockingham for assessment prior to submission to the DOH.

3. *Food Act Requirements*

All food related areas (kitchen, preparation areas, etc.) to comply with the provisions of the *Food Act 2008* and related code, regulations and guidelines. Details available for download from: https://ww2.health.wa.gov.au/Articles/S_T/Starting-a-food-business-in-WA

4. *Health (Miscellaneous Provisions) Act Requirements*

All public access areas are to comply with the provisions of the *Health (Miscellaneous Provisions) Act 1911*, related regulations and guidelines and in particular Part VI – Public Buildings.

Should you have any queries or require further information please contact Vic Andrich on 9222 2000 or eh.eSubmissions@health.wa.gov.au

Yours sincerely,

Dr Michael Lindsay
EXECUTIVE DIRECTOR
ENVIRONMENTAL HEALTH DIRECTORATE

9 February 2022

Response to Water Corporation Comments – Site and Soil Evaluation and Water Management Strategy

Water Management Strategy

CoR Comment	WaterInsight Response	Edits to Site and Soil Evaluation
Section 2.9 The developer needs to discuss the North East Baldivis Flood Study with the Department of Water and Environmental Regulations (DWER) and the City of Rockingham to agree fill levels, existing regional flood storage volumes to be retained on site plus compensating basin sizes required to detain additional post development runoff on site.	DWER have provided comments on the Water Management Strategy and requested that the finish floor levels of buildings be set at a minimum of 5.5 mAHD. The developer is required to complete the stormwater modelling and advise the City and DWER of the storage volumes required. DWER and the City does not provide this information to developers. The Water Management Strategy has included the results of stormwater modelling and storage volumes required to maintain existing hydrological conditions, as required by the Better Urban water Management Guidelines and Stormwater Management Manual for Western Australia. DWER have requested that the site retain both the first 15mm and the 5 yr events on site. This request exceeds all policy requirements, as the Water Corporation states in their comments, Discharge to Water Corporation drains must be compensated to predevelopment levels. The stormwater modelling and drainage design has been developed to retain the first 15mm on site and detain the 5yr and 100 yr event on site to match predevelopment Conditions.	Section 4.2 has been revised to state the finish floor levels of proposed buildings will be at a minimum height of 5.5 m AHD to ensure adequate flood protection is provided. The Site Plans indicate the minimum habitable floor levels are proposed to be 5.60 mAHD.
Section 2.10 Refer to DWER regarding regional groundwater modelling and the limited use of infiltration available on site due to the high winter groundwater levels	An assessment of DWER groundwater monitoring data has been completed to calculate the Maximum groundwater levels and a site investigation, including drilling was completed on the 7th September 2021 when groundwater is at or very close to its maximum levels.	No edits required

CoR Comment	WaterInsight Response	Edits to Site and Soil Evaluation
	The winter rainfall in 2021 exceeded the monthly average rainfall. No groundwater, clay soils or coffee rock were observed in any of the five test pits down to a depth of 2m. A Geotechnical Investigation and groundwater monitoring will be completed as a condition of development approval.	
The saturated hydraulic conductivity of 3 m/day is considered high and does not allow for clogging and poor maintenance of the proposed drainage swales.	The measured saturated hydraulic conductivity ranged between 3.37 m/day to 5.86 m/day. The area of the proposed development consists of free draining sands. The infiltration rate of 3 m/day is suitable based on the field work completed to date. The stormwater modelling also included groundwater levels being at 4 mAHD. The drainage design does not currently consider the use of rainwater tanks on site which are likely to collect most of the rainfall which falls on the roofs of all buildings to provide a drinking water supply. The Water Management Strategy indicates there is more than enough space available to construct the required drainage areas, with the use of rainwater tanks, the required drainage areas will be significantly reduced. Further Geotechnical Investigation will be completed and will inform the detailed drainage design.	No edits required
Table 8 needs to include the regional flood storage volume that exists on the eastern portion of the site and this needs to be discussed and agreed with DWER.	The stormwater modelling has been completed to retain the first 15mm on site and match the predevelopment conditions. By doing this the site will continue to provide the same volume of flood storage as predevelopment. All drainage policy which we are required to follow requires development to match predevelopment conditions, which has been done.	No edits required

Wastewater

CoR Comment	WaterInsight Response	Edits to Site and Soil Evaluation
The subject area falls outside a planned sewerage catchment. If a reticulated sewerage connection is required, the development should arrange for wastewater planning to be undertaken. Water Corporation normally schedules areas in the Statewide Planning Program for review when amendments to the Metropolitan Region Scheme indicate servicing is required. If the resulting planning indicates water is feasible then the development may require headworks infrastructure to be constructed.	noted	No edits required

Date: 22 February 2022

Chris Parlane
City of Rockingham
customer@rockingham.wa.gov.au

RE: Lot 53 (67) Folly Road, Baldivis - Proposed Place of Worship

I refer to the Department of Fire and Emergency Services comments 3 February 2022, regarding the above development application and City comments 10 February 2022.

DFES	BMP Comment
It has not been demonstrated that the proposed 50,000 litre water tank dedicated for fire-fighting purposes and adjacent hard-standing can achieve BAL-29 or below and is accessible to a type 3.4 appliance.	The BMP has been modified to describe the Asset Protection Zone Standard, to be provided in compliance with the Asset Protection Zone Standard in Element 2, Schedule 1 of the Guidelines v1.3. This allows trees to be planted at a foliage cover of 15% and the proposal is to maintain grasses at less than 100 mm. The BMP BAL Contour Map post development illustrates that the tank will be within BAL-29.
The referral has included a 'Bushfire Emergency Evacuation Plan' for the purposes of addressing the policy requirements. Consideration should be given to the Guidelines Section 5.5.2 'Developing a Bushfire Emergency Evacuation Plan'. This contains detail regarding what should be included in a BEEP and will ensure the appropriate content is detailed when finalising the BEEP to the satisfaction of the City.	This is a routine DFES comment, made regardless of the quality of the BEEP provided. It should be noted by the City that the BEEP has followed cl. 5.5.2 in the Guidelines and the WAPC. A Guide to developing a Bushfire Emergency Evacuation Plan October 2019.
Whilst it is acknowledged that the proposed class of buildings are not required to demonstrate compliance with AS3959 clause 3.2.3, it is suggested given the vulnerable persons on the site, the decision maker give consideration to the bushfire construction and fire separation standards.	This is provided as a comment. I've highlighted the relevant component of the phrase from the Guidelines which clearly indicates the City does not have authority to impose a construction standard AS3959:2018.

This is consistent with Clause 78E(1) of Schedule 2 of the Planning and Development (Local Planning Schemes) Regulations 2015 which requires the local government to have regard to the bushfire construction requirements of the Building Code of Australia. In addition, Clause 5.8.3 of the Guidelines reads as follows: The bushfire construction provisions of the Building Code of Australia do not apply to Class 4 to Class 9 buildings. **In these instances, the applicant has the discretion** to utilise any or all of the elements of AS3959 in the construction of the building that they deem appropriate. Although BAL construction standards do not guarantee the survival of the occupants or building, DFES does support the improved bushfire resilience provided by AS3959 construction standards.	AS3959:2018 is limited to residential accommodation type buildings class 1-3 and 10a because commercial construction standards for fire safety exceed the performance provided by bushfire. The are instances of minor development in other classes where the requirement may not exceed the bushfire performance level where the applicant can volunteer a standard. Clause 78E(1) of Schedule 2 of the Planning and Development (Local Planning Schemes) Regulations 2015, does enable a construction standard to be imposed as an offset to a shortfall in distance to achieve BAL 29.
As the proposal includes both Class 9 buildings and buildings over 500m2 total floor area, plans are required to be submitted to DFES Built Environment Branch for assessment in accordance with regulation 18(A) of the Building Regulations 2012. Unless it is demonstrated otherwise, DFES Built Environment Branch advises that hydrant coverage will be required to both the proposed Temple (975m2) and Multi-purpose Hall (1047m2). Hydrant coverage may also be required to the Dining Hall and Library if it is deemed that they are linked to the Multi-purpose Hall by awnings/verandahs. Adequate fire separation (to ensure that the proposed structures are less than 500m2) or a compliant reticulated hydrant supply to the site should be provided. If neither are provided, then a dedicated hydrant system from an on-site pump and tank set-up will be required. Any such system will need to be designed and installed in accordance with the FES Commissioner's Operational Requirements. Built Environment Branch advises that the proposed 50,000 litre water tank for bush fire-	The 50 000 L requirement in the Guidelines is not a structural fire requirement but to enable the rural fire service (DFES) to replenish its vehicle tanks. DFES have advised that structural fire considerations which may include either hydrant or tankage and pumps (provided by the BCA) is not a relevant bushfire consideration. It was provided as comment for the consideration at Building Approval *(Building Act 2011*). This matter will be resolved at building approval and BCA compliance. The City should withdraw its consideration of this requirement at this time.

fighting/intervention purposes cannot be considered for use for the protection of structures where hydrant coverage is deemed to be required (as per BCA Clause E1.3).	
City comments	
Concerns that extra traffic from the proposal will create congestion on Folly Road while evacuating during a fire event.	The area east of the freeway is a low density residential area – few people over a large catchment. Proportionately there are fewer people evacuating within the distance between the fire and the site. The expected flow rate of a single lane is 1800 vehicles per hour. The BMP has been adjusted to include a Hindu wedding 200 vehicle, extending the evacuation RSET to 50 minutes (to make the right hand turn onto Folly Road). A broader analysis of the traffic catchment may be required by the City. The BMP has identified that evacuation is the preferred approach following DFES policy, but the temple itself can provide refuge. It is within a moderate BHL level area (predominantly grassland) and the expected BAL at the building (both the temple and multi-purpose hall) is less than BAL 10 (refuge standard). Evacuation should take place if it is safe to do so, but if it was apparent that the evacuation route was not safe, and evacuation could not be completed before the fire's arrival, then refuge on site can be taken.
There is inconsistency within the bushfire management plan regarding water tank requirements, which should be rectified.	Other than for the DFES comment, which is addressed in Item 1, there is no inconsistency within the bushfire management plan requiring any change.
Landscape – comments not directly related to bushfire but require additional planting for amenity purposes.	The BMP describes the site should be maintained to APZ standard.

	This is not barren land but enables a tree canopy cover of up to 15%, which would include a higher frequency of tree planting than has been suggested by the City. In this instance an APZ standard is achievable. The site is presently grassland, and apart from a limited number of trees, less than 10% of the area, there is no further clearing required or restriction upon the management of the vegetation on the site. The APZ standard is measurable, and a commitment offered by the applicant, as part of the development, is part of the authorisation enforceable by the City (section 214 *Planning and Development Act 2005*).

Should you have any queries, please contact me on 0428 066 147, or alternatively by email: admin@envisionbp.com.au

Yours sincerely



Anthony Rowe BPAD L3

Principal