Metro Outer Development Assessment Panel Agenda

Meeting Date and Time: Thursday, 5 December 2024; 9:30am
Meeting Number: MODAP/50
Meeting Venue: 140 William Street, Perth

A live stream will be available at the time of the meeting, via the following link:
MODAP/50 – 5 December 2024 – City of Rockingham – City of Kalamunda

PART A – INTRODUCTION

1. Opening of Meeting, Welcome and Acknowledgement
2. Apologies
3. Members on Leave of Absence
4. Noting of Minutes

PART B – CITY OF ROCKINGHAM

1. Declarations of Due Consideration
2. Disclosure of Interests
3. Form 1 DAP Applications
   - 3.1 Lot No. 8005 Adelong Avenue, Golden Bay – Two (2) Fast Food Outlets – DAP/24/02722
4. Form 2 DAP Applications
5. Section 31 SAT Reconsiderations

PART C – CITY OF KALAMUNDA

1. Declarations of Due Consideration
2. Disclosure of Interests
3. Form 1 DAP Applications
   - 3.1 Lot 9 (No. 29) Stirling Crescent, High Wycombe – Two Warehouses and Incidental Office – DAP/24/02756
4. Form 2 DAP Applications
5. Section 31 SAT Reconsiderations

PART D – OTHER BUSINESS

1. State Administrative Tribunal Applications and Supreme Court Appeals
2. Meeting Closure

Please note, presentations for each item will be invited prior to the items noted on the agenda and the presentation details will be contained within the related information documentation

ATTENDANCE

DAP Members

Francesca Lefante (Presiding Member)
Karen Hyde (Deputy Presiding Member)
Andrew Howe (Specialist Member)

Part B – City of Rockingham
Cr Mark Jones (Local Government DAP Member, City of Rockingham)
Cr Dawn Jecks (Local Government DAP Member, City of Rockingham)

Part C – City of Kalamunda
Mayor Margaret Thomas (Local Government DAP Member, City of Kalamunda)
Cr Kathy Ritchie (Local Government DAP Member, City of Kalamunda)

Minute Secretary

Claire Ortlepp (DAP Secretariat)

Officers in Attendance

Zoe Hendry (DAP Secretariat)

PART A – INTRODUCTION

1. **Opening of Meeting, Welcome and Acknowledgement**
2. **Apologies**
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PART B – CITY OF ROCKINGHAM

1. Declarations of Due Consideration

2. Disclosure of Interests

3. Form 1 DAP Applications

3.1 Lot No. 8005 Adelong Avenue, Golden Bay – Two (2) Fast Food Outlets – DAP/24/02722

4. Form 2 DAP Applications

Nil.

5. Section 31 SAT Reconsiderations

Nil.

Part B – Item 3.1 – LOT NO. 8005 ADELONG AVENUE, GOLDEN BAY – TWO (2) FAST FOOD OUTLETS

Form 1 – Responsible Authority Report
(Regulation 12)

DAP Name:	Metro Outer Development Assessment Panel
Local Government Area:	City of Rockingham
Applicant:	Apex Planning
Owner:	LadyBug Twenty One Pty Ltd
Value of Development:	$3.5 million
Responsible Authority:	Local Government
Authorising Officer:	Mr Peter Ricci, Director Planning and Development Services
LG Reference:	DD020.2024.00000171
DAP File No:	DAP/24/02722
Application Received Date:	19 June 2024
Report Due Date:	27 November 2024
Application Statutory Process Timeframe:	90 Days
Attachment(s):	1. Revised Development Proposal Plans 2. Initial Development Proposal Plans 3. Schedule of Submissions 4. Referral Responses 5. Supporting Information

Responsible Authority Recommendation

That the Metro Outer Development Assessment Panel resolves to:

1. **Approve** DAP Application reference DAP/24/02722 and accompanying plans contained within Attachment 1:

   - Overall Floor Plan - Drawing Number DA-1000; Issue N, drawn by Bayer Stevens and dated 18 September 2024
   - Fast Food Building 01 - Floor Plan - Drawing Number DA-1100; Issue H, drawn by Bayer Stevens and dated 18 September 2024
   - Fast Food Building 02 - Floor Plan - Drawing Number DA-1200; Issue F, drawn by Bayer Stevens and dated 9 September 2024
   - Sections - Drawing Number DA-2000; Issue F, drawn by Bayer Stevens and dated 9 September 2024
   - Fast Food Building 01 – Elevations - DrawingFast Food Building 01 – Elevations Number DA-3000; Issue G, drawn by Bayer Stevens and dated 9 September 2024

- Fast Food Building 02 - Elevations - Drawing Number DA-3001; Issue F, drawn by Bayer Stevens and dated 9 September 2024
- Boundary Fence Elevations - Drawing Number DA-3002; Issue B, drawn by Bayer Stevens and dated 9 September 2024

in accordance with Clause 68 of Schedule 2 (Deemed Provisions) of the *Planning and Development (Local Planning Schemes) Regulations 2015* , and the provisions of the City of Rockingham Town Planning Scheme No. 2, subject to the following conditions:

Conditions

1. Pursuant to clause 26 of the Metropolitan Region Scheme, this approval is deemed to be an approval under clause 24(1) of the Metropolitan Region Scheme.

2. This decision constitutes planning 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.

3. Prior to applying for a Building Permit, a Stormwater Management Plan must be prepared by a suitably qualified engineer showing how stormwater will be contained on-site; those plans must be submitted to the City of Rockingham for approval.

   All stormwater generated by the development must be managed in accordance with Local Planning Policy No.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.

4. Prior to the commencement of works on site, a Construction and Environmental Management Plan (CEMP) must be submitted to and approved by the City of Rockingham. The CEMP shall address, but not be limited to, the following:

   (i) Hours of construction;

   (ii) Temporary fencing alignments and types,

   (iii) Traffic management including a Traffic Management Plan addressing site access, egress and parking arrangement for staff and contractors;

   (iv) Management of vibration and dust;

   (v) Management of construction noise and other site generated noise;

   (vi) Detail how access roads to and all trafficable areas on the site/s will be treated and maintained to prevent or minimise the generation of airborne dust;

   (vii) How any stockpiles on-site/s are to be managed;

(viii) Construction waste disposal strategy and location of waste disposal bins; and

(ix) How materials and equipment will be delivered and removed from the site/s.

All construction works must be undertaken in accordance with the approved CEMP to the satisfaction of the City of Rockingham.

5. The Contractor shall be responsible for the protection of all existing services in the road reserve for the duration of the works. Upon completion of the proposed services installation and prior to building occupancy, affected areas in the road reserve shall be reinstated to the satisfaction of the City.

6. Prior to occupation of the development, the car parking area must:

(i) provide a minimum of 25 shared car parking spaces, in addition to stacking for 10 cars for each drive-thru and 2 waiting bays for each Fast Food Outlet;

(ii) be designed, constructed, sealed, kerbed, drained and marked in accordance with User Class 3A and User Class 4 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 at least two (2) car parking space(s) dedicated to people with disabilities, which are designed, constructed, sealed, kerbed, drained and marked in accordance with User Class 4 of 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.

7. Vehicle crossovers are to be designed and constructed, in accordance with the City's standard Specification for the Construction of Commercial Crossovers to the satisfaction of the City of Rockingham.

8. Pavement markings and signage shall be provided at the vehicular crossover locations as shown on the approved plans, and within the development site to clearly delineate the intended traffic flow within the site as follows:

(i) Restricted entry only for light vehicles on the Mallina Crescent crossover; and

(ii) Full movement entry and exit, left turn only, for vehicles at the crossover on Adelong Avenue.

Works shall be completed to the satisfaction of the City of Rockingham at the applicant's full cost.

9. Prior to applying for a Building Permit, a Signage Strategy must be prepared (which must include the information required by *Planning Policy 3.3.1 - Control of Advertisements*) to the satisfaction of the City of Rockingham and it must thereafter be implemented for the duration of the development. The Signage Strategy shall include but not be limited to:

- Signage for wayfinding throughout the site for vehicles and pedestrians
- Signage for each Fast Food Outlet, including menu boards
- Signage for all drive-thru areas demonstrating a minimum horizontal clearance of 0.5m from the edge of any signage to the traffic and/or pedestrian lanes
- One (1) pylon sign fronting onto Warnbro Sound Avenue only

10. Prior to applying for a Building Permit, a Landscaping Plan must be submitted and approved to the satisfaction of the City of Rockingham and shall include the following detail:

(i) the location, number and type of existing and proposed trees and shrubs, including calculations for the landscaping area inclusive of the verge;

(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;

(v) the number and location of bicycle parking facilities in accordance with *Planning Policy No.3.3.14 - Bicycle Parking and End of Trip Facilities*;

(vi) Includes hardscape treatments, including furniture such as seating, planter boxes, lighting, public refuse bins;

(vii) Fencing types, heights and alignments consistent with the recommendations of the Lloyd George Environmental Noise Assessment Lot 8005 (1) Adelong Avenue Golden Bay (Ref: 23128613-01) and Technical Note (Ref 23128613-02 Memo), unless otherwise specified by the conditions of this approval;

(viii) Pedestrian footpath link along Mallina Crescent and a link to the Warnbro Sound Avenue pedestrian network;

(ix) The Mallina Crescent verge to achieve a medium planting density in a tiered landscaped design, with feature trees to be strategically located at uniform distance at the street interface; and

(x) Feature trees on Mallina Crescent to be a minimum 100L size at time of planting; hedge planting to be a minim 600mm height at time of planting (maximum height not to exceed 1.5m).

The landscaping (including all verge landscaping) 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.

11. Existing street trees adjacent to the development site must be protected throughout the course of the project in accordance with *Australian Standard AS 4970-2009 protection of trees on Development Sites*.

12. Pram ramps and kerbing shall be installed in accordance with the City of Rockingham's Road, Kerb, Footpath and Pram Ramp Details to the satisfaction of City of Rockingham and at the applicant's full cost.

13. In accordance with City of Rockingham Planning Policy No.3.3.14 - Bicycle Parking and End of Trip Facilities, a minimum of two (2) short-term and three (3) long-term bicycle parking spaces must be provided for the development. The bicycle parking spaces must be designed in accordance with AS2890.3—1993, Parking facilities, Part 3: Bicycle parking facilities and must be approved by the City of Rockingham prior to applying for a Building Permit and constructed prior to occupancy of the development. The bicycle parking spaces must be retained and maintained in good and safe condition for the duration of the development.

14. Materials, sea containers, goods, bins or similar must not be stored or displayed within the carpark areas at any time. The car park(s) shall remain freely accessible at all times for car parking purposes.

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

    (i) the location of the waste storage area and waste collection points;

    (ii) calculations of waste volumes and frequency of waste collections;

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

    (iv) general design considerations for the management of noise, odour, hygiene and vermin in the waste storage area; and

    (v) management of the bins and the waste storage areas, including cleaning, rotation and moving bins to and from the waste collection areas;

    (vi) frequency and timing of bin collections of which are to be conducted outside of operating hours only and preferably outside of residential waste collection in the immediate locality.

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

16. Prior to applying for a Building Permit, a bin storage area for each Fast Food Outlet must be designed with a size suitable to service the development and screened from view of the street to the satisfaction of the City of Rockingham and generally in accordance with the approved plans. The bin storage area must be constructed prior to the occupation of the development and must be retained and maintained in good condition for the duration of the Development.

17. Prior to applying for a Building Permit, exhaust facilities associated with the proposed Fast Food Outlets must be designed in accordance with AS 1668.2-2012 (as amended) and be fitted with filtration and odour suppression devices to the satisfaction of the City. The exhaust facilities must be installed prior to the occupation of the development and must be maintained in good working condition for the duration of the development.

18. Prior to applying for a Building Permit, an updated Odour Management Plan for each Fast Food Outlet, and generally consistent with the *"Odour Management Plan Hungry Jacks Golden Bay*" dated 23 October 2024 and "*Odour Management Plan KFC Golden Bay*", dated 24 October 2024, be prepared and submitted for approval to the satisfaction of the City of Rockingham. The updated Odour Management Plan shall include, but not be limited to, the following:

    (i) Details regarding the capturing of fumes and odours at source;

    (ii) Housekeeping, cleaning and maintenance schedules of all cooking apparatuses, ventilation systems and odour emission control systems; and

    (iii) A detailed complaint procedure for receiving, investigating, managing and resolving any complaints received with regard to odour. The procedure should address in what instances the premises will have an assessment undertaken by suitably qualified consultant to determine any corrective actions required to be further manage any identified offsite odour impacts.

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

19. The Fast Food Outlets is to comply with the requirements and recommendations of the Lloyd George Environmental Noise Assessment Lot 8005 (1) Adelong Avenue Golden Bay (Ref: 23128613-01) and Technical Note (Ref 23128613-02 Memo) and incorporate:

    - Fencing as shown in Figure 1 of the Technical Note. The fencing must be of solid construction (no gaps) and of a material with minimum surface mass 4kg/m^2
    - Delivery vehicles to the site are required to be fitted with broadband type reversing alarms rather than standard tonal alarms
    - Drive-thru ordering speakers to be low level and inaudible at residences
    - Access grates or similar to be plastic or metal with rubber gasket and secured to avoid excess banging

20. Prior to applying for a Building Permit, and once detailed design is known, an Acoustic Report which demonstrates that all mechanical services associated with the proposed development and any other such noise source, will comply with the Environmental Protection (Noise) Regulations 1997, must be submitted to and approved by the City of Rockingham.

21. Prior to the occupation of the development, written confirmation from the builder to be provided that demonstrates that all requirements indicated in the acoustic reports mentioned in Conditions 19 and 20, have been incorporated into the development.

22. The operating hours for the Fast Food Outlets shall only be between the hours as defined below:

    - Building 1 - 6am - 11pm, Sunday to Thursday; and 6am to 12 midnight, Friday and Saturday

    - Building 2 - 10am - 10pm, 7 days per week

23. Prior to the occupation of the development, a final 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—2019, Control of the obtrusive effects of outdoor lighting.

24. Public rubbish bin facilities must be provided adjacent to each Fast Food Outlet frontage so as to be convenient to pedestrians, but positioned so as not to obstruct pedestrian movements, to the satisfaction of the City of Rockingham. Public rubbish bin facilities must be emptied daily, continuously maintained in good condition and the surrounding area kept free of litter thereafter for the duration of the development.

Advice Notes

1. This Approval relates to the details provided in the application; to undertake the development in a different manner to that stated in the application a fresh application for Development Approval must be submitted to the City

2. In regards to Condition No.5, the applicant is advised that an inspection of the existing infrastructure surrounding the proposed area of works needs to be identified and documented prior to works commencing. Particular interest is to be paid to the state of the existing road pavements. Any damage due to the works, will need to be repaired to the satisfaction of the City of Rockingham.

3. The development must comply with the *Health (Public Building) Regulations 1992*; the applicant and owner should liaise with the City of Rockingham Health and Building Services in this regard.

4. 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.

5. In regards to condition 11 a pavement plan should be provided and include annotations of the location of the various kerb types and kerb transitions, which occur over a minimum length of 2m in accordance with the City of Rockingham kerbing specifications.

6. A Building Permit must be obtained for works prior to construction; the applicant and owner should liaise with the City's Building Services in this regard.

7. A Sign Permit must be obtained for any advertising associated with the development; the applicant and owner should liaise with the City's Building Services in this regard.

8. In regards to condition 16, the applicant and owner should liaise with the City's Environmental Health team in this regard.

Details: outline of development application

Region Scheme	Metropolitan Regional Scheme
Region Scheme - Zone/Reserve	Urban
Local Planning Scheme	City of Rockingham Town Planning Scheme No.2
Local Planning Scheme - Zone/Reserve	Commercial
Structure Plan/Precinct Plan	Golden Bay Neighbourhood Centre
Structure Plan/Precinct Plan - Land Use Designation	Commercial
Use Class and permissibility:	D land use
Lot Size:	4236m²
Existing Land Use:	vacant
State Heritage Register	No
Local Heritage	X N/A ☐ Heritage List ☐ Heritage Area
Design Review	X N/A ☐ Local Design Review Panel ☐ State Design Review Panel ☐ Other
Bushfire Prone Area	No
Swan River Trust Area	No

Proposal:

Proposed Land Use	Two (2) Fast Food Outlets
Proposed Net Lettable Area	519m^2
Proposed No. Storeys	1
Proposed No. Dwellings	N/A

The proposal seeks Development Approval for the establishment of two (2) Fast Food Outlets on the subject site. The initial proposal submitted included the following elements:

Building 1 - Fast Food Outlet (Hungry Jacks)

- Proposed on the northern side of the site, adjacent Mallina Crescent, comprising a 244m^2 building with a dual-lane drive-thru and two (2) food collection waiting bays;
- Six (6) immediate car parking spaces fronting the entrance of the building; and
- Proposed to operate on a 24 hour, seven day a week basis.

Building 2 - Fast Food Outlet (KFC)

- Proposed on the southern side of the site, adjacent Adelong Avenue, comprising a 275m^2 building with a dual-lane drive-thru and two (2) food collection waiting bays;
- Seven (7) immediate car parking spaces fronting the entrance of the building; and
- Proposed to operate 10am - 10pm, seven days per week.

A left turn only, dual lane crossover to Adelong Avenue and dual movement crossover from Mallina Crescent was initially proposed to service the overall development. A central shared car park area between the two buildings offering a total of 28 car parking spaces, in addition to each drive-thru facility having the ability to hold a queue of at least eleven vehicles at any one time.

Landscaping is proposed to the street frontages, with feature trees including Norfolk Pines along Warnbro Sound Avenue. Internal pedestrian paths connect the entrance of both facilities to the external footpath network. Dedicated crossing points are provided through the central car park area to provide a shared environment and for traffic calming. Fencing along the eastern boundary and northern boundary, addressing acoustic requirements, is proposed. A single pylon sign is proposed on the Warnbro Sound Avenue frontage

The following Reports and supporting material accompany the initial proposal:

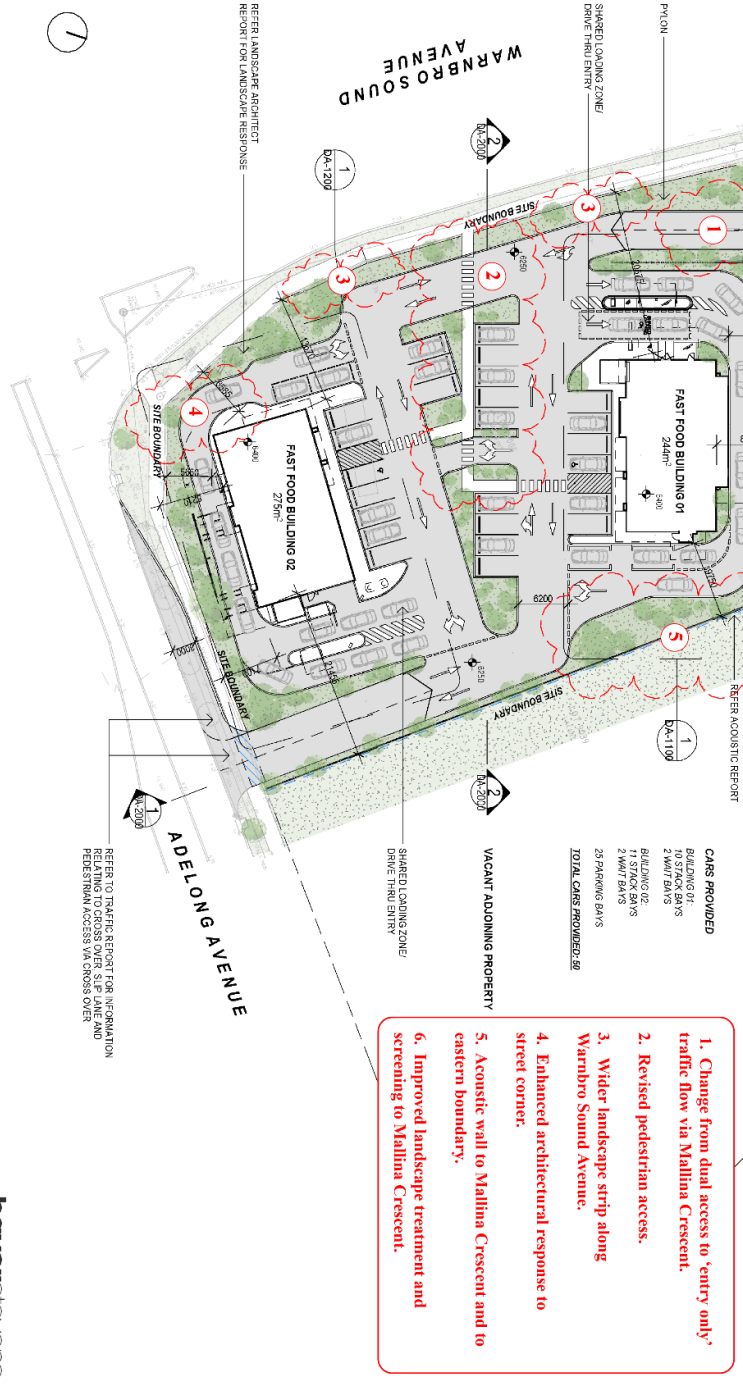
- Development Application Report;
- Development Plans;
- Acoustic Assessment;
- Transport Impact Assessment (**TIA**);
- Landscape Concept; and
- External Lighting Plan.

Subsequent to advertising the initial proposal for comment, and in response to a formal Request for Further Information (**RFI**) issued by the City, the Applicant submitted a revised proposal which incorporates the following modifications:

- Building 1 (Hungry Jacks) proposed to operate 6am to 11pm Sunday to Thursday, and 6am - 12 midnight Friday and Saturday;
- Mallina Crescent crossover revised to be single movement 'entry only';
- Revised internal configurations for vehicle and pedestrian connectivity with a reduction in car parking to 25 car parking spaces;
- Realigned and improved acoustic treatment along the Mallina Crescent frontage with increased landscape intent;
- Removal of the pedestrian link to the east of the site to accommodate improved acoustic attenuation measures and in lieu of improved pedestrian connectivity to be provided from Mallina Crescent to the Warnbro Sound Avenue frontage; and
- Improved acoustic attenuation along the eastern boundary with incorporation of an acoustic wall for the extent of the boundary.

The revisions are annotated on the following plan.

DA-1000
OVERALL FLOOR PLAN - PROPOSED



0 5 10 15 20 25 m
SCALE 1:500 @ A3 SIZE

ISSUE N
Date of Issue | 18.09.2024
| 1 ADELONG AVENUE, GOLDEN BAY, WA 6174

bayerstevens

The following additional supporting material was submitted in support of the revised proposal:

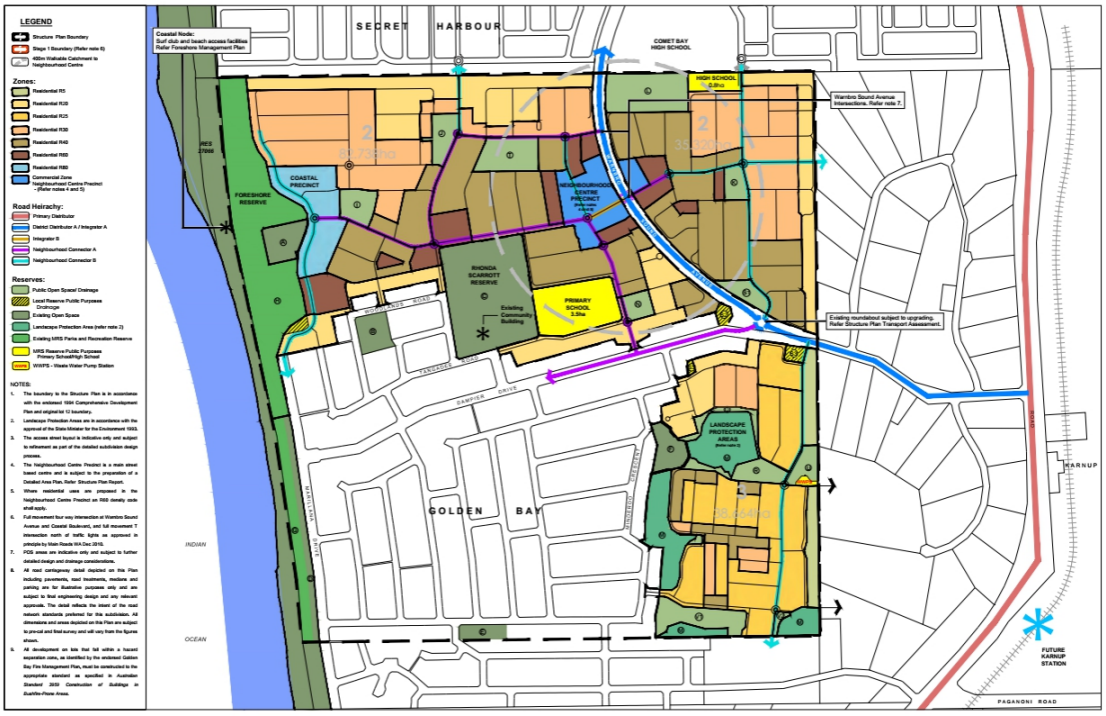
- Revised plans;
- Acoustic Technical Note;
- Traffic Technical Note;
- Perspective of proposed landscape treatment to the Mallina Crescent frontage; and
- Separate Odour Managements Plans for Hungry Jacks and KFC.

The assessment herein has been completed for the revised proposal.

Background:

Historical Context

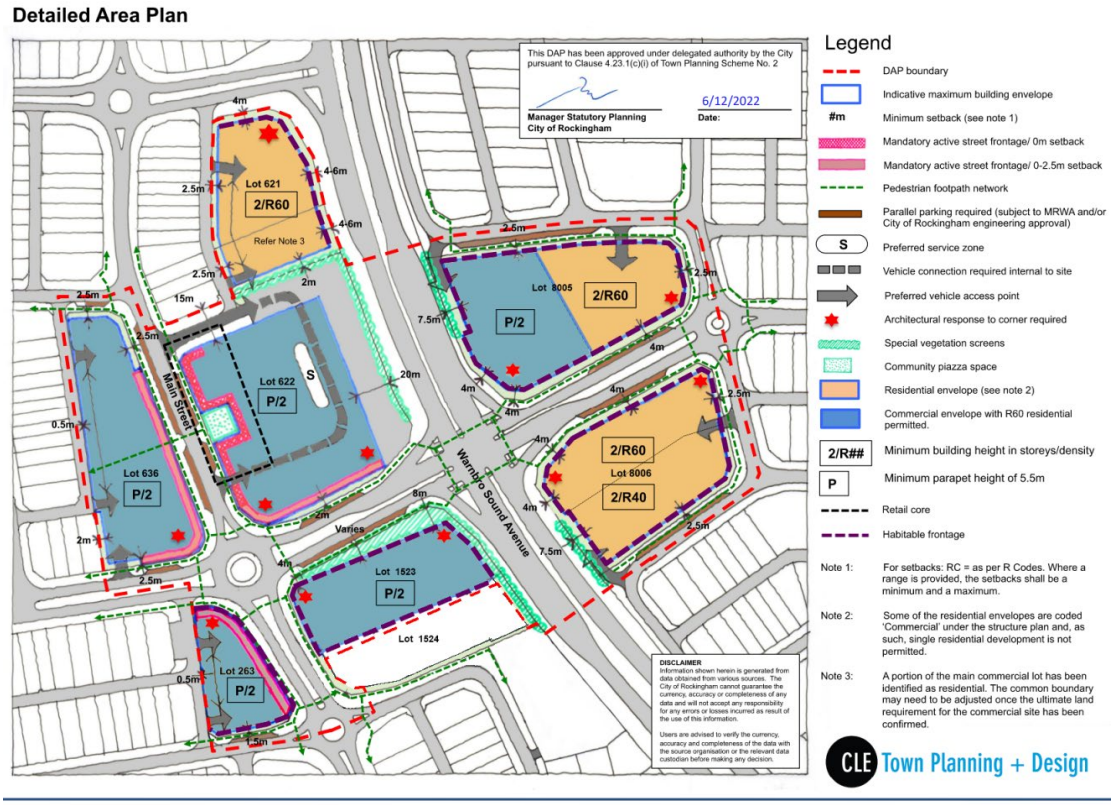
In March 2021, the Western Australian Planning Commission (**WAPC**) approved the latest amendment to the Golden Bay (Local) Structure Plan (**GBSP**). The Structure Plan provides for a 2.6ha Neighbourhood Centre, zoned 'Commercial', located mainly on the western side of Warnbro Sound Avenue. The site, the subject of this application, is on the eastern side of Warnbro Sound Avenue and is zoned 'Commercial' under the City of Rockingham (**City**) Town Planning Scheme No. 2 (**TPS2**) - refer to Figure below.



Golden Bay Structure Plan (2021)

Under the GBSP, the concept plan for the eastern side of the Warnbro Sound Avenue envisioned retail development on the subject corner, together with residential development along the northern and eastern boundaries. This concept however is 'conceptual' and not intended to be vigorously applied.

In December 2022, the City approved the latest version of a Detailed Area Plan (**DAP**), now referred to as a Local Development Plan (**LDP**), for the Golden Bay Neighbourhood Centre. The LDP sets out the key design parameters for development within the Golden Bay Neighbourhood Centre, which are addressed later in this Report (refer below).



Golden Bay Neighbourhood Centre Local Development Plan (2022)

Site and Context

The site context is characterised as follows:

- The subject site forms part of the Golden Bay Neighbourhood Centre, which is located approximately 1km south of the Secret Harbour District Centre and 1.2km west of Ennis Avenue;
- Single storey residential development lies to the north of the site. The site immediately adjacent to the west is vacant, with a Subdivision Application for 16 residential lots pending determination by the WAPC;
- Warnbro Sound Avenue, a regional road, adjoins the western boundary; and
- South of the site, on the opposite side of Adelong Avenue, recent Development Approval was issued by the MODAP for High Support Accommodation and Service Centre (MSWA Inc).

West of Warnbro Sound Avenue lies the core of the Golden Bay Neighbourhood Centre that includes:

- Lot 1523 Aurea Boulevard on the south-east corner of Aurea Boulevard and Thundelarra Drive intersection. A 'Mixed Commercial Development' was approved on Lot 1523 by the Joint development Assessment Panel (JDAP) (now MODAP) in September 2021. Existing development on this lot includes a 24 hours/7 days a week (24/7) service station, a gymnasium and fast food outlet;

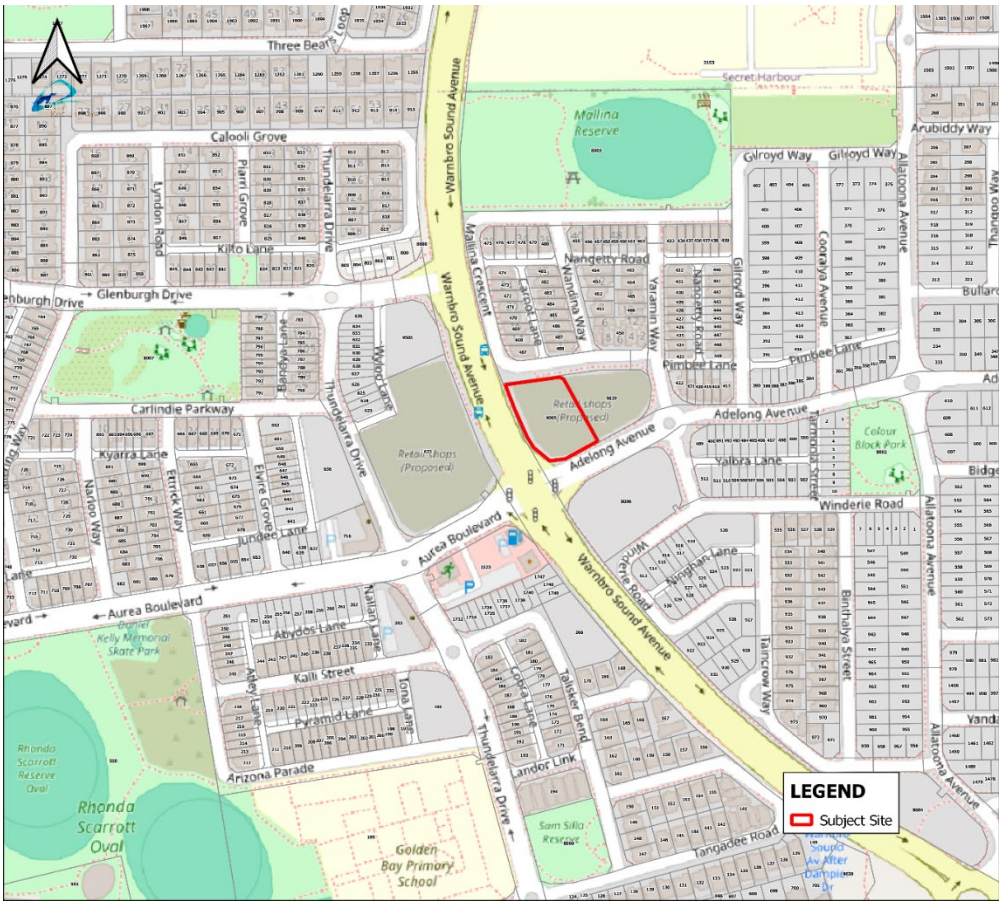
- Lot 622 Aurea Boulevard on the north-east corner of Aurea Boulevard and Thundelarra Drive intersection. In March 2024, the MODAP granted Development Approval for a supermarket, speciality retail shops, fast food outlets, a liquor store and a service station on Lot 622. The development is yet to commence construction; and

- West of Thundelarra Drive, and opposite Lot 1523 and Lot 622, are Lots 263 and 716 Aurea Boulevard. A child care premises is located on each of these lots.

The broader area is characterised by generally low and medium density residential development.

The Comet Bay College and Golden Bay Primary School are approximately 200m north-east and south-west respectively of the site.

Refer to the Location Plan and aerial below for reference.





The following photographs of the current site depict the views from the Warnbro Sound Avenue intersection and the Mallina Crescent street frontage.



Photo 1 - Site from Warnbro Sound Avenue intersection



Photo 2 - West along Mallina Crescent toward Warnbro Sound Avenue



Photo 3 - East along Mallina Crescent toward Yaramin Way

Legislation and Policy:

Legislation

Planning and Development (Local Planning Schemes) Regulations 2015 (the Regulations)

City of Rockingham Town Planning Scheme No.2 - TPS2

State Government Policies

State Planning Policy 4.2 – Activity Centres (SPP4.2)

Structure Plans/Activity Centre Plans

Local Development Plan (2022) - LDP

Local Policies

Planning Policy No.3.1.2 - Local Commercial and Activity Centres Strategy (PP3.1.2)
Planning Policy No.3.3.1 - Control of Advertisements (PP3.3.1)
Planning Policy 3.3.9 - Fast Food Outlets (PP3.3.9)
Planning Policy No.3.3.14 - Bicycle Parking and End-of-Trip Facilities (PP3.3.14)

Consultation:

Public Consultation

The proposal, as a 'Complex Application', was advertised for public comment for a period of 28 days between 4 July - 11 August 2024, in accordance with Clause 64, Schedule 2 of the *Planning and Development (Local Planning Schemes) Regulations 2015*, and Local Planning Policy No.3.3.27 - Community Consultation for Development Applications.

Advertising was carried out as follows:

- All owners and occupiers identified in the Consultation Plan (Figure 20) located within 200m of the subject site were notified in writing of the proposed development;

- A sign was erected on the site outlining the proposal and inviting public comment; and

- The application was made available for public inspection at the City's Administration Offices, and published on the City's website.

At the close of the public consultation period, a total of forty two (42) public submissions were received, noting that one (1) submitter lodged two (2) separate objection submissions. Of the submissions received, thirty eight (38) were objections.

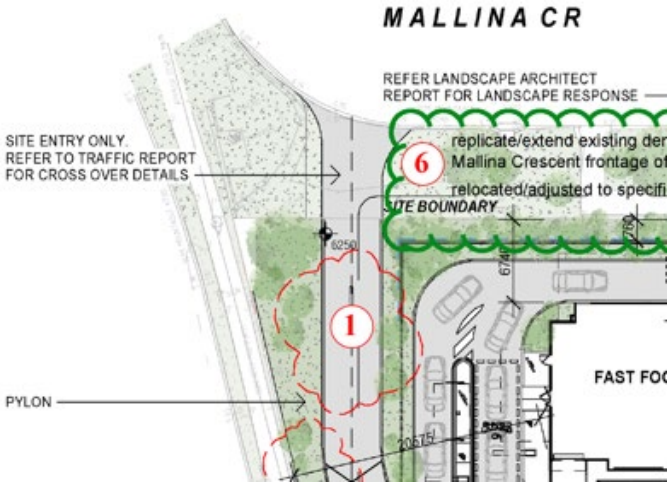
The revised proposal was received in reponse to the City's RFI and the submitter themes and comments. The revised proposal does not consitute a major change requiring the application to be re-advertised.

The following table is a summary of the main comments raised from the submissions received:

1. Need and Land Use Composition
Concern was raised that the proposal is not reflective of the communities' needs or wants. The area is already inundated with numerous fast food outlets and this will only enhance the proliferation of fast food outlets in the Golden Bay area. There is no demonstrated need for additional fast food outlets.

1. Need and Land Use Composition (cont…)
Suggestions to provide land uses more reflective of the community and provide a point of difference. Consideration for a different land use make up such as café, newsagent, bakery or local convenience was raised. There is a clear conflict of land use consideration, especially with the approved high support accommodation development on the corner of Adelong and Windarie Road and the proposed 24hr operation adjoining an existing residential area.
Applicant Response: *"The subject site is zoned Commercial under the City's TPS2 and Fast Food Outlet is a use contemplated in the Commercial zone as a 'D' discretionary use.* *The perceived oversupply or "proliferation" of a particular land use is not a relevant town planning consideration.* *Fast Food Outlets offer convenient take away food services to the local population and travelling public, and are commonly integrated into neighbourhood level activity centres".*
City's Comment: The subject land forms part of the Golden Bay Neighbourhood Centre, which is zoned 'Commercial' under TPS2. The potential land use conflicts is recognised relative to amenity impacts which are addressed below in this Report. In accordance with clause 3.2.2 of TPS2, a Fast Food Outlet is a 'Discretionary' (D) use, which *"means that the use is not permitted unless the local government has exercised its discretion by granting development approval."* While concerns over existing and the proposed number of Fast Food Outlets within Golden Bay, relative to 'over supply', are understood, it is not a relevant planning consideration. Also, the City is not able to dictate the type of permissible commercial use that the site is to contain.
2. Local Character and Community
Concern raised that the proposed land use will promote youth loitering, rubbish and social behaviour issues, evident from existing establishments in the area. A general concern raised regarding an increased incidence of crime, noting that this area is known in the community to have an existing crime issue. Concern that the development could alter the neighbourhood's character, making it more commercial and less community-oriented
Applicant Response: *"The proposed land use will not promote any negative or antisocial behaviour. Claims that fast food outlets have a connection to increased crime or antisocial behaviour are required to be supported by testable evidence, and are not relevant planning considerations.* *By its nature, a fast food outlet simply provides convenient takeaway food services, with products offered in a form ready for consumption on or off the premises.* *The subject site is zoned Commercial under the City's TPS2 and the land use proposed is inherently of a commercial nature.*

2. Local Character and Community (cont…)
There is not considered to be any land use conflict arising between the proposed fast food outlets and a high support accommodation development at the corner of Adelong and Winderie Road. The site is located at the southern side of Adelong Avenue and receives noise levels from this development which are lower than the assigned levels under the Noise Regulations".
City's Comment: The City accepts the Applicant's response with respect to the connection between the land use and anti-social behaviour. Further, where Development Approval is contemplated, the City recommends that conditions be included for lighting to be in accordance with the relevant Australian Standard, provision of public rubbish bins in the car park and requiring the operators to remove any rubbish in the car park daily.
3. Traffic and Access
General concern that the TIA states that there will not be an impact on traffic but appears to be alluding to traffic on Warnbro Sound Avenue only, whereas there will be a significant increase along both Mallina Crescent and Adelong Avenue. Queries regarding how the TIA has been conducted and what traffic counting devices or methods were used to justify the counts in the TIA. Suggestions were raised that a more sensible design would be to have any access be from Warnbro Sound Avenue, thereby avoiding increased traffic along residential streets. General concern that the local streets surrounding the proposed location are not designed to accommodate the additional traffic volume. This is said to be particularly concerning given the proximity of a school, which would be directly impacted by the increased traffic and potential safety risks to children Concern that the increased traffic volume poses a risk to the safety of pedestrians and cyclists, particularly given the existing footpaths and bike path networks. It is locally identified that Mallina Crescent is a popular 'rat run' particularly for the local schools. Coupled with speed and the blind corner, there is concern for traffic safety with increased use of this street with the proposal and the proposed access point. Suggestions that Mallina Crescent be restricted in vehicle movement (entry only) and all egress be via Adelong Avenue. Concern that the proposed crossover and use of the roundabout at Adelong Ave and Yaramin Way will be further congested.
Applicant Response: *"The traffic assessment forming part of the proposal was prepared by a suitably qualified and experienced traffic engineer. The traffic assessment was prepared entirely in accordance with the WAPC guidelines for traffic impact assessments. The methodology and data sources for the traffic assessment are set out and explained clearly within the report.* *The traffic generated by the proposed fast food outlets has been demonstrated to be well within the capacity of the surrounding road network.* *Vehicular access to Warnbro Sound Avenue is restricted.* *The proposed access arrangements have been modified such that Mallina Crescent will operate as 'entry only' and all egress movements to be via Adelong Avenue".*

3. Traffic and Access (cont…)
City Comment: Warnbro Sound Avenue is classified as an 'Other Regional Road' in the Metropolitan Region Scheme. Warnbro Sound Avenue forms a 4-way signalised intersection with Aurea Boulevard and Adelong Avenue, with the main access to the site being provided from Adelong Avenue and secondary access to Mallina Crescent. In response to concerns raised by submitters, external referral agencies and the City, the Applicant revised the access arrangements to restrict vehicle movement to 'entry only' from Mallina Crescent to reduce the traffic load exiting onto this local road. All traffic will be required to exit the development via the Adelong Avenue crossover, where the TIA has demonstrated that the existing and proposed traffic load can be sufficiently managed by the signalised intersection. See extract below showing the 'entry only' access from Mallina Crescent.    The City accepts the TIA and Traffic Technical Note provided by the Applicant, demonstrating that the road network can support the forecasted traffic. The TIA confirmed that the addition of development-generated traffic resulted in negligible increases in overall queues and delays at the intersection and local road scenarios. The level of service, or functionally of the existing intersection and road network, has been demonstrated to not change and remain satisfactory.
4. Amenity
General concern regarding the proposed 24/7 operation and the impacts on residents from the Fast Food Outlets (noise, odour, lighting, servicing, idling cars) but also from customers at late/early hours. Concern that the continuous operation will generate constant noise from vehicles, drive-through services, and customers, which will disturb the peace and quiet of the residential neighbourhood in the locality, and not just immediately adjoining the site. Claims that the land uses and the light pollution will attract seagulls and other birds at all times, and any type of fast food establishment will certainly increase vermin in the local area. Concern is therefore raised for local wildlife protection, residential amenity and community health.

4. Amenity (cont…)
Suggestion that, if there is to be a 24 hours fast food outlet, it should be located where the other outlet, which is proposed to be open 10am - 10pm, away from Mallina Crescent, thus "swapping" the locations of the two proposed food outlets?
Applicant Response: *"The operating hours for the northern fast food outlet have been reduced to 6am-11pm Sunday to Thursday and 6am-12am Friday to Saturday, which resolves the concerns about "continuous operation".* *Through consultation with the City, the design of the development has been amended to provide additional acoustic attenuation in the form of a 2m high solid fence which 'wraps around' the drive-through of the northern fast food outlet. The effect of this change is that the noise levels received by existing receivers along Mallina Crescent are significantly lower than the assigned levels under the Noise Regulations".*
City's Comment: The City, through the RFI process, raised significant concern with the initial proposal in regards to amenity and the potential impacts from the proposed 24/7 operation of the northern building and the likely continuous noise, odour and light intrusion on nearby residents. The City also expressed its concerns, during pre-lodgement and the formal application assessment processes, regarding the amenity impacts of a 24/7fast food outlet and queried the ability for it to be located further away from the Mallina Crescent frontage. In response, the Applicant modified the initial proposal, to present a development that now includes the following: • Restricted 'entry only' access from Mallina Crescent (as discussed above); • Reduced hours of operation for the northern building being 6am to 11pm Sunday to Thursday; and 6am to 12 midnight on Friday and Saturday; • Improved acoustic attenuation along the northern and eastern boundaries in the form of a contiguous 2m high boundary wall; and • Dense landscaping along the site's Mallina Crescent frontage to screen the development and drive-thru component of the northern building to the Mallina Crescent frontage. The revised hours of operation and improved acoustic attenuation measures are supported by the Acoustic Assessment and Acoustic Technical Note provided by the Applicant, which the City has assessed and accepts. Where Development Approval is contemplated, conditions reflecting the recommendations of the acoustic reporting are recommended to ensure the attenuation measures are implemented to achieve compliance with the *Environmental Protection (Noise) Regulations 1997.* Conditions restricting the hours of operation for each building should also be included on any Development Approval. The Applicant provided an Odour Management Plans (**OMP**) after the RFI response period in an attempt to address odour concerns which is discussed in the Legal and Statutory section of this Report.

4. Amenity (cont…)
Should the application be approved, it is also recommended that conditions be imposed addressing illumination direction and brightness ('lux') levels to ensure lighting is compliant with Australian Standards, and to also require public rubbish bin facilities to be provided on site and the area kept to a clean standard by the operators.
5. Community Health
Concern that the increased reliance and access to fast food outlets will increase the health issues of the youth and community.
Applicant Response: No response provided.
City's Comment: The City notes this concern is often raised in submissions received on Fast Food Outlets including from some organisations, however this is not a valid planning consideration.

Referrals/consultation with Government/Service Agencies

The following Agencies were consulted on the application:

- Department of Planning Lands and Heritage (**DPLH**); and
- Department of Main Roads Western Australia (**MRWA**).

Comments received from each Agency, are summarised as follows:

1. DPLH
"The DPLH has no objection to the proposal in principle, and provides the following comments: • *The AM and PM peak hours have not been specified. It is recommended that these be outlined.* • *Peak weekend traffic analysis should be undertaken, utilising weekend traffic generation rates as per ITE 11th Edition Trip Generation Manual.* • *'Peak Hour of Generator' rates should be utilised for drive-through queuing analysis rather than 'Peak Hour of Adjacent Street Traffic' rates.* • *The passing trade discount factor should not be incorporated when assessing driveway operational efficiency for the proposed development crossovers.* • *There are some instances where the 300 mm / 500 mm vehicle swept path buffer encroaches into proposed kerbing. It is desirable that the buffer does not encroach into surrounding road infrastructure as per Austroads Design Vehicles and Turning Path Templates Guide.* *It is recommended that the above elements be further investigated prior to development approval."*

Applicant Response: In response, the Applicant provided a Technical Note, prepared by Transcore, who also prepared the TIA report for the development, to address the traffic engineering-related comments. The Applicant notes the comments from DPLH and has addressed the comments in the Technical Note to clarify the TIA. The clarifications have not changed the results of the TIA.
City's Comment: Refer to the City's comments with respect to Traffic and Access above.
2. MRWA
"Main Roads has no objections to the proposal and provides the following comments for the City's consideration: *Traffic Impacts* • *Further consideration shall be given to the Mallina Crescent crossover and drive through location for the 'Fast Food Building 01'. The proximity of the crossover and the drive through may create stacking and prevent vehicle from entering the drive through lanes in a single movement;* • *Adequate approach and safe intersection sight distances shall be provided. The crossover on Mallina Crescent is located on the bend which is a potential safety issue and may lead to risk of a collision for access and egress movements."*
Applicant Response: Through the Technical Note provided in response, the Applicant provides the following responses: • *"Mallina Crescent's proposed crossover is on a local road and has no relevance to Main Roads WA, regardless queue analysis of the drive-through demonstrates no issues;* • *Mallina Crescent's proposed crossover is on a local road and has no relevance to Main Roads WA. Regardless, in the revised plan no egress is proposed from Mallina Crescent"*
City's Comment: The City notes the advice provided by MRWA, and confirms that through the RFI process, it raised concern with the Mallina Crescent crossover. Through discussion with the Applicant, the Mallina Crescent crossover has been revised to provide single 'entry only' movement. The City accepts the Applicant response and the revised 'entry only' crossover on Mallina Crescent.

Other Advice

Clause 67 of the Regulations, requires a decision-maker to have due regard to several matters when considering an application for development approval, including, but not limited to, the surrounding land use and development context and the likely impacts of the proposed development on the community, including amenity and the environment.

In regard to clause 67, the City raised concern, particularly regarding odour and the initial proposed 24/7 operation for Building 1, in relation to:

- The compatibility of the development with its setting, including:

  (i) the compatibility of the development with the desired future character of the locality; and

  (ii) the relationship of the development to that 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 amenity of the locality including the following:

  (i) environmental impacts of the development;

  (ii) the character of the locality; and

  (iii) social impacts of the development.

- The impact of the development on the community as a whole notwithstanding the impact of the development on particular individuals.

Odour Management

Odour is experienced when one or more chemical compounds in a gaseous form stimulates the sense of smell. Odours emitted to the atmosphere may result in annoyance or nuisance to members of the public. A person's reaction to odour is subjective. An odour may be pleasant to one person and unpleasant to someone else. An odour is considered 'Unreasonable' as defined under the *Environmental Protection Act 1986 (***EP Act***)* if it interferes with the health, welfare, convenience, comfort, or amenity of any person. Odour can affect different aspects of the liveability of an environment and may cause adverse amenity and health effects to residents affected. The main emission and odour issues from Fast Food Outlets are understood to be:

- Cooking odours;
- Greasy fume and fallout;
- Fine particulate matter both solid and aerosol material;
- Volatile organic compounds; and
- Air toxics, particularly from charcoal cooking.

The City's Health Services agree that the development site is in a sensitive location, with existing residential dwellings on Mallina Crescent within 18m of the site boundary and within 24m of Building 1. Future residential development to the east of the site on the currently vacant lot would also be within close proximity to both Fast Food Outlets.

The City, through the RFI process, requested an OMP for each proposed Fast Food Outlet be address how odour impacts will be mitigated. The City also expressed concerns that odour management should be considered on a collective approach for the site as a complete development, not just individually for each Fast Food Outlet.

The Applicant in response advised that the "*facilities will incorporate equipment which is designed and controlled to ensure fumes and odours are captured at the source and treated through mechanical ventilation systems. Both facilities also adopt ongoing management practices which involve regular cleaning of equipment, filters (and filter replacement when required), and changing of oil on a regular basis*". An OMP was not provided as part of the RFI response.

The City raised odour nuisance concerns with the Applicant, expressing that the development should adopt controls beyond standard cooking and ventilation requirements. On 24 October 2024 the Applicant submitted an OMP for each intended operator, outside of the RFI response period.

The City's Health Services considers the submitted OMPs to be generally acceptable in respect to:

- Implementing cooking practices in accordance with the Australian Standards;
- Identifying emission sources;
- Identifying odour control technologies, such as extraction systems, filters, fans and other effective odour mitigation measures;
- Proper disposal procedures for odour products to reduce odour; and
- Effective bin storage.

The submitted OMPs, however, have not included detailed housekeeping and maintenance scheduling for cooking apparatus, ventilation systems and emission control systems. A detailed complaints process that the operator will follow if/when an odour complaint has not been outlined, providing only a generic statement has been included which reads:

> *"Any complaints received are investigated, upon the outcome of the investigation by Qualified consultant. … then implements the requirements which had been raised in the report.*"

It is considered that potential odour impacts can be controlled and managed to protect the surrounding amenity through the implementation of an adequate OMP. The submitted OMPs, however, are not adequate and should be updated to more specifically address housekeeping, cleaning and maintenance schedules of all cooking apparatuses, ventilation systems and odour emission control systems. Also, a detailed complaint procedure for receiving, investigating, managing and resolving any complaints received with regard to odour.

Should Development Approval be granted, a specific condition should be imposed as outlined below:

- Prior to applying for a Building Permit, an updated Odour Management Plan for each Fast Food Outlet, and generally consistent with the *"Odour Management Plan Hungry Jacks Golden Bay*" dated 23 October 2024 and "*Odour Management Plan KFC Golden Bay*", dated 24 October 2024, be prepared and submitted for approval to the satisfaction of the City of Rockingham. The updated Odour Management Plan shall include, but not be limited to, the following:

(i) Details regarding the capturing of fumes and odours at source;

(ii) Housekeeping, cleaning and maintenance schedules of all cooking apparatuses, ventilation systems and odour emission control systems; and

(iii) A detailed complaint procedure for receiving, investigating, managing and resolving any complaints received with regard to odour. The procedure should address in what instances the premises will have an assessment undertaken by suitably qualified consultant to determine any corrective actions required to be further manage any identified offsite odour impacts.

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

Hours of Operation

The initial proposal for Building 1 (Hungry Jacks) proposed a 24/7 operation. Whilst the hours and configuration of Building 1 demonstrated to achieve acoustic compliance, the City through the RFI raised concern with regard to broader amenity impacts with continual operation, as was echoed in the submissions. The City suggested that the Applicant consider further treatments and changes to better improve the acoustic amenity.

The Applicant has considered these concerns and provided a revised proposal for Building 1. The operating hours of Building 1 have been proposed to be modified to 6am-11pm Sunday to Thursday and 6am- 12am Friday to Saturday. Based on the revised operating hours, a review of the Acoustic Assessment has been undertaken and the following modifications have been incorporated on updated plans:

- Improved attenuation along the northern (Mallina crescent) and eastern boundaries in the form of a contiguous 2m high boundary wall which will be constructed in a combination of masonry and other materials

- Modification of the Mallina Crescent crossover to ‘entry only’ at all times; and

- Dense and high screen landscaping along the Mallina Crescent frontage.

The acoustic review of the updated plans and revised hours demonstrates that the noise levels received by properties along Mallina Crescent have been significantly reduced. Whilst the noise levels were already compliant, as a result of the amendments, reductions in the range of 4db to 10db have been achieved. The noise levels generated by the development will fall well below the allowable levels of the Environmental Protection (Noise) Regulations 1997. Future receivers at the adjoining eastern residential site will also fall within assigned levels.

The updated proposal has effectively achieved a greater separation and improved the screening when viewed from Mallina Crescent. The proposed hours are consistent to those for existing Fast Food Outlets of this nature that are within proximity to residential areas. Conditions of any Development Approval contemplated should specifically define the hours for each building for clarity.

In regard to noise, the EHO accepts the Acoustic Assessment and Acoustic Technical Note, confirming that the updated proposal will achieve an acceptable acoustic outcome incorporating the attenuation measures recommended. Where Development Approval is contemplated, specific conditions should be included that specify the acoustic attenuation measures as recommended in the Acoustic Assessment and Technical Note. The requirements shall be implemented in the design, construction and ongoing operation of the development at all times.

Planning Assessment:

The proposal has been assessed against all the relevant legislative requirements of the TPS2, State and Local Planning policies and the LDP outlined in the Legislation and Policy section of this report. The proposal complies with the requirements unless otherwise discussed herein. The following matters have been identified as key considerations for the determination of the application.

Planning Policy 3.3.9 - Fast Food Outlets (PP3.3.9)

PP3.3.9 establishes that the "*preferred locations for Fast Food Outlets are within approved Neighbourhood and District Town Centre zones."* The subject site is located within the Golden Bay Neighbourhood Centre and as such satisfies the locational requirement.

Each Fast Food Outlet proposes a drive-through facility, and as such, PP3.3.9 requires that on-site queue accessway should accommodate a minimum of ten (10) cars (measured from the pick-up point). This accessway must not obstruct access to car parking spaces and not extend onto the external roadway.

The proposed buildings (1 and 2) both offer dual lane drive-through access for eleven (11) cars, with two (2) additional 'park and wait' bays also provided for each.

The design is considered sufficient as the queue analysis, provided for in the Traffic Technical Note, confirms that any overflow queuing outside of the drive-through facilities can be accommodated within the internal circulation aisles. The Traffic Technical Note has considered the worst times that queuing could occur, and this would be for three (3) minutes on the weekend in peak hour only. During this scenario, there is minimal or no risk of drive-through queues extending beyond the queuing areas or creating significant internal congestion. Under typical peak weekend conditions, the probability of queuing can be accommodated within the two-lane ordering facility with no spill onto the adjoining road network.

As such, the design of the dual drive-through lanes for each facility can accommodate peak hour demand, with queuing overflow having a negligible impact in the internal vehicle circulation or external local road networks. The revised proposal is compliant with PP3.3.9.

PP3.3.9 seeks to reduce the impact of the Fast Food Outlets on the amenity of the locality, particularly adjacent to residential areas, through the following measures:

(a) The location of signage, parking, drive-through facility, bin storage areas and service vehicle access;

(b) The control of trading hours, noise, lighting (light spill), cooking odours and windblown litter; and

(c) The provision of suitable setbacks and landscaping buffers.

The revised proposal has responded to these concerns to present a proposal that seeks to ameliorate amenity impact through reduced hours for the operator of Building 1 (Hungry Jacks), implementing an acoustic wall along the Mallina Crescent and eastern boundary and improved landscape and screening.

As outlined above, the assessment has considered amenity impacts with respect to the adjoining residential uses, particularly in regard to the hours of operation, odour, noise attenuation, landscaping, signage and lighting.

Where Development Approval is issued, specific conditions should be imposed to manage and reduce amenity impacts, as follows:

- Provision of public rubbish bins on-site;
- External lighting compliance certification;
- Signage strategy for all signage including directional and wayfinding, drive-thru menu boards and proposed pylon sign;
- Hours of operation for each Fast Food Outlet to be specified;
- Specific landscaping conditions;
- Acoustic wall to be constructed on the Mallina Crescent frontage and eastern boundary as recommended in the Acoustic Assessment; and
- With respect to the OMP, include a complaints resolution process for each Fast Food Outlet.

Local Development Plan (2022) - LDP

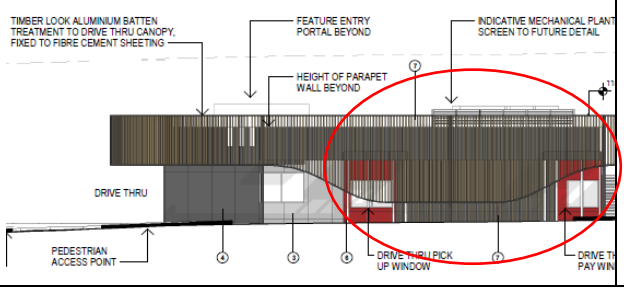
As a requirement of the GBSP, a LDP was prepared, with the latest version approved by the City on 6 December 2022. An extract of the approved LDP relevant to the site is provided in Figure 7. Figure 21 depicts the subject site only in the context of the LDP.

With respect to the site, the LDP encourages a built form that identifies, activates and 'wraps around' the Warnbro Sound Avenue and Adelong Avenue corner, guided by the following principles:

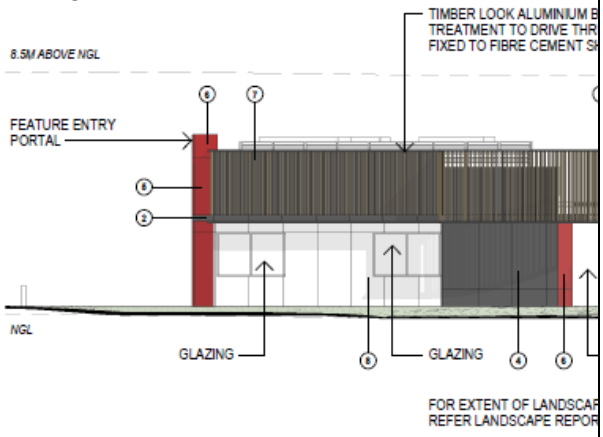
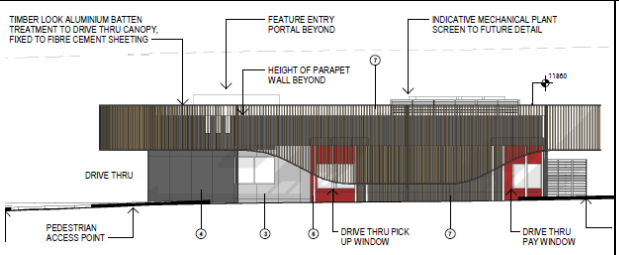
- Built form fronting and opening onto the street;
- Continuous awnings to the front of buildings, encouraging pedestrian activity;
- On street parking provision; and
- Building main entrances from the street rather than car parking areas.

The LDP requires an architectural response to the corner, specifically the Warnbro Sound Avenue and Adelong Avenue corner, *providing a prominent feature that provides visual emphasis.*

The following Table sets out an assessment of the proposal with the applicable elements of the LDP:

LDP Element	City Comment	Compliant
Minimum setback of 7.5m to Warnbro Sound Avenue, reducing to 4m at the southern aspect.	Complies with a setback ranging from 7.5m to over 10m for the 2m high acoustic wall to the north of the site for Building 1. Compiles with a setback of at least 6.5m increasing to 10m to Building 2 along the southern aspect of the frontage.	Yes Yes
2.5m setback to Mallina Crescent	A setback of 6.74m to the edge of Building 1 is proposed, which complies. A setback of 1.76m is proposed to the 2m high acoustic wall proposed to extend the extent of the Mallina Crescent boundary. The setback is acceptable as the type, alignment and height of the acoustic wall has been recommended through the Acoustic Assessment. The proposed landscape treatment to the Mallina Crescent will provide a streetscape outcome that provides a transition to the residential interface.	No, but accepted through Acoustic Assessment recommend ations.
4m setback to Adelong Avenue	At its closest point, the setback to Building 2 from the corner truncation of Adelong Avenue is proposed at 5.6m, which complies. The addition of the canopy feature at the drive thru lane collection point is setback for a portion of the Adelong Avenue at a distance of 2.5m. The canopy provides a screen to the drive thru area and the timber batten treatment provides interest in the material used. The structure is open in nature and adds to the design feature. The image below depicts the elevation indicating the timber screen extent within the setback area, which the City accepts. 	Yes Yes - through design intent the reduced setback for a portion only for the frontage is accepted.

LDP Element	City Comment	Compliant
Provision of special vegetation screens along Warnbro Sound Avenue	The landscape concept presented by the Applicant includes feature trees and medium planted areas to provide an appropriate response. Incorporation of a pedestrian link from Warnbro Sound Avenue to the development will improve the use of this area and provide safe pedestrian access separate to vehicles. The City's Landscape Officers have endorsed the landscape intent.	Yes
Preferred vehicle access from Mallina Crescent	The main access point is via a dual movement crossover from Adelong Avenue. Mallina Crescent access is proposed to be single movement 'entry only', to eliminate egress movements to Mallina Crescent and resolves sightline concerns. The	Yes
	Applicant considered the Mallina Crescent crossover in response to the concerns raised by the City, external referrals and submitters. The Applicant has demonstrated through submission of the Traffic Technical Note, that the revised vehicle crossover movements does not impact on traffic at peak operating hours and that traffic movements and function of the crossovers are satisfactory.	
Pedestrian footpath network surrounding the site, with on street parallel parking provision on Mallina Crescent	The existing pedestrian footpath network surrounding the site will be further improved with a proposed connection from Mallina Crescent to Warnbro Sound Avenue. On-street parallel parking is not proposed on the Mallina Crescent frontage. In considering the location of the vehicle crossover and the improved landscape measures to be used to address amenity and acoustic concerns, the inclusion of on-street parking would remove the existing landscaping, increase traffic safety risks with reduced sightlines and further diminish the streetscape. This would further impact on the amenity of adjoining residents. The application provides adequate on-site parking to cater for the demand generated in compliance with the TPS2 provisions. As such, additional on-street car parking is not considered necessary	Yes
Architectural response to the Adelong Avenue and Warnbro Sound Avenue corner required	This requirement is specifically applicable to the proposed Building 2 on the Warnbro Sound Avenue and Adelong Avenue frontages.	Yes

LDP Element	City Comment	Compliant
	Through the RFI response, the Applicant has provided an improved architectural response, with a reduction of the size of the structural canopy feature and improvement of built form facing the Warnbro Sound Avenue and Adelong Avenue corner. The removal of the pedestrian link through the drive-thru lanes has also assisted the design. The façades present to the corner with a variation of treatments, feature timber look battens and windows from the internal seating area which offer passive surveillance.  View from Warnbro Sound Avenue	
	 View from Adelong Avenue	

The proposal has demonstrated overall compliance with the requirements and the principles of the LDP, to achieve a design outcome that supports local neighbourhood activity centre at an appropriate scale.

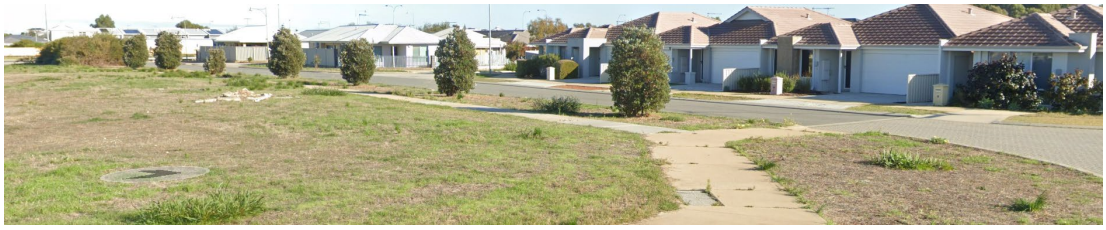
City of Rockingham Town Planning Scheme No.2 - TPS2

Clause 4.6.2 Form of Development

Within the 'Commercial' zone, the form of development must consider *the site planning, scale, built form, elevations and landscaping to provide a positive contribution to the streetscape, appearance and amenity of the locality*.

Within this context, the 'built form' response must provide a cohesive form that complements the surrounding built form, with consideration given to how the proposed development transitions to the adjacent existing and future residential development.

The City, through the RFI process, expressed concern in this regard, particularly to the Mallina crescent frontage and interface. The images below show the existing Mallina Crescent residential streetscape.



Mallina Crescent Streetscape from Yaramin Way



Mallina Crescent looking east toward Yaramin Way



Proposed Mallina Crescent entry and existing vegetation

In response to the RFI, the Applicant has provided a perspective that presents an intent to provide a dense landscape response to improve screening and replicate the existing vegetation on the Mallina Crescent. Refer to Figures below:



Proposed Mallina Crescent Perspective



Proposed Mallina Crescent perspective

Whilst the City acknowledges the Applicant's intent to effectively screen the development through landscape treatment on the Mallina Crescent, the perspectives provided are difficult to analyse and provide an indicative intent only. The planting shown appears very dense and raises safety concerns with reduced visibility of pedestrian movement and of the vehicle access from Mallina Crescent. Furthermore, the landscaped streetscape of the existing Mallina Crescent is sparse, with feature trees planted in uniformity. This does not represent a consistent approach or provide a positive contribution to the streetscape, appearance and amenity of the locality.

To achieve a preferred landscaped outcome, the City recommends that the landscaping in this area achieve a less dense and tiered landscaped effect, with feature trees strategically placed with specific planting sizes detailed to ensure that the streetscape effect is immediate. The layering of the landscaping will allow for the footpath connections to be visible and encourage a safer design outcome.

Through specific conditions detailing the requirements for the landscaping to be shown on a Landscape Plan, the preferred landscape outcome can be further communicated and negotiated to achieve a response that provides a more cohesive form that complements the surrounding built form character in scale and style.

Conclusion:

The application for the development of two (2) Fast Food Outlets has been the subject of a thorough assessment in accordance with TPS2, the approved LDP and the State and Local Policy Framework, having regard to the comments received from affected residents and external State Government agencies and the City's internal Teams.

The City's assessment has considered the compatibility of the development within its setting, current and future. This has included the likely effect on the amenity due to noise, hours of operation and odour.

Through a revised development design in response to the concerns raised by the City, submitters and external State Government agencies, the Applicant's revised design incorporates modifications that will assist in reducing the impact on amenity.

The matter of odour impacts is subjective and potentially impacts upon amenity. As discussed within the Report, the concern centres ultimately around odour complaint and how the method of response. To address this, should Development Approval be issued, a specific condition is recommended requiring submission of updated Odour Management Plans for each Fast Food Outlets, that includes a specific requirement to include a complaints procedure for receiving, investigating, managing and resolving any complaints received with regard to odour.

The proposed development is located on a site within the Golden Bay Neighbourhood Centre and is zoned 'Commercial' under TPS2 within which the land use is permissible.

The revised proposal demonstrates that the impacts of the land use can be managed and specific conditions of Development Approval will assist in this regard, it is recommend that the application be conditionally approved.

DA-0000
TITLE SHEET

DEVELOPMENT APPLICATION DRAWING LIST

SHEET NUMBER	SHEET NAME	REVISION	REVISION DATE
DA-1000	OVERALL FLOOR PLAN - PROPOSED	N	18.09.2024
DA-1100	FAST FOOD BUILDING 01 - FLOOR PLAN	H	18.09.2024
DA-1200	FAST FOOD BUILDING 02 - FLOOR PLAN	F	09.09.2024
DA-2000	SECTIONS	F	09.09.2024
DA-3000	FAST FOOD BUILDING 01 - ELEVATIONS	G	09.09.2024
DA-3001	FAST FOOD BUILDING 02 - ELEVATIONS	F	09.09.2024
DA-3002	BOUNDARY FENCE ELEVATIONS	B	09.09.2024

NOTE:

1. LANDSCAPING SHOWN INDICATIVELY ONLY. REFER RELEVANT CONSULTANT REPORTS
2. ALL REFERENCES TO SIGNAGE ARE SUBJECT TO A SEPARATE SIGNAGE APPLICATION AND APPROVAL BY LOCAL AUTHORITY
3. ALL MATERIALS/ FINISHES SHOWN INDICATIVELY ONLY. SUBJECT TO TENANT STANDARDS

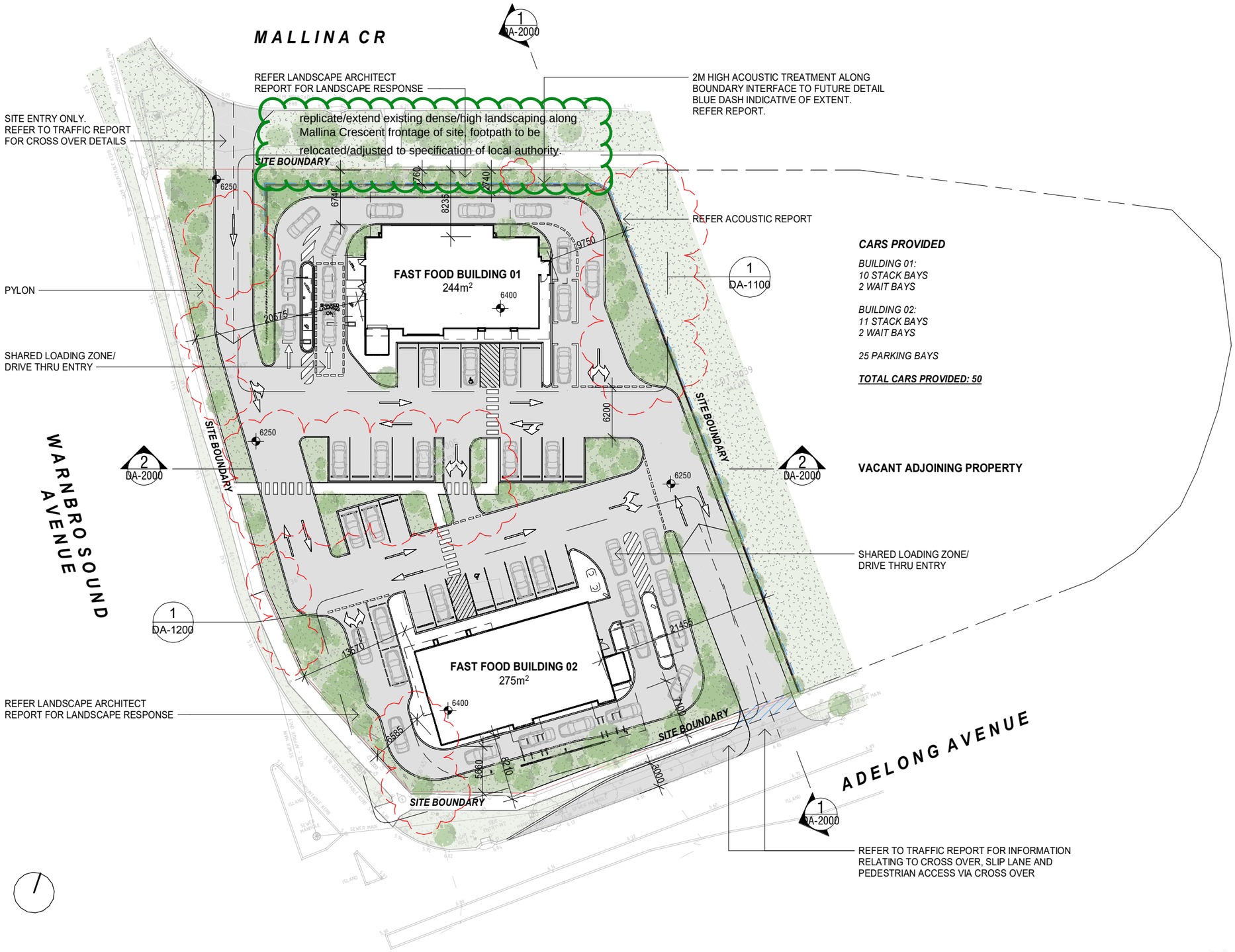
ALL DRAWINGS ARE FOR THE PURPOSES OF DEVELOPMENT APPLICATION ONLY AND NO OTHER PURPOSE.
NOT FOR CONSTRUCTION/ PRICING



ISSUE E
Date of Issue | 09.09.2024
| 1 ADELONG AVENUE, GOLDEN BAY, WA 6174

bayerstevens

DA-1000
OVERALL FLOOR PLAN - PROPOSED



0 5 10 15 20 25

SCALE 1:500 @ A3 SIZE m

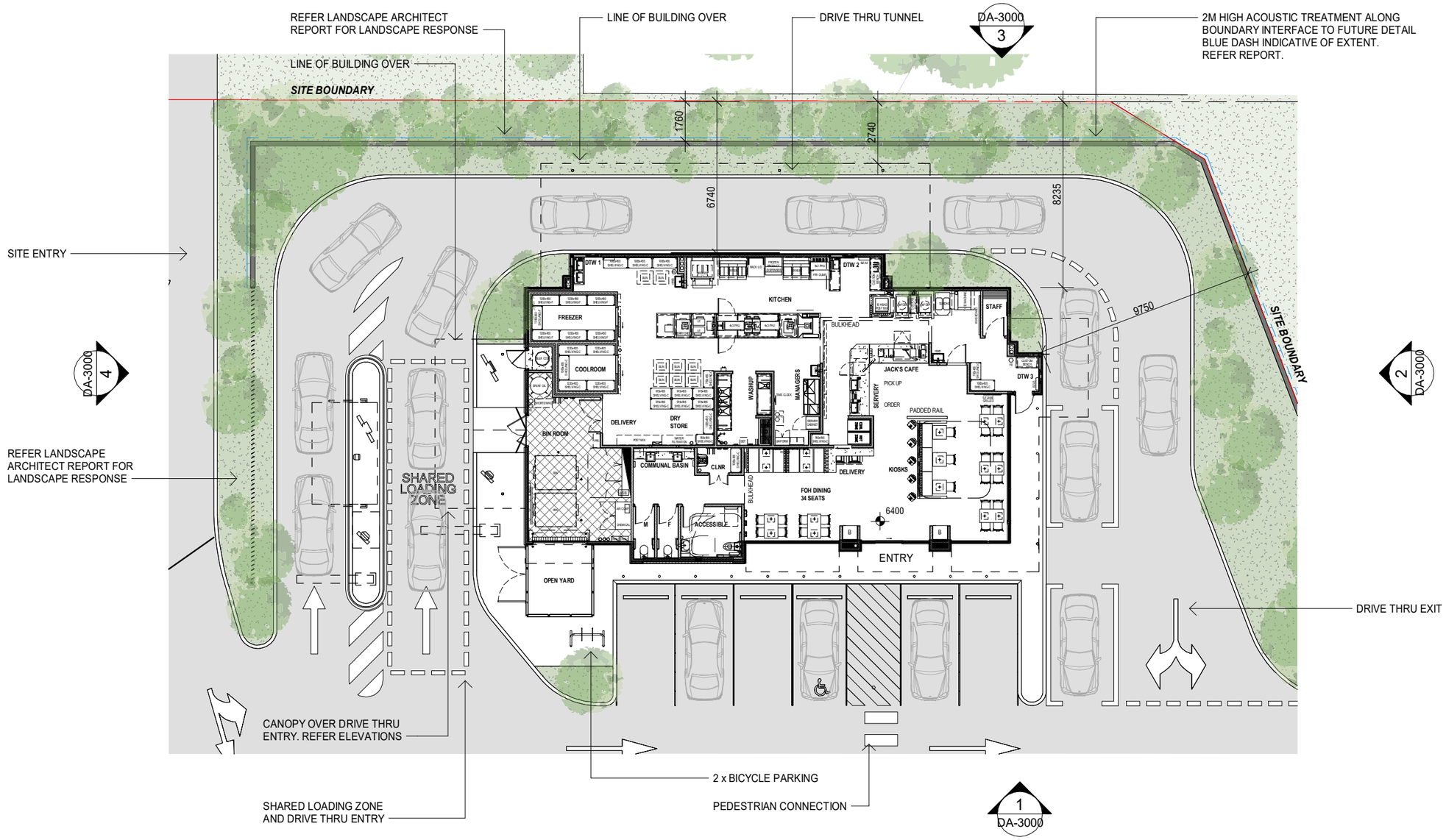
ISSUE N

Date of Issue | 18.09.2024

| 1 ADELONG AVENUE, GOLDEN BAY, WA 6174

bayerstevens

DA-1100
FAST FOOD BUILDING 01 - FLOOR PLAN



0 2 4 6 8 10

SCALE 1:200 @ A3 SIZE m

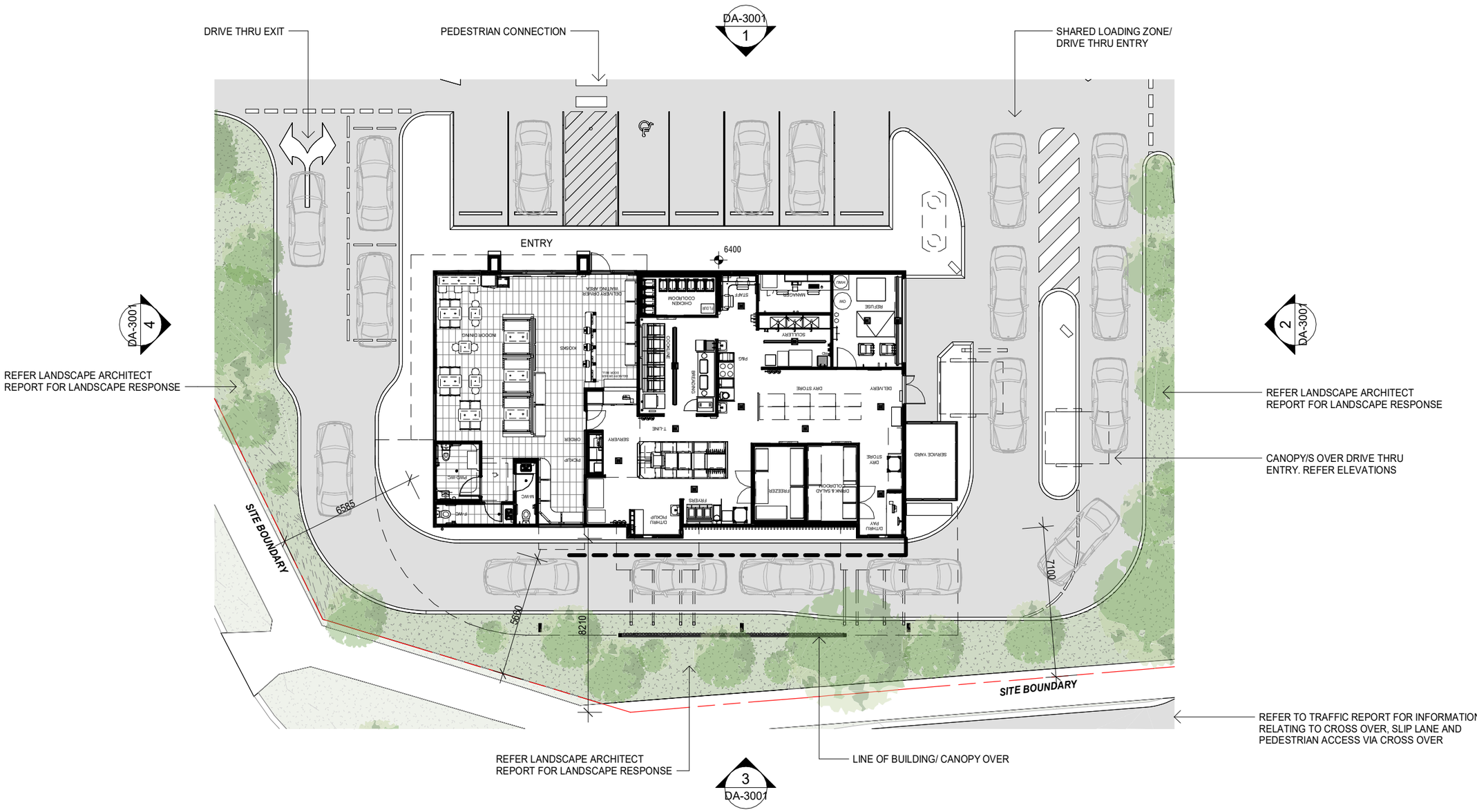
ISSUE H

Date of Issue | 18.09.2024

| 1 ADELONG AVENUE, GOLDEN BAY, WA 6174

bayerstevens

DA-1200
FAST FOOD BUILDING 02 - FLOOR PLAN



0 2 4 6 8 10

SCALE 1:200 @ A3 SIZE m

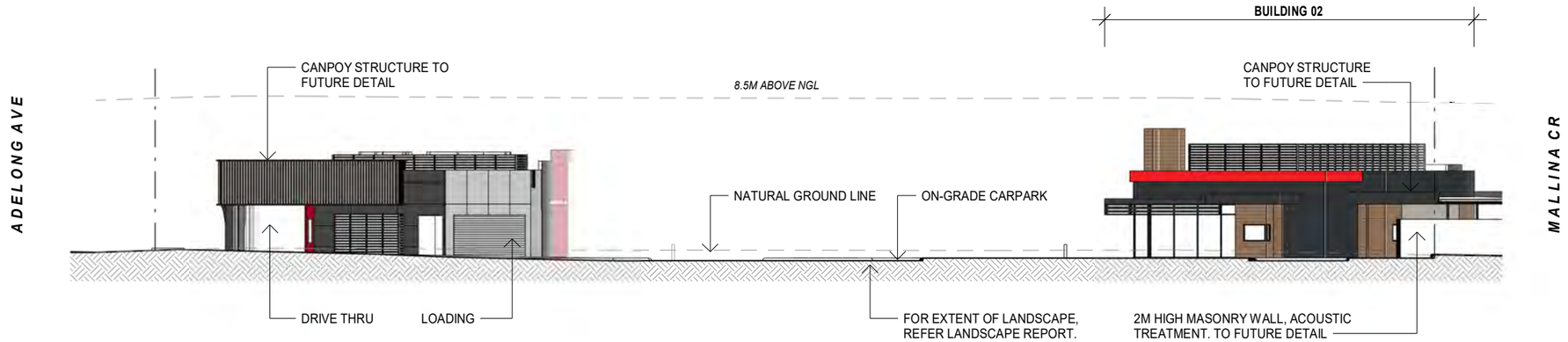
ISSUE F

Date of Issue | 09.09.2024

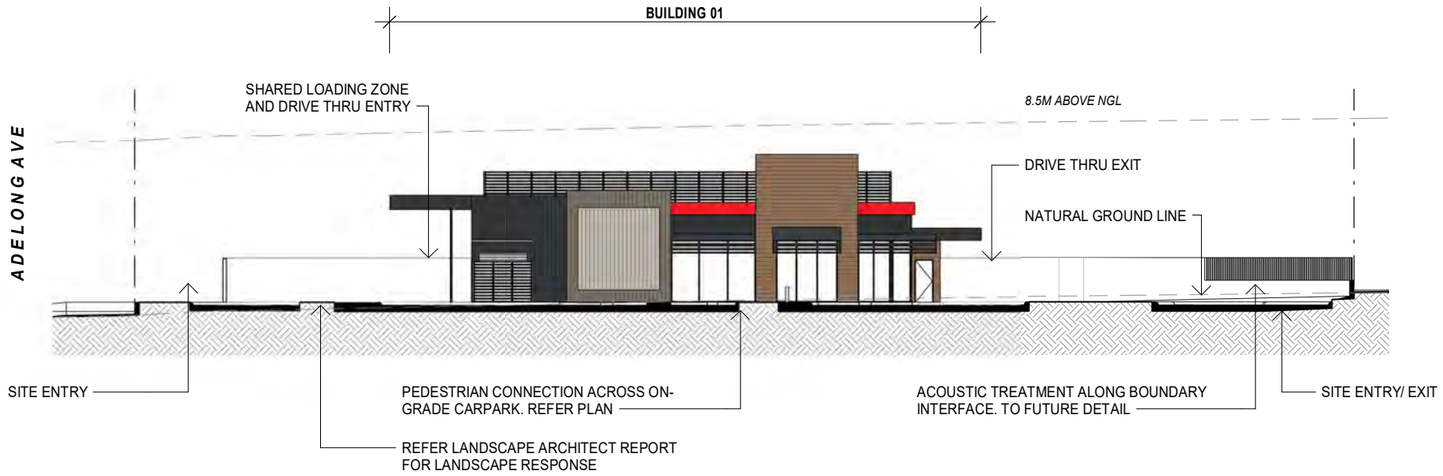
| 1 ADELONG AVENUE, GOLDEN BAY, WA 6174

bayerstevens

DA-2000
SECTIONS



1 / DA-1000 OVERALL SITE SECTION 01
1 : 300

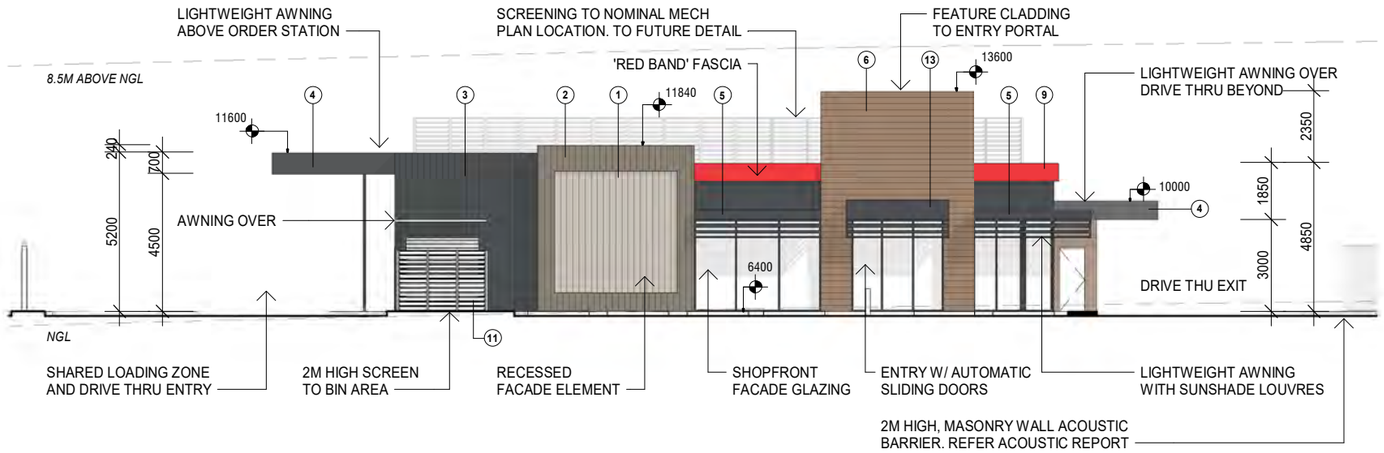


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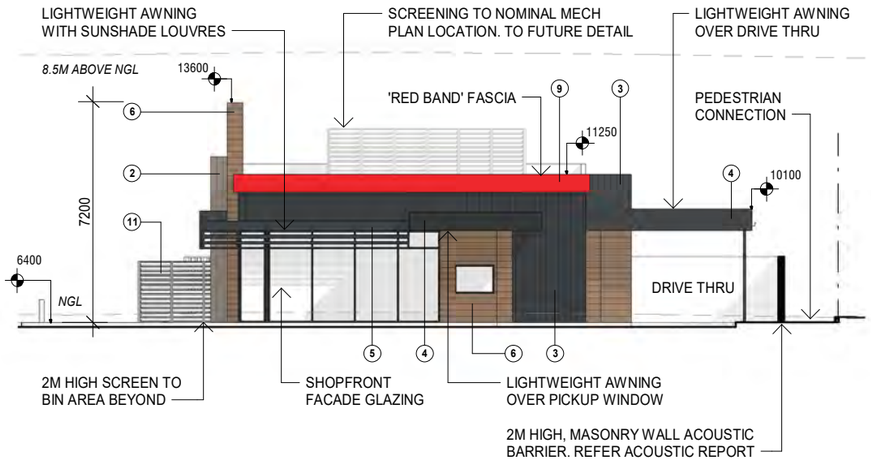
ISSUE F
Date of Issue | 09.09.2024
| 1 ADELONG AVENUE, GOLDEN BAY, WA 6174

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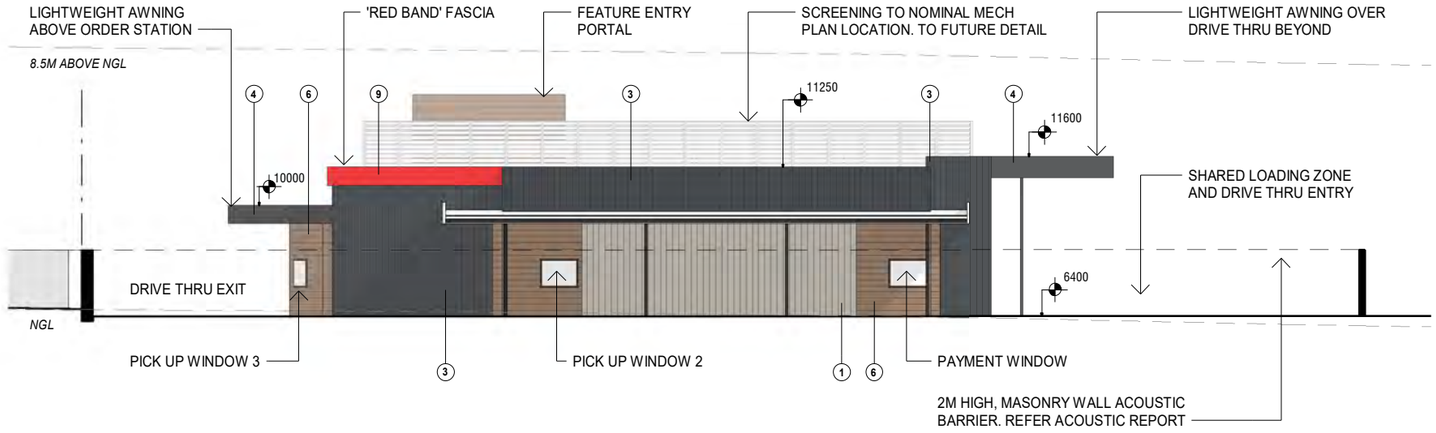
DA-3000
FAST FOOD BUILDING 01 - ELEVATIONS



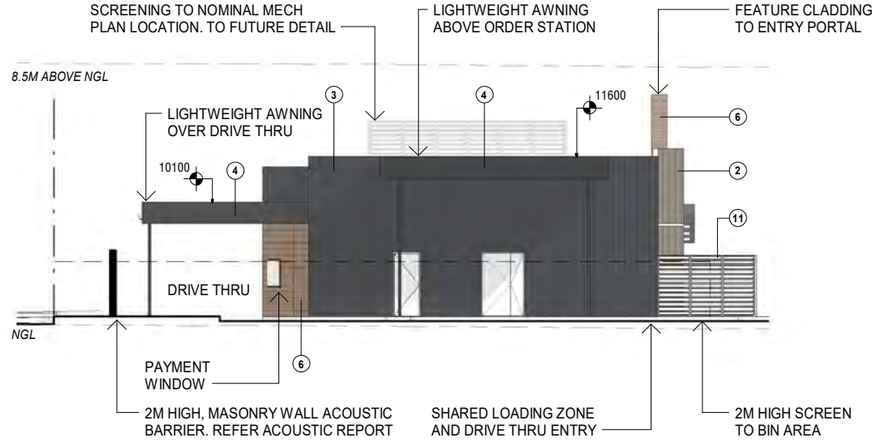
1 DA-1100 BUILDING 01 - ELEVATION 03
1 : 200



2 DA-1100 BUILDING 01 - ELEVATION 02
1 : 200



3 DA-1100 BUILDING 01 - ELEVATION 01
1 : 200



4 DA-1100 BUILDING 01 - ELEVATION 04
1 : 200

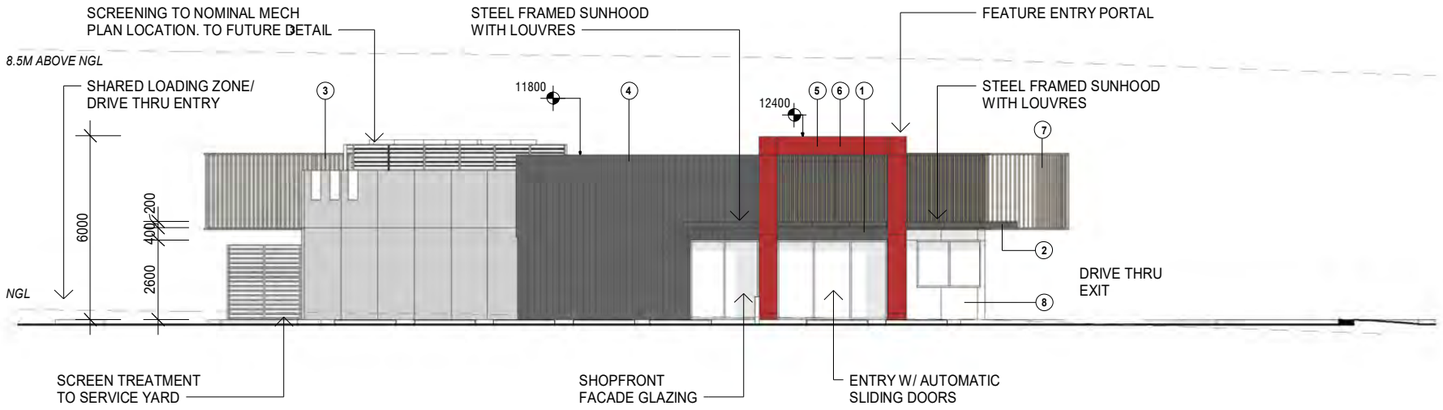
MATERIALS AND FINISHES SCHEDULE

1. PAINT FC PANEL COLOUR: BEIGE FINISH: SATIN W/ CLEAR ANTI GRAFFITI COATING
2. PAINT FC PANEL COLOUR: BROWN FINISH: SATIN W/ CLEAR ANTI GRAFFITI COATING
3. PAINT FC PANEL COLOUR: DARK GREY FINISH: SATIN W/ CLEAR ANTI GRAFFITI COATING
4. PAINT FINISH COLOUR: DARK GREY FINISH: SATIN
5. POWDERCOAT FINISH COLOUR: CHARCOAL FINISH: SATIN
6. FEATURE CLADDING WALL TIMBERLOOK CLADDING (WOODGRAIN)
7. PAINT FINISH COMPRESSED FIBRE CEMENT CLADDING COLOUR: BROWN TO MATCH XF4 FINISH: SATIN
8. PAINT FINISH COMPRESSED FIBRE CEMENT CLADDING COLOUR: OFF WHITE FINISH: SATIN
9. ILLUMINATED LIGHT BOX INTERNALLY ILLUMINATED RED LIGHT BOX
10. PRE-FINISHED METAL COLOURBOND COLOUR: DARK GREY TO MATCH XF2
11. SLATTED COMPOSITE CLADDING – TIMBERLOOK COLOUR: DARK BROWN
12. METAL LOUVRE BRAND: HOLOAKE OHL COLOUR: DARK GREY POWDERCOAT
13. ALUMINIUM COMPOSITE PANEL COLOUR: DARK GREY

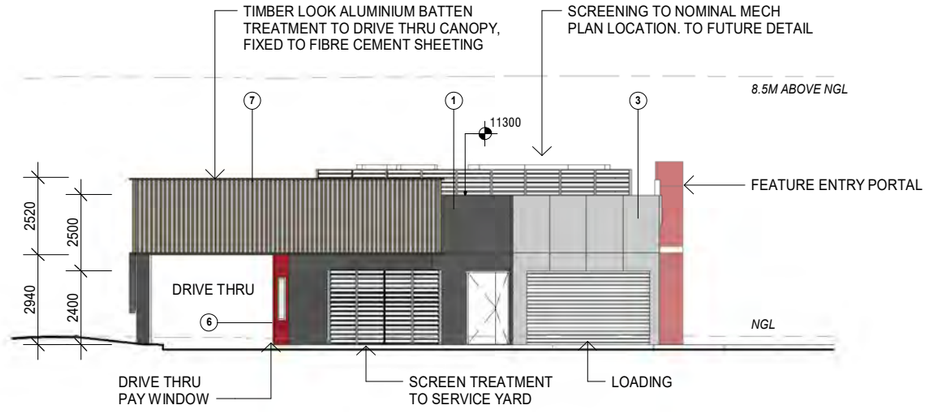
ISSUE G
Date of Issue | 09.09.2024
| 1 ADELONG AVENUE, GOLDEN BAY, WA 6174

bayerstevens

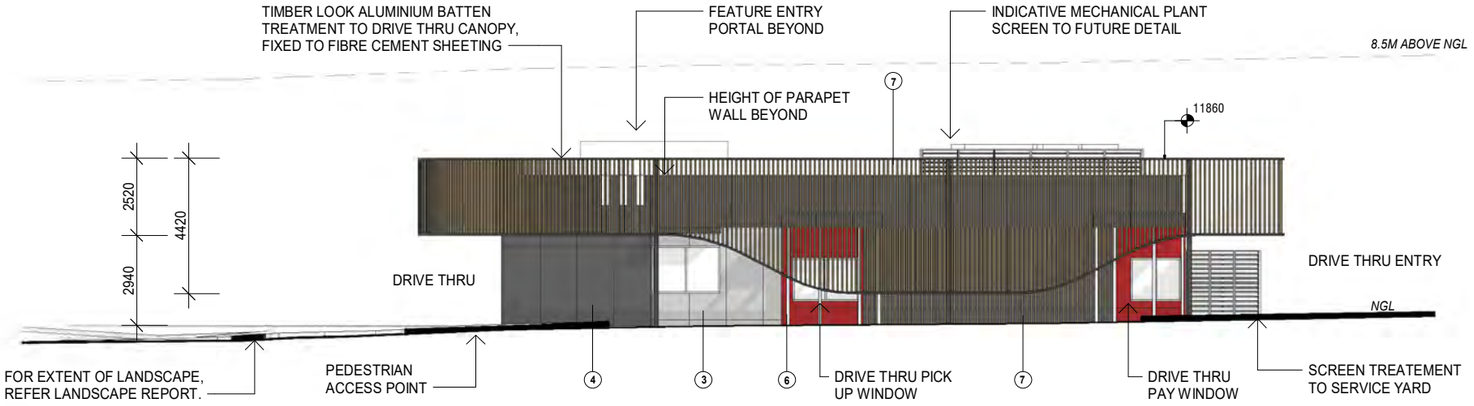
DA-3001
FAST FOOD BUILDING 02 - ELEVATIONS



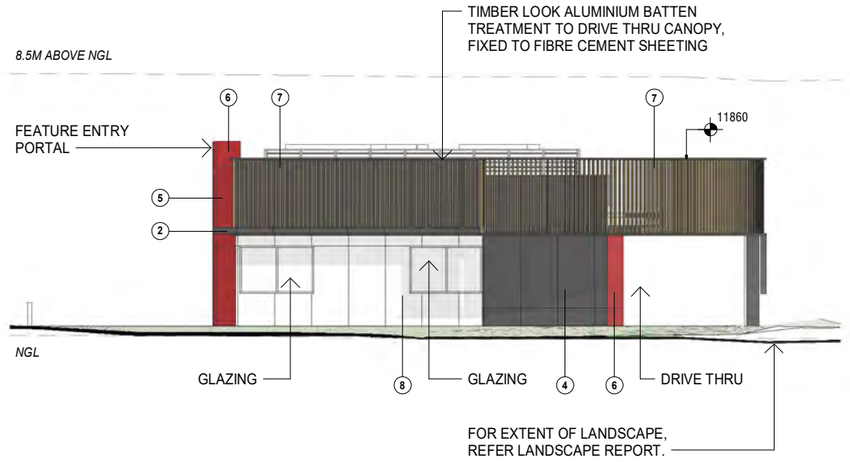
1 DA-1200 BUILDING 02 - ELEVATION 01
1 : 200



2 DA-1200 BUILDING 02 - ELEVATION 02
1 : 200



3 DA-1200 BUILDING 02 - ELEVATION 03
1 : 200



4 DA-1200 BUILDING 02 - ELEVATION 04
1 : 200

MATERIALS AND FINISHES SCHEDULE

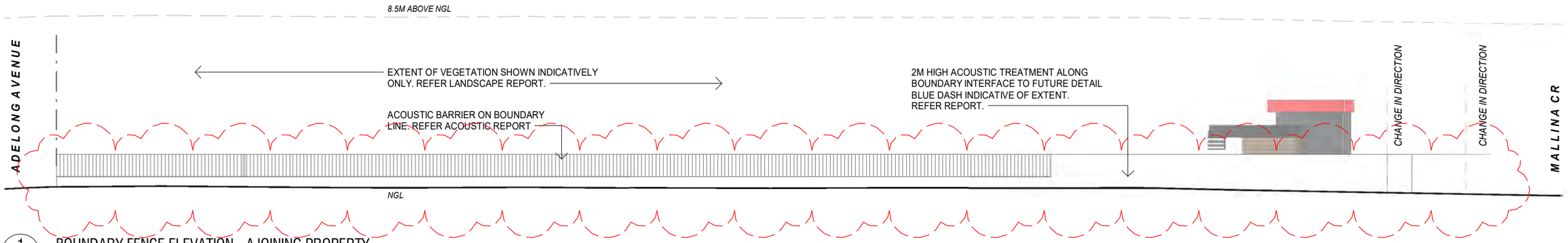
1. KFC 'BLACK CAVIAR' - BLACK (SN4H9) DULUX WEATHERSHIELD LOWSHEEN ACRYLIC SUBSTRATE: EXPRESS JOINT EXOTEC FC CLADDING AND TOPHATS OR STEELWORK
2. DULUX POWDERCOAT ELECTRO MONUMENT FLAT
3. 9MM PRE-FINISHED FIBRE CEMENT PANELS 'CEMINTEL BARESTONE ORIGINAL'. FACTORY FINISH WITH CEMINSEAL. EXPRESSED NOMINAL 20MM SHADOWLINES PAINTED DULUX ' BLACK' (SG6G6)
4. METAL CLADDING TO BE 'LYSAGHT LONGLINE 305' IN COLORBOND 'MONUMENT' INSTALLED ON 35MM HORIZONTAL TOPHATS
5. 3MM THICK PERFORATED METAL SCREENN MILD STEEL POWDERCOATED WITH DURATEC X15 IN 'KFC RED'. PATTERN: 3.25mm DIA. HOLES, 4.78mm CTRS, 41% OPEN AREA
6. KFC 'RED BOX' - RED (A0639) DULUX WEATHERSHIELD LOWSHEEN ACRYLIC ON EXPRESS JOINT EXOTEC FC CLADDING AND TOPHATS
7. 50 X 50MM ALUMINIUM TIMBER LOOK CLKIP ON BATTENS 'ALIWOOD CLIP ON' (5050COS) IN 'SNOWGUM'. TO BE INSTALLED VERTICALLY ON FIBRE CEMENT SHEETING AND TOPHATS BEHIND TO MANUFACTURERS INSTRUCTIONS. FC SHEETING TO BE PAINTED DULUX 'BLACK'
8. KFC 'ALABASTER' - WHITE (A1016) DULUX WEATHERSHIELD LOWSHEEN ACRYLIC IN ON EXPRESS JOINT EXOTEC FC CLADDING AND TOPHATS

ISSUE F
Date of Issue | 09.09.2024

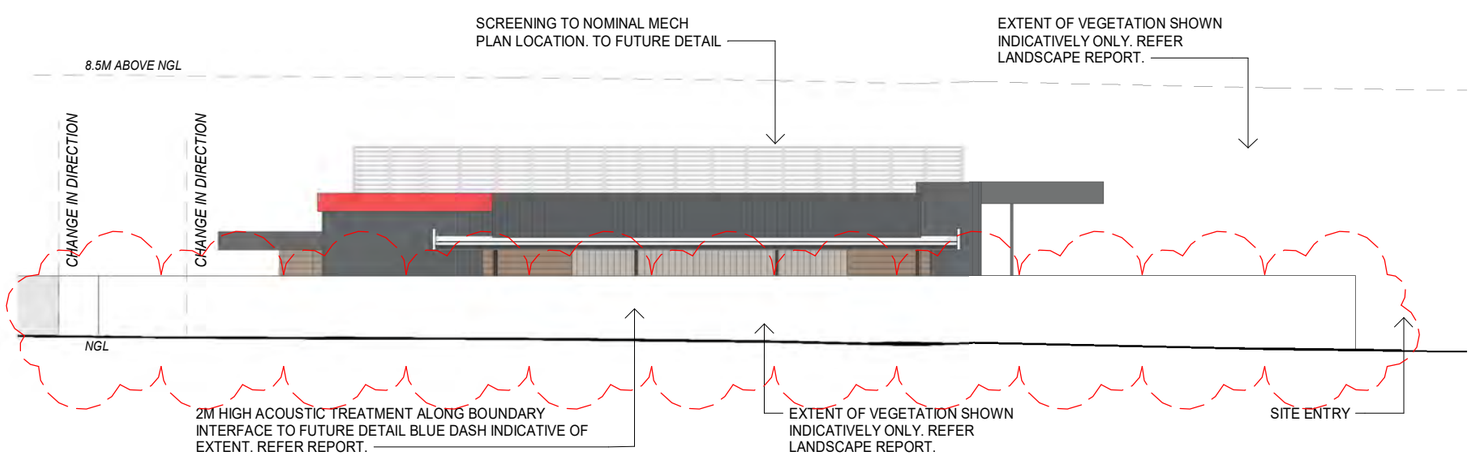
| 1 ADELONG AVENUE, GOLDEN BAY, WA 6174

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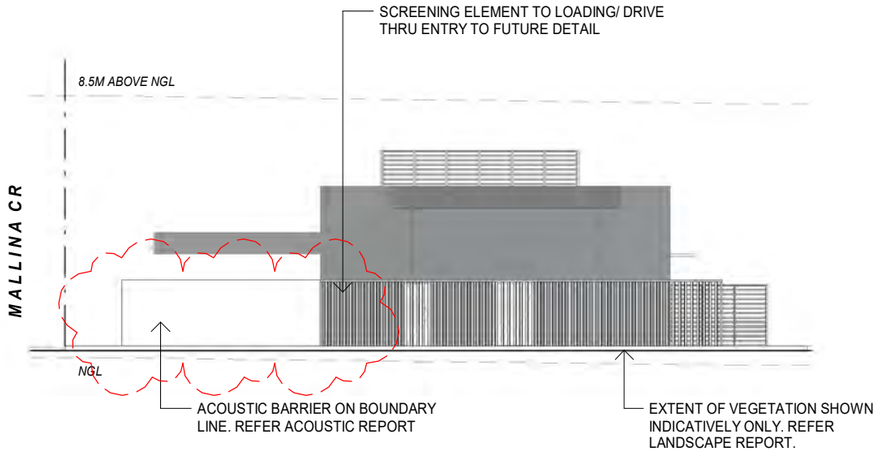
DA-3002
BOUNDARY FENCE ELEVATIONS



1 BOUNDARY FENCE ELEVATION - AJOINING PROPERTY
1 : 200



2 BOUNDARY FENCE ELEVATION - MALLINA CRESCENT
1 : 200



3 BOUNDARY FENCE ELEVATION - INTERNAL
1 : 200

0 2 4 6 8 10
SCALE 1:200 @ A3 SIZE m

ISSUE B
Date of Issue | 09.09.2024

| 1 ADELONG AVENUE, GOLDEN BAY, WA 6174

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DA-0000
TITLE SHEET

DEVELOPMENT APPLICATION DRAWING LIST			
SHEET NUMBER	SHEET NAME	REVISION	REVISION DATE
DA-1000	OVERALL FLOOR PLAN - PROPOSED	K	03.06.2024
DA-1100	FAST FOOD BUILDING 01 - FLOOR PLAN	F	03.06.2024
DA-1200	FAST FOOD BUILDING 02 - FLOOR PLAN	E	07.05.2024
DA-2000	SECTIONS	E	07.05.2024
DA-3000	FAST FOOD BUILDING 01 - ELEVATIONS	F	03.06.2024
DA-3001	FAST FOOD BUILDING 02 - ELEVATIONS	E	07.05.2024
DA-3002	BOUNDARY FENCE ELEVATIONS	A	07.05.2024

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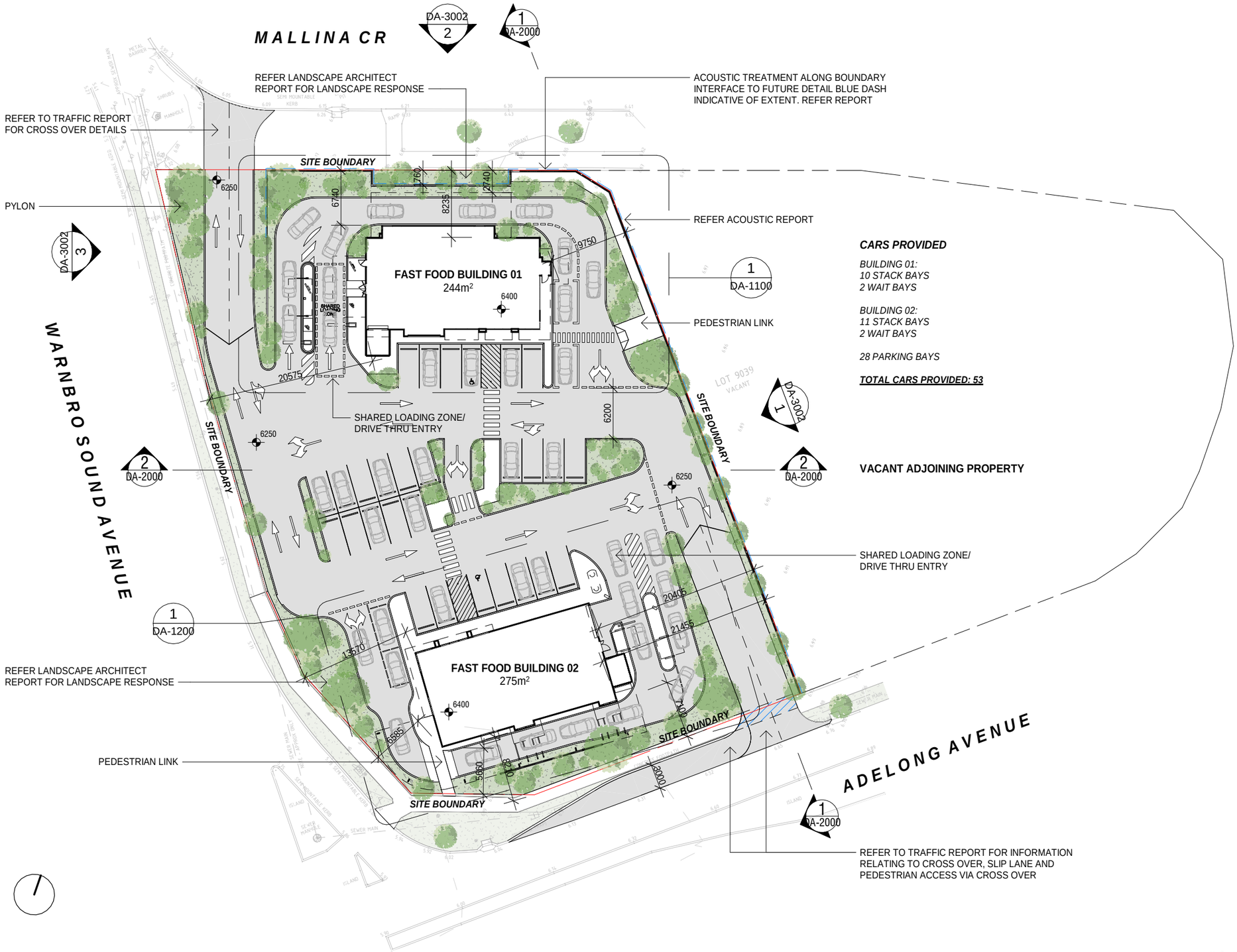


ISSUE D
Date of Issue | 07.05.2024

| 1 ADELONG AVENUE, GOLDEN BAY, WA 6174

bayerstevens

DA-1000
OVERALL FLOOR PLAN - PROPOSED



CARS PROVIDED

BUILDING 01:
10 STACK BAYS
2 WAIT BAYS

BUILDING 02:
11 STACK BAYS
2 WAIT BAYS

28 PARKING BAYS

TOTAL CARS PROVIDED: 53

0 5 10 15 20 25

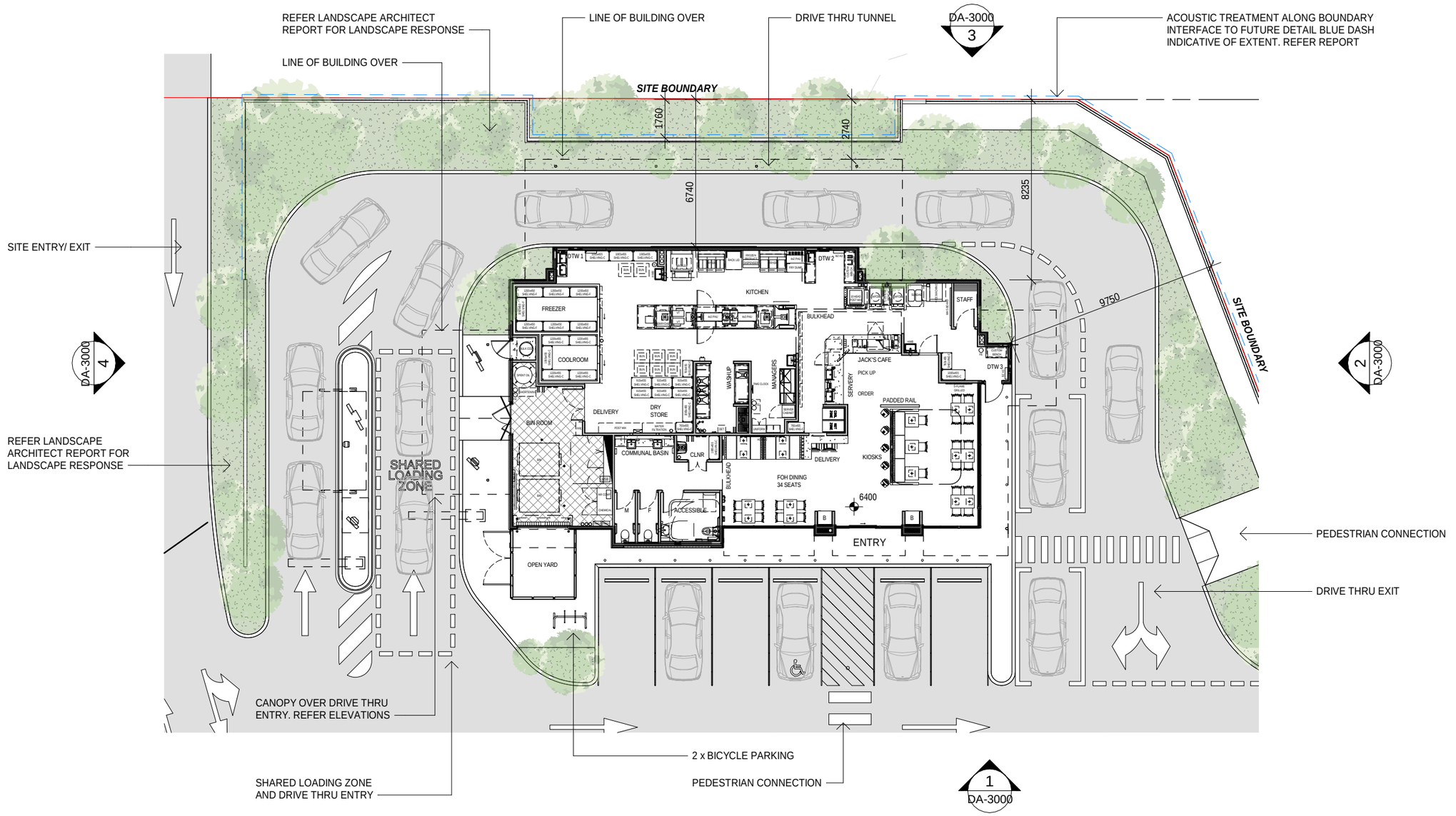
SCALE 1:500 @ A3 SIZE m

ISSUE K
Date of Issue | 03.06.2024

| 1 ADELONG AVENUE, GOLDEN BAY, WA 6174

bayerstevens

DA-1100
FAST FOOD BUILDING 01 - FLOOR PLAN



0 2 4 6 8 10

SCALE 1:200 @ A3 SIZE m

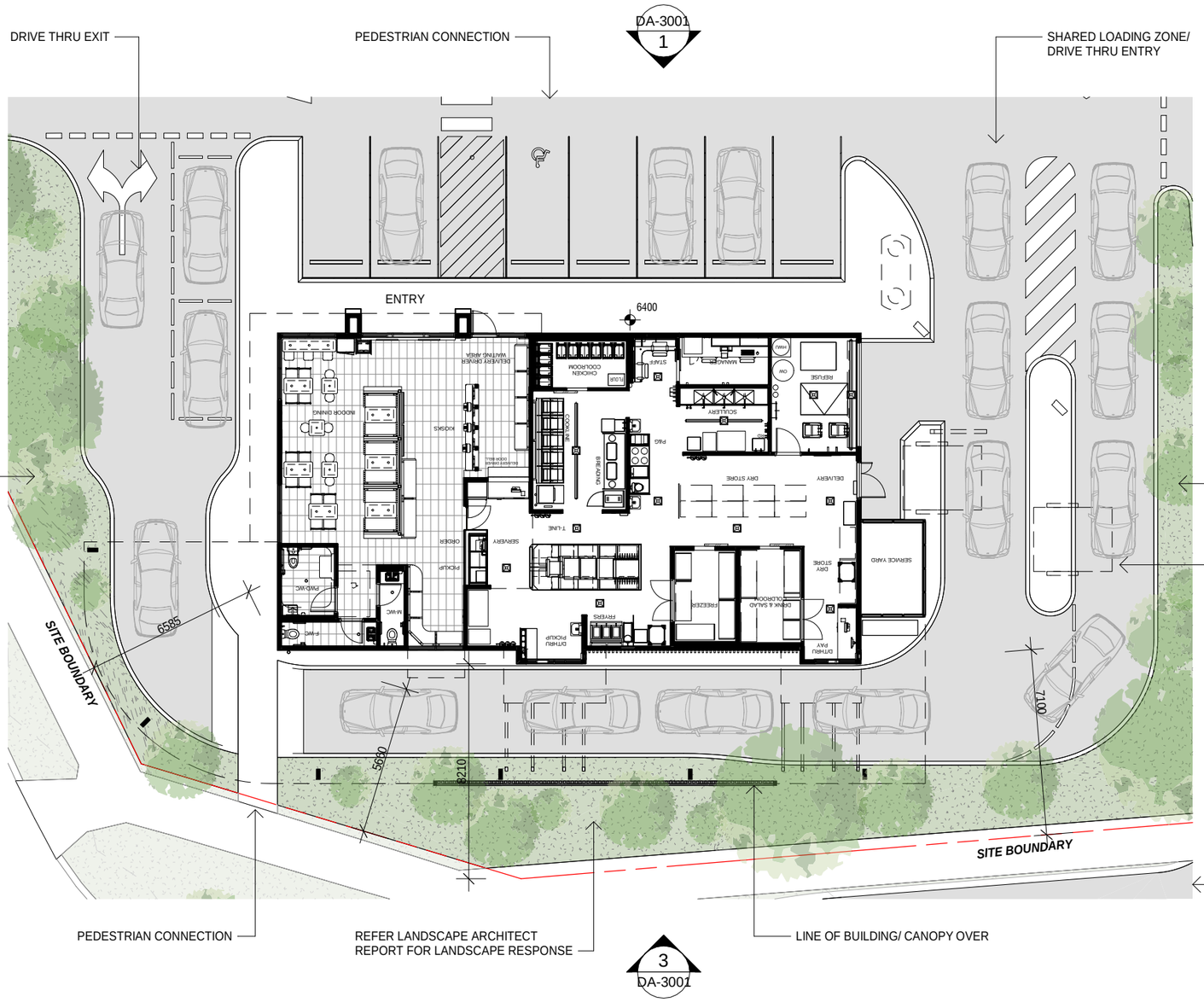
ISSUE F

Date of Issue | 03.06.2024

| 1 ADELONG AVENUE, GOLDEN BAY, WA 6174

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DA-1200
FAST FOOD BUILDING 02 - FLOOR PLAN



0 2 4 6 8 10

SCALE 1:200 @ A3 SIZE m

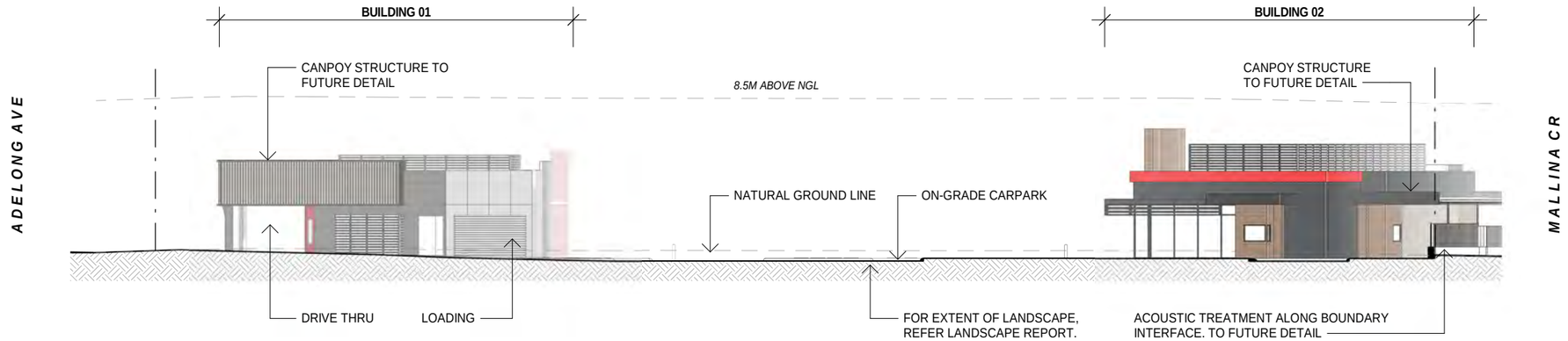
ISSUE E

Date of Issue | 07.05.2024

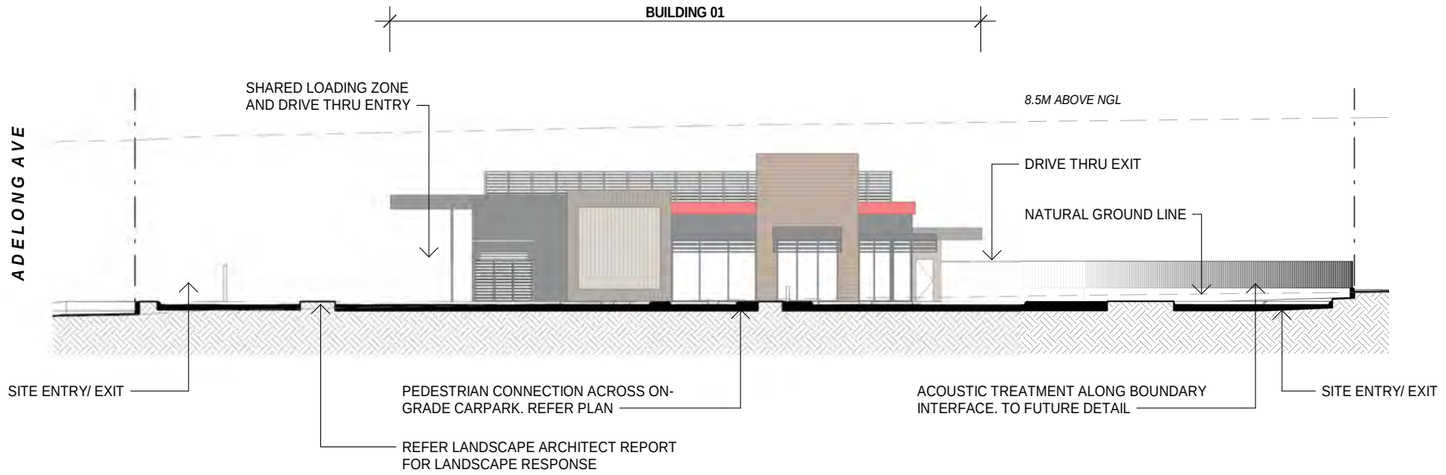
| 1 ADELONG AVENUE, GOLDEN BAY, WA 6174

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DA-2000
SECTIONS



1 DA-1000 OVERALL SITE SECTION 01
1 : 300



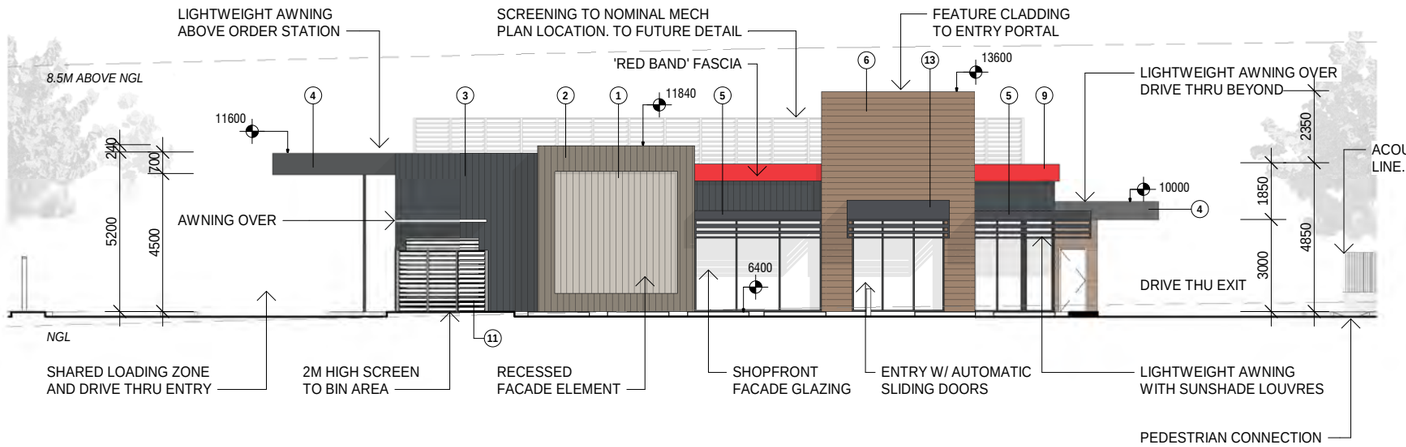
2 DA-1000 OVERALL SITE SECTION 02
1 : 300

ISSUE E
Date of Issue | 07.05.2024

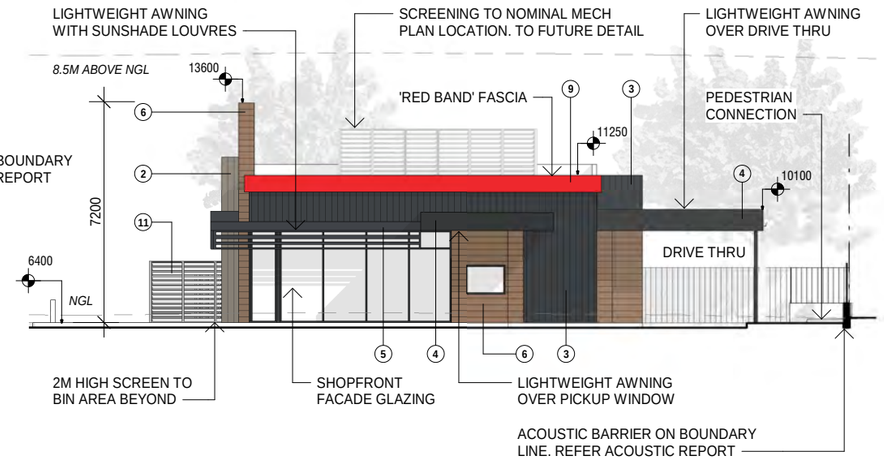
| 1 ADELONG AVENUE, GOLDEN BAY, WA 6174

bayerstevens

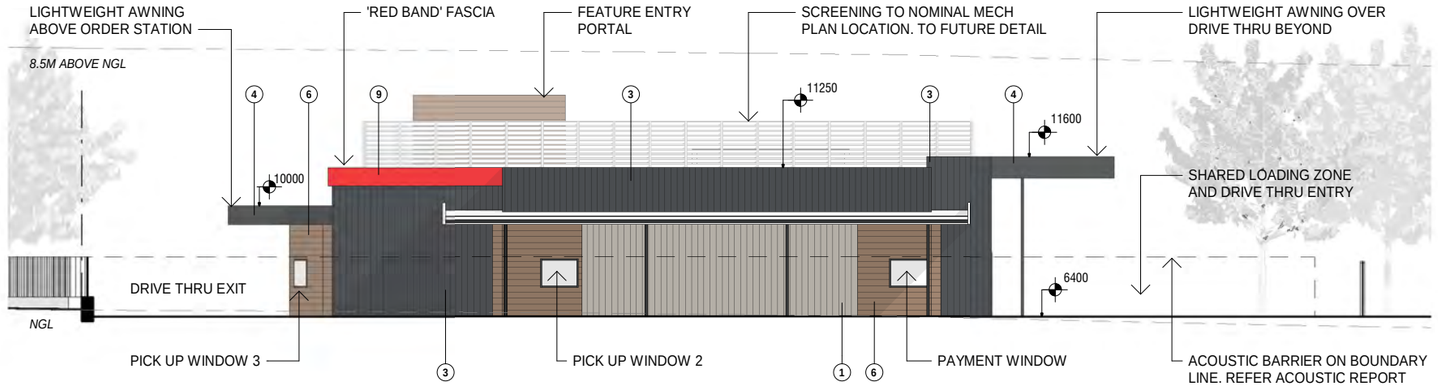
DA-3000
FAST FOOD BUILDING 01 - ELEVATIONS



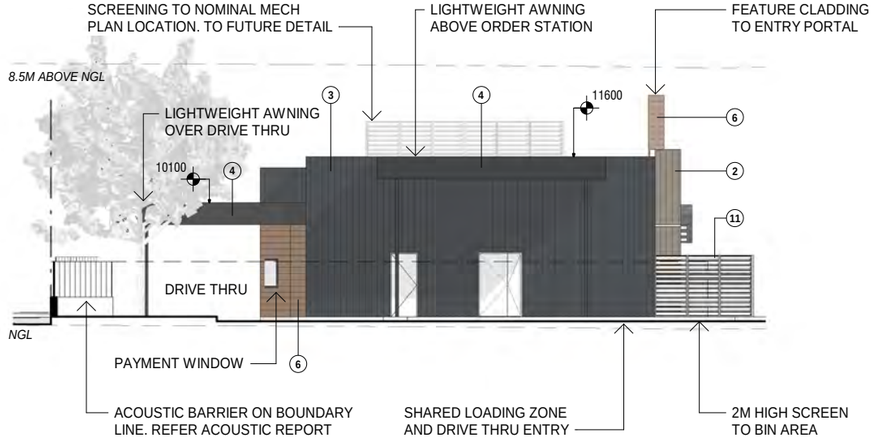
1 DA-1000 BUILDING 01 - ELEVATION 03
1 : 200



2 DA-1000 BUILDING 01 - ELEVATION 02
1 : 200



3 DA-1000 BUILDING 01 - ELEVATION 01
1 : 200



4 DA-1000 BUILDING 01 - ELEVATION 04
1 : 200

MATERIALS AND FINISHES SCHEDULE

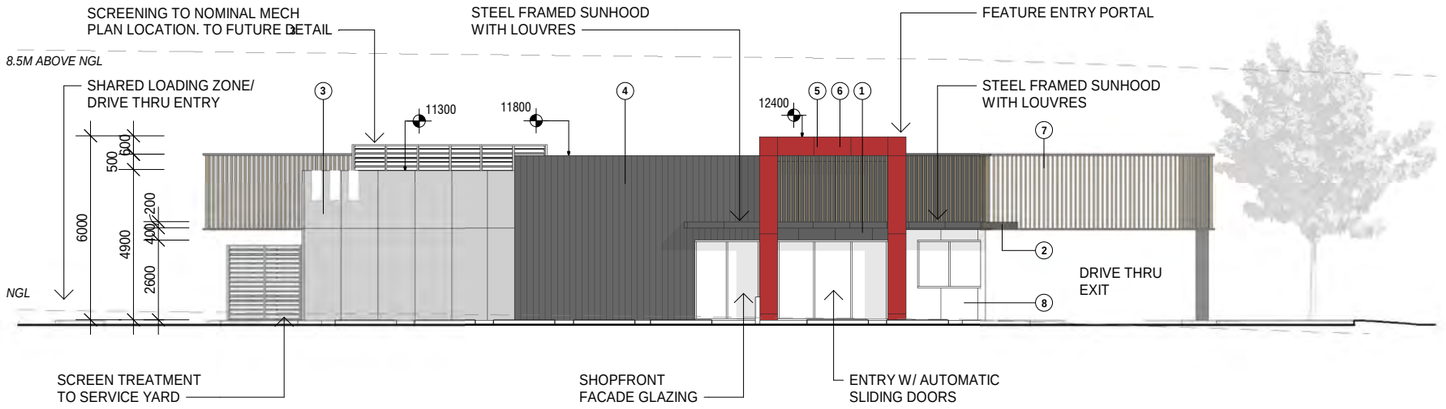
1. PAINT FC PANEL COLOUR: BEIGE FINISH: SATIN W/ CLEAR ANTI GRAFFITI COATING
2. PAINT FC PANEL COLOUR: BROWN FINISH: SATIN W/ CLEAR ANTI GRAFFITI COATING
3. PAINT FC PANEL COLOUR: DARK GREY FINISH: SATIN W/ CLEAR ANTI GRAFFITI COATING
4. PAINT FINISH COLOUR: DARK GREY FINISH: SATIN
5. POWDERCOAT FINISH COLOUR: CHARCOAL FINISH: SATIN
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11. SLATTED COMPOSITE CLADDING – TIMBERLOOK COLOUR: DARK BROWN
12. METAL LOUVRE BRAND: HOLOAKE OHL COLOUR: DARK GREY POWDERCOAT
13. ALUMINIUM COMPOSITE PANEL COLOUR: DARK GREY

ISSUE F
Date of Issue | 03.06.2024

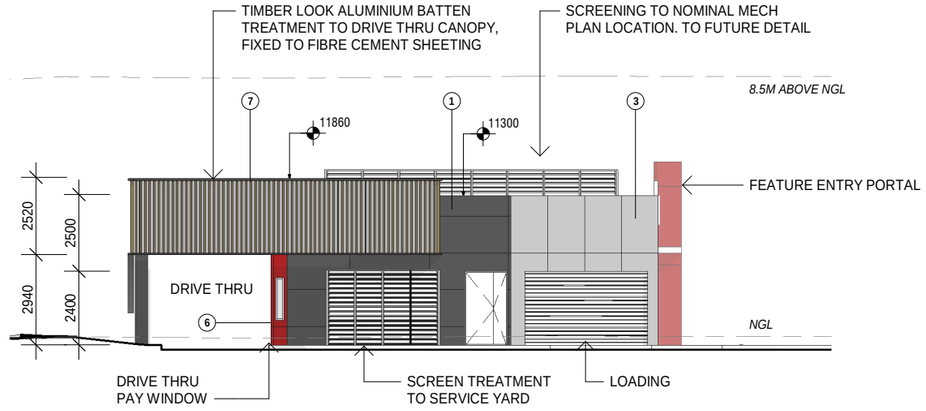
| 1 ADELONG AVENUE, GOLDEN BAY, WA 6174

bayerstevens

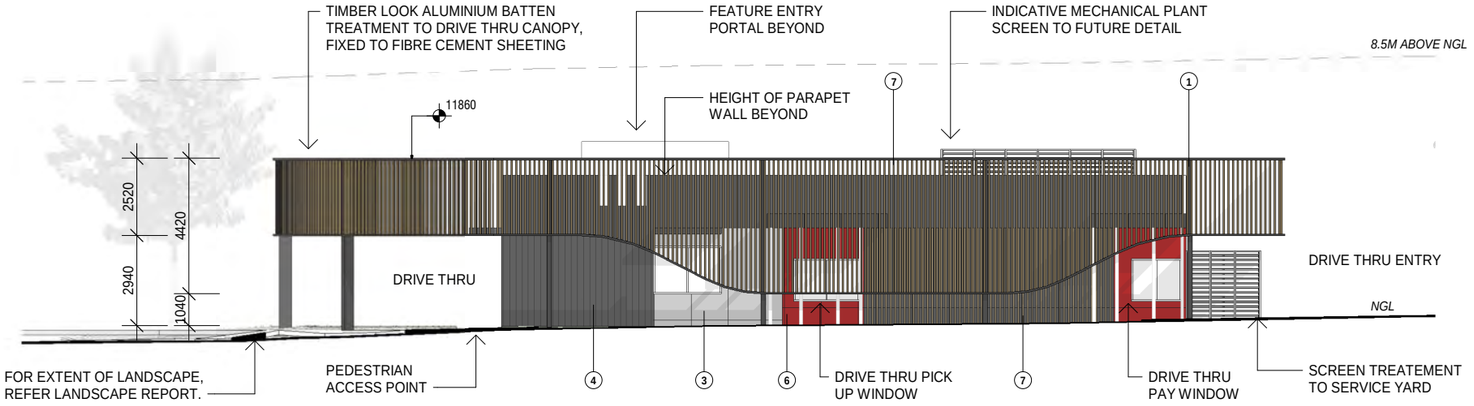
DA-3001
FAST FOOD BUILDING 02 - ELEVATIONS



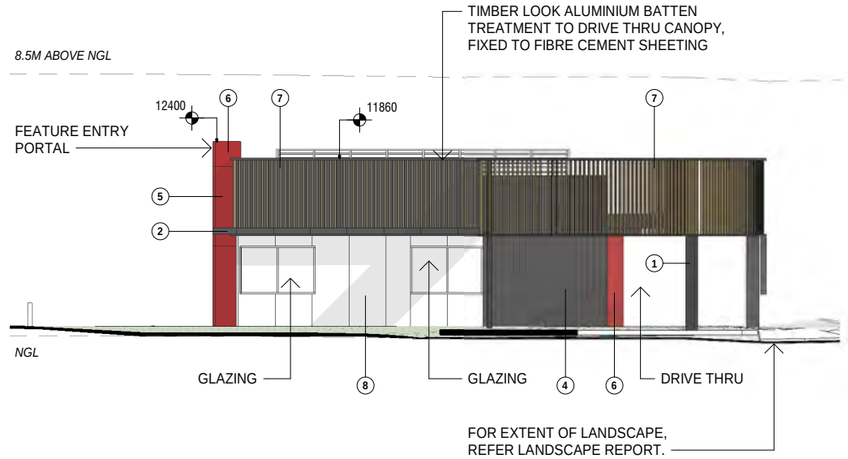
1 DA-1000 BUILDING 02 - ELEVATION 01
1 : 200



2 DA-1000 BUILDING 02 - ELEVATION 02
1 : 200



3 DA-1000 BUILDING 02 - ELEVATION 03
1 : 200



4 DA-1000 BUILDING 02 - ELEVATION 04
1 : 200

MATERIALS AND FINISHES SCHEDULE

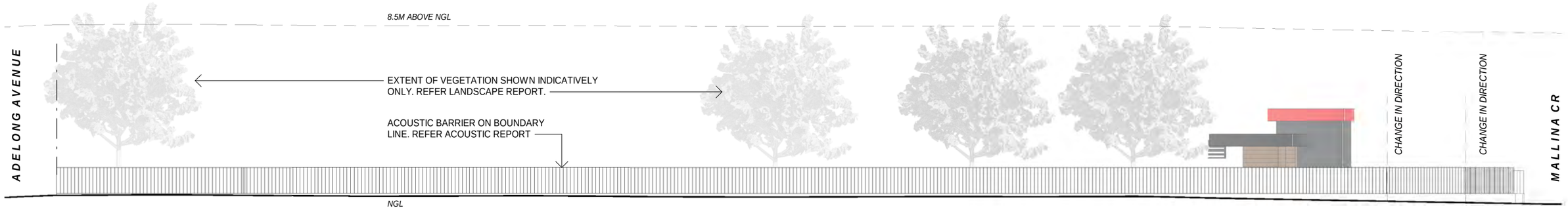
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5. 3MM THICK PERFORATED METAL SCREENN MILD STEEL POWDERCOATED WITH DURATEC X15 IN 'KFC RED'. PATTERN: 3.25mm DIA. HOLES, 4.78mm CTRS, 41% OPEN AREA
6. KFC 'RED BOX' - RED (A0639) DULUX WEATHERSHIELD LOWSHEEN ACRYLIC ON EXPRESS JOINT EXOTEC FC CLADDING AND TOPHATS
7. 50 X 50MM ALUMINIUM TIMBER LOOK CLKIP ON BATTENS 'ALIWOOD CLIP ON' (5050COS) IN 'SNOWGUM'. TO BE INSTALLED VERTICALLY ON FIBRE CEMENT SHEETING AND TOPHATS BEHIND TO MANUFACTURERS INSTRUCTIONS. FC SHEETING TO BE PAINTED DULUX 'BLACK'
8. KFC 'ALABASTER' - WHITE (A1016) DULUX WEATHERSHIELD LOWSHEEN ACRYLIC IN ON EXPRESS JOINT EXOTEC FC CLADDING AND TOPHATS

ISSUE E
Date of Issue | 07.05.2024

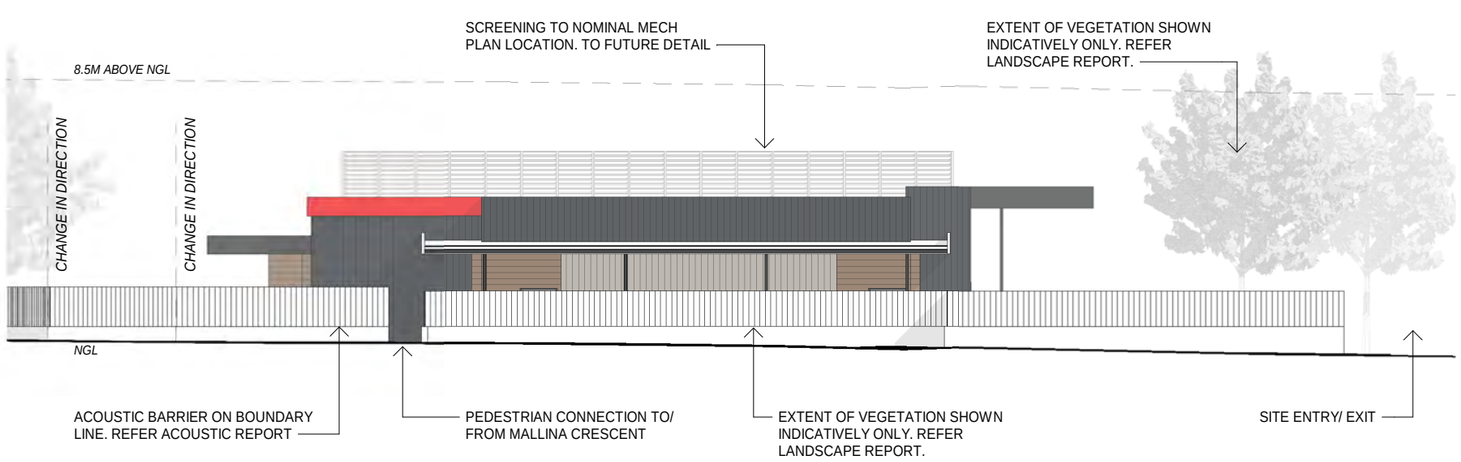
| 1 ADELONG AVENUE, GOLDEN BAY, WA 6174

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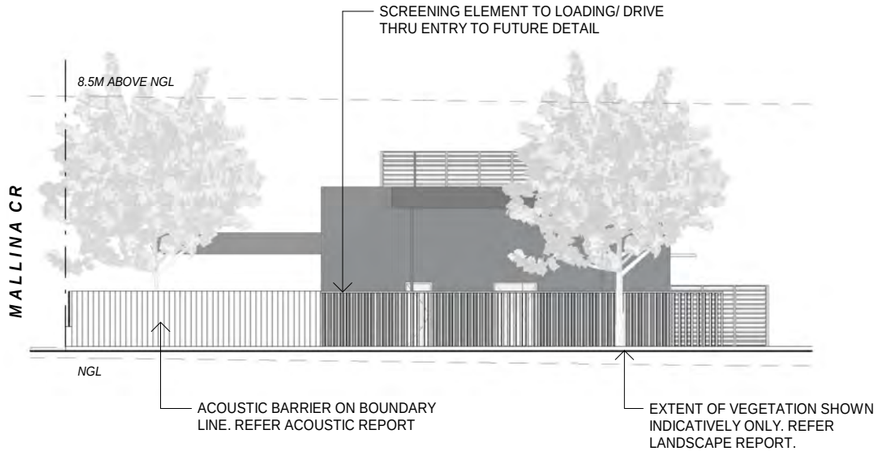
DA-3002
BOUNDARY FENCE ELEVATIONS



1 DA-1000 BOUNDARY FENCE ELEVATION - AJOINING PROPERTY
1 : 200



2 DA-1000 BOUNDARY FENCE ELEVATION - MALLINA CRESCENT
1 : 200



3 DA-1000 BOUNDARY FENCE ELEVATION - INTERNAL
1 : 200

0 2 4 6 8 10
SCALE 1:200 @ A3 SIZE m

ISSUE A
Date of Issue | 07.05.2024

| 1 ADELONG AVENUE, GOLDEN BAY, WA 6174

bayerstevens

Schedule of Submissions
Proposed Fast Food Outlets - Lot 8005 Adelong Avenue, Golden Bay - 20.2024.171.1

PUBLIC SCHEDULE OF SUBMISSIONS			
No.	**Name**	**Address**	**Comment**
1.	Mrs E Burke	Thangoo Way GOLDEN BAY WA 6174	Do you really need more fast food in the area? Not to mention it's yet another place for the local teens to cause trouble.
2.	Ms Kathleen Harvey	Ivanhoe Street GOLDEN BAY WA 6174	This proposal is not reflective of the communities needs or wants. The area is already inundated with numerous fast food chains, which do not support healthy nutritional options, enrich the community, or support small business and entrepreneurs. A far better use of the site would be a bakery; a green grocer; a butcher; a thai restaurant; an Indian restaurant; or a cafe. Any of the above would provide a point of difference to the community, provide better nutritional options and champion small business.
3.	Mr Gregg Bohan	Bancoura Parkway SECRET HARBOUR WA 6173	Additional fast food outlets, liquor outlets, shopping centres, petrol stations in Golden Bay, Secret Harbour area is not required for the community. These coastal suburbs are being ruined by too many commercial chain stores. It promotes lingering youth, crime and rubbish. How about something to promote youth activity. Do NOT approve an additional 2 x fast food chain stores in this seaside suburb.
4.	Mrs Bianca Sibbald	Piarri Grove GOLDEN BAY WA 6174	We do not need five fast food outlets in Golden Bay!!! Surely, in this economy, they won't all be able to survive if they all open up around the same time. We already have McDonald's, Chicken Treat, Subway in Secret Harbour, and Domino in Golden Bay. We are also already getting two more on the western side of Golden Bay, So there is no need or demand for two more.
5.	Mr Benjamin Sibbald	Piarri Grove GOLDEN BAY WA 6174	Please do not approve any more fast food outlets in golden Bay, 3 is already enough, with 3 more just down the road in Secret Harbour. The community wants a library not more fast food.
6.	Ms Gemma Hardiman	Mallina Crescent GOLDEN BAY WA 6174	I wish to have my say regarding the proposal for Lot 8005 Adelong Avenue fast food outlets proposal. My response is a 'No' to this proposal. Why: Mallina Crescent proposed traffic crossover 2 will be unsafe because an existing hazard exists whereby cars on the proposed traffic cross over 2 side will not safely exit because of the blind corner. I cannot walk my canine across this stretch because we've had two near-misses. Mallina Cresent is a popular 'rat run' for the football training that occurs on Mallina Park for several months of the year and also for families collecting their children from the nearby high school who wait out on Mallina Cresent. The sheer speed at which some come around that corner is a hazard. A crossover on this side will turn Mallina Crescent into an ongoing rat run and put residents, particularly school children's lives in danger. People within the estate utilise that corner of Mallina Crescent as a short-cut to the bus stop and other areas of Golden Bay. Is this 'short cut' going to be part of the proposal or blocked off?

Schedule of Submissions
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No.	Name	Address	Comment
7.	Cont…		KFC has been identified as one of the fast food outlets. They are not open 24/7. What is the other fast food outlet? McDonalds or Hungry Jacks? There is already a McDonalds in Secret Harbour Shopping Centre. Hungry Jacks is down the road in Port Kennedy. A proposal across the road bounded by Thunderlarra Dr, Aurea Boulevard and Warnbro Sound Ave already have had a submission for take away / fast food outlets / petrol station and supermarket rejected. Lot 8006 Winderie Rd (opposite this proposal) has a proposal that has been positively supported by the Golden Bay community awaiting final panel assessment for a high support accommodation center. This proposal will greatly impact on the needs of those people who will be living there. Light pollution has an impact on people's health. There is new evidence coming out about this issue. The noise and traffic figures are not realistic. These people who do these assessment do not live in this area (I live on Mallina Crescent) and I wholly reject their assertion that Number 12 Mallina Crescent and other units on Mallina Crescent will be greatly impacted. Particularly if the 24 / 7 fast food outlet is going to be on the Mallina Cresent side of proposed planning site, the noise will impact on most houses. I certainly don't want to wait to find out. What will be done to mitigate the noise of noisy exhausts? patrons? rubbish and general waste pollution? What will be done to mitigate the pollution from the cars and fast food outlets? Proposed traffic crossover 1 will greatly impacted by the rat runs that occur every school morning and afternoon. The roundabout at Adelong Ave and Yaramin Way is constantly congested because drivers enter the roundabout when they cannot do so and 'sit there' until the lights change. They obviously do not know that it is illegal to sit on a roundabout. This will have a flow on effect for those of us who are going about our daily activities of living. I did not buy into this suburb to have a fast food outlets at the end of my street. I am all for something for the community on this site but not at the expense of my (or my neighbour's) health, safety, property values and enjoyment of my wee home and suburb. This proposal simply does not 'fit' the mold of what Golden Bay is all about.
7.	Mr Craig Clitheroe	Dampier Drive GOLDEN BAY WA 6174	Ian allowed to any fast food outlets. Secret harbour is just 1min drive away and has already got enough in the area. All these facilities encourage is ill health and bad heavier from visitors. The amount of trash already come from 7/11 service station is astounding. We want a better culture to live in, not another cut and paste from town development. Encourage shopfronts and private businesses, these generate local income, jobs and community in the area. Like the small towns in Margaret river, they turn into thriving destinations. Rockingham is really becoming a less inviting place over the years, because of this type of development. I mean, when was the last time you went to a McDonald's and felt like it gave you a sense of community and respect for the area. I strongly oppose.

Schedule of Submissions
Proposed Fast Food Outlets - Lot 8005 Adelong Avenue, Golden Bay - 20.2024.171.1

No.	Name	Address	Comment
8.	Ms Nikita Hurt	Allatoona Avenue GOLDEN BAY WA 6174	I am writing to express my strong opposition to the proposed placement of a fast food restaurant in Golden Bay as A resident of the local area. The decision to introduce such an establishment in this area raises significant concerns that appear to have been overlooked. Firstly, the introduction of a fast food restaurant in Golden Bay is unnecessary given the abundance of similar establishments in the surrounding areas. The community is already well-served in this regard, making another fast food outlet redundant. Secondly, the increased traffic that a fast food restaurant would bring to the area is a major concern. The streets surrounding the proposed location are not designed to handle the additional traffic volume that such a business would generate. This is particularly concerning given the proximity of a school, which would be directly impacted by the increased traffic and potential safety risks to children. Moreover, Golden Bay has the potential to be a thriving residential community. Prioritizing housing development over commercial ventures, especially fast food outlets, would better serve the long-term interests of the community. A focus on housing would help foster a safer, more family-friendly environment, encouraging community growth and stability. Additionally, it is well-known that this particular street already experiences a higher rate of crime. The presence of a fast food restaurant is likely to exacerbate this issue, attracting more foot traffic and potentially increasing incidents of crime. Maintaining this area as a residential zone would help in mitigating these concerns and contribute to a safer neighborhood. In conclusion, the decision to place a fast food restaurant in Golden Bay is ill-advised. The area would benefit far more from the development of additional housing, which would contribute to the overall well-being and safety of the community. I urge the Rockingham local government to reconsider this proposal in favor of enhancing Golden Bay as a residential area. Thank you for your attention to this matter.
9.	Mr Pradeep Satya	Lake Street ROCKINGHAM WA 6168	Supported. Will bring employment opportunities for local youth and residents. Will add value to local areas.
10.	Ms Breanna Bird	Breaksea Court GOLDEN BAY WA 6174	Not needed. We already have enough fast-food outlets in the area. Secret Harbour has chicken treat and McDonalds. Pt Kennedy has HJ's, Lakelands has McDonald's and KFC. Fast food outlets also bring a lot of activity at night and usually not great behaviours. Shouldn't these be put somewhere further away from residential sites? An IGA or cafe or other shops is much better suited to this area. Would be very disappointed to see fast food chains go here.
11.	Ms Deborah Kerr	Mallina Crescent GOLDEN BAY WA 6174	Cust objects to building going in. Doesn't want this building. Not suitable for the area.

Schedule of Submissions
Proposed Fast Food Outlets - Lot 8005 Adelong Avenue, Golden Bay - 20.2024.171.1

No.	Name	Address	Comment
12.	Mrs Dalai Zeenni Petersen	Calooli Grove GOLDEN BAY WA 6174	I would like to share my thoughts & strongly oppose this application and reject the application of fast food outlet to be approved or proceed at all because it's very close 2 minutes to our residential area where we come after a long day of work to have our peace & relax. Not only that this area have lot of families around with lot of teenagers, and adults. We are continuously struggling & reporting about the bullying, the mess on the road from teenager, the shouting and screaming. We see police cars often in those areas. So by approving these fast food outlet, our life will be turned to a big nightmare of unrest, noise, insecurity and probably more crime to be on the rise from 24 hours service & cars around all night long. So please I urge you not to allow this above mentioned project to take place at all. I thank you for strongly taking my opinion into consideration.
13.	Mr Nathanael Carmody	Gilroyd Way GOLDEN BAY WA 6174	Would strongly oppose this proposal. Comet Bay High school is too close and already have issues with McDonalds and proximity to the high school. Surprising that City of Rockingham would even entertain an idea in light of "One in four children and 71 per cent of adults in WA are overweight or obese and 86 per cent of schools have at least one fast-food store within 1km as per a report released by the state's Department of Health." Cannot put sports and recreation and health on the table for your citizens but then 'entice' our impressionable teens with 2 more options within 2 min walking distance or less. We and the city of Rockingham has to do better for its youth.
14.	Mr Daniel Byers	No address provided	I fully support the proposed fast food outlets at this site. The more choice the better and leaving these spaces empty is an eye sore.
15.	Mr Max Power	No address provided	This is a vote AGAINST having the development happen …… Absolutely disgusting this is happening
16.	Ms Chaz Roberts	No address provided	Can I please REJECT the above proposal. This area doesn't need that.
17.	Ms Belinda Larrs	No address provided	Reject proposal.
18.	Ms Patsy Ackermans	Yaramin Way GOLDEN BAY WA 6174	I am writing on behalf of myself and my family to express our strong opposition to the proposed development of two fast food outlets with drive-through facilities at Lot 8005, Adelong Avenue. We believe that this development is not suitable for the available plot of land and the community for several reasons outlined below. **1. Traffic Congestion and Safety Concerns** The introduction of two fast food outlets with drive-through lanes operating at high capacities will significantly increase traffic on Adelong Avenue and Mallina Crescent. The Transport Impact Assessment (TIA) provided with the proposal estimates an addition of 249 vehicle trips during the AM peak hour and 185 trips during the PM peak hour. This increased traffic volume poses a risk to the safety of pedestrians and cyclists, particularly given the existing footpaths and bike paths along these roads. The intersections at Warnbro Sound Avenue, Adelong Avenue, and Aurea Boulevard are already busy, and additional traffic could lead to congestion and accidents.

Schedule of Submissions
Proposed Fast Food Outlets - Lot 8005 Adelong Avenue, Golden Bay - 20.2024.171.1

No.	Name	Address	Comment
18.	Cont…		The report states that there will not be an impact on traffic but appears to be alluding to traffic on Warnbro Sound Avenue, whereas there will be a significant increase along both Mallina Crescent and Adelong Avenue. **2. Noise Pollution** One of the proposed outlets intends to operate 24 hours a day, seven days a week. This continuous operation will generate constant noise from vehicles, drive-through services, and customers, which will disturb the peace and quiet of the residential neighbourhood, especially during nighttime hours. As a local resident living on Yaramin Way, I am concerned about the impact this will have on the quality of life and the potential increase in noise pollution that will disrupt my family and neighbours. **3. Environmental Impact** The construction and operation of two fast food outlets will likely increase litter and waste in the area, contributing to environmental degradation. Fast food establishments typically produce significant amounts of disposable packaging, which can lead to increased littering if not properly managed. Additionally, the increase in traffic and idling cars in the drive-through lanes will contribute to higher emissions and air pollution, negatively impacting the local environment. The light pollution will no doubt attract seagulls and other birds at night, and any type of fast food establishment will certainly increase vermin in the local area which will be detrimental to any local wildlife we have. **4. Impact on Local Character and Community** Golden Bay is a residential area with a close-knit community. The introduction of two fast food outlets does not align with the character of the neighbourhood, which is predominantly residential with local businesses that cater to the community's needs. The proposed development could alter the neighbourhood's character, making it more commercial and less community-oriented. When purchasing my land from PEET, I was advised that this block of land would have a small local complex of shops, along the lines of a café and boutique, which is more in line with local community needs. **5. Proximity to Schools and Health Impact** Both a primary school and a secondary school are within close walking distance of the proposed development site. The easy access to fast food can have a direct negative impact on the health of school children, promoting unhealthy eating habits and increasing the risk of obesity and related health issues. The presence of fast food outlets so close to educational institutions is not conducive to fostering a healthy lifestyle among young students. **6. Adequate Existing Facilities** The community is already adequately served by existing food outlets and local businesses. There is no demonstrated need for additional fast food outlets, especially ones with drive-through facilities. The proposed development does not provide any unique benefits that would outweigh the negative impacts on the community. In conclusion, the proposed development of two drive-through fast food outlets at Lot 8005, Adelong Avenue, Golden Bay, is not suitable for our community.

Schedule of Submissions
Proposed Fast Food Outlets - Lot 8005 Adelong Avenue, Golden Bay - 20.2024.171.1

No.	Name	Address	Comment
18.	Cont…		The potential increase in traffic congestion, noise pollution, environmental impact, alteration of the neighbourhood's character, and health risks to school children are significant concerns for local residents. We respectfully request that this application be reconsidered and alternative developments more in keeping with the community's needs and character be explored. Thank you for considering our objections. We hope that the City will prioritise the well-being and preferences of its residents in making its decision.
19.	Mr Jimmy Stacey	No address provided	We do not need another fast food outlet. You are killing this community!!
20.	MS Angelica Franco Alvarez	Winning Approach GOLDEN BAY WA 6174	We already have too many fast food outlets around. The amount of rubbish that these places create as people dispose of their cups and packets around the parks and the beach is too much. And it ends up blowing on our front porch and gardens. Also we are facing an overwhelming increase in diabetes, heart disease and bowel cancer caused by fast food products. Our kids are getting more obese than ever before. Please don't do this to our little community. Why don't we look for alternatives to these fast food outlets?
21.	Mrs Renee Barnett	Treasure Road SINGLETON WA 6175	Please do not allow this to go ahead! Way too many junky stores already, not to mention a shop in the already new built complex that has never been leased. Take a look at Bru's cafe or singleton beach cafe when they are open and how busy they are being the only two in the area! People want more community friendly stores, especially being so close to houses. Imagine KFC stink all day through air vents in your house. Step up and listen to the community.
22.	Mr Matthew Barnett	Treasure Road SINGLETON WA 6175	Do no let this go ahead for the sake of everyone living close by. Crime rates in golden bay have already risen and what was a sought after area has turned bad. Save our community and build something we all want... a small grocer!
23.	Mr Declan Omeara	Thangoo Way GOLDEN BAY WA 6174	I believe it would be a great idea seeing as the too that are being proposed I'm assuming are kfc and hj's would be great as there the two that are somewhat a distance to travel.
24.	Ms Nina Amory	Montague Street SECRET HARBOUR WA 6173	We don't need anymore fast food in the area. We need proper shops like cafes, news agencies, convenience stores, bakeries, etc Please review decision as we would never use these facilities if provided.
25.	Mr James Horne	Winderie Road GOLDEN BAY WA 6174	As long as its not a kfc. i dont want that greasy smell in the air 24 hours a day.
26.	Mrs Bonnie Wood	8 Marillana Drive GOLDEN BAY WA 6174	Properties between this development and the coast (Golden Bay/Secret Harbour) will now get the cooking smells when the easterlies blow in summer? NO THANKS! I don't pay thousands in rates to put up with that!
27.	Ms Clare Thurling	Yaramin Way GOLDEN BAY WA 6174	The following factors are not fair on residents who have bought homes with the expectation of the land being used for residential development or for a medical practice as was advertised previously: - ongoing smell of takeaway/fried food

Schedule of Submissions
Proposed Fast Food Outlets - Lot 8005 Adelong Avenue, Golden Bay - 20.2024.171.1

No.	Name	Address	Comment
27.	Cont…		- increased traffic in area - increased noise outside of business hours due to 24 hour food service - increased rubbish due to takeaway wrappers - increased foot traffic and loud patrons 24/7 in residential areas - promotion of unhealthy food constantly available in close proximity to a high school All of these factors will reduce the ability of residents to reasonably enjoy their homes which have been purchased in good faith that the land will be used for a different purpose.
28.	Mr S Gordon Sutherland	Wandina Way GOLDEN BAY WA 6174	I am writing to complain IN THE STRONGEST POSSIBLE TERMS about the proposed siting of a 24 Hours Fast Food Outlet in the quiet Mallina Crescent adjacent to my house. When I bought my property off the plans some ten years ago, this was supposed to be a quiet residential area, NOT with commercial premises in the immediate vicinity of where I live. Furthermore, there has recently been built a “7 eleven” outlet diagonally opposite my house across the main dual carriageway [I also objected to this, without any result] as well as a PIZZA shop at the back of this, and there are several eating places (including a **McDONALDS**) at the nearby shopping centre, so I do not see any need for another fast food outlet near me, as the community is very well served for eating places in the neighbourhood. Under the **REPRESENTATION OF THE PEOPLE** legislation, are our elected representative not supposed to listen to the people they purport to represent??? This does NOT seem to have happened in this case! In addition, it was not made clear in the glossy pamphlet the ROCKINGHAM CITY COUNCIL regularly distributes (telling people how well they are doing???) that this was about to occur and they have given little consultation time for residents’ views to be expressed. My neighbours and I most emphatically do NOT wish to have a 24 Hours Fast Food Outlet, with traffic running up and down the quiet, residential street at the side of our houses (with the noise pollution and probably litter) spoiling where we live. I shall remember this at the next Council Elections and I shall remind my friends and neighbours, too, and I have a good mind to stand at the next election for Council, myself. I remember the President of the Soviet Union being know as *President niet* for always saying NO to things, and the President of France being know as *President non* for saying NO to things. Perhaps if I am elected to ROCKINGHAM COUNCIL, I could become know as Councillor **not on your nelly!**
29.	Ms Sandra Dubjak-Wenzel	Warriedar Way GOLDEN BAY WA 6174	Not needed. Across the rood there is already an planning for two more fast food store and a second petrol station. There is already one fast food existing. 5 Fast food stores, in one little corner and 200m away is the next one. Unreal! Can't we have something useful, making healthy choices with an aquatic centre or sport centre or what about a park with some sport facilities/playgrounds. Will help with the Medicare cost too!

Schedule of Submissions
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No.	Name	Address	Comment
30.	Mrs Elise Jones	Sawley Close GOLDEN BAY WA 6174	This area already encounters a lot of antisocial problems and a 24hr food outlet will only increase this. The area is missing more cafe style dining. I strongly oppose more fast food given there is a McDonalds and Chicken Treat in close vicinity.
31	Mr Graham Bishop	Mallina Crescent GOLDEN BAY WA 6174	Thank you for all the help you have given me. I am writing to complain in the strongest possible terms about the proposed siting of a 24 hours fast food outlet across the quiet Mallina Crescent beside my house. It would seem that any TRAFFIC MANAGEMENT plan has not taken into account that the proposed entry to the 24 hours commercial complex would appear to be on the bend of Mallina Crescent, just at my house, which would result in me at 12 Mallina Crescent being affected by 24 hour light pollution streaming into my home. As Mallina Crescent is a fairly narrow road, any resulting increase in traffic could be dangerous on Mallina Crescent. Furthermore, there has recently been built a "7 *eleven*" store diagonally opposite my house across the main dual carriageway as well as a pizza shop at the back of it and there are several eateries (including a McDONALDS) at the nearby shopping centre, so I do not see any need for yet another fast food outlet nearby. If there **is** to be a 24 hours fast food outlet there, why can the 24 hour food outlet not be located on the other side of that area where the other outlet, which is supposed to be open 10am – 10pm, away from residents' houses beside Mallina Crescent, thus "swapping" the locations of the two proposed food outlets? As a rate-payer, I am appalled that the Council could consider such a proposal without taking into account how this would affect the residents (and voters) in the area. In addition, it was not made clear that this was about to occur and the residents have been given little consultation time for their view to be expressed. My neighbour and I do NOT wish to have a 24 hour fast food outlet with traffic running up and down the quiet street at the side of our houses (with noise pollution and probably litter) spoiling where we live.
32.	Ms Kimberly Carmody	Gilroyd Way GOLDEN BAY WA 6174	I am writing to formally go on record to state that my family and I are against this proposal for fast food outlets to be built in our neighbourhood. We will be extremely upset if the City of Rockingham allows this to happen and can only assume that money and revenue are once again the primary concern instead of the local residents and families that live here. Firstly, we do not NEED fast food outlets on our street. There is a McDonald's located 1.8km away as well as Chicken Treat and multiple restaurants. We also have Domino's and 7 Eleven across the street. There is no lack for food choices within a kilometre and only a short drive to Port Kennedy or Lakelands for more food choices. This is not bush or country where choices are limited and more spread out. Secondly, why are you promoting more unhealthy food choices in our communities? Government should be ashamed of themselves.

Schedule of Submissions
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No.	Name	Address	Comment
32.	Cont…		You spend so much money promoting good health advertising and programs towards children and adults yet you drop several fast food restaurants within LESS than a kilometre of TWO schools.I live in this neighbourhood and have personally witnessed the primary clientele of McDonald's and 7-Eleven to be our local high school students and primary school age students. I see kids and teenagers walking to school in the MORNING with slurpies from 7-Eleven and McDonald's cups. And now you want to add to that? For what good reason, other than money, can you possibly have? Thirdly, we take pride in our neighbourhood and since 7-Eleven has been built and established, the amount of rubbish on our streets has increased dramatically. There is not a day that goes by that I do not see cups, takeaway bags, and other rubbish with their logos on it on my street, pathways, park and grass areas etc. I shudder to think of the amount of rubbish we will see with further fast food restaurants built even closer to us. Fourthly, this is a residential neighbourhood for families and people and it should stay that way. This is not an Appropriate location for shops or restaurants. McDonald's Secret Harbour is at least a part of a greater shopping centre and structure which makes sense and seems appropriate. We want to be able to walk and ride our bikes on our streets without having a car park full of cars driving in and out and teenagers loitering around. And because of the local high school, these fast food outlets will simply become another hang out spot for teenagers. No one will actually enjoy going to these restaurants. Just have a look at McDonald's Secret Harbour. They actually closed the indoor restaurant from 3-5pm because they could not crowd control the teenagers who would come straight from school and just stay and make chaos. So again, I ask you, what is the actual benefit to US, the people who live here? Healthier food choices? No. Accessibility to restaurants and fast food? No, we already have that. An enjoyable dining experience for locals? No. Cleaner and safer neighbourhoods? No. Revenue to fill the pockets of government and big chain corporations? YES. Please hear our voices and our concerns. Singleton Shopping centre is very nearby and currently has zero fast food outlets on either side of the street. Wouldn't that be a more appropriate location for this proposal? We beg you not to allow this to happen and forever change our beautiful home and neighbourhood that we love.
33.	Mrs Amanda Cliffe	Bidgemia Road GOLDEN BAY WA 6174	This is good and we hope this happens.
34.	Mr David Nelson	Address not provided	Fast food outlets with in eye sight of two schools and several daycare centres is Not acceptable. Put in a spud shed or, Perhaps a police station would be of more benefit to this party area. There is a lot of crime associated with the Social housing properties on Adelong avenue.

Schedule of Submissions
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No.	Name	Address	Comment
35.	Ms Melissa McMonagle	Perrinvale Loop GOLDEN BAY WA 6174	This would bring another place for the local teenagers to hang around and cause trouble within our local area you only need to look at the ongoing issues that have happened at the McDonald's 2km down the road to see that this is going to attract the same issues amongst dense housing.
36.	Ms Lorna Draper	Crystaluna Drive GOLDEN BAY WA 6174	Completely oppose the proposed fast food outlets at this site. There are enough fast food outlets in the area already. This only promotes poor nutrition and Australia is currently experiencing an obesity crisis.
37.	Ms Deborah Reid	Yaramin Way GOLDEN BAY WA 6174	Thank you for your recent letter regarding the application for development on lot 8005, Adelong Avenue, Golden Bay. I wish to submit in writing, my objection to this proposed development. The proposal for two fast food outlets on that piece of land seems unnecessary when there are already a sufficient number of fast food eateries in Golden Bay and Secret Harbour, through to Port Kennedy. I count at least seven, various outlets.
38.	Mr Graham Bishop	Mallina Crescent GOLDEN BAY WA 6174	Thank you for all the help you have given me I have received the Developer's proposed Traffic Management plans for the planned fast food outlets beside my home, and I am puzzled at how they came by the suggested traffic volumes which are contained in these documents as neither I nor my neighbours have seen any traffic counting devices in our estate at any time, which makes me wonder if the Developer's figures came from some idea borne out of a figment of someone's imagination. The road from the traffic lights was always called AUREA BOULEVARD on both sides of the lights (and not Adelong as was originally planned). That is one error which the proposed Traffic Management plans shows. Furthermore, it would seem more sensible to have any entrance to the proposed outlets to be from Warnbro Sound Avenue, thereby avoiding much increased traffic along Mallina Crescent. Such an entrance exists at the Warnbro Shopping Centre, where there is a bus stop off the main road in front of an entrance into the Petrol station. In addition, I should point out that any light pollution coming into my house from such outlets could be considered to be carcinogenic and would seriously affect me in a deleterious manner. My neighbours and I do NOT want fast food outlets beside our homes and think very little of our elected representatives for considering such proposals.
39.	Ms Barbara Wheater	Mallina Crescent GOLDEN BAY WA 6174	I moved into my home knowing that the property bordering Adelong and Mallina was zoned commercial, however I was advised it was more likely to be offices or a childcare facility, with the knowledge that on the west side of Warnbro Sound Avenue has plans for a Service Station, Food outlet and Grocery (that has been on hold for some time now). Along with the Food Outlet already where the current & Seven Eleven is. I wish to submit my objection to the plans for the above proposal of more Fast Food Outlets.

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Proposed Fast Food Outlets - Lot 8005 Adelong Avenue, Golden Bay - 20.2024.171.1

No.	Name	Address	Comment
39.	Cont…		My submissions: I feel unless Adelong is widened to allow for queuing traffic going to the site, it will restrict the residential & other traffic using Adelong as at present this is a single lane roadway. On the plans there is an allocation of parking spaces, will these be for use by staff as well as customers?? If not where will the staff need to park their vehicles, in Mallina Cres? if so this would restrict the traffic flow for both patrons of the Fast Food Outlets and residents alike. I would like to see that the driveway from Mallina Cres is ENTRANCE ONLY, to the proposed site with ALL vehicles exiting should be via left turn into Adelong Avenue, this would not mean changing the plans to a great extent but would allow for a lesser flow from the site into Mallina Cres, which is also a single lane street. With the health issues and the financial state of the country with many families struggling to make ends meet, and really don't need or require the added temptation to buy fast foods. For those who can afford these luxuries there are many such outlets within a close driving distance. I feel that I would much rather the site be used to assist those in need, either a community garden or similar to help and encourage the residents. The properties in the area being so small there really is no room for people to grow fruit and vegetables. In brief my objections are: The closeness to the proposed MS facility for Neurological patients. The entrance to the site off Adelong is likely to cause congestion. The entrance & exit in Mallina is likely to cause congestion. Staff parking should be within the site. Should the plans be approved and go ahead, I would like to see that the Mallina driveway be only single lane entrance to the site, and the exit should be a single lane exit from the site to Adelong. In my humble opinion this would considerable reduce any congestion that could be caused with entering and exiting vehicles from the site.
40	Mr Dylan Adams	Marlin Way GOLDEN BAY WA 6174	For the proposed building running from 10am-10pm I propose to have a nice restaurant with a beer garden put in like the Whistling Kite. If there is no interest for a local restaurant I would recommend putting in a Nando's. For the building running 24/7 I would recommend putting in a U&I Cafe. Who specialise in Vietnamese food. We do not need a KFC, Hungry Jacks option. We need more restaurants in Golden Bay as the area is getting bigger every year!
41	Ms Angela Owens	Wandina Way GOLDEN BAY WA 6174	I am writing to you to **COMPLAIN IN THE STRONGEST POSSIBLE TERMS** regarding the proposed 24 hour fast food outlets adjacent to Mallina Cresent. I have lived here for 8 years as a working sole parent raising my son. In this time we have enjoyed a quite lifestyle which we hope to continue. We have great neighbours which I know agree with me that we do not wish to have these fast food outlets on our doorstep.

Schedule of Submissions
Proposed Fast Food Outlets - Lot 8005 Adelong Avenue, Golden Bay - 20.2024.171.1

No.	Name	Address	Comment
41.	Cont…		First of all I feel we have been given little consultation time for residents views to be expressed. We currently have the 7 eleven petrol station on the west side of Warnbro sound avenue, which includes a Domino's pizza in the vicinity, noting that the space beside Domino's has yet to be leased even though being advertised since the vicinity opened. Across the road from there still on the west side of Warnbro sound avenue many residents fought against the development there which has now beeen approved for another petrol station, liquor store, two speciality stores, a small grocery store and **TWO FAST FOOD OUTLETS.** This already being approved makes me question why we need **ANOTHER TWO FAST FOOD OUTLETS** directly across on the eastern side of Warnbro sound avenue? I understand that the land in question has always been earmarked for a commercial development but why does that have to be two fast food outlets with one being a 24 hour store that happens to be closest to us residents dwellings? Secondly the proposal of this planning to bring traffic from Warnbro sound avenue onto Mallina cresent is something as residents we 100% disagree with. The amount of traffic which this venture will bring to out quite streets is not wanted. The rubbish that this venture will bring to our homes is not wanted. The noise that this venture will bring to our quite streets is not wanted. In everything I have said I believe nothing the residents say will change the outcome unfortunately. In saying that we will try and fight this development. If this development is to go ahead we would like the City of Rockingham and Development Assessment Panel to please change the 24 hour fast food outlet to be on the south side of the development and the 10pm closing fast food out to be on the north side of the development, at least our worries about noise will be reduced by having the 10pm closing fast food outlet closest to our residence, I think this should be approved if we are to have no choice in the final decision/approval. Also the left hand only turning lane in planning to come in onto Mallina cresent should be adjusted to come in somewhere else. The current proposal will impact serverely the residents who live on Mallina cresent. I ask that a different access point be looked at and this adjusted.
42	Ms Ainslie Sartori	Level 1/420 Bagot Road SUBIACO WA 6008	Cancer Council Western Australia (Cancer Council WA) welcomes the opportunity to comment on the above proposal and urges the City of Rockingham to refuse this development application. As the peak non-government cancer control organisation in Western Australia, Cancer Council WA advises government and other bodies on practices and policies to help prevent, detect and treat cancer. We develop, promote and contribute to policy and initiatives to reduce the impact of cancer on the Australian community.

Schedule of Submissions
Proposed Fast Food Outlets - Lot 8005 Adelong Avenue, Golden Bay - 20.2024.171.1

No.	Name	Address	Comment
42.	Cont…		In the spirit of deepening relationships, Cancer Council WA acknowledge all the traditional custodians and owners of country throughout Western Australia and recognise their continuing connection to land, waters and community. We also pay our respect to their Elders and extend that respect to all Aboriginal peoples living and working in this area. **Our interest in the application** Cancer Council WA objects to the land use for drive-through fast-food outlets in circumstances where they pose a significant risk to community and public health. This is in areas where there would be significant impact to the quality of the existing food environment such as worsening of existing high density fast-food outlets in neighbourhoods, and where proposed developments are close to homes, schools and children's community infrastructure. The development of two drive-through fast-food outlets as part of the Golden Bay Neighbourhood Centre poses significant risk to community and public health due to its proximity to schools, homes, children's community infrastructure and already approved fast-food outlets on adjacent sites. **Evidence to support our submission** Poor diets and living with overweight and obesity are priority public health issues in Western Australia requiring collective efforts across community organisations and Government jurisdictions. Western Australian Local Governments are increasingly advancing actions in their areas to assist their community to live in the best possible health by implementing strategies to assist communities to eat well and be physically active. This is part of creating healthy, connected communities and responding to the principles and objectives of the Public Health Act 2016 under the administration of WA Local Governments. Currently, living with overweight and obesity and poor diets are second and third only to tobacco use contributing the most burden of preventable total death and disease in Australia and there is a clear link to poor diets and having higher body weight with increased risk of heart disease, stroke, type 2 diabetes and 13 types of cancers. Recent research commissioned by Cancer Council Australia and published in the International Journal of Cancer modelled that over the 25 years (2017-2037), 190,500 cancer cases could be avoided if all Australian adults achieved and maintained a healthy weigh. The location and density of fast-food outlets is contributing to poor diets and having overweight and obesity because of their pervasive availability, accessibility and marketing. The Western Australian Department of Health has reviewed the evidence regarding food, built environments and obesity and consequently recommend planning laws and frameworks are utilised and amended to limit unhealthy food outlets and support access to healthy food outlets, including near schools.

Schedule of Submissions
Proposed Fast Food Outlets - Lot 8005 Adelong Avenue, Golden Bay - 20.2024.171.1

No.	Name	Address	Comment
42.	Cont…		Perth neighbourhoods are experiencing 'food swamps; a term describing an area where the density and number of unhealthy food outlets outnumber access to outlets providing healthier options. The Telethon Kids Institute has been at the forefront of research regarding communities' geographical access to food and its influence on diet. Their research verified that geographical access to food within a community influences individuals' diet. They found Perth schools were surrounded by fast-food outlets. Perth primary schools on average have two fast-food outlets within only 400m and seven within 1kmviii. Secondary schools are higher, with three fast-food outlets within only 400m and 13 fast-food outlets within 1km. Regarding school children, Perth research has found that almost 50 per cent of secondary school students' frequent fast-food outlets near their schools to purchase unhealthy food on a weekly basis, and it's more likely when the fast-food outlets are the most common chain outlets (i.e. McDonald's, KFC, Hungry Jacks, Subway). Fast-food outlets are the most common food outlet frequented by Australians for food prepared outside the home with over half (55 per cent) of WA adults consuming fast-food once a week or more. It is known that lower socio-economic households are more likely to frequently purchase fast-foods and consume takeaway more frequently, compared to their higher socio-economic counterparts. Moreover, the combination of low socio-economic status and high fast-food outlet exposure has been shown to increase the odds of developing obesity. Thus, the increased proliferation of fast-food outlets in areas of disadvantage could further aggravate health inequalities. Fast-food outlets sell oversized, overly processed food, packed full of cheap ingredients including salt, added sugar and saturated fat which can lead to a variety of health problems. They regularly advertise directly to children, such as cheap $1 slushies in lolly flavours on the sides of bus-stops and school buses and partnering with brands such as UNO® and Starburst. **The Application** The application for two drive-through fast-food outlets should not form part of the Golden Bay Neighbourhood Centre as it will be detrimental to community health and does not align with residents' expectations for a vibrant, sustainable neighbourhood with good amenity. Golden Bay residents do not want drive-through fast-food outlets in their neighbourhood. This application follows the development proposal which was open for public consultation in March 2023 for a Mixed Commercial Development (including two drive-through fast-food outlets) only a 100-metre distance from this site along Aurea Boulevard. This development application received substantial, strong community opposition with 71 out of 78 submissions objecting. Reasons for objection included health and wellbeing, traffic, amenity and proliferation of this type of land use.

Schedule of Submissions
Proposed Fast Food Outlets - Lot 8005 Adelong Avenue, Golden Bay - 20.2024.171.1

No.	Name	Address	Comment
42.	Cont…		Whilst this previous development application was initially not supported by the City of Rockingham and was refused by the first development assessment panel, it was ultimately approved at a follow- up development assessment panel. The proposed drive-through fast-food outlets are 500m from Golden Bay Primary School, 800m from Comet Bay College and there are two childcare facilities operating within the immediate vicinity. The inclusion of two drive-through fast-food outlets this close to children and family orientated land-uses significantly undermines potential benefits of a walkable neighbourhood centre, where a community can connect and go about their daily needs in a neighbourhood that enables the best possible health and quality of life. The site's proximity to schools and children's community infrastructure will increase availability of, and accessibility to, heavily advertised, unhealthy, highly processed food and drinks. This proposal will exacerbate the existing poor health outcomes experienced by people living in the City of Rockingham. A 2023 health and wellbeing profile of residents living in the City of Rockingham revealed that 33 per cent are eating fast-food weekly, and 82 per cent of residents are living with overweight or obesity. Additionally, the City of Rockingham has a SEIFA score of 962 which indicates residents are experiencing significant socio-economic disadvantage, increasing their risk of poor diets due to likelihood of higher exposure to fast-food outlets. The WA Food Atlas team led by Dr Gina Trapp from Edith Cowan University maps food retail and food service outlets in all Perth metropolitan local governments. In the City of Rockingham, 52 per cent of food retail outlets are fast-food outlets which is above the average for the rest of Perth. With two recently approved drive-through fast-food outlets along Aurea Boulevard, the approval of another two drive-through fast-food outlets will exacerbate this and lead to a food swamp whereby there is an overabundance of unhealthy food outlets and lack of healthier options. There is already a Dominos in the vicinity, along with Chicken Treat and McDonald's a 5-minute drive away. Cancer Council WA commends the City of Rockingham for their Strategic Community Plan 2022-2033 which identified one of the five aspirations for the community as: "a built environment carefully planned for today and tomorrow." We know that well-designed built environments can facilitate healthy, flourishing lifestyles through providing opportunities for physical activity and/or healthy eating. The high-quality shared paths around the site along Warnbro Sound Avenue and Adelong Avenue are great examples of built environments as it encourages physical activity through the incorporation of cycling. Fast-food outlets on the contrary are poor examples of built environments for neighbourhoods as they promote unhealthy diets and are found in abundance across suburbs. **Grounds to object** Cancer Council WA is aware of the inherent failure of Western Australia's planning laws to address community health concerns.

Schedule of Submissions
Proposed Fast Food Outlets - Lot 8005 Adelong Avenue, Golden Bay - 20.2024.171.1

No.	Name	Address	Comment
42.	Cont…		While there is no legal obligation to consider community health and local interests, Cancer Council WA is determined to ensure decision makers within the City of Rockingham adopt a holistic approach to the design of communities. The process of decision-making inherently involves balancing a combination of interests to arrive at a decision that gives appropriate weight to these interests. High density of fast-food outlets next to homes and schools goes against community expectations. Golden Bay is not alone in receiving strong objection from community in response to development applications for drive-through fast-food outlets. Community opposition to new drive-through fast-food outlets in Hammond Park, Serpentine Jarrahdale and Alkimos demonstrate that communities do not want new drive-through fast-food outlets and their interests are continuously ignored. Cancer Council WA has surveyed representative samples of the Western Australian population and almost 80 per cent are in favour of a policy requiring local governments to consider the health of their communities when deciding whether a new unhealthy food outlet should be approved, for example if the proposed outlet is close to a school. As such, the planning process should consider the aspirations of the community to promote spaces and environments that support healthy living. **Conclusion and recommendation** Cancer Council WA supports measures that promote vibrant, liveable neighbourhoods. The health and wellbeing of community must be supported by health promoting environments to prevent behaviours associated with chronic diseases including cancer. We commend the work Western Australian local governments are already doing to support the health of their residents. Cancer Council WA continues to work with local governments to achieve our vision of a cancer free future for our community. Our guide Local Governments, public health, and cancer prevention. Taking action to improve the health and wellbeing of our local communities provides an introduction to our capacity to work with WA local governments. Cancer Council WA urges the City of Rockingham to reconsider the land use for two drive-through fast- food outlets. This will support community's aspirations as residents in Golden Bay have demonstrated they are strongly opposed to fast-food outlets in their neighbourhoods. If you have any questions about this submission, we welcome further discussion on this issue.

Schedule of Submissions
Proposed Fast Food Outlets - Lot 8005 Adelong Avenue, Golden Bay - 20.2024.171.1

SERVICING AUTHORITY SCHEDULE OF SUBMISSIONS			
No.	**Name**	**Address**	**Comment**
1.	Didier Ah-Sue **Main Roads Western Australia**	PO Box 6202 EAST PERTH WA 6892	**Submission 1** In response to correspondence received on 24 June 2024 please be advised Main Roads has reviewed the information and is unable to provide a recommendation at this point in time, based on the information currently provided. Please provide the following items: **1. Transport Impact Assessment** • Electronic SIDRA Intersection files (.sip) in Version 9 relating to the Transport Impact Assessment prepared by Transcore, Revision 01b dated 20 May 2024. Justification for Request The information has not been provided and is required in order for Main Roads to undertake a comprehensive assessment of the application. Please provide the above information at your earliest convenience, noting that Main Roads will require 30 days to review this information once the additional information is received. As stated above, Main Roads is not in a position to provide a recommendation on the subject proposal until the above information has been received or reviewed. Should the City require further information please do not hesitate to contact Didier Ah-Sue on (08) 9323 4806. **Submission 2** In response to correspondence received on 5 July 2024 please be advised that the proposed development is located on the corner of Adelong Avenue and Warnbro Sound Avenue which is not part of the State Road network. Main Roads has no objections to the proposal and provides the following comments for the City's consideration. Traffic Impacts • Further consideration shall be given to the Mallina Crescent crossover and drive through location for the 'Fast Food Building 01'. The proximity of the crossover and the drive through may create stacking and prevent vehicle from entering the drive through lanes in a single movement. • Adequate approach and safe intersection sight distances shall be provided. The crossover on Mallina Crescent is located on the bend which is a potential safety issue and may lead to risk of a collision for access and egress movements. Should the City disagree with the above comments, please do not hesitate to contact Didier Ah-Sue. Please ensure a copy of the City's final determination is sent to planninginfo@mainroads.wa.gov.au.
2.	Mr Adrian Jose **Department of Planning, Lands and Heritage**		**Land Requirements** The site abuts Warnbro Sound Avenue which is reserved as an Other Regional Road (ORR) in the Metropolitan Region Scheme (MRS) and Category 1 per WAPC Plan No. 694/6. The site is not affected by the ORR reservation.

Schedule of Submissions
Proposed Fast Food Outlets - Lot 8005 Adelong Avenue, Golden Bay - 20.2024.171.1

No.	Name	Address	Comment
2.	Cont…		**Access** Two vehicular access points are proposed which include a northern full-movement driveway connecting to Mallina Crescent, and a southern left-in / left-out driveway connecting to Adelong Avenue. 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 crossovers onto regional roads. **Transport Impact Assessment (TIA)** The supporting TIA by Transcore (May 2024) has estimated a traffic generation of 125/124 trips in/out trips and 92/93 in/out trips in the AM peak hour and PM peak hour respectively. A passing trade factor of 50% has been included in this estimate. A SIDRA intersection analysis has been undertaken, depicting a Level of Service (LOS) A for the proposed crossover from Adelong Avenue, and a LOS C for existing and 2034 scenarios on the Warnbro Sound Avenue/Adelong Avenue intersection. Existing traffic levels have been obtained utilising Main Roads WA Trafficmap SCATS data for the Warnbro Sound Avenue/Adelong Avenue intersection. **Recommendation** The Department of Planning, Lands and Heritage has no objection to the proposal in principle, and provides the following comments: • The AM and PM peak hours have not been specified. It is recommended that these be outlined. • Peak weekend traffic analysis should be undertaken, utilising weekend traffic generation rates as per *ITE 11th Edition Trip Generation Manual.* • 'Peak Hour of Generator' rates should be utilised for drive-through queuing analysis rather than 'Peak Hour of Adjacent Street Traffic' rates. • The passing trade discount factor should not be incorporated when assessing driveway operational efficiency for the proposed development crossovers. • There are some instances where the 300mm/500mm vehicle swept path buffer encroaches into proposed kerbing. It is desirable that the buffer does not encroach into surrounding road infrastructure as per *Austroads Design Vehicles and Turning Path Templates Guide.* It is recommended that the above elements be further investigated prior to development approval.

Department of **Planning, Lands and Heritage**

GOVERNMENT OF WESTERN AUSTRALIA

City of Rockingham
PO Box 2142
Rockingham DC WA 6967

Your ref: 20.2024.171.1
Our ref: 808/02/28/0002P
Enquiries: Adrian Jose (Ph: 6552 4709)

9 July 2024

Attention: Dave Waller

Dear Dave,

Re: Lot 8005 (1) Adelong Avenue, Golden Bay

I refer to your correspondence dated 24 June 2024. In accordance with the Western Australian Planning Commission's (WAPC) Instrument of Delegation DEL 2017/02 dated 18 January 2022, the following comments are provided. This proposal seeks comments for the proposed establishment of two fast food outlets with drive-through facilities.

Land Requirements

The site abuts Warnbro Sound Avenue which is reserved as an Other Regional Road (ORR) in the Metropolitan Region Scheme (MRS) and Category 1 per WAPC Plan No. 694/6. The site is not affected by the ORR reservation.

Access

Two vehicular access points are proposed which include a northern full-movement driveway connecting to Mallina Crescent, and a southern left-in / left-out driveway connecting to Adelong Avenue. 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 crossovers onto regional roads.

Transport Impact Assessment (TIA)

The supporting TIA by Transcore (May 2024) has estimated a traffic generation of 125/124 trips in/out trips and 92/93 in/out trips in the AM peak hour and PM peak hour respectively. A passing trade factor of 50% has been included in this estimate.

A SIDRA intersection analysis has been undertaken, depicting a Level of Service (LOS) A for the proposed crossover from Adelong Avenue, and a LOS C for existing and 2034 scenarios on the Warnbro Sound Avenue / Adelong Avenue intersection. Existing traffic levels have been obtained utilising Main Roads WA Trafficmap SCATS data for the Warnbro Sound Avenue / Adelong Avenue intersection.

Recommendation

The Department of Planning, Lands and Heritage has no objection to the proposal in principle, and provides the following comments:

- The AM and PM peak hours have not been specified. It is recommended that these be outlined.
- Peak weekend traffic analysis should be undertaken, utilising weekend traffic generation rates as per *ITE 11th Edition Trip Generation Manual*.

- ‘Peak Hour of Generator’ rates should be utilised for drive-through queuing analysis rather than ‘Peak Hour of Adjacent Street Traffic’ rates.
- The passing trade discount factor should not be incorporated when assessing driveway operational efficiency for the proposed development crossovers.
- There are some instances where the 300 mm / 500 mm vehicle swept path buffer encroaches into proposed kerbing. It is desirable that the buffer does not encroach into surrounding road infrastructure as per *Austroads Design Vehicles and Turning Path Templates Guide*.

It is recommended that the above elements be further investigated prior to development approval.

Thank you for your correspondence. Should you have any queries regarding this matter, please contact me on 6552 4709 or via email at Adrian.Jose@dplh.wa.gov.au.

Regards,

Adrian Jose
Senior Planning and Engineering Officer
Strategy and Engagement

Simon Luscombe
Principal Planning Officer
Strategy and Engagement



MRS map

Enquiries: Didier Ah-Sue on (08) 9323 4806
Our Ref: 24/5383 (D24#971581)
Your Ref: 20.2024.171.1
DAP Ref: DAP/24/02722

31 July 2024

Chief Executive Officer
City of Rockingham
PO Box 2142
ROCKINGHAM DC WA 6967

Email: customer@rockingham.wa.gov.au (via email)

Dear Sir/Madam,

PROPOSED COMMERCIAL (FAST FOOD OUTLET X 2) - LOT 8005 (1) ADELONG AVENUE GOLDEN BAY – REF 20.2024.171.1 – DAP/24/02722

In response to correspondence received on 5 July 2024 please be advised that the proposed development is located on the corner of Adelong Avenue and Warnbro Sound Avenue which is not part of the State Road network. Main Roads has no objections to the proposal and provides the following comments for the City's consideration.

Traffic Impacts

- Further consideration shall be given to the Mallina Crescent crossover and drive through location for the 'Fast Food Building 01'. The proximity of the crossover and the drive through may create stacking and prevent vehicle from entering the drive through lanes in a single movement.
- Adequate approach and safe intersection sight distances shall be provided. The crossover on Mallina Crescent is located on the bend which is a potential safety issue and may lead to risk of a collision for access and egress movements.

Should the City disagree with the above comments, please do not hesitate to contact Didier Ah-Sue on (08) 9323 4806.

Please ensure a copy of the City's final determination is sent to planninginfo@mainroads.wa.gov.au.

Yours sincerely

Didier Ah-Sue
Planning Assessment Officer

Lloyd George Acoustics
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T: 9401 7770
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Environmental Noise Assessment - Fast Food Development

Lot 8005 (1) Adelong Avenue, Golden Bay

Reference: 23128613-01

Prepared for:
Ladybug Twenty One Pty Ltd

Reference: 23128613-01

Lloyd George Acoustics Pty Ltd
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This report has been prepared in accordance with the scope of services described in the contract or agreement between Lloyd George Acoustics Pty Ltd and the Client. The report relies upon data, surveys, measurements and results taken at or under the particular times and conditions specified herein. Any findings, conclusions or recommendations only apply to the aforementioned circumstances and no greater reliance should be assumed or drawn by the Client. Furthermore, the report has been prepared solely for use by the Client, and Lloyd George Acoustics Pty Ltd accepts no responsibility for its use by other parties.

Date	Rev	Description	Author	Verified
6-May-24	0	Issued to Client	Matt Moyle	Terry George
15-May-24	-	Finalised for Council Submission	Matt Moyle	Terry George

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EXECUTIVE SUMMARY

Lloyd George Acoustics was engaged by Ladybug Twenty One Pty Ltd to undertake a noise assessment for a proposed commercial (two fast food outlets with drive-throughs) development to be located at Lot 8005 (1) Adelong Avenue, Golden Bay. This report considered noise emissions from the proposed development to surrounding properties by way of noise modelling.. Noise impacts considered include those of mechanical plant, vehicle noise, drive-through noise and store deliveries.

Noise emissions are predicted by way of computer noise modelling and assessed against assigned levels in accordance with the *Environmental Protection (Noise) Regulations 1997*.

The predicted noise levels are demonstrated to be compliant.

1. INTRODUCTION

Lloyd George Acoustics was engaged by Ladybug Twenty One Pty Ltd to undertake an environmental noise assessment of a proposed commercial development to be located at Lot 8005 (1) Adelong Avenue, Golden Bay (refer *Figure 1-1*) with the site plan shown in *Figure 1-2* and full Development Application (DA) plans provided in *Appendix A*. The development will comprise of the following elements:

- 1x fast food restaurant on southern part of the site, operating within the hours of 10am and 10pm, with drive-through lanes;
- 1x fast food restaurant on the northern part of the site, operating 24/7, with drive through lanes.

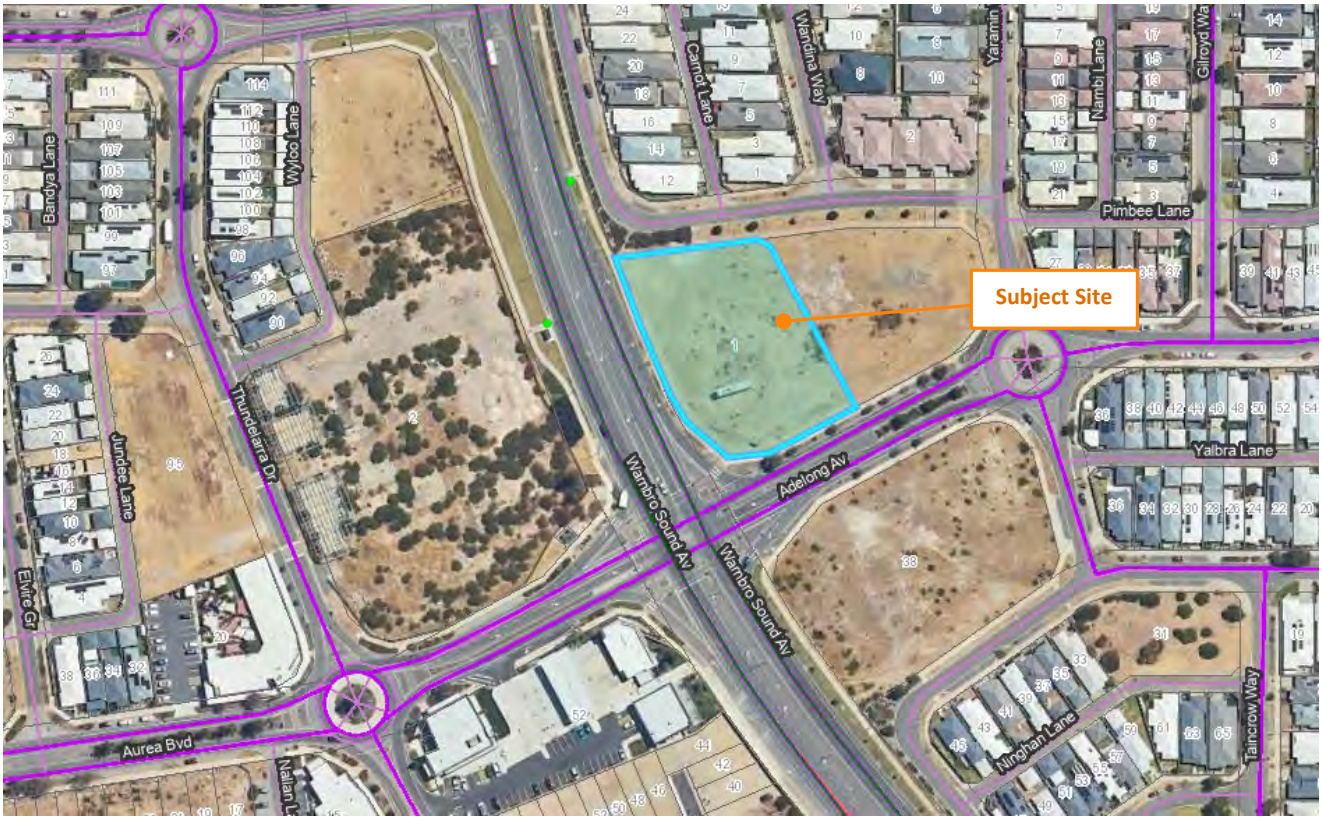


Figure 1-1: Subject Site Location (Source: DPLH PlanWA)

Both fast food tenancies are noted to operate within the day and evening time periods, with one operating during the night-time period. With regard to noise emissions, consideration is given to noise at neighbouring properties from mechanical plant, drive through speakers, deliveries, and vehicles, against the prescribed standards of the *Environmental Protection (Noise) Regulations 1997*.

Note that the adjacent Lot 9039 to the east is not yet developed but has the potential for noise sensitive uses, and may be multiple storeys. This has been conservatively considered in the assessment.

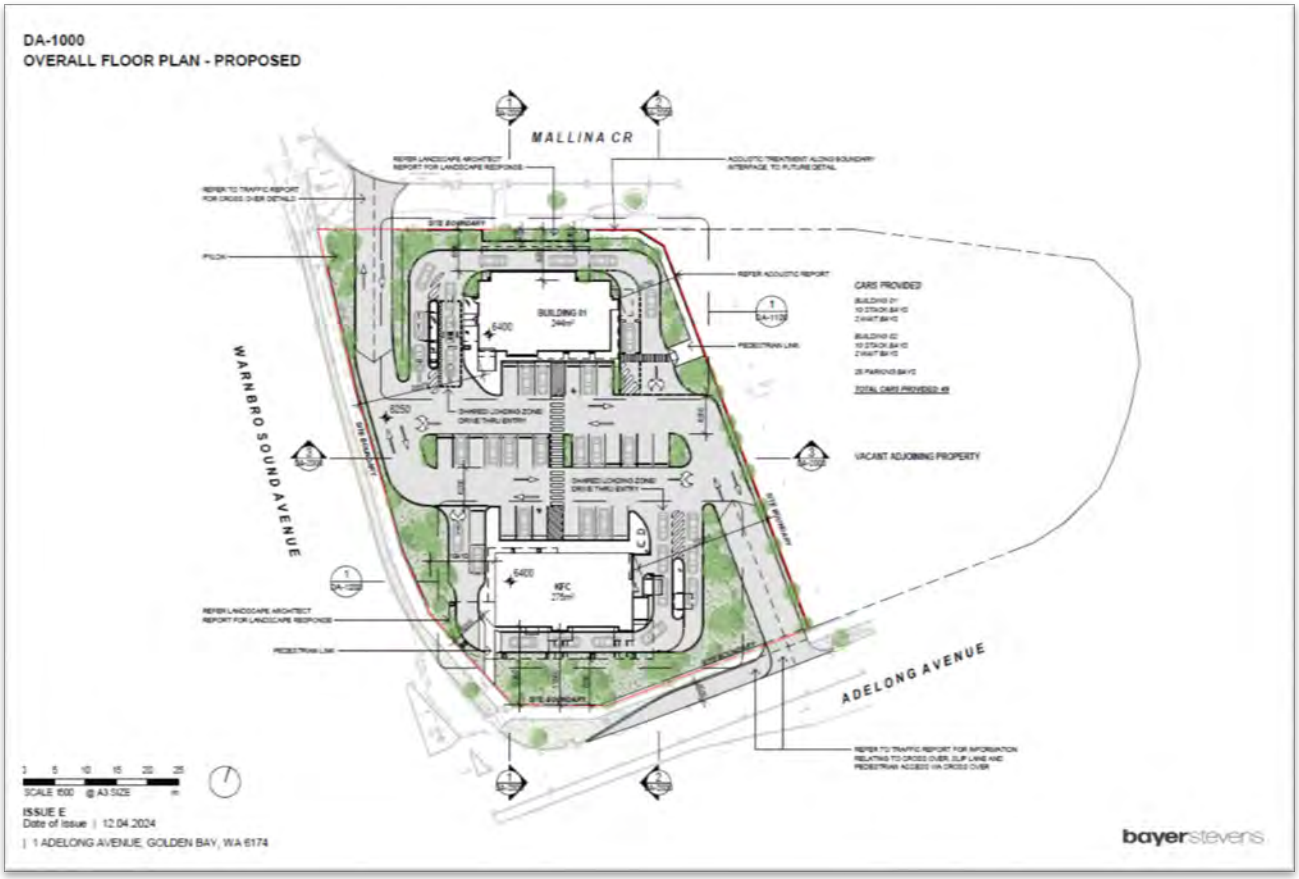


Figure 1-2: Proposed Site Plan

Appendix C contains a description of some of the terminology used throughout this report

2. CRITERIA

Environmental noise in Western Australia is governed by the *Environmental Protection Act 1986*, through the *Environmental Protection (Noise) Regulations 1997* (the Regulations).

2.1. Regulations 7, 8 & 9

This group of regulations provide the prescribed standard for noise as follows:

"7. Prescribed standard for noise emissions

(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; and

(ii) impulsiveness; and

(iii) modulation,

when assessed under regulation 9.

(2) For the purposes of subregulation (1)(a), 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 at the point of reception."

Tonality, impulsiveness and modulation are defined in regulation 9 (refer *Appendix C*). Under regulation 9(3), *"Noise is taken to be free of the characteristics of tonality, impulsiveness and modulation 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 prescribed under regulation 7(1)(a) after the adjustments in the table [Table 2-1] … are made to the noise emission as measured at the point of reception."

Table 2-1 Adjustments Where Characteristics Cannot Be Removed

Where Noise Emission is Not Music*			Where Noise Emission is Music	
Tonality	Modulation	Impulsiveness	No Impulsiveness	Impulsiveness
+ 5 dB	+ 5 dB	+ 10 dB	+ 10 dB	+ 15 dB

* These adjustments are cumulative to a maximum of 15 dB.

The assigned levels (prescribed standards) for all premises are specified in regulation 8(3) and are shown in *Table 2-2*. The L_{A10} assigned level is applicable to noises present for more than 10% of a representative assessment period, generally applicable to "steady-state" noise sources. The L_{A1} is for short-term noise sources present for less than 10% and more than 1% of the time. The L_{Amax} assigned level is applicable for incidental noise sources, present for less than 1% of the time.

Table 2-2 Baseline Assigned Levels

Premises Receiving Noise	Time Of Day	Assigned Level (dB)		
		L_{A10}	L_{A1}	L_{Amax}
Noise sensitive premises: highly sensitive area[1]	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
Noise sensitive premises: any area other than highly sensitive area	All hours	60	75	80
Commercial Premises	All hours	60	75	80
Industrial and Utility Premises	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 influencing factor (IF), in relation to noise received at noise sensitive premises, has been calculated as 5 dB, as determined in *Appendix B*. *Table 2-3* shows the assigned noise levels including the influencing factor and transport factor at the receiving premises groups shown in *Figure 2-1*. Note that the adjacent Lot 9039 immediately east, is not yet developed but has the potential for noise sensitive uses, and at multiple levels. This has been conservatively considered in the assessment.



Figure 2-1: Subject Site and Modelled Elements (Source: DPLH PlanWA)

Table 2-3 Assigned Levels

Premises Receiving Noise	Time Of Day	Assigned Level (dB)		
		L_{A10}	L_{A1}	L_{Amax}
+5 dB IF Noise sensitive premises: highly sensitive area[1]	0700 to 1900 hours Monday to Saturday (Day)	50	60	70
	0900 to 1900 hours Sunday and public holidays (Sunday)	45	55	70
	1900 to 2200 hours all days (Evening)	45	55	60
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays (Night)	40	50	60
Commercial Premises	All hours	60	75	80

It must be noted the assigned levels above apply outside the receiving premises and at a point at least 3 metres away from any substantial reflecting surfaces.

The assigned 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*, *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 Water Environmental 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-hour RAP, which is assumed to be appropriate given the nature of the operations, this is to be used for guidance only.

2.2. Regulation 3

"3. Regulations do not apply to certain noise emissions

(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 restaurant car parks are considered a road and therefore vehicle noise (propulsion and braking) is not assessed. Noise from vehicle car doors and refrigeration units on trucks however are assessed, since these are not part of the propulsion or braking system. Vehicle propulsion noise in the drive-through areas has been considered assessable in this report due to the nature of the lanes being solely for food ordering purposes and not road access.

2.3. Regulation 14A

"14A. Waste Collection and Other Works

(2) Regulation 7 does not apply to noise emitted in the course of carrying out class 1 works if –

(a) The works are carried out in the quietest reasonable and practicable manner; and

(b) The equipment used to carry out the works is the quietest reasonably available;

class 1 works means specified works carried out between -

(a) 0700 hours and 1900 hours on any day that is not a Sunday or a public holiday; or

(b) 0900 hours and 1900 hours on a Sunday or public holiday.

specified works means -

(a) The collection of waste; or

(b) The cleaning of a road or the drains for a road; or

(c) The cleaning of public places, including footpaths, cycle paths, car parks and beaches;"

In the case where specified works are to be carried out outside of class 1, a noise management plan is to be prepared and approved by the CEO.

3. METHODOLOGY

Computer modelling has been used to predict the noise emissions from the development. The software used was *SoundPLAN 9.0* with the ISO 9613 algorithms (ISO 17534-3 improved method) selected, as they include the influence of wind and are considered appropriate given the relatively short source to receiver distances. Input data required in the model are listed below and discussed in *Section 3.1* to *Section 3.4*:

- Meteorological Information;
- Topographical data;
- Ground Absorption; and
- Source sound power levels.

3.1. Meteorological Conditions

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	Night (7.00pm to 7.00am)
Temperature (°C)	15
Humidity (%)	50
Wind Speed (m/s)	Up to 5
Wind Direction*	All

* The modelling package allows for all wind directions to be modelled simultaneously.

Alternatives to the above default conditions can be used where one year of weather data is available and the analysis considers the worst 2% of the day and night for the month of the year in which the worst-case weather conditions prevail (source: *Draft Guideline on Environmental Noise for Prescribed Premises*, May 2016). In most cases, the default conditions occur for more than 2% of the time and therefore must be satisfied.

3.2. Topographical Data

Topographical data was adapted from publicly available information (e.g. *Google*) in the form of spot heights and combined with the site plan, including a 1.2-metre high parapet around all new buildings.

Surrounding existing buildings were also incorporated in the noise model, as these can provide noise shielding as well as reflection paths. Single storey buildings are modelled with a height of 3.5 metres with receivers 1.4 metres above ground. It is noted that many houses close to the development have laneway type garage access and these are not considered sensitive facades, so predictions are made to the nearest habitable facades. The adjacent Lot 9039 is assumed to have noise sensitive receptors at the first floor level, being 4.2m above ground level.

Figure 3-1 shows a 2D overview of the noise model with the location of all relevant receivers and noise sources identified. The east boundary fence is assumed to be 1.8m high and of colorbond or similar construction system.

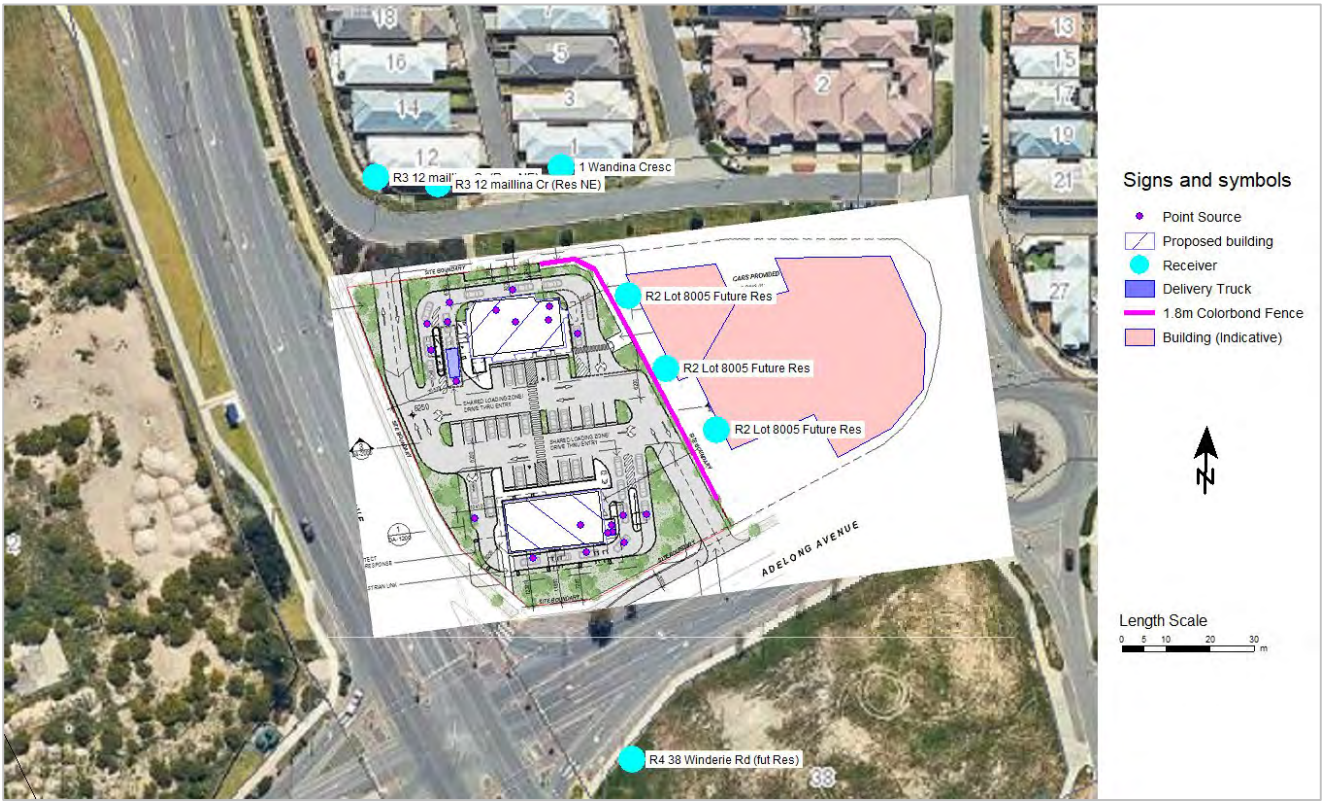


Figure 3-1: Overview of Noise Model

3.3. Ground Absorption

The ground absorption has been assumed to be 0.0 (0%) for the roads, including the car park area of the site itself and 0.5 (50%) elsewhere, noting that 0.0 represents hard reflective surfaces such as water and 1.0 represents absorptive surfaces such as grass.

3.4. Source Sound Levels

The source sound levels used in the modelling are provided in *Table 3-2*.

Table 3-2: Source Sound Levels, dB

Description	Octave Band Centre Frequency (Hz)								Overall dB(A)
	63	125	250	500	1k	2k	4k	8k	
Typical Refrigeration Condenser– L_{A10}	88	87	85	81	76	70	64	59	**82**
General Exhaust Fan – L_{10}	72	70	64	61	53	53	51	45	**63**
Toilet Exhaust Fan – L_{10}	-	61	67	61	64	60	52	46	**67**
Typical AC Condensers – L_{10}	-	77	75	72	70	67	62	56	**75**
Car Door Closings – L_{max}	71	74	77	81	80	78	72	61	**84**
Refrigerated Truck Condenser – L_1	84	75	88	86	88	88	81	72	**94**
Drive-Through Speaker – L_{A1}	62	64	66	77	80	73	57	42	**82**
Drive-Through Car Idling – L_{A10}	81	78	74	72	74	74	67	64	**79**

The following is noted in relation to *Table 3-2*:

- Mechanical plant sound levels are estimated from previous projects;
- Exhaust fans are located 0.5m above roof;
- A/C and refrigeration external plant for the north restaurant are located on the rooftop (1.0m above roof level) and screened with parapets;
- A/C and refrigeration external plant for the south restaurant are located in the designated service yard (1.0m above ground level) and assumed screened with acoustically permeable fencing;
- Refrigerated truck condenser is modelled at 2.3m above ground in the designated delivery bays;
- Car door and all engine sources are modelled at 0.5m above ground;
- For each of the drive through tenancies, 6 to 12 vehicles are modelled idling in the Drive-Through queuing, ordering and waiting areas, depending on the calculation scenario (see following page).

4. RESULTS AND ASSESSMENT

Due to the different operating hours of the two restaurants, various noise modelling scenarios were considered to assess worst case noise levels, as follows:

1. Evening (L_{A10}) – Both restaurants are operating. Includes all L_{A10} noise sources of *Table 3-2,* with a total of 12 idling cars in drive through lanes (6 per tenancy);
2. Night (L_{A10}) – Only the north restaurant operating, including mechanical plant and with a total of 6 idling cars in its drive through lane;
3. Night-time (L_{A1}) – Only the north restaurant is operating. Includes a refrigerated delivery truck in north restaurant loading area (cold deliveries) and 12 cars in the drive though lanes and the drive through speakers;
4. Night-time (L_{Amax}) – Considers car door closings in all parking locations.

4.1. Scenario 1 – Evening All Restaurants Plant and Drive Thru L_{A10}

The results for evening operations are provided in *Table 4-1*. A noise contour plot is also provided in *Figure 4-1* showing noise levels at ground floor. It should be noted that the assessment has assumed all plant will be operating simultaneously, which is conservative as they will generally cycle intermittently.

Table 4-1: Scenario 1 Predicted Levels and Assessment, dB L_{A10}

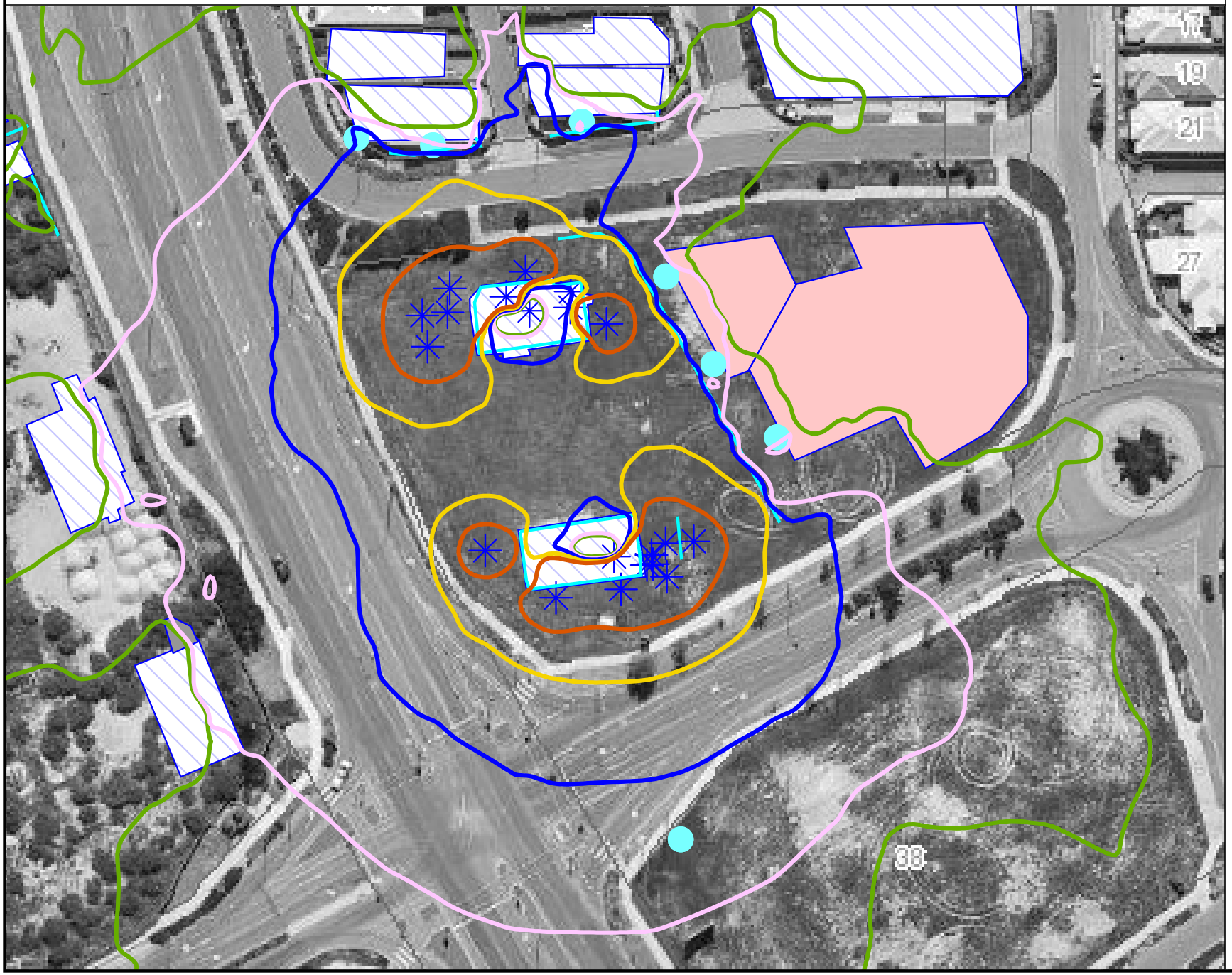
Receiver*	12 Drive Through Vehicles	All Mech Plant	Total	Evening Assigned Level	Assessment
1 Wandina Crescent	36	25	**36**	**45**	*Complies*
Lot 9039 Future Res (Ground Floor)	39	30	**39**	**45**	*Complies*
Lot 9039 Future Res (Upper Floor)	47	32	**47**	**45**	*+2*
12 Mallina Crescent	45	24	**45**	**45**	*Complies*
38 Winderie Road Future Res	42	29	**43**	**45**	*Complies*

*Where a premises has multiple receivers, only the worst case levels are reported.

The vehicles in drive through lanes are the dominant sources and given the number and range of sources operating simultaneously in this scenario, tonality is not considered detectable. Therefore, the predicted level is compliant at all the existing worst-case locations. In future, depending on the nature of development on Lot 9039, the upper floor receivers (if any result) facing the drive through lanes could result in marginal exceedences of 2 dB during the evening. This exceedance is caused by a vehicle idling in the waiting bay of the northern fast food outlet, while vehicles moving in drive through lanes are compliant. Where complaints arise in the future and depending on future development, this could be managed by providing an alternate waiting bay after 7pm.

As the analysis is based on file data, it is recommended that a follow up verification of mechanical plant selections be carried out at detailed design by a suitably qualified acoustical consultant.

Figure 4-1 Scenario 1 Evening Noise Ground Floor, dB L_{A10}



Predicted Noise level

= 35
= 40
= 45
= 50
= 55

Legend

Receiver
Car/Mech Source
Indicative Building

N

Scale 1:1000

0 5 10 20 30 m

Project No: 23128613
Consultant: MM
Date: 3/05/2024
Algorithm: ISO 9613
SoundPLAN Version: 9.0

Lloyd George Acoustics
PO Box 717
HILLARYS WA 6923
(08) 9401 7770

4.2. Scenario 2 – North Restaurant Only, Plant and Drive Thru L_{A10}

The predicted noise levels from mechanical plant and drive through lanes for the north restaurant at night, are provided in *Table 4-2*. A noise contour plot is also provided in *Figure 4-2* showing noise levels at ground floor. The vehicles in drive through lanes are the dominant sources and given the number and range of sources operating simultaneously in this scenario, tonality is not considered detectable.

Table 4-2: Scenario 2 Predicted Levels and Assessment, dB L_{A10}

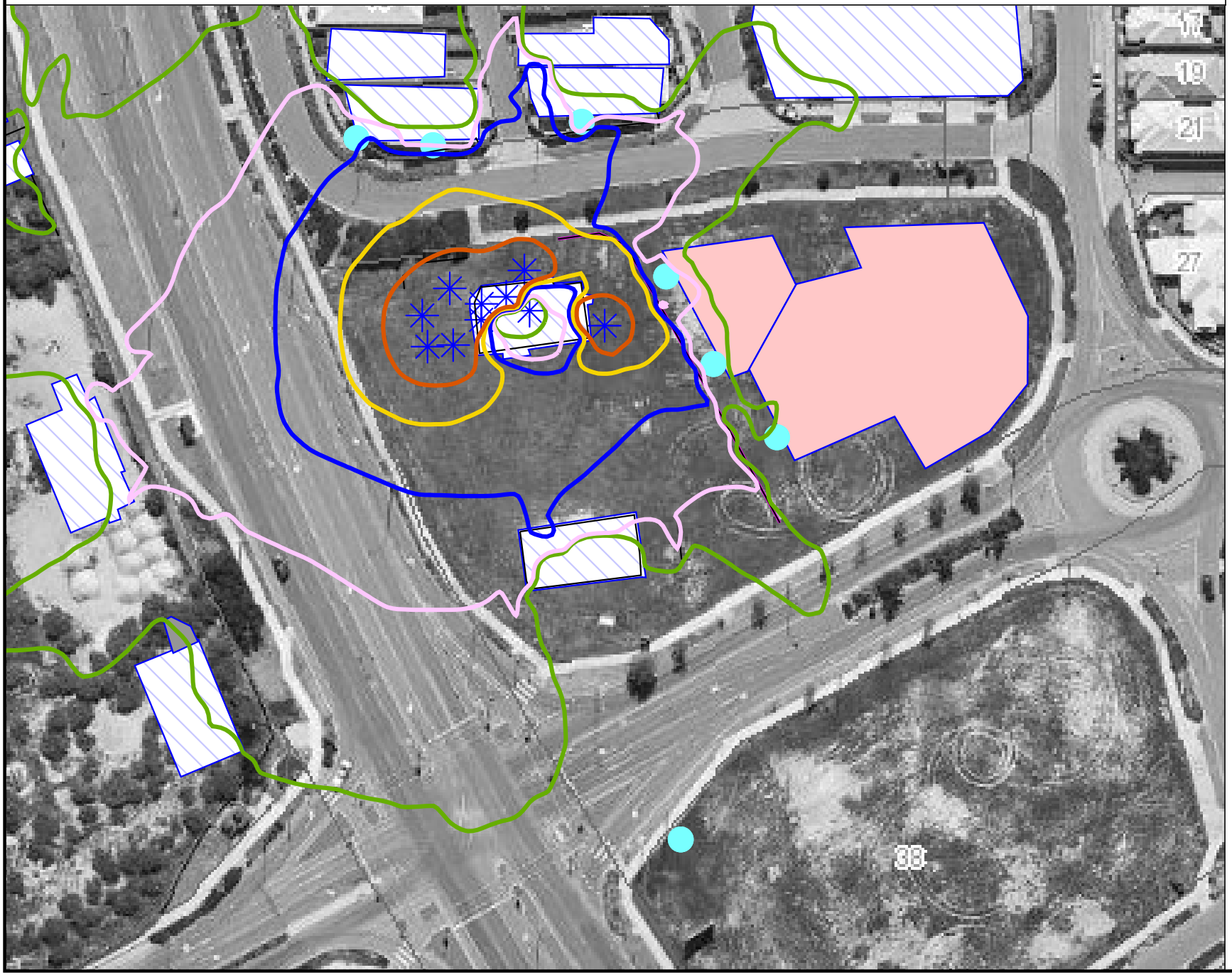
Receiver	Mech Plant	6 Drive Through Vehicles	Total	Night-time Assigned Level	Assessment
1 Wandina Crescent	23	35	35	**40**	*Complies*
Lot 9039 Future Res (Ground Floor)	26	37	37	**40**	*Complies*
Lot 9039 Future Res (Upper Floor)	28	46	46	**40**	*+6*
12 Mallina Crescent	24	44	44	**40**	*+4*
38 Winderie Road Future Res	16	28	28	**40**	*Complies*

*Includes all Mech Plant Sources from Scenario 1

At existing residences, an exceedance during the night is predicted at 12 Mallina Crescent to the north, with noise from drive through cars exceeding by 4 dB. To address this noise, a low barrier of 1.2m height could be installed along the north adjacent the drive through lanes – refer to *Section 5* for further details. It is understood that the latest designs of the site (*Appendix A*) incorporate this change.

At possible future sensitive premises on the upper floors of Lot 9039, a 6 dB exceedence is predicted. Management measures, if necessary in future, would be dependent on the design of Lot 9039 development, and may include directing patrons to use one of the parking bays in front of the building after 10pm instead of the dedicated waiting bay.

Figure 4-2 Scenario 2 Night Noise Ground Floor, dB L_{A10}



Predicted Noise level

= 35
= 40
= 45
= 50
= 55

Legend

Receiver
Car/Mech Source
Indicative Building

N

Scale 1:1000

0 5 10 20 30 m

Project No: 23128613
Consultant: MM
Date: 3/05/2024
Algorithm: ISO 9613
SoundPLAN Version: 9.0

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4.3. Scenario 3 – Night Refrigerated Trucks and Full Drive-Through Lanes L_{A1}

The predicted noise levels from a refrigerated delivery truck and the fully loaded drive through lanes for the north restaurant at night, are provided in *Table 4-3*. A noise contour plot is also provided in *Figure 4-2* showing noise levels at ground floor. This assumes deliveries will take less than 24 minutes in a 4-hour period, which is considered sufficient time for scale restaurants.

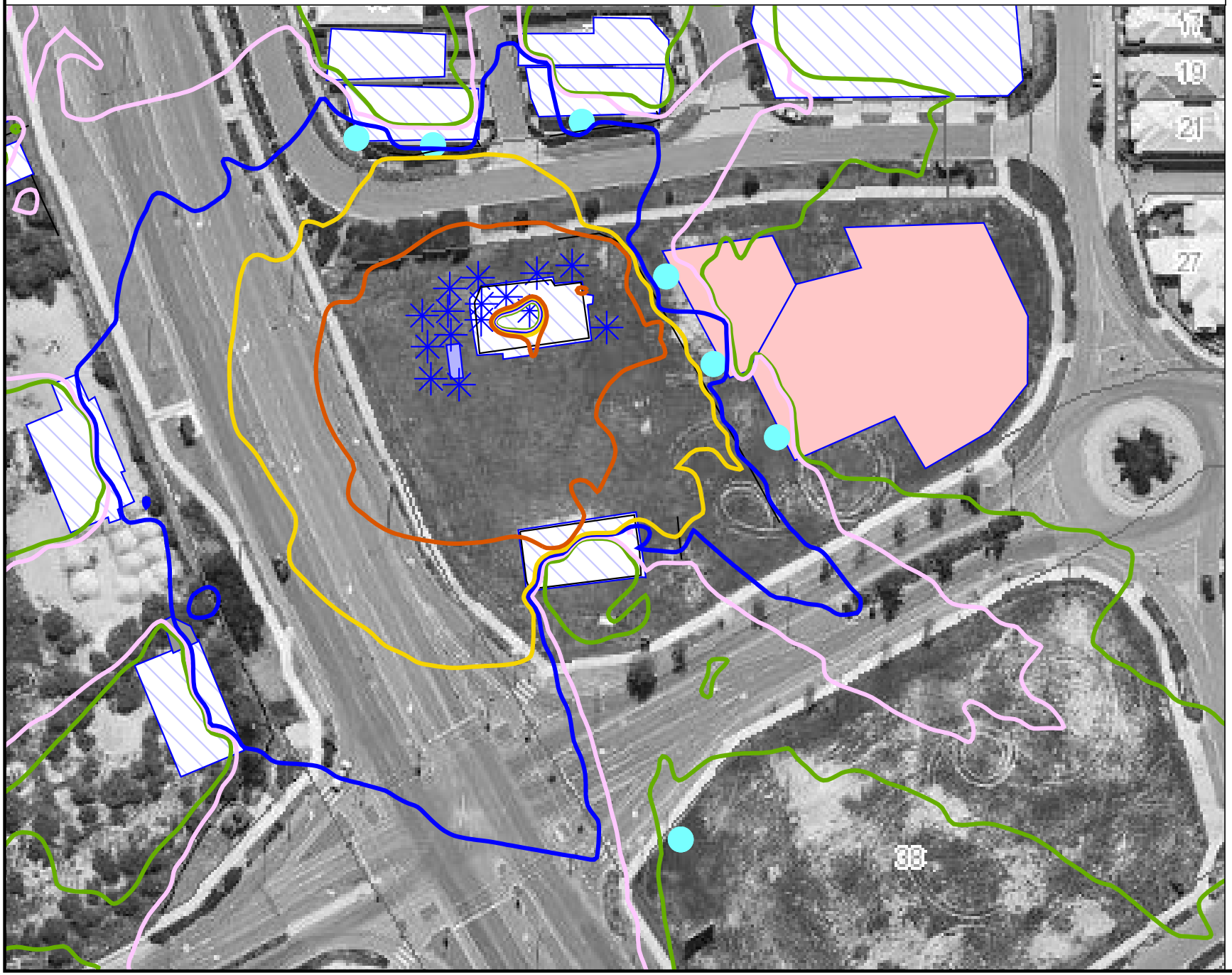
Table 4-3: Scenario 3 Predicted Levels and Assessment, dB L_{A1}

Receiver	Delivery Truck	12 Drive Through Vehicles	Total*	Night-time Assigned Level	Assessment
1 Wandina Crescent	28	37	38	**50**	*Complies*
Lot 9039 Future Res (Ground Floor)	43	38	45	**50**	*Complies*
Lot 9039 Future Res (Upper Floor)	49	45	51	**50**	*+1*
12 Mallina Crescent	38	47	47	**50**	*Complies*
38 Winderie Road Future Res	33	30	34	**50**	*Complies*

*Includes all Mech Plant Sources from Scenario 2

Compliance at all existing residences is predicted at night. At the possible upper floor of Lot 9039, there is a minor 1 dB exceedance. Management measures should be anticipated, and if necessary in future, might include an alternate delivery location or schedule for refrigerated trucks (no night-time).

Figure 4-3 Scenario 3 Night Noise Ground Floor, dB L_{A1}



Predicted Noise level

- = 35
- = 40
- = 45
- = 50
- = 55

Legend

- Receiver
- Car/Mech Source
- Indicative Building
- Delivery Truck

N

Scale 1:1000

0 5 10 20 30 m

Project No: 23128613
Consultant: MM
Date: 3/05/2024
Algorithm: ISO 9613
SoundPLAN Version: 9.0

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4.4. Scenario 4 – Night L_{Amax}

The results for night-time L_{Amax} scenario (car doors) are provided in *Table 4-4*. A noise contour plot (non-cumulative) is also provided in *Figure 4-4* showing noise levels at ground floor. For conservative purposes, cars have been assumed to park in any bay, including the south restaurant which is closed at Night. Car door closing noise levels are adjusted by + 10 dB for impulsiveness and assessed against the night-time L_{Amax} assigned level.

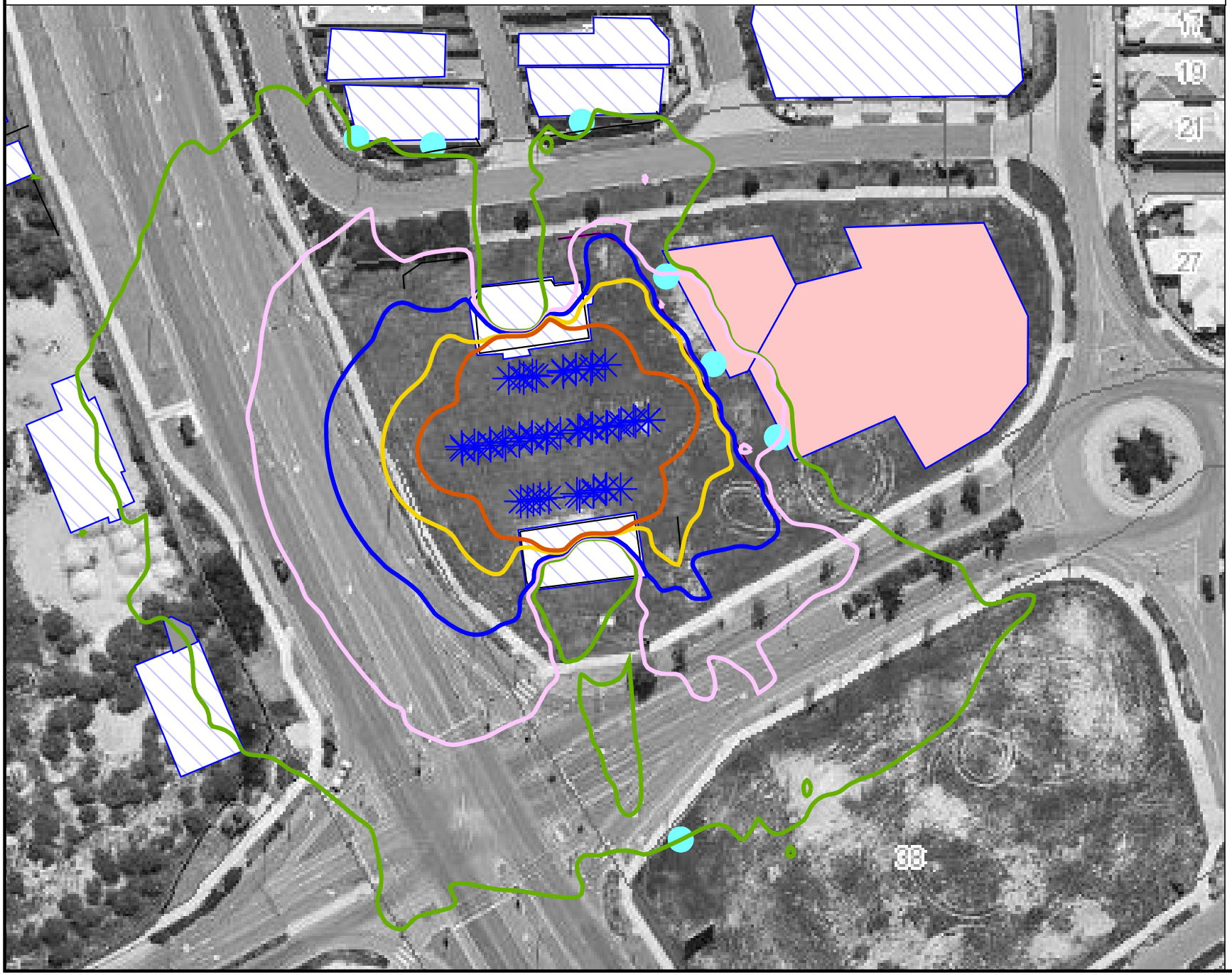
Table 4-4: Scenario 4 Predicted Levels and Assessment, dB L_{Amax}

Receiver	Car Door Closing#	Assigned Noise Level	Assessment
1 Wandina Crescent	**37**	**60**	*Complies*
Lot 9039 Future Res (Ground Floor)	**49**	**60**	*Complies*
Lot 9039 Future Res (Upper Floor)	**56**	**60**	*Complies*
12 Mallina Crescent	**43**	**60**	*Complies*
38 Winderie Road Future Res	**42**	**60**	*Complies*

Adjusted by + 10 dB for impulsiveness

Noise levels are predicted to comply at all receivers, inclusive of the impulsiveness adjustment.

Figure 4-4 Scenario 4 Night Noise Ground Floor, dB L_{Amax}



Predicted Noise level

	= 35
	= 40
	= 45
	= 50
	= 55

Legend

- Receiver
- Car Door Source
- Indicative Building

N

Scale 1:1000

0 5 10 20 30 m

Project No: 23128613
Consultant: MM
Date: 3/05/2024
Algorithm: ISO 9613
SoundPLAN Version: 9.0

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5. RECOMMENDATIONS

The assessment has demonstrated that noise from the commercial development can comply with the assigned levels determined in accordance with the *Environmental Protection (Noise) Regulations 1997* provided minor mitigation measures are applied to the site and operations.

To ensure compliance, fencing is to be provided as shown in *Figure 5-1.* The fencing must be of solid construction (no gaps) and of a material with minimum surface mass 4 kg/m^2. These updates are referenced in the latest architectural plans in *Appendix A.*

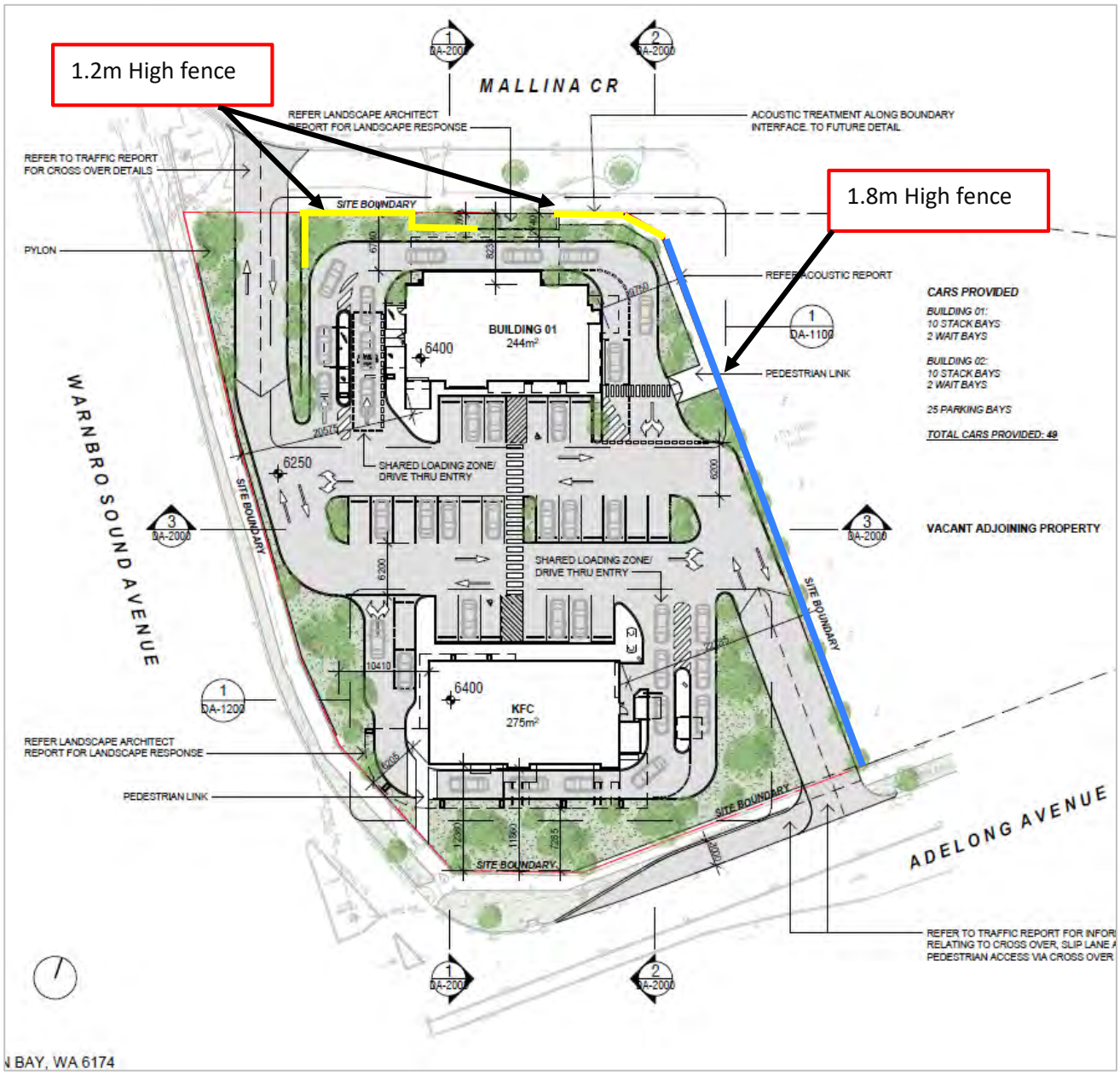


Figure 5-1: Acoustic Fencing Requirements

To ensure compliance with the Noise Regulations, delivery vehicles are to have broadband type reversing alarms fitted rather than standard tonal alarms. This is also inline with the guidance provided by DWER and considered less likely to elicit complaints from the community.

Where future development to the east occurs on Lot 9039, management of the northern restaurant may need to adjust delivery schedules and practices around the waiting bay during the evening. Subject to review in the future as development progresses or at direction from the local government authority.

While not required for compliance, noting that the development is at DA stage only, some best practice recommendations have been included below – to be implemented in the design and operation where practicable:

- Drive-thru ordering speakers shall be low level and inaudible at residences;
- Bin servicing shall occur between 7.00am and 7.00pm 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.
- Access grates or similar to be plastic or metal with rubber gasket and secured to avoid excess banging.
- Mechanical plant:
  - Once the mechanical plant has been designed and selected, the noise levels shall be reviewed prior to Building Permit;
  - All exhaust fans shall be located inside the ceiling void and shall be axial fan type, allowing the incorporation of an attenuator if required;
  - All fans shall be variable speed drive so that maximum speed is only occurring when necessary with demand;
  - Air-conditioning shall have a 'night' / 'quiet' mode option, in case required for prior to 7.00am operation, subject to final detailed analysis;
  - All plant shall be selected for quiet operation;
  - All plant is to be appropriately vibration isolated to 95% isolation efficiency.

Appendix A – Development Plans

DA-0000
TITLE SHEET

DEVELOPMENT APPLICATION DRAWING LIST			
SHEET NUMBER	SHEET NAME	REVISION	REVISION DATE
DA-1000	OVERALL FLOOR PLAN - PROPOSED	I	08.05.2024
DA-1100	FAST FOOD BUILDING 01 - FLOOR PLAN	E	07.05.2024
DA-1200	FAST FOOD BUILDING 02 - FLOOR PLAN	E	07.05.2024
DA-2000	SECTIONS	E	07.05.2024
DA-3000	FAST FOOD BUILDING 01 - ELEVATIONS	E	07.05.2024
DA-3001	FAST FOOD BUILDING 02 - ELEVATIONS	E	07.05.2024
DA-3002	BOUNDARY FENCE ELEVATIONS	A	07.05.2024

NOTE:

1. LANDSCAPING SHOWN INDICATIVELY ONLY. REFER RELEVANT CONSULTANT REPORTS
2. ALL REFERENCES TO SIGNAGE ARE SUBJECT TO A SEPARATE SIGNAGE APPLICATION AND APPROVAL BY LOCAL AUTHORITY
3. ALL MATERIALS/ FINISHES SHOWN INDICATIVELY ONLY. SUBJECT TO TENANT STANDARDS

ALL DRAWINGS ARE FOR THE PURPOSES OF DEVELOPMENT APPLICATION ONLY AND NO OTHER PURPOSE.
NOT FOR CONSTRUCTION/ PRICING

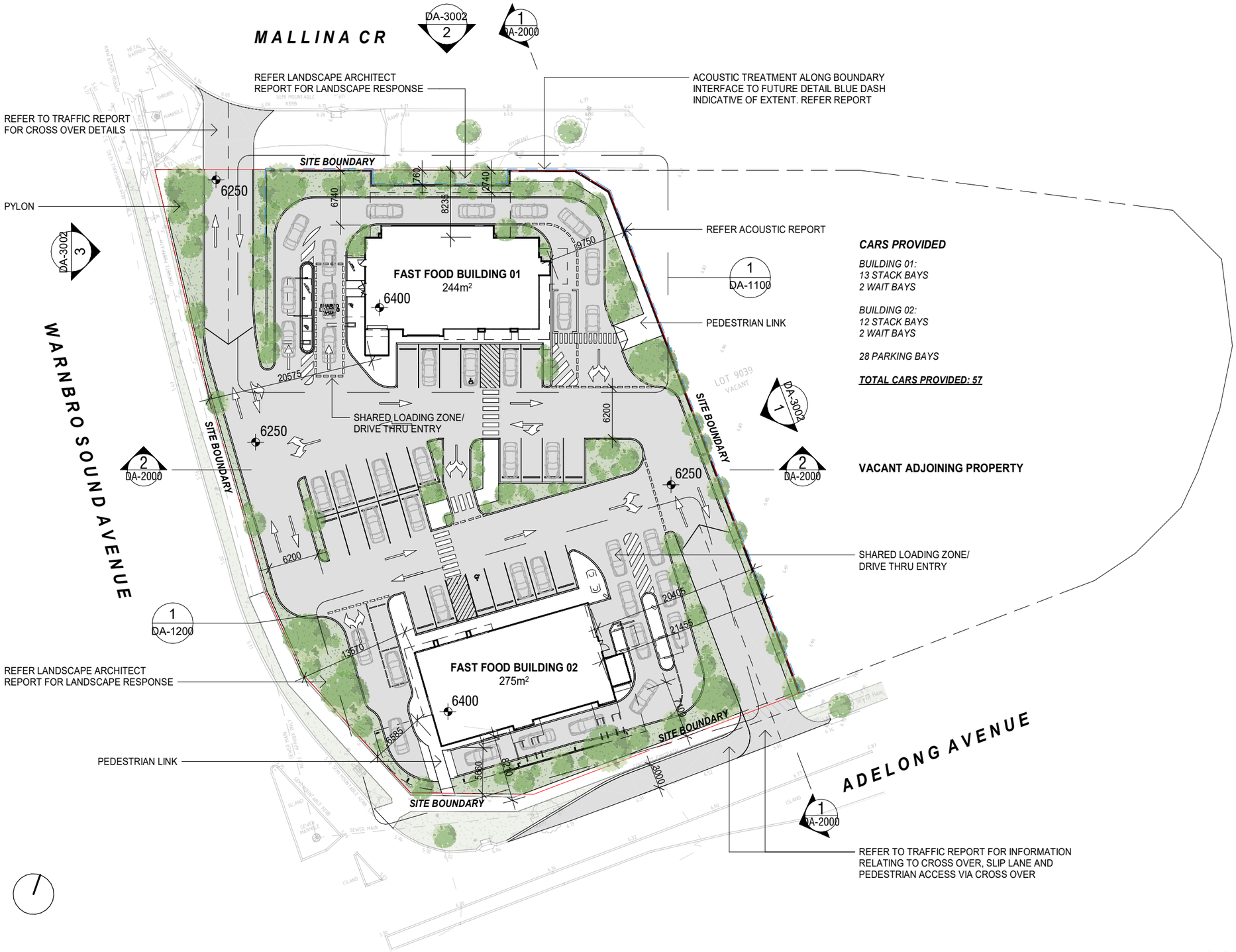


ISSUE D
Date of Issue | 07.05.2024

| 1 ADELONG AVENUE, GOLDEN BAY, WA 6174

bayerstevens

DA-1000
OVERALL FLOOR PLAN - PROPOSED



CARS PROVIDED

BUILDING 01:
13 STACK BAYS
2 WAIT BAYS

BUILDING 02:
12 STACK BAYS
2 WAIT BAYS

28 PARKING BAYS

TOTAL CARS PROVIDED: 57

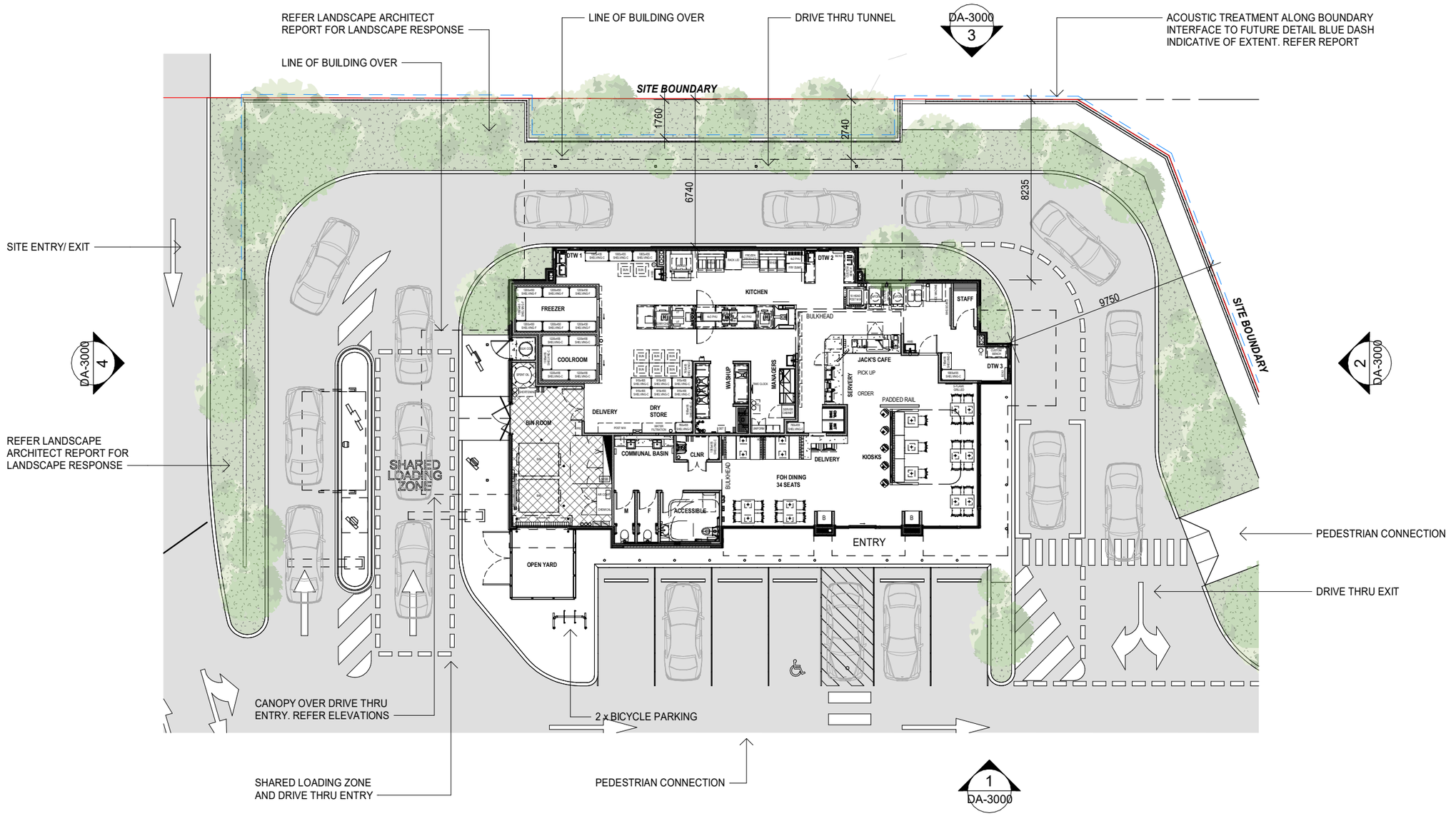
0 5 10 15 20 25
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ISSUE I
Date of Issue | 08.05.2024

| 1 ADELONG AVENUE, GOLDEN BAY, WA 6174

bayerstevens

DA-1100
FAST FOOD BUILDING 01 - FLOOR PLAN



0 2 4 6 8 10

SCALE 1:200 @ A3 SIZE m

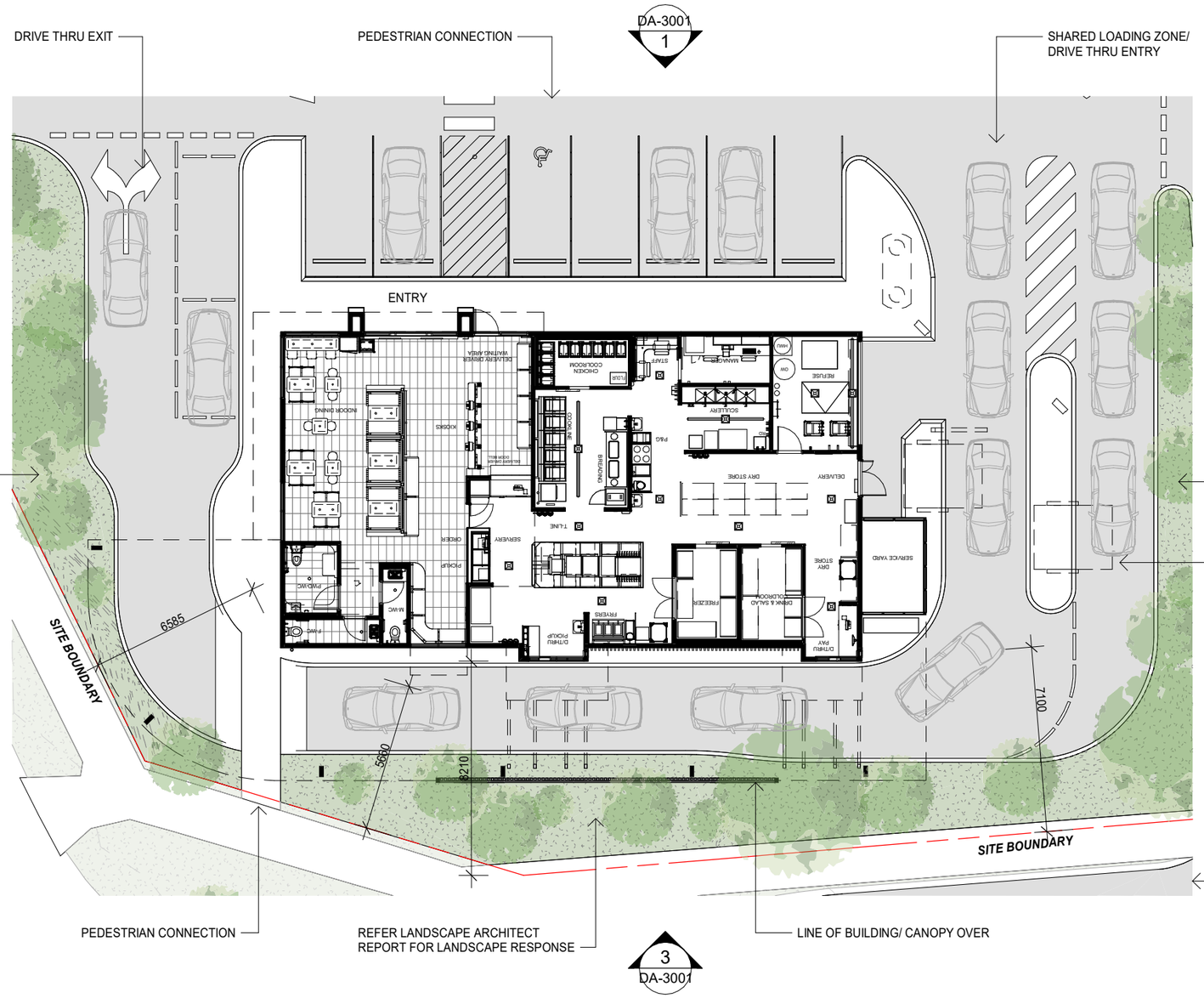
ISSUE E

Date of Issue | 07.05.2024

| 1 ADELONG AVENUE, GOLDEN BAY, WA 6174

bayerstevens

DA-1200
FAST FOOD BUILDING 02 - FLOOR PLAN



0 2 4 6 8 10

SCALE 1200 @ A3 SIZE m

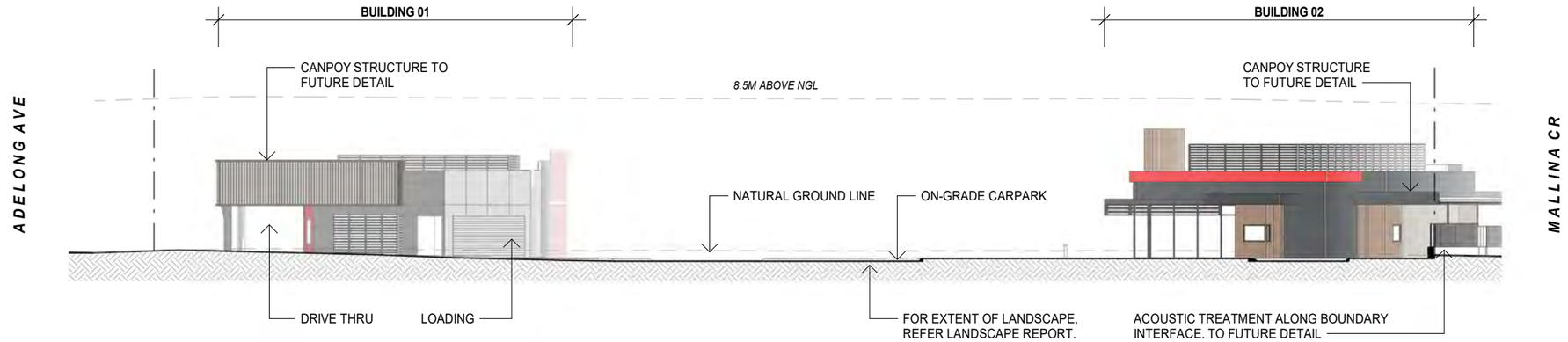
ISSUE E

Date of Issue | 07.05.2024

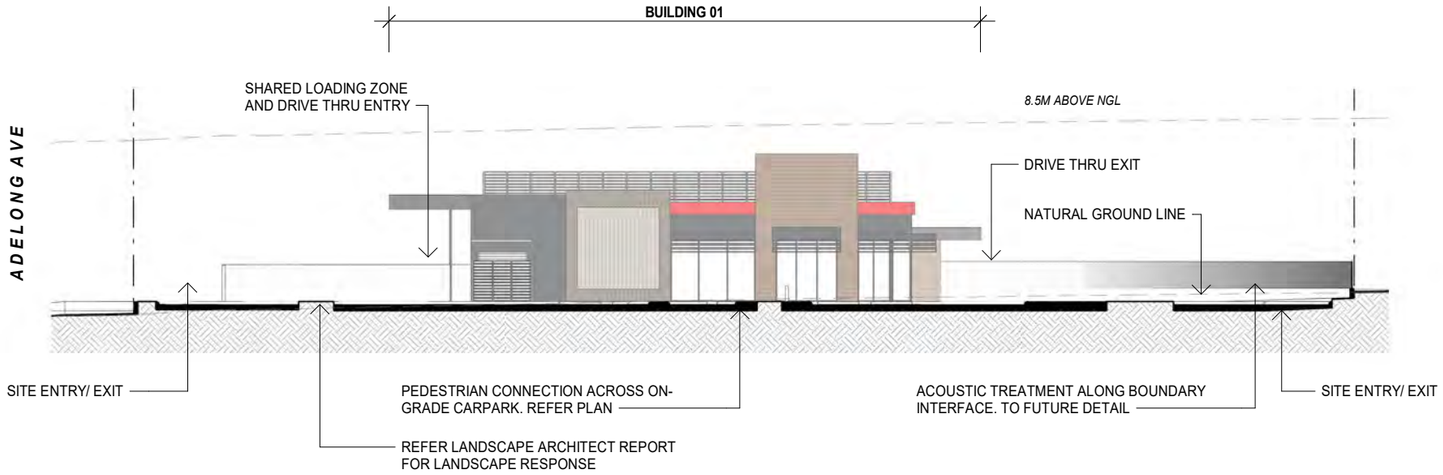
| 1 ADELONG AVENUE, GOLDEN BAY, WA 6174

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DA-2000
SECTIONS



1 DA-1000 OVERALL SITE SECTION 01
1 : 300



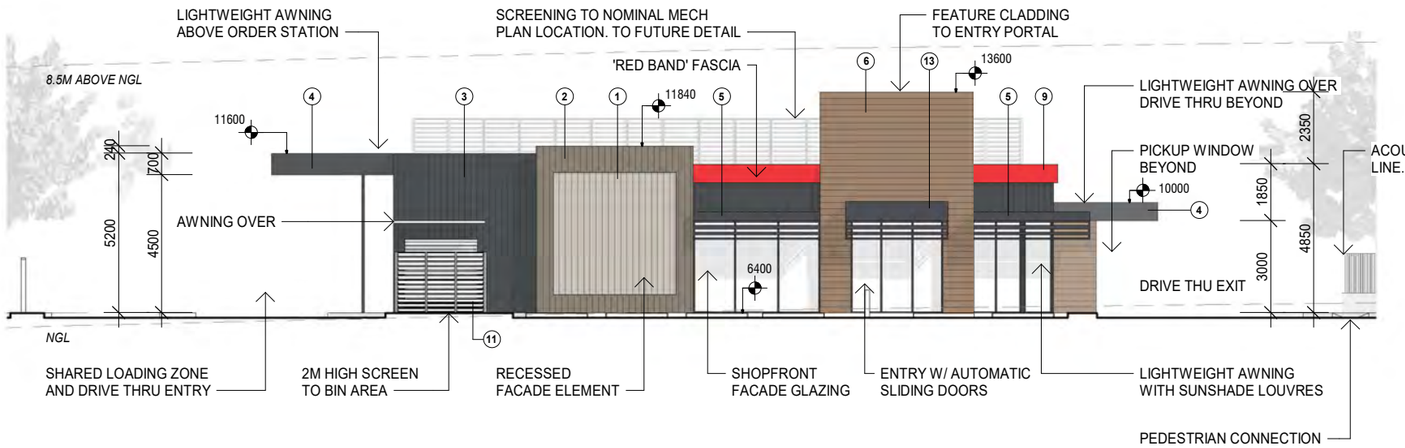
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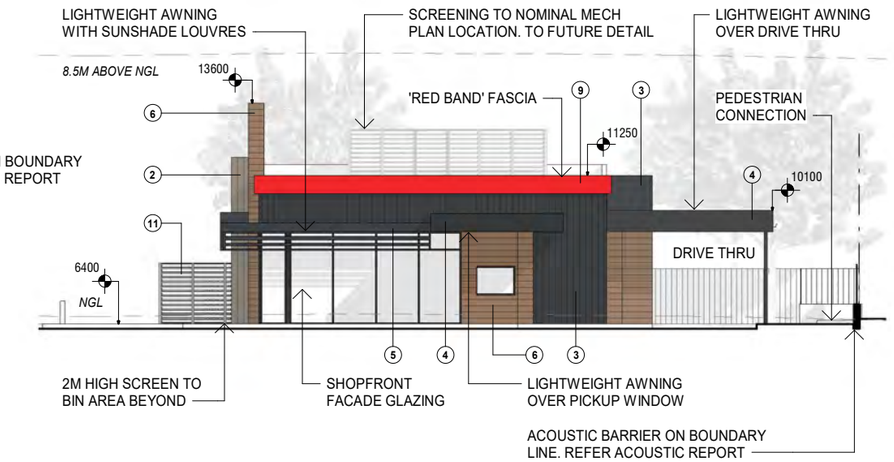
| 1 ADELONG AVENUE, GOLDEN BAY, WA 6174

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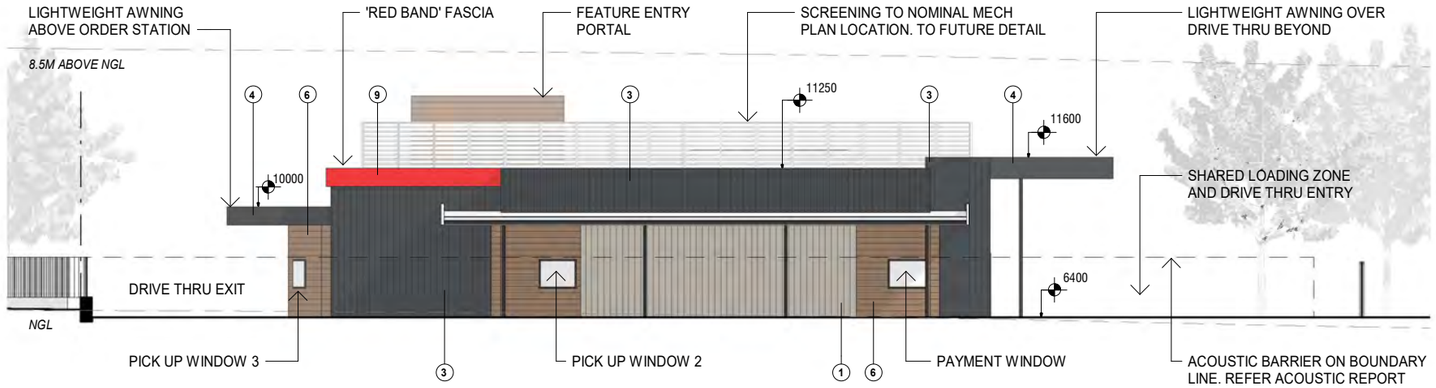
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FAST FOOD BUILDING 01 - ELEVATIONS



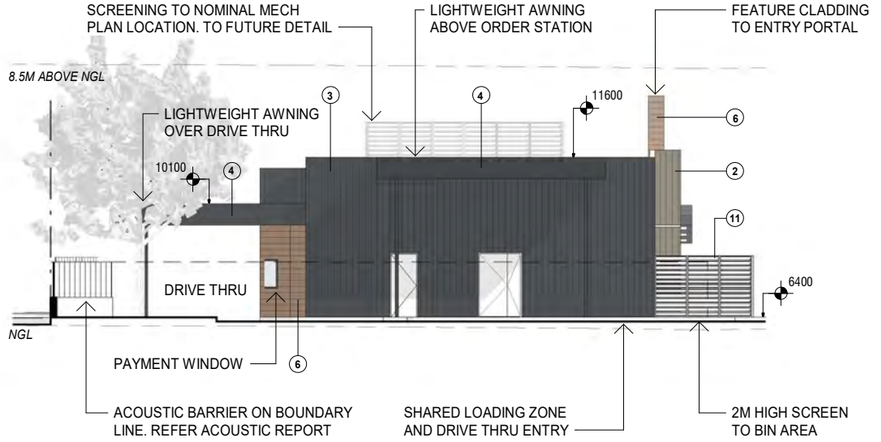
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2 DA-1000 BUILDING 01 - ELEVATION 02
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3 DA-1000 BUILDING 01 - ELEVATION 01
1 : 200



4 DA-1000 BUILDING 01 - ELEVATION 04
1 : 200

MATERIALS AND FINISHES SCHEDULE

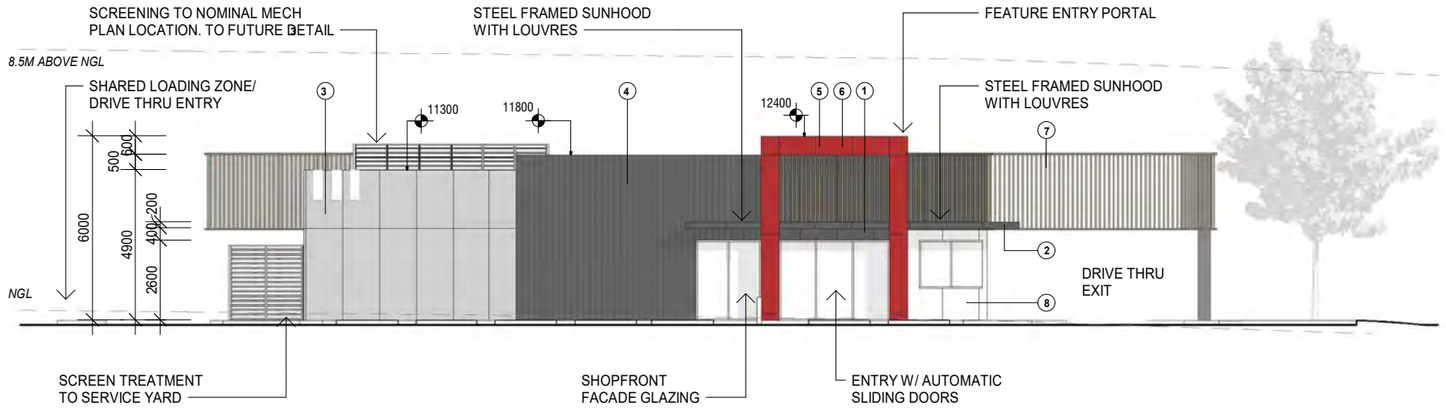
1. PAINT FC PANEL COLOUR: BEIGE FINISH: SATIN W/ CLEAR ANTI GRAFFITI COATING
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3. PAINT FC PANEL COLOUR: DARK GREY FINISH: SATIN W/ CLEAR ANTI GRAFFITI COATING
4. PAINT FINISH COLOUR: DARK GREY FINISH: SATIN
5. POWDERCOAT FINISH COLOUR: CHARCOAL FINISH: SATIN
6. FEATURE CLADDING WALL TIMBERLOOK CLADDING (WOODGRAIN)
7. PAINT FINISH COMPRESSED FIBRE CEMENT CLADDING COLOUR: BROWN TO MATCH XF4 FINISH: SATIN
8. PAINT FINISH COMPRESSED FIBRE CEMENT CLADDING COLOUR: OFF WHITE FINISH: SATIN
9. ILLUMINATED LIGHT BOX INTERNALLY ILLUMINATED RED LIGHT BOX
10. PRE-FINISHED METAL COLOURBOND COLOUR: DARK GREY TO MATCH XF2
11. SLATTED COMPOSITE CLADDING – TIMBERLOOK COLOUR: DARK BROWN
12. METAL LOUVRE BRAND: HOLOAKE OHL COLOUR: DARK GREY POWDERCOAT
13. ALUMINIUM COMPOSITE PANEL COLOUR: DARK GREY

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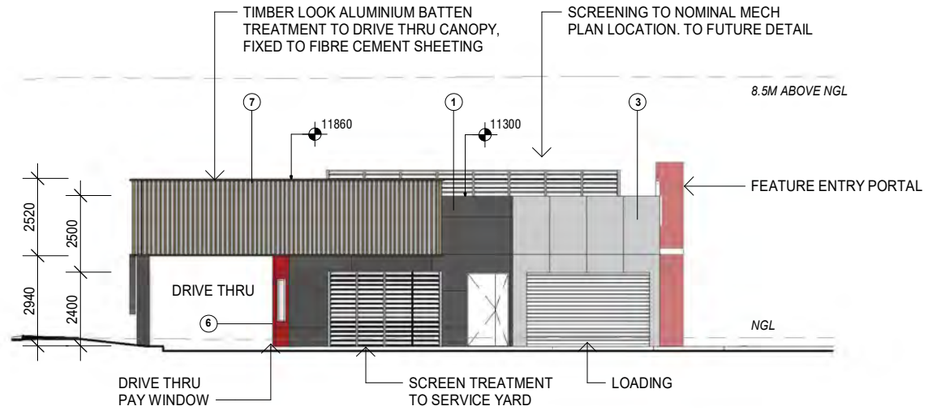
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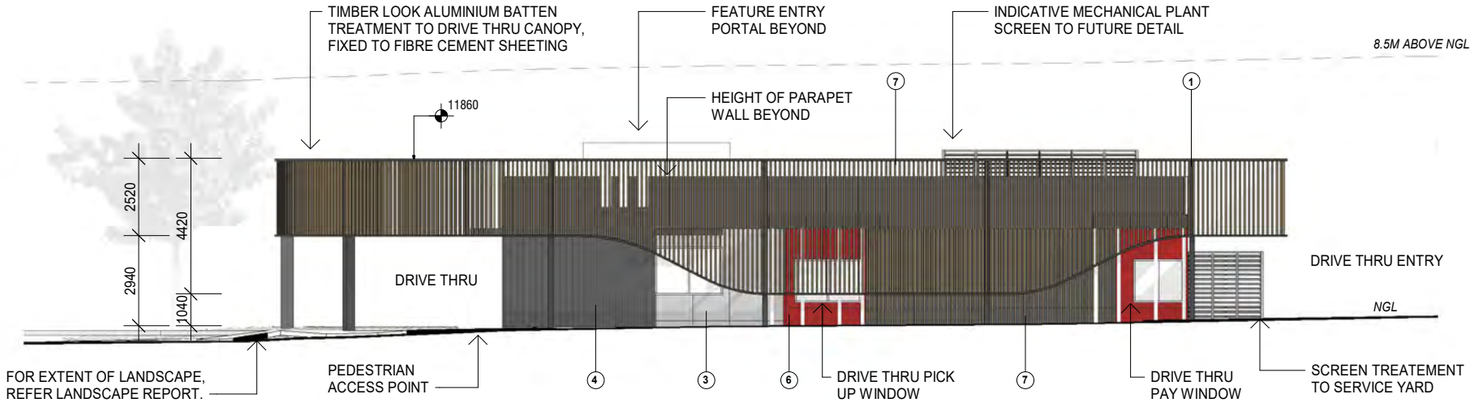
DA-3001
FAST FOOD BUILDING 02 - ELEVATIONS



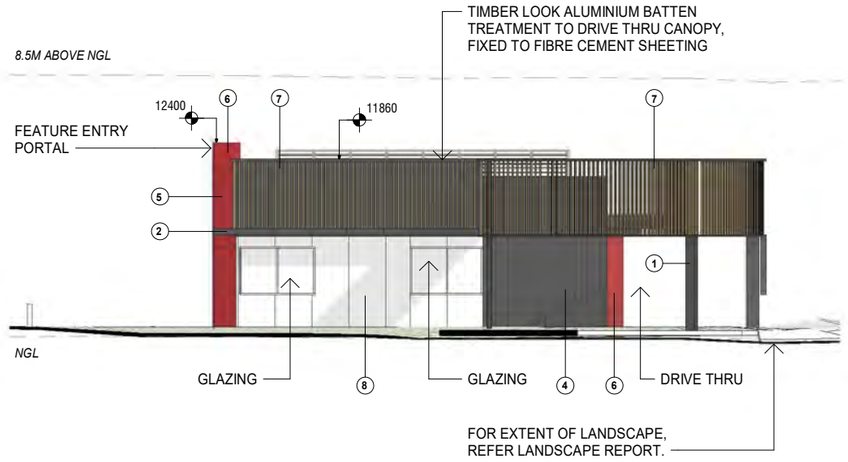
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2 DA-1000 BUILDING 02 - ELEVATION 02
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3 DA-1000 BUILDING 02 - ELEVATION 03
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4 DA-1000 BUILDING 02 - ELEVATION 04
1 : 200

MATERIALS AND FINISHES SCHEDULE

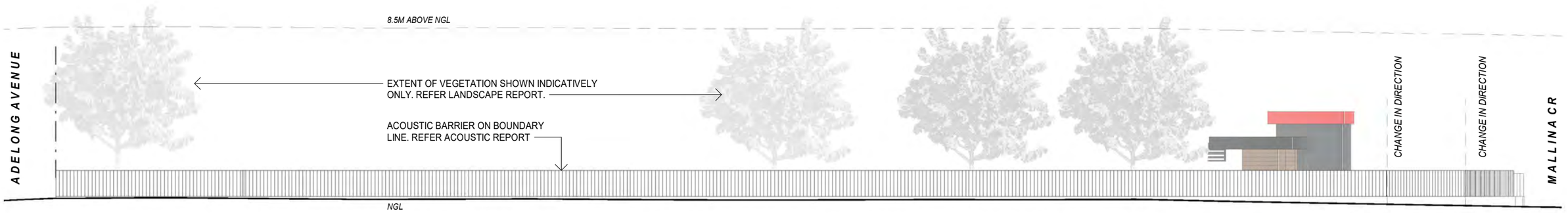
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2. DULUX POWDERCOAT ELECTRO MONUMENT FLAT
3. 9MM PRE-FINISHED FIBRE CEMENT PANELS 'CEMINTEL BARESTONE ORIGINAL'. FACTORY FINISH WITH CEMINSEAL. EXPRESSED NOMINAL 20MM SHADOWLINES PAINTED DULUX ' BLACK' (SG6G6)
4. METAL CLADDING TO BE 'LYSAGHT LONGLINE 305' IN COLORBOND 'MONUMENT' INSTALLED ON 35MM HORIZONTAL TOPHATS
5. 3MM THICK PERFORATED METAL SCREENN MILD STEEL POWDERCOATED WITH DURATEC X15 IN 'KFC RED'. PATTERN: 3.25mm DIA. HOLES, 4.78mm CTRS, 41% OPEN AREA
6. KFC 'RED BOX' - RED (A0639) DULUX WEATHERSHIELD LOWSHEEN ACRYLIC ON EXPRESS JOINT EXOTEC FC CLADDING AND TOPHATS
7. 50 X 50MM ALUMINIUM TIMBER LOOK CLKIP ON BATTENS 'ALIWOOD CLIP ON' (5050COS) IN 'SNOWGUM'. TO BE INSTALLED VERTICALLY ON FIBRE CEMENT SHEETING AND TOPHATS BEHIND TO MANUFACTURERS INSTRUCTIONS. FC SHEETING TO BE PAINTED DULUX 'BLACK'
8. KFC 'ALABASTER' - WHITE (A1016) DULUX WEATHERSHIELD LOWSHEEN ACRYLIC IN ON EXPRESS JOINT EXOTEC FC CLADDING AND TOPHATS

ISSUE E
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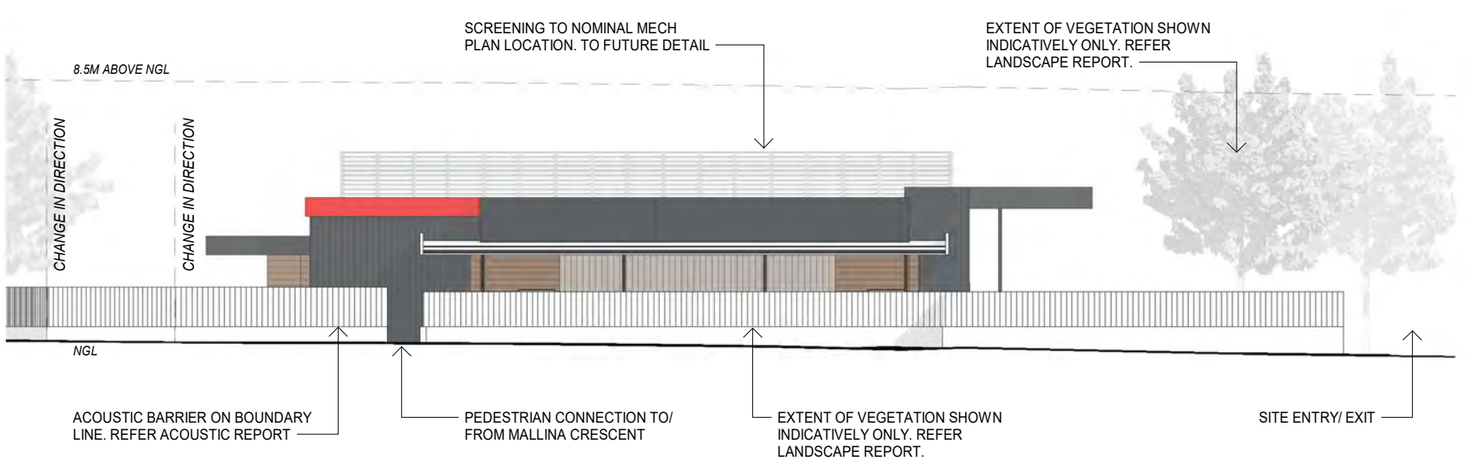
| 1 ADELONG AVENUE, GOLDEN BAY, WA 6174

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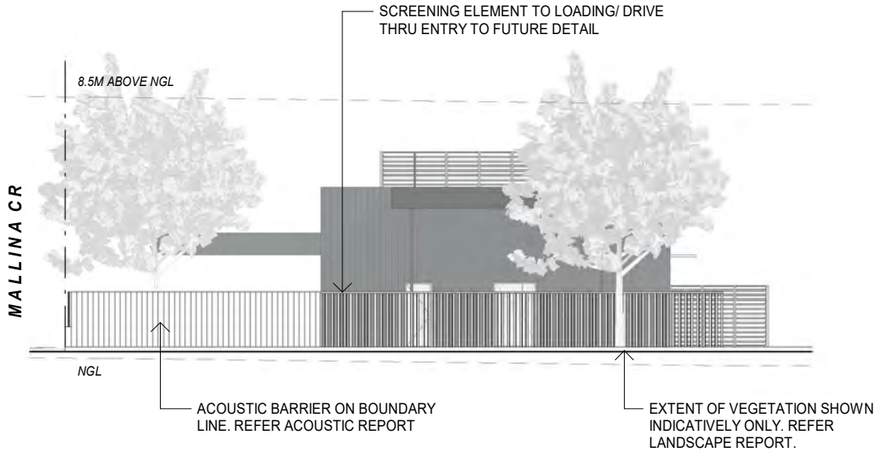
DA-3002
BOUNDARY FENCE ELEVATIONS



1 DA-1000 BOUNDARY FENCE ELEVATION - AJOINING PROPERTY
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2 DA-1000 BOUNDARY FENCE ELEVATION - MALLINA CRESCENT
1 : 200



3 DA-1000 BOUNDARY FENCE ELEVATION - INTERNAL
1 : 200

0 2 4 6 8 10
SCALE 1:200 @ A3 SIZE m

ISSUE A
Date of Issue | 07.05.2024

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Appendix B – Influencing Factor Calculation

The assigned levels combine a baseline assigned level with an influencing factor, with the latter increasing the assigned level on the basis of the existence of significant roads and commercial or industrial zoned land within an inner circle (100 metre radius) and an outer circle (450 metre radius) of the noise sensitive premises. The calculation for the influencing factor is:

$$= \frac{1}{10}(\%\ \text{Type A}_{100} + \%\ \text{Type A}_{450}) + \frac{1}{20}(\%\ \text{Type B}_{100} + \%\ \text{Type B}_{450})$$

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

+ Transport Factor (maximum of 6 dB)

= 2 for each secondary road (6,000 to 15,000 vpd) within 100m

= 2 for each major road (> 15,000 vpd) within 450m

= 6 for each major road within 100m

The nearest noise sensitive premises is identified as 12 Mallina Crescent. It is noted that all nearest receptors assessed in this report share the same proximity to land use and transport infrastructure.

Table B-1 shows the percentage of industrial and commercial land within the inner (100 metre radius) and outer (450 metre radius) circles of the noise sensitive premises, with this also shown on *Figure B-1* for 12 Mallina Crescent.



Figure B-2: Land Types within 100m and 450m Radii of 12 Mallina Cr

Table B-1: Percentage of Land Types within 100m and 450m Radii

Receiver	Land Type	Within 100m	Within 450m
12 Mallina Cr	Type A - Industrial and Utility	0	0
	Type B – Commercial	13	5

The Main Roads WA Traffic Map does provide current traffic counts in this area (Feb 2022 LM01072) with counts in the order of 10,000 vpd. However with knowledge of the planning framework since 2011, information has been obtained from Main Roads WA *Perth Metropolitan Functional Road Hierarchy 1997*, referring to Warnbro Sound Avenue as a Distributor A or Arterial road with intent to carry 15,000 to 35,000 vpd. The same document classifies Aurea Boulevard as a Local Distributor with a maximum 6,000 vpd. It is clear that the roads have been designed and planned for high vehicle use in this commercial and residential hub since 2011. Despite these classifications, the Noise Regulations require recent traffic counts to be used when classifying the road for purposes of determining a transport factor. *Table B-2* shows the relevant roads within the inner (100 metre radius) and outer (450 metre radius) circles.

Table B-2: Relevant Roads within 100m and 450m Radii

Receiver	Within 100m		Within 450m
	Major Road (+ 6 dB)	Secondary Road (+ 2 dB)	Major Road Not Within 100m (+ 2 dB)
12 Mallina Cr	-	Aurea Bvd and Warnbro Sound Ave	-

Table B-3 combines the percentage land types and Transport Factor to calculate the influencing factor.

Table B-3: Influencing Factor Calculation, dB

Receiver	Industrial Land	Commercial Land	Transport Factor	Total
12 Mallina Cre	0.0	0.9	4	**5**

The influencing factor calculated in *Table B-3* is combined with those baseline assigned levels of *Table 2-2*, resulting in the project assigned levels provided in *Table 2-3*.

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 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 level 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 (slow) time weighting. 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 (fast) time weighting. This is used when assessing the presence of modulation.

- **L_{APeak}**

This is the greatest absolute instantaneous sound pressure level in decibels using the A-frequency weighting.

- **L_{Amax}**

An L_{Amax} level is the maximum A-weighted noise level during a particular measurement.

- **L_{A1}**

The L_{A1} level is the A-weighted noise level exceeded for 1 percent of the measurement period and is considered to represent the average of the maximum noise levels measured.

- **L_{A10}**

The L_{A10} level is the A-weighted noise level exceeded for 10 percent of the measurement period and is considered to represent the "intrusive" noise level.

- **L_{A90}**

The L_{A90} level is the A-weighted noise level exceeded for 90 percent of the measurement period and is considered to represent the "background" 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.

- **One-Third-Octave Band**

Means a band of frequencies spanning one-third of an octave and having a centre frequency between 25 Hz and 20000 Hz inclusive.

- **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.

- **L_{Amax} assigned level**

Means an assigned level, which, measured as a L_{ASlow} value, is not to be exceeded at any time.

- **L_{A1} assigned level**

Means an assigned level, which, measured as a L_{ASlow} value, is not to be exceeded for more than 1 percent of the representative assessment period.

- **L_{A10} assigned level**

Means an assigned level, which, measured as a L_{ASlow} value, is not to be exceeded for more than 10 percent 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; and

(b) is present for at least 10% of the representative assessment period; and

(c) is regular, cyclic and audible.

- **Impulsive Noise**

An impulsive noise source has a short-term banging, clunking or explosive sound. The quantitative definition of impulsiveness means:

– a variation in the emission of a noise where the difference between L_{Apeak} and L_{Amax} is more than 15 dB when determined for a single representative event.

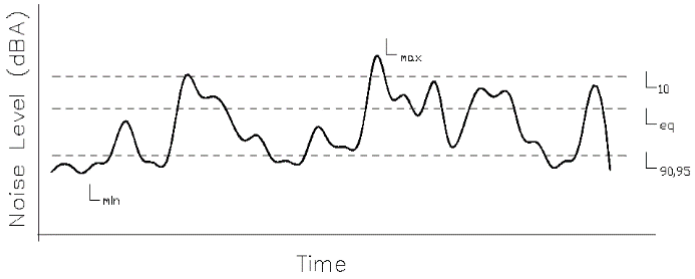
- **Major Road**

Is a road with an estimated average daily traffic count of more than 15,000 vehicles.

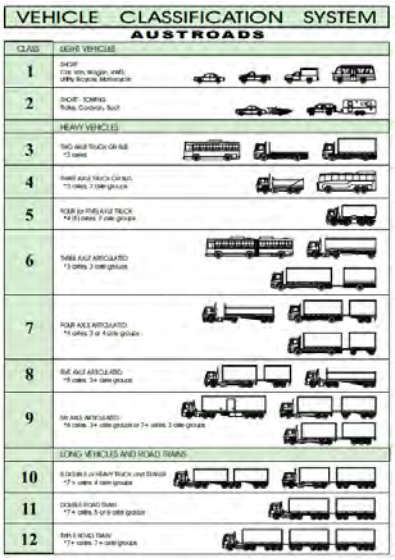
- **Secondary / Minor Road**

Is a road with an estimated average daily traffic count of between 6,000 and 15,000 vehicles.

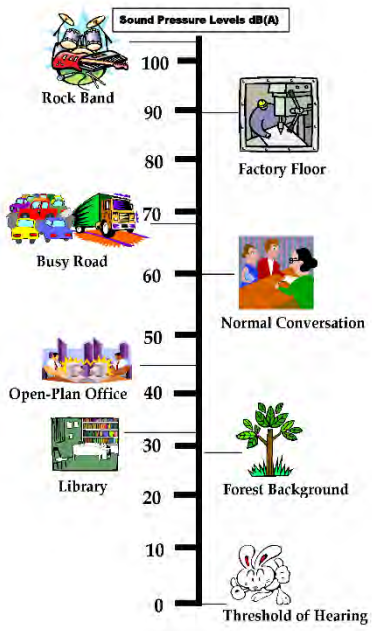
- **Chart of Noise Level Descriptors**



- **Austroads Vehicle Class**



- **Typical Noise Levels**



Lloyd George Acoustics
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www.lgacoustics.com.au

To:	Ladybug Twenty One Pty Ltd c/- Apex Planning	**From:**	Matt Moyle
Attention:	Alessandro Stagno	**Date:**	13 September 2024
Email:	alessandro@apexplanning.com.au	**Pages:**	3
Our Ref:	23128613-02 Memo		
Re:	**Lot 8005 Adelong Avenue, Golden Bay: Site Plan Updates**		

Lloyd George Acoustics has been requested to provide this technical note to review the potential noise impacts of site plan updates for a proposed fast food development at Lot 8005 Adelong Avenue, Golden Bay.

An environmental noise assessment was completed for the proposal in May 2024, Lloyd George Acoustics Reference 23128613-01 dated 15 May 24 (hereby referred to as the 'Assessment').

Since the completion of the Assessment, updates to site layouts have been proposed including the following changes:

- Increasing height of boundary fencing to 2m high;
- Extents of solid acoustic wall to continue fully across the north side of the drive through lanes.

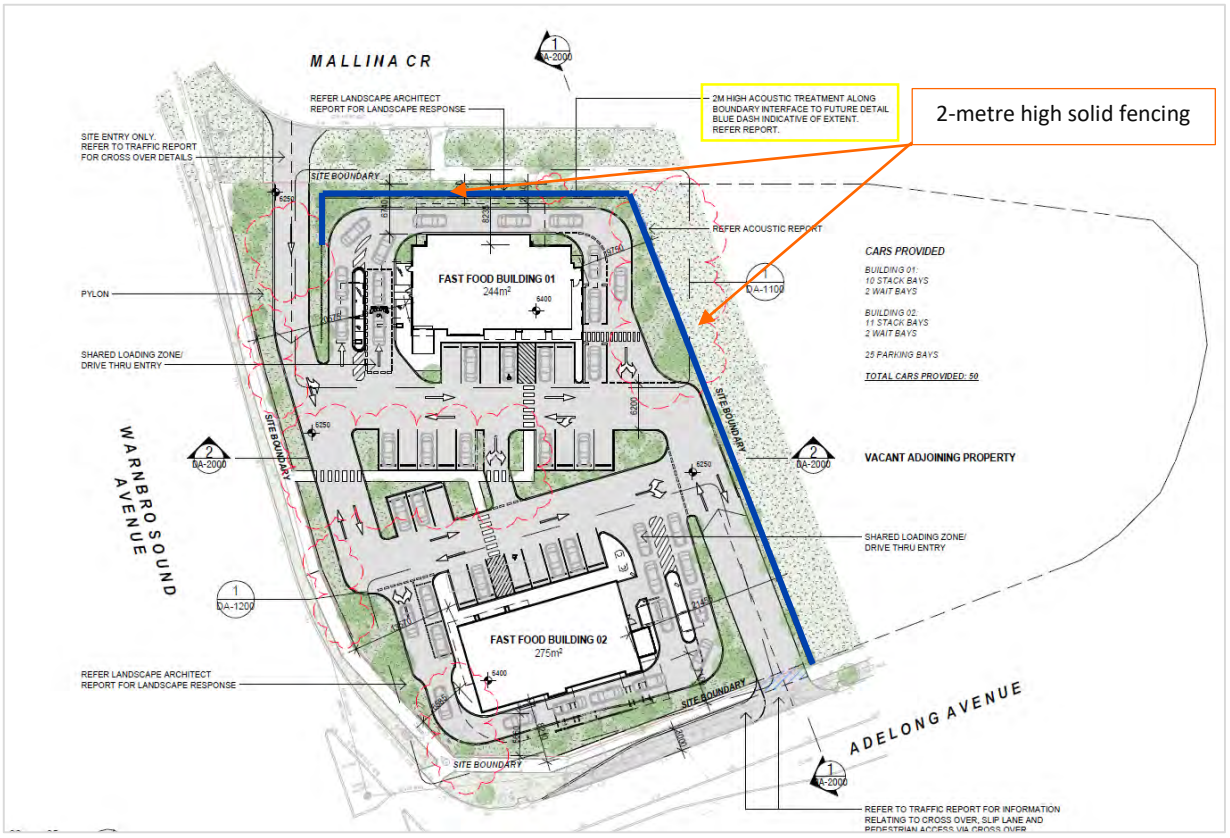


Figure 1: Site Plan Updates (dated 9 September 2024)

The noise model was updated to include the additional acoustic fencing, and results compared with the Assessment outcomes with the original proposed site plan and fencing. All other noise sources were maintained from the previous noise assessment. *Table 1 to Table 3* present the noise levels comparison for the Evening L_{A10}, Night L_{A10}, and Night L_{A1} scenarios, respectively.

Table 1: Scenario 1 Predicted Evening Levels and Assessment, dB L_{A10}

Receiver*	12 Drive Through Vehicles	All Mech Plant	Total	Previous Assessment Total	Change from Previous Assessment
1 Wandina Crescent	31	25	**32**	**36**	*-4*
Lot 9039 Future Res (Ground Floor)	37	30	**38**	**39**	*-1*
Lot 9039 Future Res (Upper Floor)	47	34	**47**	**47**	*0*
12 Mallina Crescent	35	23	**35**	**45**	*-10*
38 Winderie Road Future Res	42	29	**43**	**43**	*0*

*Where a premises has multiple receivers, only the worst case levels are reported.

Table 2: Scenario 2 Predicted Night Levels and Assessment, dB L_{A10}

Receiver*	6 Drive Through Vehicles	All Mech Plant	Total	Previous Assessment Total	Change from Previous Assessment
1 Wandina Crescent	29	23	**30**	**35**	*-5*
Lot 9039 Future Res (Ground Floor)	36	26	**36**	**37**	*-1*
Lot 9039 Future Res (Upper Floor)	46	28	**46**	**47**	*-1*
12 Mallina Crescent	34	24	**35**	**44**	*-9*
38 Winderie Road Future Res	28	16	**28**	**28**	*0*

*Where a premises has multiple receivers, only the worst case levels are reported.

Table 3: Scenario 3 Predicted Night Levels and Assessment, dB L_{A1}

Receiver	Delivery Truck	12 Drive Through Vehicles	Total*	Previous Assessment Total	Change from Previous Assessment
1 Wandina Crescent	27	32	**33**	**38**	*-5*
Lot 9039 Future Res (Ground Floor)	43	37	**44**	**45**	*-1*
Lot 9039 Future Res (Upper Floor)	49	45	**51**	**51**	*0*
12 Mallina Crescent	34	37	**39**	**47**	*-8*
38 Winderie Road Future Res	33	30	**34**	**34**	*0*

*Includes all Mech Plant Sources from Scenario 2

As demonstrated by the comparisons, the noise levels from all scenarios are predicted to decrease for residents to the immediate north. At 1 Wandina Crescent the reduction in noise is between 4 to 5 dB on the previous design modelling. At 12 Mallina Crescent the reduction is between 8 to 10 dB on the original proposal.

The noise level reductions are a direct result of the upgraded acoustic fencing treatment, both in height and extents.

As such it is concluded that the proposed site plan offers a significant improvement to noise sensitive premises and an improvement to amenity would be expected given the scale of reductions being within the “audibly noticeable” range of 4 or more dB.

We trust the above is satisfactory. Should you require anything further, please do not hesitate in contacting us.

Regards,

Matt Moyle

Engineering a better future for over 20 years!

Proposed Fastfood Outlets

Lot 8005 (1) Adelong Avenue, Golden Bay

Transport Impact Assessment

PREPARED FOR:
Ladybug Twenty One Pty Ltd

May 2024

Document history and status

Author	Revision	Approved by	Date approved	Revision type
A Navarro	r01	B Bordbar	15/04/2024	Draft
A Navarro	r01a	B Bordbar	15/05/2024	Revised Draft
A Navarro	r01b	B Bordbar	20/05/2024	Final

File name: t23.159.an.r01a

Author: Alvira Illana Navarro

Project manager: Behnam Bordbar

Client: Ladybug Twenty One Pty Ltd

Project: Lot 8005 (1) Adelong Avenue, Golden Bay

Document revision: r01a

Project number: t23.159

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1 Introduction

This Transport Impact Assessment (TIA) has been prepared by Transcore on behalf of Ladybug Twenty One Pty Ltd with regard to the proposed fast food outlets with drive-through facilities to be located at Lot 8005 (1) Adelong Avenue, Golden Bay in City of Rockingham.

The subject site is presently vacant with an area of approximately 4,240m^2. The subject site is bounded by Mallina Crescent, Adelong Avenue, Warnbro Sound Avenue, and a vacant lot in the north, south, west, and east respectively. The location of the subject site is shown in **Figure 1**.



Figure 1: Location of the subject site

The key issues that will be addressed in this report include the traffic generation of the proposed development, review of the proposed site crossovers and capacity analysis the adjacent intersection of Warnbro Sound Avenue/Adelong Avenue/Aurea Boulevard.

The location of the subject site within the *Metropolitan Region Scheme* context is illustrated in **Figure 2**. Review of the *MRS* confirms that Warnbro Sound Avenue is classified as an *Other Regional Road,* where it comes under the authority of the Western Australian Planning Commission (WAPC) with its care and control is vested with City of Rockingham. Mallina Crescent and Adelong Avenue abutting the subject site to the north and south are local roads under the care and control of City of Rockingham. The subject site is zoned as *"Urban"* in the *MRS.*

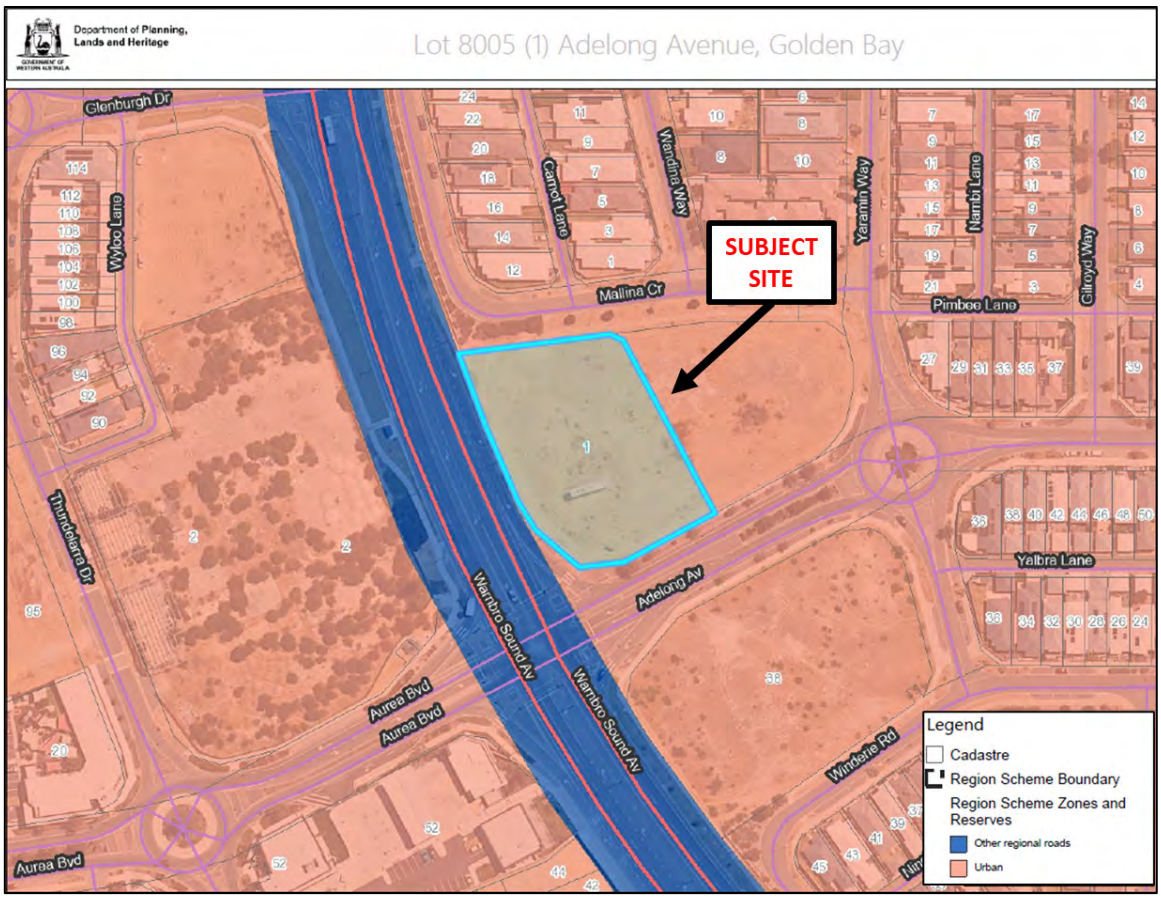


Figure 2: Site location within the Metropolitan Region Scheme

2 Development Proposal

The proposed development contemplates the construction of two fast food outlets with associated on-site car parking.

The proposed development will have road frontages on Mallina Crescent to the north, Adelong Avenue to the south and Warnbro Sound Avenue to the west. The proposed development will have one driveway crossover on Adelong Avenue and one driveway crossover on Mallina Crescent.

The development plan included in **Appendix A** shows 28 on-site parking spaces (including two (2) ACROD bays). The drive-through lanes for the northern fast-food outlet allows for 10 stacking bays and 2 wait bays and the southern fast-food outlet allows for 11 stacking bays and 2 wait bays. This provides a total of 53 practical parking spaces.

In order to achieve effective traffic circulation within the site and provide guidance to the patrons, arrow pavement markings are proposed as shown in the development plan. The proposed pavement markings will be finalised through liaison with City of Rockingham during the detailed design stage of the project.

Loading zone for the northern fast-food outlet will be shared with its eastern drive-through lane. Loading zone for the southern fast-food outlet will be shared with its western drive-through lane.

Pedestrian access to the site is accommodated by footpaths on surrounding roads.

3 Existing Situation

3.1 Existing Road Network

Warnbro Sound Avenue is classified as an *Other Regional Road* in the *Metropolitan Region Scheme*. Warnbro Sound Avenue is also classified as a *Distributor B* in the Main Roads WA *Functional Road Hierarchy* document. Warnbro Sound Avenue operates under the speed limit of 70km/h in the vicinity of the subject site and reduces to 60km/h north of Dampier Drive.

Warnbro Sound Avenue is constructed as a 25m wide four-lane carriageway, kerbed on both sides with a solid median. It has a 2m footpath on both sides with pedestrian facilities, including drop kerbs and crossings at the intersection. Warnbro Sound Avenue forms a 4-way signalised intersection with Aurea Boulevard and Adelong Avenue. Refer to **Figure 3** for more details.



Figure 3: Northbound view of Warnbro Sound Ave/Adelong Ave/Aurea Blvd intersection

Adelong Avenue is classified as an *Access Road* in the Main Roads WA *Functional Road Hierarchy* document. The default built-up area speed limit of 50km/h applies.

Adelong Avenue forms a 4-way signalised intersection with Warnbro Sound Avenue and Aurea Boulevard. It also forms a roundabout intersection with Yaramin Way. Adelong Avenue is constructed as a 16m two-lane carriageway width between kerbs with a solid median. Bike paths and 2m footpaths are provided on both sides of the road. Refer to **Figure 4** for more details.



Figure 4: Eastbound view of Adelong Avenue

Mallina Crescent is classified as an *Access Road* in the Main Roads WA *Functional Road Hierarchy* document. The default built-up area speed limit of 50km/h applies.

Mallina Crescent forms T-intersections with Yaramin Way, Carnot Lane, and Wandina Lane. Mallina Crescent is constructed as a 6m carriageway with a 2m footpath on both sides. Refer to Figure 5 for more details.



Figure 5: Westbound view of Mallina Crescent

3.2 Existing Traffic Volume on Roads

The latest SCATS data for the signalised intersection of Warnbro Sound Ave/Adelong Ave/Aurea Blvd was sourced and analysed to establish the hourly and daily traffic volumes at the intersection.

Review of the June 2023 SCATS data indicated that Warnbro Sound Avenue and Adelong Avenue carried approximately 8,700vpd and 1,300vpd respectively during the weekday.

3.3 Public Transport Access

Existing bus route 574 (Warnbro Station to Lakelands Station) runs on Warnbro Sound Avenue as shown in **Figure 3**. It provides 15-minute service during weekday peak periods and 30-minute services during the day and on weekends and public holidays.

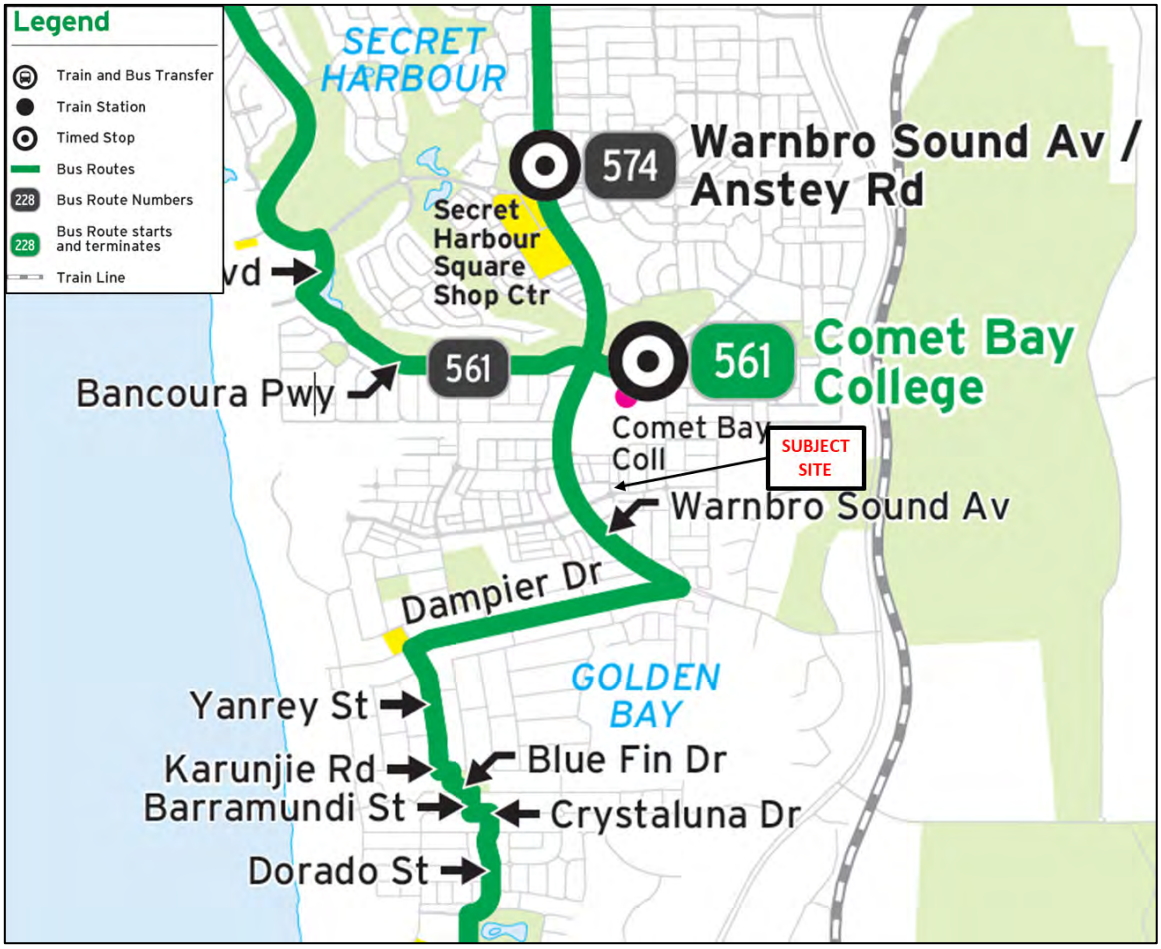


Figure 6: Bus Route 574 (Source: Transperth)

3.4 Pedestrian and Cyclist Facilities

The existing bicycle facilities (as at 2021), are shown in **Figure 4**, which is taken from the Department of Transport's *Perth Bike Map* series. However, it appears that the subject site has not yet been introduced in the relevant maps.

The Department of Transport's *Long-Term Cycle Network for Perth* map identifies Warnbro Sound Avenue as having high quality shared path. Bike paths have been

introduced along Adelong Avenue within the vicinity of the subject site. There are also 2m footpaths provided along Warnbro Sound Avenue, Adelong Avenue and Mallina Crescent.

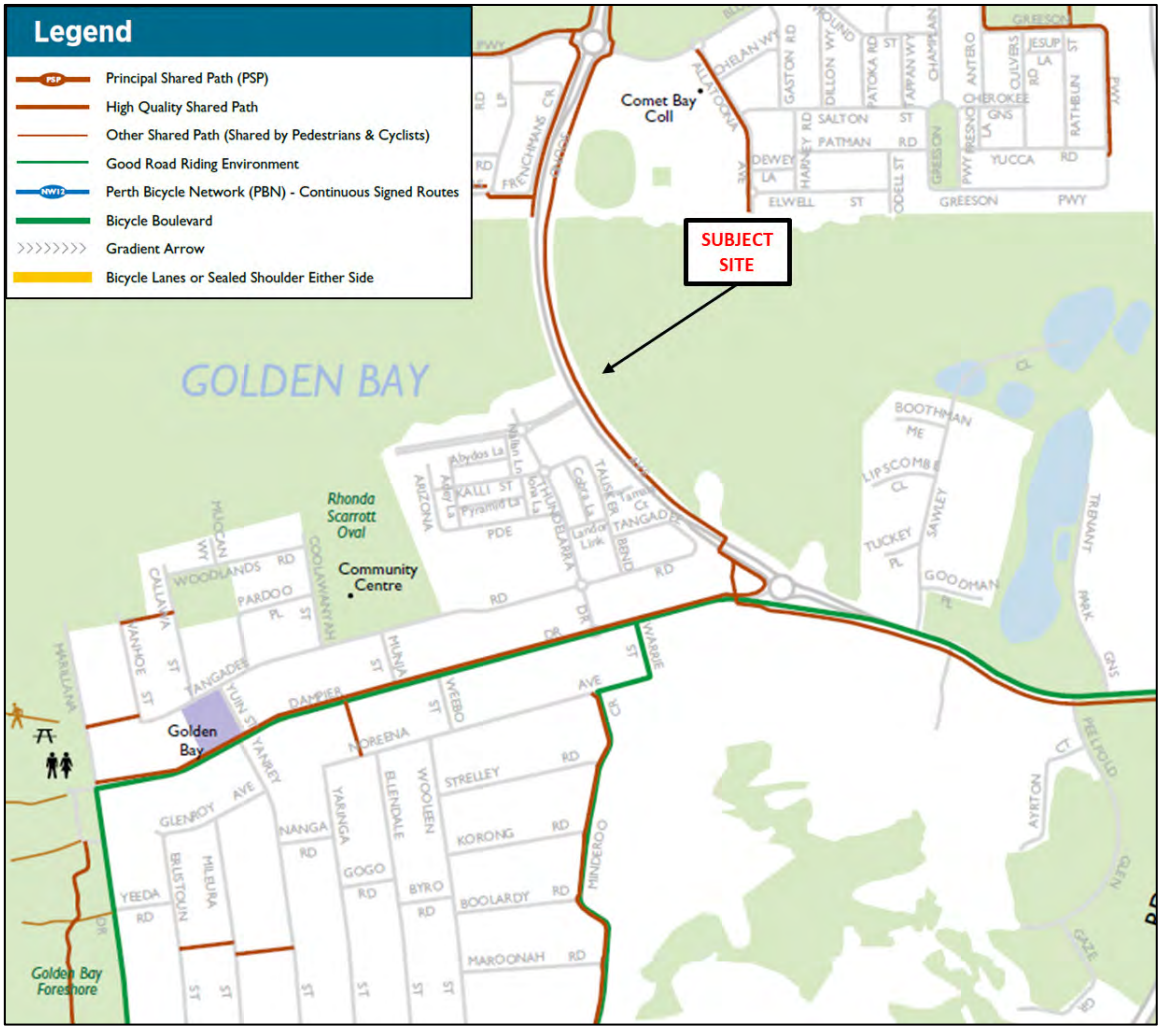


Figure 7: Bike Map (source: Department of Transport)

4 Changes to Surrounding Transport Networks

There are no changes to the surrounding road network as part of the proposed development. A left-in/left-out crossover with a left-turn lane is proposed on Adelong Avenue fronting the site as part of this proposal. The proposed crossover in Mallina Crescent is in line with the Golden Bay Neighbourhood Centre Detailed Area Plan.

5 Integration with Surrounding Area

The proposed development is of a commercial character and is expected to address the existing and future demand for this type of service within Golden Bay and specifically within this locality.

6 Traffic Assessment

6.1 Assessment Period

The assessment years that are adopted for the analysis are 2024 and 2034.

6.2 Trip Generation and Distribution

The trip generation of the proposed fast-food outlets was sourced from the Institute of Transport Engineers (ITE) Trip Generation Manual (11th edition) for a robust assessment. The trip rates which are used to estimate the proposed land uses are:

Fast-food Outlet with Drive-through (934)

- Weekday, daily: 503.2 trips per 100m^2 GFA;
- Weekday, AM peak hour: 48.0 trips per 100m^2 GFA; and,
- Weekday, PM peak hour: 35.6 trips per 100m^2 GFA

Table 1 summarises the trip generation of the proposed development. **Table 2** shows the primary trips component of the proposed development. **Table 3** shows the passing trade component of the proposed development.

Trips associated with the proposed fast-food outlets also comprise passing-trade trips (trips already on the road network and not specifically generated by the proposed development). As derived from ITE, a 50% passing trade is assumed. Conservatively, no cross trade is assumed between the land uses.

Accordingly, it is estimated that the net addition of the development traffic when accounting for the passing trade is **+124vph** (AM peak hour) and **+92vph** (PM peak hour) on the surrounding road network. The distribution of the development traffic was evaluated by considering the catchment area of the proposed development as well as the available access and egress routes to and from the site. Accordingly, the total development traffic is shown in **Figure 8**.

Table 1: Weekday Daily, AM Peak, and PM Peak hour trip generation for the proposed development

Land Use	Area (m^2)	Daily (vpd)	AM Peak (vph)	PM Peak (vph)	AM Peak		PM Peak	
					IN	OUT	IN	OUT
Fast food outlet with drive-through	275	1,384	132	98	66	66	49	49
Fast food outlet with drive-through	244	1,228	117	87	59	58	43	44
Total Traffic		**2,612**	**249**	**185**	**125**	**124**	**92**	**93**

Table 2: Primary Trips component of the trip generation

Land Use	Daily Trips (vpd)	AM Peak (vph)		PM peak (vph)	
		IN	OUT	IN	OUT
Fast food outlet with drive-through	692	33	33	24	25
Fast food outlet with drive-through	614	29	29	21	22
Total Traffic	**1,306**	**62**	**62**	**45**	**47**

Table 3: Passing Trade component of the trip generation

Land use	Daily Trips (vpd)	AM Peak (vph)		PM peak (vph)	
		IN	OUT	IN	OUT
Fast food outlet with drive-through	692	33	33	25	24
Fast food outlet with drive-through	614	30	29	22	22
Total Traffic	**1,306**	**63**	**62**	**47**	**46**



Figure 8: Proposed development traffic – Weekday AM and PM peak hour

6.3 Traffic Flow

The existing traffic counts in the area were established by a review of the SCATS data at the existing signalised intersection of Warnbro Sound Ave/Aurea Blvd/Adelong Ave. The total post-development traffic for the assessment years of 2024 and 2034 was calculated with the existing background traffic on the abovementioned intersection plus the development traffic. For both years 2024 and 2034, a 2% annual traffic growth was applied to the background traffic.

The total projected traffic volumes for the years 2024 and 2034 are presented in **Figure 9** and **Figure 10**.

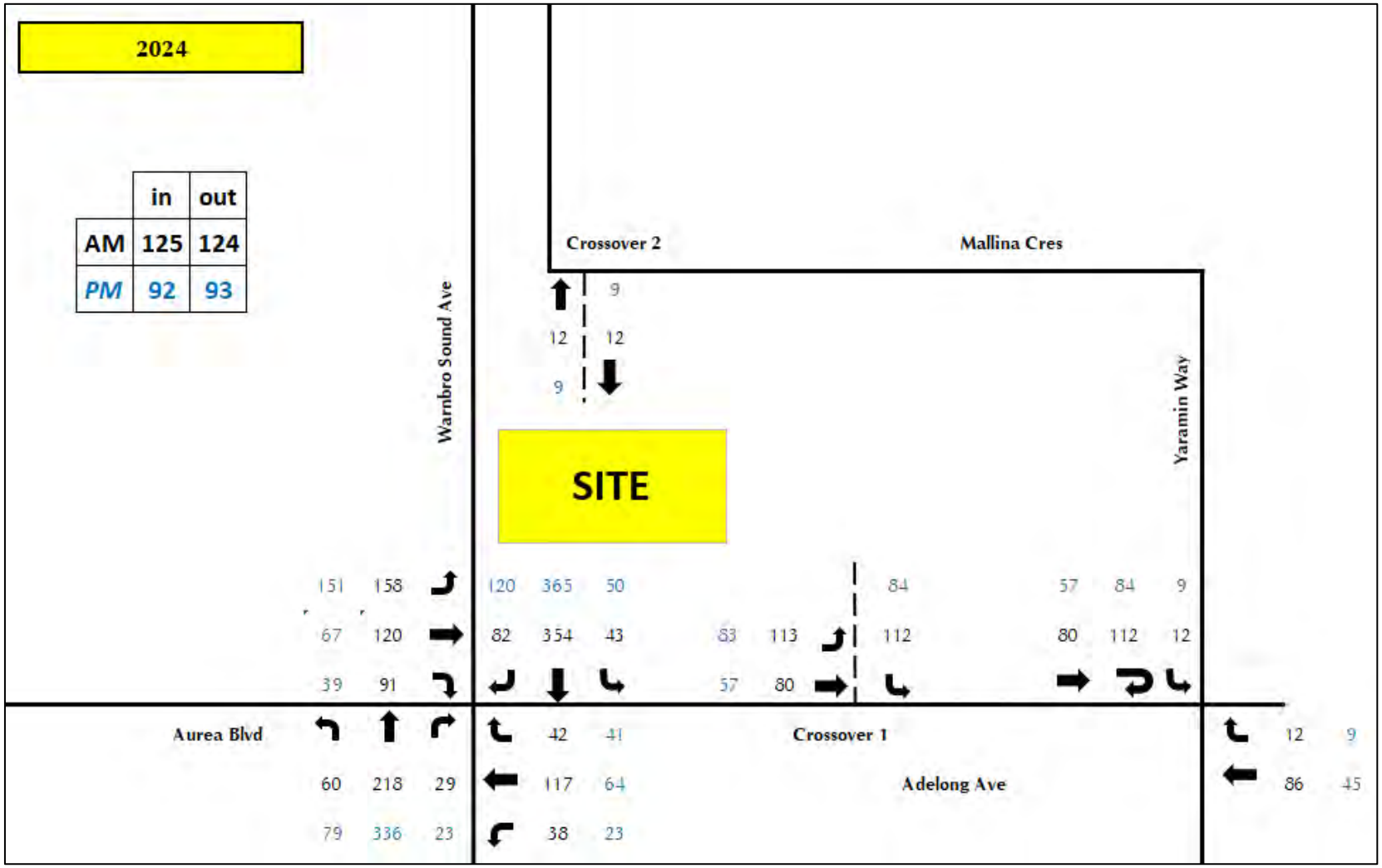


Figure 9: 2024 Total Traffic – Weekday AM and PM peak hour

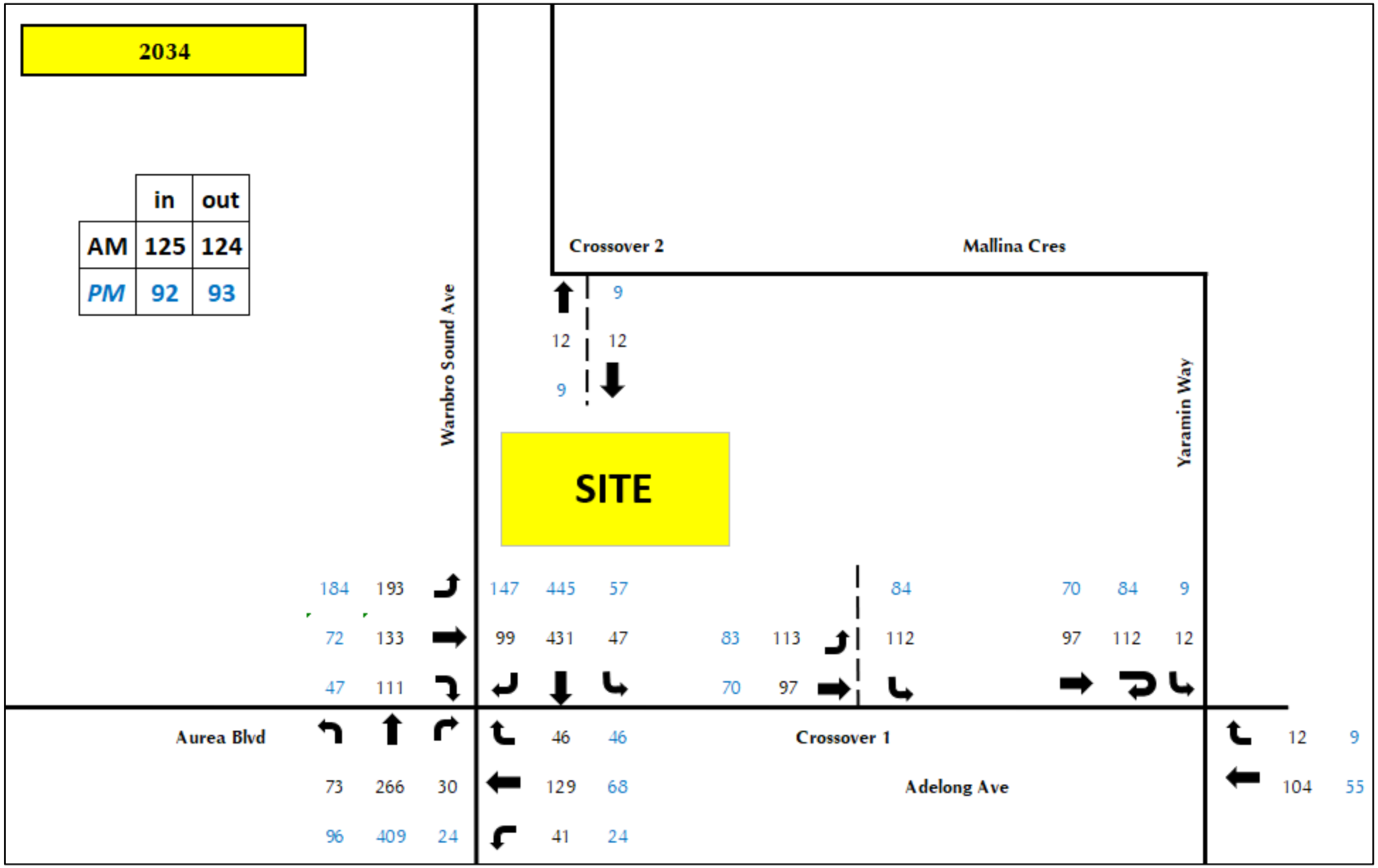


Figure 10: 2034 Total Traffic – Weekday AM and PM peak hour

6.4 Analysis of Local Intersections & Crossovers

Capacity analysis was undertaken using the SIDRA computer software package for the years 2024 and 2034. SIDRA is an intersection modelling tool commonly used by traffic engineers for all types of intersections. SIDRA outputs are presented in the form of Degree of Saturation, Level of Service, Average Delay and 95% Queue. These characteristics are defined as follows:

- ***Degree of Saturation*** *is the ratio of the arrival traffic flow to the capacity of the approach during the same period. The Degree of Saturation ranges from close to zero for infrequent traffic flow up to one for saturated flow or capacity.*
- ***Level of Service*** *is the qualitative measure describing operational conditions within a traffic stream and the perception by motorists and/or passengers. In general, there are 6 levels of service, designated from A to F, with Level of Service A representing the best operating condition (i.e. free flow) and Level of Service F the worst (i.e. forced or breakdown flow).*
- ***Average Delay*** *is the average of all travel time delays for vehicles through the intersection.*
- ***95% Queue*** *is the queue length below which 95% of all observed queue lengths fall.*

Network SIDRA model (refer to **Figure 11**) was developed to assess the development crossover on Adelong Avenue and the Warnbro Sound Ave/Adelong Ave/Aurea Blvd intersection as an integrated traffic network.

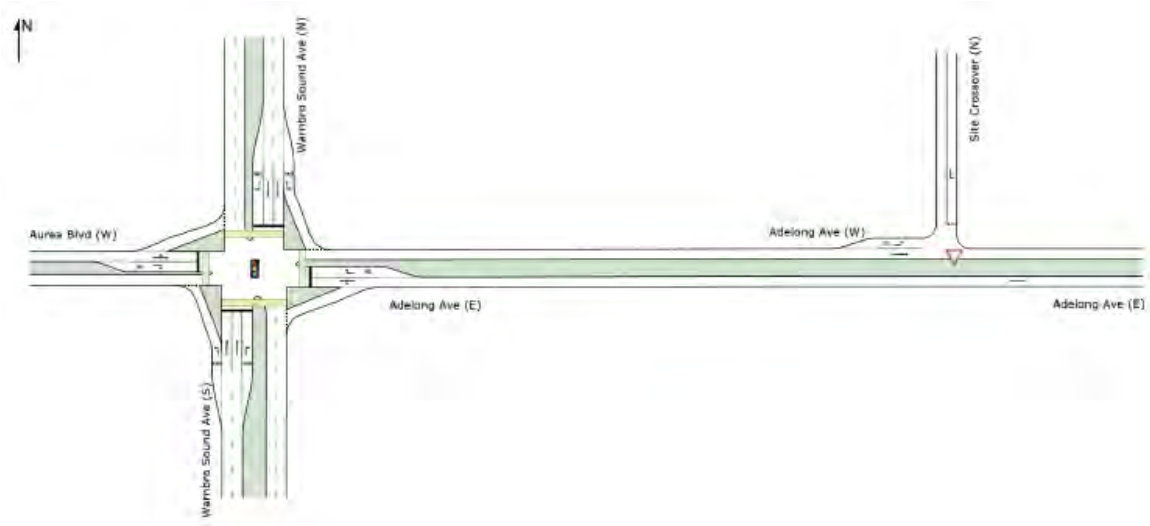


Figure 11: SIDRA Network Model

The results of the SIDRA analysis are summarised in **Appendix C.** The SIDRA intersection models were coded with reference to Main Roads WA Operation Modelling Guidelines. All relevant parameters such as heavy vehicle groups, PCU factors etc. were coded as per the Main Roads WA Guidelines.

6.4.1 Warnbro Sound Ave/Adelong Ave/Aurea Blvd Intersection

The SIDRA analysis results indicate that the existing signalised intersection presently operates satisfactorily (overall LoS C) with moderate queues and delays during both weekday peak hours.

The addition of development-generated traffic resulted in negligible increases in overall queues and delays. No major change in overall LoS for the intersection is reported.

The SIDRA assessment for the 10-year post-development scenario during the nominated peak periods rendered similar results to the post-development scenario with marginal increases in delays and queues and no changes to the LoS for most of the movements of the intersection. Importantly, the intersection has retained ample spare capacity for future traffic growth.

6.4.2 Development Crossover

SIDRA analysis indicates that the development crossover on Adelong Ave will operate satisfactorily in 2024 and 2034 during assessed peak hours. All movements operate with a good level of service (LoS A) with minimal delays and queuing.

6.4.3 Network Operation

Relevant SIDRA Network outputs were reviewed for the assessed peak hours to establish the operation of the development crossovers and the nearby intersections as an integrated network.

As detailed in **Figure 12** and **Figure 13** there are no queue backs from the nearby intersection to the development crossover. Similarly, no queue back from the development crossover to the nearby intersection is reported.

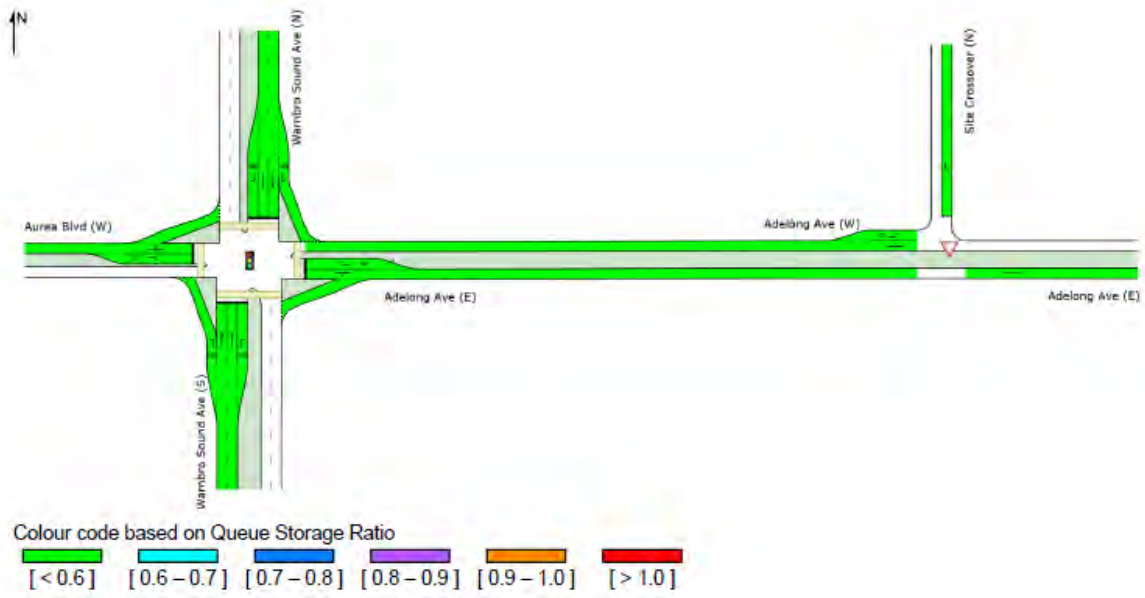


Figure 12: 2024 Queue Storage Ratio – AM and PM peak hour network analysis

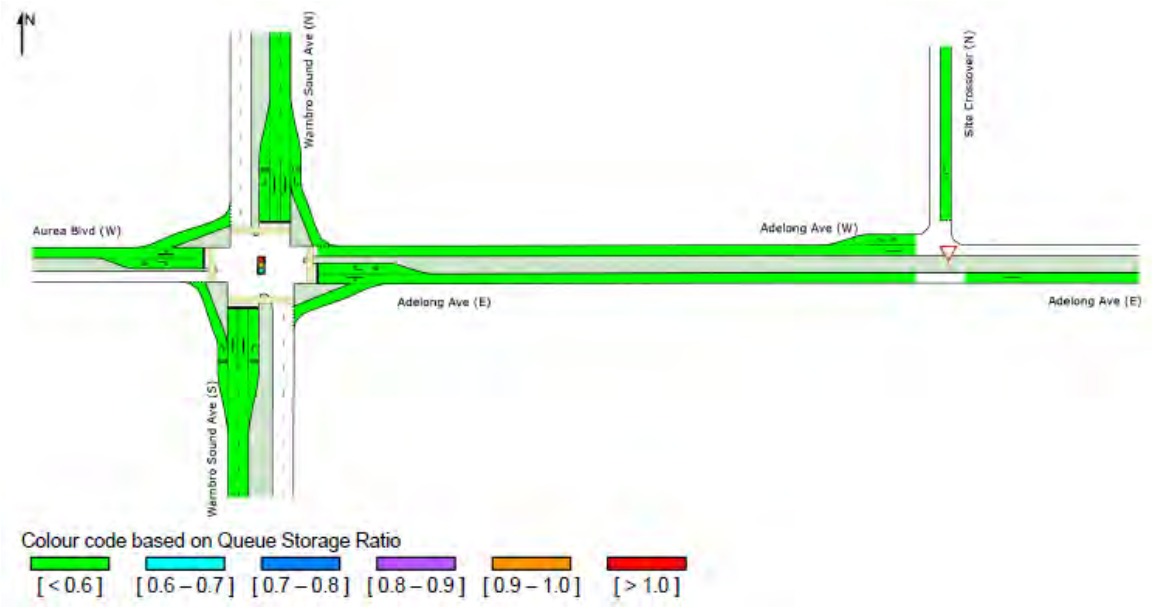


Figure 13: 2034 Queue Storage Ratio – AM and PM peak hour network analysis

6.5 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 proposed development will not increase traffic on any lanes on most of the surrounding road network by more than 100vph, except on Adelong Avenue. However, considering that Adelong Avenue has been constructed to Integrator B standard from Warnbro Sound Avenue to Yaramin Way, this level of traffic increase is well within the capacity of the road and is considered acceptable without impacting traffic operations.

6.6 Impact on Neighbouring Areas

Due to the location of the subject site, its accessibility via a major regional road, significant passing trade component and a limited number of residential dwellings

within the immediate vicinity, the traffic impact from the development in the area will be limited.

6.7 Traffic Noise and Vibration

Due to the location of the subject site, its accessibility via a major regional road, and its significant passing trade component, the traffic impact from the development in the area will be limited.

It generally requires a doubling of traffic volumes on a road to produce a perceptible 3dB(A) increase in road noise. The proposed development will not increase traffic volumes or noise on surrounding roads anywhere near this level.

7 Provision for Service Vehicles

The loading zone for the northern fast-food outlet is proposed to be located in the west of the building sharing a lane with the eastern drive-through lane. The loading zone for the southern fast-food outlet is proposed to be located east of the building sharing a lane with the western drive-through lane.

Waste collection and deliveries will take place within the site. The largest anticipated heavy vehicle to service the site is an 8.8m service vehicle. The service vehicle will enter the site via the proposed left-in/left-out crossover on Adelong Avenue in forward gear, park in the loading zone and then exit the site via the same crossover in forward gear.

It is proposed that servicing will be conducted outside peak operating hours of the proposed fast-food outlets to allow the use of the parking area for manoeuvring of the service vehicles.

Turn path analysis is undertaken for an 8.8m service vehicle included in **Appendix B** shows satisfactory access, egress, and circulation within the site.

8 Parking

The proposed development proposes the following parking provision:

- 28 90-degree parking bays;
- 2 ACROD bays;
- 25 stacking bays; and
- 4 waiting bays.

The northern fast-food outlet provides 10 stacking bays and 2 wait bays for its drive-through lanes and the southern fast-food outlet provides 11 stacking bays and 2 wait bays. Therefore, total practical parking provision for the proposed development is 53 effective parking spaces.

The City of Rockingham TPS2 provides the parking requirements for various land uses. The parking provision applicable to the proposed development is:

- 1 bay per 11m^2 NLA (including outdoor eating areas).

The proposed fast-food outlets have areas of 244m^2 and 275m^2. According to City's policy, the proposed development requires a parking provision of 47 parking bays. It is proposed to provide a total of 53 parking spaces (inclusive of 2 ACROD bays 21 stacking bays and 4 waiting bays). It is therefore concluded that the effective parking supply satisfies the parking demand and TPS2 requirements.

9 Queue Analysis

In order to assess the queuing capacity of the largest of the two fast food outlets proposed as part of this development (the southern outlet) a queue analysis was undertaken.

In order to reduce the risk of excessive vehicle queuing in the drive-through of the proposed fast-food outlets, a dual-lane drive-through is proposed for each fast-food outlet. This feature will effectively double the order-taking capacity of the drive-through to accommodate the potential demand for this service.

9.1 Drive-Through Window Trip Generation

Based on information available to Transcore, the percentage of drive-through patronage for fast food is about 50% of the total trip generation during the busiest hours. Applying 50% to the trip generation of the largest fast-food outlet results in the drive-through patronage of 66 customers/vehicles during the busiest hour.

9.2 Drive-Through Analysis

The proposed drive-through for each fast-food outlet is designed to include a dual-lane drive-through facility with two Customer Order Booths (COB). This facility merges into a single lane for payment and order pickup.

The proposed drive-through facility for the northern fast-food outlet provides four (4) cars stacking capacity upstream of the COBs with stacking space for two cars at each COB. The total stacking capacity proposed for the northern fast-food outlet is 10 stacking capacity which includes six (6) cars stacking capacity downstream of COBs.

The proposed drive-through facility for the southern fast-food outlet provides six (6) cars stacking capacity upstream of the COBs with stacking space for two cars at each COB. The total stacking capacity proposed for the northern fast-food outlet is 11 stacking capacity which includes five (5) cars stacking capacity downstream of COBs.

In addition, two waiting bays are also proposed for each drive through facility next to the exit point from the drive-through with the option to bypass these bays for customers not needing to wait to pick up their orders.

It is estimated that typical servicing time (order-taking time) would average one minute, translating into a service rate of 60 customers (cars) per hour per COB.

A queue length analysis was undertaken to assess the provision of storage for vehicles within the drive-through lane. For this purpose, an M/M/1 queuing model was adopted for each COB. The M/M/1 is a single-server queue model that can be used to approximate simple systems.

The queuing model adopted the following assumptions:

- Vehicles arrive randomly following Poisson's probability distribution;
- Service time is exponentially distributed;
- For a dual-lane facility, there is one server per queue, i.e., there are two queues, one for each COB, instead of a single queue being served by two COBs;
- The capacity of the queue in which arriving users wait before being served is infinite (for the purposes 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 4**.

M/M/s - Drive Through Queuing Analysis (Poisson Arrival and Service Rates)

M/M/s	vph	vps
Arrival rate	66	0.018333
Service rate	60	0.016667
Number of servers	2	2

Utilization	55.00%		55.00%	
P(0), probability that the system is empty	0.2903		0.2903	
Lq, expected queue length	0.4771	(cars)	6.0000	(metres)
L, expected number in system	1.5771	(cars)	12.0000	(metres)
Wq, expected time in queue	0.0072	(hours)	26.0215	(seconds)
W, expected total time in system	0.0239	(hours)	86.0215	(seconds)
Probability that a customer waits	0.3903		0.3903	
95% Queue	5.0000	(cars)	30.0000	(metres)

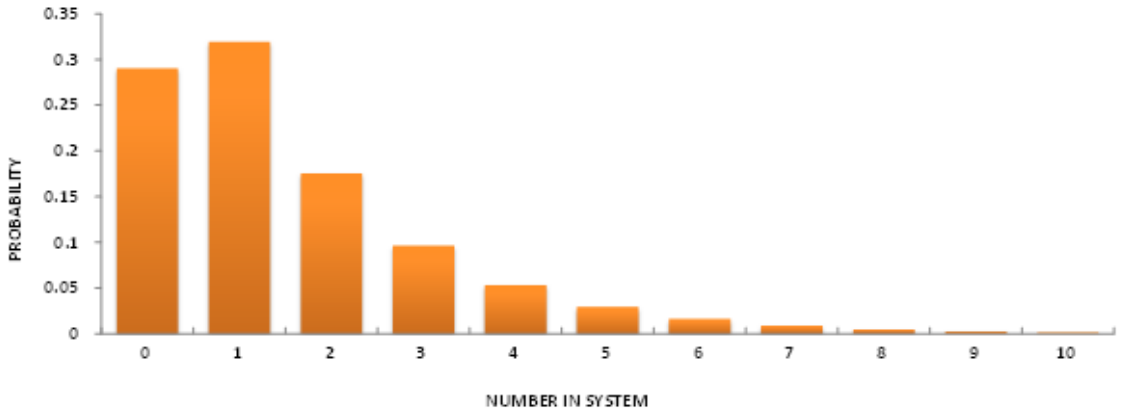


Figure 14. Peak hour queueing analysis

In summary, peak hour queuing analysis of the drive-through system established the following:

- The system utilisation rate is 55.00% during the peak hour;
- The expected number of vehicles in the system is two;
- The probability of the system (COB) being empty is 29.03%;
- The probability that a customer waits is 39.03%;
- The expected time in the queue for a vehicle to get to a COB is 26 seconds;
- The expected total time in the system is 86 seconds; and,
- The 95th percentile queue within the whole system is five vehicles.

The queue length usually adopted for robust analysis is the 95th percentile queue. This queue length will not exceed 95% of the time during the peak hour.

Based on the queue analysis model, it is concluded that under typical peak conditions, the queue back from each COB will be accommodated within the two-lane ordering facility, with no impact on the internal circulation system and the site's crossovers

9.3 RTA NSW – Drive-Through Requirements

RTA NSW Guide to Traffic Generating Developments specifies drive-through requirements for specific land uses. It states that:

Kentucky Fried Chicken: A drive through capacity of 6 car lengths should be provided. This requirement could be reduced to 5 car lengths for restaurants with low potential turnover. However the queue must be able to extend to 8 car lengths without unreasonably disrupting car parking operations or extending onto the street for restaurants with single booths or potential high turnover.

It also states that *"There should also be a maximum of four car spaces for cars queued from ordering point."*

The proposed dual-lane drive-through facility for each fast-food outlet provides a total of 10 car stacking capacity for the northern fast-food outlet and 11 car stacking capacity for the southern fast-food outlet including a total of four car spaces for cars queued from the ordering point for the northern fast-food outlet, six car spaces for cars queued from the ordering point for the southern fast-food outlet and two waiting bays for each facility as shown in **Appendix A**. Thus, the proposed stacking capacity arrangement exceeds the RTA NSW guideline requirements.

10 Public Transport Access

Details of the available public transport services in this locality are provided in **Section 4.3** of this report and will provide a satisfactory level of public transport accessibility to the site, particularly during business hours.

11 Pedestrian and Cyclist Access

Details of the pedestrian and cyclist facilities in this locality are provided in **Section 4.4** of the report. The existing facilities in this location provide a satisfactory level of service for the proposed development.

12 Conclusions

This Transport Impact Assessment (TIA) has been prepared by Transcore on behalf of Ladybug Twenty One Pty Ltd with regard to the proposed fast-food outlets to be located at 1 Adelong Avenue, Golden Bay.

The proposed development will utilise the proposed crossovers on Adelong Avenue and Mallina Crescent.

The net addition of traffic as a result of the proposed development when accounting for passing trade is **+124**vph (AM peak hour) and **+92**vph (PM peak hour) on the surrounding road network. Considering the standards and classifications of the surrounding road, this level of traffic increase can be accommodated without undermining traffic operations.

Queue analysis undertaken for the proposed fast-food outlets indicates that under typical peak conditions on a weekday or weekend, the queueing associated with the fast-food outlets will be accommodated within the site without impacting the development crossovers.

The stacking capacity of the proposed fast-food outlets also satisfies the RTA Guidelines requirements.

Network SIDRA models were developed to assess the development crossover on Adelong Avenue and the nearby intersection of Warnbro Sound Ave/Adelong Ave/Aurea Blvd as an integrated network. The analysis result indicates satisfactory traffic operations at the intersection and crossover.

A total of 53 effective parking spaces including 2 ACROD bays, 21 stacking bays and 4 wait bays are proposed for the proposed development. This level of parking supply satisfies the requirements of TPS2 and the anticipated parking demand of the development. Effective traffic circulation and guidance for patrons within the site is facilitated the proposed arrow pavement markings as shown in the development plan.

In conclusion, the findings of this Transport Impact Assessment are supportive of the proposed development.

Appendix A

PROPOSED DEVELOPMENT PLAN

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DA-1000
OVERALL FLOOR PLAN - PROPOSED



CARS PROVIDED

BUILDING 01:
10 STACK BAYS
2 WAIT BAYS

BUILDING 02:
11 STACK BAYS
2 WAIT BAYS

28 PARKING BAYS

TOTAL CARS PROVIDED: 53

0 5 10 15 20 25
SCALE 1500 @ A3 SIZE m

ISSUE J
Date of Issue | 15.05.2024

| 1 ADELONG AVENUE, GOLDEN BAY, WA 6174

bayerstevens

DA-1100
FAST FOOD BUILDING 01 - FLOOR PLAN



0 2 4 6 8 10

SCALE 1200 @ A3 SIZE m

ISSUE E

Date of Issue | 07.05.2024

| 1 ADELONG AVENUE, GOLDEN BAY, WA 6174

bayerstevens

DA-1200
FAST FOOD BUILDING 02 - FLOOR PLAN



0 2 4 6 8 10

SCALE 1200 @ A3 SIZE m

ISSUE E

Date of Issue | 07.05.2024

| 1 ADELONG AVENUE, GOLDEN BAY, WA 6174

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Appendix B

TURN PATH ANALYSIS

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1 Adelong Avenue, Golden Bay

8.8 m Service Vehicle

Building 01 Service Bay Entry

LEGEND

Vehicle Body

Wheel Path

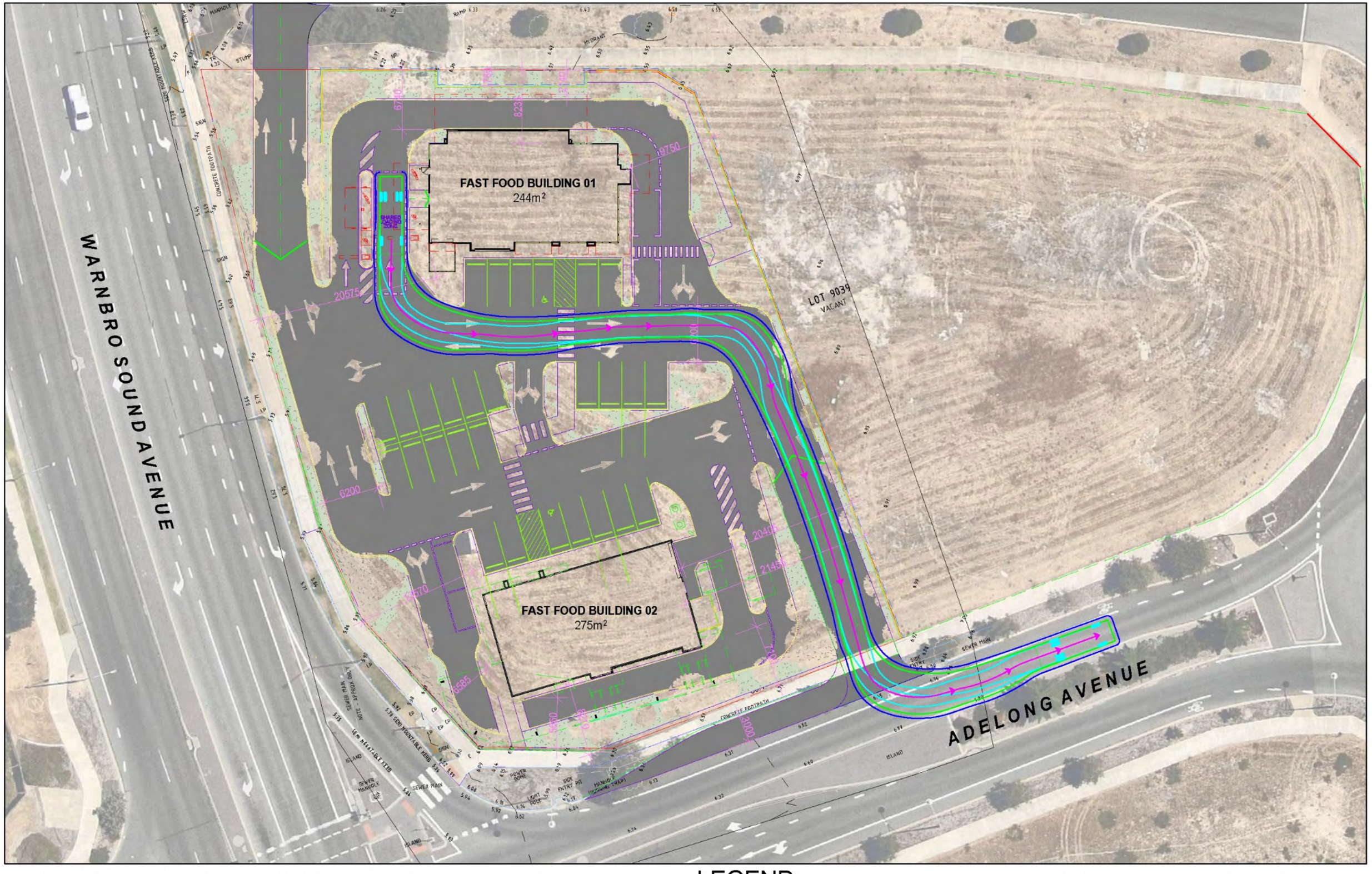
500mm Clearance

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transcore



1 Adelong Avenue, Golden Bay

8.8 m Service Vehicle

Building 01 Service Bay Exit

LEGEND

Vehicle Body

Wheel Path

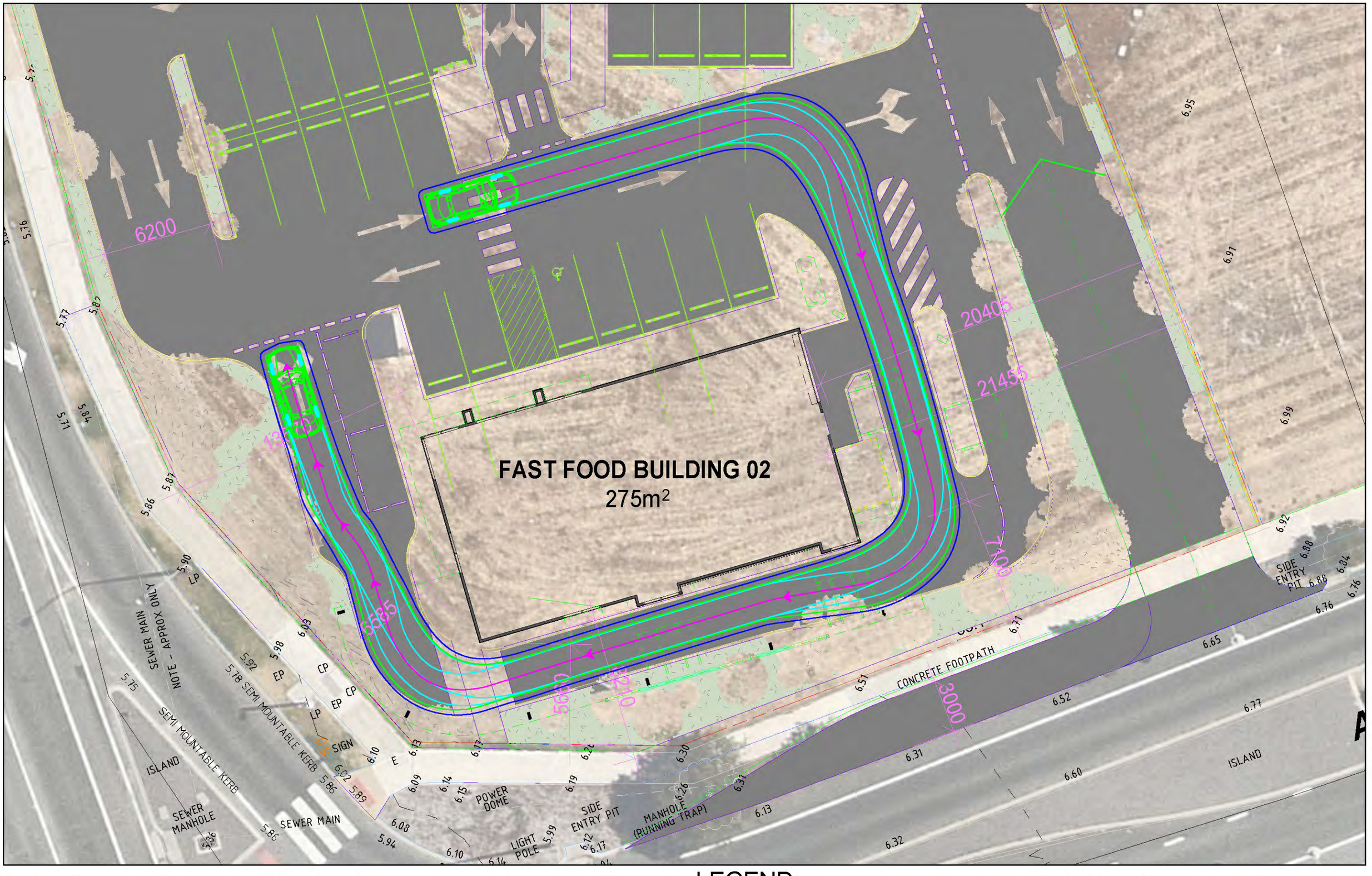
500mm Clearance

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transcore



1 Adelong Avenue, Golden Bay

B99 Passenger Car

Building 02 Drive-through Entry and Exit

LEGEND

Vehicle Body

Wheel Path

300mm Clearance

t23.159.sk04e

15/05/2024

Scale: 1:200 @ A3

transcore



1 Adelong Avenue, Golden Bay

B99 Passenger Car

Building 02 Drive-through Entry and Exit

LEGEND

Vehicle Body

Wheel Path

300mm Clearance

t23.159.sk05e

15/05/2024

Scale: 1:200 @ A3

transcore



1 Adelong Avenue, Golden Bay

B99 Passenger Car

Building 01 Drive-through Entry and Exit

LEGEND

Vehicle Body

Wheel Path

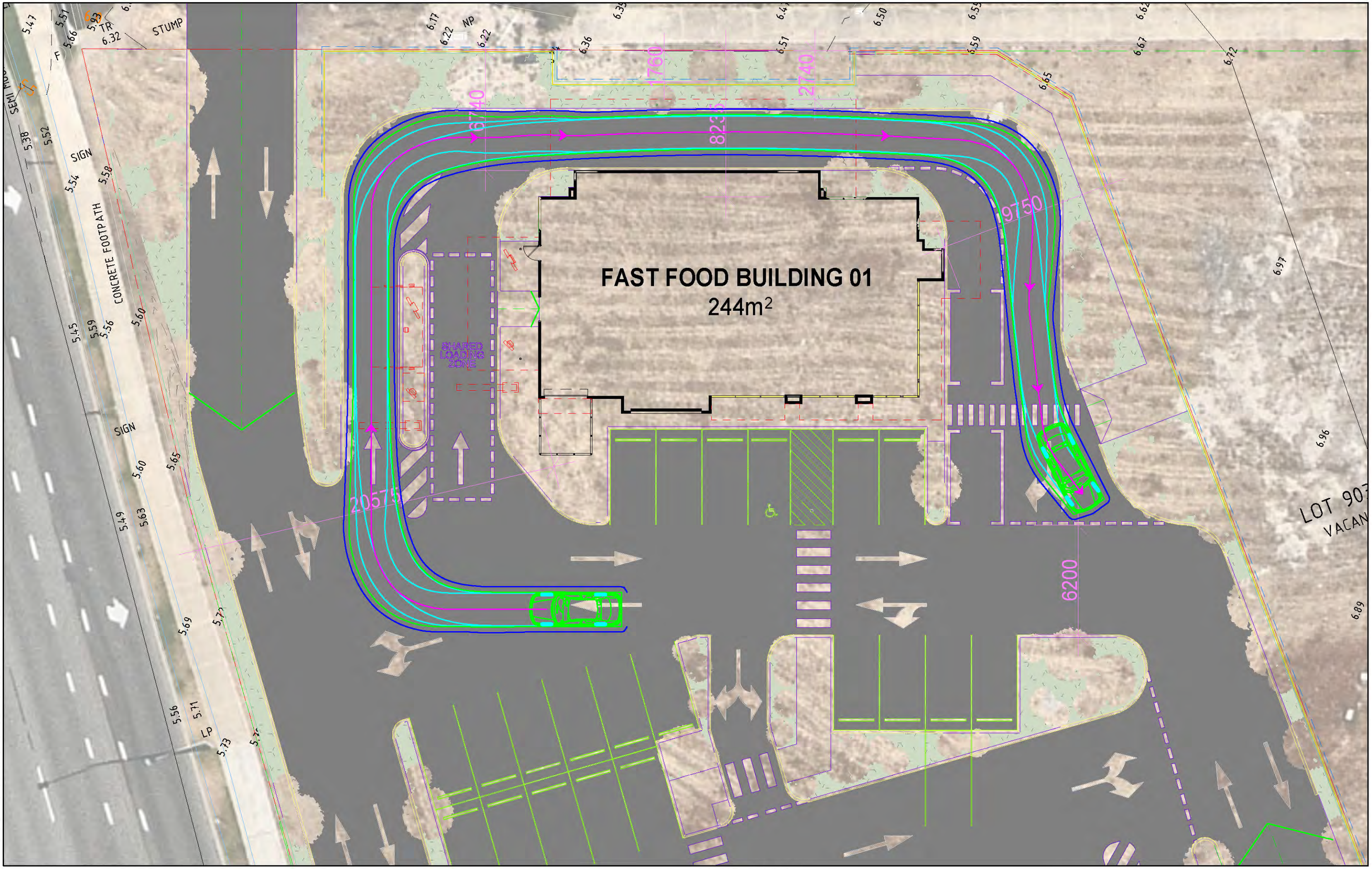
300mm Clearance

t23.159.sk06e

15/05/2024

Scale: 1:200 @ A3

transcore



1 Adelong Avenue, Golden Bay

B99 Passenger Car

Building 01 Drive-through Entry and Exit

LEGEND

Vehicle Body

Wheel Path

300mm Clearance

t23.159.sk07e

15/05/2024

Scale: 1:200 @ A3

transcore



1 Adelong Avenue, Golden Bay

8.8 m Service Vehicle

Building 02 Service Bay Entry

LEGEND

Vehicle Body

Wheel Path

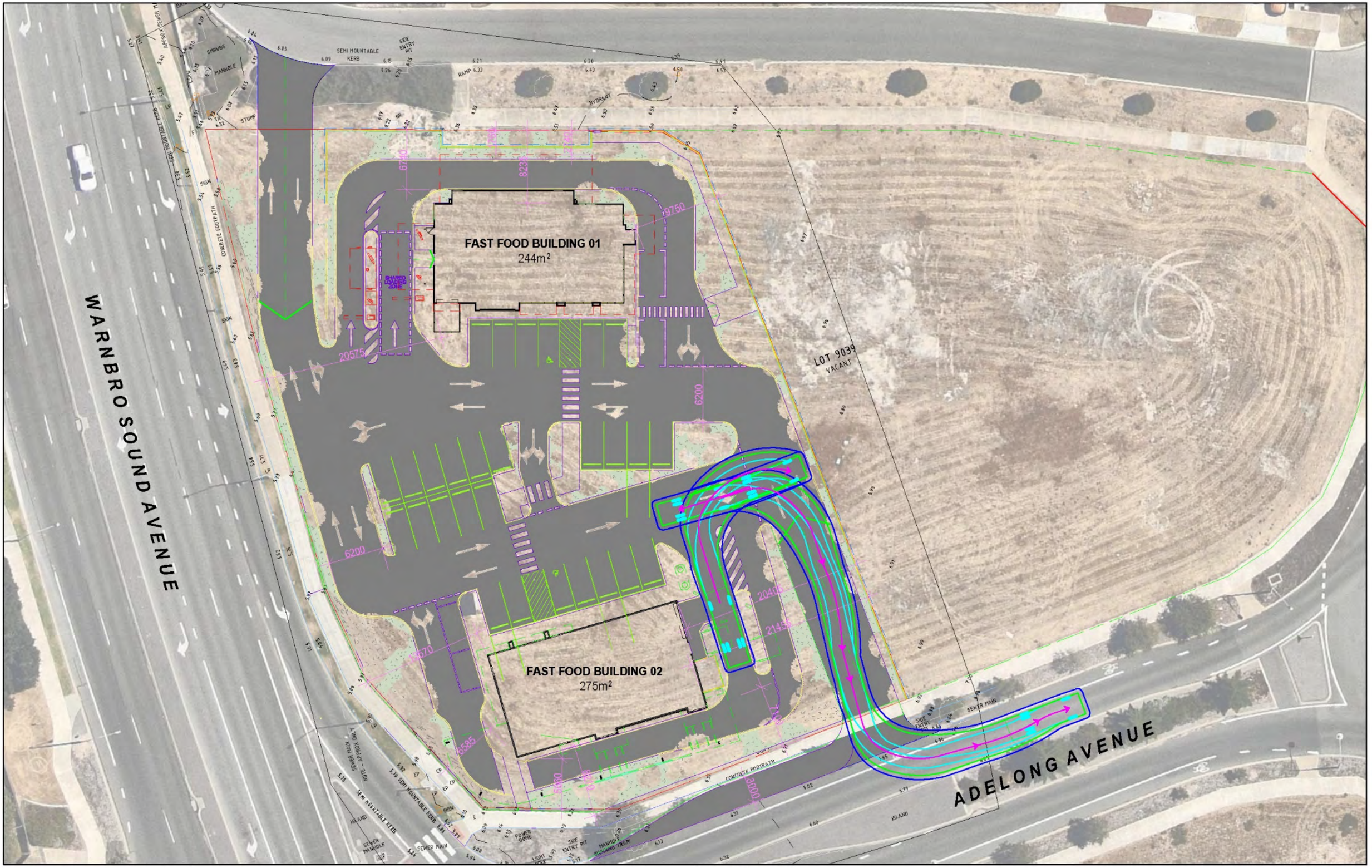
500mm Clearance

t23.159.sk08d

16/05/2024

Scale: 1:400 @ A3

transcore



1 Adelong Avenue, Golden Bay

8.8 m Service Vehicle

Building 02 Service Bay Exit

LEGEND

Vehicle Body

Wheel Path

500mm Clearance

t23.159.sk09d

16/05/2024

Scale: 1:400 @ A3

transcore

Appendix C

SIDRA ANALYSIS

Engineering a better future for over 20 years!

Table C-1: Warnrbo Sound Ave/Adelong Ave/Aurea Blvd – AM (Existing)

MOVEMENT SUMMARY

Site: [Warnbro Sound Ave & Adelong Ave & Aurea Blvd - AM (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

NA
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 81 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Warnbro Sound Ave (S)															
10	L2	All MCs	62	2.0	62	2.0	0.045	7.4	LOS A	0.3	2.1	0.20	0.63	0.20	51.2
11	T1	All MCs	225	5.8	225	5.8	0.383	34.0	LOS C	4.1	32.4	0.94	0.74	0.94	42.4
12	R2	All MCs	4	2.0	4	2.0	0.013	36.6	LOS D	0.1	1.0	0.85	0.64	0.85	30.0
Approach			292	4.9	292	4.9	0.383	28.4	LOS C	4.1	32.4	0.78	0.72	0.78	43.9
East: Adelong Ave (E)															
1	L2	All MCs	14	2.0	14	2.0	0.155	5.4	LOS A	1.6	12.3	0.82	0.64	0.82	39.8
2	T1	All MCs	57	2.0	57	2.0	*0.155	20.0	LOS B	1.6	12.3	0.82	0.64	0.82	35.4
3	R2	All MCs	18	2.0	18	2.0	0.045	30.7	LOS C	0.6	4.2	0.81	0.67	0.81	31.5
Approach			88	2.0	88	2.0	0.155	19.9	LOS B	1.6	12.3	0.82	0.65	0.82	35.1
North: Warnbro Sound Ave (N)															
4	L2	All MCs	18	2.0	18	2.0	0.016	11.1	LOS B	0.2	1.7	0.40	0.64	0.40	47.8
5	T1	All MCs	365	9.8	365	9.8	*0.644	36.4	LOS D	7.2	58.3	0.99	0.83	1.04	41.3
6	R2	All MCs	84	2.0	84	2.0	*0.269	38.8	LOS D	3.0	22.5	0.91	0.76	0.91	35.5
Approach			467	8.1	467	8.1	0.644	35.8	LOS D	7.2	58.3	0.95	0.81	0.99	40.2
West: Aurea Blvd (W)															
7	L2	All MCs	163	2.0	163	2.0	0.197	4.9	LOS A	1.7	13.2	0.41	0.56	0.41	50.2
8	T1	All MCs	60	2.0	60	2.0	*0.197	9.7	LOS A	1.7	13.2	0.41	0.56	0.41	43.6
9	R2	All MCs	94	2.0	94	2.0	0.262	34.9	LOS C	3.2	24.3	0.89	0.75	0.89	36.1
Approach			317	2.0	317	2.0	0.262	14.7	LOS B	3.2	24.3	0.55	0.62	0.55	43.9
All Vehicles			1164	5.2	1164	5.2	0.644	27.0	LOS C	7.2	58.3	0.79	0.72	0.80	41.8

Table C-2: Warnrbo Sound Ave/Adelong Ave/Aurea Blvd – PM (Existing)

MOVEMENT SUMMARY

Site: [Warnbro Sound Ave & Adelong Ave & Aurea Blvd - PM (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

NA
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 85 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Warnbro Sound Ave (S)															
10	L2	All MCs	81	2.0	81	2.0	0.060	7.6	LOS A	0.5	3.4	0.22	0.63	0.22	51.0
11	T1	All MCs	346	5.8	346	5.8	0.501	34.3	LOS C	6.6	52.0	0.94	0.77	0.94	42.2
12	R2	All MCs	5	2.0	5	2.0	0.018	38.8	LOS D	0.2	1.4	0.86	0.65	0.86	29.1
Approach			433	5.0	433	5.0	0.501	29.4	LOS C	6.6	52.0	0.81	0.74	0.81	43.5
East: Adelong Ave (E)															
1	L2	All MCs	5	2.0	5	2.0	0.055	5.0	LOS A	0.6	4.5	0.79	0.59	0.79	38.8
2	T1	All MCs	19	2.0	19	2.0	*0.055	22.2	LOS C	0.6	4.5	0.79	0.59	0.79	34.6
3	R2	All MCs	22	2.0	22	2.0	0.058	32.9	LOS C	0.7	5.6	0.83	0.68	0.83	30.5
Approach			46	2.0	46	2.0	0.058	25.4	LOS C	0.7	5.6	0.81	0.64	0.81	32.9
North: Warnbro Sound Ave (N)															
4	L2	All MCs	33	2.0	33	2.0	0.029	11.0	LOS B	0.4	3.1	0.39	0.65	0.39	47.9
5	T1	All MCs	377	9.8	377	9.8	*0.567	34.9	LOS C	7.4	59.9	0.96	0.79	0.96	41.9
6	R2	All MCs	124	2.0	124	2.0	*0.417	42.0	LOS D	4.8	36.1	0.94	0.79	0.94	34.4
Approach			534	7.5	534	7.5	0.567	35.1	LOS D	7.4	59.9	0.92	0.78	0.92	40.0
West: Aurea Blvd (W)															
7	L2	All MCs	156	2.0	156	2.0	0.134	5.0	LOS A	1.4	10.4	0.27	0.54	0.27	50.5
8	T1	All MCs	21	2.0	21	2.0	*0.134	9.9	LOS A	1.4	10.4	0.27	0.54	0.27	44.0
9	R2	All MCs	40	2.0	40	2.0	0.117	35.9	LOS D	1.4	10.6	0.86	0.71	0.86	35.8
Approach			217	2.0	217	2.0	0.134	11.2	LOS B	1.4	10.6	0.38	0.57	0.38	46.4
All Vehicles			1229	5.5	1229	5.5	0.567	28.5	LOS C	7.4	59.9	0.78	0.72	0.78	42.1

Table C-3: Warnrbo Sound Ave/Adelong Ave/Aurea Blvd – AM (2024)

MOVEMENT SUMMARY

Site: [Warnbro Sound Ave & Adelong Ave & Aurea Blvd - Post - AM (Site Folder: Post - Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM (Network Folder: Post Development)]

NA
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 81 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Warnbro Sound Ave (S)															
10	L2	All MCs	63	2.0	63	2.0	0.047	7.7	LOS A	0.3	2.6	0.23	0.63	0.23	51.0
11	T1	All MCs	229	5.8	229	5.8	0.390	34.0	LOS C	4.2	33.0	0.94	0.74	0.94	42.4
12	R2	All MCs	31	2.0	31	2.0	0.098	37.6	LOS D	1.0	7.8	0.87	0.71	0.87	29.2
Approach			323	4.7	323	4.7	0.390	29.2	LOS C	4.2	33.0	0.79	0.72	0.79	42.9
East: Adelong Ave (E)															
1	L2	All MCs	40	2.0	40	2.0	0.349	5.5	LOS A	3.9	29.6	0.86	0.71	0.86	39.3
2	T1	All MCs	123	2.0	123	2.0	*0.349	21.7	LOS C	3.9	29.6	0.86	0.71	0.86	35.1
3	R2	All MCs	44	2.0	44	2.0	0.110	31.3	LOS C	1.4	10.7	0.83	0.71	0.83	31.2
Approach			207	2.0	207	2.0	0.349	20.6	LOS C	3.9	29.6	0.86	0.71	0.86	34.9
North: Warnbro Sound Ave (N)															
4	L2	All MCs	45	2.0	45	2.0	0.042	11.6	LOS B	0.6	4.6	0.42	0.66	0.42	48.8
5	T1	All MCs	373	9.8	373	9.8	*0.657	36.6	LOS D	7.3	59.8	0.99	0.84	1.05	41.2
6	R2	All MCs	86	2.0	86	2.0	*0.276	38.8	LOS D	3.1	23.1	0.91	0.76	0.91	35.5
Approach			504	7.8	504	7.8	0.657	34.7	LOS C	7.3	59.8	0.92	0.81	0.97	40.3
West: Aurea Blvd (W)															
7	L2	All MCs	166	2.0	166	2.0	0.365	5.2	LOS A	4.0	29.9	0.69	0.67	0.69	47.5
8	T1	All MCs	126	2.0	126	2.0	*0.365	17.2	LOS B	4.0	29.9	0.69	0.67	0.69	39.2
9	R2	All MCs	96	2.0	96	2.0	0.268	34.9	LOS C	3.3	24.8	0.89	0.75	0.89	36.1
Approach			388	2.0	388	2.0	0.365	16.4	LOS B	4.0	29.9	0.74	0.69	0.74	41.9
All Vehicles			1423	4.7	1423	4.7	0.657	26.4	LOS C	7.3	59.8	0.83	0.74	0.85	40.7

Table C-4: Site Crossover/Adelong Ave – AM (2024)

MOVEMENT SUMMARY

Site: [Site Crossover & Adelong Ave - Post - AM (Site Folder: Post - Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM (Network Folder: Post Development)]

NA
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Adelong Ave (E)															
2	T1	All MCs	91	2.0	91	2.0	0.048	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach			91	2.0	91	2.0	0.048	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
North: Site Crossover (N)															
4	L2	All MCs	118	2.0	118	2.0	0.078	0.3	LOS A	0.4	2.8	0.18	0.06	0.18	23.2
Approach			118	2.0	118	2.0	0.078	0.3	LOS A	0.4	2.8	0.18	0.06	0.18	23.2
West: Adelong Ave (W)															
7	L2	All MCs	119	2.0	119	2.0	0.066	3.9	LOS A	0.0	0.0	0.00	0.52	0.00	29.5
8	T1	All MCs	84	2.0	84	2.0	0.044	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach			203	2.0	203	2.0	0.066	2.3	NA	0.0	0.0	0.00	0.31	0.00	35.4
All Vehicles			412	2.0	412	2.0	0.078	1.2	NA	0.4	2.8	0.05	0.17	0.05	31.3

Table C-5: Warnrbo Sound Ave/Adelong Ave/Aurea Blvd – PM (2024)

MOVEMENT SUMMARY

Site: [Warnbro Sound Ave & Adelong Ave & Aurea Blvd - Post - PM (Site Folder: Post - Development)]

Network: N101 [PM (Network Folder: Post Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

NA
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 85 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Warnbro Sound Ave (S)															
10	L2	All MCs	83	2.0	83	2.0	0.063	8.0	LOS A	0.5	4.1	0.25	0.64	0.25	50.8
11	T1	All MCs	354	5.8	354	5.8	0.512	34.4	LOS C	6.8	53.3	0.95	0.77	0.95	42.2
12	R2	All MCs	24	2.0	24	2.0	0.081	39.6	LOS D	0.9	6.5	0.88	0.71	0.88	28.3
Approach			461	4.9	461	4.9	0.512	29.9	LOS C	6.8	53.3	0.82	0.74	0.82	43.0
East: Adelong Ave (E)															
1	L2	All MCs	24	2.0	24	2.0	0.204	5.5	LOS A	2.2	17.0	0.83	0.67	0.83	38.9
2	T1	All MCs	67	2.0	67	2.0	*0.204	22.9	LOS C	2.2	17.0	0.83	0.67	0.83	34.7
3	R2	All MCs	43	2.0	43	2.0	0.113	33.4	LOS C	1.5	11.1	0.84	0.71	0.84	30.3
Approach			135	2.0	135	2.0	0.204	23.1	LOS C	2.2	17.0	0.83	0.68	0.83	33.8
North: Warnbro Sound Ave (N)															
4	L2	All MCs	53	2.0	53	2.0	0.047	11.1	LOS B	0.7	5.2	0.39	0.66	0.39	49.5
5	T1	All MCs	384	9.8	384	9.8	*0.578	35.0	LOS D	7.5	61.2	0.96	0.79	0.96	41.9
6	R2	All MCs	126	2.0	126	2.0	*0.424	42.1	LOS D	4.9	36.8	0.94	0.79	0.94	34.4
Approach			563	7.3	563	7.3	0.578	34.4	LOS C	7.5	61.2	0.90	0.78	0.90	40.2
West: Aurea Blvd (W)															
7	L2	All MCs	166	2.0	166	2.0	0.384	5.4	LOS A	4.3	32.5	0.72	0.69	0.72	46.8
8	T1	All MCs	126	2.0	126	2.0	*0.384	19.4	LOS B	4.3	32.5	0.72	0.69	0.72	38.4
9	R2	All MCs	96	2.0	96	2.0	0.281	37.2	LOS D	3.5	26.4	0.90	0.76	0.90	35.3
Approach			388	2.0	388	2.0	0.384	17.8	LOS B	4.3	32.5	0.76	0.70	0.76	41.1
All Vehicles			1547	4.8	1547	4.8	0.578	27.9	LOS C	7.5	61.2	0.84	0.74	0.84	40.8

Table C-6: Site Crossover/Adelong Ave – PM (2024)

MOVEMENT SUMMARY

Site: [Site Crossover & Adelong Ave - Post - PM (Site Folder: Post - Development)]

Network: N101 [PM (Network Folder: Post Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

NA
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Adelong Ave (E)															
2	T1	All MCs	47	2.0	47	2.0	0.025	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach			47	2.0	47	2.0	0.025	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
North: Site Crossover (N)															
4	L2	All MCs	88	2.0	88	2.0	0.057	0.2	LOS A	0.3	2.1	0.15	0.04	0.15	23.4
Approach			88	2.0	88	2.0	0.057	0.2	LOS A	0.3	2.1	0.15	0.04	0.15	23.4
West: Adelong Ave (W)															
7	L2	All MCs	87	2.0	87	2.0	0.048	3.9	LOS A	0.0	0.0	0.00	0.52	0.00	29.5
8	T1	All MCs	60	2.0	60	2.0	0.032	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach			147	2.0	147	2.0	0.048	2.3	NA	0.0	0.0	0.00	0.31	0.00	35.3
All Vehicles			283	2.0	283	2.0	0.057	1.3	NA	0.3	2.1	0.05	0.17	0.05	30.8

Table C-7: Warnrbo Sound Ave/Adelong Ave/Aurea Blvd – AM (2034)

MOVEMENT SUMMARY

Site: [Warnbro Sound Ave & Adelong Ave & Aurea Blvd - 10 Years - AM (Site Folder: 10 years Post - Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [AM (Network Folder: 10 Years Post Development)]

NA
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 81 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Warnbro Sound Ave (S)															
10	L2	All MCs	77	2.0	77	2.0	0.058	7.8	LOS A	0.5	3.5	0.24	0.64	0.24	50.9
11	T1	All MCs	280	5.8	280	5.8	0.476	34.6	LOS C	5.2	41.0	0.95	0.76	0.95	42.1
12	R2	All MCs	32	2.0	32	2.0	0.101	37.6	LOS D	1.1	8.1	0.87	0.72	0.87	29.1
Approach			388	4.7	388	4.7	0.476	29.6	LOS C	5.2	41.0	0.81	0.74	0.81	42.8
East: Adelong Ave (E)															
1	L2	All MCs	43	2.0	43	2.0	0.384	5.9	LOS A	4.1	30.7	0.87	0.73	0.87	39.9
2	T1	All MCs	136	2.0	136	2.0	*0.384	20.6	LOS C	4.1	30.7	0.87	0.73	0.87	35.5
3	R2	All MCs	48	2.0	48	2.0	0.120	31.4	LOS C	1.6	11.7	0.83	0.71	0.83	31.2
Approach			227	2.0	227	2.0	0.384	20.1	LOS C	4.1	30.7	0.87	0.72	0.87	35.2
North: Warnbro Sound Ave (N)															
4	L2	All MCs	49	2.0	49	2.0	0.046	11.6	LOS B	0.7	5.0	0.42	0.66	0.42	48.8
5	T1	All MCs	454	9.8	454	9.8	*0.800	40.8	LOS D	9.7	79.0	1.00	0.95	1.22	39.3
6	R2	All MCs	104	2.0	104	2.0	*0.333	39.2	LOS D	3.7	28.2	0.92	0.77	0.92	35.3
Approach			607	7.8	607	7.8	0.800	38.2	LOS D	9.7	79.0	0.94	0.89	1.11	38.9
West: Aurea Blvd (W)															
7	L2	All MCs	203	2.0	203	2.0	0.409	5.3	LOS A	4.7	35.2	0.68	0.68	0.68	47.7
8	T1	All MCs	140	2.0	140	2.0	*0.409	16.9	LOS B	4.7	35.2	0.68	0.68	0.68	39.5
9	R2	All MCs	117	2.0	117	2.0	0.327	35.4	LOS D	4.1	30.7	0.90	0.77	0.90	35.9
Approach			460	2.0	460	2.0	0.409	16.5	LOS B	4.7	35.2	0.74	0.70	0.74	42.0
All Vehicles			1683	4.7	1683	4.7	0.800	27.8	LOS C	9.7	79.0	0.84	0.78	0.90	40.2

Table C-8: Site Crossover/Adelong Ave – AM (2034)

MOVEMENT SUMMARY

Site: [Site Crossover & Adelong Ave - 10 Years - AM (Site Folder: 10 years Post - Development)]

Network: N101 [AM (Network Folder: 10 Years Post Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

NA
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Adelong Ave (E)															
2	T1	All MCs	109	2.0	109	2.0	0.058	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach			109	2.0	109	2.0	0.058	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
North: Site Crossover (N)															
4	L2	All MCs	118	2.0	118	2.0	0.079	0.3	LOS A	0.4	2.9	0.20	0.08	0.20	23.1
Approach			118	2.0	118	2.0	0.079	0.3	LOS A	0.4	2.9	0.20	0.08	0.20	23.1
West: Adelong Ave (W)															
7	L2	All MCs	119	2.0	119	2.0	0.066	3.9	LOS A	0.0	0.0	0.00	0.52	0.00	29.5
8	T1	All MCs	102	2.0	102	2.0	0.054	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach			221	2.0	221	2.0	0.066	2.1	NA	0.0	0.0	0.00	0.28	0.00	36.2
All Vehicles			448	2.0	448	2.0	0.079	1.1	NA	0.4	2.9	0.05	0.16	0.05	32.0

Table C-9: Warnrbo Sound Ave/Adelong Ave/Aurea Blvd – PM (2034)

MOVEMENT SUMMARY

Site: [Warnbro Sound Ave & Adelong Ave & Aurea Blvd - 10 Years - PM (Site Folder: 10 years Post - Development)]

Network: N101 [PM (Network Folder: 10 Years Post Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

NA
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 85 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Warnbro Sound Ave (S)															
10	L2	All MCs	101	2.0	101	2.0	0.078	8.2	LOS A	0.7	5.5	0.26	0.64	0.26	50.6
11	T1	All MCs	431	5.8	431	5.8	0.623	35.4	LOS D	8.5	66.7	0.97	0.81	0.98	41.7
12	R2	All MCs	25	2.0	25	2.0	0.085	39.6	LOS D	0.9	6.8	0.88	0.71	0.88	28.3
Approach			557	4.9	557	4.9	0.623	30.7	LOS C	8.5	66.7	0.84	0.77	0.85	42.6
East: Adelong Ave (E)															
1	L2	All MCs	25	2.0	25	2.0	0.216	5.5	LOS A	2.4	18.0	0.83	0.67	0.83	38.9
2	T1	All MCs	72	2.0	72	2.0	*0.216	22.9	LOS C	2.4	18.0	0.83	0.67	0.83	34.7
3	R2	All MCs	48	2.0	48	2.0	0.126	33.5	LOS C	1.7	12.4	0.84	0.72	0.84	30.2
Approach			145	2.0	145	2.0	0.216	23.4	LOS C	2.4	18.0	0.84	0.69	0.84	33.7
North: Warnbro Sound Ave (N)															
4	L2	All MCs	60	2.0	60	2.0	0.054	11.4	LOS B	0.8	6.2	0.41	0.66	0.41	49.0
5	T1	All MCs	468	9.8	468	9.8	*0.704	37.3	LOS D	9.7	78.9	0.99	0.86	1.07	40.8
6	R2	All MCs	155	2.0	155	2.0	*0.519	42.8	LOS D	6.1	45.9	0.96	0.80	0.96	34.2
Approach			683	7.3	683	7.3	0.704	36.3	LOS D	9.7	78.9	0.93	0.83	0.99	39.3
West: Aurea Blvd (W)															
7	L2	All MCs	194	2.0	194	2.0	0.258	5.4	LOS A	3.1	23.7	0.48	0.59	0.48	49.4
8	T1	All MCs	76	2.0	76	2.0	*0.258	12.6	LOS B	3.1	23.7	0.48	0.59	0.48	41.8
9	R2	All MCs	49	2.0	49	2.0	0.145	36.1	LOS D	1.7	13.2	0.87	0.72	0.87	35.7
Approach			319	2.0	319	2.0	0.258	11.8	LOS B	3.1	23.7	0.54	0.61	0.54	45.2
All Vehicles			1704	5.1	1704	5.1	0.704	28.8	LOS C	9.7	78.9	0.82	0.76	0.84	41.0

Table C-10: Site Crossover/Adelong Ave – PM (2034)

MOVEMENT SUMMARY

Site: [Site Crossover & Adelong Ave - 10 Years - PM (Site Folder: 10 years Post - Development)]

Network: N101 [PM (Network Folder: 10 Years Post Development)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

NA
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Adelong Ave (E)															
2	T1	All MCs	58	2.0	58	2.0	0.030	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach			58	2.0	58	2.0	0.030	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
North: Site Crossover (N)															
4	L2	All MCs	88	2.0	88	2.0	0.058	0.2	LOS A	0.3	2.0	0.16	0.06	0.16	23.3
Approach			88	2.0	88	2.0	0.058	0.2	LOS A	0.3	2.0	0.16	0.06	0.16	23.3
West: Adelong Ave (W)															
7	L2	All MCs	87	2.0	87	2.0	0.048	3.9	LOS A	0.0	0.0	0.00	0.52	0.00	29.5
8	T1	All MCs	74	2.0	74	2.0	0.039	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach			161	2.0	161	2.0	0.048	2.1	NA	0.0	0.0	0.00	0.28	0.00	36.2
All Vehicles			307	2.0	307	2.0	0.058	1.2	NA	0.3	2.0	0.05	0.16	0.05	31.5

Technical Note:	No 1	**Date:**	19/09/2024
Project No:	t23.159		
Project:	Lot 8005 (1) Adelong Avenue, Golden Bay		
Subject:	Transcore's response to the comments from the City of Rockingham, DPLH and Main Roads WA		

1 Introduction

This Technical Note has been prepared by Transcore on behalf of Ladybug Twenty One Pty Ltd with regard to the proposed fast food outlets with drive-through facilities to be located at Lot 8005 (1) Adelong Avenue, Golden Bay in City of Rockingham.

Transcore prepared a Transport Impact Assessment (TIA) report in line with the WAPC guidelines in May 2024. The City reviewed the TIS and referred it to DPLH and Main Road WA for comments. Following the review of the TIA the authorities have provided their respective comments in letters as per the following:

- City of Rockingham - 05th August 2024
- DPLH - 09th July 2024
- Main Roads WA - 31st July 2024

Accordingly, the aim of this technical note is to address the traffic engineering-related comments from these authorities and provide a suitable response to the items raised.

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Figure 1: Location of the subject site

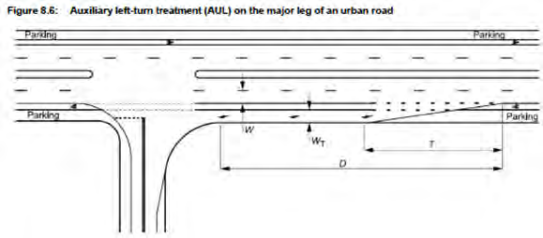
2 Response to the City of Rockingham's Comments

Transcore's responses to the comments from the City of Rockingham are detailed in green in **Table 1**.

Table 1: Transcore's Responses to the City of Rockingham's Comments

City of Rockingham's Comments	Transcore's Response
Swept path analysis suggests the movement of the proposed service vehicles is likely to increase traffic safety risks and presents turn movements that may not be practical.	The service vehicle movements for this proposed development are similar to any other development of this nature and size. Further, it should be noted that service vehicle visitations to the site are not frequent and only a few times during the week. These visitations are generally outside the peak operations to minimise any internal conflicts. The swept paths show satisfactory entry and egress for service vehicles.
To improve traffic safety and vehicle queues external to the site, a redesign should be considered to restrict patrons from making a left turn into the drive-through area for "Building 2" from Adelong Avenue, and from Mallina Crescent turning into the western drive-through for "Building 1".	The aisle in front of "Building 2" is one way and vehicles entering from Adelong Avenue will not be able to immediately turn into the drive-through to access the drive-through for "Building 2". Further with respect to "Building 1" it is not possible for vehicles entering from Mallina Crescent to enter the western drive-through and they can only enter the eastern drive-through.
Loading areas and areas used by general public/pedestrians should be easily identifiable/delineated and separated as far as possible in accordance with AS2890.2 and not being shared. Pedestrian movement through traffic aisles and drive-thru is not supported. It is also suggested that the internal one way access between car parking in the centre of the development to be removed, to be used as integrated landscape and/or pedestrian refuge.	The use of drive-through lanes for servicing is not unusual. It is reiterated that service vehicles will access this site only few times per week and outside peak operating times. When service vehicles are in the drive-through the second drive-through lane is still available which will be adequate to service the development during off-peak times. There are no issues with the internal one-way access between car parking.
The proposed vehicle crossover on Adelong Avenue raises concern in	Please refer to responses under **Attachment 1** items.

regard to safety. The eastern wing of the proposed vehicle encroaches into the adjacent traffic lane. Please refer to Attachment 1 for commentary.	
The Mallina Crescent crossover to be re-considered to address traffic risks and safety concerns with the alignment on the corner/bend.	This crossover is now proposed as entry only. Please refer to the revised development plan in **Appendix A**. The traffic was redistributed based on the revised crossover arrangement and SIDRA analysis for the weekday peak hours was revised. The revised SIDRA results for weekday peak hours are provided in **Appendix B** which show satisfactory operations.
Attachment 1 - Adelong Avenue Crossover Comments:	
The taper for the proposed left turn pocket is located within the 6.0m from the Tangent Point (TP) of the roundabout.	There is no issue with the taper for the proposed left turn pocket to be located within 6.0m of the Tangent Point (TP) of the roundabout. There is no guideline that prohibits this proximity.
The stop line distance between the roundabout (Adelong Avenue/Yarramin Way) and the signalised intersection (Warnbro Sound Avenue/Adelong Avenue) is approximately 105m which is considered too short to have an access located between the intersections.	There is no issue with the proposed location of the crossover. Please refer to the development crossovers recently approved (with one development already constructed) on Aurea Blvd between the signalised intersection and roundabout of Aurea Blvd and Thundelarra Dr.
Attachment 1 - Adelong Avenue Crossover Comments: Access off Adelong Avenue will have the following constraints:	
The access shall be located more than 34m away from the roundabout entrance based on the upstream functional area of a roundabout (60km/hr design speed and 2 seconds reaction time). MRWA's guideline for Driveways require that driveways near roundabouts shall not be located within the functional area of the roundabout.	Please refer to the previous response.
The access shall be located more than 73m from the traffic signal's exit point	Please refer to the previous response.

based on the downstream functional area for the traffic signal (60km/hr design speed and 2 seconds reaction time). MRWA's guideline for Driveway requires that they shall not be located within the functional area of a traffic signal.	
For a design speed of 60km/hr (i.e posted speed limit of 50km/hr + 10km/hr) suggests a minimum length of deceleration "D" of 55.0m in accordance with Austroads' *Guide to Road Design Part 4A (Unsignalised and Signalised Intersections)*. Figure 8.6: Auxiliary left-turn treatment (AUL) on the major leg of an urban road  	As the proposed access point and left turn are retrofitted to an existing road network and the area is brownfield then EDD of Austroads applies. In accordance with EDD, the minimum length of the slip lane including taper is 30m with a length of 32m provided. Also, please refer to the approved and constructed left-turn lane for the development on Aurea Blvd immediately west of the signalised intersection.
Minimum distance of 6.0m between the Tangent Point (TP) and the start of the left turn taper (based on AS2890.1).	This point is already addressed.
Manual measurements from the overall floor plan suggests approximately 6.5m wide crossover (or 12.5m including the wings).	Noted.

3 Response to DPLH's Comments

Transcore's responses to the comments from the DPLH are detailed in green below in **Table 2**.

Table 2: Transcore's Responses to the DPLH's Comments

DPLH's Comments	Transcore's Response
The supporting TIA by Transcore (May 2024) has estimated a traffic generation of 125/124 trips in/out trips and 92/93 in/out trips in the AM peak hour and PM peak hour respectively. A passing trade factor of 50% has been included in this estimate. A SIDRA intersection analysis has been undertaken, depicting a Level of Service (LOS) A for the proposed crossover from Adelong Avenue, and a LOS C for existing and 2034 scenarios on the Warnbro Sound Avenue / Adelong Avenue intersection. Existing traffic levels have been obtained utilising Main Roads WA Trafficmap SCATS data for the Warnbro Sound Avenue / Adelong Avenue intersection.	Noted.
The AM and PM peak hours have not been specified. It is recommended that these be outlined.	The road network peak hours are established from the SCATS data as between 8:00-9:00 AM & 5:00–6:00 PM. The weekend peak hour is between 12:00-1:00 PM on Sunday afternoon.
Peak weekend traffic analysis should be undertaken, utilising weekend traffic generation rates as per *ITE 11th Edition Trip Generation Manual*.	The ITE trip generation for fast-food 934 was used to estimate the weekend peak hour trip generation and SIDRA analysis was undertaken for this weekend peak hour. The SIDRA results are provided in **Appendix C** which show satisfactory operations.
'Peak Hour of Generator' rates should be utilised for drive-through queuing analysis rather than 'Peak Hour of Adjacent Street Traffic' rates.	The drive-through queue analysis for weekend peak hour is provided in **Section 3.1** of this technical note.

The passing trade discount factor should not be incorporated when assessing driveway operational efficiency for the proposed development crossovers.	The passing trade is only reported for the purpose of establishing the net increase of traffic generation on the surrounding roads. SIDRA analysis in the original TIA and provided in this technical note did not allow for passing trade.
There are some instances where the 300 mm / 500 mm vehicle swept path buffer encroaches into proposed kerbing. It is desirable that the buffer does not encroach into surrounding road infrastructure as per *Austroads Design Vehicles and Turning Path Templates Guide*.	This is an internal site matter and has no relevance to DPLH. The purpose of using clearance for undertaking turn paths is to ensure the body or the wheel track does not impact kerbs. Austroads guidelines do not prohibit clearances encroaching onto kerbs and simply require that turn paths should be undertaken with clearances. Further, it should be noted that turn paths are conservative and real-life vehicle movements perform much better than simulation.

3.1 Drive Through Queue analysis for weekend peak hour

Additional queue length analysis was undertaken to assess the provision of storage for vehicles within the drive-through lanes during the weekend peak hour. For this purpose, an M/M/1 queuing model was adopted for each COB as per the TIA. The M/M/1 is a single-server queue model that can be used to approximate simple systems.

The queuing model adopted the following assumptions:

- Vehicles arrive randomly following Poisson's probability distribution;
- Service time is exponentially distributed;
- For a dual-lane facility, there is one server per queue, i.e., there are two queues, one for each COB, instead of a single queue being served by two COBs;
- The capacity of the queue in which arriving users wait before being served is infinite (for the purposes 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.

It is estimated that typical servicing time (order-taking time) would average one minute, translating into a service rate of 60 customers (cars) per hour per COB.

The proposed drive-through facility for the northern fast-food outlet provides four (4) cars stacking capacity downstream of the COBs with stacking space for two cars at each COB. The total stacking capacity proposed for the northern fast-food outlet (Building 1) is 10 stacking capacity which includes six (6) cars stacking capacity upstream of COBs to the collection point but not including a vehicle at the collection point.

The proposed drive-through facility for the southern fast-food outlet (Building 2) provides six (6) cars stacking capacity upstream of the COBs with stacking space for two cars at each COB. The total stacking capacity proposed for the northern fast-food outlet is 11 stacking capacity which includes five (5) cars stacking capacity upstream of COBs up to the collection point and excluding a vehicle at the collection point.

In addition, two waiting bays are also proposed for each drive-through facility next to the exit point from the drive-through with the option to bypass these bays so customers do not need to wait to pick up their orders.

3.1.1 Fast Food Building 1

The results of the queuing analysis for the fast-food building 1 are detailed in Figure 2.

M/M/s - Drive Through Queuing Analysis (Poisson Arrival and Service Rates)

M/M/s	vph	vps
Arrival rate	72	0.02
Service rate	60	0.016667
Number of servers	2	2

Utilization	60.00%		60.00%	
P(0), probability that the system is empty	0.2500		0.2500	
Lq, expected queue length	0.6750	(cars)	6.0000	(metres)
L, expected number in system	1.8750	(cars)	12.0000	(metres)
Wq, expected time in queue	0.0094	(hours)	33.7500	(seconds)
W, expected total time in system	0.0260	(hours)	93.7500	(seconds)
Probability that a customer waits	0.4500		0.4500	
95% Queue	6.0000	(cars)	36.0000	(metres)
Probability of 4 or less cars in the system	90.28%			

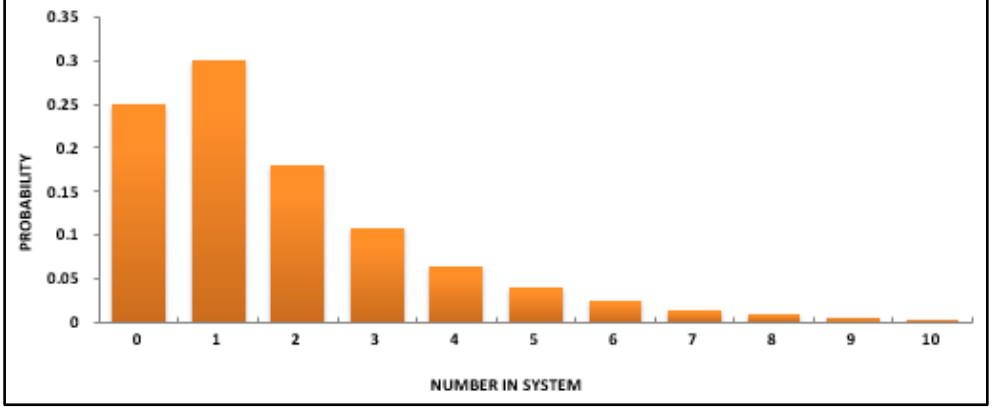


Figure 2. Peak hour queueing analysis

In summary, peak hour queuing analysis of the drive-through system established the following:

- The system utilisation rate is 60.00% during the peak hour;
- The expected number of vehicles in the system is 2;
- The probability of the system (COB) being empty is 25.0%;
- The probability that a customer waits is 45.0%;
- The expected time in the queue for a vehicle to get to a COB is 34 seconds;
- The expected total time in the system is 94 seconds;
- The 95th percentile queue within the whole system is 6 vehicles; and,
- The probability of the queue not exceeding the capacity (4 cars) is 90.28%.

3.1.2 Fast Food Building 2

The results of the queuing analysis for the fast-food building 1 are detailed in Figure 3.

M/M/s - Drive Through Queuing Analysis (Poisson Arrival and Service Rates)

M/M/s	vph	vps	
Arrival rate	82	0.022778	
Service rate	60	0.016667	
Number of servers	2	2	
Utilization	68.33%	68.33%	
P(0), probability that the system is empty	0.1881	0.1881	
Lq, expected queue length	1.1972 (cars)	12.0000	(metres)
L, expected number in system	2.5638 (cars)	18.0000	(metres)
Wq, expected time in queue	0.0146 (hours)	52.5586	(seconds)
W, expected total time in system	0.0313 (hours)	112.5586	(seconds)
Probability that a customer waits	0.5548	0.5548	
95% Queue	8.0000 (cars)	48.0000	(metres)
Probability of 6 or less cars in the system	91.73%		

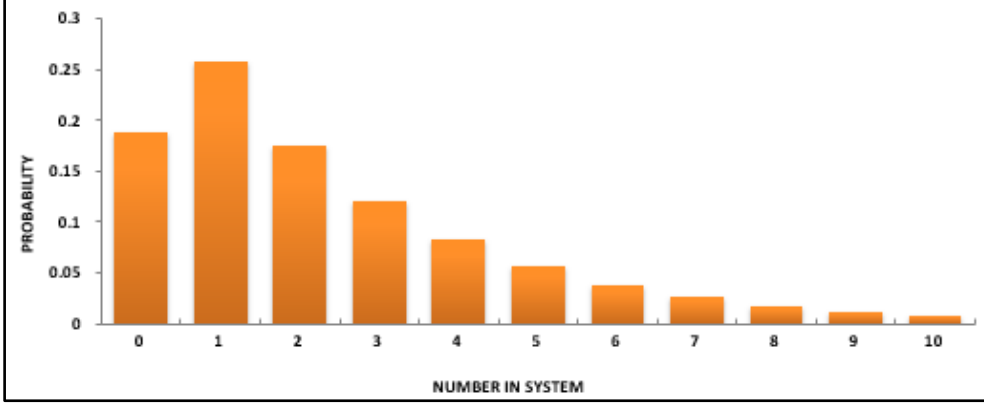


Figure 3. Peak hour queueing analysis

In summary, peak hour queuing analysis of the drive-through system established the following:

- The system utilisation rate is 68.33% during the peak hour;
- The expected number of vehicles in the system is 3;
- The probability of the system (COB) being empty is 18.81%;
- The probability that a customer waits is 55.48%;
- The expected time in the queue for a vehicle to get to a COB is 53 seconds;
- The expected total time in the system is 113 seconds;
- The 95th percentile queue within the whole system is 8 vehicles; and,
- The probability of the queue not exceeding the capacity (6 cars) is 91.73%.

3.1.3 Analysis of Outcome

The queue length usually adopted for robust analysis is the 95th percentile queue. This means during 95% of the peak hour (57 minutes) the queue will be less than that reported. The queue reported will only occur during 5% of the peak hour (3 minutes).

Any reported queuing outside the drive-through facilities can be accommodated within the internal circulation aisles. Therefore, considering the limited time that the 95% queue occurs (3 minutes of the weekend peak hour only) and any such queuing will be accommodated within the site there is minimal or no risk of drive-through queues extending onto the surrounding roads or creating regular and significant internal congestion.

Further, under typical peak weekend conditions, the probability of queue backs from each COB to be accommodated within the two-lane ordering facility is more than 90%.

4 Response to Main Roads WA's Comments

Transcore's response to the comments from the Main Roads WA is detailed in green below in **Table 3**.

Table 3: Transcore's response to the Main Roads WA's Comments

Main Roads WA's Comments	Transcore's Response
Further consideration shall be given to the Mallina Crescent crossover and drivethrough location for the 'Fast Food Building 01'. The proximity of the crossover and the drive through may create stacking and prevent vehicle from entering the drive through lanes in a single movement.	Mallina Crescent's proposed crossover is on a local road and has no relevance to Main Roads WA, regardless queue analysis of the drive-through demonstrates no issues.
Adequate approach and safe intersection sight distances shall be provided. The crossover on Mallina Crescent is located on the bend which is a potential safety issue and may lead to risk of a collision for access and egress movements.	Mallina Crescent's proposed crossover is on a local road and has no relevance to Main Roads WA. Regardless, in the revised plan no egress is proposed from Mallina Crescent.

APPENDIX B

Revised Weekday Peak Hours SIDRA Analysis

MOVEMENT SUMMARY

Site: [Warnbro Sound Ave & Adelong Ave & Aurea Blvd - AM (Site Folder: Existing)]

Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 81 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	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
South: Warnbro Sound Ave (S)														
10	L2	59	2.0	62	2.0	0.045	7.4	LOS A	0.3	2.1	0.20	0.63	0.20	52.4
11	T1	214	5.8	225	5.8	0.383	34.0	LOS C	4.1	32.4	0.94	0.74	0.94	42.4
12	R2	4	2.0	4	2.0	0.013	36.5	LOS D	0.1	1.0	0.85	0.64	0.85	29.8
Approach		277	4.9	292	4.9	0.383	28.4	LOS C	4.1	32.4	0.78	0.72	0.78	44.0
East: Adelong Ave (E)														
1	L2	13	2.0	14	2.0	0.155	20.3	LOS C	1.6	12.3	0.82	0.64	0.82	40.7
2	T1	54	2.0	57	2.0	*0.155	16.4	LOS B	1.6	12.3	0.82	0.64	0.82	35.3
3	R2	17	2.0	18	2.0	0.045	30.7	LOS C	0.6	4.2	0.81	0.67	0.81	31.8
Approach		84	2.0	88	2.0	0.155	19.9	LOS B	1.6	12.3	0.82	0.65	0.82	35.3
North: Warnbro Sound Ave (N)														
4	L2	17	2.0	18	2.0	0.016	11.1	LOS B	0.2	1.7	0.40	0.64	0.40	47.8
5	T1	347	9.8	365	9.8	*0.644	36.4	LOS D	7.2	58.3	0.99	0.83	1.04	41.2
6	R2	80	2.0	84	2.0	*0.269	38.7	LOS D	3.0	22.5	0.91	0.76	0.91	35.8
Approach		444	8.1	467	8.1	0.644	35.8	LOS D	7.2	58.3	0.95	0.81	0.99	40.2
West: Aurea Blvd (W)														
7	L2	155	2.0	163	2.0	0.197	7.4	LOS A	1.7	13.2	0.41	0.56	0.41	51.1
8	T1	57	2.0	60	2.0	*0.197	2.8	LOS A	1.7	13.2	0.41	0.56	0.41	43.5
9	R2	89	2.0	94	2.0	0.262	35.0	LOS C	3.2	24.3	0.89	0.75	0.89	36.3
Approach		301	2.0	317	2.0	0.262	14.7	LOS B	3.2	24.3	0.55	0.62	0.55	44.4
All Vehicles		1106	5.2	1164	5.2	0.644	27.0	LOS C	7.2	58.3	0.79	0.72	0.80	42.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Warnbro Sound Ave (S)												
P4	Full	50	53	32.1	LOS D	0.1	0.1	0.89	0.89	67.9	43.0	0.63
East: Adelong Ave (E)												
P1	Full	50	53	30.3	LOS D	0.1	0.1	0.87	0.87	58.7	34.1	0.58
North: Warnbro Sound Ave (N)												

P2 Full	50	53	30.3	LOS D	0.1	0.1	0.87	0.87	64.5	41.0	0.64
West: Aurea Blvd (W)											
P3 Full	50	53	29.5	LOS C	0.1	0.1	0.85	0.85	56.9	32.9	0.58
All Pedestrians	0	211	30.5	LOS D	0.1	0.1	0.87	0.87	62.0	37.8	0.61

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT SUMMARY

Site: [Warnbro Sound Ave & Adelong Ave & Aurea Blvd - PM (Site Folder: Existing)]

Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 85 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	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
South: Warnbro Sound Ave (S)														
10	L2	77	2.0	81	2.0	0.060	7.6	LOS A	0.5	3.4	0.22	0.63	0.22	52.2
11	T1	329	5.8	346	5.8	0.501	34.3	LOS C	6.6	52.0	0.94	0.77	0.94	42.2
12	R2	5	2.0	5	2.0	0.018	38.6	LOS D	0.2	1.4	0.86	0.65	0.86	28.9
Approach		411	5.0	433	5.0	0.501	29.4	LOS C	6.6	52.0	0.81	0.74	0.81	43.6
East: Adelong Ave (E)														
1	L2	5	2.0	5	2.0	0.055	21.5	LOS C	0.6	4.5	0.79	0.59	0.79	39.6
2	T1	18	2.0	19	2.0	*0.055	17.7	LOS B	0.6	4.5	0.79	0.59	0.79	34.5
3	R2	21	2.0	22	2.0	0.058	32.9	LOS C	0.7	5.6	0.83	0.68	0.83	30.8
Approach		44	2.0	46	2.0	0.058	25.4	LOS C	0.7	5.6	0.81	0.64	0.81	33.1
North: Warnbro Sound Ave (N)														
4	L2	31	2.0	33	2.0	0.029	11.0	LOS B	0.4	3.1	0.39	0.65	0.39	47.9
5	T1	358	9.8	377	9.8	*0.567	34.9	LOS C	7.4	59.9	0.96	0.79	0.96	41.9
6	R2	118	2.0	124	2.0	*0.417	41.9	LOS D	4.8	36.1	0.94	0.79	0.94	34.7
Approach		507	7.5	534	7.5	0.567	35.1	LOS D	7.4	59.9	0.92	0.78	0.92	40.1
West: Aurea Blvd (W)														
7	L2	148	2.0	156	2.0	0.134	6.1	LOS A	1.4	10.4	0.27	0.54	0.27	51.4
8	T1	20	2.0	21	2.0	*0.134	1.6	LOS A	1.4	10.4	0.27	0.54	0.27	44.0
9	R2	38	2.0	40	2.0	0.117	36.0	LOS D	1.4	10.6	0.86	0.71	0.86	35.9
Approach		206	2.0	217	2.0	0.134	11.2	LOS B	1.4	10.6	0.38	0.57	0.38	47.1
All Vehicles		1168	5.5	1229	5.5	0.567	28.5	LOS C	7.4	59.9	0.78	0.72	0.78	42.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Warnbro Sound Ave (S)												
P4	Full	50	53	34.1	LOS D	0.1	0.1	0.90	0.90	69.9	43.0	0.62
East: Adelong Ave (E)												
P1	Full	50	53	32.3	LOS D	0.1	0.1	0.87	0.87	60.7	34.1	0.56
North: Warnbro Sound Ave (N)												

P2	Full	50	53	32.3	LOS D	0.1	0.1	0.87	0.87	66.4	41.0	0.62
West: Aurea Blvd (W)												
P3	Full	50	53	31.4	LOS D	0.1	0.1	0.86	0.86	58.8	32.9	0.56
All Pedestrians		0	211	32.5	LOS D	0.1	0.1	0.88	0.88	64.0	37.8	0.59

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT SUMMARY

Site: [Site Crossover & Adelong Ave - Post - AM (Site Folder: Post - Development)]

Network: N101 [AM (Network Folder: Post Development)]

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

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	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Adelong Ave (E)														
2	T1	208	2.0	208	2.0	0.110	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		208	2.0	208	2.0	0.110	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
North: Site Crossover (N)														
4	L2	131	2.0	131	2.0	0.086	0.3	LOS A	0.4	3.2	0.18	0.07	0.18	23.2
Approach		131	2.0	131	2.0	0.086	0.3	LOS A	0.4	3.2	0.18	0.07	0.18	23.2
West: Adelong Ave (W)														
7	L2	119	2.0	119	2.0	0.066	3.9	LOS A	0.0	0.0	0.00	0.52	0.00	29.5
8	T1	84	2.0	84	2.0	0.044	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		203	2.0	203	2.0	0.066	2.3	NA	0.0	0.0	0.00	0.31	0.00	35.4
All Vehicles		542	2.0	542	2.0	0.110	0.9	NA	0.4	3.2	0.04	0.13	0.04	32.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [Site Crossover & Adelong Ave - Post - PM (Site Folder: Post - Development)] Network: N101 [PM (Network Folder: Post Development)]

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

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	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Adelong Ave (E)														
2	T1	136	2.0	136	2.0	0.071	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		136	2.0	136	2.0	0.071	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
North: Site Crossover (N)														
4	L2	98	2.0	98	2.0	0.063	0.2	LOS A	0.3	2.2	0.15	0.05	0.15	23.4
Approach		98	2.0	98	2.0	0.063	0.2	LOS A	0.3	2.2	0.15	0.05	0.15	23.4
West: Adelong Ave (W)														
7	L2	87	2.0	87	2.0	0.048	3.9	LOS A	0.0	0.0	0.00	0.52	0.00	29.5
8	T1	60	2.0	60	2.0	0.032	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		147	2.0	147	2.0	0.048	2.3	NA	0.0	0.0	0.00	0.31	0.00	35.3
All Vehicles		381	2.0	381	2.0	0.071	1.0	NA	0.3	2.2	0.04	0.13	0.04	32.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [Warnbro Sound Ave & Adelong Ave & Aurea Blvd - Post - AM (Site Folder: Post - Development)]

Network: N101 [AM (Network Folder: Post Development)]

Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 81 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

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	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Warnbro Sound Ave (S)														
10	L2	63	2.0	63	2.0	0.047	7.4	LOS A	0.3	2.1	0.20	0.63	0.20	52.4
11	T1	226	5.8	226	5.8	0.384	34.0	LOS C	4.2	32.5	0.94	0.74	0.94	42.4
12	R2	31	2.0	31	2.0	0.098	37.4	LOS D	1.0	7.8	0.87	0.72	0.87	29.1
Approach		320	4.7	320	4.7	0.384	29.1	LOS C	4.2	32.5	0.79	0.72	0.79	43.1
East: Adelong Ave (E)														
1	L2	73	2.0	73	2.0	0.252	16.9	LOS B	3.0	22.8	0.77	0.68	0.77	42.5
2	T1	71	2.0	71	2.0	* 0.252	13.0	LOS B	3.0	22.8	0.77	0.68	0.77	36.7
3	R2	64	2.0	64	2.0	0.160	31.7	LOS C	2.1	15.7	0.84	0.73	0.84	31.4
Approach		207	2.0	207	2.0	0.252	20.2	LOS C	3.0	22.8	0.79	0.69	0.79	36.5
North: Warnbro Sound Ave (N)														
4	L2	45	2.0	45	2.0	0.042	11.6	LOS B	0.6	4.6	0.42	0.66	0.42	48.8
5	T1	362	9.8	362	9.8	* 0.639	36.3	LOS D	7.1	57.7	0.99	0.82	1.03	41.3
6	R2	86	2.0	86	2.0	* 0.276	38.7	LOS D	3.1	23.1	0.91	0.76	0.91	35.8
Approach		494	7.7	494	7.7	0.639	34.4	LOS C	7.1	57.7	0.92	0.80	0.95	40.4
West: Aurea Blvd (W)														
7	L2	140	2.0	140	2.0	0.363	13.4	LOS B	3.9	29.2	0.72	0.68	0.72	47.7
8	T1	126	2.0	126	2.0	* 0.363	8.8	LOS A	3.9	29.2	0.72	0.68	0.72	38.5
9	R2	69	2.0	69	2.0	0.194	34.4	LOS C	2.3	17.7	0.87	0.74	0.87	36.5
Approach		336	2.0	336	2.0	0.363	16.0	LOS B	3.9	29.2	0.75	0.69	0.75	42.1
All Vehicles		1357	4.7	1357	4.7	0.639	26.4	LOS C	7.1	57.7	0.83	0.74	0.84	41.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Warnbro Sound Ave (S)											
P4	Full	53	32.1	LOS D	0.1	0.1	0.89	0.89	67.9	43.0	0.63
East: Adelong Ave (E)											
P1	Full	53	30.3	LOS D	0.1	0.1	0.87	0.87	58.7	34.1	0.58
North: Warnbro Sound Ave (N)											
P2	Full	53	30.3	LOS D	0.1	0.1	0.87	0.87	64.5	41.0	0.64

West: Aurea Blvd (W)										
P3 Full	53	29.5	LOS C	0.1	0.1	0.85	0.85	56.9	32.9	0.58
All Pedestrians	211	30.5	LOS D	0.1	0.1	0.87	0.87	62.0	37.8	0.61

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT SUMMARY

Site: [Warnbro Sound Ave & Adelong Ave & Aurea Blvd - Post - PM (Site Folder: Post - Development)]

Network: N101 [PM (Network Folder: Post Development)]

Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 85 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

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	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Warnbro Sound Ave (S)														
10	L2	83	2.0	83	2.0	0.063	7.4	LOS A	0.4	2.9	0.20	0.63	0.20	52.4
11	T1	352	5.8	352	5.8	0.509	34.4	LOS C	6.8	52.9	0.95	0.77	0.95	42.2
12	R2	24	2.0	24	2.0	0.081	39.4	LOS D	0.9	6.5	0.88	0.71	0.88	28.2
Approach		459	4.9	459	4.9	0.509	29.8	LOS C	6.8	52.9	0.81	0.74	0.81	43.2
East: Adelong Ave (E)														
1	L2	48	2.0	48	2.0	0.121	15.8	LOS B	1.6	12.0	0.68	0.63	0.68	43.0
2	T1	28	2.0	28	2.0	* 0.121	11.9	LOS B	1.6	12.0	0.68	0.63	0.68	37.1
3	R2	58	2.0	58	2.0	0.151	33.7	LOS C	2.0	15.0	0.85	0.73	0.85	30.4
Approach		135	2.0	135	2.0	0.151	22.7	LOS C	2.0	15.0	0.75	0.67	0.75	35.5
North: Warnbro Sound Ave (N)														
4	L2	53	2.0	53	2.0	0.047	11.1	LOS B	0.7	5.2	0.39	0.66	0.39	49.5
5	T1	377	9.8	377	9.8	* 0.567	34.9	LOS C	7.4	59.9	0.96	0.79	0.96	41.9
6	R2	126	2.0	126	2.0	* 0.424	42.0	LOS D	4.9	36.8	0.94	0.79	0.94	34.7
Approach		556	7.3	556	7.3	0.567	34.3	LOS C	7.4	59.9	0.90	0.77	0.90	40.2
West: Aurea Blvd (W)														
7	L2	139	2.0	139	2.0	0.225	9.9	LOS A	2.4	17.8	0.54	0.61	0.54	49.5
8	T1	71	2.0	71	2.0	* 0.225	5.4	LOS A	2.4	17.8	0.54	0.61	0.54	40.9
9	R2	21	2.0	21	2.0	0.062	35.5	LOS D	0.7	5.5	0.85	0.69	0.85	36.1
Approach		231	2.0	231	2.0	0.225	10.9	LOS B	2.4	17.8	0.57	0.61	0.57	45.9
All Vehicles		1380	5.1	1380	5.1	0.567	27.7	LOS C	7.4	59.9	0.80	0.73	0.80	41.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Warnbro Sound Ave (S)											
P4	Full	53	34.1	LOS D	0.1	0.1	0.90	0.90	69.9	43.0	0.62
East: Adelong Ave (E)											
P1	Full	53	32.3	LOS D	0.1	0.1	0.87	0.87	60.7	34.1	0.56
North: Warnbro Sound Ave (N)											
P2	Full	53	32.3	LOS D	0.1	0.1	0.87	0.87	66.4	41.0	0.62
West: Aurea Blvd (W)											

P3 Full	53	31.4	LOS D	0.1	0.1	0.86	0.86	58.8	32.9	0.56
All Pedestrians	211	32.5	LOS D	0.1	0.1	0.88	0.88	64.0	37.8	0.59

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT SUMMARY

Site: [Site Crossover & Adelong Ave - 10 Years - AM (Site Folder: 10 years Post - Development)]

Network: N101 [AM (Network Folder: 10 Years Post Development)]

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

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	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Adelong Ave (E)														
2	T1	227	2.0	227	2.0	0.120	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		227	2.0	227	2.0	0.120	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
North: Site Crossover (N)														
4	L2	131	2.0	131	2.0	0.087	0.3	LOS A	0.4	3.2	0.20	0.08	0.20	23.1
Approach		131	2.0	131	2.0	0.087	0.3	LOS A	0.4	3.2	0.20	0.08	0.20	23.1
West: Adelong Ave (W)														
7	L2	119	2.0	119	2.0	0.066	3.9	LOS A	0.0	0.0	0.00	0.52	0.00	29.5
8	T1	102	2.0	102	2.0	0.054	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		221	2.0	221	2.0	0.066	2.1	NA	0.0	0.0	0.00	0.28	0.00	36.2
All Vehicles		579	2.0	579	2.0	0.120	0.9	NA	0.4	3.2	0.05	0.13	0.05	33.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [Site Crossover & Adelong Ave - 10 Years - PM (Site Folder: 10 years Post - Development)]

Network: N101 [PM (Network Folder: 10 Years Post Development)]

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

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	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Adelong Ave (E)														
2	T1	146	2.0	146	2.0	0.077	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		146	2.0	146	2.0	0.077	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
North: Site Crossover (N)														
4	L2	98	2.0	98	2.0	0.064	0.2	LOS A	0.3	2.2	0.16	0.06	0.16	23.3
Approach		98	2.0	98	2.0	0.064	0.2	LOS A	0.3	2.2	0.16	0.06	0.16	23.3
West: Adelong Ave (W)														
7	L2	87	2.0	87	2.0	0.048	3.9	LOS A	0.0	0.0	0.00	0.52	0.00	29.5
8	T1	74	2.0	74	2.0	0.039	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		161	2.0	161	2.0	0.048	2.1	NA	0.0	0.0	0.00	0.28	0.00	36.2
All Vehicles		405	2.0	405	2.0	0.077	0.9	NA	0.3	2.2	0.04	0.13	0.04	32.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [Warnbro Sound Ave & Adelong Ave & Aurea Blvd - 10 Years - AM (Site Folder: 10 years Post - Development)]

Network: N101 [AM (Network Folder: 10 Years Post Development)]

Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 81 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

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	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Warnbro Sound Ave (S)														
10	L2	77	2.0	77	2.0	0.058	7.4	LOS A	0.3	2.6	0.20	0.63	0.20	52.4
11	T1	277	5.8	277	5.8	0.470	34.6	LOS C	5.2	40.5	0.95	0.76	0.95	42.1
12	R2	32	2.0	32	2.0	0.101	37.4	LOS D	1.1	8.1	0.87	0.72	0.87	29.0
Approach		385	4.7	385	4.7	0.470	29.4	LOS C	5.2	40.5	0.80	0.73	0.80	43.0
East: Adelong Ave (E)														
1	L2	76	2.0	76	2.0	0.288	16.7	LOS B	3.2	24.2	0.79	0.69	0.79	42.7
2	T1	83	2.0	83	2.0	* 0.288	12.9	LOS B	3.2	24.2	0.79	0.69	0.79	36.9
3	R2	68	2.0	68	2.0	0.170	31.8	LOS C	2.2	16.8	0.84	0.73	0.84	31.3
Approach		227	2.0	227	2.0	0.288	19.8	LOS B	3.2	24.2	0.81	0.70	0.81	36.6
North: Warnbro Sound Ave (N)														
4	L2	49	2.0	49	2.0	0.046	11.6	LOS B	0.7	5.0	0.42	0.66	0.42	48.8
5	T1	443	9.8	443	9.8	* 0.782	40.0	LOS D	9.4	76.2	1.00	0.92	1.21	39.6
6	R2	104	2.0	104	2.0	* 0.333	39.1	LOS D	3.7	28.2	0.92	0.77	0.92	35.7
Approach		597	7.8	597	7.8	0.782	37.5	LOS D	9.4	76.2	0.94	0.88	1.09	39.1
West: Aurea Blvd (W)														
7	L2	177	2.0	177	2.0	0.404	12.6	LOS B	4.7	35.6	0.71	0.68	0.71	48.1
8	T1	140	2.0	140	2.0	* 0.404	8.1	LOS A	4.7	35.6	0.71	0.68	0.71	39.0
9	R2	91	2.0	91	2.0	0.253	34.9	LOS C	3.1	23.4	0.88	0.75	0.88	36.3
Approach		407	2.0	407	2.0	0.404	16.0	LOS B	4.7	35.6	0.75	0.70	0.75	42.4
All Vehicles		1617	4.8	1617	4.8	0.782	27.7	LOS C	9.4	76.2	0.84	0.77	0.90	40.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Warnbro Sound Ave (S)											
P4	Full	53	32.1	LOS D	0.1	0.1	0.89	0.89	67.9	43.0	0.63
East: Adelong Ave (E)											
P1	Full	53	30.3	LOS D	0.1	0.1	0.87	0.87	58.7	34.1	0.58
North: Warnbro Sound Ave (N)											
P2	Full	53	30.3	LOS D	0.1	0.1	0.87	0.87	64.5	41.0	0.64

West: Aurea Blvd (W)										
P3 Full	53	29.5	LOS C	0.1	0.1	0.85	0.85	56.9	32.9	0.58
All Pedestrians	211	30.5	LOS D	0.1	0.1	0.87	0.87	62.0	37.8	0.61

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT SUMMARY

Site: [Warnbro Sound Ave & Adelong Ave & Aurea Blvd - 10 Years - PM (Site Folder: 10 years Post - Development)]

Network: N101 [PM (Network Folder: 10 Years Post Development)]

Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 85 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

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	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Warnbro Sound Ave (S)														
10	L2	101	2.0	101	2.0	0.076	7.4	LOS A	0.5	3.5	0.20	0.63	0.20	52.4
11	T1	428	5.8	428	5.8	0.620	35.4	LOS D	8.5	66.3	0.97	0.81	0.98	41.7
12	R2	25	2.0	25	2.0	0.085	39.4	LOS D	0.9	6.8	0.88	0.71	0.88	28.2
Approach		555	4.9	555	4.9	0.620	30.5	LOS C	8.5	66.3	0.83	0.77	0.83	42.8
East: Adelong Ave (E)														
1	L2	49	2.0	49	2.0	0.134	15.4	LOS B	1.6	12.2	0.70	0.64	0.70	43.5
2	T1	33	2.0	33	2.0	* 0.134	11.6	LOS B	1.6	12.2	0.70	0.64	0.70	37.4
3	R2	63	2.0	63	2.0	0.165	33.9	LOS C	2.2	16.4	0.85	0.73	0.85	30.4
Approach		145	2.0	145	2.0	0.165	22.6	LOS C	2.2	16.4	0.77	0.68	0.77	35.5
North: Warnbro Sound Ave (N)														
4	L2	60	2.0	60	2.0	0.054	11.4	LOS B	0.8	6.2	0.41	0.66	0.41	49.0
5	T1	461	9.8	461	9.8	* 0.693	37.0	LOS D	9.5	77.2	0.99	0.86	1.06	40.9
6	R2	155	2.0	155	2.0	* 0.519	42.6	LOS D	6.1	45.9	0.96	0.80	0.96	34.5
Approach		676	7.3	676	7.3	0.693	36.0	LOS D	9.5	77.2	0.93	0.83	0.98	39.5
West: Aurea Blvd (W)														
7	L2	174	2.0	174	2.0	0.253	9.4	LOS A	3.0	23.0	0.52	0.61	0.52	49.8
8	T1	76	2.0	76	2.0	* 0.253	4.8	LOS A	3.0	23.0	0.52	0.61	0.52	41.3
9	R2	29	2.0	29	2.0	0.087	35.7	LOS D	1.0	7.7	0.86	0.70	0.86	36.0
Approach		279	2.0	279	2.0	0.253	10.9	LOS B	3.0	23.0	0.55	0.62	0.55	46.1
All Vehicles		1655	5.2	1655	5.2	0.693	28.8	LOS C	9.5	77.2	0.82	0.76	0.84	41.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Warnbro Sound Ave (S)											
P4	Full	53	34.1	LOS D	0.1	0.1	0.90	0.90	69.9	43.0	0.62
East: Adelong Ave (E)											
P1	Full	53	32.3	LOS D	0.1	0.1	0.87	0.87	60.7	34.1	0.56
North: Warnbro Sound Ave (N)											
P2	Full	53	32.3	LOS D	0.1	0.1	0.87	0.87	66.4	41.0	0.62

West: Aurea Blvd (W)										
P3 Full	53	31.4	LOS D	0.1	0.1	0.86	0.86	58.8	32.9	0.56
All Pedestrians	211	32.5	LOS D	0.1	0.1	0.88	0.88	64.0	37.8	0.59

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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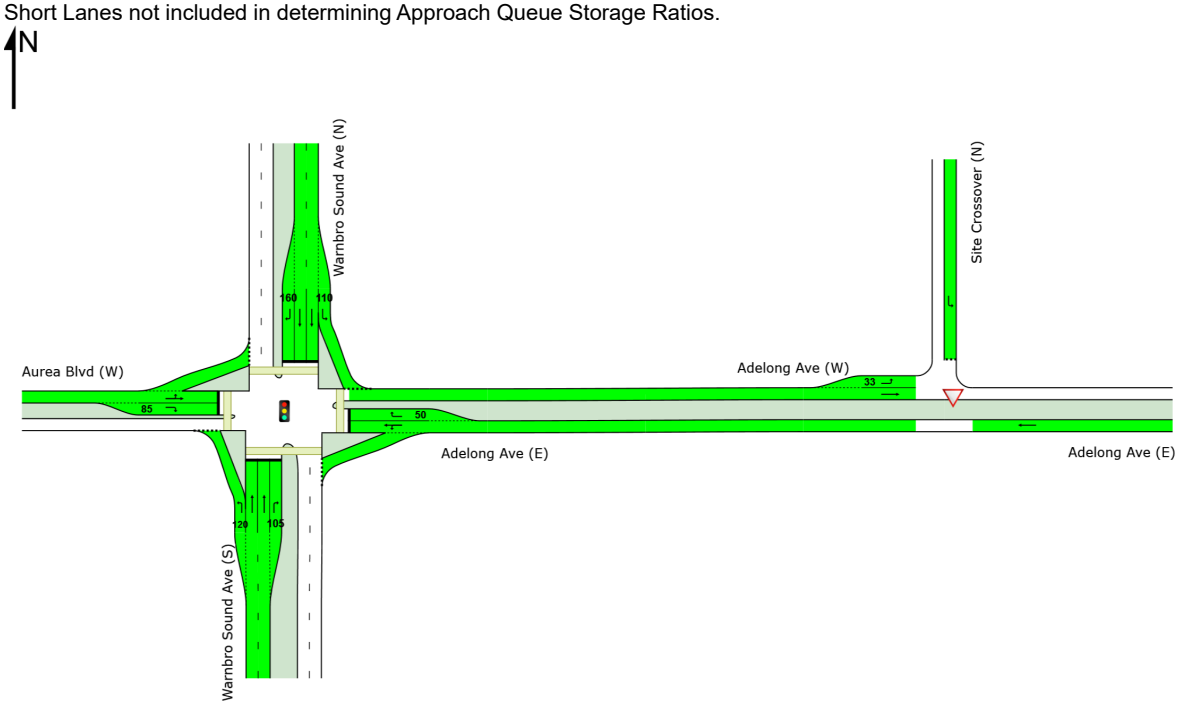
QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Network: N101 [AM (Network Folder: Post Development)]

New Network
Network Category: (None)

Short Lanes not included in determining Approach Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA Standard.

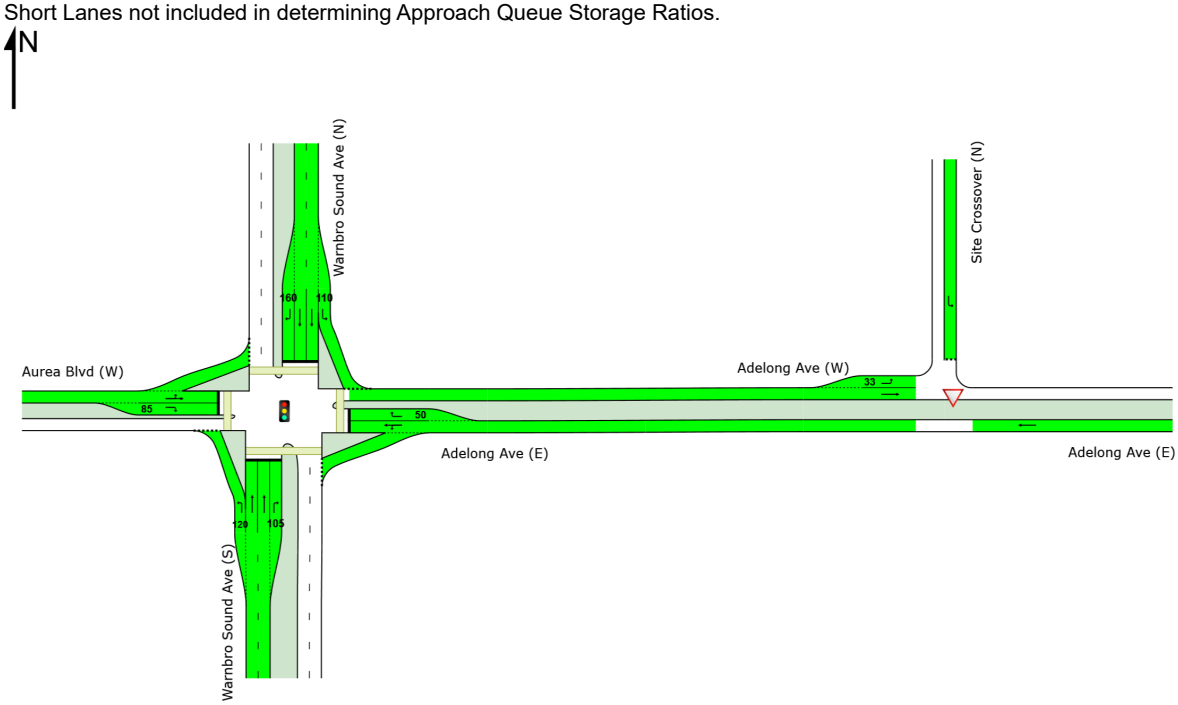
QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Network: N101 [PM (Network Folder: Post Development)]

New Network
Network Category: (None)

Short Lanes not included in determining Approach Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA Standard.

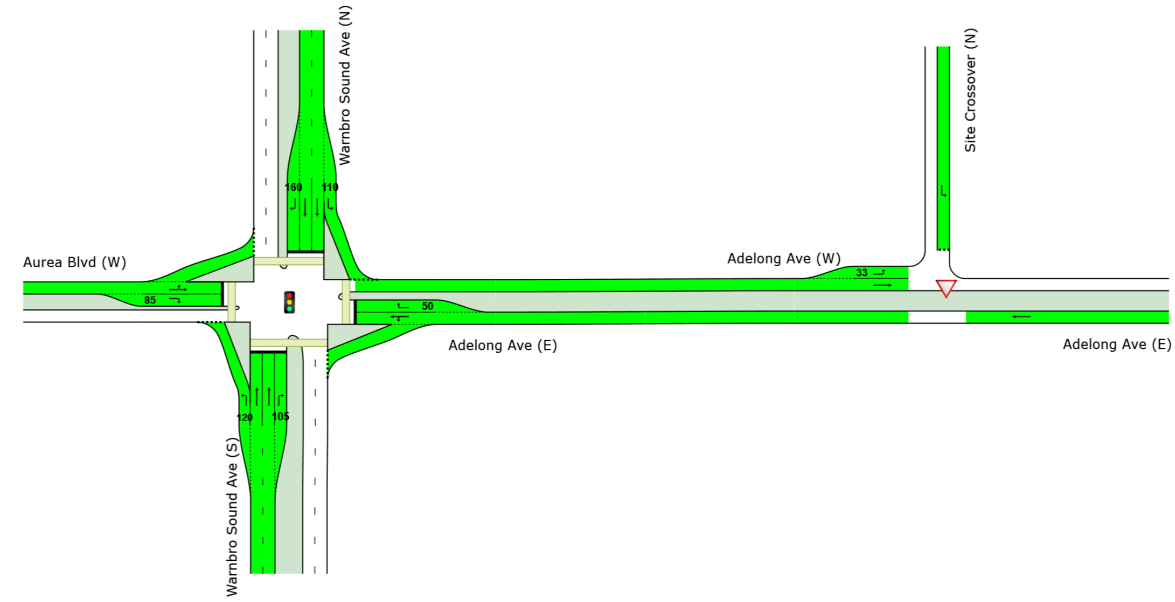
QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Network: N101 [AM (Network Folder: 10 Years Post Development)]

New Network
Network Category: (None)

Short Lanes not included in determining Approach Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA Standard.

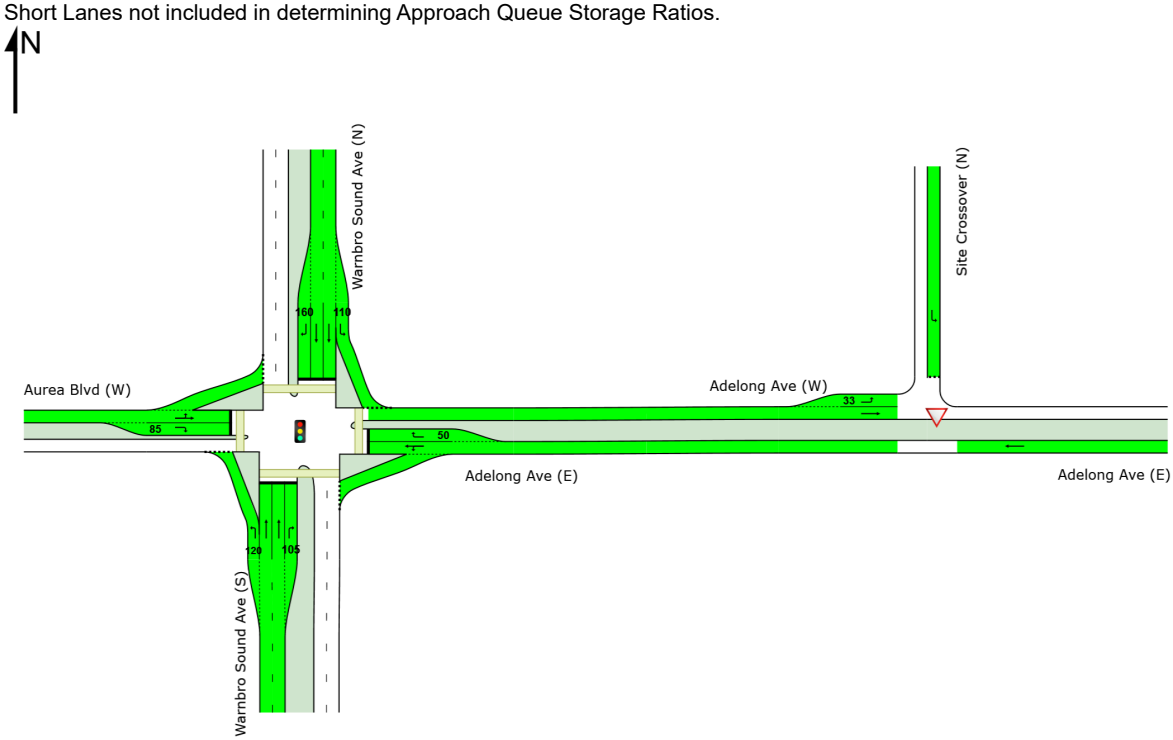
QUEUE STORAGE RATIO (PERCENTILE)

Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Network: N101 [PM (Network Folder: 10 Years Post Development)]

New Network
Network Category: (None)

Short Lanes not included in determining Approach Queue Storage Ratios.



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA Standard.

APPENDIX C

New Weekend Peak Hour SIDRA Analysis

MOVEMENT SUMMARY

Site: [Warnbro Sound Ave & Adelong Ave & Aurea Blvd - Sun (Site Folder: Existing)]

Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 85 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	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
South: Warnbro Sound Ave (S)														
10	L2	48	2.0	51	2.0	0.038	7.6	LOS A	0.3	2.1	0.22	0.63	0.22	52.2
11	T1	258	5.8	272	5.8	0.393	33.5	LOS C	5.1	39.8	0.92	0.74	0.92	42.6
12	R2	5	2.0	5	2.0	0.018	38.6	LOS D	0.2	1.4	0.86	0.65	0.86	28.9
Approach		311	5.2	327	5.2	0.393	29.6	LOS C	5.1	39.8	0.81	0.72	0.81	43.7
East: Adelong Ave (E)														
1	L2	8	2.0	8	2.0	0.051	20.2	LOS C	0.6	4.4	0.77	0.60	0.77	40.3
2	T1	15	2.0	16	2.0	* 0.051	16.3	LOS B	0.6	4.4	0.77	0.60	0.77	35.0
3	R2	20	2.0	21	2.0	0.055	32.9	LOS C	0.7	5.3	0.83	0.68	0.83	30.8
Approach		43	2.0	45	2.0	0.055	24.7	LOS C	0.7	5.3	0.79	0.64	0.79	33.7
North: Warnbro Sound Ave (N)														
4	L2	31	2.0	33	2.0	0.029	11.0	LOS B	0.4	3.1	0.39	0.65	0.39	47.9
5	T1	330	9.8	347	9.8	* 0.522	34.6	LOS C	6.7	54.6	0.95	0.77	0.95	42.1
6	R2	120	2.0	126	2.0	* 0.424	42.0	LOS D	4.9	36.8	0.94	0.79	0.94	34.7
Approach		481	7.4	506	7.4	0.522	34.9	LOS C	6.7	54.6	0.91	0.77	0.91	40.1
West: Aurea Blvd (W)														
7	L2	173	2.0	182	2.0	0.141	5.7	LOS A	1.3	9.9	0.23	0.54	0.23	51.5
8	T1	12	2.0	13	2.0	* 0.141	1.2	LOS A	1.3	9.9	0.23	0.54	0.23	44.1
9	R2	54	2.0	57	2.0	0.167	36.4	LOS D	2.0	15.2	0.87	0.73	0.87	35.8
Approach		239	2.0	252	2.0	0.167	12.4	LOS B	2.0	15.2	0.37	0.58	0.37	46.6
All Vehicles		1074	5.3	1131	5.3	0.522	27.9	LOS C	6.7	54.6	0.76	0.71	0.76	42.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Warnbro Sound Ave (S)												
P4	Full	50	53	34.1	LOS D	0.1	0.1	0.90	0.90	69.9	43.0	0.62
East: Adelong Ave (E)												
P1	Full	50	53	32.3	LOS D	0.1	0.1	0.87	0.87	60.7	34.1	0.56
North: Warnbro Sound Ave (N)												

P2 Full	50	53	32.3	LOS D	0.1	0.1	0.87	0.87	66.4	41.0	0.62
West: Aurea Blvd (W)											
P3 Full	50	53	31.4	LOS D	0.1	0.1	0.86	0.86	58.8	32.9	0.56
All Pedestrians	0	211	32.5	LOS D	0.1	0.1	0.88	0.88	64.0	37.8	0.59

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT SUMMARY

Site: [Site Crossover & Adelong Ave - Post - Sun (Site Folder: Post - Development)]

Network: N101 [Sun (Network Folder: Post Development)]

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

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	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Adelong Ave (E)														
2	T1	193	2.0	193	2.0	0.101	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		193	2.0	193	2.0	0.101	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
North: Site Crossover (N)														
4	L2	162	2.0	162	2.0	0.104	0.2	LOS A	0.5	3.9	0.14	0.04	0.14	23.4
Approach		162	2.0	162	2.0	0.104	0.2	LOS A	0.5	3.9	0.14	0.04	0.14	23.4
West: Adelong Ave (W)														
7	L2	146	2.0	146	2.0	0.081	3.9	LOS A	0.0	0.0	0.00	0.52	0.00	29.5
8	T1	52	2.0	52	2.0	0.027	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		198	2.0	198	2.0	0.081	2.9	NA	0.0	0.0	0.00	0.39	0.00	32.9
All Vehicles		553	2.0	553	2.0	0.104	1.1	NA	0.5	3.9	0.04	0.15	0.04	30.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [Warnbro Sound Ave & Adelong Ave & Aurea Blvd - Post - Sun (Site Folder: Post - Development)]

Network: N101 [Sun (Network Folder: Post Development)]

Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 85 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

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	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Warnbro Sound Ave (S)														
10	L2	52	2.0	52	2.0	0.048	10.9	LOS B	0.6	4.9	0.39	0.66	0.39	49.9
11	T1	273	5.8	273	5.8	0.395	33.5	LOS C	5.1	40.0	0.92	0.74	0.92	42.6
12	R2	38	2.0	38	2.0	0.127	39.8	LOS D	1.4	10.4	0.89	0.73	0.89	28.0
Approach		362	4.9	362	4.9	0.395	31.0	LOS C	5.1	40.0	0.84	0.73	0.84	42.3
East: Adelong Ave (E)														
1	L2	81	2.0	81	2.0	0.152	13.3	LOS B	2.1	15.9	0.62	0.63	0.62	45.1
2	T1	33	2.0	33	2.0	* 0.152	9.5	LOS A	2.1	15.9	0.62	0.63	0.62	38.6
3	R2	78	2.0	78	2.0	0.203	34.2	LOS C	2.7	20.5	0.86	0.74	0.86	30.2
Approach		192	2.0	192	2.0	0.203	21.1	LOS C	2.7	20.5	0.72	0.68	0.72	36.7
North: Warnbro Sound Ave (N)														
4	L2	65	2.0	65	2.0	0.059	11.5	LOS B	0.9	6.7	0.41	0.66	0.41	49.0
5	T1	342	9.8	342	9.8	* 0.514	34.5	LOS C	6.6	53.7	0.95	0.77	0.95	42.1
6	R2	128	2.0	128	2.0	* 0.431	42.0	LOS D	5.0	37.4	0.94	0.79	0.94	34.7
Approach		536	7.0	536	7.0	0.514	33.5	LOS C	6.6	53.7	0.88	0.76	0.88	40.3
West: Aurea Blvd (W)														
7	L2	154	2.0	154	2.0	0.291	11.3	LOS B	3.1	23.4	0.62	0.64	0.62	48.7
8	T1	94	2.0	94	2.0	* 0.291	6.8	LOS A	3.1	23.4	0.62	0.64	0.62	39.8
9	R2	25	2.0	25	2.0	0.074	35.6	LOS D	0.9	6.6	0.85	0.69	0.85	36.1
Approach		273	2.0	273	2.0	0.291	12.0	LOS B	3.1	23.4	0.64	0.65	0.64	44.9
All Vehicles		1362	4.7	1362	4.7	0.514	26.8	LOS C	6.6	53.7	0.80	0.72	0.80	41.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Warnbro Sound Ave (S)											
P4	Full	53	34.1	LOS D	0.1	0.1	0.90	0.90	69.9	43.0	0.62
East: Adelong Ave (E)											
P1	Full	53	32.3	LOS D	0.1	0.1	0.87	0.87	60.7	34.1	0.56
North: Warnbro Sound Ave (N)											
P2	Full	53	32.3	LOS D	0.1	0.1	0.87	0.87	66.4	41.0	0.62

West: Aurea Blvd (W)										
P3 Full	53	31.4	LOS D	0.1	0.1	0.86	0.86	58.8	32.9	0.56
All Pedestrians	211	32.5	LOS D	0.1	0.1	0.88	0.88	64.0	37.8	0.59

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT SUMMARY

Site: [Site Crossover & Adelong Ave - 10 Years - Sun (Site Folder: 10 years Post - Development)]

Network: N101 [Sun (Network Folder: 10 Years Post Development)]

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

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	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Adelong Ave (E)														
2	T1	202	2.0	202	2.0	0.106	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		202	2.0	202	2.0	0.106	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
North: Site Crossover (N)														
4	L2	162	2.0	162	2.0	0.105	0.2	LOS A	0.5	3.9	0.16	0.05	0.16	23.3
Approach		162	2.0	162	2.0	0.105	0.2	LOS A	0.5	3.9	0.16	0.05	0.16	23.3
West: Adelong Ave (W)														
7	L2	146	2.0	146	2.0	0.081	3.9	LOS A	0.0	0.0	0.00	0.52	0.00	29.5
8	T1	63	2.0	63	2.0	0.033	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		209	2.0	209	2.0	0.081	2.8	NA	0.0	0.0	0.00	0.36	0.00	33.6
All Vehicles		574	2.0	574	2.0	0.106	1.1	NA	0.5	3.9	0.04	0.15	0.04	31.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [Warnbro Sound Ave & Adelong Ave & Aurea Blvd - 10 Years - Sun (Site Folder: 10 years Post - Development)]

Network: N101 [Sun (Network Folder: 10 Years Post Development)]

Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 85 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

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	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Warnbro Sound Ave (S)														
10	L2	63	2.0	63	2.0	0.057	10.3	LOS B	0.7	5.5	0.37	0.66	0.37	50.3
11	T1	334	5.8	334	5.8	0.483	34.2	LOS C	6.4	49.9	0.94	0.76	0.94	42.3
12	R2	39	2.0	39	2.0	0.131	39.8	LOS D	1.4	10.7	0.89	0.73	0.89	28.0
Approach		436	4.9	436	4.9	0.483	31.2	LOS C	6.4	49.9	0.85	0.75	0.85	42.3
East: Adelong Ave (E)														
1	L2	83	2.0	83	2.0	0.164	13.0	LOS B	2.1	15.8	0.64	0.64	0.64	45.4
2	T1	36	2.0	36	2.0	* 0.164	9.1	LOS A	2.1	15.8	0.64	0.64	0.64	38.9
3	R2	83	2.0	83	2.0	0.217	34.3	LOS C	2.9	21.9	0.87	0.74	0.87	30.2
Approach		202	2.0	202	2.0	0.217	21.1	LOS C	2.9	21.9	0.73	0.68	0.73	36.7
North: Warnbro Sound Ave (N)														
4	L2	73	2.0	73	2.0	0.066	11.5	LOS B	1.0	7.6	0.41	0.66	0.41	49.0
5	T1	420	9.8	420	9.8	* 0.632	35.7	LOS D	8.4	68.1	0.97	0.81	0.99	41.5
6	R2	157	2.0	157	2.0	* 0.526	42.7	LOS D	6.2	46.6	0.96	0.80	0.96	34.5
Approach		649	7.0	649	7.0	0.632	34.7	LOS C	8.4	68.1	0.91	0.79	0.92	39.8
West: Aurea Blvd (W)														
7	L2	194	2.0	194	2.0	0.309	10.0	LOS B	3.7	27.9	0.57	0.63	0.57	49.4
8	T1	97	2.0	97	2.0	* 0.309	5.5	LOS A	3.7	27.9	0.57	0.63	0.57	40.8
9	R2	38	2.0	38	2.0	0.111	35.9	LOS D	1.3	10.0	0.86	0.71	0.86	36.0
Approach		328	2.0	328	2.0	0.309	11.7	LOS B	3.7	27.9	0.60	0.64	0.60	45.5
All Vehicles		1616	4.8	1616	4.8	0.632	27.4	LOS C	8.4	68.1	0.81	0.73	0.81	41.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Warnbro Sound Ave (S)											
P4	Full	53	34.1	LOS D	0.1	0.1	0.90	0.90	69.9	43.0	0.62
East: Adelong Ave (E)											
P1	Full	53	32.3	LOS D	0.1	0.1	0.87	0.87	60.7	34.1	0.56
North: Warnbro Sound Ave (N)											
P2	Full	53	32.3	LOS D	0.1	0.1	0.87	0.87	66.4	41.0	0.62

West: Aurea Blvd (W)										
P3 Full	53	31.4	LOS D	0.1	0.1	0.86	0.86	58.8	32.9	0.56
All Pedestrians	211	32.5	LOS D	0.1	0.1	0.88	0.88	64.0	37.8	0.59

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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QUEUE STORAGE RATIO (PERCENTILE)

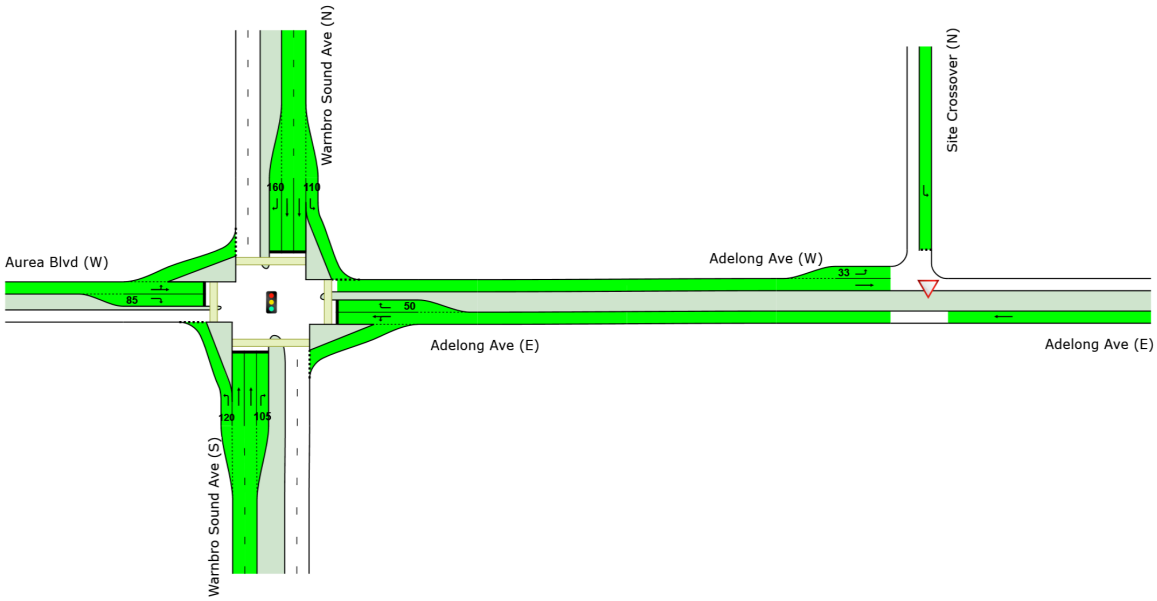
Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Network: N101 [Sun (Network Folder: Post Development)]

New Network
Network Category: (None)

Short Lanes not included in determining Approach Queue Storage Ratios.

N



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA Standard.

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QUEUE STORAGE RATIO (PERCENTILE)

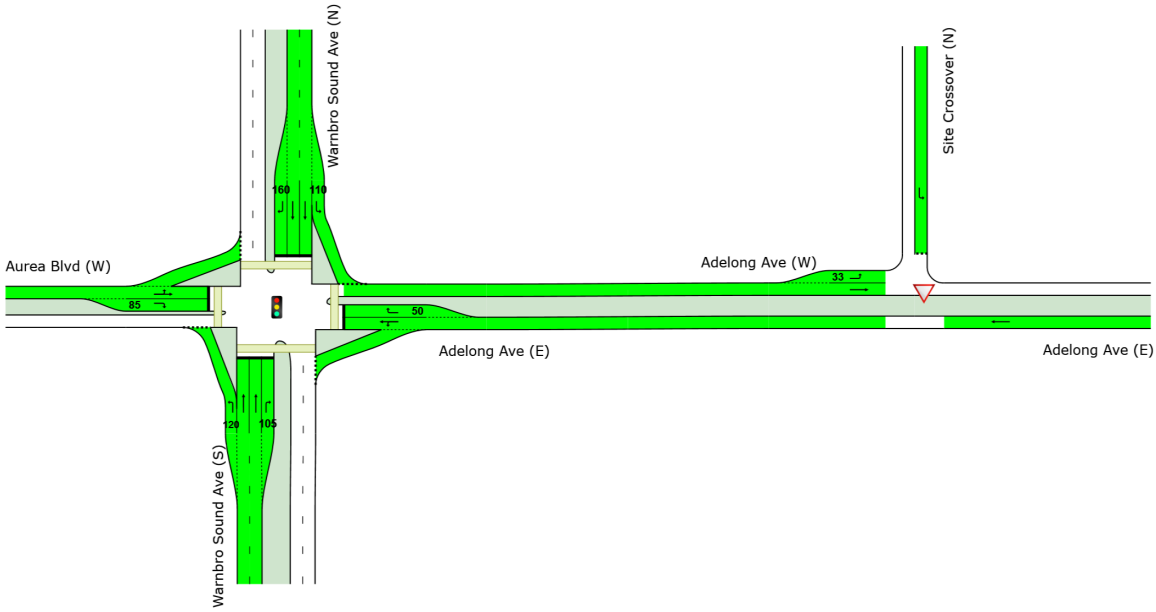
Ratio of the 95% Back of Queue Distance to the available queue storage distance per lane

Network: N101 [Sun (Network Folder: 10 Years Post Development)]

New Network
Network Category: (None)

Short Lanes not included in determining Approach Queue Storage Ratios.

N



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Queue Model: SIDRA Standard.

LANDSCAPE CONCEPT



LEGEND

01 INSITU CONCRETE PAVEMENT TO SHOPS SURROUNDS

02 INSITU CONCRETE PAVEMENT TO PEDESTRIAN LINK

03 LOW - MEDIUM NATIVE COASTAL STYLE PLANTING

04 SHADE TREES TO CAR PARK
(AGONIS FLEXUOSA)

05 LOW TO MEDIUM NATIVE COASTAL STYLE PLANTING WITH SMALL TREES (EUCALYPTUS ERYTHROCORYS)

06 EXISTING FOOTPATH TO BE RETAINED & PROTECTED

07 FEATURE NORFOLK ISLAND PINE TREES WITH UPLIGHTING AT ENTRY & KEY LOCATIONS

08 SMALL TREES COLUMNAR TREES TO GARDEN BED WITH LOW NATIVE PLANTING

09 FEATURE BOULDERS IN GARDEN BEDS AT ENTRY AND KEY LOCATIONS

PLAN E

LANDSCAPE ARCHITECTS
L1/278 RAILWAY PARADE, WEST LEEDERVILLE 6007
T: (08) 9388 9566 E: mail@plane.com.au

LANDSCAPE CONCEPT
PREPARED FOR APEX PLANNING
MAY 2024

C1.102
REV B
1:400 @ A3

0 4 8 12 20m

© PLAN E

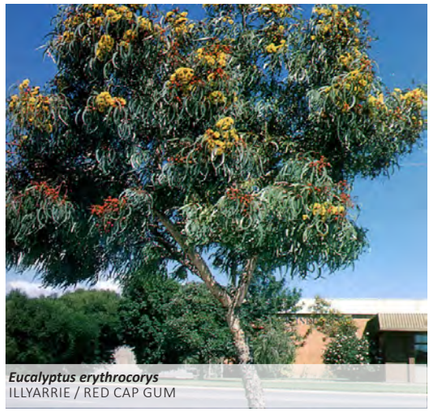
PLANTING PALETTE



Araucaria heterophylla
NORFOLK ISLAND PINE



Agonis flexuosa
WEST AUSTRALIAN WEEPING PEPPERMINT



Eucalyptus erythrocorys
ILLYARRIE / RED CAP GUM



Allocasuarina fraseriana
WESTERN SHEOAK, COMMON SHEOAK



Acer platanoides 'Columnare'
NORWAY MAPLE



Westringea dampierii
NATIVE ROSEMARY/ SHORE WESTRINGIA



Westringia 'Mundi'
COASTAL ROSEMARY



Leucophyta Silver Nugget
SILVER CUSHION BUSH



Rhagodia baccata
BERRY SALTBUSH



Hypocalymma angustifolium
WHITE MYRTLE - WHITE FLOWER



Conostylis candicans
GREY COTTONHEADS



Anigozanthos spp.
KANGAROO PAW



Carpobrotus virescens
PIG FACE



Adenanthos sericeus 'Compact'



Scaevola aemula
FAIRY FAN-FLOWER

PLAN E

LANDSCAPE ARCHITECTS

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MAY 2024

C1.103

REV B

2322401 LOT 8005 ADELONG AVENUE, GOLDEN BAY- landscape concept

© PLAN E

PLANTING PALETTE



Acacia cyclops
COASTAL WATTLE



Boronia heterophylla
RED BORONIA



Grevillea gin gin gem
SPIDER FLOWER



Olearia axillaris
COASTAL DAISY-BUSH



Pimelea ferruginea
PINK RICE FLOWER



Verticordia chrysantha
YELLOW FEATHERFLOWER



Hardenbergia comptoniana
NATIVE WISTERIA



Eremophila 'Kalbarri Carpet'
TAR BUSH



Acacia lasiocarpa
GLOW WATTLE



Lomandra verday
SPINY HEAD MAT RUSH

PLAN E

LANDSCAPE ARCHITECTS

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LANDSCAPE CONCEPT

PREPARED FOR APEX PLANNING
MAY 2024

C1.104

REV B

© PLANE

DA-5000
MALLINA CRESCENT BOUNDARY INTERFACE



MALLINA CRESCENT STREET ELEVATION
NTS



MALLINA CRESCENT INDICATIVE ARTIST IMPRESSION
NTS

ISSUE A
Date of Issue | 18.10.2024
| 1 ADELONG AVENUE, GOLDEN BAY, WA 6174

bayerstevens

Odour Management Plan Hungry Jack's Golden Bay

Restaurant: *Hungry Jacks Golden Bay*

Date: 23/10/2024

INTRODUCTION

Hungry Jacks Odour Management Plan (OMP) details a range of operational procedures and action plan which occur at Hungry Jacks restaurant sites.

This OMP has been prepared by Hungry Jack's and should be read in conjunction with the site plans (see appendix).

This OMP does not replace any training or procedure manuals and is in addition to the OH&S procedures.

Hungry Jack's Pty. Ltd. are an Australian owned company and are highly experienced in the management and operation of fast-food restaurants since 1971. Current it operates some 435 stores nationally.

In Wa we operate 74 stores of which the last 30 stores have had the same mechanical spec as outlined below

Objectives of the OMP

- To demonstrate Hungry Jack's commitment to the safe and amiable management of the restaurant sites, for guests, employees and adjoining and nearby properties
- To set out specific actions and procedures to manage patrons and the operation at the site
- To set out specific actions and procedures to remedy any issue that occur from time to time in relation to the extraction systems
- To promote communication between Hungry Jack's, the local community and nearby residents to resolve issues.

This OMP applies to the Hungry Jacks fast food restaurant noted as each site has its own nuances. The OMP is a dynamic document which can be updated to respond to changing procedures and practices.

TRADING HOURS PLAN AND STAFFING

Hungry Jacks Trading Hours Plan includes details the operating hours of the Hungry Jacks store. It breaks down the trading hours for both drive-thru and dining room and highlights peak days and day-parts. Trading hours are designed to maximise customer convenience whist having due regard for the surrounding environment and neighbouring properties.

Trading Hours are planned to meet the specific requirements of each site. They take into consideration:-

- the specific needs of the location
- any specific requirements issues identified in the immediate surrounding environment (ie residential bounding the site)
- business drivers (specific busy times driven by other generators)
- staff and customer safety

The dining room and drive thru trading hours:-

- **Drive Thru** – 6am to 11pm Sunday to Thursday and 6am to 12 pm Friday and Saturday .
- **Restaurant Dining room** – The dining room is generally open Sunday to Thursday 6am to 10pm* – Friday/ Sat 6am to 11pm*

* Restaurant hours may vary dependent on location requirements

Peak (day part) periods:

- Breakfast (7am to 9.30am),
- Lunch (11am to 2pm) and
- Dinner (5pm to 7.30pm)

Peak (days) are generally:

- Thursday, Friday Saturday

Staff Employed in HJ restaurants

Employment levels at the store vary depending customer volumes and on time of day and day of the week. They typically range from:

- Mornings - 1 manager and 1 to 4 crew
- Lunch – 1 to 2 managers and 6 to 12 crew.
- Dinner – 1 to 2 managers and 4 to 14 crew.
- Nights - 1 manager 1 to 2 crew

Conclusion

Trading hours will meet the needs of the location whist having due regard to neighbouring properties. It is not anticipated that any significant issues will result with respect to the trading hours at the Hungry Jacks site.

Odour Management

Restaurants Designed by Hungry Jacks are designed to comply with the Authority Approvals and with the Australian standards for Extraction systems

The Extraction systems in the stores are designed and interfaced so that if a extraction component Fails the Extraction system shuts down the cooking items utilised until repairs are made.

There are 2 types of extraction systems located within a store

The Boiler extraction system

The Fryer extraction system

The Broiler extraction System comprises of

1. The Nieco incendalist is the first stage of the extraction which removes 80% of odour by trapping pollutants in the incendalist
   This item is cleaned daily to regenerate the incendalist and remove any build up within the incendalist. The incendalist captures 80% of the particle and smoke odours emitted by the broiler

   It is located on-top of the broiler and id tied into the Broiler with a Key and needs to be connected to the Key to allow operation of the Broiler.

   The Broiler will not operate if the Incendalist is not installed

2. Franke cascade filters which are 270 % more effective than standard filters in capturing oil particles and reducing smoke emissions

3. The CFM fans capture any remaining particles and have a filter on them – these are serviced on a monthly basis to remove any build up of contaminants and oil.

The Fryer extraction system comprises of

1. Franke cascade filters which are 270 % more effective than standard filters in capturing oil particles and reducing smoke emissions

2. The CFM fans capture any remaining particles and have a filter on them – these are serviced on a monthly basis to remove any build up of contaminants and oil.

Servicing

The store is set up with both operational procedures and external cleaning from the commencement of trade which assist in maintaining the extraction and air quality extracted.

These are.

1. Daily cleaning of the incendalist which sits on-top of the Nieco Broiler
2. 3x weekly cleaning of the fryer filter in store
3. Daily cleaning of the Broiler filters
4. Monthly cleaning of the duct work and fans by an external contractor on a service agreement

Odour management

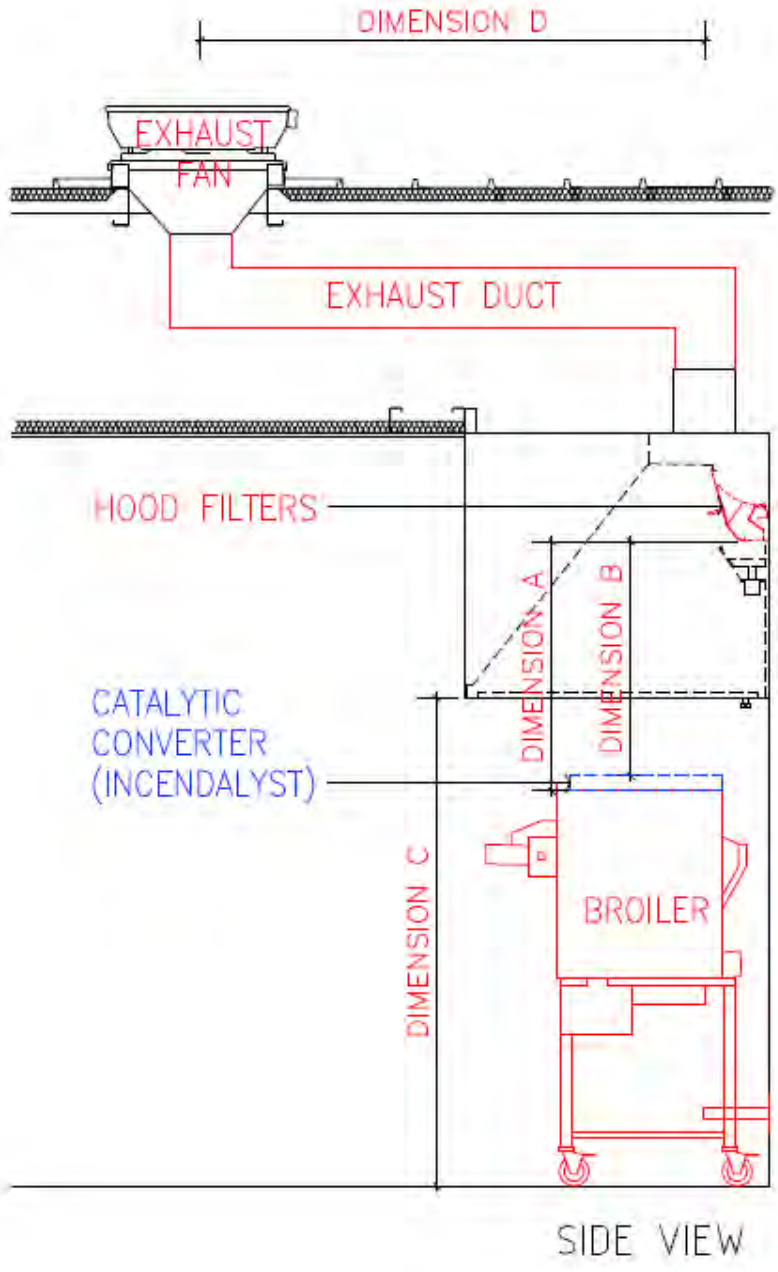
The Mechanical systems comply to the AS 1668.and AS 9002

In addition, comply with all relevant requirements defined by the following: -

- Building Code of Australia (National Construction Code).
- State Fire and Rescue Authority.
- The Insurance Council of Australia.
- The Building Surveyor/Certifier.
- Supply Authorities and State Electricity Commission.
- Telecommunications service providers (Telstra / NBN fibre ready to the premises).
- Local Council.
- Work Health & Safety Act and Regulations.
- Any other Authority having jurisdiction over the works.

Should concerns be raised during the life of the building in relation to odours Hungry Jack's is committed to Resolving these issues as and when these arise.

Any complaints received are investigated, upon the outcome of the investigation by Qualified consultant. Hungry Jacks then implements the requirements which had been raised in the report.


DIMENSION D
EXHAUST FAN
EXHAUST DUCT
HOOD FILTERS
CATALYTIC CONVERTER (INCENDALYST)
DIMENSION A
DIMENSION B
DIMENSION C
BROILER
SIDE VIEW

INCENDALYST

Emission Control Device for the Nieco Automatic Broiler

COST EFFECTIVE EMISSION CONTROL

The Nieco Incendalyst System is designed for use with the Nieco Automatic Broiler, or the Nieco Flexi-Chef System.

The Incendalyst utilizes a catalytic converter, similar to those found in automobiles, to reduce smoke and other gases created when meat is char-broiled.

The Incendalyst mounts directly on top of the Nieco Broiler, and requires no utility hook-up. The Incendalyst operates on the exhaust heat from the broiler. Reduction in overall pollutants is approximately 85 - 90%, with visible emissions being virtually eliminated. Odor is significantly reduced as well. The Incendalyst works on both gas and electric broilers.

By reducing grease and smoke before it reaches the exhaust hood, the ventilation system stays much cleaner, improving operation and reducing the risk of grease build-up in the ducts.

Installation is simple and maintenance is minimal. The device can be retrofit to an existing Nieco broiler with little modification to the broiler or hood system. Regular maintenance consists of monthly cleaning which can be performed in the restaurant by restaurant personnel.

This device has been tested by Underwriters Laboratory for smoke containment and fire suppression.



Benefits:

Easy to install
Low maintenance
Environmentally friendly
Reduced hood cleaning costs
All stainless steel construction

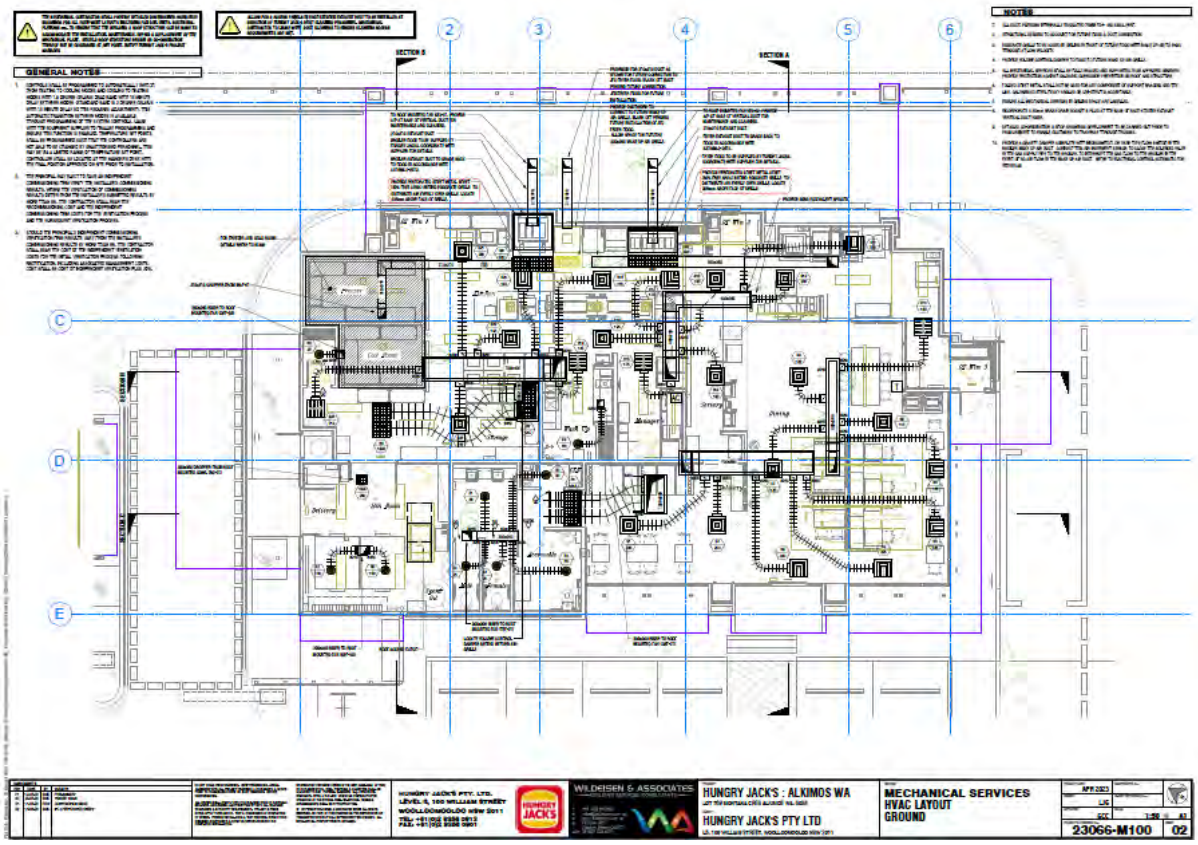
Cleaning Instructions:
Clean on a monthly basis. Soak Incendalyst in a tub of hot water. DO NOT USE CHEMICALS ON THE INCENDALYST OR PUT THE INCENDALYST IN A DISHWASHER. After soaking, rinse with a standard kitchen sprayer and let air dry overnight.

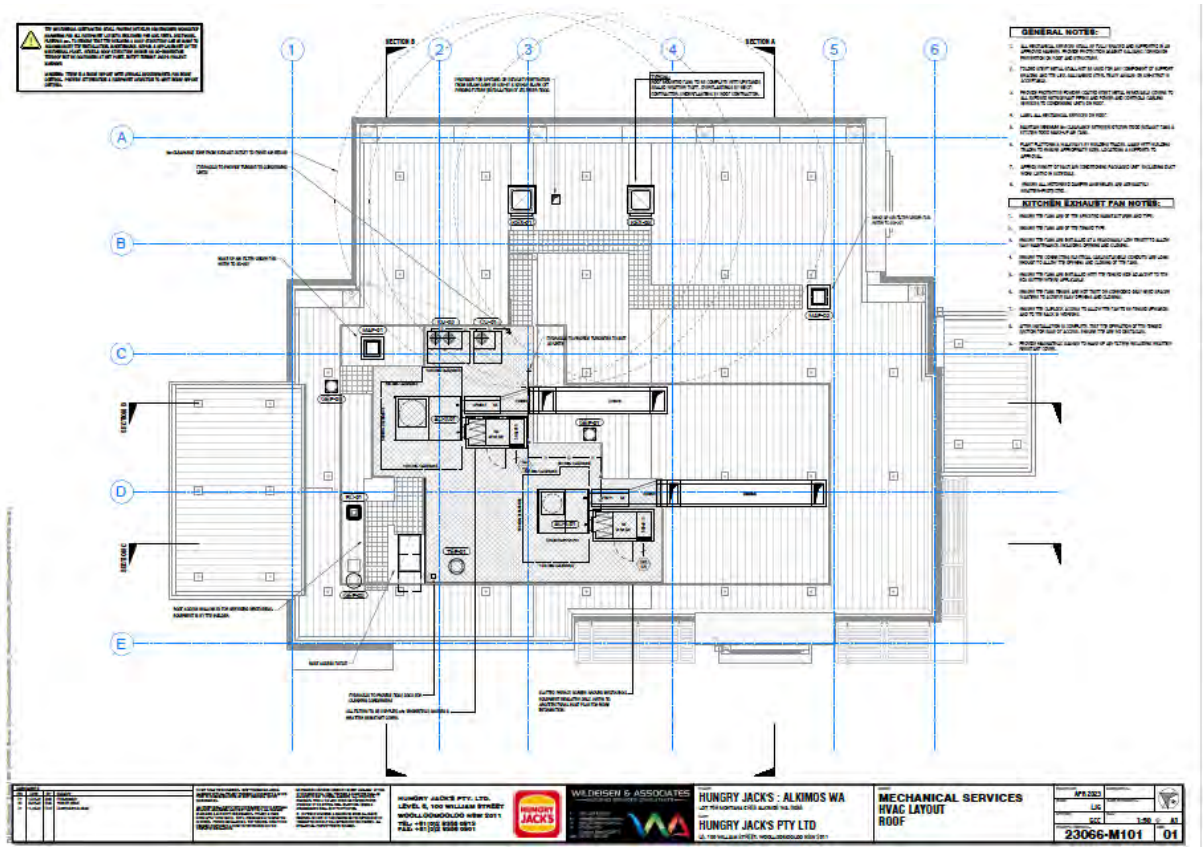
nieco

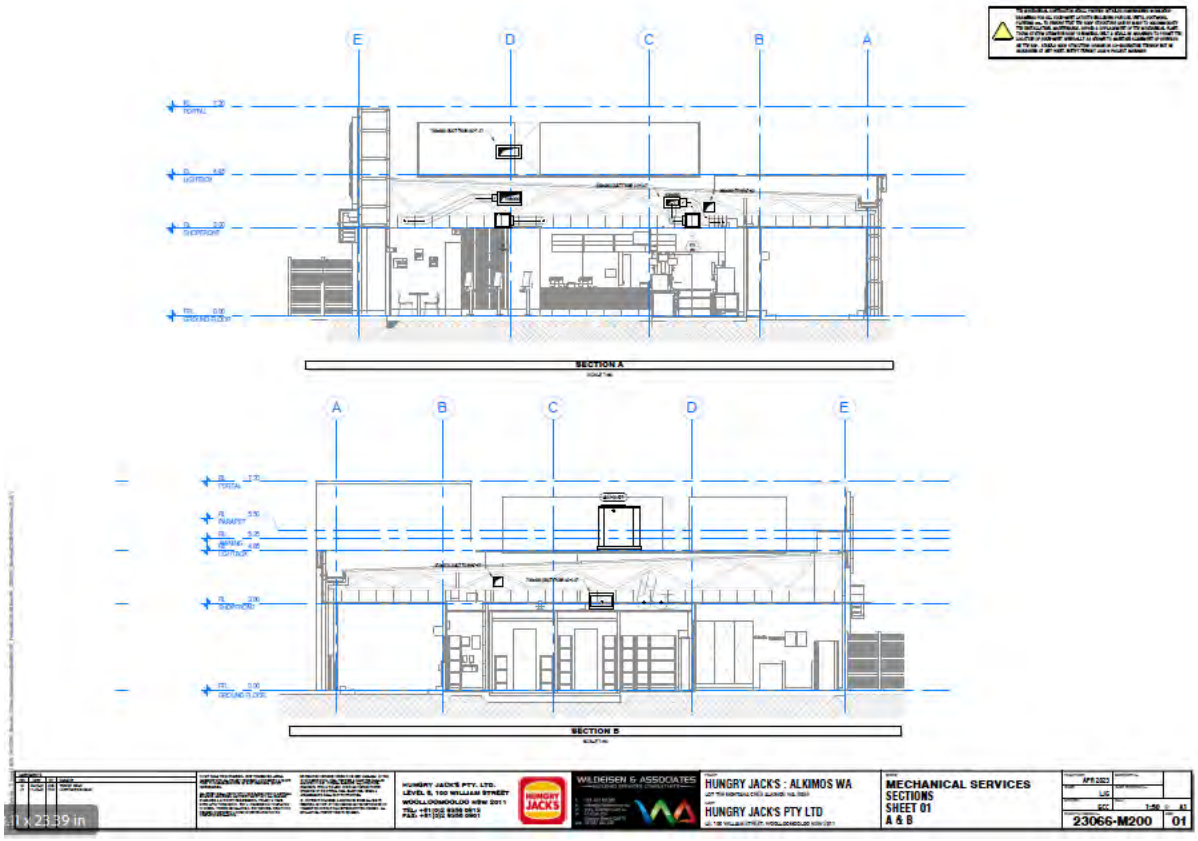
Nieco Corporation
7950 Cameron Drive
Windsor, CA 95492
800.643.2656
www.nieco.com • sales@nieco.com
Re-order P/N 9999-99123

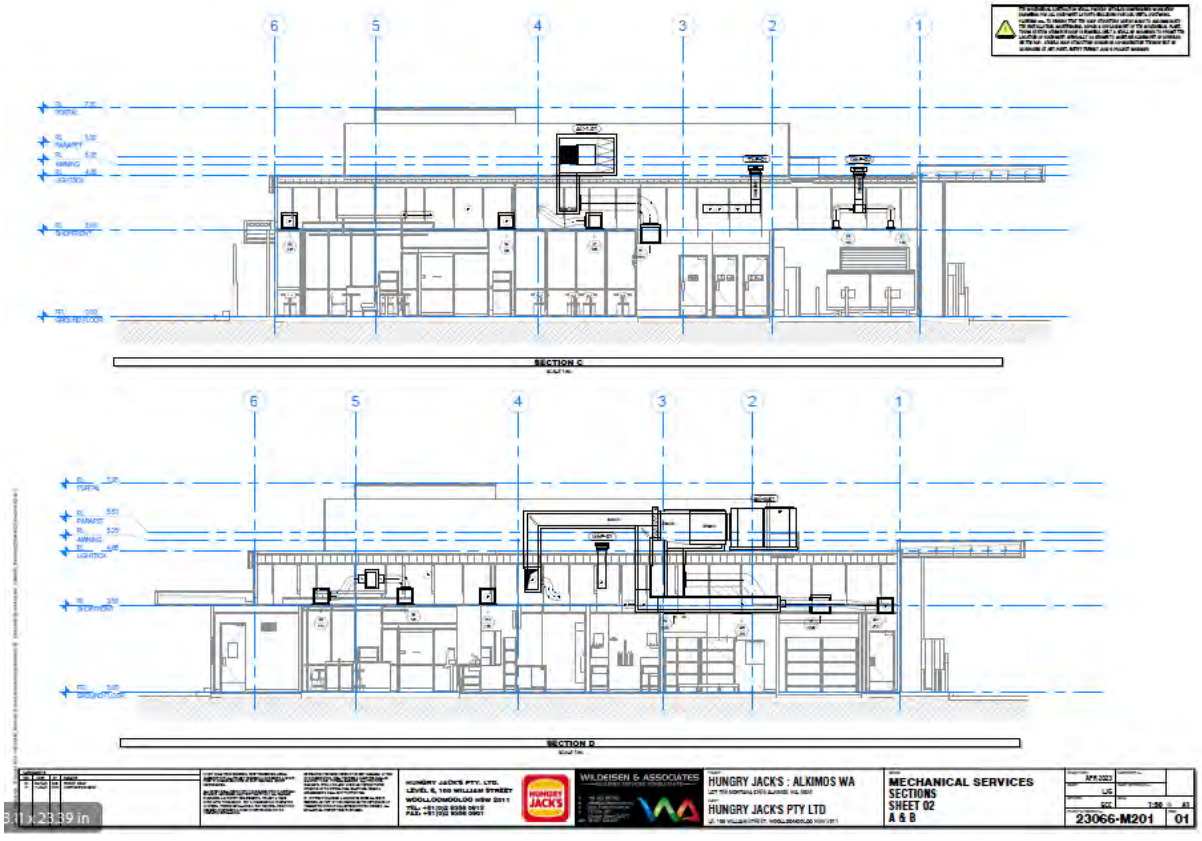
Nieco Factory Authorized Sales and Service:

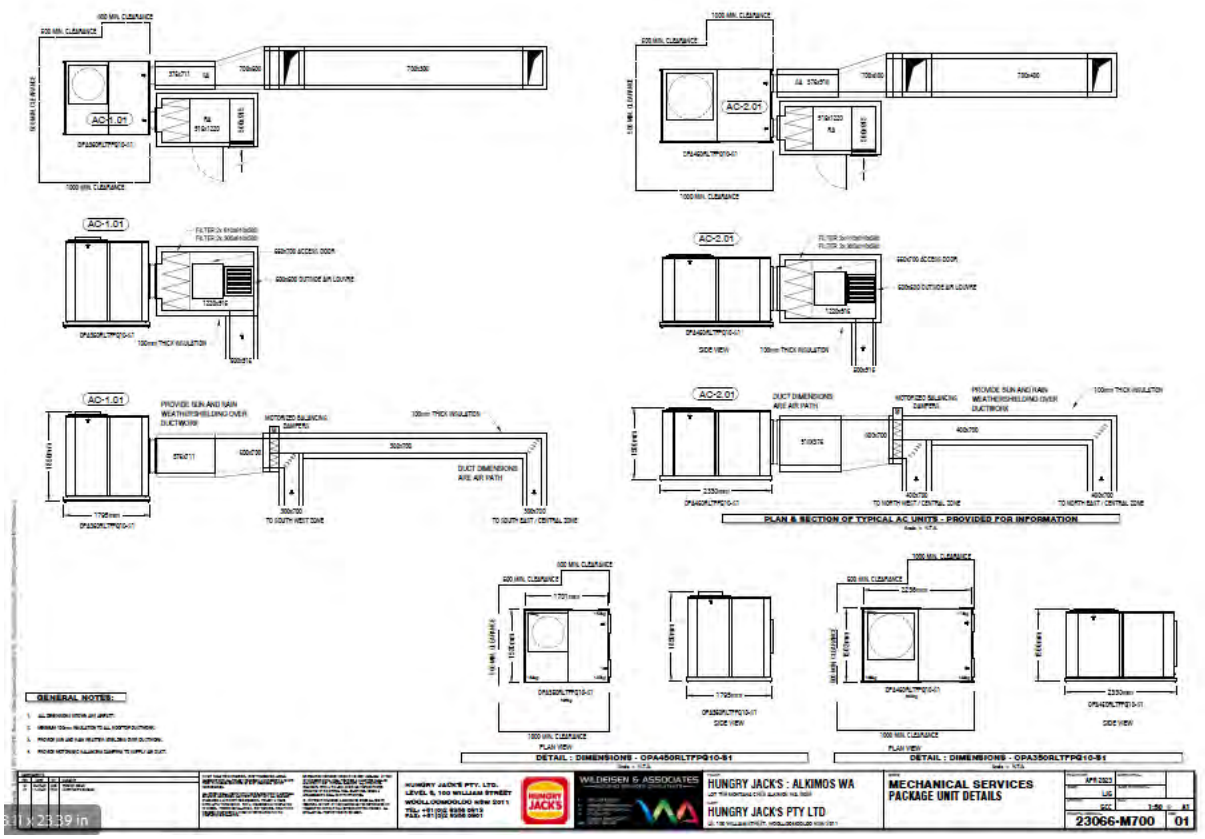
Typical Mechanical plans

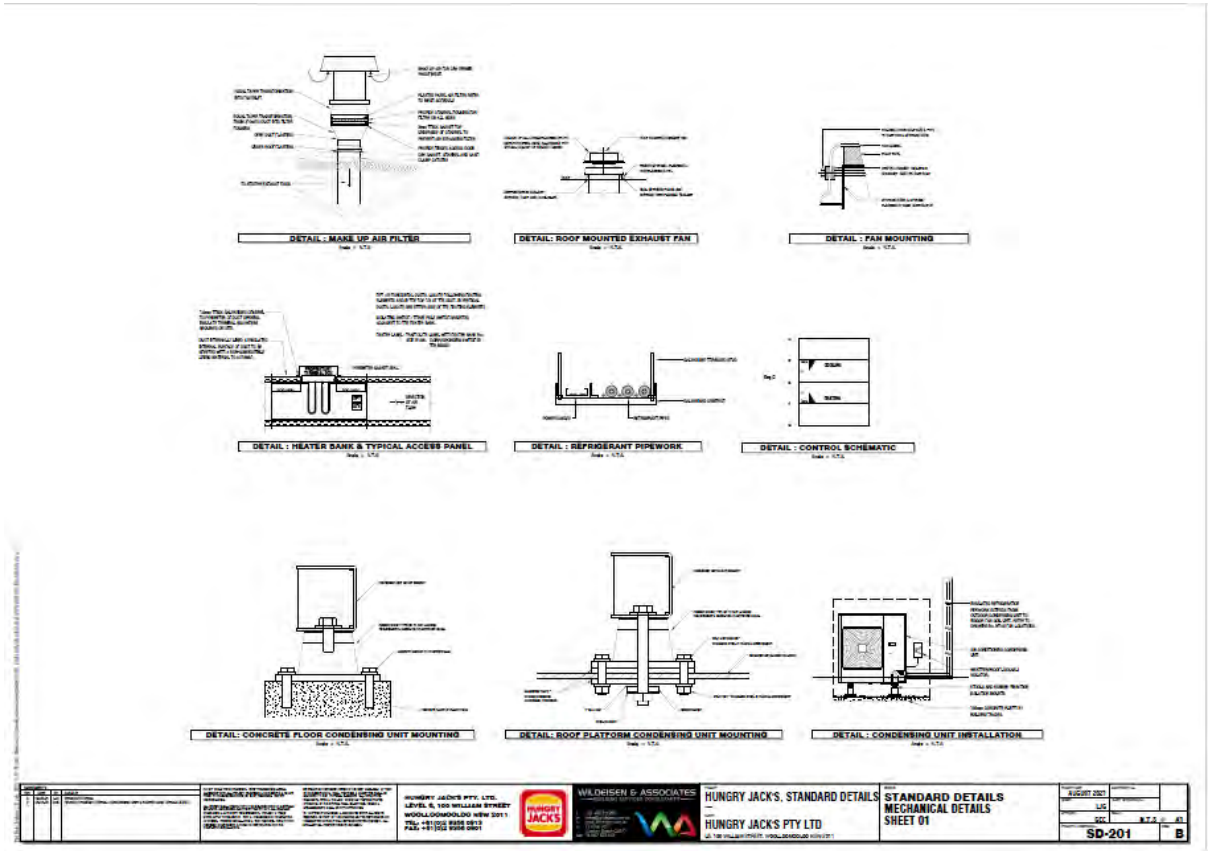


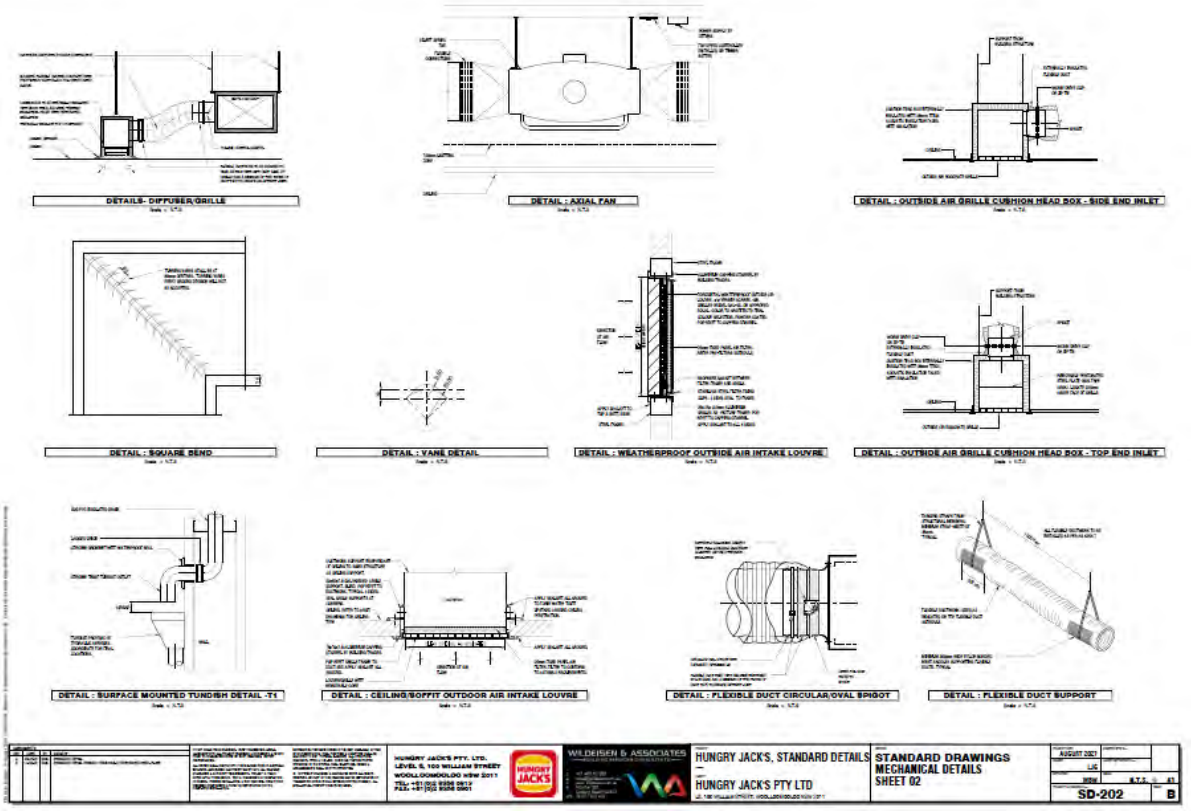



E
D
C
B
A
SECTION A
A
B
C
D
E
SECTION B
HUNGRY JACK'S : ALKIMOS WA
HUNGRY JACK'S PTY LTD
MECHANICAL SERVICES
SECTIONS
SHEET 01
A & B
23066-M200
01


6
5
4
3
2
1
SECTION C
SECTION D
HUNGRY JACK'S : ALKIMOS WA
HUNGRY JACK'S PTY LTD
MECHANICAL SERVICES
SECTIONS
SHEET 02
A & B
23066-M201
01


AC-1.01
AC-2.01
PLAN & SECTION OF TYPICAL AC UNITS - PROVIDED FOR INFORMATION
GENERAL NOTES:
DETAIL : DIMENSIONS - OPA450RLTFPG10-S1
DETAIL : DIMENSIONS - OPA350RLTFPG10-S1
HUNGRY JACK'S : ALKIMOS WA
HUNGRY JACK'S PTY LTD
MECHANICAL SERVICES
PACKAGE UNIT DETAILS
23066-M700
01


DETAIL : MAKE UP AIR FILTER
DETAIL: ROOF MOUNTED EXHAUST FAN
DETAIL : FAN MOUNTING
DETAIL : HEATER BANK & TYPICAL ACCESS PANEL
DETAIL : REFRIGERANT PIPEWORK
DETAIL : CONTROL SCHEMATIC
DETAIL: CONCRETE FLOOR CONDENSING UNIT MOUNTING
DETAIL: ROOF PLATFORM CONDENSING UNIT MOUNTING
DETAIL : CONDENSING UNIT INSTALLATION
HUNGRY JACK'S, STANDARD DETAILS
HUNGRY JACK'S PTY LTD
STANDARD DETAILS
MECHANICAL DETAILS
SHEET 01
SD-201
B


DETAILS- DIFFUSER/GRILLE
DETAIL : AXIAL FAN
DETAIL : OUTSIDE AIR GRILLE CUSHION HEAD BOX - SIDE END INLET
DETAIL : SQUARE BEND
DETAIL : VANE DETAIL
DETAIL : WEATHERPROOF OUTSIDE AIR INTAKE LOUVRE
DETAIL : OUTSIDE AIR GRILLE CUSHION HEAD BOX - TOP END INLET
DETAIL : SURFACE MOUNTED TUNDISH DETAIL -T1
DETAIL : CEILING/SOFFIT OUTDOOR AIR INTAKE LOUVRE
DETAIL : FLEXIBLE DUCT CIRCULAR/OVAL SPIGOT
DETAIL : FLEXIBLE DUCT SUPPORT
HUNGRY JACK'S PTY. LTD.
LEVEL 5, 100 WILLIAM STREET
WOOLLOOMOOLOO NSW 2011
WILDEISEN & ASSOCIATES
HUNGRY JACK'S, STANDARD DETAILS
HUNGRY JACK'S PTY LTD
STANDARD DRAWINGS
MECHANICAL DETAILS
SHEET 02
AUGUST 2021
SD-202
B

Cascade filter documentation

CASCADE™ HIGH EFFICIENCY HOOD FILTERS

Models: CF-1016, CF-1020, CF-1616, CF-1620, CF-2016CF-2020, CF-2025

The Cascade Advantage...

Franke Cascade Replacement Hood Filters capture more grease than standard filters, reduce grease damage to fans and roof, have lower static pressure than other comparable filters and have little impact on existing fans and hood performance.



High Performance

- 270% more efficient than standard baffle filters (at 8 microns capture)
- Removes 33% more grease than standard grease filters in field test
- Reduces grease buildup in ducts and fans
- Less grease buildup on your roof
- Reduces fan and roof maintenance
- Lowers annual duct cleaning bills

Easy to Maintain

- Only require once-a-day cleaning
- Remove quickly for easy crew cleaning
- Two-piece hinged design opens without tools
- Can be cleaned in sink or dishwasher with standard cleaners

Cascade™ Filters are **GREEN** and easy to clean!



Cost Efficent

- Half the cost of other high efficiency filters
- Lower static pressure than comparable filters
- Less impact on existing exhaust fans
- Can pay for themselves in savings in 1-2 years

Simple Retrofit

- Available in most standard sizes
- Replaces standard 2" deep filters
- Can be used with a Franke UVC Exhaust Air Cleaner System for even higher extraction

Environmental

- Reduce air pollution and odors
- Increased grease collection for recycling
- Reduce use of caustic cleaning chemicals
- Fewer duct cleanings save energy and water

ASTM 2519-05 Certified

Complies with NFPA 96 filter requirements

ETL Listed to UL-1046 & UL-S649

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1.888.462.4000
www.frankefs.com

FOODSERVICE SYSTEMS

FRANKE

CASCADE™ HIGH EFFICIENCY HOOD FILTERS

Models: CF-1016, CF-1020, CF-1616, CF-1620, CF-2016, CF-2020, CF-2025

Size Ordering Guide

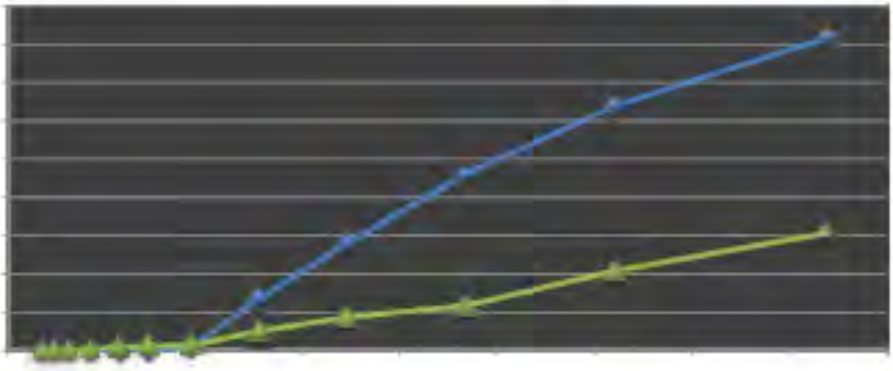
Model Part #	Nominal Height	Nominal Length	Nominal Depth	Actual Height	Actual Length	Actual Depth	Actual Weight
CF-1015 19001654	10"	15"	2"	9.5" (240mm)	15.5" (390mm)	1.5" (37mm)	5.2 lbs (2.3 kg)
CF-1020 19001653	10"	20"	2"	9.5" (240mm)	19.5" (490mm)	1.5" (37mm)	7.0 lbs (3.5 kg)
CF-1615 19001652	15"	15"	2"	15.5" (390mm)	15.5" (390mm)	1.5" (37mm)	10.1 lbs (4.5 kg)
CF-1620 19001657	15"	20"	2"	15.5" (390mm)	19.5" (490mm)	1.5" (37mm)	12.7 lbs (5.8 kg)
CF-2015 19003025	20"	15"	2"	19.5" (490mm)	15.5" (390mm)	1.5" (37mm)	12.7 lbs (5.8 kg)
CF-2020 19003024	20"	20"	2"	19.5" (490mm)	19.5" (490mm)	1.5" (37mm)	15.8 lbs (7.3 kg)
CF-2025 19003026	20"	25"	2"	19.5" (490mm)	24.5" (620mm)	1.5" (37mm)	20.1 lbs (9.1 kg)

Static Pressure

CFM	CF-1016	CF-1020	CF-1616	CF-1620	CF-2016	CF-2020	CF-2025
250	0.03	0.01	0.06	0.04	0.04	0.04	0.05
325	0.10	0.06	0.07	0.06	0.06	0.07	0.06
350	0.13	0.07	0.08	0.10	0.10	0.09	0.07
375	0.03	0.09	0.09	0.10	0.12	0.11	0.07
400	0.08	0.08	0.10	0.10	0.10	0.12	0.07
425	0.11	0.10	0.10	0.10	0.10	0.13	0.08
450	0.03	0.03	0.10	0.10	0.10	0.14	0.09
475	0.05	0.12	0.21	0.17	0.17	0.14	0.11
500	0.10	0.02	0.09	0.10	0.09	0.15	0.13
525	0.12	0.01	0.21	0.21	0.21	0.16	0.14
550	0.15	0.02	0.30	0.22	0.22	0.17	0.15
575		0.15	0.34	0.23	0.23	0.18	0.16
600		0.28	0.37	0.25	0.25	0.19	0.18
625			0.40	0.28	0.28	0.20	0.19
650			0.43	0.31	0.31	0.22	0.21
675			0.46	0.34	0.34	0.23	0.22
700			0.50	0.38	0.38	0.25	0.24
725						0.28	0.26
750						0.31	0.28
775						0.34	0.30
800						0.38	0.33

ATSM Tested to be up to 270%* more efficent than standard baffle filters:

**Relative capture rate from 2 to 8 micron particle size*



Filter Type	ASTM Certified Efficiency	Static Pressure †	Hood Changes required
Standard Baffle	10%	.21" @ 250 CFM	None
Franke Cascade™	92%	.15" @ 250 CFM	Possible fan pulley adjustment
Other High Performance	94%	.2.0" @ 250 CFM	Replace fan pulleys, belts and motor or entire fan

† The Franke Cascade™ filter has 1/4" the static pressure of competitive high performance filters. In most retrofit situations only a pulley adjustment is needed. Other filters having higher static may require motor/fan changes.

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www.franke.com

FOODSERVICE
SYSTEMS

FRANKE

Kitchen Centrifugal Grease Trap Fans

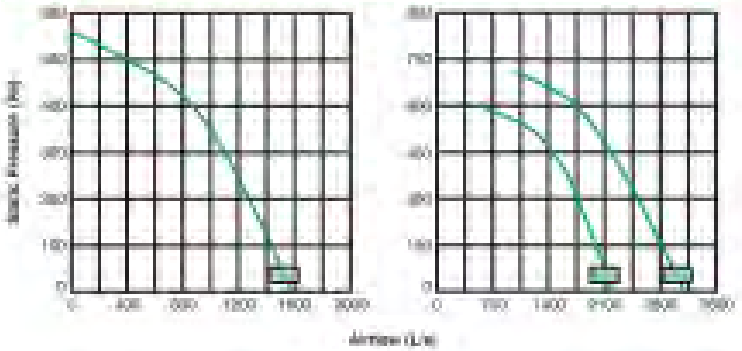
CFMAIRSYSTEMS



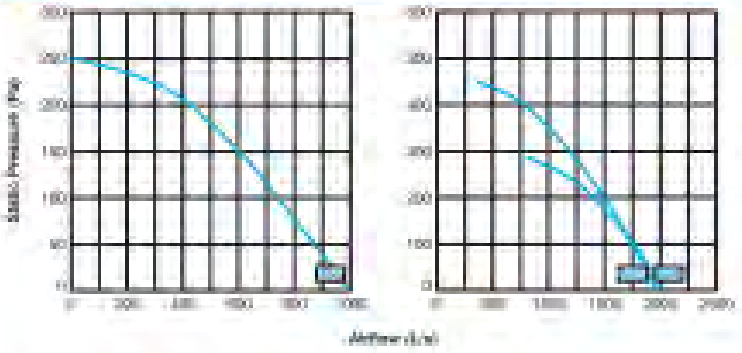


MCVG Series

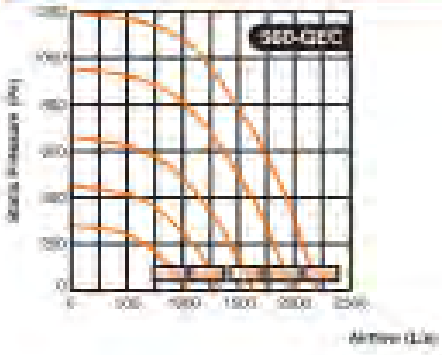
4 Pole



6 Pole



EC



Backward curved centrifugal impellers with high quality external rotor motor for high pressure exhaust applications.

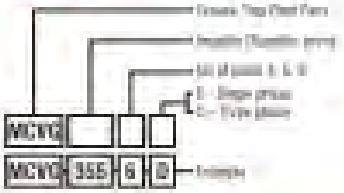
Common Applications

- Suitable for high temperature kitchen exhaust systems
- High grease applications

Features

- Capable of handling up to 28000 L/Sec and static pressure up to 600 Pa
- Performance tests are in accordance with ISO5801 (2017)
- Noise level tests are under BS848 Part 2 (1980) and DIN 45635 Part 38
- Fan diameter from 450mm to 560mm
- Fully weather proof galvanized steel housing
- Sealed for life ball bearing motors
- Easy cleaning access with clip lock design
- Available with single and 3 phase motor
- Bird mesh guard
- Painting in colour matching optional extra
- Available in EC version

Order Code



106 Fairbank Road, Clayton South, Victoria 3169, Australia
T 03 9801 4599 F 03 9521 3799 E mail@cfmairsystems.com.au
www.cfmairsystems.com.au

Kitchen Centrifugal Grease Trap Fans

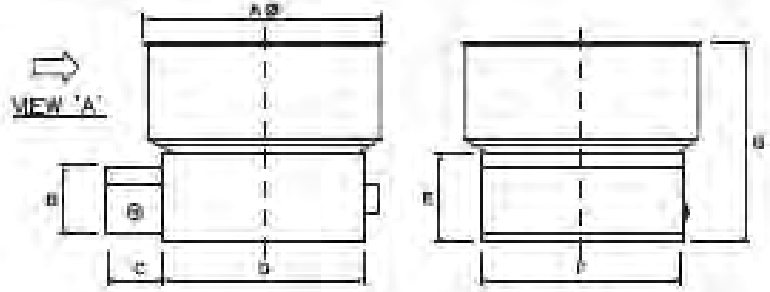
CFMAIRSYSTEMS
AUSTRALASIA

Technical Data ■ 4 POLE ■ 6 POLE ■ 8 POLE

Model	Speed r/s	1 phase		3 phase		Octave Band Frequency Lw dB (A)								SPL dB(A) @ 3m
		kW	Amps	kW	Amps	63	125	250	500	1k	2k	4k	8k	
MCGV450/4	21	0.75	3.80	0.74	3.46	48	57	60	64	61	62	56	69	48
MCV0450/6	14	–	–	0.37	2.75	48	47	47	51	49	54	45	35	37
MCVG500/4	23	1.49	5.70	1.85	7.60	64	62	62	70	64	64	61	55	53
MCV0530/6	16	–	–	0.63	3.40	46	56	62	60	57	57	52	38	48
MCV0560/4	27	–	–	2.16	4.10	46	63	65	64	62	59	57	57	58
MCV0560/6	16	–	–	1.30	2.50	38	52	58	55	50	50	50	50	45
MCV560-SEC	33	–	–	2.30	3.70	39	59	61	67	63	65	64	54	62

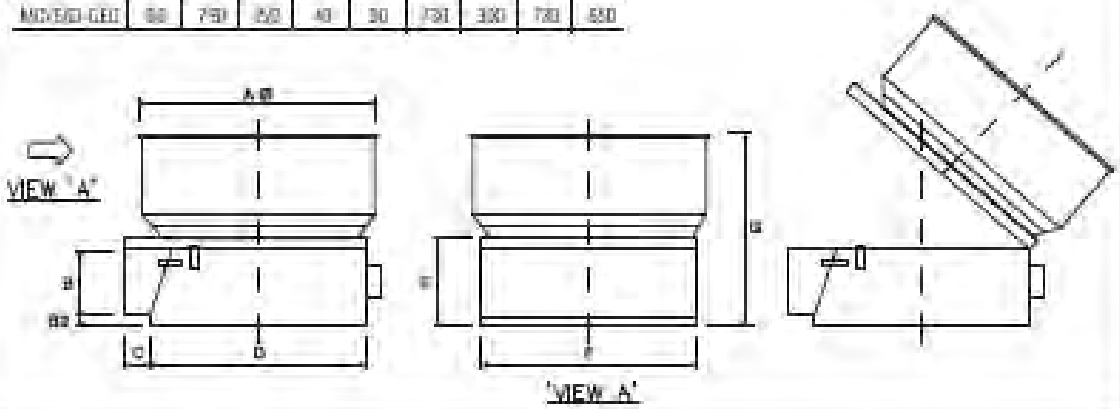
Technical Data

Model	kg	A	B	C	D	E	F	G
MCV0450	42	780	310	190	680	300	650	680
MCV0500	50	920	230	190	730	300	750	980
MCV0530	60	920	230	190	730	300	730	780



Technical Data

Model	kg	A	B	B2	C	D	E	F	G
MCV560-SEC	80	790	250	40	30	730	300	730	650



CFM Airsystems reserve the right to change design without any notice or obligation. Please refer to your local CFM Airsystems representatives for technical and installation details.

Odour Management Plan

KFC Golden Bay

24 October 2024

Introduction

Collins Foods Ltd Odour Management Plan (OMP) details a range of operational procedures and action plan which occur at the KFC restaurant to be located in Golden Bay.

This OMP has been prepared by Collins Foods Ltd and should be read in conjunction with the site plans (see appendix).

This OMP does not replace any training or procedure manuals and is in addition to the OH&S procedures.

Collins Foods who is the Franchisee for KFC are an Australian owned company and are highly experienced in the management and operation of fast-food restaurants since 1971. Currently they operate 385 restaurants worldwide.

In WA we operate 70 stores of which the last 10 stores have had the same mechanical specifications outlined in the following document.

Objectives of the OMP

- To demonstrate KFC's commitment to the safe and amiable management of the restaurants, for guests, employees and adjoining/nearby properties
- To set out specific actions and procedures to manage patrons and the operation at the site
- To set out specific actions and procedures to remedy any issue that occur from time to time in relation to the extraction systems
- To promote communication between KFC's, the local community and nearby residents to resolve issues.

This OMP applies to the KFC fast food restaurant noted as each site has its own nuances. The OMP is a dynamic document which can be updated to respond to changing procedures and practices.

Trading Hours & Staffing

KFC Trading Hours Plan includes details the operating hours of the KFC store. It breaks down the trading hours for both drive-thru and dining room and highlights peak days and day-parts. Trading hours are designed to maximise customer convenience whist having due regard for the surrounding environment and neighbouring properties.

Trading Hours are planned to meet the specific requirements of each site. They take into consideration:-

- the specific needs of the location
- any specific requirements issues identified in the immediate surrounding environment (ie residential bounding the site)
- business drivers (specific busy times driven by other generators)
- staff and customer safety

The dining room and drive thru trading hours:-

- Seven days per week, 10am to 10pm

* Restaurant hours may vary dependent on location requirements

Peak (day part) periods:

- Lunch (11am to 2pm) and
- Dinner (5pm to 7.30pm)

Peak (days) are generally:

- Thursday, Friday, Saturday

Staff Employed in KFC restaurants

Employment levels at the store vary depending customer volumes and on time of day and day of the week. They typically range from: Late morning - 1 manager and 1 to 4 crew

Lunch – 1 to 2 managers and 6 to 12 crew.

Dinner – 1 to 2 managers and 4 to 14 crew.

Nights - 1 manager 1 to 2 crew

Conclusion

Trading hours will meet the needs of the location whist having due regard to neighbouring properties. It is not anticipated that any significant issues will result with respect to the trading hours at the KFC site.

Odour Management

Restaurants Designed by KFC are designed to comply with the Authority Approvals and with the Australian standards for Extraction systems.

The Extraction systems in the stores are designed and interfaced so that if a extraction component Fails the Extraction system shuts down the cooking items utilised until repairs are made.

There are 2 types of extraction systems located within a store

- The Main Cookline consisting of sealed closed oil pressure cooker system
- The Fryer extraction system

The above cooking processes are relatively clean.

There is no smoke or heavily grease laden air being discharged form our cooking process.

KFC do not chargrill or cook over open flames.

KFC have chosen canopy filters which target the products of their cooking process to achieve the best results.

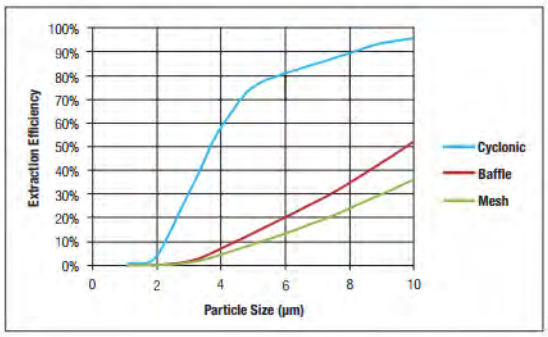
KFC do not discharge heavy grease laden air therefore do not require kitchen exhaust fan “grease capture tanks” like others do.

The kitchen canopies are “performance engineered” canopies from “Halton”.

They have the following performance enhancements over the standard canopies found in other Fast Food outlets;

- “Capture Jet” technology to ensure the airborne cooking products are directed into the high efficiency cyclonic KSA filters.

  The graph below indicates the superiority of the cyclonic KSA filters over baffle or mesh filters;





Cyclonic filter
95% efficient
on 10um and
above particles



Find attached the Halton canopy data sheet, KSA filter data sheet and ASHRAE grease filter article.

Installation

The kitchen exhaust system shall comply with AS1668.2 2012 and AS 4254 legislation requirements with specific attention to the following:

- All kitchen exhaust ductwork transverse and longitudinal joints shall be sealed prior to assembly with an approved grease resistance sealant (Sikasil 670 Fire),suitable for operation at temperatures over 150degC.
- Kitchen exhaust ductwork thickness shall be 1.2mm Galvanised iron or 0.9mm stainless steel.
- Supply and installation of roof mounted kitchen exhaust fan with ductwork terminating directly below with 90 deg bend and 50mm drain plug.

Servicing

The store is set up with both operational procedures and external cleaning from the commencement of trade which assist in maintaining the extraction and air quality extracted.

These are.

1. Daily cleaning of the cyclonic filter which is within the capture jet hood which sits above the frying equipment

2. The cooking area cleaned on a daily basis. Oil within the friers is tested daily and changed at least twice a week (or more frequently depending on testing).

3. Monthly cleaning of the duct work and fans by an external contractor on a service agreement

The Mechanical systems comply to the AS 1668.and AS 9002. In addition, comply with all relevant requirements defined by the following: -

- Building Code of Australia (National Construction Code).
- State Fire and Rescue Authority.
- The Insurance Council of Australia.
- The Building Surveyor/Certifier.
- Supply Authorities and State Electricity Commission.
- Telecommunications service providers (Telstra / NBN fibre ready to the premises).
- Local Council.
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- Any other Authority having jurisdiction over the works.

Should concerns be raised during the life of the building in relation to odours KFC's is committed to Resolving these issues as and when these arise.

Any complaints received are investigated, upon the outcome of the investigation by Qualified consultant. KFC then implements the requirements which had been raised in the report.

KSA - CYCLONIC FILTER

KSA filters provide superior filtration for Capture Jet™
Kitchen Exhaust Canopies



Overview:

Mechanical grease filters are used to remove particles from the exhaust airflow and provide primary fire protection by preventing flames from spreading into the exhaust system. To ensure high-efficiency grease extraction, Halton have developed and patented the UL1046 and NSF-certified KSA multi-cyclone filter.

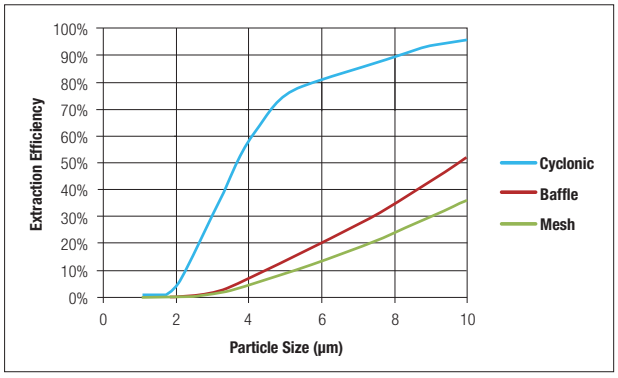
The unique KSA filter is constructed of multiple cyclone chambers with high fractional efficiency to remove 95% of grease particles sized ten microns and above by centrifugal separation. Grease and moisture particles drain from the inclined cyclone chambers into a grease collection cup for safe disposal & recycling.

The cyclone chambers maintain a constant pressure drop throughout the operating cycle so design airflows can be maintained with a lower exhaust fan operating cost. KSA filters are robust and can be easily removed and passed through a hood type dishwasher to keep the kitchen clean and hygienic. Independent laboratory tests prove that this is the most efficient mechanical grease filter on the market.

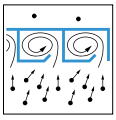
Features:

- **Flame & Spark Arrestance: AS1668.1 2015 (Clause 6.2.9):** Requires that exhaust systems with duct lengths exceeding 10 m and/or with possible exposed flame or embers generated by the cooking processes, the filters must be UL1046 Certified. Every KSA filter carries a “UL1046 classified” certification stamp.
- **Hygienic:** NSF-certified for safe use over food preparation areas to remove grease from the air and prevent grease from falling back onto the food and cooking appliances. Durable Stainless steel (AISI 304) construction allows for easy removal and cleaning in the dishwasher.
- **Efficient:** (AS1668.1-2012) KSA Filters have been tested using VDI 2052 standard test methods and are proven to remove over 95% of particles 10µm size and above. The non-clogging design ensures ongoing contaminant removal with lower fan energy cost.









Cyclonic filter
95% efficient
on 10um and
above particles

Kitchen Exhaust Hood shall comply with the requirements or NCC 2015 and AS1668.2 2012. Constructed from 1.2 mm AISI 304 Satin finish with fully welded exhaust plenum. The hood shall be supplied complete with vertical and horizontal Capture Jet™ technology, high efficiency UL1046 Certified Cyclonic Filters (KSA) and pressure measurement points, exhaust and supply air adjustment dampers, and flush light fittings to provide minimum 500 lux at the cooking surface. The size shall be as indicated in the drawings. The hood will be designed to save energy and capture efficiency will be calculated using convective heat calculations methods. Make-up air will be supplied at low velocity through the front face of the canopy.

Due to continuous product research and development,
the information contained herein is subject to change without notice.

Revision: 27/04/2021

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Halton

KVF - CAPTURE JET™ HOOD

With low-velocity makeup air system on the front face



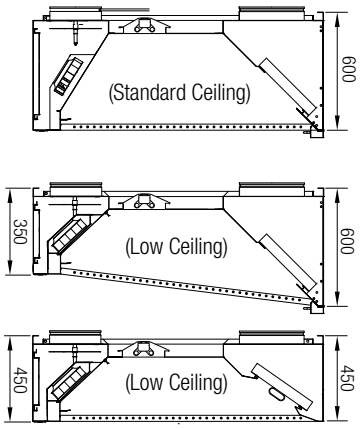
Overview:

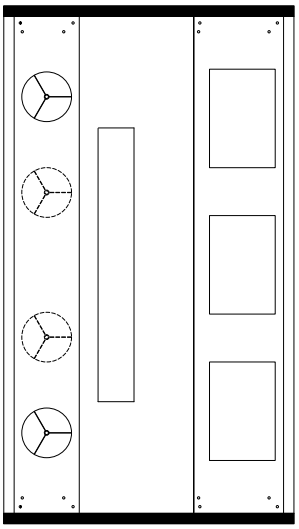
Halton exhaust hoods are designed for use in high energy commercial kitchens and show kitchens.
Halton KVF hoods with Capture Jet™ are proprietary kitchen exhaust hoods, that efficiently capture and extract the thermal plume from heavy duty and live fuel cooking equipment. The combination of Capture Jet™ and the provision for make-up air through the hood's front face at low velocity helps capture and contain the heat load with 30 to 40% lower exhaust airflow.

Features:

- **Compliant design:** Halton Capture Jet™ hoods comply with AS1668.2 as proprietary kitchen exhaust hoods designed to proven and tested standards. (ASTM F1704.VDI2052)
- **Safe:** Halton's KSA filters are UL1046 certified to prevent the spread of flames from the kitchen into the exhaust plenum and duct.
- **Efficient:** Capture Jet™ technology uses controlled horizontal and vertical air curtains to contain the exhaust air and move it toward the filters for efficient removal. Provision for supply of Make-up Air through the hood's front face at low velocity increases the hoods capture efficiency up to 40%.
- **Effective:** Halton's KSA filters use cyclonic action to efficiently separate contaminant particles. Independent tests verify that 95% of particles (10µm and above) are removed.
- **Low maintenance:** High efficiency removal of oil particulate keeps the exhaust duct and exhaust fan cleaner and reduces formation of combustible deposits.
- **Healthy:** Louvred nozzles in the front of the canopy provide fresh air to maintain a comfortable work environment for chefs. Provision for supply of Make-up Air through the front hood's face at low velocity further improves the comfort for kitchen staff. The HACCP certified KSA filters are easily removed and washed on site in the pot-washer with hot soapy water to maintain kitchen hygiene.
- **Easy:** Capture Jet™ Hoods are easy to install with full perimeter hanging rails and power leads with plugs for quick connection to lighting circuits by installers.

Typical Section & Plan:





*For dimensions refer to project drawing



Capture Jet™ technology
Up to 40% reduction in airflow rates



Cyclonic filter
95% efficient on 10um and above particles



Integrated supply air
Better capture and comfort



T.A.B.™ technology
Quick airflow rates measurement

Recommended Combinations:



M.A.R.V.E.L.
Extend airflow reduction to up to 64%



Capture Ray™ technology
Neutralises grease vapours and particles



Built-in Fire Suppression
Engineered & pre-installed from factory

Notes:
1. The dimensions shown are for modular sections only. Longer hoods are assembled using a combination of separate modules to make delivery and on-site handling easier.
2. Other Capture Jet™ air supply possibilities or connections are available on request.

LOCATION OF CONNECTIONS (mm)
Number of exhaust and supply connections to be assessed in relation to the length of the modules and the calculation of airflow rates depending on the configuration of the cooking appliances.

Estimated Weight kg (h=600mm)

L/W	1100	1300	1500	1700	1900
1100	86	91	97	107	113
1600	114	119	125	136	141
2100	141	147	152	164	170
2600	169	174	180	193	199
3100	196	202	207	222	228

Typical Specification Text:

Kitchen Exhaust Hood shall comply with the requirements or NCC 2015 and AS1668.2 2012. Constructed from 1.2 mm AISI 304 Satin finish with fully welded exhaust plenum. The hood shall be supplied complete with vertical and horizontal Capture Jet™ technology, high efficiency UL1046 Certified Cyclonic Filters (KSA) and pressure measurement points, exhaust and supply air adjustment dampers, and flush light fittings to provide minimum 500 lux at the cooking surface. The size shall be as indicated in the drawings. The hood will be designed to save energy and capture efficiency will be calculated using convective heat calculations methods. Make-up air will be supplied at low velocity through the front face of the canopy.

Due to continuous product research and development,
the information contained herein is subject to change without notice.

Revision: 27/04/2021

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PART C – CITY OF KALAMUNDA

1. Declarations of Due Consideration

2. Disclosure of Interests

3. Form 1 DAP Applications

3.1 Lot 9 (No. 29) Stirling Crescent, High Wycombe – Two Warehouses and Incidental Office – DAP/24/02756

4. Form 2 DAP Applications

Nil.

5. Section 31 SAT Reconsiderations

Nil.

Part C – Item 3.1 – LOT 9 (NO. 29) STIRLING CRESCENT, HIGH WYCOMBE – TWO WAREHOUSES AND INCIDENTAL OFFICE

Form 1 – Responsible Authority Report
(Regulation 12)

DAP Name:	Metro Outer Development Assessment Panel
Local Government Area:	City of Kalamunda
Applicant:	Planning Solutions
Owner:	D Jones & A Jones
Value of Development:	$7 million
Responsible Authority:	City of Kalamunda
Authorising Officer:	Regan Travers - Manager Approval Services Cardia Mariani – Principal Statutory Planner Anjali Parmar – Senior Statutory Planner
LG Reference:	DA24/0315
DAP File No:	DAP/24/02756
Application Received Date:	23 August 2024
Report Due Date:	21 November 2024
Application Statutory Process Timeframe:	90 Days, with an additional 13 days agreed
Attachment(s):	1. Development Plans 2. Environmental Acoustic Assessment 3. Stormwater Management Plan 4. Bushfire Management Plan 5. Geotechnical Report 6. Transport Impact Statement & Appendices (Appendix 1, 2 & 3) 7. Site and Soil Evaluation Report 8. Waste Management Plan 9. Planning Report 10. Submissions Table 11. Design Review Panel Meeting Minutes 12. Applicants Response to DRP Minutes 13. Referral response from Main Roads 14. Referral response from Perth Airport

Responsible Authority Recommendation

That the Metro Outer Development Assessment Panel resolves to:

1. **Refuse** the DAP Application reference DAP/24/02756 as it is not capable of approval as a "Warehouse/Storage" land use due to being incompatible with the objectives of the zoning table in accordance with Clause 4.2.4 of the City of Kalamunda Local Planning Scheme No. 3;

2. **Refuse** DAP Application reference DAP/24/02756 and accompanying plans in accordance with Clause 68 of Schedule 2 (Deemed Provisions) of the *Planning and Development (Local Planning Schemes) Regulations 2015*, and the provisions of Clause 10.4 of the City of Kalamunda Local Planning Scheme No. 3, for the following reasons:

Reasons

1. The proposed development is not consistent with Clause 27(2)(a) and Clause 67(2)(b) of the *Planning and Development (Local Planning Schemes) Regulations 2015* as it cannot constitute an orderly and proper planning proposal in the absence of a structure plan - in the following ways:

    a. The proposed development is inconsistent with the objectives of Clause 5.23 of the City of Kalamunda Local Planning Scheme No.3. Clause 5.23 foreshadows all vehicular access to be obtained from an internal road and specifically not via Stirling Crescent;

    b. The proposed development is inconsistent with the planned future amenity of the area and will have negative impacts on the amenity of adjoining landowners due to vehicular access to the site being proposed from Stirling Crescent in lieu of an internal road which was foreshadowed by Clause 5.23 of LPS3 and a subsequent structure plan.

2. The proposed development is not consistent with Clause 27(2)(b) and Clause 67(2)(m) of the *Planning and Development (Local Planning Schemes) Regulations 2015 as* it would prejudice the overall development potential of the area in the following ways:

    a. The proposed development is inconsistent with Clause 5.23 of the City of Kalamunda Local Planning Scheme No.3 which requires a structure plan to be prepared and approved for the subject land and adjoining land holdings, to coordinate planning and address vehicular access, interface to residential development, identification and protection of environmentally significant areas, and bushfire risk.

    b. The proposed development pre-empts the structure planning process, prejudices future planning and does not address the requirement for coordinated planning across the land within the 'Light Industrial' zone.

    c. Given that the proposed development restricts the site from having future access from an internal road, and that there has been a lack of adequate structure planning in relation to vehicular access, the proposed development would undermine the legitimate aspirations found in the current planning framework, in particular Local Planning Scheme No. 3.

3. Given reasons (1) and (2), it is appropriate to apply the precautionary principle to the proposed development.

Details: outline of development application

Region Scheme	Metropolitan Region Scheme
Region Scheme - Zone/Reserve	Urban
Local Planning Scheme	Local Planning Scheme No. 3
Local Planning Scheme - Zone/Reserve	Light Industry
Structure Plan/Precinct Plan	N/A
Structure Plan/Precinct Plan - Land Use Designation	N/A
Use Class and permissibility:	Warehouse/Storage – "P" Office (Incidental) – "D"
Lot Size:	Total lot area: 10,032sqm.
Existing Land Use:	Single House
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:

The development application seeks approval for two (2) warehouses and an incidental office at Lot 9 (No. 29) Stirling Crescent, High Wycombe. The key components of the development are summarised below:

Proposed Land Use	Warehouse/Storage
Proposed Net Lettable Area	4,965sqm
Proposed No. Storeys	Single storey
Proposed No. Dwellings	n/a

The application proposes:

- Warehouse 1: with a total net lettable area of 2,345sqm
- Warehouse 2: with a total net lettable area of 2,520sqm
- Incidental office to Warehouse 1, with a total net lettable area of 360sqm. The area comprises of a reception, office space, staff room and bathroom facilities.
- External parking area, comprising of 53 car parking bays for light vehicles.
- One bicycle rack with space for six bicycles.
- Heavy vehicle access to the loading / unloading area.
- The two warehouses are connected with an undercover loading / unloading area for heavy vehicles.
- Two crossovers:
    - One 11m wide crossover, providing entry movements for light and heavy vehicles via the eastern boundary of Stirling Crescent.

    - One 11m wide crossover, providing exit movements for light and heavy vehicles via the western boundary of Stirling Crescent.
- One-way vehicle circulation in an anti-clockwise direction through the site.

Background:

Site Description

The subject site is located within the Hatch Court Light Industrial Precinct, which comprises approximately 30 hectares of land and is in the north-western corner of High Wycombe generally bounded by Kalamunda Road, Stirling Crescent and Adelaide Street.

The subject site is described as follows:

1. Zoned 'Urban under the Metropolitan Region Scheme (MRS) and 'Light Industry' under the City of Kalamunda Local Planning Scheme No.3 (LPS3).

2. Bound by Stirling Crescent to the south-east. The adjoining sites to the north-west and north-east are rural in nature, being located within the Hatch Court Precinct. The south-west are developed for industrial purposes. Across the road on Stirling Crescent, the properties are all residential in nature and are coded R20.

3. Identified on the Department of Fire and Emergency Services (DFES) OBRM mapping as being located within a Bushfire Prone Area (BPA) under the Fire and Emergency Services Act 1998 (as amended).

4. The lot is currently occupied by an existing residential dwelling and the site contains mature vegetation around the periphery of the site.

5. The lot also contains an existing man-made pond.

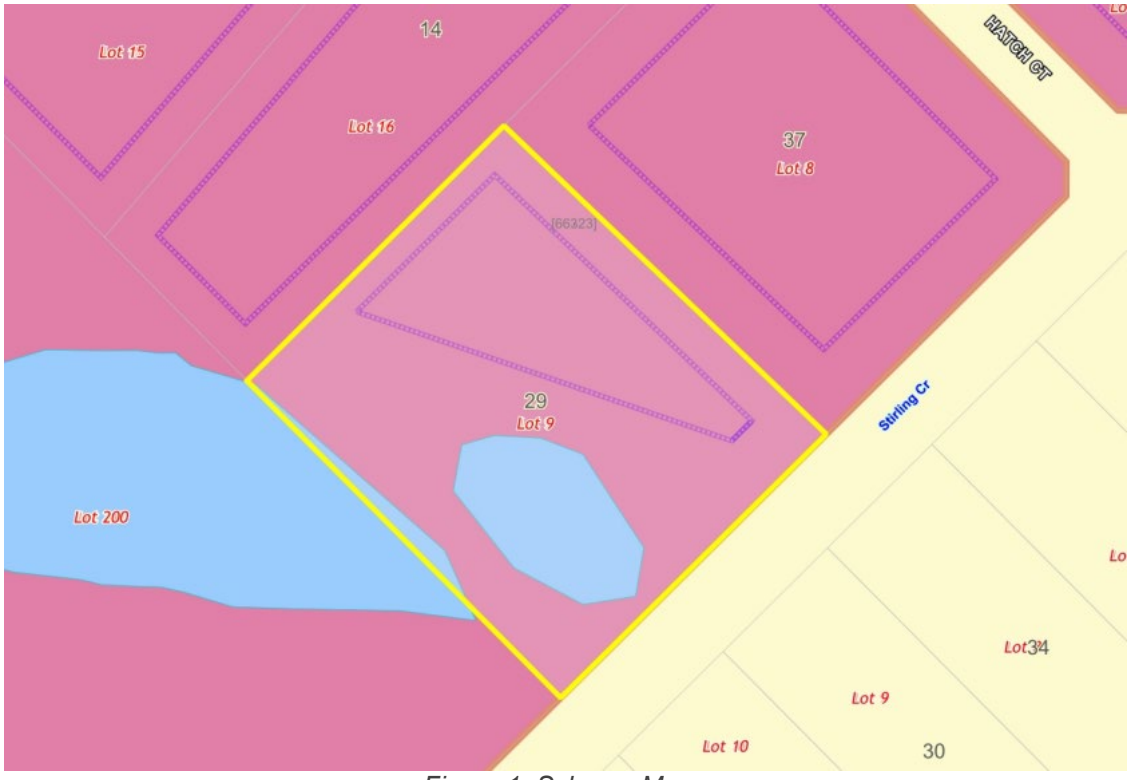


Figure 1: Scheme Map

Site History

In 2010, the subject land within the Hatch Court precinct was rezoned from Rural to Urban under the Metropolitan Region Scheme (1187/57).

On 6 February 2016, Amendment 80 to the City's Local Planning Scheme No. 3 was gazetted to:

1. Rezone lots within Hatch Court from 'Urban Development' to 'Light Industry.'
2. Insert a new clause 5.23 into the Scheme which sets out additional site and development requirements to properties within Hatch Court. These include the preparation of a structure plan to address vehicle access and the interface to the residential land uses along Stirling Crescent.

Since the Amendment was gazetted, no structure plan has been progressed for Hatch Court. This will be discussed in further detail in the Planning Assessment section of this report.

In 2021, Main Roads finalised the modifications to the Great Eastern Highway Bypass Interchange to improve traffic and connectivity. The modifications result in the closure of existing access to Great Eastern Highway from Stirling Crescent which results in the reduction in industrial traffic along Stirling Crescent.

Legislation and Policy:

Legislation

Planning and Development Act 2005
Planning and Development (Local Planning Schemes) Regulations 2015
Planning and Development (Development Assessment Panel) Regulations 2011

Metropolitan Region Scheme (MRS)
City of Kalamunda *Local Planning Scheme No. 3* (LPS3)
Environmental Protection (Noise) Regulations 1997

State Government Policies

State Planning Policy 3.7 – Planning in Bushfire Prone Areas
State Planning Policy 4.1 – State Industrial Interface
State Planning Policy 5.1 – Land Use Planning in the Vicinity of Perth Airport
State Planning Policy 7.0 – Design of the Built Environment
Government Sewerage Policy 2019

Structure Plans/Activity Centre Plans

n/a

Local Policies

Local Planning Policy 2 – Advertising Signage (LPP 2)
Local Planning Policy 11 – Public Notification of Planning Proposals (LPP 11)
Local Planning Policy 16 – Design Review Panels (LPP 16)
Local Planning Policy 26 – Public Art Contributions (LPP 26)
Draft Local Planning Policy 35 – Hatch Court Light Industrial Precinct (LPP 35)

Consultation:

Public Consultation

The proposal was advertised in accordance with Clause 64 and Clause 87 of the Regulations and Local Planning Policy 11 – Public Notification of Planning Proposals (LPP 11). The proposed development was advertised for a period of 14 days via the following methods:

(a) Letters were sent to all landowners and occupiers within the Hatch Court Precinct, residential properties within Stirling Crescent and lots fronting Kalamunda Road to the west;
(b) Notice on the City's website; and
(c) Signage on site.

A total of four submissions were received, all objecting to the proposal. All submissions have been compiled and responded to in the submission table (attachment 10). The key concerns relate to the development of the site in the absence of an approved structure plan and the traffic implications onto Stirling Crescent. The City's response to the concerns has been addressed in the submission table in accordance with Clause 67(2)(y) of the Regulations.

Referrals/consultation with Government/Service Agencies

Main Roads

The application was also referred to Main Roads for comment as the site is located in close proximity to the Great Eastern Highway Bypass Interchanges Project. Main Roads have no objection to the proposal. Main Roads also note:

- Stirling Crescent between Kalamunda Road and Adelaide Street is not a state road.
- The Great Eastern Highway (GEH) Bypass Interchanges Project is at the construction stage and is currently on hold until Main Roads secure the approvals required to deliver the works.
- The site currently does not have access to the Restricted Access Vehicle (RAV) network.

This application does not propose to use of Restricted Access Vehicles for the development.

City of Swan

The application was also referred to City of Swan for comment as the site is located in proximity to the City of Swan's project for local road design changes for Stirling Crescent, Talbot Road and Adelaide Street for the new interchanges on Great Eastern Highway Bypass. No comments were received.

Perth Airport

The application was referred to Perth Airport for comments as the site is located within 800m of the centreline of the cross runway and is within 1km of Perth's new runway. Perth Airport advised they neither support nor object the proposal. The development was deemed as acceptable under SPP 5.1, and the development poses no impacts to the assesses airspace criteria.

Design Review Panel Advice

Pursuant to LPP16, the proposed development is a 'significant proposal' and therefore the advice of DRP was sought and considered during the assessment of this Development Application.

The City of Kalamunda's DRP comprises of independent experts in the field of architecture, urban design and urban planning. The Panel provides formal technical and professional advice and recommendations to the City and applicant on development proposals. The application was considered by the DRP on 9 October 2024 (refer attachment 11 for the minutes of the meeting).

Pursuant to Clause 10.3 of LPS3, the City is required to give due regard to any relevant recommendation of the DRP. The below table provides a summary of the proposals response to the recommendations made by the DRP.

Design Principle	**DRP Recommendations (summary)**	**City's Response**
1. Context and Character	• Consider how the development sets a precedent and vision for the future light industrial precinct and to seek a complimentary interface with the residential area across Stirling Crescent.	No changes made.
2. Landscape Quality	• Retention of mature and native trees within front of site	No changes made to increase trees /

	• Decrease parking to facilitate tree retention • Use of native trees • Re-planting of comparable species for native flora and ensure tree selection can achieve sufficient shading for hard surfaces on site.	retain existing trees on site. A condition can be recommended for an updated Landscape Plan to be submitted to increase the canopy cover on site.
3. Built Form and Scale	• Re-consider signage on Stirling Crescent elevation.	No changes made to signage.
4. Functionality and Build Quality	• Concerns with insufficient toilet access from rear warehouse, which may impact the convenience and comfort of future workers. • Concerns with no toilets provided to both warehouses which has issues future if warehouses are operated separately.	No changes made.
5. Sustainability	• No measurable commitments were provided in DA package. • Recommend providing commitments on solar panels, EV charging, carbon footprint, solar shading, lighting and natural ventilation in the proposal. • Recommend provision of solar panels on the covered canopy.	No changes made to provide commitments to solar panels, EV charging etc. No addition of solar panels to the covered canopy. A condition can be recommended to require a Sustainability Report prior to the issue of a Building Permit.
6. Amenity	• Consider shifting the staff outdoor area to increase the space available for staff for better use.	No changes made.
7. Legibility	• No recommendations.	n/a
8. Safety	• Consider how light and heavy vehicles will access the large crossovers and whether these can be separated, or demarked. • Consider one way movement through staff car park to avoid potential front on conflicts between cars and trucks entering and existing the site.	No changes made.

9. Community	• Consider increase in tree retention which will provide an ecological and community benefit. • Consider how this development contributes to the community via the street frontage design.	No changes made.
10. Aesthetics	• Consider design opportunities to reduce the scale of large blank walls at the rear of the site. • Consider materiality of the checkerboard patterns – they need to be effective at reducing the scale of wall surfaces. • Concerns with the diminishing quality of the materiality and finishes applied to the building from the front of the site to the rear, especially when there is no industrial development currently at the rear of the site, it is important design quality is evident throughout the site.	No changes made. Should the JDAP resolve to approve the application, the City recommends a condition be imposed for a detailed external finishes and colour schemes palate to be submitted prior to the issue of the building permit to ensure the recommendations of the Panel can be incorporated into the development.

As indicated in the table above, no changes were made to the plans to address the recommendations of the DRP.

Note: the applicant has also provided a response to the DRP comments and recommendations, which is contained within attachment 12.

Internal Departments

The application was referred to relevant internal departments for formal comment as part of the consideration process.

Planning Assessment:

The proposal has been assessed against all the relevant legislative requirements of the Scheme, State and Local Planning Policies 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:

1. Additional requirements that apply to land in Scheme area (Table 4 of LPS3)
2. Clause 27 – Effect of Structure Plan (Schedule 2, Part 4 of the *Planning and Development (Local Planning Schemes) Regulations 2015*)
3. Site Requirements (Table 2 of LPS 3)
4. Canopy Cover (Urban Forest Strategy)

Land Use Permissibility

The subject site is zoned “Light Industry” under LPS3 with the proposal seeking approval for “Warehouse/Storage” which is a (P) permitted land use in accordance with Clause 4.3 and Table 1 of LPS3.

The “Warehouse/Storage” use is defined in Schedule 1, Part 2 of LPS3 as:

> ***"warehouse/storage"*** *means premises including indoor or outdoor facilities used for –*
>
> *(a) the storage of goods, equipment, plant, or materials; or*
>
> *(b) the display or sale by wholesale of goods;*

The proposed development also seeks approval for an ‘incidental use’ (Office) which is defined by Schedule 1, Part 1 of LPS3 as follows:

> ***"incidental use"*** *means a use of premises which is ancillary and subordinate to the predominant or primary use.*

A related definition of LPS3 is the definition of “predominant use”, which is defined by Schedule 1, Part 1 of LPS3 as follows:

> ***"predominant use"*** *means the primary use of premises to which all other uses carried out of the premises are subordinate, incidental or ancillary.*

When considering incidental uses, it is necessary to determine whether the uses are incidental to the predominant use of land or constitute an independent use. Pursuant to Clause 4.3.3 of LPS3, incidental uses are permitted if the change of use does not change the predominant use of the land. The City is satisfied the use of office does not change the predominant use of the land; being ancillary and subordinate to the predominant land use of ‘warehouse/storage’. Therefore, the incidental use for an office is supported and can be conditioned accordingly should the JDAP resolve to approve the application.

Site and Development Requirements (Clause 5.23 of LPS 3)

As identified in the report above, the site is located within the Hatch Court Industrial Precinct which was subject to re-zoning from ‘Urban Development’ to ‘Light Industry’ under Amendment 80 of LPS 3. The lots subject to the Amendment 80 are shown in outlined in blue in the map below:

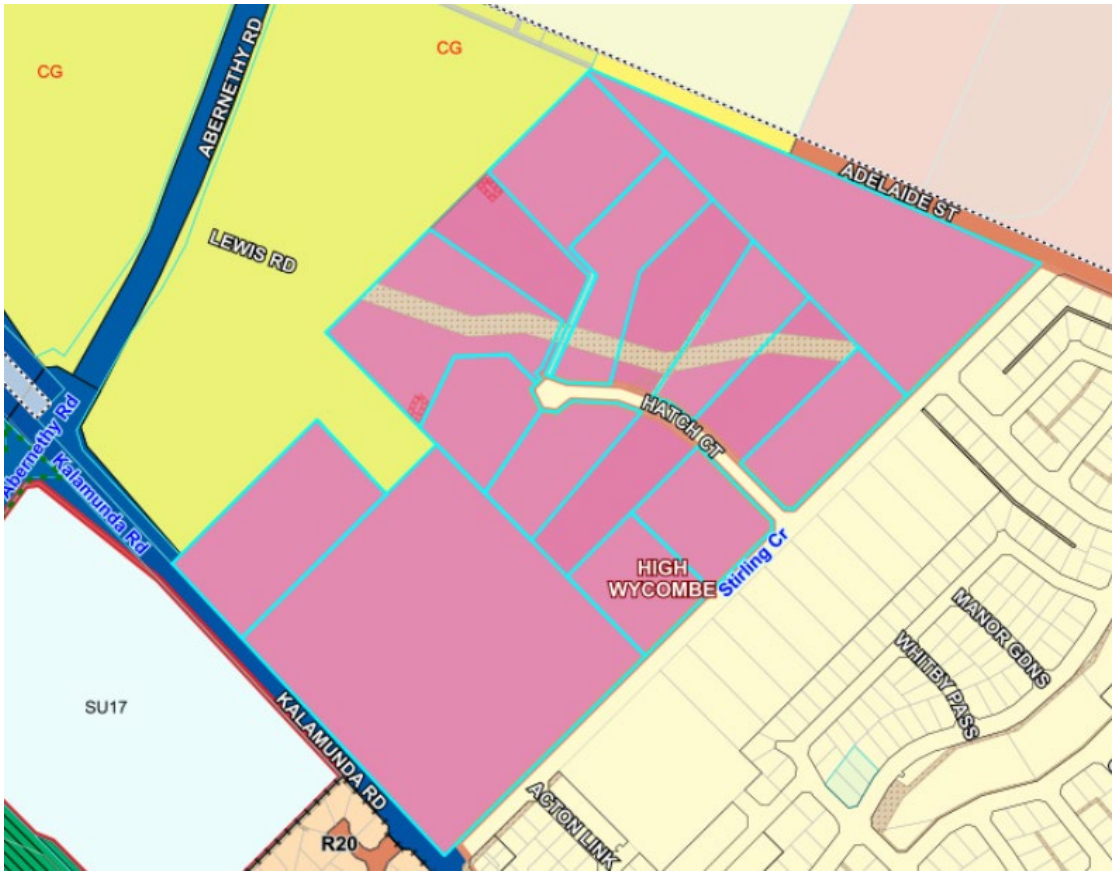


Figure 2: Lots within Hatch Court subject to Amendment 80

Amendment 80 also introduced Clause 5.23 and Table 4 to the Scheme which requires a structure plan to be prepared and approved for the properties within the Hatch Court Precinct. The structure plan is required to address the following:

- Traffic management;
- The interface to the residential properties;
- Identifying and protecting environmentally significant areas with appropriate buffers; and
- Identifying bushfire risk.

Clause 5.23 of the Scheme requires all development and subdivision to be in accordance with the approved structure plan. There is currently no approved structure plan for the Hatch Court Precinct and this development application is progressing in the absence of an approved structure plan.

Whilst this is a variation to the requirements of the Scheme, it does not discount the ability of the application to ensure that the development does not prejudice the ability for the site to achieve the requirements of the structure plan. This assessment has been conducted against the provisions of Table 4 in the section of the report below.

Table 4 of LPS 3 – Additional Requirements that Apply to Land in Scheme Area

The below table outlines the assessment against Table 4 of LPS 3. The purpose of Table 4 is to outline the requirements relating to development that are additional to those set out in local development plans or state and local planning policies. Ultimately

these are bespoke planning requirements, responding to specific – but clear – planning outcomes.

REQUIREMENTS UNDER TABLE 4 OF LPS3		**PROPOSAL**
(a) Traffic management including;	Provision of future vehicular access to be primarily via Adelaide Street;	n/a – this development does not have access to Adelaide Street.
	Ensuring any vehicular access to Kalamunda Road does not reduce existing levels of access for adjacent properties; and	n/a –There is no vehicular access to Kalamunda Road.
	Access for lots with frontage to Stirling Crescent being provided via an internal road only	**Variation** – access is proposed via Stirling Crescent and not via an internal road. Further discussion is provided below in this report.
(b) Appropriate interface with existing residential development along Stirling Crescent including setbacks, landscaping, fencing and façade treatment provisions		The City's Scheme requires a 15m setback to Stirling Crescent and the application proposes 20m, which exceeds the Scheme requirements. The City's Scheme requires a 3m landscaping Strip to Stirling Crescent, and 3m landscaping is provided to this frontage. The application was referred to the City's Design Review Panel for comments. The Panel was generally supportive of the façade treatments to the Stirling Crescent elevation but mainly had concerns about the diminishing quality of materiality and finishes applied to the building from the front of the site to the rear. As such, an external schedule of colours and materials could be conditioned to improve the materiality of the buildings at the rear.

	The remainder of the setbacks, landscaping and fencing along Stirling Crescent is considered acceptable.
(c) The identification and protection of environmentally significant areas within the land through the provision of appropriate buffers	There is a man-made pond on the subject property, it is not a natural occurring asset and does not have any environmental significance. There are no other environmentally significant areas on the subject site. A condition can be imposed should the JDAP approve the application for an updated Landscape Plan to be submitted to retain as many trees as possible within the front setback area of the site, which will contribute to the canopy cover on the site.
(d) The identified bushfire risk in accordance with State Planning Policy 3.7 and Guidelines for Planning in Bushfire Prone Areas	The application appropriately addresses bushfire risk through the preparation of a Bushfire Management Plan which complies with State Planning Policy 3.7 and Guidelines for Planning in Bushfire Prone Areas. Refer to the Bushfire section in the Planning Assessment of this report for further information.

In the event a proposed development does not prejudice the future preparation of a structure plan, an application is capable of JDAP support, but only if the matters in Table 4 have been suitably addressed or subject to valid planning conditions. As identified in the table above, the application does not appropriately address provision (a) Traffic Management in regards to vehicular access being obtained via Stirling Crescent and not through an internal road.

Clause 27 – Effect of Structure Plan (Schedule 2, Part 4 of the *Planning and Development (Local Planning Schemes) Regulations 2015*)

Clause 27(2) of Schedule 2, Part 4 of the *Planning and Development (Local Planning Schemes) Regulations 2015* states that for an area which a structure plan may be prepared, but for which no structure plan has been approved by the Commission, development approval may be granted for a proposal if the decision maker is satisfied that –

b. The proposed development or subdivision does not conflict with the principles of orderly and proper planning; and
c. The proposed development or subdivision would not prejudice the overall development potential of the area.

This application has been progressed in the absence of an approved structure plan, which is a variation to Clause 5.23 of LPS 3, allowing the applicant the opportunity through its submission to demonstrate that the proposed development has met the threshold set by Clause 27. In the circumstance where a development application is lodged prior to a higher order planning framework being in place (structure plan), the decision maker must consider whether it is 'orderly and proper' to approve the

development application ahead of the higher order planning framework, and whether such an approval will in any way fetter that future framework.

This is particularly pertinent with respect to matters such as building height and scale and determining the planned future amenity of an area. The decision maker must only exercise discretion to approve a development when it is readily apparent that approval will not prejudice or pre-determine the future character of the area.

However, notwithstanding the above, the City is *not* satisfied that the proposal will not prejudice or pre-determine the future character of the area. In the absence of the structure plan, the proposed development is required to obtain vehicular access off Stirling Crescent – rather than the foreshadowed internal road - which would ordinarily have been facilitated by a structure plan. This not only has implications for the interface between the site and the residential properties located adjacent on Stirling Crescent but is not considered to be 'orderly and proper'.

'Orderly and proper planning' is a test used to determine whether an application is capable of support. The term generally refers to whether an application is consistent with the objectives that are set out in the local planning scheme, and any relevant policy for the area in question.

Whilst the application has appropriately addressed matters such as building bulk and scale through the design to address the other scheme provisions in the absence of a structure plan, the City is not satisfied that the interface between the site and the adjacent residential properties has been appropriately managed in regards to a traffic sense. The intent of provision (a) of Clause 5.23 of LPS3 is to ensure that vehicular access is provided by an internal road, particularly to manage and limit the number of heavy vehicles utilising Stirling Crescent to access these sites.

As there is currently no internal road established through a structure plan, vehicle access cannot be obtained in such a manner. The vehicle access onto Stirling Crescent is considered to jeopardize the overall development of Hatch Court Precinct which the intent is to centralize all vehicular movements, limiting vehicles, particularly heavy vehicles from using Stirling Crescent.

In terms of future structure planning, should the development be approved by the JDAP, this site will not contribute to the Developer Contributions for the remainder of the structure plan area. However, whilst there is no scope under the Planning Regulations to refuse an application for not contributing to a future DCP, it is still noted.

In light of the above, the application is recommended for refusal because it does not meet Clause 27(2) of the Regulations because the development is considered to conflict with the principles of orderly and proper planning and prejudice the overall development potential of the Hatch Court Light Industrial Precinct.

<u>Draft Local Planning Policy 35 – Hatch Court Light Industrial Precinct</u>

The purpose of LPP 35 was to provide guidance where development is possible prior to the progression of a local structure plan for the precinct. The draft LPP 35 was the first planning instrument to show the potential location of a future internal road.

At the Ordinary Council Meeting in July 2022, Council adopted LPP 35 for public advertising. The Policy was advertised for a period for 60 days and a public information session was also held at the City of Kalamunda.

Following the advertising period, objections were received relating to the progression of development on Lot 1499 Stirling Crescent before a structure plan has been prepared. This development application was lodged after the conclusion of the advertising period of LPP 35.

In October 2024, a report was presented to Council at the Ordinary Council Meeting to consider the submissions received and the final adoption of the policy. It was recommended to Council that Council take steps to improve the planning framework by progressing a Local Structure Plan (LSP) and Development Contribution Plan (DCP) to ensure coordinated development of the Hatch precinct for the area to achieve its highest and best use. It was also recommended that Council initiate a new planning policy for the area in the form of design guidelines.

Subsequently, at the Ordinary Council Meeting of 22 October 2024, Council resolved not to proceed with the draft Local Planning Policy 35 – Hatch Court Industrial Precinct. Council also resolved to initiate the preparation of a LSP, DCP and design Guidelines for the Hatch Court Light Industrial area and the land on the south-east side of Stirling Crescent which does not have an LSP to coordinate and guide development.

There are Council decisions which clearly articulate the City's preferred coordinated approach to achieve the highest and best planning outcomes for the Hatch Court area, and legitimate aspirations to address the requirements of the current planning framework; Clause 5.23 of LPS 3.

Site Requirements

The below table outlines the proposals compliance with the site requirements applicable to a Light Industrial zone under Table 2 of LPS 3.

PROVISION		**REQUIRED**	**PROPOSED**	**COMPLIES**
SETBACKS	**PRIMARY STREET** (Stirling Crescent)	15.0m	20m	**YES**
	SIDE	Nil	10.7m and 8.4m (Warehouse 1) Nil – both side boundaries (Warehouse 2)	**YES**
	REAR	Nil	Nil (Warehouse 2)	**YES**
SITE COVERAGE		60%	66%	**NO**
PLOT RATIO AREA		0.5	0.6	**NO**

LANDSCAPING	3m to all road frontages	3m to Stirling Crescent	**YES**

As indicated in the table above, the proposal complies with the site requirements of LPS 3, with the exception of the site cover and plot ratio area.

The development proposes a covered canopy which contributes to the site coverage. As the City's DRP highlighted, the covered canopy will provide better shade and improve the amenity for the staff of the warehouse development. There is also opportunity for the applicants to provide solar panels on the covered canopy, to improve the overall sustainability of the development. This can be dealt with through a condition of approval to ensure the proposal provides solar panels prior to occupation and to further comply with SPP7.0.

The overall development complies with the front and side setbacks and therefore, the site cover and plot ratio variation is supported.

Car Parking

The below table outlines the City's parking requirements in accordance with Table 3 of LPS3 for a warehouse which is:

> *3 bays for up to the first 200m^2 of floor area and thereafter 1 bay for every 100m^2 of NLA or part thereof.*

LAND USE	CAR PARKING REQUIREMENT	PROVIDED	COMPLIES
Warehouse / Storage	4,965m^2 NLA = 51 Bays Required	53 Bays Provided	**YES**

As indicated in the table above, the proposal complies with the parking requirements of LPS 3.

Landscaping:

The table below outlines the proposals compliance with the landscaping requirements applicable to the site under Local Planning Policy 33 – Tree Retention.

PROVISION	REQUIREMENT	PROPOSAL	COMPLIANCE
CAR PARKING AREAS (Clause 5.15.8 of LPS3)	Trees shall be provided in car parking areas where an area of 12 or more car parking bays are to be provided to allow for shade	Landscape Plan indicates provision of one tree per four bays for parking adjoining the primary street boundary to Stirling Crescent. Other bays are capable of receiving shade from trees	**YES**

		within the landscaping strips. Parking bays 26-50 are not able to be provided with trees due to the shade structures of the office and pedestrian access.	
CANOPY COVER (Urban Forest Strategy)	10% canopy cover at maturity	8.8% canopy cover at maturity (888sqm)	**NO**

As indicated in the table above, the development seeks a variation against the canopy targets outlined in the Urban Forest Strategy. A condition can be recommended for amended plans to be provided prior to the issue of a building permit to demonstrate the provision of 10% canopy cover at maturity. There are opportunities for the retention of trees within the front of the site, including native trees. This information is also reflected in the City's DRP advice to the applicant.

Implementing increased canopy cover in industrial developments not only aligns with sustainability goals for the City of Kalamunda but also provides tangible benefits that can enhance the overall functionality and appeal of the developing industrial area.

Traffic and Access

The applicant has provided a Transport Impact Statement (TIS) to support the application. The TIS concludes the total traffic from the development will be 224 vehicular trips per day and 30 vehicular trips per hour in peak hours. The peak hours are 7am – 8am for the morning peak and 5pm – 6pm for the evening peak. The development will have a moderate impact on the road network.

As noted earlier in this report, the application also proposes two (2) eleven-meter-wide crossovers onto Stirling Crescent. The applicant has also provided swept paths for the B99 passenger vehicles, a semi-trailer, service vehicle and fire truck. The City has reviewed the TIS and swept paths and both driveways are now sufficiently wide to accommodate the vehicle moments with a one-way vehicle movement around the site (except for passenger vehicles which can have full movements).

Whilst the TIS and swept paths are generally supported by the City, in the absence of a structure plan which would allow for access via an internal road within the Hatch Court precinct, the proposal is required to obtain access from Stirling Crescent. The introduction of these crossovers and subsequently approval of this development which allows vehicular access onto Stirling Crescent in lieu of an internal road pushes all of the traffic and vehicular movements onto Stirling Crescent which would prejudice the desired character and outcome of the area.

Bushfire

The subject site is identified on the Department of Fire and Emergency Services (DFES) mapping as being located within a Bushfire Prone Area (BPA) under the *Fire and Emergency Services Act 1998* (as amended). Designation of an area as being bushfire prone reflects the potential of bushfire to affect this site and acts as a mechanism for initiating further assessment in the planning and building processes.

The development is supported by a Bushfire Management Plan (attachment 6) which determines a BAL-12.5. The intent of the BMP is to identify the hazards within the vicinity of the subject site and to ensure any hazards are mitigated in accordance with the requirements of the Guidelines for Planning in Bushfire Prone Areas. The table below outlines the developments response to the bushfire protection criteria outlined in Appendix 4 of SPP 3.7 which are applicable to the development application.

ELEMENT	ASPECT	DEVELOPMENT RESPONSE	COMPLIANCE
1. Location	Development Location	The site is located within an urban context and has been identified as an industrial area. All proposed buildings within the site will be exposed to a rating of BAL12.5 or less post development of the site.	**YES**
2. Siting and Design	Asset Protection Zone (APZ)	There are no Asset Protection Zones required for this development.	**YES**
3. Vehicular Access	Public Road	The site is located on Stirling Crescent and will be accessed from Stirling Crescent which is an existing public road.	**YES**
	Multiple Access Routes	Access to the site can be obtained from Kalamunda Road to Stirling Crescent or Adelaide Street to Kalamunda Road.	
	Private Driveways	Although the private driveway is more than 70m in length, two-way access can be achieved due to the width of the driveway. The design of the vehicle access which circulates the site removes the need for a turn around point.	
4. Water	Reticulated Areas	The site will be serviced by the existing reticulated water supply. Hydrants presently exist along Stirling Crescent, in accordance with the requirements of the Water Corporation.	**YES**
5. Vulnerable Tourism Land Uses	Not applicable to this development	n/a	**N/A**

As noted in the above table and in the BMP, the proposed development complies with all relevant acceptable solutions for the Bushfire Protection Criteria including location, siting and design of development, vehicular access way and water. Additionally, a condition would be required to advise that the site is subject to the BMP.

Public Art

The City has a Local Planning Policy 26 (LPP26) for Public Art that is applicable to all development where the estimated cost of development exceeds $500,000 with the exception of some residential based proposals. Public art plays an important role throughout the City of Kalamunda's built environment. The City encourages public art that contributes to creating a strong sense of place, promotes the local identity and responds to the culture and character of the community. Public art can attract people to work, live and recreate in a place and thereby encouraging associated cultural and economic activity.

As the proposed works of the development are estimated to be $7 million, the provisions of LPP 26 are applicable to this development application. The provision of public art can be provided through a public art contribution within the subject site or within a public area within the locality of the subject site. Should the JDAP resolve to approve the application, a condition can be applied to ensure compliance with LPP 26 through requiring a public art contribution equal to $70,000 within the subject site, or alternatively a cash-in-lieu payment made to the City of Kalamunda's Public Art Fund.

The City has considered the individual merits of the proposed development and concluded that it generates a planning need for public art for the following reasons:

1. The site has a direct interface to residential development along Stirling Crescent. There would be a benefit to passing traffic and residents along Stirling Crescent to incorporate some form of artwork that is visually pleasing.

2. The development encompasses a large warehouse consisting of some colour design variations. Whilst there will be trees and landscaping provided along the lot boundaries, the area will not be entirely screened. Therefore, the development will benefit from public art especially along the Stirling Crescent interface.

Based on the above the City believes that there is sufficient need and nexus to warrant the application of LPP 26 should the proposal be supported.

Acoustic Requirements

The Environmental Noise Assessment considers the operational activities of the site, including the use of forklifts and truck movements in and out of the site.

The Environmental Noise Assessment notes that the predicted noise emissions received at the adjoining residential premises will be compliant with the assigned levels of the *Environmental Protection (Noise) Regulations 1997,* for all hours of the 24/7 operation noting:

- A restriction to a maximum of 10 truck movements in and out of the site on evenings, nights, Sundays and Public Holidays.
- No restrictions to forklift activities
- No restrictions to truck movements during the day time.

Notwithstanding that the proposal complies with the Noise Regulations, the City notes that the emissions from vehicular movement would be contained on an internal road if a structure plan was progressed mitigating the impacts on adjoining properties altogether.

Effluent Disposal

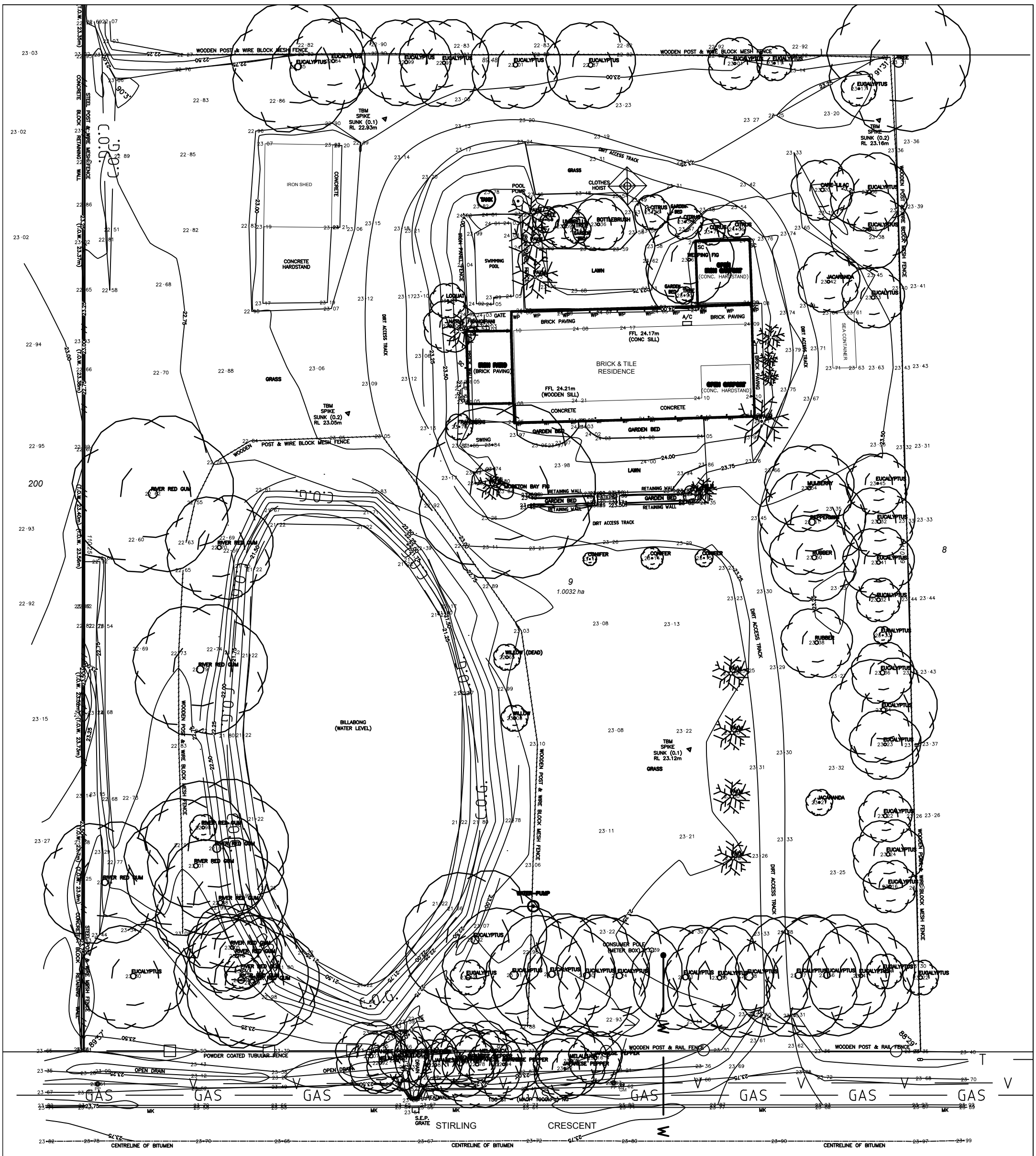
The site is not currently connected to any reticulated sewerage. Therefore, the proposed development is required to be serviced by on-site effluent disposal in accordance with the Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974 and the Government Sewerage Policy 2019. Should the JDAP resolve to approve the application, a condition would be required to ensure the development is provided with adequately sized effluent disposal which is designed to be nutrient retentive as required under the Government Sewerage Policy.

Conclusion:

Whilst the development assessment presents that the proposal is satisfies elements of compliance with the relevant planning framework specifically in regard to land use compatibility and built form, the proposal is inconsistent with Table 4, No. 1 and 2 under Clause 5.23 of LPS3 with respect to the requirement for a structure plan to be prepared and approved, and for the lots to obtain vehicular access from an internal road. In this regard, the proposed development is not considered to satisfy principles of orderly and proper planning and would prejudice the overall development potential of the area.

This is a fundamental planning consideration, and unlike development approvals issued in locality which have also been subject to the requirements of Table 4 of LPS3 – the development as it is proposed is the first to truly conflict with the planned outcome.

FEATURE SURVEY
SITE PLAN 1:200 @A1



Trevenny PTY LTD ATF Chudleigh Family Trust ABN: 69 118 630 744 TRADING AS

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PROJECT: PROPOSED NEW OFFICE WAREHOUSE
DEVELOPMENT FOR MR & MRS D JONES
LOT 9, 29 STIRLING CRESCENT
HIGH WYCOMBE WA 6057

DRAWING NO: 24 442 DD06 **REV NO:** 3

Not to be used for constuction unless signed as approved

Scale: 1:200 @A1 **Date:** FEB 2024 **Drawn:** TCC **Design:** TCC **Datum:** LOCAL

No:	Date:	Revision:	By:
3	31/07/24	ISSUE FOR DEVELOPMENT APPROVAL APPLICATION	TCC

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EXTERNAL WALLS MIN 20MM SET OFF BOUNDARY

BOUNDARY 89 480

88°20'0"

WAREHOUSE 2
INTERNAL NLA 2530m2
GROSS BLDG AREA 2565m2

FFL 24.200

NOTIONAL 8M STRUCTURAL GRID TO SUIT 200 'Z' PURLINS
SPECIFIC STRUCTURAL SYSTEM BY BUILDERS STRUCTURAL ENGINEER

RL 24.200

BOLLARDS OUTSIDE REQUIRED EMERGENCY EGRESS DOORS ARE MANDATORY TO STOP BLOCKING WITH STORAGE OR PARKING OF VEHICLES

SIDE LOAD AND UNLOAD

LOT 9
1.0032ha

ONE WAY

RL 23.900

COVERED LOADING/UNLOADAING AREA
R.CONCRETE HARDSTAND

2.4M HIGH SOLID CONCRETE PANEL BARRIER TO SCREEN HEADLIGHTS FROM NEIGHBOURING PROPERTY

10770.
SIDE BOUNDARY SETBACK

BIN BIN

8435.
SIDE BOUNDARY SETBACK

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DEVELOPMENT FOR MR & MRS D JONES
LOT 9, 29 STIRLING CRESCENT
HIGH WYCOMBE WA 6057

DRAWING NO: 24 442 DD01 REV NO: 5

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Scale: 1:200 @A1 Date: MAY 2024 Drawn: TCC Design: TCC Datum: AHD

No:	Date:	Revision:	By:
3	31/07/24	ISSUE FOR DEVELOPMENT APPROVAL APPLICATION	TCC
4	13/08/24	RE-ISSUED WITH TURNING ON SITE ATU SYSTEM ADDED, TRUCK TURNING AS PER TRAFFIC CONSULTANT REPORT	TCC
5	19/08/24	ATU SYSTEM INCREASE ATU DISBERSEMENT FIELD TO 250M2	TCC

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OUTLINE OF EXISTNG DRIVEWAY AND TRACK AROUND EXISTNG RESIDENCE

FFL 24.200

WAREHOUSE 1
INTERNAL NLA 2345m2
NON NLA SERVICES 90m2
GROSS BLDG AREA 2472m2

INCLUDES 360M2 OF INTERNAL OFFICE AND AMENITY AREA

ONE WAY
BITUMEN PAVING
RL 23.950

RL 24.000

PEDESTRIAN ZONE

7000
MIN. REQUIRED 6M FIRE BRIGADE ACCESS

LOT 200

BOUNDARY 110 250

LOT 8

89.51

SITE PLAN 1:200 @A1

2500
MIN. REQUIRED 6M FIRE BRIGADE ACCESS

2 X 4M DIA. FIRE FIGHTING WATER TANKS- SIZE TBC

FIRE BRIGADE BOOSTER CONNECTION MANIFOLD

MEETING/ OFFICE 3 CARPET
OFFICE 2 CARPET
OFFICE 1 CARPET
RECEPTION VINYL
ENTRY
MALE TILES
FEMALE TILES
PASSAGE VINYL
STAFF RM. VINYL
BIKE RACK

12 COVERED BAYS

ACCESS BAY
DISABLED PARKING SIGN AND BOLLARD IN BAY AND SHARED ZONE TO COD

SHARE ZONE

REFER TO ARCHITECTURAL DRAWING A05 FOR DETAILS OF LANDSCAPING (TYP)

ATU SEWER SYSTEM
36.57m2
8.3m2
=28.3m2

500 (TYP) DISPERSEMENT FIELD SETBACK

28M2 ATU DISPERSEMENT FIELD No1

TWO WAY LV TRAFFIC ONLY

STAFF/ VISITOR PARKING
BITUMEN PAVING

HV/LV EXIT ONLY

HV/LV ENTRY ONLY

ATU DISPERSEMENT FIELD No2 CONTINUED

224M2 ATU DISPERSEMENT FIELD No2

ONE TREE PER FOUR BAYS WHERE SHOWN (TYP)

LOW LEVEL PLANTING

DENSE LANDSCAPING

SITE MAIN ELECT. SWITCHBOARD

NEW R. CONC. CROSSOVER

RL 23.800

BOUNDARY 92 500

OPEN DRAIN TO REMAIN

EXISTING POWER POLE

DENSE LANDSCAPING

TURF

EX.SIDE ENTRY PIT

STIRLING CRESCENT

CENTRELINE OF BITUMEN

APPROXIMATE LOCATION OF NEIGHBOURING PROPERTY DRIVEWAYS (TYP)

LOT10
No 26

LOT 9
No 30

LOT 8
No 34

BOUNDARY

EXISTING RESIDENCE

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PROJECT: PROPOSED NEW OFFICE WAREHOUSE
DEVELOPMENT FOR MR & MRS D JONES
LOT 9, 29 STIRLING CRESCENT
HIGH WYCOMBE WA 6057

DRAWING NO: 24 442 DD02 REV NO: 5

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Scale: 1:100 @A1 Date: MAY 2024 Drawn: TCC Design: TCC Datum: LOCAL

No:	Date:	Revision:	By:
3	31/07/24	ISSUE FOR DEVELOPMENT APPROVAL APPLICATION	TCC
4	13/08/24	ISSUED WITH ON SITE ATU SYSTEM SHOWN	TCC
5	19/08/24	ATU SYSTEM INCREASE ATU DISBERSEMENT FIELD TO 250M2	TCC

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FLOOR PLAN 1:100 @A1

WAREHOUSE 1
INTERNAL NLA 2345m2
NON NLA SERVICES 90m2
GROSS BLDG AREA 2472m2

INCLUDES 360M2 OF INTERNAL OFFICE AND AMENITY AREA

FFL 24.200

RL 23.950 | RL 24.200 | PEDESTRIAN ZONE | ONE WAY | FIRE HOSE REEL | BOLLARD | EMERGENCY EXIT | FIRE HYDRANT

MEETING/ OFFICE 3 CARPET | OFFICE 2 CARPET | OFFICE 1 CARPET | 120/120/120 RATED SELF CLOSING FIRE RATED DOOR | RECEPTION VINYL | EMERGENCY EXIT ENTRY RL 24.200 | OFFICE CLEANER | MALE TILES | DURAMAT DURAMAT | ACCESS FACILITY WITH SHR | PASSAGE VINYL | ELECT. DIST. BRD | COMS. MDF | FEMALE TILES | STAFF RM VINYL | BIKE RACK | FR | SHR | UHS | LANDSCAPING | 2 X 4M DIA. FIRE FIGHTING WATER TANKS- SIZE TBC | PAVING | FIRE BRIGADE BOOSTER CONNECTION MANIFOLD | REFER TO ARCHITECTURAL DRAWING A05 FOR DETAILS OF LANDSCAPING (TYP) | 600 | 5400 TYPICAL | KERB RAMP | RL 24.000 | ACCESS BAY DISABLED PARKING SIGN AND BOLLARD TO BE PROVIDED BAY AND SHARED ZONE TO CLOSE | SHARE ZONE | 12 COVERED BAYS | 500 (TYP) | ATU SEWER SYSTEM 36.57m2 -8.26m2 +28.31m2 | 28M2 ATU DISPERSEMENT FIELD No1

TWO WAY LV ONLY

RL 24.000 | RL 23.950 | 6000 | STAFF/ VISITOR PARKING | 20000

ATU SYSTEM & DISPERSEMENT FIELD DETAILS TO BE FINALISED AT TIME OF DEVELOPMENT WHEN FINAL OCCUPANCY NUMBERS KNOWN TO LOCAL AUTHORITY HEALTH DEPARTMENT APPROVAL

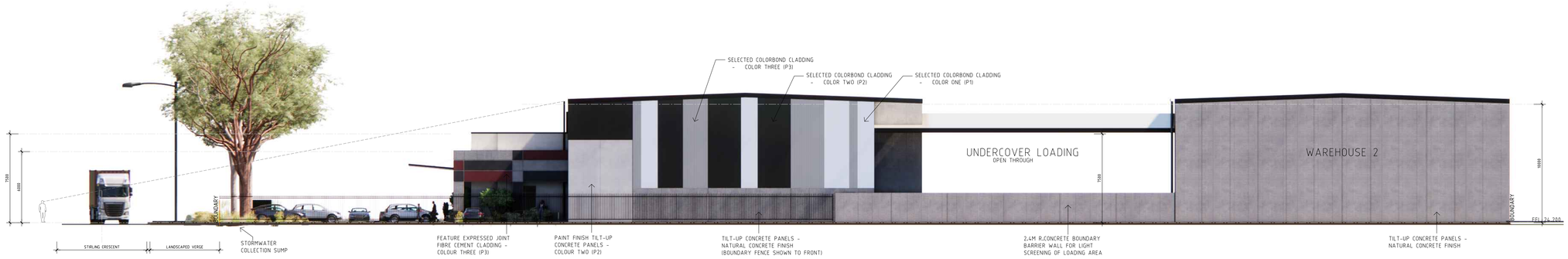
HV/LV EXIT ONLY | HV/LV ENTRY ONLY | ATU DISPERSEMENT FIELD No2 CONTINUED | ONE TREE PER FOUR BAYS WHERE SHOWN (TYP) | 2500 TYPICAL | CENTRE OF PROPERTY | LOW LEVEL PLANTING | DENSE LANDSCAPING | 224M2 ATU DISPERSEMENT FIELD No2 | 11000 | NEW R. CONC. CROSSOVER | RL 23.800 | 1500. TYP | TURF | PP EXISTING POWER POLE | EX.SIDE ENTRY PIT | BOUNDARY 92 500

STIRLING CRESCENT



EAST ELEVATION 1:200@A1

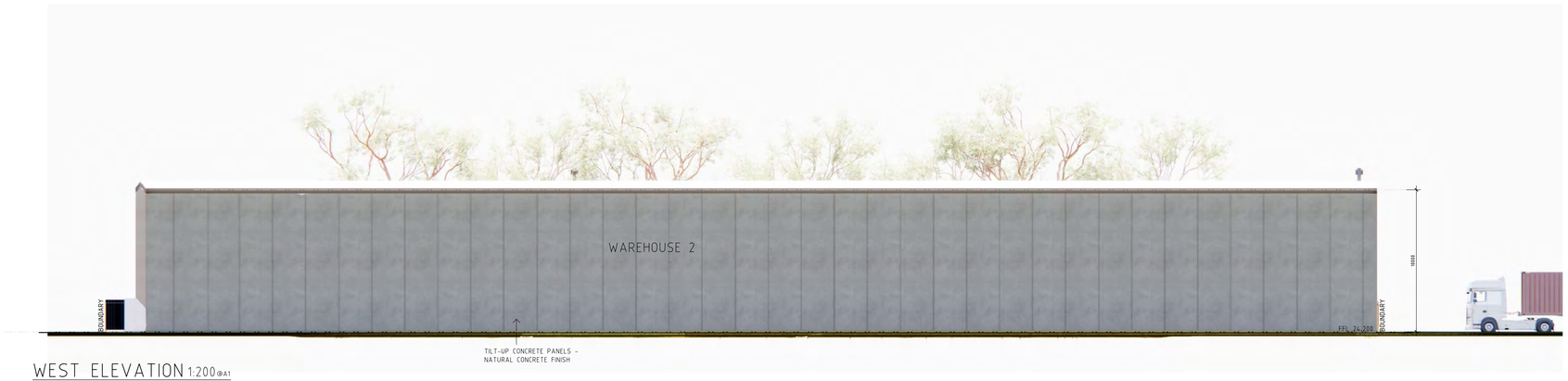
STIRLING CRESCENT



NORTHERN ELEVATION 1:200@A1



SOUTHERN ELEVATION 1:200@A1



WEST ELEVATION 1:200@A1

NOTE:

- REFER TO LANDSCAPE PLAN FOR DETAILS OF PROPOSED LANDSCAPING, VEGETATION SHOWN ON ELEVATIONS FOR GRAPHIC PURPOSES ONLY

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PROJECT: PROPOSED NEW OFFICE WAREHOUSE
DEVELOPMENT FOR MR & MRS D JONES
LOT 9, 29 STIRLING CRESCENT
HIGH WYCOMBE WA 6057

DRAWING NO: 24 442 DD03 REV NO: 3

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Scale: 1:200 @A1 Date: MAY 2024 Drawn: TCC Design: TCC Datum: LOCAL

No	Date	Revision	By
3	31/07/24	ISSUE FOR DEVELOPMENT APPROVAL APPLICATION	TCC

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PROJECT: PROPOSED NEW OFFICE WAREHOUSE
DEVELOPMENT FOR MR & MRS D JONES
LOT 9, 29 STIRLING CRESCENT
HIGH WYCOMBE WA 6057

DRAWING NO: 24 442 DD05 **REV NO:** 5

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Scale: REFERE SCALE BAR **Date: MAY 2024** **Drawn: TCC** **Design: TCC** **Datum: LOCAL**

No:	Date:	Revision:	By:
3	31/07/24	ISSUE FOR DEVELOPMENT APPROVAL APPLICATION	TCC
4	13/08/24	ISSUED WITH POTENTIAL FULL CANOPY OUTLINES ADDED	TCC
5	19/08/24	ATU SYSTEM INCREASE ATU DISBERSEMENT FIELD TO 250M2	TCC

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DEVELOPMENT APPLICATION
LANDSCAPE PLAN 1:100 @ A1

-2 0 2 4 6 8 10

N

LOT 9
1.0032ha

LAWN & TREE PLANTING SCHEDULE

① - KIKUYU VILLAGE GREEN TURF TO VERGE AREAS

② - SPECIES - EUCALYPTUS TORQUATA, COMMON NAME - CORAL GUM, SIZE 4M (w) X 5M(h) SMALL EUCALYPTUS WITH ABUNDANCE OF PINK FLOWERS IN SUMMER - SELECTED FOR VERGE LOCATION TO LIMIT HEIGHT UNDER EXISTING POWER LINES

③ - SPECIES - DELONIX REGIA, COMMON NAME - POINCIANA TREE, SIZE 7M (h) X 7M (w), LARGE LUSH, SHINY, DEEP GREEN FOLIAGE WITH ROUNDED GROWING HABIT. NEW GROWTH IS TINGED IN COPPER, SWEETLY PERFUMED GOLDEN YELLOW FLOWERS APPEAR IN SUMMER (100lt)

④ - SPECIES - EUCALYPTUS VICTRIX, COMMON NAME - DWARF GHOST GUM, SIZE - 6M (h) X 8M (w), SMOOTH TRUNK WITH CREAM TO GREY COLOURING, BRIGHT GREEN LEAVES WITH A LOW AND WIDE CANOPY (100lt)

⑤ - SPECIES - MELALEUCA QUINQUERVIA, COMMON NAME - CAJEPUT TREE, 8M (h) X 2-4M (w), A SMALL TO MEDIAUM-SIZED TREE WHICH IS USUALLY UP TO 12M IN CULTIVATION. MULTIPLAYERED PAPERY HABITAT (100lt)

PLANT MIX SCHEDULE

- PLANT MIX 1 - DRAINAGE SPECIES - 6/SQ M
  LEPIDOSPERMA GLADIATUM
  BAUMEA JUNCEA
  FINCINIA NODOSA
  ANIGOZANTHUS VIRIDIS
  JUNCUS KRAUSII

- PLANT MIX 2 - LOW FEATURE PLANTING - 4/SQ M
  LOMANDRA LONGIFOLIA - TANIKA
  DIANELLA REVOLTA
  ANIGOZANTHUS FLAVIDUS
  KENNEDIA PROSTRATA
  GREVILLEA OBTUSIFOLIA
  PIMELEA IMBRICATA
  EREMOPHILA NIVEA
  OLERIA AXILLARIS
  SCAEVOLA AEMULA

- PLANT MIX 3 - LOW SCREENING PLANTING - 3/SQ M
  WESTRINGEA FRUTICOSA
  PITTOSPORUM 'MOUNTAIN GREEN'
  HARDENBURGIA COMPTONIANA
  LOMANDRA LONGIFOLIA - TANIKA
  MELALEUCA INCANA-NANA

GENERAL NOTES AND AREAS

- TOTAL LANDSCAPING AREA WITHIN LOT 448M2 (+VERGE)
- PLANT MIX 1: DRAINAGE PLANTING - 283.0M2
- PLANT MIX 2: FEATURE PLANTING - 135.0M2
- PLANT MIX 3: SCREENING PLANTING - 163.0M2
- VERGE AREA TURF - 409.5M2
- ALL LANDSCAPING AREA TO BE FULLY IRRIGATED - IRRIGATION MAY BE SWITCHED OFF OR REDUCED BEYOND THE TWO YEAR MAINTENANCE/ ESTABLISHMENT PERIOD
- PM01 TO HAVE GRAVEL MULCH 100MM THICK
- PM02 AND PM03 TO HAVE ORGANIC PINEBARK MULCH 100MM THICK
- MATURE TREE CANOPY AREA OF 888M2 EQUATES TO 0.0884% OF 1.0032h PROPERTY.

BOUNDARY 110 250

BOUNDARY 110 250

R.CONCRETE HARDSTAND TO LOADING/ UNLOADING AREAS (TYP)

BRICK PAVING

FIRE FIGHTING WATER TANKS

ENTRY

LANDSCAPING

PLANT MIX 2 LOW FEATURE PLANTING

PLANT MIX 1 DRAINAGE PLANTING

ATU SEWER SYSTEM

28M2 ATU DISPERSEMENT FIELD No1

POTENTIAL EXPECTED FULL CANOPY OF MATURE TREE OF SELECTED TREES IF NOT PRUNED OR CONTROLLED

BLACK BITUMEN PAVING TO CARPARKING (TYP)

ONE TREE PER FOUR BAYS WHERE SHOWN (TYP)

ATU DISPERSEMENT FIELD No2 CONTINUED

LOW LEVEL PLANTING

DENSE LANDSCAPING

224M2 ATU DISPERSEMENT FIELD No2

PLANT MIX 3 LOW SCREENING PLANTING

3000 REQUIRED LANDSCAPE STRIP

600

BOUNDARY 92 500

89°57'0"

89°29'0"

PLANT MIX 3 LOW SCREENING PLANTING

PLANT MIX 1 DRAINAGE PLANTING

KIKUYU VILLAGE GREEN TURF TO VERGE AREAS ①

VERGE TREES EVERY 10M - 4M(W) X 5M(H)

EX.SIDE ENTRY PIT

PP

STIRLING CRESCENT

LAWN & TREE PLANTING SCHEDULE

① - KIKUYU VILLAGE GREEN TURF TO VERGE AREAS

② - SPECIES - EUCALYPTUS TORQUATA, COMMON NAME - CORAL GUM, SIZE 4M (w) X 5M(h) SMALL EUCALYPTUS WITH ABUNDANCE OF PINK FLOWERS IN SUMMER - SELECTED FOR VERGE LOCATION TO LIMIT HEIGHT UNDER EXISTING POWER LINES

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  BAUMEA JUNCEA
  FINCINIA NODOSA
  ANIGOZANTHUS VIRIDIS
  JUNCUS KRAUSII

- PLANT MIX 2 - LOW FEATURE PLANTING - 4/SQ M
  LOMANDRA LONGIFOLIA - TANIKA
  DIANELLA REVOLTA
  ANIGOZANTHUS FLAVIDUS
  KENNEDIA PROSTRATA
  GREVILLEA OBTUSIFOLIA
  PIMELEA IMBRICATA
  EREMOPHILA NIVEA
  OLERIA AXILLARIS
  SCAEVOLA AEMULA

- PLANT MIX 3 - LOW SCREENING PLANTING - 3/SQ M
  WESTRINGEA FRUTICOSA
  PITTOSPORUM 'MOUNTAIN GREEN'
  HARDENBURGIA COMPTONIANA
  LOMANDRA LONGIFOLIA - TANIKA
  MELALEUCA INCANA-NANA

GENERAL NOTES AND AREAS

- TOTAL LANDSCAPING AREA WITHIN LOT 448M2 (+VERGE)
- PLANT MIX 1: DRAINAGE PLANTING - 150.0M2
- PLANT MIX 2: FEATURE PLANTING - 135.0M2
- PLANT MIX 3: SCREENING PLANTING - 163.0M2
- VERGE AREA TURF - 409.5M2
- ALL LANDSCAPING AREA TO BE FULLY IRRIGATED - IRRIGATION MAY BE SWITCHED OFF OR REDUCED BEYOND THE TWO YEAR MAINTENANCE/ ESTABLISHMENT PERIOD
- PM01 TO HAVE GRAVEL MULCH 100MM THICK
- PM02 AND PM03 TO HAVE ORGANIC PINEBARK MULCH 100MM THICK

WAREHOUSE DEVELOPMENT

LOT 9, #29 STIRLING CRESCENT
HIGH WYCOMBE

ENVIRONMENTAL ACOUSTIC ASSESSMENT

AUGUST 2024

OUR REFERENCE: 33016-3-24222

Rochdale Holdings Pty Ltd A.B.N. 85 009 049 067 trading as:
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DOCUMENT CONTROL PAGE

ENVIRONMENTAL ACOUSTIC ASSESSMENT
WAREHOUSE DEVELOPMENT

Job No: 24222

Document Reference: 33016-3-24222

FOR

PLANNING SOLUTIONS

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Author:	George Watts	**Checked By:**	Paul Daly
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1	Revision following Planning Solutions Feedback	11/7/2024	GW	
2	Revised drawing inclusion	1/8/2024	GW	

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This report has been prepared in accordance with the scope of services and on the basis of information and documents provided to Herring Storer Acoustics by the client. To the extent that this report relies on data and measurements taken at or under the times and conditions specified within the report and any findings, conclusions or recommendations only apply to those circumstances and no greater reliance should be assumed. The client acknowledges and agrees that the reports or presentations are provided by Herring Storer Acoustics to assist the client to conduct its own independent assessment.

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APPENDIX

A	CONCEPT DESIGN
B	NOISE CONTOUR PLOTS

1. INTRODUCTION

Herring Storer Acoustics were commissioned through Planning Solutions to undertake an acoustic assessment of noise emissions associated with the proposed 24/7 warehouse development to be located on Lot 9 (29) Stirling Crescent, High Wycombe.

This report is to provide an assessment of proposed noise emissions from the warehouse units with respect to compliance with the requirements of the *Environmental Protection (Noise) Regulations 1997*. We understand that this report is intended to demonstrate that the development will appropriately manage the interface between industrial and residential dwellings. For information, a plan of the proposal is shown in Figure 1.1, with further details contained in Appendix A.

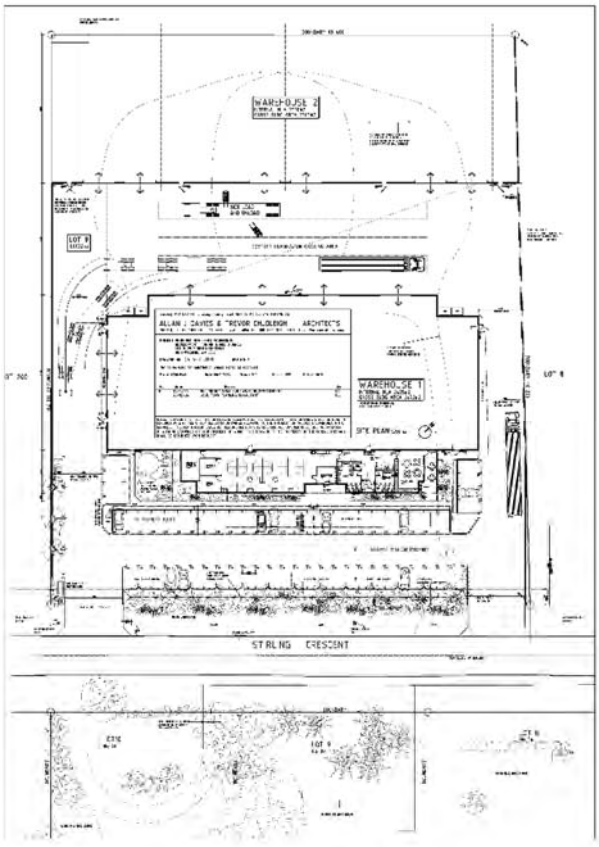


FIGURE 1.1 PROPOSED DEVELOPMENT PLAN

In acoustic terms, the noise emissions related to the movement of trucks and the loading dock activities have been assessed. Expectations are that any noise associated with the warehousing activities internally would be confined within the building.

2. SUMMARY

Based on the assessment, noise received at the neighbouring residential premises from the proposed Warehouse development would be deemed to comply with the requirements of the *Environmental Protection (Noise) Regulations 1997* for all potential hours of operation noting the following :

- Forklift activities have been determined to be compliant at all times.
- Truck movements in/out are to be restricted to 10 per hour during the night, evening and Sunday/Public Holiday periods.
- Truck movements are unrestricted during the Day Period.

3. CRITERIA

The allowable noise level at the surrounding locales is prescribed by the *Environmental Protection (Noise) Regulations 1997*. Regulations 7 & 8 stipulate maximum allowable external noise levels. For highly sensitive area of a noise sensitive premises this is determined by the calculation of an influencing factor, which is then added to the base levels shown below in Table 3.1. The influencing factor is calculated for the usage of land within two circles, having radii of 100m and 450m from the premises of concern. For other areas within a noise sensitive premises, the assigned noise levels are fixed throughout the day, as listed in Table 3.1.

TABLE 3.1 - BASELINE ASSIGNED OUTDOOR NOISE LEVEL

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		L_{A10}	L_{A1}	L_{Amax}
Noise sensitive premises: highly sensitive area	0700 - 1900 hours Monday to Saturday (Day)	45 + IF	55 + IF	65 + IF
	0900 - 1900 hours Sunday and Public Holidays (Sunday / Public Holiday Day)	40 + IF	50 + IF	65 + IF
	1900 - 2200 hours all days (Evening)	40 + IF	50 + IF	55 + IF
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays (Night)	35 + IF	45 + IF	55 + IF

Note: L_{A10} is the noise level exceeded for 10% of the time.
L_{A1} is the noise level exceeded for 1% of the time.
L_{Amax} is the maximum noise level.
IF is the influencing factor.

Under the Regulations, a 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 m of that building or that part of the building.

It is a requirement that received noise be free of annoying characteristics (tonality, modulation and impulsiveness), defined below as per Regulation 9.

"impulsiveness" means a variation in the emission of a noise where the difference between L_{Apeak} and $L_{Amax(Slow)}$ is more than 15 dB when determined for a single representative event;

"modulation" means a variation in the emission of noise that –

(a) is more than 3 dB L_{AFast} or is more than 3 dB L_{AFast} in any one-third octave band;

(b) is present for more at least 10% of the representative assessment period; and

(c) is regular, cyclic and audible;

"tonality" means 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_{ASlow} levels.

Where the noise emission is not music, if the above characteristics exist and cannot be practicably removed, then any measured level is adjusted according to Table 3.2 below.

TABLE 3.2 - ADJUSTMENTS TO MEASURED LEVELS

Where **tonality** is present	Where **modulation** is present	Where **impulsiveness** is present
+5 dB(A)	+5 dB(A)	+10 dB(A)

Note: These adjustments are cumulative to a maximum of 15 dB.

The closest residence adjacent to the development have been identified as shown in the aerial picture below.

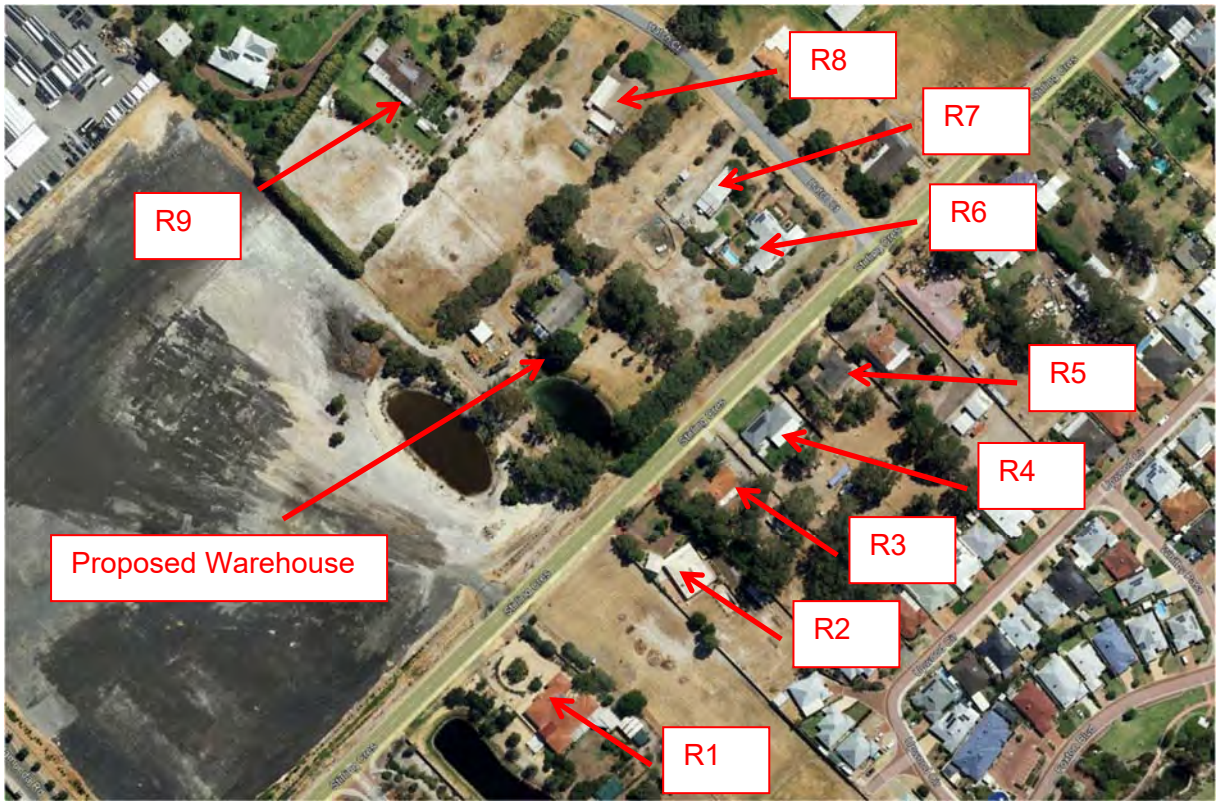


FIGURE 3.1 - RESIDENTIAL LOCATIONS

The Influencing Factor has been the determination at the identified noise sensitive premises as follows, noting that this is a conservative calculation (i.e. Underestimation):

Secondary Road within the inner circle;	
Stirling Crecent	+ 2 dB
Industrial Premises within the inner circle;	
40 %	+ 4 dB
Industrial Premises within the outer circle;	
40 %	+ 4 dB
Total IF	**+10 dB**

Hence the influencing factor would be +10 dB and the assigned noise levels would be as listed in Table 3.3.

TABLE 3.3 - ASSIGNED OUTDOOR NOISE LEVEL

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		L_{A10}	L_{A1}	L_{Amax}
R1 to R9	0700 - 1900 hours Monday to Saturday (Day)	55	65	75
	0900 - 1900 hours Sunday and Public Holidays (Sunday / Public Holiday Day)	50	60	75
	1900 - 2200 hours all days (Evening)	50	60	65
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays (Night)	45	55	65

Note: L_{A10} is the noise level exceeded for 10% of the time.
L_{A1} is the noise level exceeded for 1% of the time.
L_{Amax} is the maximum noise level.

4. DEVELOPMENT

For the purpose of the development application, based on the concept design of the buildings, the activities would be centered around storing goods, with in coming and outgoing transport of the goods. Loading docks are situated between two warehouses, with the loading/unloading area covered between.

For the industrial units it has been assumed these could operate 7 days a week, 24 hours a day.

5. MODELLING

To determine the noise that would be received at the surrounding premises from the facility, modelling of noise emission propagation was carried out using “SoundPlan”.

Based on previous experience and the measured noise levels from existing facilities with the same operations, Table 5.1 contains the sound power level used for the modelling. As the building are assumed to attenuate the noise levels due to the structure (concrete walls etc.) for internal noise emissions, the focus of the noise egress has been on the docks at each location and for truck movements around the docks and yard area. Figure 5.1 details the source locations.

TABLE 5.1 – SOUND POWER LEVEL

Noise Source	Sound Power Level dB(A)
Semi-trailer Truck	92
Forklifts	81

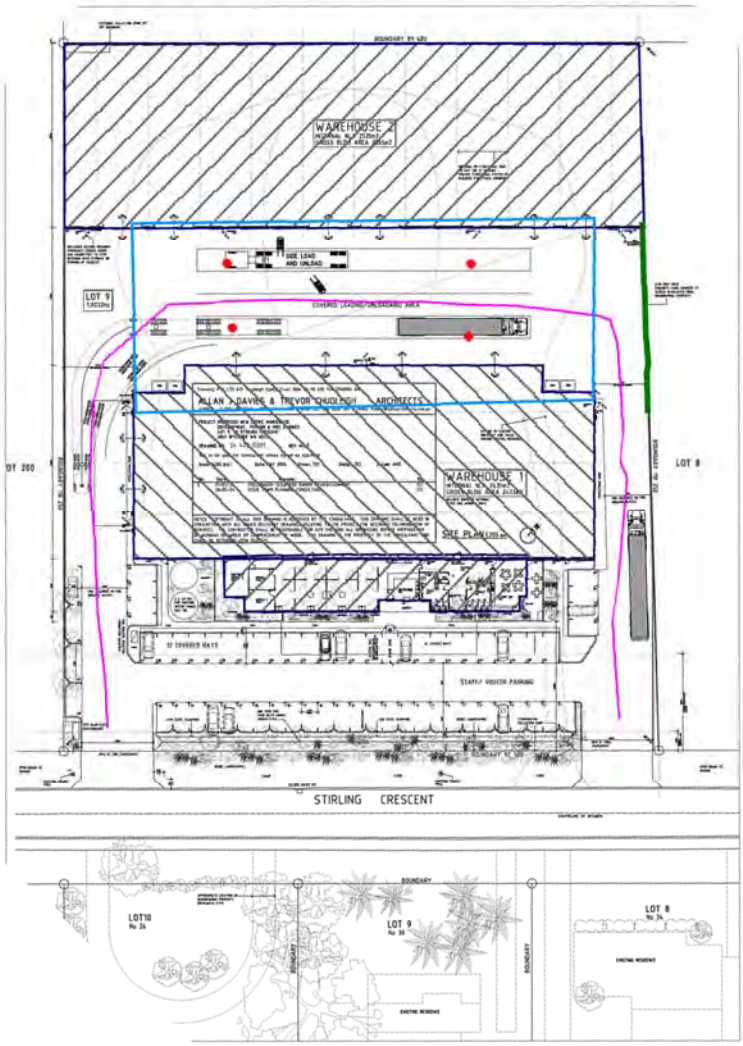


FIGURE 5.1 - SOURCE LOCATIONS

Included in the predictive noise model is a 2.4m barrier to the north-east boundary as per the development plan drawings.

The calculations used the following input data:

a) Ground contours (site topography).

c) DWER worst case day weather conditions.

Weather conditions for the modelling were undertaken using the "Default Conditions for Noise Modelling" as stipulated within the Environmental Protection Authority's "*Draft Guidance for Environmental Noise for Prescribed Premises"* as listed in Table 5.2.

TABLE 5.2– WEATHER CONDITIONS

Condition	Day	Night
Temperature	20°C	15°C
Relative humidity	50%	50%
Pasquil Stability Class	E	G
Wind speed	4 m/s*	3 m/s*

* From sources, towards receivers.

6. RESULTS

The results of the noise modelling are attached in Appendix B.

Additionally, for information, the resultant noise level at the worst-case receiver for the above scenario is listed in Table 5.1

TABLE 6.1 – SUMMARY OF RESULTS
WORST CASE RECIEVER

Receiver Location	Calculated Noise Level dB(A)	
	Semi-Trailer Truck Movements	Forklifts
R1	39	31
R2	46	-
R3	46	-
R4	46	-
R5	43	28
R6	46	36
R7	47	37
R8	39	8
R9	17	-

7. ASSESSMENT

The number of truck movements in/out of the facility would dictate what parameter is pertinent to assess the noise impact against.

In the event that truck noise is present for less than 10% of a representative time period, which would be 24 mins in a 4 hour period, it would be the L_{A1} parameter.

Based upon trucks moving at 10km/hour, this would equate to 10 trucks in and out in a 4 hours period, which is assumed to be a reasonable assumption on the basis that each truck needs to be loaded/unloaded. This is considered appropriate numbers to be assumed for the night/evening period – and Sunday/Public holiday day period.

During the day period (Monday to Saturday, 7am – 7pm, excluding public holidays) it has been assumed that there may be, on occasion, more than 10 trucks in a 4 hour period, and therefore, be considered against the L_{A10} parameter.

Forklifts could be operating for greater than 10% of a representative time period, and therefore, has been compared to the L_{A10} parameter.

Based on the definitions of tonality, noise emissions from truck movements during the night/evening periods (and Sundays/Public Holidays), being an L_{A1}, being present for less than 10% of the time, would not be considered tonal.

Noise levels associated with forklift activity could contain tonal characteristics, hence, a + 5 dB adjustment would be applicable. Additionally, noise levels associated with truck movements during the day could be considered tonal.

Therefore, the assessable noise levels for each of the noise sources are listed below in Table 7.1 below, with the assessment of the noise levels shown in Tables 7.2 to 7.4.

TABLE 7.1 – ASSESSABLE NOISE LEVELS

Receiver Location	Assessable Noise Level dB(A)		
	Semi-Trailer Truck Movements Day Period	Semi-Trailer Truck Movements Evening/Night/ Sunday Periods	Forklifts
R1	44	39	36
R2	51	46	-
R3	51	46	-
R4	51	46	-
R5	48	43	33
R6	51	46	41
R7	52	47	42
R8	44	39	13
R9	22	17	-

TABLE 7.2 – ASSESSMENT OF NOISE LEVELS – TRUCK MOVEMENTS – EVENING/NIGHT/SUNDAY

Receiver	Noise Assessable Noise Level dB(A)	Time of Day	Assigned L_{A01} Level (dB)	Compliance
R1	39	Night / Evening / Sundays	55/60	Complies
R2	46			Complies
R3	46			Complies
R4	46			Complies
R5	43			Complies
R6	46			Complies
R7	47			Complies
R8	39			Complies
R9	17			Complies

TABLE 7.3 – ASSESSMENT OF NOISE LEVELS – TRUCK MOVEMENTS – DAY PERIOD

Receiver	Noise Assessable Noise Level dB(A)	Time of Day	Assigned L_{A10} Level (dB)	Compliance
R1	44	Day	55	Complies
R2	51			Complies
R3	51			Complies
R4	51			Complies
R5	48			Complies
R6	51			Complies
R7	52			Complies
R8	44			Complies
R9	22			Complies

TABLE 7.4 – ASSESSMENT OF NOISE LEVELS – LOADING DOCK NOISE (ALL HOURS)

Receiver	Noise Assessable Noise Level dB(A)	Time of Day	Assigned Night L_{A10} Level (dB)	Compliance
R1	36	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays (Night)	45	Complies
R2	-			Complies
R3	-			Complies
R4	-			Complies
R5	33			Complies
R6	41			Complies
R7	42			
R8	13			
R9	-			Complies

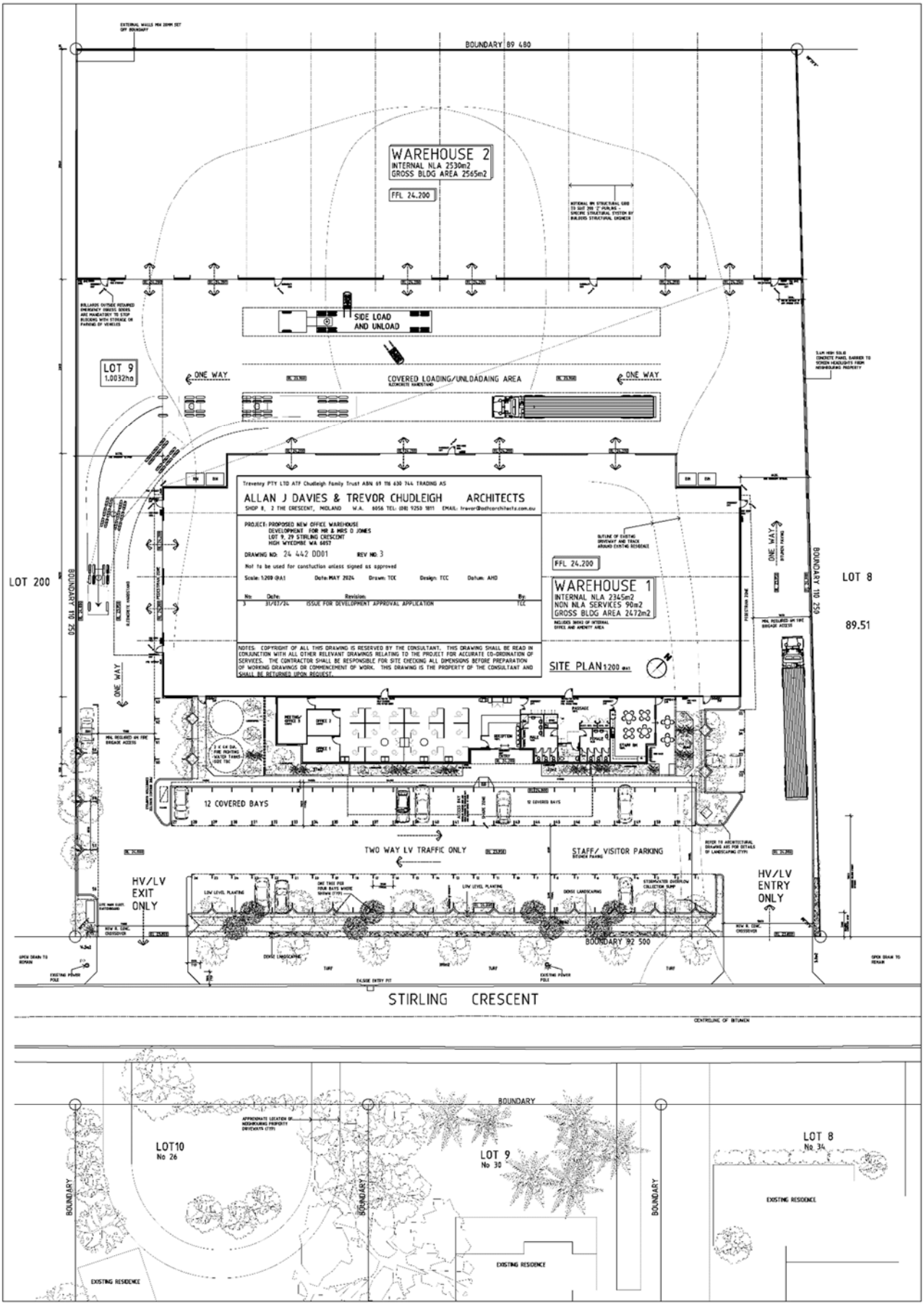
8. CONCLUSION

Based on the above assessment, noise received at the neighbouring residential premises from the proposed Warehouse development would be deemed to comply with the requirements of the *Environmental Protection (Noise) Regulations 1997* for all potential hours of operation, noting the following :

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- Truck movements in/out are to be restricted to 10 per hour during the night, evening and Sunday/Public Holiday periods.
- Truck movements are unrestricted during the Day Period.

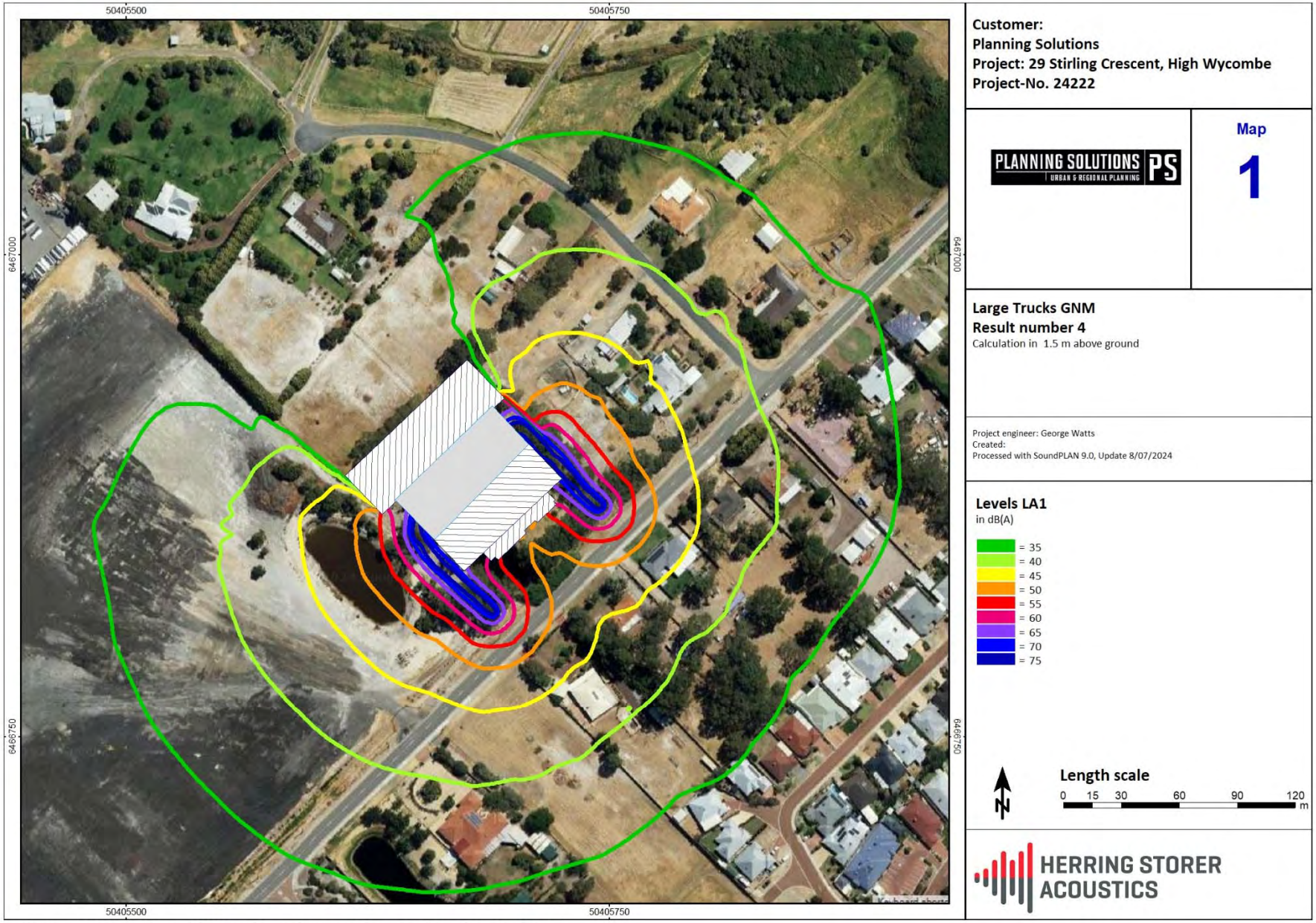
APPENDIX A

PLAN

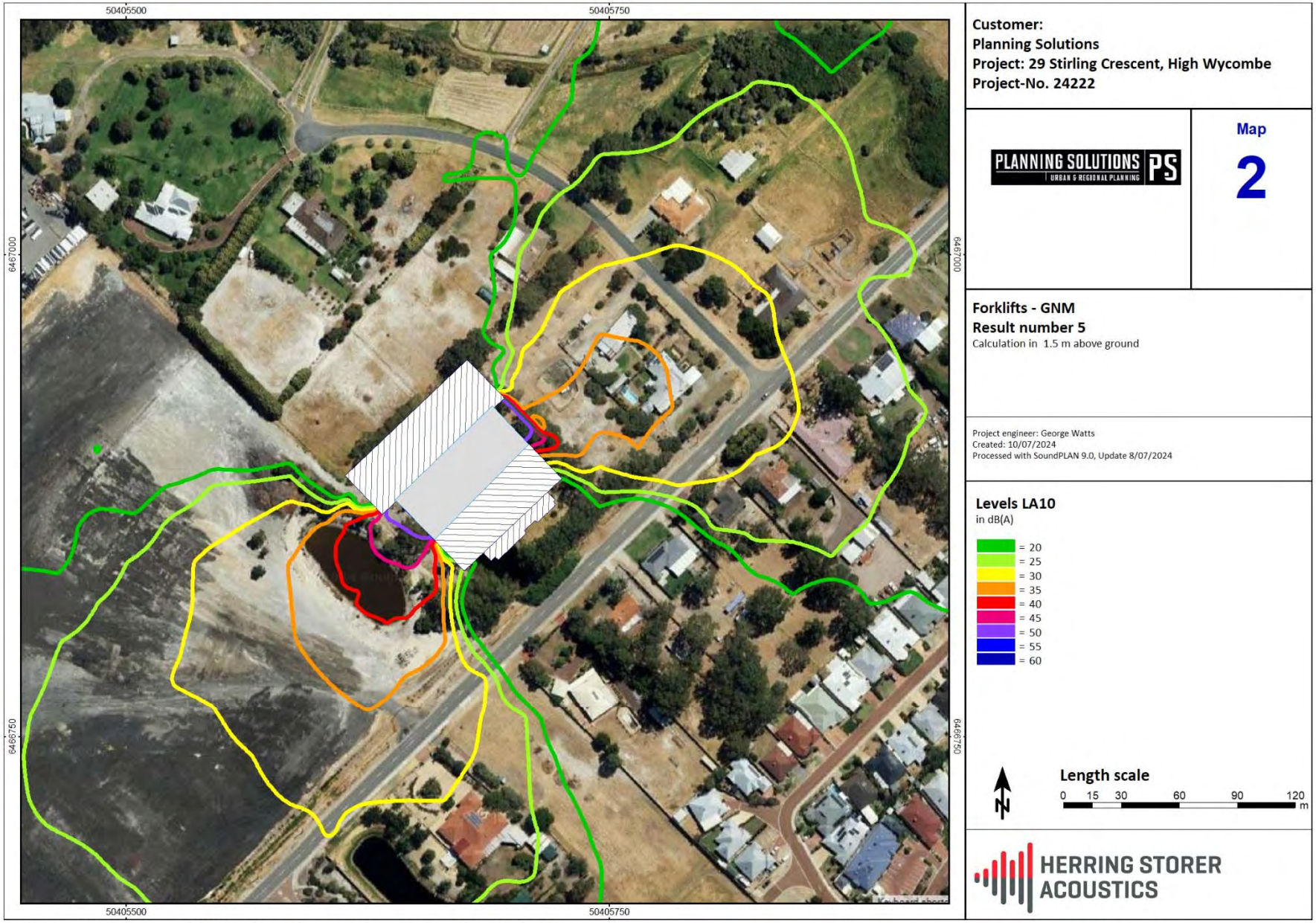

BOUNDARY 89.480
WAREHOUSE 2
INTERNAL NLA 2530m2
GROSS BLDG AREA 2565m2
FFL 24.200
SIDE LOAD AND UNLOAD
LOT 9
1.0032ha
ONE WAY
COVERED LOADING/UNLOADAING AREA
ONE WAY
ALLAN J DAVIES & TREVOR CHUDLEIGH ARCHITECTS
PROJECT: PROPOSED NEW OFFICE WAREHOUSE DEVELOPMENT FOR MR & MRS D JONES
LOT 9, 29 STIRLING CRESCENT HIGH WYCOMBE WA 6057
DRAWING NO: 24 442 DD01 REV NO: 3
Not to be used for constuction unless signed as approved
Scale: 1:200 @A1 Date: MAY 2024 Drawn: TCC Design: TCC Datum: AHD
No: Date: Revision: By:
3 31/07/24 ISSUE FOR DEVELOPMENT APPROVAL APPLICATION TCC
NOTES: COPYRIGHT OF ALL THIS DRAWING IS RESERVED BY THE CONSULTANT. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS RELATING TO THE PROJECT FOR ACCURATE CO-ORDINATION OF SERVICES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SITE CHECKING ALL DIMENSIONS BEFORE PREPARATION OF WORKING DRAWINGS OR COMMENCEMENT OF WORK. THIS DRAWING IS THE PROPERTY OF THE CONSULTANT AND SHALL BE RETURNED UPON REQUEST.
FFL 24.200
WAREHOUSE 1
INTERNAL NLA 2345m2
NON NLA SERVICES 90m2
GROSS BLDG AREA 2472m2
SITE PLAN 1:200 @A1
LOT 200
BOUNDARY 110.250
LOT 8
89.51
BOUNDARY 110.250
ONE WAY
12 COVERED BAYS
TWO WAY LV TRAFFIC ONLY
STAFF/ VISITOR PARKING
HV/LV EXIT ONLY
HV/LV ENTRY ONLY
BOUNDARY 92.500
STIRLING CRESCENT
CENTRELINE OF BITUMEN
BOUNDARY
LOT10
No 26
LOT 9
No 30
LOT 8
No 34
EXISTING RESIDENCE
EXISTING RESIDENCE
EXISTING RESIDENCE

APPENDIX B

NOISE CONTOUR PLOT



SoundPLANnoise 9.0 C:\DATA\ActiveProjectsGW\24222 - Warehouse Stirling Crescent High Wycombe\High Wycombe Warehouse\Sheet1.sgs



SoundPLANnoise 9.0 C:\DATA\ActiveProjectsGW\24222 - Warehouse Stirling Crescent High Wycombe\High Wycombe Warehouse\TruckContourMap.sgs

Porter
Consulting Engineers

29 STIRLING CRESCENT HIGH WYCOMBE

STORMWATER MANAGEMENT PLAN

Porter

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2.0 SITE LOCATION 1

3.0 THE EXISTING SITE 2

3.1 Landform 2

4.0 DEVELOPMENT LAYOUT 2

5.0 STORMWATER REQUIREMENTS 3

6.0 STORMWATER DESIGN 3

6.1 Underground Stormwater Retention Devices 3

6.2 Warehouse Drainage 3

6.3 Above Ground Storage 4

7.0 CONCLUSIONS 4

APPENDIX A - Feature Survey

APPENDIX B - Geotechnical Investigation

APPENDIX C - Proposed Development Layout

APPENDIX D - Stormwater Management Plan and Calculations

HISTORY AND STATUS OF THE DOCUMENT

Revision	Date issued	Author	Issued to	Revision type
Rev A	29/07/2024	Jamie King	City of Wanneroo	Engineering Approvals

1.0 INTRODUCTION

Porter Consulting Engineers has been engaged to prepare a Stormwater Management Plan to support the commercial development application for 29 Stirling Crescent, High Wycombe.

2.0 SITE LOCATION

The site is approximately 1ha in size and its location is shown below in Figure 1.



Figure 1 – Site Location

3.0 THE EXISTING SITE

3.1 Landform

The site is rectangular in shape and surrounded by the Stirling Crescent road reserve to the south-east, recently developed land to the west and sparsely developed residential land to the north and east.

Scanlan Surveys completed a level & feature survey and this is presented in **Appendix A**. The site has a gentle grade from east to west, subtle undulations. Existing surface levels range from RL22.5 along the western boundary up to RL23.65 in the east. There is an existing house and associated out buildings towards the rear of the lot. The FFL of the existing house is slightly elevated at ~RL24.

There are several mature trees and scattered vegetation across the lot. It is expected the majority of these trees will be cleared as part of the development works.

There is an existing man-made billabong on the site. Similarly to the development to the west, it is expected this billabong will be filled in as part of the proposed development works under the supervision of a Geotechnical Engineer.

Brown Geotechnical have completed a site Geotechnical Investigation to provide an understanding of the earthworks required to facilitate the proposed development, and to provide the soil and drainage design parameters for the site. This investigation report is presented in **Appendix B**, and identifies the natural soils beneath the site being medium grained, non-cohesive, well-draining sand. There is, however, some uncontrolled clayey sand fill that has been spread over the site. It is understood all uncontrolled fill will be removed from the site as part of the development works and will be replaced with clean free draining sand. Once the uncontrolled fill has been removed, the site will receive a Class A classification.

The Geotechnical Investigation noted groundwater being encountered within the test pits at about RL21.7m (or within 2m of the existing surface). This is consistent with the surveyed top water level within the billabong. The high groundwater levels found at the site maybe influenced by an underlying cemented coffee rock layer.

The Geotechnical Investigation also confirms that the drainage characteristics of the existing sandy soils are good, with a measured permeability rate of $5x10^{-4}$ m/s (or 43.2m/day).

4.0 DEVELOPMENT LAYOUT

The proposed development layout plan is presented in **Appendix C**.

Due to the presence of uncontrolled fill and high groundwater levels, remediation earthworks and lot filling is required to provide a Class A site and to accommodate onsite stormwater disposal. The extent of required filling is dependent on ensuring separation to groundwater and functionality of the underground stormwater retention devices.

It is expected retaining walls will be required along the boundaries of the site to facilitate the site being filled.

Crossover access will be provided to Stirling Crescent as per the normal Shire of Kalamunda standards.

5.0 STORMWATER REQUIREMENTS

The Geotechnical Investigation confirms the site's sandy soils are suitable for onsite stormwater disposal via soakwells (or similar devices). On that basis, the City of Kalamunda Stormwater Design Guidelines require onsite stormwater retention devices to be sized for the 1% AEP (1 in 100Yr) critical storm event. Underground retention structures sized for a minimum 5% AEP (1 in 20Yr) critical storm event can be combined with above ground storage (within hardstand/landscaped areas) as necessary.

The City's guidelines allow for a maximum design permeability rate of 5m/day and a minimum separation of 500mm to the sites expected maximum groundwater level to the base of the retention devices.

6.0 STORMWATER DESIGN

A Stormwater Management Plan (24-6-92/500) compliant with the above requirements is presented in **Appendix D**. It is proposed to utilise underground stormwater retention devices including soakwells and cellular structures combined with additional aboveground storage in accordance with the City's guidelines.

Note the maximum allowed design permeability rate of 5m/day has been assumed for the soils beneath the retention devices. This rate represents an 88% reduction to the measured permeability test results and is considered conservative.

6.1 Underground Stormwater Retention Devices

The Underground Stormwater Retention Devices will be set a minimum of 500mm above the expected maximum ground water level as shown. The exact type and location of the devices will be confirmed at detailed design stage and will be compliant with the above design requirements.

Compaction beneath the devices will be closely monitored to ensure over compaction is avoided and permeability is optimized.

6.2 Warehouse Drainage

The two Warehouses will have downpipes plumbed directly into the Underground Stormwater Retention Devices. The exact number and location of the downpipes is not yet known though will be confirmed during detailed design.

6.3 Above Ground Storage

In accordance with the City's guidelines, allowances have been made for some above ground storage within the existing hardstand and landscaped areas. The exact location of the inundated areas will be confirmed during detailed design.

7.0 CONCLUSIONS

The Geotechnical Investigation confirms the site is suitable for onsite stormwater disposal provided the existing uncontrolled clayey sand fill is removed.

Filling and retaining is required to lift the site to allow sufficient clearance above the expected maximum groundwater levels.

A combination of Underground Stormwater Retention Devices and above ground storage have been allowed to cater for the 1% AEP critical storm event.

16

200

9
1.0032 ha

8

WOODEN POST & WIRE BLOCK MESH FENCE

STEEL POST & WIRE MESH FENCE

CONCRETE BLOCK RETAINING WALL

TBM SPIKE SUNK (0.1) RL 22.93m

TBM SPIKE SUNK (0.2) RL 23.16m

TBM SPIKE SUNK (0.2) RL 23.05m

TBM SPIKE SUNK (0.1) RL 23.12m

TBM CONC. NAIL IN PATH RL 23.92m

IRON SHED

CONCRETE HARDSTAND

DIRT ACCESS TRACK

GRASS

CLOTHES HOISTS

POOL PUMP

TANK

SWIMMING POOL

IRON PANEL FENCE

LAWN

GARDEN BED

CITRUS

PALM TREE

UMBRELLA TREE

BOTTLEBRUSH

WEEPING FIG

OPEN IRON CARPORT (CONC. HARDSTAND)

LOQUAT

NATIVE FRANGIPANI

GATE

BRICK PAVING

FFL 24.17m (CONC SILL)

IRON PATIO (BRICK PAVING)

BRICK & TILE RESIDENCE

FFL 24.21m (WOODEN SILL)

OPEN CARPORT (CONC. HARDSTAND)

CONCRETE

FRANGIPANI

SWING

MORETON BAY FIG

RETAINING WALL

CAFE LILAC

EUCALYPTUS

JACARANDA

SEA CONTAINER

MULBERRY

PEPPERMINT

RUBBER

CONIFER

RIVER RED GUM

WILLOW (DEAD)

WILLOW

PALM

BILLABONG (WATER LEVEL)

WATER PUMP

CONSUMER POWER (METER BOX)

JAPANESE PEPPER

MELALEUCA

POWDER COATED TUBULAR FENCE

WOODEN POST & RAIL FENCE

OPEN DRAIN

DRAIN

S.E.P. GRATE

HEADWALL

150 ST (MAOP 1900kPa) NG

STIRLING CRESCENT

CENTRELINE OF BITUMEN

(T.O.W. 23.35m)

(T.O.W. 23.37m)

(T.O.W. 23.38m)

(T.O.W. 23.40m)

(T.O.W. 23.56m)

(T.O.W. 23.73m)

(T.O.W. 23.9m)

89.48

90°3'

91°31'

89°57'

88°29'

23.00

24.00

92.5

110.25

170.26

SERVICE LOCATING QUALITY LEVEL

As per Standards Australia document AS5488 - 2013 Quality Levels, the positional accuracy of the following underground utilities meet Quality Level C (QL-C).

Comms & Fibre Optics. Visible ground infrastructure (Pits) located on site. Exact position of underground conduits not determined but positioned from Onecall (BYDA) information. Pot holing required to determine exact location and depth of the infrastructure.

As per Standards Australia document AS5488 - 2013 Quality Levels, the positional accuracy of the following undergound utilities meet Quality Level D (QL-D).

Water. Pipes positioned by digital data extraction from WC Esinet Website.

Gas. Exact position of underground pipes not determined but positioned from Onecall (BYDA) information. Pot holing required to determine exact location and depth of the infrastructure.

LEGEND

POWER
- POWER POLE (PP)
- OVERHEAD POWER LINES (V)

WATER
- WATER METER (W)
- WATER MAIN (W)

GAS
- GAS MAIN (GAS)

COMMUNICATIONS
- COMMS PIT
- COMMS LINE (T)

TERRAIN
- TOP OF BANK
- BOTTOM OF BANK
- CHANGE OF GRADE (C.O.G.)

ROAD
- MOUNTABLE KERB (MK)

VEGETATION
- TREE

SERVICE RECORD

SERVICE \ STATUS	LOCATED	AVAILABLE	NO SERVICE	CONFIRM
WATER	✓			
SEWERAGE			✓	
GAS		✓		✓
TELSTRA	✓			
POWER U/G				
POWER O/H	✓			

NOTE: SERVICES MARKED CONFIRM REQUIRE BUILDER/CLIENT TO CONFIRM POSITION ON SITE.

SCALE 1:200 @ A1

0m 2m 4m 6m 8m 10m

WARNING

Level between TBM's before adopting their elevation.

NOTES

1. This PLAN is current at the Date of Survey (19/02/2024).
2. The cadastral boundary position has been determined from cadastral survey marks. A full re-establishment survey of the lot will be completed.
3. Check Landgate's Diagram & Certificate of Title for any Encumbrances including Depth Limits, Easements, Caveats, Covenants etc.
4. All SERVICES require verification from the relevant AUTHORITY - suggest contacting "Before You Dig Australia" for underground services & a site inspection.

SCANLAN SURVEYS LICENSED SURVEYORS

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DRAWN BY:	JS	26/02/2024
CHECKED BY:	RS	27/02/2024
APPROVED BY:	JS	27/02/2024
DRAWING FILE:	8877241.DWG	

REVISION	DESCRIPTION	BY	DATE
	ISSUED TO ARCHITECT	JS	27/02/2024

PLAN OF: CONTOUR AND FEATURE SURVEY

PROJECT:
LOT 9 ON DIA 67603
29 STIRLING CRESCENT
HIGH WYCOMBE

CLIENT:
D & A JONES

DIAGRAM: 67603 C/T: 1689/342

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HORIZONTAL DATUM: LOCAL PLANE

VERTICAL DATUM: AHD (SSM MV63 - RL 23.639m)

DRAWING: 8877/24/1

REVISION:

Brown Geotechnical

Consulting Engineers – Land Development
Geotechnical/Acid Sulphate Soil/Groundwater Monitoring

Our reference: 24040 22 July 2024

David Jones & Anita Jones
29 Stirling Crescent
High Wycombe WA 6057

C/- Planning Solutions
Attention: Joshua Carmody

Geotechnical Investigation – 29 Stirling Crescent, High Wycombe.

Dear Joshua

Introduction

Brown Geotechnical visited the above site on 2nd July 2024 to carry out a geotechnical investigation for a proposed commercial development including warehouses, offices and truck parking.

In addition to the three test holes previously carried out by Brown Geotechnical as part of the preliminary investigation for the area Structure Plan, four additional test holes were extended to a depth of 4m using an electric friction cone penetrometer (CPT) rig to allow for confirmation of soil depth and type across the site.

At the time of the investigation the site was occupied by an existing single storey residence and out-buildings. A large, approximately 1.5m deep, pond occupied the southern corner of the lot, and occasional medium to large tree were scattered across the property.

Brief

The report will address:

- Subsurface conditions,
- The existing soil classification in accordance with (AS2870-2011),
- Any earthworks required to obtain a classification suitable for development,
- Suitability of in-situ soil for use as engineering fill in the development,
- Soil bearing capacity and settlements,
- Retaining wall parameters,
- CBR for car park pavement design,
- Earthquake sub-soil class (AS1170.4-2007),
- Groundwater levels,
- Site permeability and drainage issues.

Laboratory Test Results

Table 1 – Geotechnical Test Results

Sample Location	Depth (m)	Fines (%)	Sand (%)	Gravel (%)	LL (%)	PL (%)
CPT4	0.5	43	57	0	39	17

Ground Conditions

The natural in-situ soil below the site is a medium grained, non-cohesive, well-draining sand. CPT 1 and 4 noted a very dense / cemented layer at approx. 2.5m to 3m. Experience in the area suggests this to be an iron cemented silty sand layer, locally know as coffee rock. It is usually approx. 0.5m thick. CPT2 and CPT3 pushed through the layer, though the zone still appears to be cemented.

The rear third of the site has a layer of clayey sand fill approx. 0.5m - 1m thick (see attached plan). The fill is compact and appears free from any deleterious materials but has some cohesive (plastic) fines, though only a small area was investigated. The area is raised 0.5m – 1.0m above the adjacent paddocks to the northwest. A sample taken at CPT4 has a moderate fines content, with low plasticity and low shrink swell potential.

The ground either side of the pond has a thin layer of fill to approx. 0.3m - 0.5m.

Site Classification

The site classification for the site will depend on whether the clayey sand fill is removed or retained.

If the clayey sand fill remains, specifically in the rear third of the site, it has been determined that the appropriate site classification for footing design in this area is Class 'S' in accordance with AS2870-2011 (refer Table 2) and following the earthworks and foundation considerations below.

If the clayey sand fill is removed, which is recommended, the site classification will be Class 'A'.

It is therefore considered that the land is suitable for development.

Table 2 - Definition of Site Classifications (Australian Standard AS2870-2011)

Class	Foundation
A	Most sand and rock sites with little or no ground movement from moisture changes
S	Slightly reactive clay sites with only slight ground movement for moisture changes (y_s<20mm).
M	Moderately reactive clay or silt sites, which can experience moderate ground movement from moisture changes (y_s 20–40mm).
H1	Highly reactive clay site, which can experience moderate to high ground movement from moisture changes (y_s 40–60mm)
H2	Highly reactive clay site, which can experience high ground movement from moisture changes (y_s 60–75mm)
E	Extremely reactive sites, which can experience extreme ground movement from moisture changes (y_s>75mm)

y_s: Characteristic Surface Movement

Earthworks

All earthworks should be undertaken in accordance with AS3798-1996 “Guidelines on earthworks for commercial and residential developments”.

Topsoil / Fill

Topsoil is not suitable for foundation support and should be removed. There are some trees across the site. Unless they are to be retained, they should be removed with the entire root bulb material. The excavations should then be backfilled with material exhibiting the same geotechnical properties as the surrounding soils, then compacted as stated below.

All uncontrolled materials associated with the demolition of the existing structures, including footings, etc, should be removed from site.

Proof Rolling and Site Compaction

Prior to footing placement or placing any additional fill on site, the sand should be proof rolled to achieve at least 98% SMDD.

Should the clayey sand fill be retailed, or re-worked, it should be compacted to a dry density ratio of at least 95% MMDD. Compaction should be checked using nuclear dry density tests.

Imported Fill Material

Any sand fill imported to obtain site formation levels, should be compacted in layers not more than 300mm thick to at least 98% SMDD. In-situ density tests should be carried out to calibrate the PSP to specific densities of the compacted material. Moisture conditioning (wetting) of the sand may be required to optimise compaction. Imported sand should ideally contain less than 5% non-plastic fines to retain good drainage characteristics and should be compacted at optimum moisture content.

Following excavation for foundations, the bases of pad and strip footings should also be compacted to achieve at least 98% SMDD.

Earthwork Inspections

A geotechnical consultant should be engaged to inspect the site following the removal of topsoil, trees, buildings and other unsuitable materials, and to confirm the compaction of the subsurface following proof rolling. Inspections and auditing of the earthworks should be carried out by the geotechnical consultant to enable confirmation of the final site classification.

Pond Backfill

It is understood, following discussions with the owner, that the pond is man-made and does not contain a clay liner. It is assumed the water within the pond is natural groundwater at the natural groundwater level.

Prior to backfilling, the pond should be dewatered, and any fines and sludge removed. The excavations should then be backfilled with material exhibiting the same geotechnical properties as the surrounding soils, then compacted as stated above. Only following the backfill and compaction should the dewatering be stopped.

Note: On no account should sand fill be placed into standing water in an attempt to backfill the pond. Saturated soils cannot be compacted and may result in excessive settlement below the future development.

Suitability of Existing Soils for use in the Development

The in-situ sands on site have low fines, are medium grained, cohesionless and free draining. They will be suitable for use as engineering fill in the development.

The clayey sand fill may be retained, however will likely form an impermeable layer restricting drainage. Further inspection and testing of the fill should be carried out as it is uncovered during the development.

Note: If the clayey sand fill is retained below proposed building envelopes, care should be taken avoid placing pad and strip footing across area of differing soil types to avoid differential settlement.

Bearing Capacity

It is understood that approximately 1m of clean sand fill will be imported on to the site during the bulk earthworks. For the estimate bearing capacity purposes, we considered the fill to have been proof rolled to a dense condition.

The following allowable bearing pressures have been based on a dense sand and a Young's modulus, E = 40 MPa. Potential settlements should be taken into account for design bearing pressures.

Table 3 - Strip Footing Allowable Bearing Pressure and Estimated Settlement

Footing Depth (m)	Footing Width (m)	Allowable Bearing Pressure (kPa)	Estimated Settlement (mm)
0.5	0.5	125	<5
	1.0	150	5-10
	1.5	200	10-15

Table 4 - Pad Footing Allowable Bearing Pressure and Estimated Settlement

Footing Depth (m)	Footing Dimension (m)	Allowable Bearing Pressure (kPa)	Estimated Settlement (mm)
0.5	0.5 x 0.5	150	<5
	1.0 x 1.0	200	5-10
	1.5 x 1.5	250	10-15

The bearing pressures presented in Table 3 and 4 are also based on the following:

- Loading is isolated, vertical, non-eccentric, on level ground, and not influenced by any nearby cuttings or embankments,
- Factor of Safety of 2.5,
- It is recommended that the total settlement be limited to 15mm,
- Differential Settlement to be no greater than nominally half the total.

California Bearing Ratio

An average CBR correlation value of 18% for dense sand (in-situ) is considered adequate for access road and car park pavement design based on the CPT data.

For imported Perth sand fill, typical CBR values can vary from 12 to 20. Testing of additional imported fill should be carried out to determine more accurate values.

Earthquake Sub-Soil Class

The site Sub-Soil Class is considered as a Class C_e.

Retaining Wall Parameters

Assuming compaction / proof rolling of the soils has been carried out as stated above, the following retaining wall parameters have been based on a medium dense sand soil with ϕ=30°.
γ=18 kN/m^3

Ko=0.50

Ka=0.29

Kp=4.

The parameters detailed above assume design of the retaining structure and compaction of the foundations are in accordance with AS 4678-2002, and that backfill material is composed of clean cohesionless sand.

Groundwater

Groundwater was encountered at approx. 1.5m bgl in the CPT probes. The preliminary investigation noted groundwater at 2.3m in TH19, below a 1m layer of fill. This equates to approximately the same level noted in CPT1 where there is no fill present.

The Perth groundwater map indicates the groundwater level to be approx. 19mAHD, or approx. 4m below ground level. The DoW notes these values can vary locally by up to 3m.

The layer of cemented sand / coffee rock seen in the CPT probes at approx. 2.5m could influence the local groundwater level, being an aquiclude to vertical drainage or causing perching of groundwater in sands above the layer.

For more accurate groundwater information, groundwater monitoring bores should be considered.

Permeability and Site Drainage

Drainage within the clayey sand fill will be poor. It is recommended that the material be removed if soakwells are required in the future development.

The drainage characteristics of the sand on site are good. The near surface soil permeability is 5x10^{-4} m/s. Soakwells will be suitable for stormwater runoff within the sand.

Permeability and drainage conditions may be reduced during earthworks due to compaction of in-situ and imported sands. Over compaction during earthworks can seriously reduce soil permeability and drainage potential. It is recommended that further permeability testing be carried out following the completion of earthworks.

Regards

Ken Brown

Senior Geotechnical Engineer
BROWN GEOTECHNICAL

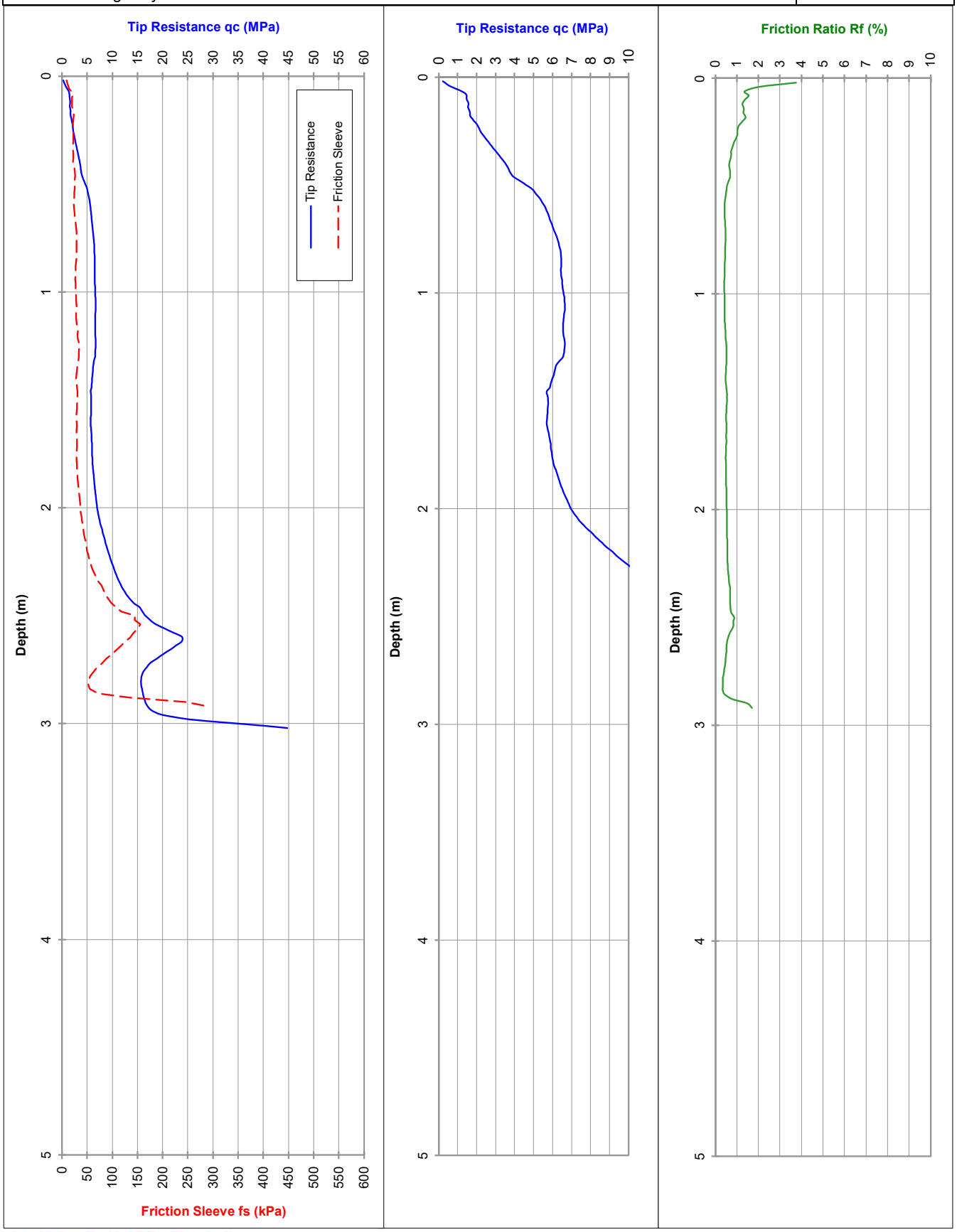
Attachments: 1. Site and Test Location Plan
2. CPT Plots and Test Hole Logs
3. Laboratory Test Certificates
3. Conditions Relating to this Report

Site and Test Location Plan



ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: Brown Geotechnical	Job No.: 24024	Probe I.D
PROJECT: 29 Stirling Crescent	RL (m):	**CPT 01**
LOCATION: High Wycombe	Co-ords:	02-Jul-24



PROBEDRILL GEOTECHNICAL SURVEY

Tested in accordance with AS 1289.6.5.1-1999 and IRTP 2001 for friction reducer

Approx. water (m): 1.6

Dummy probe to (m):

Refusal: Rod Friction

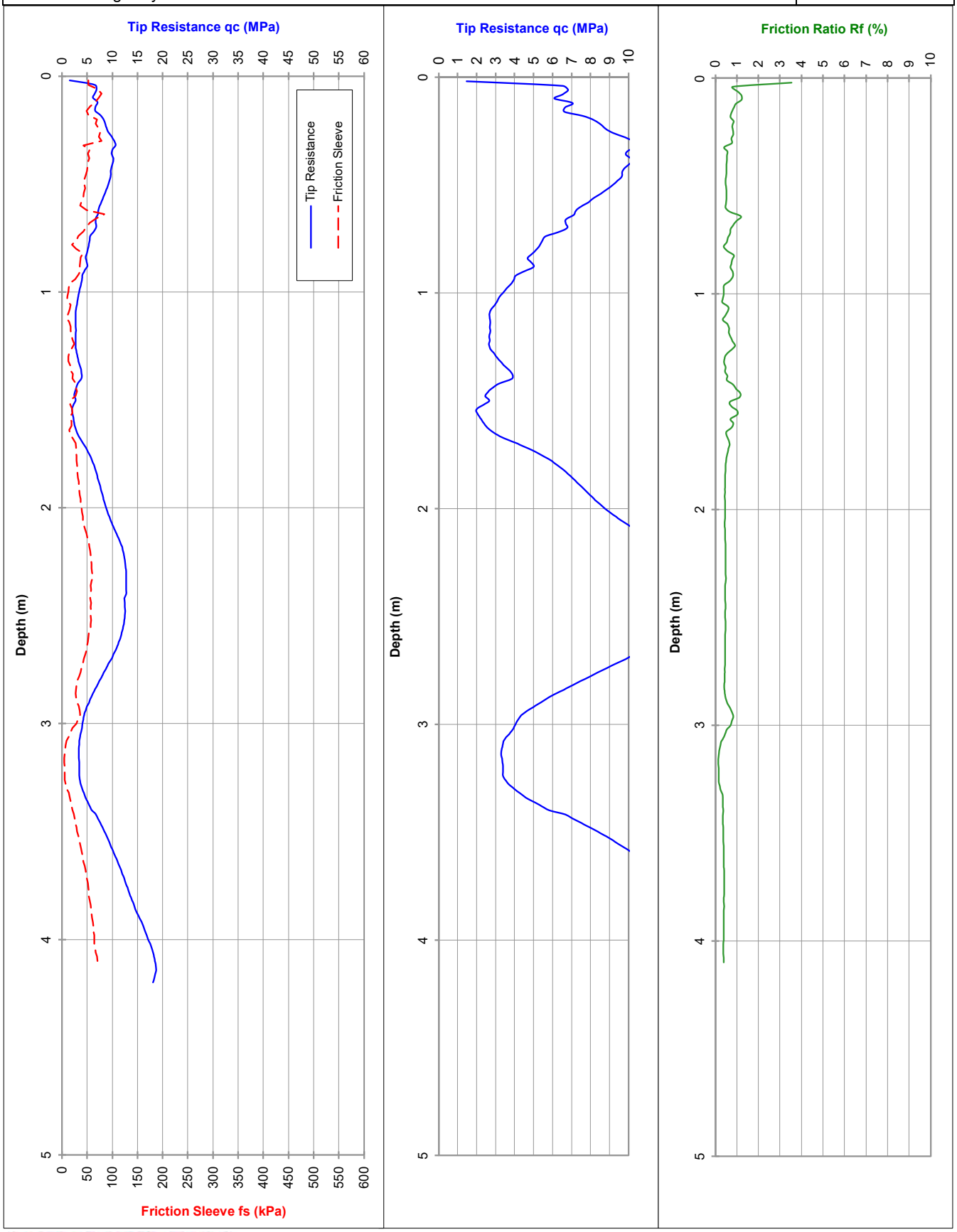
Cone I.D.: EC39

File: BG0122T

Rig Type: 7t track

ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: Brown Geotechnical	Job No.: 24024	Probe I.D
PROJECT: 29 Stirling Crescent	RL (m):	**CPT 02**
LOCATION: High Wycombe	Co-ords:	02-Jul-24



PROBEDRILL GEOTECHNICAL SURVEY

Tested in accordance with AS 1289.6.5.1-1999 and IRTP 2001 for friction reducer

Approx. water (m): 1.5

Dummy probe to (m):

Refusal:

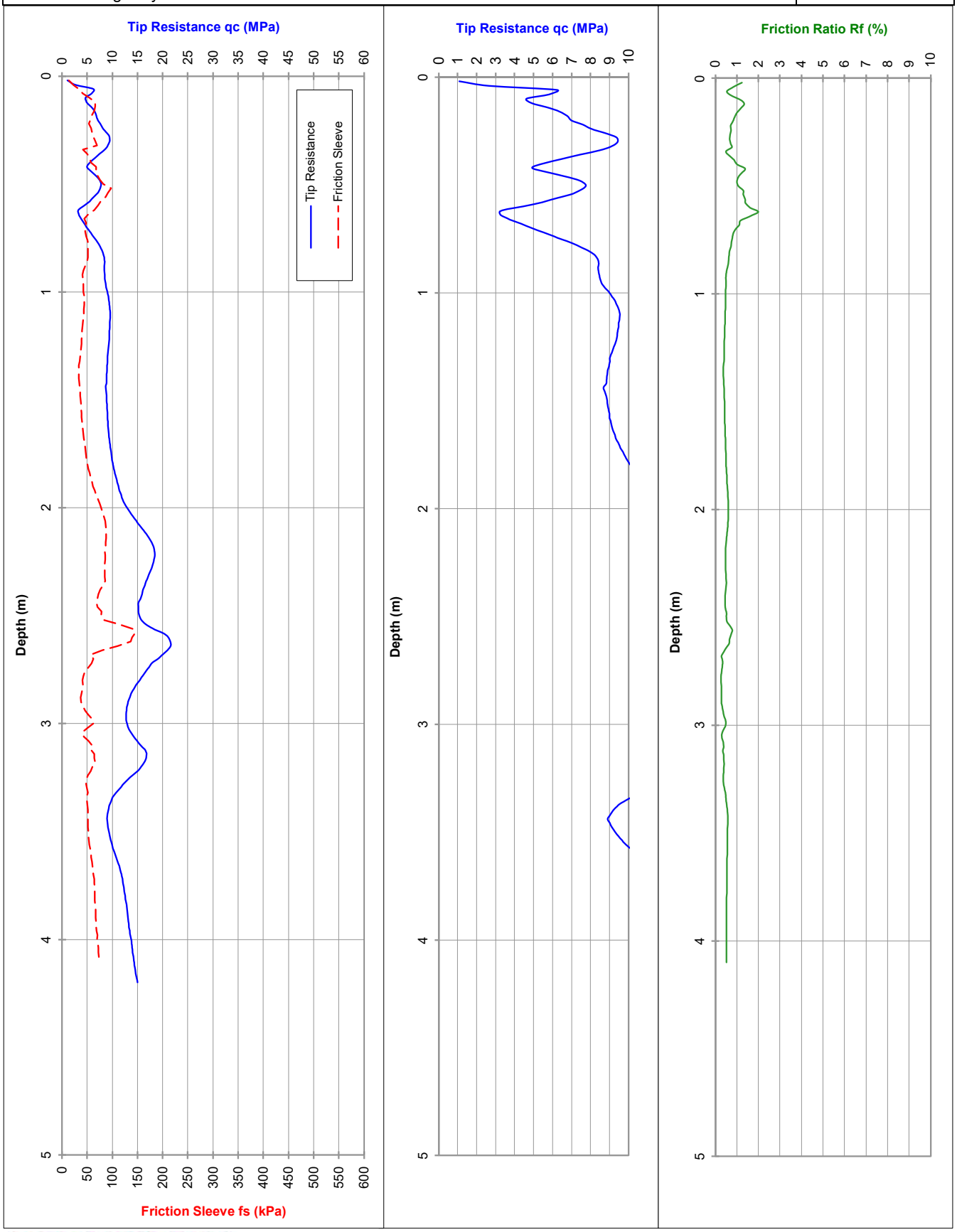
Cone I.D.: EC39

File: BG0123T

Rig Type: 7t track

ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: Brown Geotechnical	Job No.: 24024	Probe I.D
PROJECT: 29 Stirling Crescent	RL (m):	**CPT 03**
LOCATION: High Wycombe	Co-ords:	02-Jul-24



PROBEDRILL GEOTECHNICAL SURVEY

Tested in accordance with AS 1289.6.5.1-1999 and IRTP 2001 for friction reducer

Approx. water (m): 1.3

Dummy probe to (m):

Refusal:

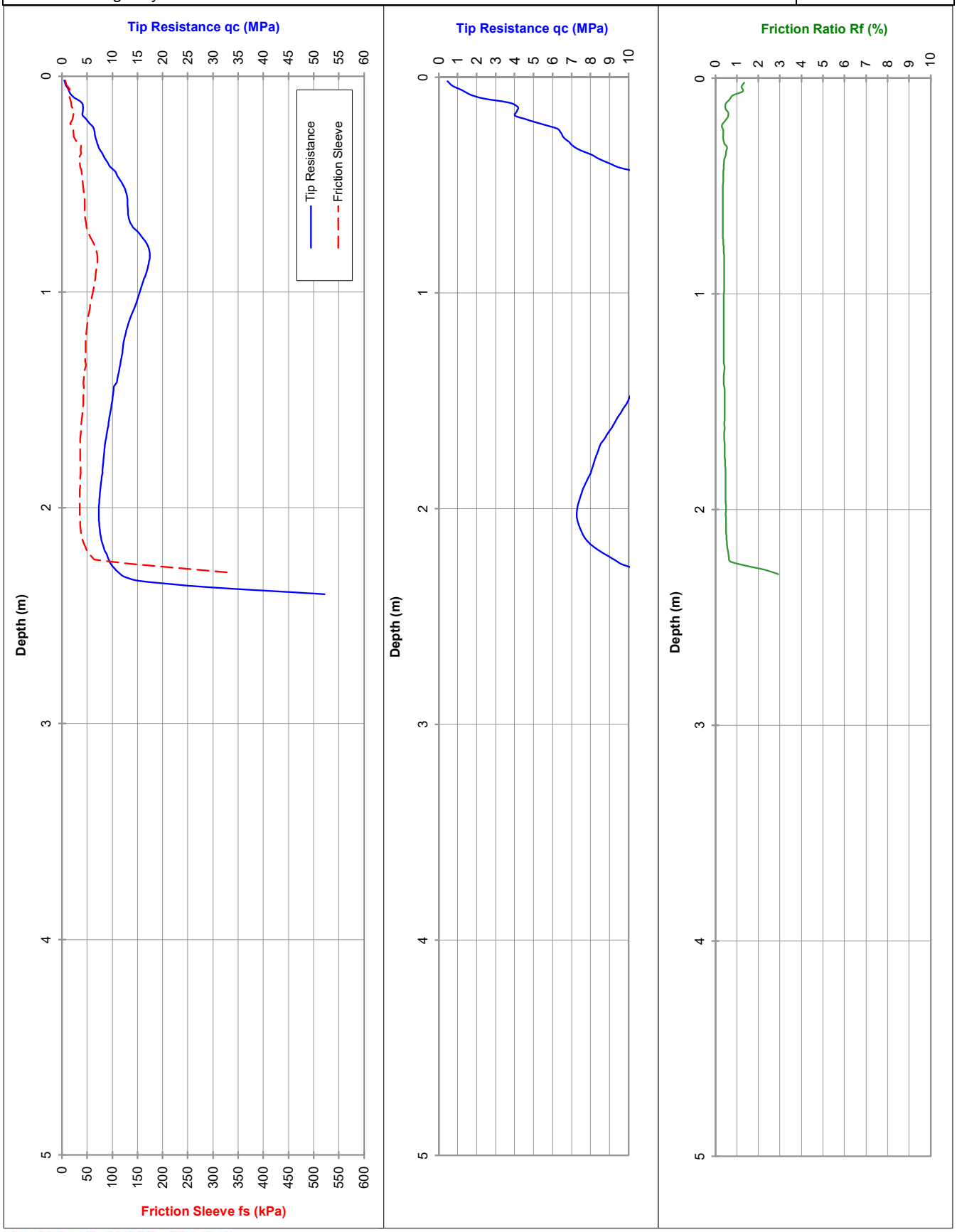
Cone I.D.: EC39

File: BG0124T

Rig Type: 7t track

ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: Brown Geotechnical	Job No.: 24024	Probe I.D
PROJECT: 29 Stirling Crescent	RL (m):	**CPT 04**
LOCATION: High Wycombe	Co-ords:	02-Jul-24



PROBEDRILL GEOTECHNICAL SURVEY

Tested in accordance with AS 1289.6.5.1-1999 and IRTP 2001 for friction reducer

Approx. water (m): Dry to 1.8

Dummy probe to (m):

Refusal: Rod Friction

Cone I.D.: EC39

File: BG0125T

Rig Type: 7t track

BG Brown Geotechnical

BOREHOLE NUMBER TH18

CLIENT Marwon Pty Ltd **PROJECT NAME** Stirling Crescent/Hatch Court LSP

PROJECT NUMBER 14010 **PROJECT LOCATION** High Wycombe

DATE STARTED 25/06/14 **COMPLETED** 25/06/14 **R.L. SURFACE** 23.1 **DATUM** m AHD

DRILLING CONTRACTOR **SLOPE** 90° **BEARING** ---

EQUIPMENT 5 tonne excavator **HOLE LOCATION** 31.993031S 116.00253E MGA

HOLE SIZE 0.5m x 1m **LOGGED BY** KB **CHECKED BY** KB

NOTES

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
		23.0				TOPSOIL: Fine to medium, grey, silty sand, with rootlets, moist		
					FILL	FILL: Dense, grey & brown, sandy gravel fill		
			0.5		SP	SAND: Medium dense, medium, grey, trace silt, moist		
		22.5						
	Not Encountered		1.0					
		22.0						
			1.5					
		21.5						
			2.0					
		21.0						
						Collapse Borehole TH18 terminated at 2.3m		
			2.5					
		20.5						
			3.0					

BG Brown Geotechnical

BOREHOLE NUMBER TH19

CLIENT Marwon Pty Ltd **PROJECT NAME** Stirling Crescent/Hatch Court LSP

PROJECT NUMBER 14010 **PROJECT LOCATION** High Wycombe

DATE STARTED 25/06/14 **COMPLETED** 25/06/14 **R.L. SURFACE** 24.0 **DATUM** m AHD

DRILLING CONTRACTOR **SLOPE** 90° **BEARING** ---

EQUIPMENT 5 tonne excavator **HOLE LOCATION** 31.92991S 116.00179E MGA

HOLE SIZE 0.5m x 1m **LOGGED BY** KB **CHECKED BY** KB

NOTES

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
						TOPSOIL: Fine to medium, grey, silty sand, with rootlets, moist		
					FILL	FILL: Dense, brown, clayey sand fill		
		23.5	0.5					
		23.0	1.0					
					SP	SAND: Medium dense, medium, grey, trace silt, moist		
		22.5	1.5					
		22.0	2.0					
	▼ 2.3m					wet below 2.3m		
		21.5	2.5					
						Borehole TH19 terminated at 2.5m		
		21.0	3.0					

BOREHOLE / TEST PIT STIRLING HATCH.GPJ GINT AUSTRALIA.GDT 13/08/14

BG Brown Geotechnical

BOREHOLE NUMBER TH20

CLIENT Marwon Pty Ltd **PROJECT NAME** Stirling Crescent/Hatch Court LSP

PROJECT NUMBER 14010 **PROJECT LOCATION** High Wycombe

DATE STARTED 25/06/14 **COMPLETED** 25/06/14 **R.L. SURFACE** 23.8 **DATUM** m AHD

DRILLING CONTRACTOR **SLOPE** 90° **BEARING** ---

EQUIPMENT hand auger **HOLE LOCATION** 31.93049S 116.005206E MGA

HOLE SIZE 0.5m x 1m **LOGGED BY** KB **CHECKED BY** KB

NOTES

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
						TOPSOIL: Fine to medium, grey, silty sand, with rootlets, moist		
		23.5	0.5		FILL	FILL: Dense, brown, clayey sand fill		
	Not Encountered	23.0	1.0		SP	SAND: Medium dense, medium, grey, trace silt, moist		
		22.5	1.5			Borehole TH20 terminated at 1.5m		
		22.0	2.0					
		21.5	2.5					
		21.0	3.0					

WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

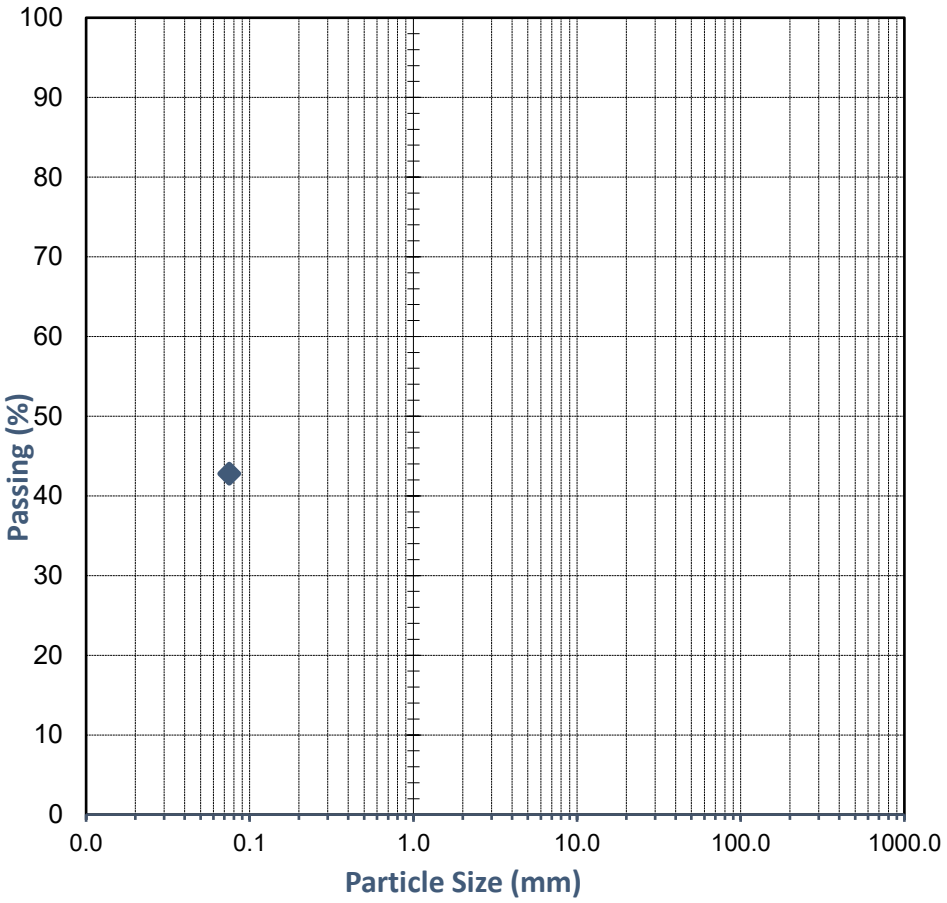
TEST REPORT - AS 1289.3.6.1 (% Fines)

Client:	Brown Geotechnical	*Ticket No.*	S13725
Client Address:	PO Box 278, Como WA 6952	*Report No.*	WG24.10365_1_%FINES
Project:	29 Stirling Crescent	*Sample No.*	WG24.10365
Location:	High Wycombe	*Date Sampled:*	2/07/2024
Sample Identification:	CPT4 - 0.5m	*Date Tested:*	04/07 - 05/07/2024

TEST RESULTS - Particle Size Distribution of Soil

Sampling Method: **Sampled by Client, Tested as Received**

Sieve Size (mm)	Percent Passing Sieve (%)
75.0	
37.5	
19.0	
9.5	
4.75	
2.36	
1.18	
0.600	
0.425	
0.300	
0.150	
0.075	43



Comments: Clients request for the % Fines of Material passing 0.075mm only.

Approved Signatory:

Name: Natasha Bielawski

Date: 05/July/2024

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WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.3.1.2, 3.2.1, 3.3.1 & 3.4.1

Client:	Brown Geotechnical	*Ticket No.*	S13725
Client Address:	PO Box 278, Como WA 6952	*Report No.*	WG24.10365_1_PI
Project:	29 Stirling Crescent	*Sample No.*	WG24.10365
Location:	High Wycombe	*Date Sampled:*	2/07/2024
Sample Identification:	CPT4 - 0.5m	*Date Tested:*	5/07/2024

TEST RESULTS - Consistency Limits (Casagrande)

Sampling Method:	**Sampled by Client, Tested as Received**
History of Sample:	**Oven Dried <50°C**
Method of Preparation:	**Dry Sieved**

AS 1289.3.1.2	**Liquid Limit (%)**	**39**
AS 1289.3.2.1	**Plastic Limit (%)**	**17**
AS 1289.3.3.1	**Plasticity Index (%)**	**22**
AS 1289.3.4.1	**Linear Shrinkage (%)**	**8.0**
AS 1289.3.4.1	**Length of Mould (mm)**	**250**
AS 1289.3.4.1	**Condition of Dry Specimen**	**-**

Comments:

Approved Signatory:

Name: Cody O'Neill

Date: 08/July/2024

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APPENDIX C - Proposed Development Layout

EXTERNAL WALLS MIN 20MM SET OFF BOUNDARY

BOUNDARY 89 480

88°29'0"

WAREHOUSE 2
INTERNAL NLA 2530m2
GROSS BLDG AREA 2565m2

NOTIONAL 8M STRUCTURAL GRID TO SUIT 200 'Z' PURLINS - SPECIFIC STRUCTURAL SYSTEM BY BUILDERS STRUCTURAL ENGINEER

BOLLARDS OUTSIDE REQUIRED EMERGENCY EGRESS DOORS ARE MANDATORY TO STOP BLOCKING WITH STORAGE OR PARKING OF VEHICLES

SIDE LOAD AND UNLOAD

COVERED LOADING/UNLOADAING AREA

LOT 9
1.0032ha

2.4M HIGH SOLID CONCRETE PANEL BARRIER TO SCREEN HEADLIGHTS FROM NEIGHBOURING PROPERTY

OT 200

BOUNDARY 110 250

LOT 8

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ALLAN J DAVIES & TREVOR CHUDLEIGH ARCHITECTS

SHOP 8, 2 THE CRESCENT, MIDLAND W.A. 6056 TEL: (08) 9250 1811 EMAIL: trevor@adtcarchitects.com.au

PROJECT: PROPOSED NEW OFFICE WAREHOUSE DEVELOPMENT FOR MR & MRS D JONES
LOT 9, 29 STIRLING CRESCENT
HIGH WYCOMBE WA 6057

DRAWING NO: 24 442 DD01 REV NO: 0

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Scale: 1:200 @A1 Date: MAY 2024 Drawn: TCC Design: TCC Datum: AHD

No:	Date:	Revision:	By:
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WAREHOUSE 1
INTERNAL NLA 2435m2
GROSS BLDG AREA 2472m2
INCLUDES 360M2 OF INTERNAL OFFICE AND AMENITY AREA

OUTLINE OF EXISTNG DRIVEWAY AND TRACK AROUND EXISTNG RESIDENCE

SITE PLAN 1:200 @A1

MEETING/ OFFICE 3
OFFICE 2
OFFICE 1
RECEPTION
ENTRY
MALE
FEMALE
PASSAGE
STAFF RM
2 X 4M DIA. FIRE FIGHTING WATER TANKS- SIZE TBC
MIN. REQUIRED 6M FIRE BRIGADE ACCESS
FIRE BRIGADE BOOSTER CONNECTION MANIFOLD
12 COVERED BAYS
ACCESS BAY
SHARE ZONE
STAFF/ VISITOR PARKING
PEDESTRIAN ZONE
BIN
LOW LEVEL PLANTING
ONE TREE PER FOUR BAYS WHERE SHOWN (TYP)
DENSE LANDSCAPING
STORMWATER COLLECTION SUMP
SITE MAIN ELECT. SWITCHBOARD
NEW R. CONC CROSSOVER
NEW R. CONC. CROSSOVER
OPEN DRAIN TO REMAIN
EXISTING POWER POLE
EX.SIDE ENTRY PIT
LAWN
BOUNDARY 92 500
STIRLING CRESCENT
CENTRELINE OF BITUMEN

APPROXIMATE LOCATION OF NEIGHBOURING PROPERTY DRIVEWAYS (TYP)

LOT10
No 26

LOT 9
No 30

LOT 8
No 34

EXISTING RESIDENCE

BOUNDARY

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DEVELOPMENT FOR MR & MRS D JONES
LOT 9, 29 STIRLING CRESCENT
HIGH WYCOMBE WA 6057

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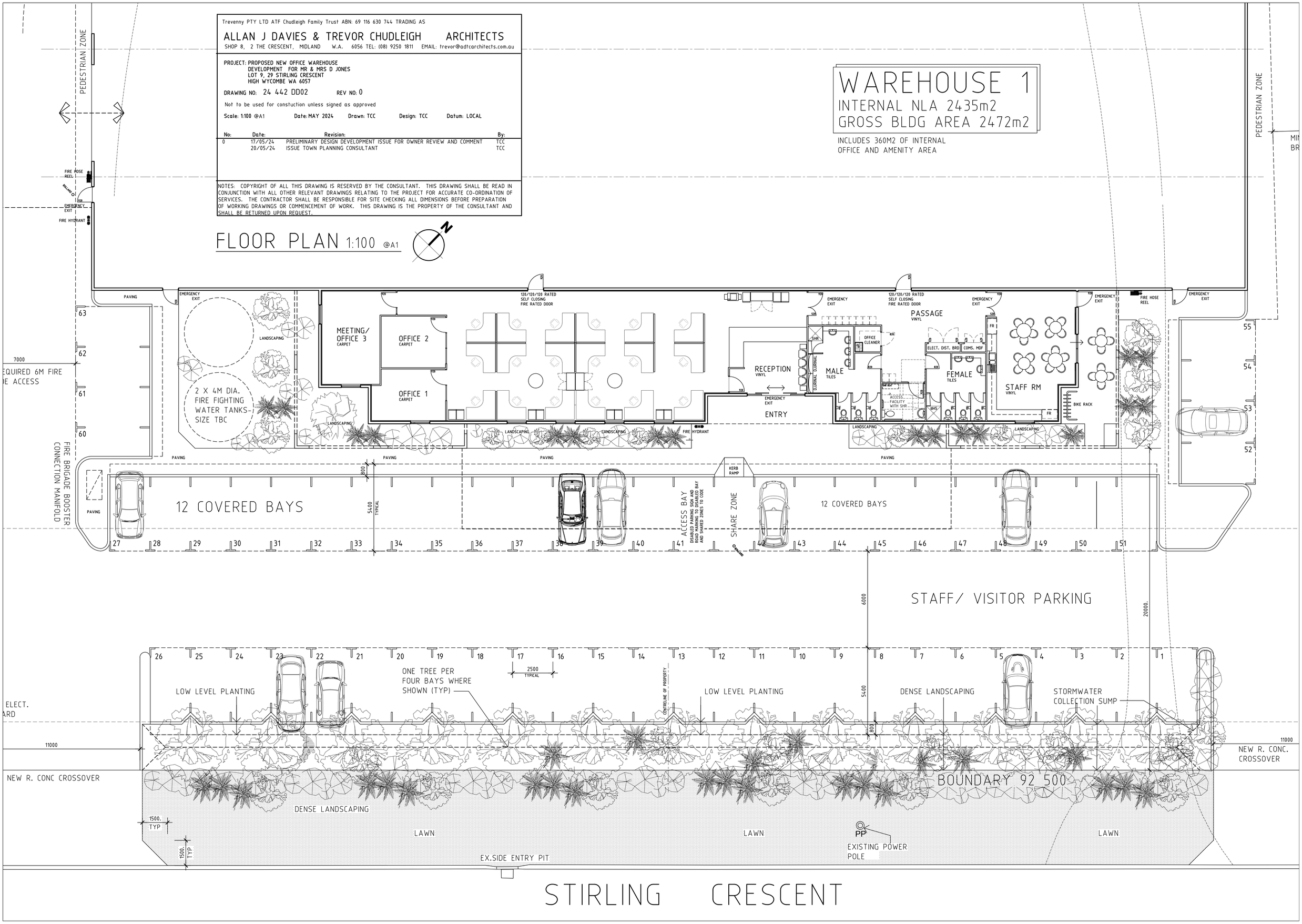
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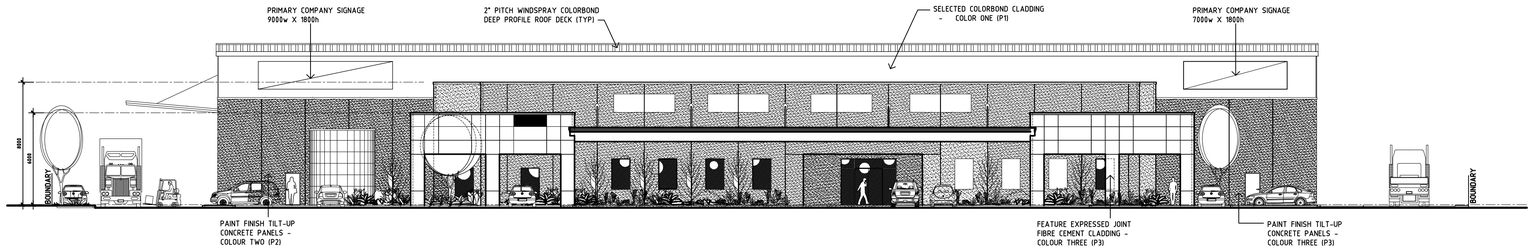
WAREHOUSE 1

INTERNAL NLA 2435m2
GROSS BLDG AREA 2472m2

INCLUDES 360M2 OF INTERNAL
OFFICE AND AMENITY AREA

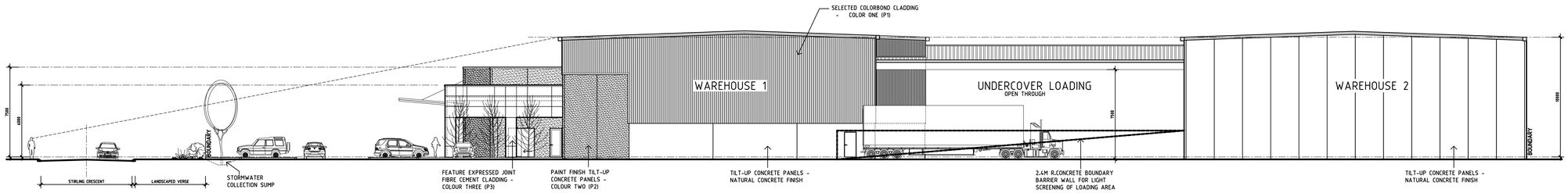
FLOOR PLAN 1:100 @A1



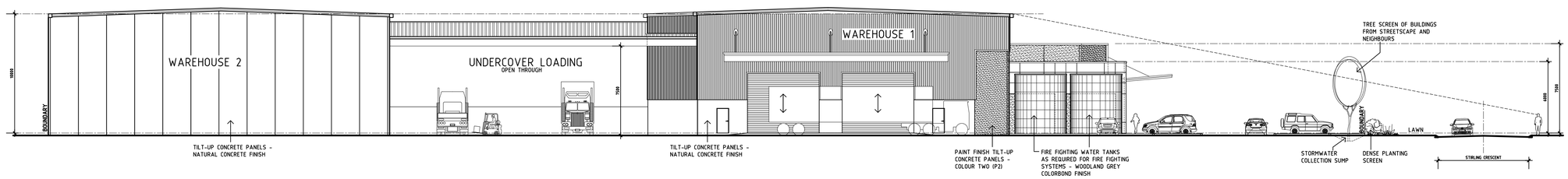


EAST ELEVATION 1:200@A1

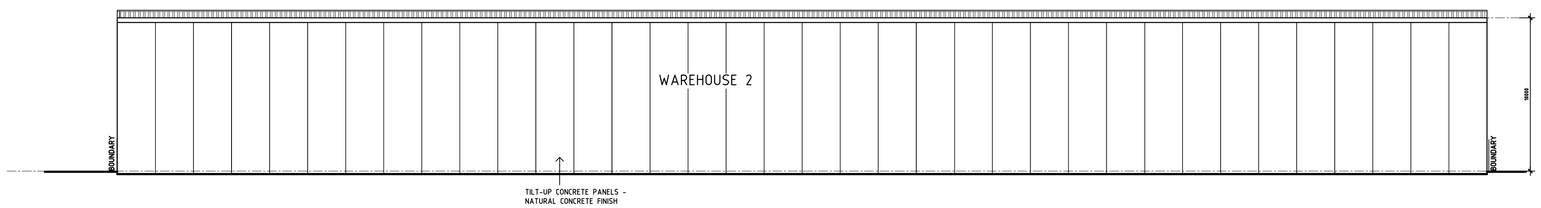
STIRLING CRESCENT



NORTHERN ELEVATION 1:200@A1



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LOT 9, 29 STIRLING CRESCENT
HIGH WYCOMBE WA 6057

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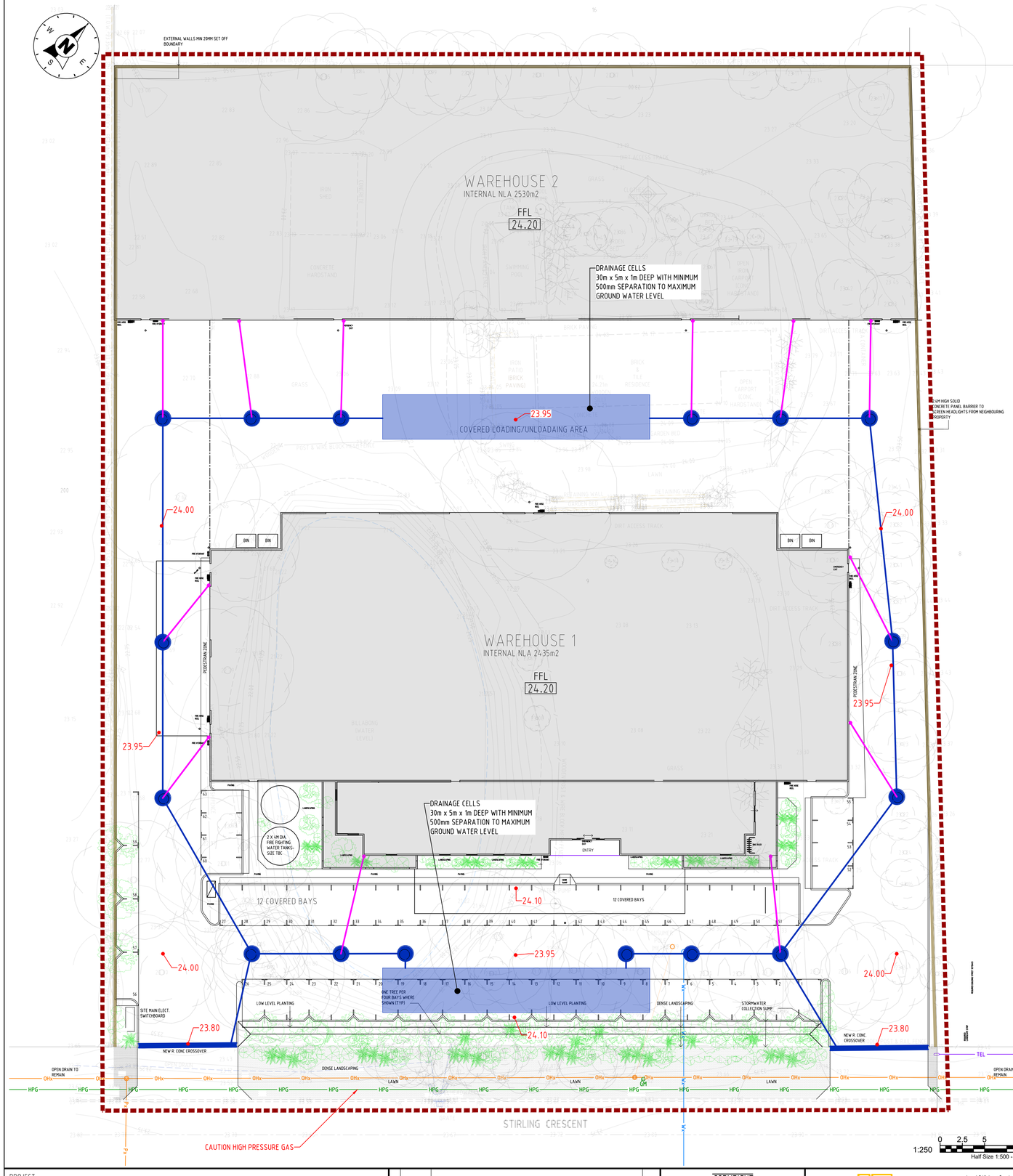
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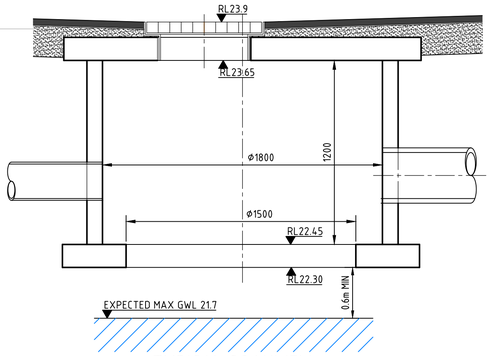
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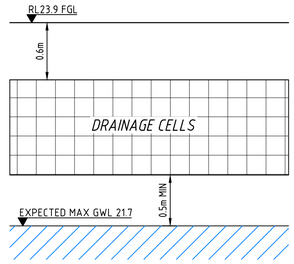
APPENDIX D - Stormwater Management Plan and Calculations





TYPICAL SOAKWELL

NOT TO SCALE



TYPICAL DRAINAGE CELLS

NOT TO SCALE

LEGEND

- EXISTING GROUND CONTOUR
- EXISTING GROUND SPOT LEVEL
- FFL 24.00 — PROPOSED FINISHED FLOOR LEVEL
- BOUNDARY
- PROPOSED RETAINING WALL
- UNDERGROUND STORAGE CELLS
- PROPOSED 300RCP DRAINAGE PIPE APPROXIMATE
- PROPOSED 225PVC DOWNPIPE DRAINAGE CONNECTION- APPROXIMATE
- EXISTING ROAD/ KERB
- EXISTING DRAINAGE- OPEN
- Wx — EXISTING WATER MAIN
- Px — EXISTING POWER LINE
- OHx — EXISTING OVERHEAD POWER LINE AND POLE
- Tx — EXISTING TELECOMMUNICATIONS
- VOC — EXISTING VOCUS
- HPG — EXISTING HIGH PRESSURE GAS LINE
- 1.8m x 1.2m SOAKWELL (SW)
- PROPOSED DOWNPIPE APPROXIMATE LOCATION
- 24.00 — APPROXIMATE PROPOSED FINISHED LEVELS
- TRENCH GRATE

DRAINAGE CALCULATIONS

SITE LEVELS

MINIMUM FINISHED SURFACE LEVELS	23.9	m
MAXIMUM GROUND WATER LEVEL	21.25	m
FREEBOARD	0.5	m
AVAILABLE DEPTH OF DRAINAGE STRUCTURE	1.65	m

DESIGN SUMMARY

POST DEVELOPMENT

AEP	1%	
CRITICAL DESIGN STORM DURATION	6	hr
RAINFALL INTENSITY	14.6	mm/hr
AREA	1	ha
COEFFICIENT- POST DEVELOPMENT	0.90	

STORMWATER VOLUMES

STORM VOLUME	792	m^3
STORAGE VOLUME AVAILABLE	341	m^3
INFILTRATION RATE	5	m/DAY
SOAKAGE VOLUME	400	m^3
ABOVE GROUND STORAGE	>51	m^3

STORAGE STRUCTURES

SOAKWELLS	16 No.	1.8m DIA X 1.2m DEEP	49	m^3
SOAKWELL INFILTRATION	16 No.	1.5m DIA AT BASE	51	m^3
STORAGE PIPE	18m	0.3m DIA	13	m^3
ABOVE GROUND STORAGE	>51m^3			
DRAINAGE CELLS	59.4 x 4.7m x 1m DEEP		280	m^3
DRAINAGE CELL SOAKAGE	59.4 x 4.7m x 1m DEEP		349	m^3
TOTAL STORAGE PROVIDED			793	m^3

BEFORE YOU DIG www.dyda.com.au

PROJECT:

29 STIRLING CRESCENT HIGH WYCOMBE

No.	DATE	REVISION	BY
A	20-6-2024	ISSUED FOR APPROVAL	MEG

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TUSMO Pty Ltd ACN 070 097 548 as trustee for the Consulting Engineering Unit Trust trading as Porter Consulting Engineers ABN 78 636 396 385

CLIENT:

DAVID JONES AND ANITA JONES

DRAWING:

STORMWATER MANAGEMENT PLAN

STATUS: **FOR APPROVAL**

SCALE	1:250
DATE	Jul-24
DESIGN	JK
DRAWN	MEG
CHECK	

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APP'D

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WESTERN
ENVIRONMENTAL

Bushfire Management Plan

Development Application: 29 Stirling Crescent, High Wycombe

Western Environmental Pty Ltd
(08) 6162 8980
PO Box 437, Leederville, WA 6903
enquiries@westenv.com.au
westenv.com.au

Bushfire Management Plan

Development Application: 29 Stirling Crescent, High Wycombe

Report No:
A24.109-RPT-BMP_0_FINAL
Issue Date:
12-Jul-2024
Status
FINAL

Prepared for:
David Jones C/- Planning Solutions
Level 1, 251 St Georges Tce
Perth WA 6000

Prepared by
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Internal Review

Author	Reviewed by	Approved by
		
Bridie Farrar Bushfire Consultant	**Daniel Panickar** Senior Principal BPAD L3 -37802	**Daniel Panickar** Senior Principal BPAD L3 -37802
12-Jul-2024	**12-Jul-2024**	**12-Jul-2024**

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Appendices

Appendix A: Classified vegetation photos
Appendix B: Vehicular access technical requirements (WAPC, 2021)
Appendix C: City of Kalamunda Fire Hazard Reduction Notice 2023/2024

1. Introduction

1.1 Proposal Details

Planning solutions, on behalf of David Jones is seeking to progress a Development Application (DA) for 29 Stirling Crescent, High Wycombe (hereafter referred to as the subject site, Figure 1). The proposed development will result in an intensification of land use and involves the development of a warehouse (Figure 2).

The subject site is within a designated bushfire prone area as per the *Western Australia State Map of Bush Fire Prone Areas* (DFES 2021; Figure 3), which triggers bushfire planning requirements under *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (SPP 3.7; WAPC, 2015) and reporting to accompany submission of the DA in accordance with the associated *Guidelines for Planning in Bushfire Prone Areas v 1.4* (the Guidelines; WAPC, 2021).

Western Environmental Approvals Pty Ltd (WEPL) was commissioned to prepare a Bushfire Management Plan (BMP) to support the DA. This BMP has been prepared by Bushfire Consultant Bridie Farrar and Senior Principal Bushfire Consultant Daniel Panickar (FPAA BPAD Level 3 Certified Practitioner No. BPAD37802).

1.1.1 Site context

The subject site is located within City of Kalamunda and is zoned Light Industry under the City of Kalamunda Local Planning Scheme and Urban under the Metropolitan Region Scheme. The subject site contains a mixture of unmanaged, classifiable vegetation as well as cleared areas. The subject site is bound by light residential lots to the north; Stirling Crescent and residential lots to the east and south; and light industrial lots to the west.

1.2 Purpose and Application of the BMP

This BMP has been prepared in accordance with SPP 3.7 and the Guidelines to support the assessment of the DA for the subject site submitted to the Shire of Kalamunda.

In addition, this BMP provides strategies and guidance to reduce the level of bushfire risk exposure for the subject site through implementation of a range of bushfire management measures in accordance with the Guidelines.

1.3 Environmental Considerations

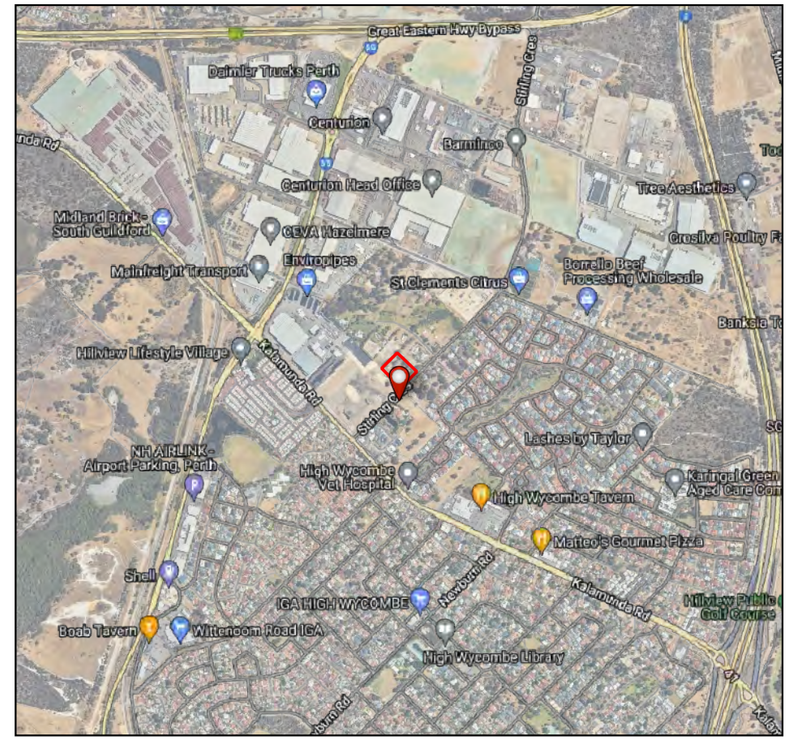
SPP 3.7 policy objective 5.4 recognises the need to consider bushfire risk management measures alongside environmental, biodiversity and conservation values.

WEPL completed a site walkover at the subject site to ascertain whether there were any significant environmental values present on site. It was found that the quality of vegetation on site is poor. WEPL is not aware of any outstanding environmental approvals required for development to proceed.

No revegetation is proposed within the subject site and landscaping will be maintained in a low-threat state.

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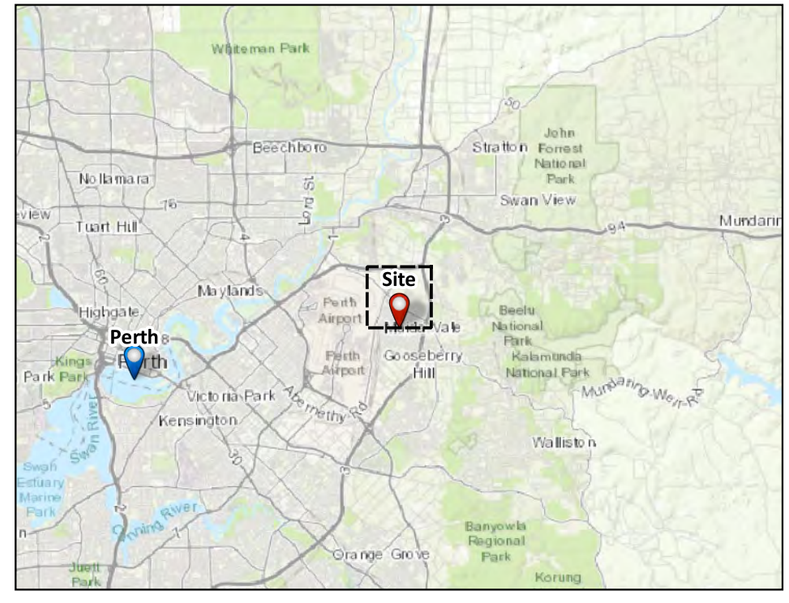


Figure 1: Site Overview

N

0 30 60 90 120 m

PROJECT/REPORT NAME: Bushfire Management Plan 29 Stirling Crescent, High Wycombe		
SCALE: 1:2,308	SHEET SIZE: A3 COLOUR	CLIENT: David Jones c/- Planning Solutions
COORDINATE REFERENCE SYSTEM: GDA2020 / MGA zone 50	PROJECT NUMBER: A24.109	VERSION: 0
DATA SOURCE: LANDGATE AERIAL IMAGERY Summer 2023	DRAWN BY / REVIEWED BY: SM/BF	DATE: 10/7/2024

Legend

- Subject Site
- Buffer 100m
- Buffer 150m

No	Description	Drawn	Approved	Date
A	Original issue	SM	BF	10/7/2024

NOTES:

Cadastral boundary (LGATE-002). Base map ESRI Topo. Townsites (LGATE-248).

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Figure 2: Site Plan

N

0 10 20 30 40 m

PROJECT/REPORT NAME	Bushfire Management Plan 29 Stirling Crescent, High Wycombe
SCALE	1:1,899
SHEET SIZE	A3 COLOUR
CLIENT	David Jones c/- Planning Solutions
COORDINATE REFERENCE SYSTEM	GDA2020 / MGA zone 50
PROJECT NUMBER	A24.109
VERSION	0
DATA SOURCE	LANDGATE AERIAL IMAGERY Summer 2023
DRAWN BY / REVIEWED BY	SM/BF
DATE	10/7/2024

Legend

- Subject Site
- Buffer 100m
- Buffer 150m
- Subject building
- Carpark
- Hardstand/driveway

No	Description	Drawn	Approved	Date
A	Original issue	SM	BF	10/7/2024

NOTES:

Cadastral boundary (LGATE-002). Label corresponds to the vegetation association number.

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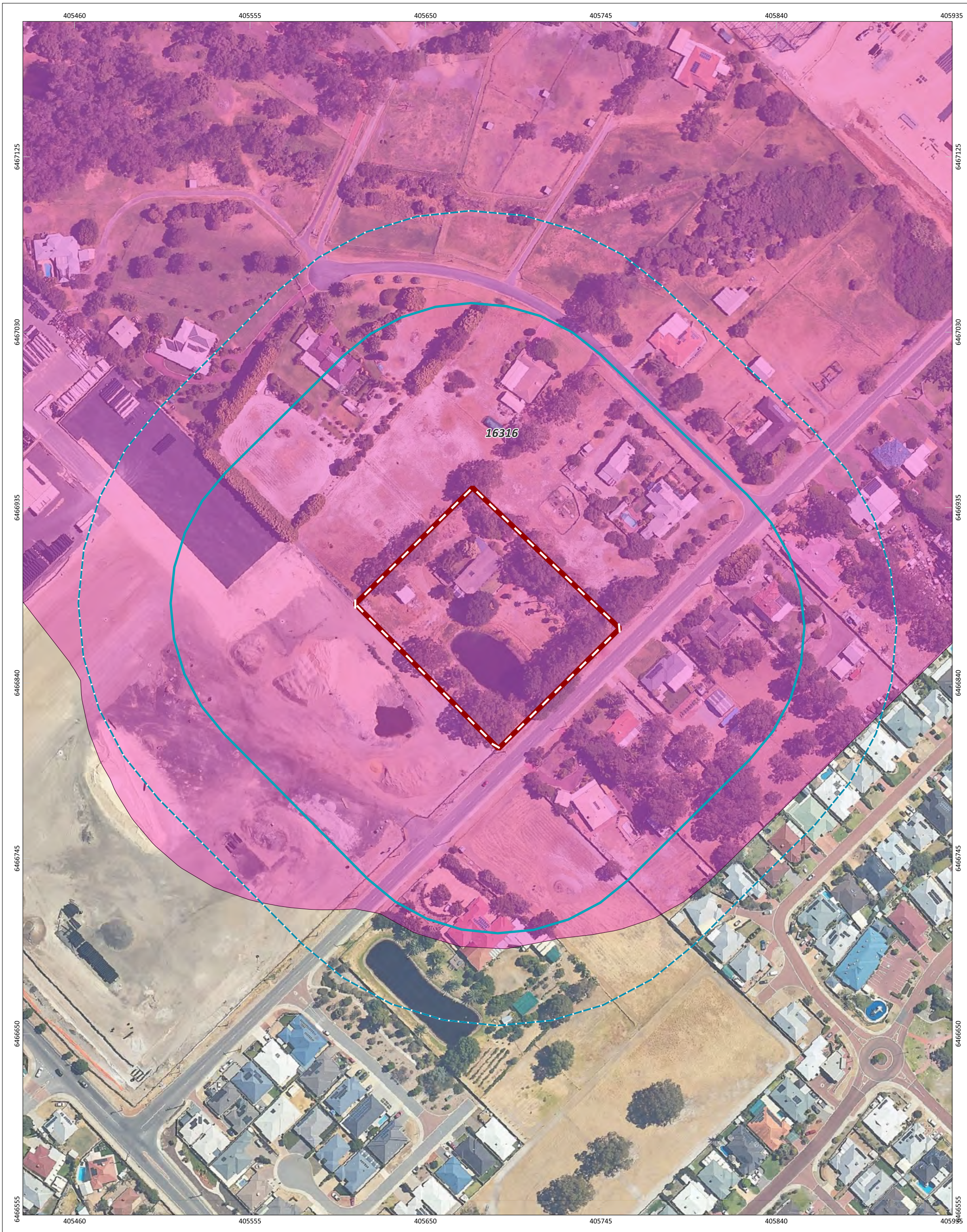


Figure 3: Bushfire Prone Areas

N 0 10 20 30 40 m		PROJECT/REPORT NAME: Bushfire Management Plan 29 Stirling Crescent, High Wycombe	
SCALE: 1:1,899	SHEET SIZE: A3 COLOUR	CLIENT: David Jones c/- Planning Solutions	
COORDINATE REFERENCE SYSTEM: GDA2020 / MGA zone 50		PROJECT NUMBER: A24.109	VERSION: 0
DATA SOURCE: LANDGATE AERIAL IMAGERY Summer 2023		DRAWN BY / REVIEWED BY: SM/BF	DATE: 10/7/2024

Legend

- Subject Site
- Buffer 100m
- Buffer 150m
- Bush Fire Prone Areas 2021 (OBRM-019)

No	Description	Drawn	Approved	Date
A	Original issue	SM	BF	10/7/2024

NOTES:

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2. Bushfire Assessment Results

2.1 Bushfire Assessment Inputs

A bushfire assessment has been undertaken for the proposed development in accordance with the Guidelines. Inputs to this assessment are detailed below.

2.1.1 Fire Danger Index

A blanket Fire Danger Index (FDI) 80 is adopted for Western Australia, as outlined in *Australian Standard AS 3959: 2018 Construction of Buildings in Bushfire Prone Areas* (SA, 2018).

2.1.2 Vegetation Classification and Slope under Vegetation

Vegetation and effective slope (i.e. slope under vegetation) within the subject site and surrounding 150 m (the assessment area) were assessed on 1/07/2024 in accordance with the Guidelines and AS 3959: 2018.

The classified vegetation and effective slope for the site from each of the identified vegetation plots are identified below in Table 1 and Figure 4.

Table 1: Classified Vegetation as per AS 3959: 2018

Plot	Vegetation classification	Effective slope
1	Class B Woodland	All upslopes and flat land (0 degrees)
2	Excluded - clause 2.2.3.2 (e) & (f)	-

Photographs relating to each area and vegetation type are included in Appendix A.

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405460 405555 405650 405745 405840 405935

6467125 6467030 6466935 6466840 6466745 6466650 6466555

20 m 20 m

4 5 6 7 13 12 2 10 11 1 8 9 3

Area to be cleared for development

Plot 2 - Excluded AS 3959: 2018 clause 2.2.3.2 (e) & (f)

Plot 1 - Upslope / Flat land

405460 405555 405650 405745 405840 405935

Figure 4: Vegetation Classification

N 0 10 20 30 40 m	PROJECT/REPORT NAME: Bushfire Management Plan 29 Stirling Crescent, High Wycombe		
SCALE: 1:1,899	SHEET SIZE: A3 COLOUR	CLIENT: David Jones c/- Planning Solutions	
COORDINATE REFERENCE SYSTEM: GDA2020 / MGA zone 50		PROJECT NUMBER: A24.109	VERSION: 0
DATA SOURCE: LANDGATE AERIAL IMAGERY Summer 2023		DRAWN BY / REVIEWED BY: SM/BF	DATE: 10/7/2024

Legend

- Subject Site
- Buffer 100m
- Buffer 150m
- Photos

2 metre contours (DPIRD-072)

- 10 m
- 2 m

VegetationBushfire150

- Class B - Woodland
- Excluded AS 3959: 2018 2.2.3.2

No	Description	Drawn	Approved	Date
A	Original issue	SM	BF	10/7/2024

NOTES:

Cadastral boundary (LGATE-002). Label corresponds to the vegetation association number.

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2.2 Bushfire Assessment Outputs

A Bushfire Attack Level (BAL) assessment has been undertaken in accordance with SPP 3.7, the Guidelines, AS 3959: 2018 and the bushfire assessment inputs in Section 2.1.

2.2.1 BAL Assessment

All land located within 100 m of the classified vegetation depicted in Figure 4 is considered bushfire prone and is subject to a BAL assessment in accordance with AS 3959: 2018.

A Method 1 BAL assessment (as outlined in AS 3959: 2018) has been completed for the proposed development and incorporates the following factors:

- Fire Danger Index (FDI) rating.
- Vegetation class.
- Slope under classified vegetation.
- Distance between proposed subdivision area and the classified vegetation.

Based on the identified BAL, construction requirements for relevant buildings/structures can then be assigned. The BAL rating gives an indication of the expected level of bushfire attack (i.e. radiant heat flux, flame contact and ember penetration) that may be received by proposed buildings and subsequently informs the standard of construction required to increase building survivability.

2.2.2 Method 1 BAL Assessment

Table 2 and Figure 5 display the Method 1 BAL assessment (in the form of BAL contours) that has been completed for the proposed development in accordance with AS 3959: 2018 methodology.

Post-development, all proposed buildings within the subject site will be subject to BAL ratings of ≤BAL-12.5.

Table 2: Method 1 BAL Calculation (BAL Contours)

Plot	Vegetation classification	Effective slope	Separation distances required (m)				
			BAL-FZ	BAL-40	BAL-29	BAL-19	BAL-12.5
1	Class B Woodland	All upslopes and flat land (0 degrees)	<10	10 - <14	14 - <20	20 - <29	29 - <100
2	Excluded - clause 2.2.3.2 (e) & (f)	-	No separation distances required - BAL-LOW				

Based on the site assessment inputs and BAL assessment, all proposed buildings within the subject site will be exposed to BAL ratings ≤BAL-12.5. A summary of the BAL ratings for these assets within the subject site is provided in Table 3.

The Guidelines state:

> *The bushfire construction requirements of the Building Code of Australia only apply to certain types of residential buildings (being Class 1, 2 or 3 buildings and/or Class 10a buildings or decks associated with a Class 1, 2 or 3 building) in designated bushfire prone areas. As such, AS 3959 does not apply to all buildings. Only vulnerable or high-risk land uses that fall within the relevant classes of buildings as set out in the Building Code of Australia will be required to comply with the bushfire construction requirements of the Building Code of Australia. As such, the planning process focuses on the location and siting of vulnerable and high-risk land uses rather than the application of bushfire construction requirements.*

As none of the proposed structures is a Class 1, 2 or 3 building and/or Class 10a building or deck associated with a Class 1, 2 or 3 building, construction to AS 3959: 2018 is not required for this proposal. However, WEPL recommend that ember protection measures in sections 3 and 5 of AS 3959: 2018 are incorporated into the design and construction of the warehouses where possible.

Table 3: BAL Ratings for Assets Within the Subject Site

Proposed Building/Asset	Plot Most Affecting BAL Rating	Separation Distance	BAL Rating
Warehouse 1	-	>100 m	BAL-LOW
Warehouse 2	Plot 1	69 m	BAL-12.5

2.3 Identification of Issues Arising from the BAL Assessment

Post-development, all proposed buildings within the subject site will be subject to BAL ratings of ≤BAL-12.5.

A reassessment of BAL ratings, through either a BMP addendum or revised BMP will be undertaken if changes to development design or classified vegetation within the assessment area which require a modified bushfire management response occur.

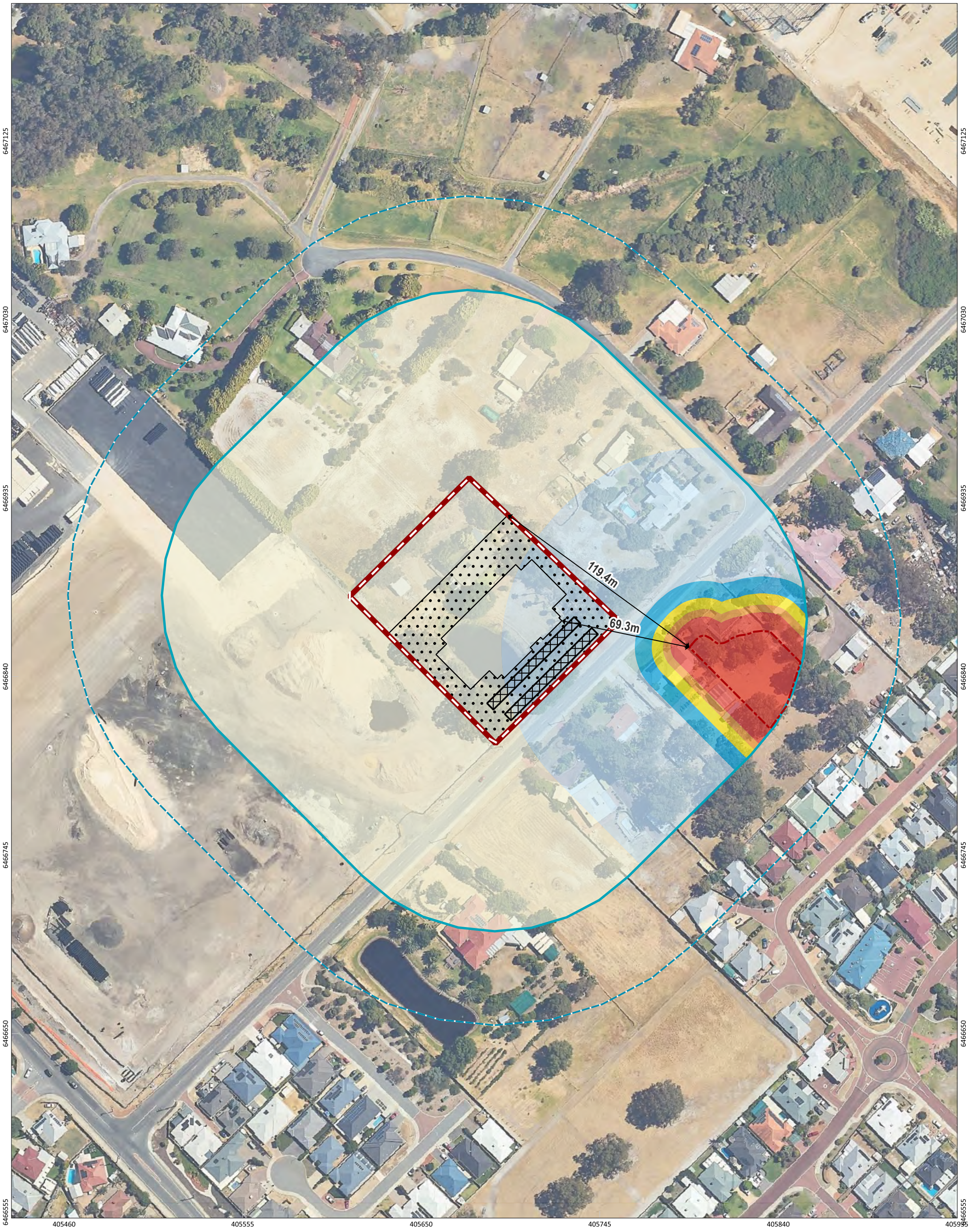


Figure 5: Bushfire Attack Level (BAL) Contours

N

0 10 20 30 40 m

PROJECT/REPORT NAME	Bushfire Management Plan 29 Stirling Crescent, High Wycombe
SCALE	1:1,899
SHEET SIZE	A3 COLOUR
CLIENT	David Jones c/- Planning Solutions
COORDINATE REFERENCE SYSTEM	GDA2020 / MGA zone 50
PROJECT NUMBER	A24.109
VERSION	0
DATA SOURCE	LANDGATE AERIAL IMAGERY Summer 2023
DRAWN BY / REVIEWED BY	SM/BF
DATE	10/7/2024

Legend

- Subject Site
- Buffer 100m
- Buffer 150m
- Subject building
- Carpark
- Hardstand/driveway
- Bushfire hazard Interface

Bushfire Attack Level (BAL)

- BAL-FZ
- BAL-40
- BAL-29
- BAL-19
- BAL-12.5
- BAL-LOW

No	Description	Drawn	Approved	Date
A	Original issue	SM	BF	10/7/2024

NOTES:

Cadastral boundary (LGATE-002). Label corresponds to the vegetation association number.

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3. Assessment Against the Bushfire Protection Criteria

3.1 Compliance

The proposed development is required to comply with policy measures 6.2 and 6.5 of SPP 3.7 and the Guidelines.

Table 4 outlines the Acceptable Solutions (AS) that are relevant to the proposal and summarises how the intent of each Bushfire Protection Criteria has been achieved through the application of bushfire risk management measures. No Performance Solutions (PS) have been proposed for this development. These management measures are depicted in Figure 6 where relevant.

Implementation of this BMP is expected to meet objectives 5.1-5.4 of SPP 3.7.

Table 4: Assessment Against the Bushfire Protection Criteria

Bushfire Protection Criteria	AS	PS	N/A
Element 1: Location **A1.1 Development location**	✓	☐	☐
Post-development, all proposed buildings within the subject site will be exposed to BAL ratings of ≤BAL-12.5 (**Figure 5**). The proposed development is considered to be compliant with A1.1.			
Element 2: Siting and design of development **A2.1 Asset Protection Zone (APZ)**	✓	☐	☐
No APZs are required or proposed as part of this development. The proposed development is considered to be compliant with A2.1.			
Element 3: Vehicular access **A3.1 Public roads**	✓	☐	☐
The subject site is accessed via existing public roads. The Guidelines do not prescribe values for the trafficable (carriageway/pavement) width of public roads as they should be in accordance with the class of road as specified in the IPWEA Subdivision Guidelines, Liveable Neighbourhoods, Austroad Standards and/or any applicable standard in the local government area. WEPL's assessment, however, has identified that the roads surrounding the development are bitumen with estimated width of the sealed surface achieving a minimum width of 6 m and therefore consider the existing road network would provide suitable access and egress for the community and emergency services personnel in the event of a bushfire. Vehicular access technical requirements in accordance with the Guidelines are detailed in Appendix B. The proposed development is considered to be compliant with A3.1.			
A3.2a Multiple access routes	✓	☐	☐
Multiple access routes from the subject site to more than two suitable destinations are available via the existing public network (Figure 6). Access to the site is available via two different access points. Refer to A3.1 above for details regarding vehicular access technical requirements for public roads. The proposed development is considered to be compliant with A3.2a.			

Bushfire Protection Criteria	AS	PS	N/A
A3.2b Emergency access way	✓	☐	☐
No emergency access ways are required or proposed as part of this development. The proposed development is considered to be compliant with A3.2b.			
A3.3 Through-roads	☐	☐	✓
Not Applicable - This Acceptable Solution does not apply to development applications.			
A3.4a Perimeter roads	☐	☐	✓
Not Applicable - This Acceptable Solution does not apply to development applications.			
A3.4b Fire service access route	☐	☐	✓
Not Applicable - This Acceptable Solution does not apply to development applications.			
A3.5 Battle-axe access legs	☐	☐	✓
Not Applicable - This Acceptable Solution does not apply to development applications.			
A3.6 Private driveways	✓	☐	☐
The private driveway exceeds 70 m in length, however at its narrowest point, is 6 m wide, providing two-way vehicle access. The driveway loops from the first access point back around to the second access point onto Stirling Crescent, and as such, removes the need for a turnaround point to be established next to Warehouse 1. The proposed development is considered to be compliant with A3.6.			
Element 4: Water **A4.2 Provision of water for firefighting purposes**	✓	☐	☐
Existing reticulated water is present within the area and the subject site will be connected to this water supply. The nearest existing hydrants are located on Stirling Crescent (Figure 6). WEPL assumes the surrounding network of hydrants meet Water Corporation specifications given they are established and within the Perth metropolitan area. The proposed development is considered to be compliant with A4.2.			
Element 5: Vulnerable tourism land uses	☐	☐	✓
This development is not considered vulnerable tourism land use. Element 5 is not applicable to this proposed development.			

Note: AS - Acceptable solution, PS - Performance solution, N/A - Not applicable.

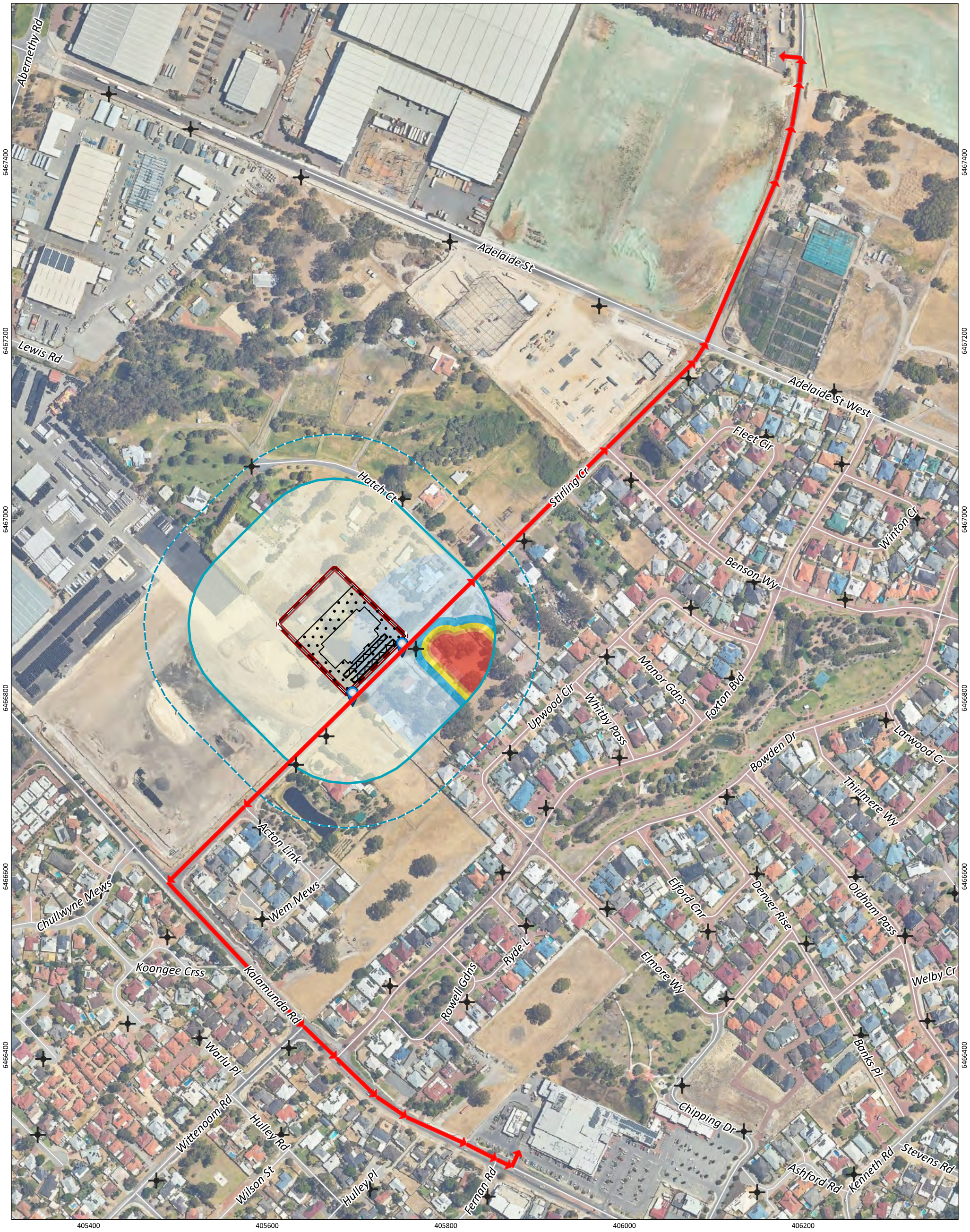


Figure 6: Spatial representation of the bushfire management strategies

N 0 30 60 90 120 m		PROJECT/REPORT NAME: Bushfire Management Plan 29 Stirling Crescent, High Wycombe	
SCALE: 1:4,000	SHEET SIZE: A3 COLOUR	CLIENT: David Jones c/- Planning Solutions	
COORDINATE REFERENCE SYSTEM: GDA2020 / MGA zone 50		PROJECT NUMBER: A24.109	VERSION: 0
DATA SOURCE: LANDGATE AERIAL IMAGERY Summer 2023		DRAWN BY / REVIEWED BY: SM/BF	DATE: 10/7/2024

Legend

- Subject Site
- Buffer 100m
- Buffer 150m
- Subject building
- Carpark
- Hardstand/ driveway
- Access / egress route
- Access point
- Water Hydrant (WCORP-070)

Bushfire Attack Level (BAL)

- BAL-FZ
- BAL-40
- BAL-29
- BAL-19
- BAL-12.5
- BAL-LOW

No	Description	Drawn	Approved	Date
A	Original issue	SM	BF	10/7/2024

NOTES:

Cadastral boundary (LGATE-002). Label corresponds to the vegetation association number.

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4. Responsibilities for Implementation and Management of Bushfire Management Measures

Responsibility for implementation of the bushfire risk management measures outlined in Section 3 of this BMP applies to the developer, future owners/builders within the subject site and the local government. Table 5 provides a works program detailing these measures, timing of implementation and responsibility.

Table 5: Proposed Works Program

No.	Bushfire management measure
Developer responsibilities - Prior to occupancy	
1	Construct private driveways as per the site plan (Figure 2) and to the standard set out in the Guidelines.
Landowner/Builder responsibilities - Ongoing	
2	Maintain clear access via both driveways within the subject site.

5. Conclusion

In the professional opinion of the author, the proposed development satisfies the intent, aim and objectives of SPP 3.7 and the Guidelines and is recommended for approval.

6. References

Department of Fire and Emergency Services (DFES). (2021). *Map of Bush Fire Prone Areas*. Retrieved on 5/07/2024 from: http://www.dfes.wa.gov.au/regulationandcompliance/bushfireproneareas/Pages/default.aspx.

Standards Australia (SA). (2018). *Construction of buildings in bushfire-prone areas* (AS 3959: 2018).

Western Australian Planning Commission (WAPC). (2015). *State Planning Policy 3.7 Planning in Bushfire Prone Areas*. Government of Western Australia.

Western Australian Planning Commission (WAPC). (2021). *Guidelines for Planning in Bushfire Prone Areas Version 1.4 (including appendices)*. Government of Western Australia.

Appendix A:
Classified vegetation photos

Plot 1	Class B Woodland
Photo 1 This plot consists of trees up to 30 m in height, with canopy cover between 10 and 30%. The understorey has an open structure, with grasses dominant throughout. The slope under this vegetation was assessed to be upslope/flat land.	
Plot 2	**Excluded - clause 2.2.3.2 (e) & (f)**
Photo 2 Maintained grasses in the adjacent property to the northeast of the subject site. This vegetation has been maintained to the requirements of City of Kalamunda Fire Hazard Reduction Notice 2023/2024 (i.e. grasses slashed to a maximum height of 50 mm; **Appendix C**). This maintenance appears to be carried out regularly, and also outside of the period which the fire notice applies, therefore an exclusion under clause 2.2.3.2 (f) can be applied confidently.	
Plot 2	**Excluded - clause 2.2.3.2 (e) & (f)**
Photo 3 Maintained grasses in the properties surrounding the subject site. This vegetation has been maintained to the requirements of City of Kalamunda Fire Hazard Reduction Notice 2023/2024 (i.e. grasses slashed to a maximum height of 50 mm; **Appendix C**). This maintenance appears to be carried out regularly, and also outside of the period which the fire notice applies, therefore an exclusion under clause 2.2.3.2 (f) can be applied confidently.	

Plot 2	Excluded - clause 2.2.3.2 (e) & (f)
Photo 4 Maintained grasses in the properties surrounding the subject site. This vegetation has been maintained to the requirements of City of Kalamunda Fire Hazard Reduction Notice 2023/2024 (i.e. grasses slashed to a maximum height of 50 mm; **Appendix C**). This maintenance appears to be carried out regularly, and also outside of the period which the fire notice applies, therefore an exclusion under clause 2.2.3.2 (f) can be applied confidently.	
Plot 2	**Excluded - clause 2.2.3.2 (e) & (f)**
Photo 5 Residential dwellings and associated vegetation which is maintained to a low-threat state, in the areas surrounding the subject site.	
Plot 2	**Excluded - clause 2.2.3.2 (e) & (f)**
Photo 6 Residential dwellings and associated vegetation which is maintained to a low-threat state, in the areas surrounding the subject site.	

Plot 2	Excluded - clause 2.2.3.2 (e) & (f)
Photo 7 Maintained grasses in the properties surrounding the subject site. This vegetation has been maintained to the requirements of City of Kalamunda Fire Hazard Reduction Notice 2023/2024 (i.e. grasses slashed to a maximum height of 50 mm; **Appendix C**). This maintenance appears to be carried out regularly, and also outside of the period which the fire notice applies, therefore an exclusion under clause 2.2.3.2 (f) can be applied confidently.	
Plot 2	**Excluded - clause 2.2.3.2 (e) & (f)**
Photo 8 Residential dwellings and associated vegetation which is maintained to a low-threat state, in the areas surrounding the subject site.	
Plot 2	**Excluded - clause 2.2.3.2 (e) & (f)**
Photo 9 Public roads surrounding the subject site which are devoid of vegetation.	

Plot 2	Excluded - clause 2.2.3.2 (e) & (f)
Photo 10 Vegetation within the subject site which is to be cleared for development**.**	
Plot 2	**Excluded - clause 2.2.3.2 (e) & (f)**
Photo 11 Areas within the adjacent lot to the west which has been cleared for industrial use. This area is completely devoid of vegetation.	
Plot 2	**Excluded - clause 2.2.3.2 (e) & (f)**
Photo 12 Maintained grasses in the properties surrounding the subject site. This vegetation has been maintained to the requirements of City of Kalamunda Fire Hazard Reduction Notice 2023/2024 (i.e. grasses slashed to a maximum height of 50 mm; **Appendix C**). This maintenance appears to be carried out regularly, and also outside of the period which the fire notice applies, therefore an exclusion under clause 2.2.3.2 (f) can be applied confidently.	

Plot 2	Excluded - clause 2.2.3.2 (e) & (f)
Photo 13 Maintained grasses in the properties surrounding the subject site. This vegetation has been maintained to the requirements of City of Kalamunda Fire Hazard Reduction Notice 2023/2024 (i.e. grasses slashed to a maximum height of 50 mm; **Appendix C**). This maintenance appears to be carried out regularly, and also outside of the period which the fire notice applies, therefore an exclusion under clause 2.2.3.2 (f) can be applied confidently.	

Appendix B:
Vehicular access technical requirements (WAPC, 2021)

Technical requirements	Public road	Emergency access way[1]	Fire service access route[1]	Battle-axe and private driveways[2]
Minimum trafficable surface (m)	In accordance with A3.1	6	6	4
Minimum horizontal clearance (m)	N/A	6	6	6
Minimum vertical clearance (m)	4.5			
Minimum weight capacity (t)	15			
Maximum grade unsealed road3	As outlined in the IPWEA Subdivision Guidelines	1:10 (10%)		
Maximum grade sealed road3	As outlined in the IPWEA Subdivision Guidelines	1:7 (14.3%)		
Maximum average grade sealed road	As outlined in the IPWEA Subdivision Guidelines	1:10 (10%)		
Minimum inner radius of road curves (m)	As outlined in the IPWEA Subdivision Guidelines	8.5		

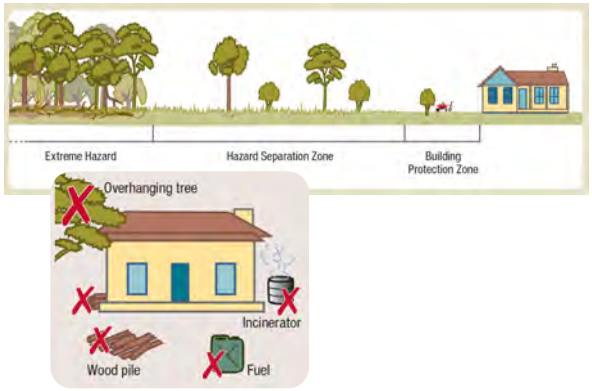
1To have crossfalls between 3 and 6%

2Where driveways and battle-axe legs are not required to comply with the widths in A3.5 or A3.6, they are to comply with Residential Design Codes and Development Control Policy 2.2 Residential Subdivision.

3Dips must have no more than a 1 in 8 (12.5% - 7.1 degree) entry and exit angle.

Appendix C:
City of Kalamunda Fire Hazard Reduction Notice 2023/2024

Fire Management Requirements for all Land with a Total Area less than 5000m²



Dead Flammable Material (DFM)

Reduce and/or maintain all dead flammable material below 8 tonne per hectare (see definition FUEL LOAD).

Slashing

Slash, mow, or trim unmanaged grasses or dead grasses/weeds, dead shrubs, and dead plants to a height no greater than 50mm.

Clean Gutter Debris

Gutters, roofs, and walls of all buildings to be free of flammable matter and maintained.

Asset Protection Zone (APZ)

Maintain a fuel reduced zone around all buildings or assets which extends 20 metres from the outermost point of the building or asset.

- Gutters, roofs, and walls of all buildings to be free of flammable matter and maintained.
- Fuel load within the 20-metre zone is reduced and maintained to no more than 2 tonne per hectare.
- Trees over 5 metres in height within the 20-metre zone to be under pruned up to 2 metres.
- Trees or shrubs within 2 metres of the asset shall be pruned to a height no greater than 2 metres and/or pruned away from the asset to a distance no greater than 2 metres.

Variation to the Fire Hazard Reduction Notice

If you consider it impractical to meet a requirement/s of this Notice, you may apply to the City for a variation no later than 1 October 2023.

Note: A variation is not an exemption but an application to employ alternative methods of property preparedness to land that you own and/or occupy.

An administration fee of $150 applies for all applications received after 1 October 2023.

If your application is not granted you must comply with all requirements outlined in the Fire Hazard Reduction Notice 2023/2024.

Variation request application forms are available before 1 October 2023 on the City's website at: www.kalamunda.wa.gov.au/fire

If you require any further information, please contact the City of Kalamunda Community Safety team on (08) 9257 9999, email at enquiries@kalamunda.wa.gov.au or visit www.kalamunda.wa.gov.au/fire

Gary Ticehurst
A/CHIEF EXECUTIVE OFFICER

City of Kalamunda
PO Box 42, Kalamunda, 6926
(08) 9257 9999
enquiries@kalamunda.wa.gov.au
www.kalamunda.wa.gov.au

City of Kalamunda

Fire Hazard Reduction Notice 2023/2024

FIRST AND FINAL NOTICE

COMPLIANCE DUE BY: 1 NOVEMBER 2023

Important: The works outlined within must be completed by 1 November 2023 and maintained in this state up to and including 31 March 2024.

City of Kalamunda

Notice to all owners and occupiers of land within the City of Kalamunda

Pursuant to Section 33 of the Bush Fires Act 1954 (WA), the City of Kalamunda (City) gives written notice to act as specified in this notice to land that you own and/or occupy and with respect to any matter which is upon the land that you own and/or occupy within the City. Failure or neglect to comply with this notice is an offence and can result in a penalty of up to $5000. The City's Fire Hazard Inspectors are authorised under the Bush Fires Act 1954 (WA) (Act) and have powers to enter land pursuant to Section 14 of the Act. The City advises that its officers, servants, workmen, contractors, vehicles, machinery, and appliances (as the officers deem fit) may carry out the requisitions of this notice that are not complied with by 1 November 2023, and any costs and expenses incurred may be recovered from you as the owner and/or occupier of the land.



Fire Break:

A strip of land free of all flammable and combustible material with the intention of preventing the outbreak of a bush fire and provides a visible safe access on the property for emergency vehicles and other firefighting operations. It is acceptable to install a firebreak around naturally occurring obstacles. Fire breaks may be constructed by one or more of the following methods: ploughing, cultivating, scarifying, raking, chemical spraying, or another method as approved by an Authorised Officer.

- Clearance must be no less than 3-metres wide and 4-metres in height inside and along all boundaries (including boundaries adjacent to roads, rail and drain reserves and all public open space reserves).
- Must not be more than 4-metres wide (further width extensions may be considered upon written application for approval to the City). Maintained, reticulated living lawns are lawns considered to be kept completely green. Driveways may be acceptable in conjunction with, or in lieu of, fire breaks. Contact a City Fire Officer for further assistance.
- Must have a corner turning radius of up to 10 metres.
- Must be a continuous trafficable surface for a 4WD vehicle, be clear of any obstructions and must not terminate in a cul-de-sac (dead end).

Fuel Load:

Can be live and dead vegetation that accumulates over time. This Notice refers only to dead vegetation.

Fine fuels include = leaf litter, grasses, weeds, twigs (up to 6mm diameter), bark etc.

Heavy (course) fuels include = branches, logs, stumps etc.

A fuel load depth of 15mm (fine fuels) to the mineral earth is indicative of approximately 8 tonne per hectare. The more fuel load, the higher the flame height and increased fire intensity.

Mulch piles, stored firewood and burn piles can contribute to fuel loading on land and must be stored safely away from assets, removed from the property, or actioned as directed by a Fire Officer.

Additional Works

You may be required to carry out further bushfire property preparedness works on your land to reduce any fire hazards considered necessary by a Fire Control Officer. If required, these will be outlined in a 'work order' and sent to the address of the owner and/or occupier.

Emergency Management Plans and City Approved Treatment Plans

All properties and/or land subject to a Bushfire Management Plan, Emergency Management Plan, or an approved Bushfire Attack Level assessment (BAL), as a result of subdivision, development application or a City approved treatment plan, must comply with the listed requirements in their entirety. Compliance with any additional plans does not constitute compliance with this Notice.

Environmental and Heritage Conditions

Any property subject to environmental and heritage value such as, but not limited to, Threatened Ecological Communities (TEC), Bush Forever sites, Declared Rare Flora, and Fauna (DRF) sites and Aboriginal Heritage sites, etc should seek further information about what can or cannot be done prior to carrying out requirements under this Notice.

Low Threat Minimal Fuel Vegetation

Minimal fuel condition means there is insufficient fuel available to significantly increase the severity of the bushfire attack. Low threat vegetation includes grassland managed in a minimal fuel condition, maintained lawns, golf courses, maintained public reserves and parklands, vineyards, orchards, cultivated gardens, commercial nurseries, nature strips and windbreaks. Properties of these description will still be assessed under this Notice and can apply for a variation.

Fire Management Requirements for all Land with a Total Area of 5000m^2 or more

Fire Breaks

Fire Breaks are to be installed or upgraded to:

- 3-metre-wide,
- 4-metre-high clearance,
- Continuous (no dead ends) and trafficable
- As close to as possible directly inside the entire perimeter of the land.

Maintained, reticulated living lawns that are kept completely green is acceptable in conjunction with, or in lieu of a fire break/s (see definition FIRE BREAK).

Dead Flammable Material (DFM)

Reduce and/or maintain all dead flammable material below 8 tonne per hectare (see definition FUEL LOAD).

Slashing

- If the land is an area above 5000m^2 and less than 50,000m^2 slash mow or trim unmanaged grasses or dead grasses/weeds and dead shrubs and plants to a height of 50mm. This is additional to Firebreak requirements.
- If the land is an area of 50,000m^2 (5 hectares) or greater the grass must be maintained on the land to a height no greater than 50mm for a distance of 10 meters from any firebreak.

Asset Protection Zone (APZ)

Maintain a fuel reduced zone around all buildings or assets which extends 20 metres from the outermost point of the building or asset.

- Gutters, roofs, and walls of all buildings to be free of flammable matter and maintained.
- Fuel load within the 20-metre zone is reduced and maintained to no more than 2 tonne per hectare.
- Trees over 5 metres in height within the 20-metre zone to be under pruned up to 2 metres.
- Trees or shrubs within 2 metres of the asset shall be pruned to a height no greater than 2 metres and/or pruned away from the asset to a distance no greater than 2 metres.

Brown Geotechnical

Consulting Engineers – Land Development
Geotechnical/Acid Sulphate Soil/Groundwater Monitoring

Our reference: 24040 22 July 2024

David Jones & Anita Jones
29 Stirling Crescent
High Wycombe WA 6057

C/- Planning Solutions
Attention: Joshua Carmody

Geotechnical Investigation – 29 Stirling Crescent, High Wycombe.

Dear Joshua

Introduction

Brown Geotechnical visited the above site on 2nd July 2024 to carry out a geotechnical investigation for a proposed commercial development including warehouses, offices and truck parking.

In addition to the three test holes previously carried out by Brown Geotechnical as part of the preliminary investigation for the area Structure Plan, four additional test holes were extended to a depth of 4m using an electric friction cone penetrometer (CPT) rig to allow for confirmation of soil depth and type across the site.

At the time of the investigation the site was occupied by an existing single storey residence and out-buildings. A large, approximately 1.5m deep, pond occupied the southern corner of the lot, and occasional medium to large tree were scattered across the property.

Brief

The report will address:

- Subsurface conditions,
- The existing soil classification in accordance with (AS2870-2011),
- Any earthworks required to obtain a classification suitable for development,
- Suitability of in-situ soil for use as engineering fill in the development,
- Soil bearing capacity and settlements,
- Retaining wall parameters,
- CBR for car park pavement design,
- Earthquake sub-soil class (AS1170.4-2007),
- Groundwater levels,
- Site permeability and drainage issues.

Laboratory Test Results

Table 1 – Geotechnical Test Results

Sample Location	Depth (m)	Fines (%)	Sand (%)	Gravel (%)	LL (%)	PL (%)
CPT4	0.5	43	57	0	39	17

Ground Conditions

The natural in-situ soil below the site is a medium grained, non-cohesive, well-draining sand. CPT 1 and 4 noted a very dense / cemented layer at approx. 2.5m to 3m. Experience in the area suggests this to be an iron cemented silty sand layer, locally know as coffee rock. It is usually approx. 0.5m thick. CPT2 and CPT3 pushed through the layer, though the zone still appears to be cemented.

The rear third of the site has a layer of clayey sand fill approx. 0.5m - 1m thick (see attached plan). The fill is compact and appears free from any deleterious materials but has some cohesive (plastic) fines, though only a small area was investigated. The area is raised 0.5m – 1.0m above the adjacent paddocks to the northwest. A sample taken at CPT4 has a moderate fines content, with low plasticity and low shrink swell potential.

The ground either side of the pond has a thin layer of fill to approx. 0.3m - 0.5m.

Site Classification

The site classification for the site will depend on whether the clayey sand fill is removed or retained.

If the clayey sand fill remains, specifically in the rear third of the site, it has been determined that the appropriate site classification for footing design in this area is Class 'S' in accordance with AS2870-2011 (refer Table 2) and following the earthworks and foundation considerations below.

If the clayey sand fill is removed, which is recommended, the site classification will be Class 'A'.

It is therefore considered that the land is suitable for development.

Table 2 - Definition of Site Classifications (Australian Standard AS2870-2011)

Class	Foundation
A	Most sand and rock sites with little or no ground movement from moisture changes
S	Slightly reactive clay sites with only slight ground movement for moisture changes (y_s<20mm).
M	Moderately reactive clay or silt sites, which can experience moderate ground movement from moisture changes (y_s 20–40mm).
H1	Highly reactive clay site, which can experience moderate to high ground movement from moisture changes (y_s 40–60mm)
H2	Highly reactive clay site, which can experience high ground movement from moisture changes (y_s 60–75mm)
E	Extremely reactive sites, which can experience extreme ground movement from moisture changes (y_s>75mm)

y_s: Characteristic Surface Movement

Earthworks

All earthworks should be undertaken in accordance with AS3798-1996 “Guidelines on earthworks for commercial and residential developments”.

Topsoil / Fill

Topsoil is not suitable for foundation support and should be removed. There are some trees across the site. Unless they are to be retained, they should be removed with the entire root bulb material. The excavations should then be backfilled with material exhibiting the same geotechnical properties as the surrounding soils, then compacted as stated below.

All uncontrolled materials associated with the demolition of the existing structures, including footings, etc, should be removed from site.

Proof Rolling and Site Compaction

Prior to footing placement or placing any additional fill on site, the sand should be proof rolled to achieve at least 98% SMDD.

Should the clayey sand fill be retailed, or re-worked, it should be compacted to a dry density ratio of at least 95% MMDD. Compaction should be checked using nuclear dry density tests.

Imported Fill Material

Any sand fill imported to obtain site formation levels, should be compacted in layers not more than 300mm thick to at least 98% SMDD. In-situ density tests should be carried out to calibrate the PSP to specific densities of the compacted material. Moisture conditioning (wetting) of the sand may be required to optimise compaction. Imported sand should ideally contain less than 5% non-plastic fines to retain good drainage characteristics and should be compacted at optimum moisture content.

Following excavation for foundations, the bases of pad and strip footings should also be compacted to achieve at least 98% SMDD.

Earthwork Inspections

A geotechnical consultant should be engaged to inspect the site following the removal of topsoil, trees, buildings and other unsuitable materials, and to confirm the compaction of the subsurface following proof rolling. Inspections and auditing of the earthworks should be carried out by the geotechnical consultant to enable confirmation of the final site classification.

Pond Backfill

It is understood, following discussions with the owner, that the pond is man-made and does not contain a clay liner. It is assumed the water within the pond is natural groundwater at the natural groundwater level.

Prior to backfilling, the pond should be dewatered, and any fines and sludge removed. The excavations should then be backfilled with material exhibiting the same geotechnical properties as the surrounding soils, then compacted as stated above. Only following the backfill and compaction should the dewatering be stopped.

Note: On no account should sand fill be placed into standing water in an attempt to backfill the pond. Saturated soils cannot be compacted and may result in excessive settlement below the future development.

Suitability of Existing Soils for use in the Development

The in-situ sands on site have low fines, are medium grained, cohesionless and free draining. They will be suitable for use as engineering fill in the development.

The clayey sand fill may be retained, however will likely form an impermeable layer restricting drainage. Further inspection and testing of the fill should be carried out as it is uncovered during the development.

Note: If the clayey sand fill is retained below proposed building envelopes, care should be taken avoid placing pad and strip footing across area of differing soil types to avoid differential settlement.

Bearing Capacity

It is understood that approximately 1m of clean sand fill will be imported on to the site during the bulk earthworks. For the estimate bearing capacity purposes, we considered the fill to have been proof rolled to a dense condition.

The following allowable bearing pressures have been based on a dense sand and a Young's modulus, E = 40 MPa. Potential settlements should be taken into account for design bearing pressures.

Table 3 - Strip Footing Allowable Bearing Pressure and Estimated Settlement

Footing Depth (m)	Footing Width (m)	Allowable Bearing Pressure (kPa)	Estimated Settlement (mm)
0.5	0.5	125	<5
	1.0	150	5-10
	1.5	200	10-15

Table 4 - Pad Footing Allowable Bearing Pressure and Estimated Settlement

Footing Depth (m)	Footing Dimension (m)	Allowable Bearing Pressure (kPa)	Estimated Settlement (mm)
0.5	0.5 x 0.5	150	<5
	1.0 x 1.0	200	5-10
	1.5 x 1.5	250	10-15

The bearing pressures presented in Table 3 and 4 are also based on the following:

- Loading is isolated, vertical, non-eccentric, on level ground, and not influenced by any nearby cuttings or embankments,
- Factor of Safety of 2.5,
- It is recommended that the total settlement be limited to 15mm,
- Differential Settlement to be no greater than nominally half the total.

California Bearing Ratio

An average CBR correlation value of 18% for dense sand (in-situ) is considered adequate for access road and car park pavement design based on the CPT data.

For imported Perth sand fill, typical CBR values can vary from 12 to 20. Testing of additional imported fill should be carried out to determine more accurate values.

Earthquake Sub-Soil Class

The site Sub-Soil Class is considered as a Class C_e.

Retaining Wall Parameters

Assuming compaction / proof rolling of the soils has been carried out as stated above, the following retaining wall parameters have been based on a medium dense sand soil with ϕ=30°.
γ=18 kN/m^3

Ko=0.50

Ka=0.29

Kp=4.

The parameters detailed above assume design of the retaining structure and compaction of the foundations are in accordance with AS 4678-2002, and that backfill material is composed of clean cohesionless sand.

Groundwater

Groundwater was encountered at approx. 1.5m bgl in the CPT probes. The preliminary investigation noted groundwater at 2.3m in TH19, below a 1m layer of fill. This equates to approximately the same level noted in CPT1 where there is no fill present.

The Perth groundwater map indicates the groundwater level to be approx. 19mAHD, or approx. 4m below ground level. The DoW notes these values can vary locally by up to 3m.

The layer of cemented sand / coffee rock seen in the CPT probes at approx. 2.5m could influence the local groundwater level, being an aquiclude to vertical drainage or causing perching of groundwater in sands above the layer.

For more accurate groundwater information, groundwater monitoring bores should be considered.

Permeability and Site Drainage

Drainage within the clayey sand fill will be poor. It is recommended that the material be removed if soakwells are required in the future development.

The drainage characteristics of the sand on site are good. The near surface soil permeability is 5x10^{-4} m/s. Soakwells will be suitable for stormwater runoff within the sand.

Permeability and drainage conditions may be reduced during earthworks due to compaction of in-situ and imported sands. Over compaction during earthworks can seriously reduce soil permeability and drainage potential. It is recommended that further permeability testing be carried out following the completion of earthworks.

Regards

Ken Brown

Senior Geotechnical Engineer
BROWN GEOTECHNICAL

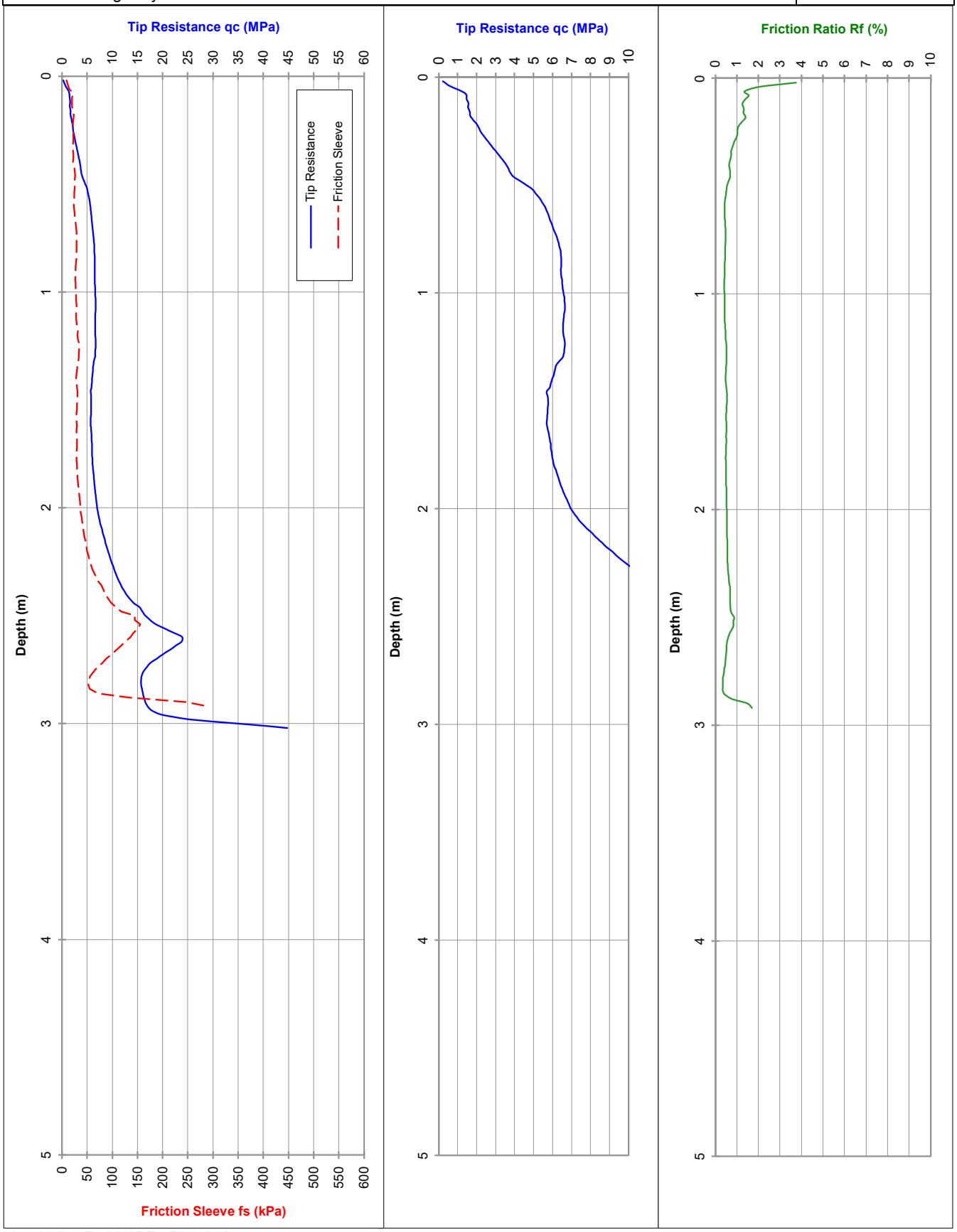
Attachments: 1. Site and Test Location Plan
2. CPT Plots and Test Hole Logs
3. Laboratory Test Certificates
3. Conditions Relating to this Report

Site and Test Location Plan



ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: Brown Geotechnical	Job No.: 24024	Probe I.D
PROJECT: 29 Stirling Crescent	RL (m):	**CPT 01**
LOCATION: High Wycombe	Co-ords:	02-Jul-24



PROBEDRILL GEOTECHNICAL SURVEY

Tested in accordance with AS 1289.6.5.1-1999 and IRTP 2001 for friction reducer

Approx. water (m): 1.6

Dummy probe to (m):

Refusal: Rod Friction

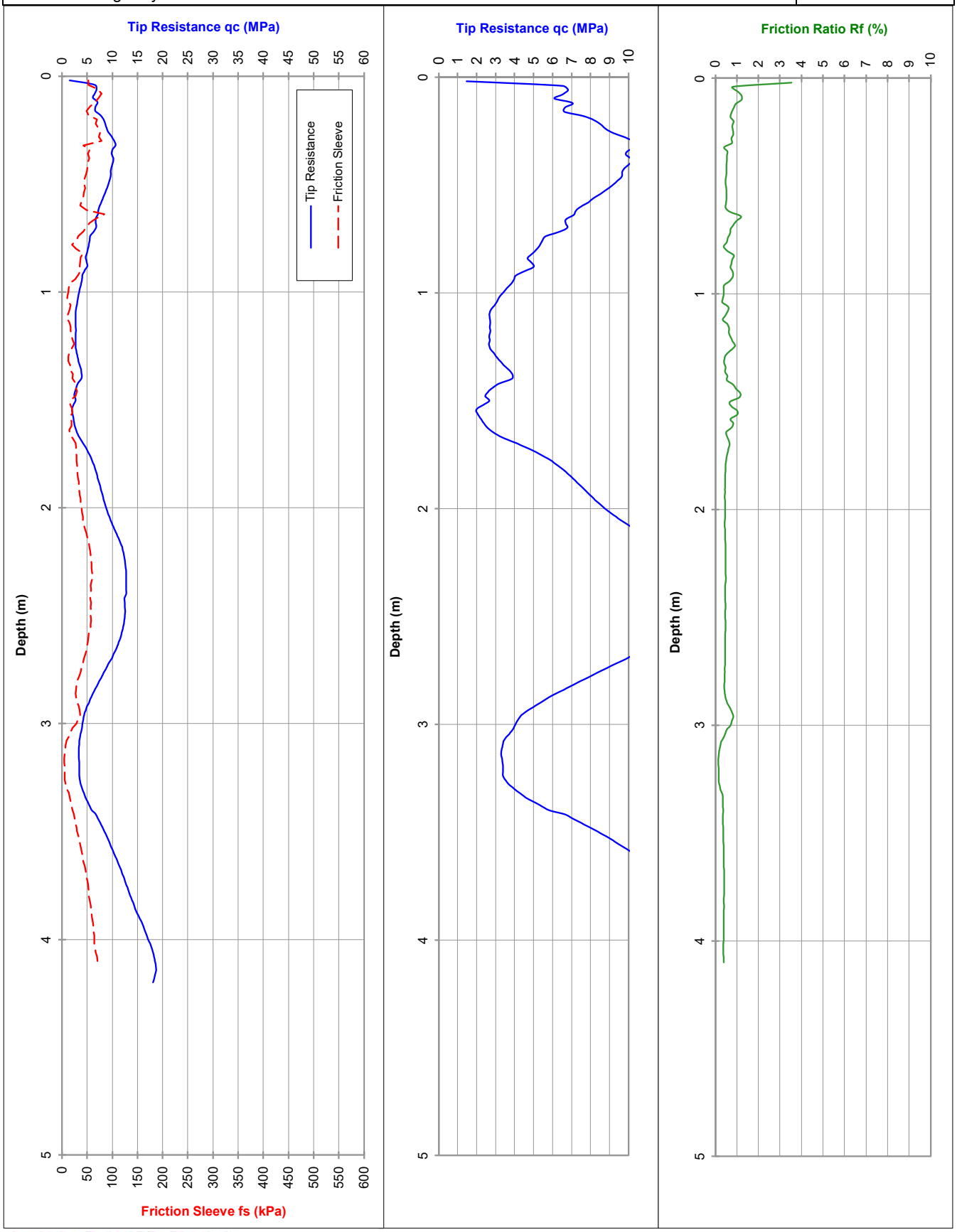
Cone I.D.: EC39

File: BG0122T

Rig Type: 7t track

ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: Brown Geotechnical	Job No.: 24024	Probe I.D
PROJECT: 29 Stirling Crescent	RL (m):	**CPT 02**
LOCATION: High Wycombe	Co-ords:	02-Jul-24



PROBEDRILL GEOTECHNICAL SURVEY

Tested in accordance with AS 1289.6.5.1-1999 and IRTP 2001 for friction reducer

Approx. water (m): 1.5

Dummy probe to (m):

Refusal:

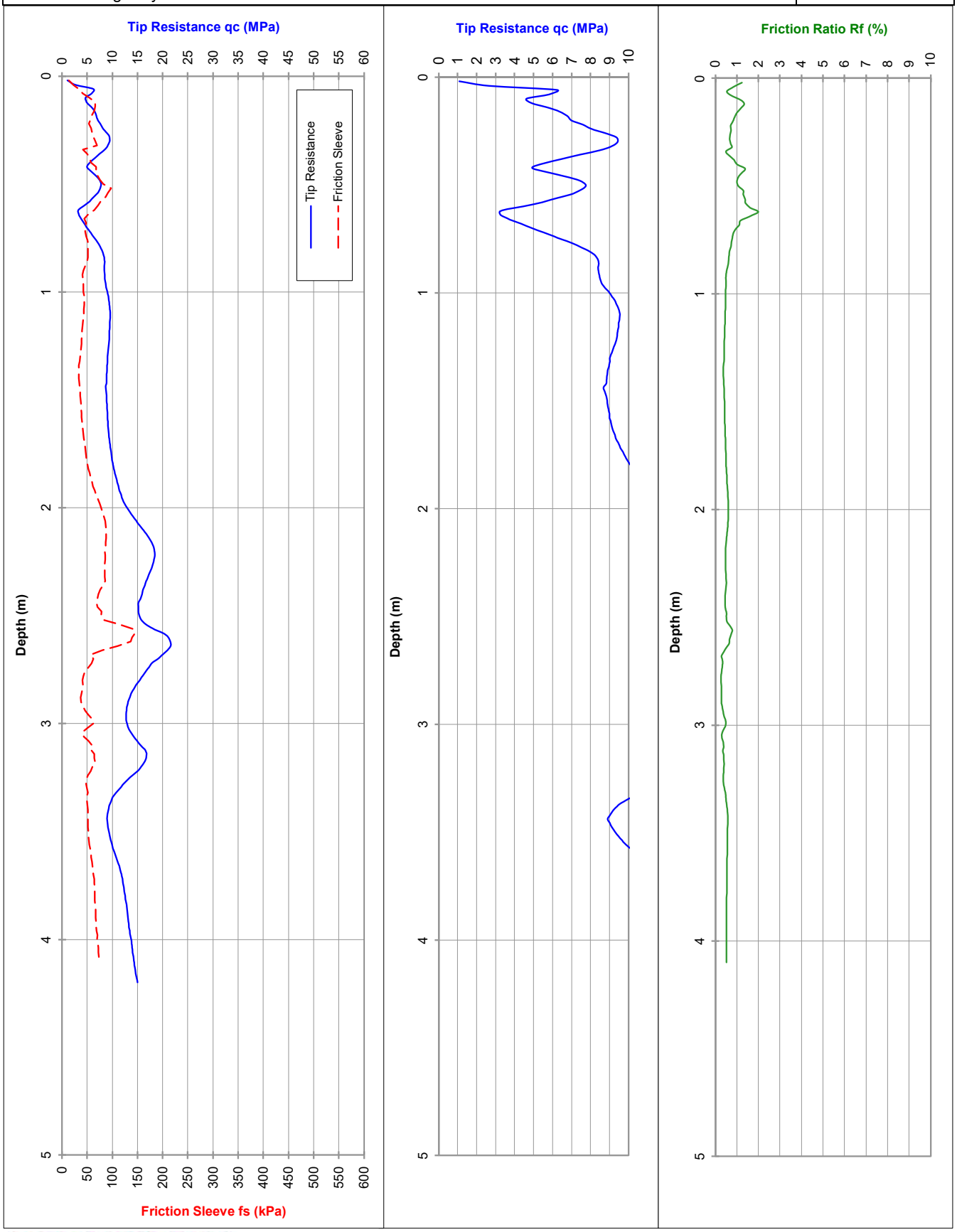
Cone I.D.: EC39

File: BG0123T

Rig Type: 7t track

ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: Brown Geotechnical	Job No.: 24024	Probe I.D
PROJECT: 29 Stirling Crescent	RL (m):	**CPT 03**
LOCATION: High Wycombe	Co-ords:	02-Jul-24



PROBEDRILL GEOTECHNICAL SURVEY

Tested in accordance with AS 1289.6.5.1-1999 and IRTP 2001 for friction reducer

Approx. water (m): 1.3

Dummy probe to (m):

Refusal:

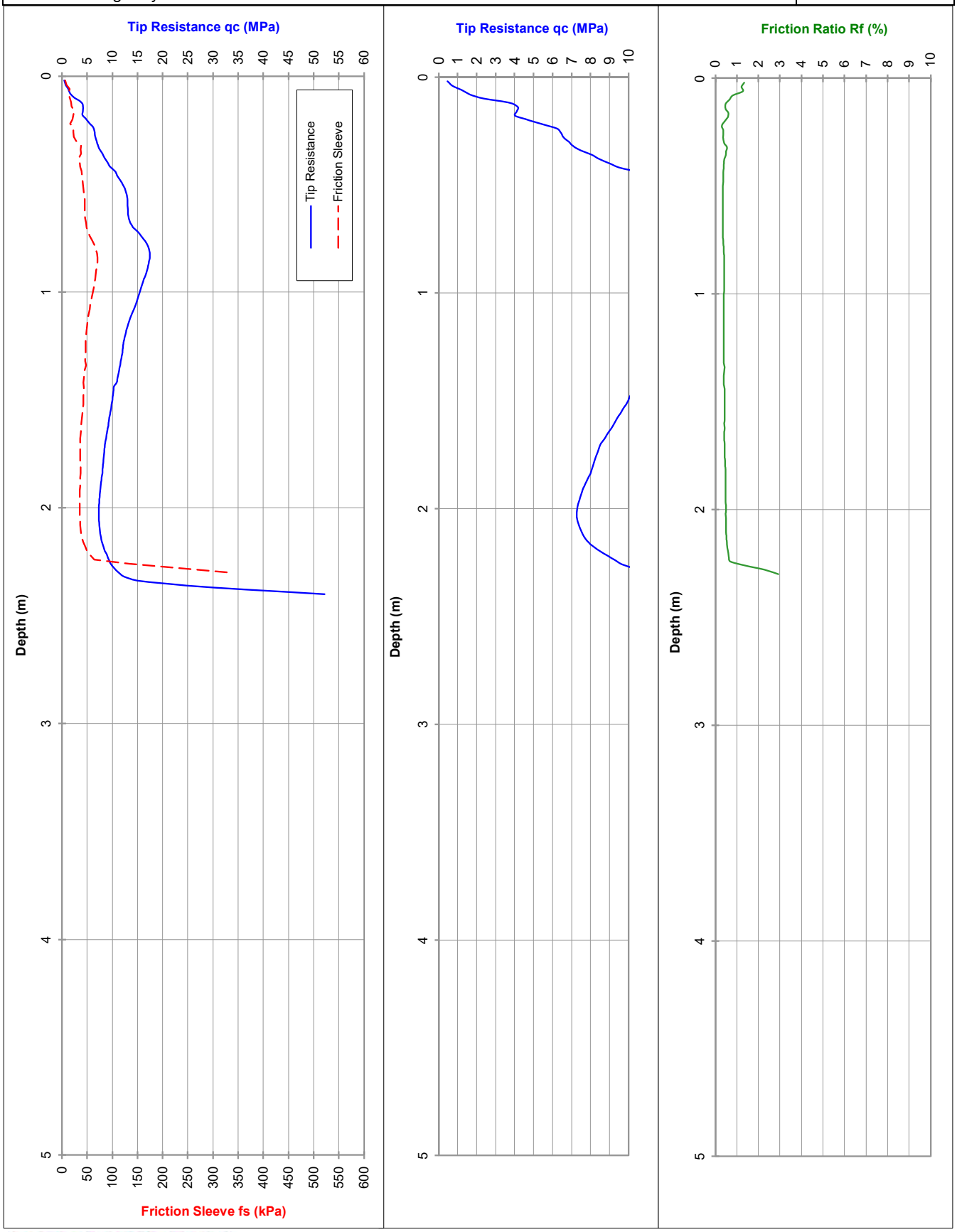
Cone I.D.: EC39

File: BG0124T

Rig Type: 7t track

ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: Brown Geotechnical	Job No.: 24024	Probe I.D
PROJECT: 29 Stirling Crescent	RL (m):	**CPT 04**
LOCATION: High Wycombe	Co-ords:	02-Jul-24



PROBEDRILL GEOTECHNICAL SURVEY

Tested in accordance with AS 1289.6.5.1-1999 and IRTP 2001 for friction reducer

Approx. water (m): Dry to 1.8

Dummy probe to (m):

Refusal: Rod Friction

Cone I.D.: EC39

File: BG0125T

Rig Type: 7t track

BG Brown Geotechnical

BOREHOLE NUMBER TH18

CLIENT Marwon Pty Ltd **PROJECT NAME** Stirling Crescent/Hatch Court LSP

PROJECT NUMBER 14010 **PROJECT LOCATION** High Wycombe

DATE STARTED 25/06/14 **COMPLETED** 25/06/14 **R.L. SURFACE** 23.1 **DATUM** m AHD

DRILLING CONTRACTOR **SLOPE** 90° **BEARING** ---

EQUIPMENT 5 tonne excavator **HOLE LOCATION** 31.993031S 116.00253E MGA

HOLE SIZE 0.5m x 1m **LOGGED BY** KB **CHECKED BY** KB

NOTES

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
		23.0				TOPSOIL: Fine to medium, grey, silty sand, with rootlets, moist		
					FILL	FILL: Dense, grey & brown, sandy gravel fill		
			0.5		SP	SAND: Medium dense, medium, grey, trace silt, moist		
		22.5						
	Not Encountered		1.0					
		22.0						
			1.5					
		21.5						
			2.0					
		21.0						
						Collapse Borehole TH18 terminated at 2.3m		
			2.5					
		20.5						
			3.0					

BG Brown Geotechnical

BOREHOLE NUMBER TH19

CLIENT Marwon Pty Ltd **PROJECT NAME** Stirling Crescent/Hatch Court LSP

PROJECT NUMBER 14010 **PROJECT LOCATION** High Wycombe

DATE STARTED 25/06/14 **COMPLETED** 25/06/14 **R.L. SURFACE** 24.0 **DATUM** m AHD

DRILLING CONTRACTOR **SLOPE** 90° **BEARING** ---

EQUIPMENT 5 tonne excavator **HOLE LOCATION** 31.92991S 116.00179E MGA

HOLE SIZE 0.5m x 1m **LOGGED BY** KB **CHECKED BY** KB

NOTES

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
						TOPSOIL: Fine to medium, grey, silty sand, with rootlets, moist		
					FILL	FILL: Dense, brown, clayey sand fill		
		23.5	0.5					
		23.0	1.0					
					SP	SAND: Medium dense, medium, grey, trace silt, moist		
		22.5	1.5					
		22.0	2.0					
	▼ 2.3m					wet below 2.3m		
		21.5	2.5					
						Borehole TH19 terminated at 2.5m		
		21.0	3.0					

BOREHOLE / TEST PIT STIRLING HATCH.GPJ GINT AUSTRALIA.GDT 13/08/14

BG Brown Geotechnical

BOREHOLE NUMBER TH20

CLIENT Marwon Pty Ltd **PROJECT NAME** Stirling Crescent/Hatch Court LSP

PROJECT NUMBER 14010 **PROJECT LOCATION** High Wycombe

DATE STARTED 25/06/14 **COMPLETED** 25/06/14 **R.L. SURFACE** 23.8 **DATUM** m AHD

DRILLING CONTRACTOR **SLOPE** 90° **BEARING** ---

EQUIPMENT hand auger **HOLE LOCATION** 31.93049S 116.005206E MGA

HOLE SIZE 0.5m x 1m **LOGGED BY** KB **CHECKED BY** KB

NOTES

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
						TOPSOIL: Fine to medium, grey, silty sand, with rootlets, moist		
		23.5	0.5		FILL	FILL: Dense, brown, clayey sand fill		
	Not Encountered	23.0	1.0		SP	SAND: Medium dense, medium, grey, trace silt, moist		
		22.5	1.5			Borehole TH20 terminated at 1.5m		
		22.0	2.0					
		21.5	2.5					
		21.0	3.0					

WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

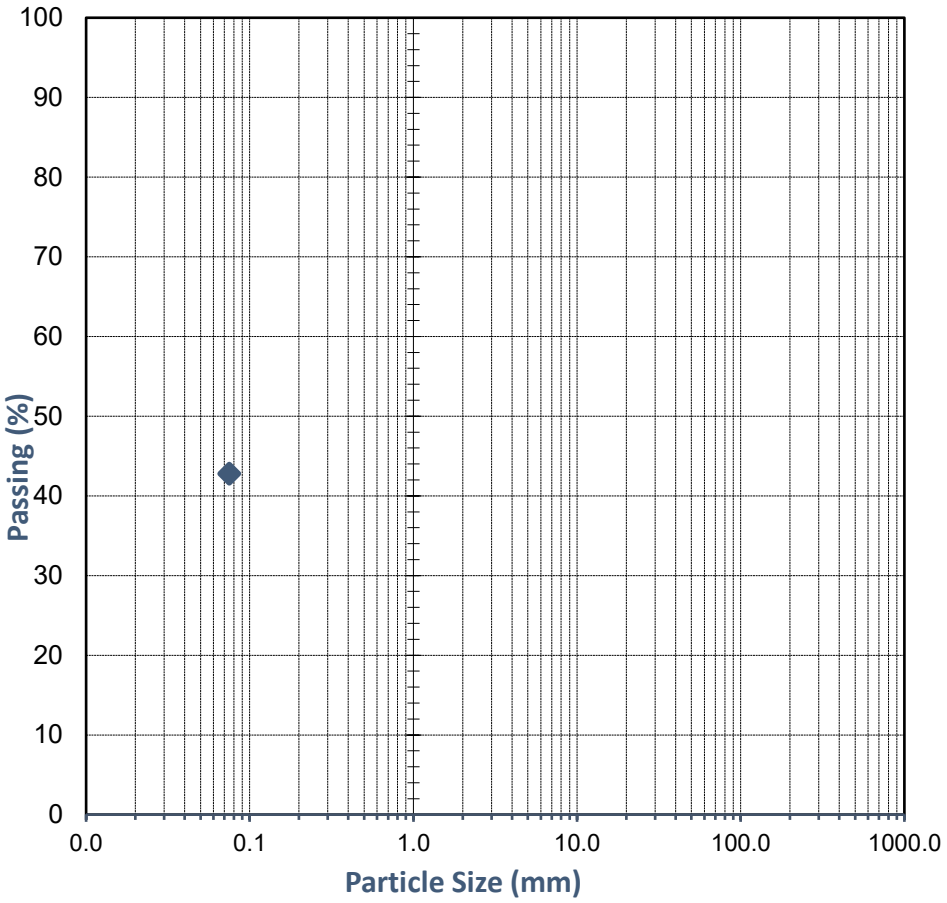
TEST REPORT - AS 1289.3.6.1 (% Fines)

Client:	Brown Geotechnical	*Ticket No.*	S13725
Client Address:	PO Box 278, Como WA 6952	*Report No.*	WG24.10365_1_%FINES
Project:	29 Stirling Crescent	*Sample No.*	WG24.10365
Location:	High Wycombe	*Date Sampled:*	2/07/2024
Sample Identification:	CPT4 - 0.5m	*Date Tested:*	04/07 - 05/07/2024

TEST RESULTS - Particle Size Distribution of Soil

Sampling Method: **Sampled by Client, Tested as Received**

Sieve Size (mm)	Percent Passing Sieve (%)
75.0	
37.5	
19.0	
9.5	
4.75	
2.36	
1.18	
0.600	
0.425	
0.300	
0.150	
0.075	43



Comments: Clients request for the % Fines of Material passing 0.075mm only.

Approved Signatory:

Name: Natasha Bielawski

Date: 05/July/2024

NATA WORLD RECOGNISED ACCREDITATION

Accreditation No. 20599
Accredited for compliance with ISO/IEC 17025 - Testing

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WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.3.1.2, 3.2.1, 3.3.1 & 3.4.1

Client:	Brown Geotechnical	*Ticket No.*	S13725
Client Address:	PO Box 278, Como WA 6952	*Report No.*	WG24.10365_1_PI
Project:	29 Stirling Crescent	*Sample No.*	WG24.10365
Location:	High Wycombe	*Date Sampled:*	2/07/2024
Sample Identification:	CPT4 - 0.5m	*Date Tested:*	5/07/2024

TEST RESULTS - Consistency Limits (Casagrande)

Sampling Method:	**Sampled by Client, Tested as Received**
History of Sample:	**Oven Dried <50°C**
Method of Preparation:	**Dry Sieved**

AS 1289.3.1.2	**Liquid Limit (%)**	**39**
AS 1289.3.2.1	**Plastic Limit (%)**	**17**
AS 1289.3.3.1	**Plasticity Index (%)**	**22**
AS 1289.3.4.1	**Linear Shrinkage (%)**	**8.0**
AS 1289.3.4.1	**Length of Mould (mm)**	**250**
AS 1289.3.4.1	**Condition of Dry Specimen**	**-**

Comments:

Approved Signatory:

Name: Cody O'Neill

Date: 08/July/2024

NATA WORLD RECOGNISED ACCREDITATION

Accreditation No. 20599
Accredited for compliance with ISO/IEC 17025 - Testing

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CONDITIONS RELATING TO THIS REPORT

1. This report has been prepared for the sole use of the client. It has been issued in accordance with the agreed terms and scope detailed in the proposal for the investigation. No responsibility or liability to any third party is accepted for any damages arising out of the use of this report.

2. This report has been prepared by suitably qualified and experienced personnel for the purposes stated herein. Every care is taken with the report as it relates to interpretation of sub-surface conditions, discussion of findings and recommendations given. No responsibility for the consequences of extrapolation by others is accepted by the company.

3. Findings and conclusions produced in the report are based on the investigation of the sub-surface through isolated locations. Conditions between investigated sites are based on extrapolation, interpretation and professional estimates. Unexpected variations in ground conditions often occur which cannot always be anticipated. The conclusions and recommendations in the report were considered accurate at the time of issue and based on certain assumptions at the time. Conditions and assumptions change with time and may affect the accuracy of the report.

4. Certain content within this report is based on information provided by the client and/or other parties and the accuracy of this information cannot be guaranteed.

5. These conditions must be read as part of the report and must be reproduced with all future copies.

6. The recommendations of this report should be considered a starting point. Recommendations should be continuously reviewed during the earthworks stage as sub-surface information and results from monitoring become available. It is strongly recommended that the Brown Geotechnical be retained to provide consultancy and/or inspections during the earthwork stages.

TRANSPORT IMPACT STATEMENT

Lot 9 (No 29) Stirling Crescent,

High Wycombe

August 2024

Rev B

kctt

PART OF Premise

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Appendices

Appendix 1 - The layout of the proposed development
Appendix 2 - Transport Planning and Traffic Plans
Appendix 3 - Vehicle Turning Circle Plans

1. Executive Summary

Site Context

- The subject site is currently occupied by a residential dwelling and accompanying facilities. The development plans show warehouse facilities with an internal office and amenity area. Existing network allows access for heavy vehicles not exceeding 19m in length.

  The subject site will be accessible from Stirling Crescent via two proposed crossovers, allowing shared access for both passenger and heavy vehicles. Proposed crossovers allow full movement for passenger vehicles, while heavy vehicles have a directional flow through the site, accessing via the eastern crossover and egressing via the western crossover only.

Technical Findings

- Proposed dimensions of car parking bays comply with the AS 2890.01.

- The swept paths have been checked for a B99 Passenger Vehicle (5.2m), a Semi-trailer (19.0m), a Service Vehicle (8.8 m) and a Fire Truck (12.4m). No navigability issues have been detected. Movement of heavy vehicles will be streamlined so the eastern crossover is used as access only and western crossover is used for egress only.

Relationship with Policies

- The plans show 62 parking bays (employees', visitors', deliveries') which is deemed to be sufficient to cater for the operational requirements.
- Building Code of Australia ACROD Provision – One ACROD parking bay is provided in line with the requirements.

Conclusion

- The total traffic from the proposed development will be up to 224 vehicular trips per day and 30 vehicular trips per hour in peak hours. The proposed development is expected to generate additional 215 vehicular movements per day with a forecasted impact of around 29 vehicular movements per hour in the peak hours. According to WAPC guidelines, all developments generating 10-100 VPH can be deemed to have a moderate impact on the network.

- Stirling Crescent is classified as Local Distributor as per MRWA classification with the maximum desirable volume of 6,000 vehicles per day. Currently there are around 4,500 vehicles per day on weekdays. Therefore, with the added traffic from the subject site the street would remain well under the maximum desirable traffic volume for Local Distributor roads. Other surrounding roads would absorb significantly less traffic than Stirling Crescent moreover, the traffic would be dispersed so that the impact can be considered negligible.

- In summary KCTT believe that the proposed development will not have a negative impact on the surrounding road network.

2. Transport Impact Statement

2.1 Proposal

Planning Solutions engaged KCTT to prepare a TIS (Transport Impact Statement) for the proposed commercial development (light industrial / warehouse) at Lot 9 (No 29) Stirling Crescent High Wycombe.

The proposed development includes two warehouse facilities with accompanying offices, accessible from Stirling Crescent through two planned crossovers, allowing shared access for both standard and heavy vehicles. Proposed crossovers allow full movement for passenger vehicles, while heavy vehicles have a directional flow through the site, accessing via the eastern crossover and egressing via the western crossover only.

This report will primarily address the level impact of the proposed development and the requirements for integration of the proposed development with the surroundings, namely the existing and planned immediate road network.

2.2 Location

Lot Number	9
Street Number	29
Road Name	Stirling Crescent
Suburb	High Wycombe
Description of Site	The subject site is currently occupied by a residential dwelling and accompanying facilities. The development proposes the establishment of a warehouse facilities with internal office and amenity area.

2.3 Technical Literature Used

Local Government Authority	City of Kalamunda
Type of Development	Warehouse / Light industry
Are the R-Codes referenced?	NO
If YES, nominate which:	-
Is the NSW RTA Guide to Traffic Generating Developments Version 2.2 October 2002 (referenced to determine trip generation / attraction rates for various land uses) referenced?	YES
Which WAPC Transport Impact Assessment Guideline should be referenced?	Volume 4 - Individual Developments Volume 5 - Technical Guidance
Are there applicable LGA schemes for this type of development?	YES
If YES, Nominate:	
Name and Number of Scheme	Local Planning Scheme No 3
Are Austroads documents referenced?	YES
Is the Perth Transport Plan for 3.5 million and Beyond referenced?	YES

2.4 Land Uses

Are there any existing Land Uses	YES
If YES, Nominate:	Single residential dwelling with ancillary facility

Proposed Land Uses	
How many types of land uses are proposed?	As below
Nominate land use type and yield	Proposed facility: • Warehouse 1: 2,345m^2 NLA/ 2,472m^2 GFA including 360m^2 NLA of internal office and amenity area • Warehouse 2: 2,530m^2 NLA/ 2,565m^2 GFA Proposed development plans are provided in Appendix 1 of this report for clarity.
Are the proposed land uses complimentary with the surrounding land-uses?	YES Warehouse is a permitted use for Light Industry Zone under the City's Local Planning Scheme No.3.

2.5 Local Road Network Information

How many roads front the subject site?

Name of Roads Fronting Subject Site / Road Classification and Description:

Road Name	**Stirling Crescent**
Number of Lanes	two way, one lane each direction, undivided
Road Reservation Width	App. 21m
Road Pavement Width	App. 7m
Classification	Local Distributor
Speed Limit	60kph
Bus Route	NO
If YES Nominate Bus Routes	-
On-street parking	NO

Name of Other Roads within 400m radius of site, or roads likely to take increased traffic due to the development:

Road Name	**Kalamunda Road**
Number of Lanes	two way, one lane per direction, divided
Road Reservation Width	App. 21m
Road Pavement Width	App. 12.5m
Classification	Distributor A
Speed Limit	60kph
Bus Route	YES
If YES Nominate Bus Routes	278
On-street parking	NO

2.6 Traffic Volumes

Road Name	Location of Traffic Count	Vehicles Per Day (VPD)	Vehicles per Peak Hour (VPH)		Heavy Vehicle %	Date of Traffic Count	*If older than 3 years multiply with a growth rate*
			AM Peak Time - AM Peak VPH	PM Peak Time - PM Peak VPH	*If HV count is Not Available, are HV likely to be in higher volumes than generally expected?*		
Stirling Crescent	North of Kalamunda Road (SLK 0.08)	4,507	07:30 – 385	15:45 – 400	8.8	2018/19	5,224
	South of Great Eastern Highway Bypass (SLK 0.56)	6,007	11:30 – 445	16:00 – 532	14.9	2021/22	–
Kalamunda Road	North of Abernethy Road (SLK 3.07)	12,151	07:15 – 933	16:00 – 1,182	11.4	2021/22	–
	West of Hawkevale Road (SLK 5.93)	16,909	07:45 – 1,236	16:00 – 1,507	7.7	2023/24	–
	South of Abernethy Road (SLK 7.46)	11,819	07:15 – 918	15:45 – 1,005	10.4	2021/22	–
Abernethy Road	North of Kalamunda Road (SLK 6.20)	10,937	07:15 – 812	16:00 – 909	34.1	2021/22	–
	South of Kalamunda Road (SLK 6.54)	16,742	07:15 – 1,318	16:00 – 1,546	28.5	2021/22	–
Newburn Road	South of Kalamunda Road (SLK 0.08)	5,885	08:15 – 463	16:00 – 556	4.8	2018/19	6,823
Wittenoom Road	South of Kalamunda Road (SLK 0.05)	3,428	08:00 – 297	15:00 – 336	8.7	2018/19	3,974

Note- These traffic volumes have been derived through Main Roads

2.7 Current And Projected Traffic Situation

Current Traffic Volume:

- Stirling Crescent (north of Kalamunda Road): 4,507 vehicles/day (including ~400 trucks).
- Stirling Crescent (south of Great Eastern Highway Bypass): 6,007 vehicles/day(including ~900 trucks).
- Significant through traffic due to current road layout.

Infrastructure and Traffic Changes:

- Planned closure of Stirling Crescent at Great Eastern Highway Bypass.
- Connection of Adelaide Street to Abernethy Road, improving local access.
- Expected reduction in through traffic on Stirling Crescent.
- Redistribution of non-residential traffic, including trucks, primarily to Adelaide Street and the northern section of Stirling Crescent.



Figure 1 – Existing short-cut for heavy vehicles to GEH (orange path) and expected change in traffic flow (red path) after the planned closure of the Great Eastern/Stirling Crescent intersection, construction of the Bypass and construction of the Adelaide Street/Abernathy Road intersection

According to Main Roads data from 2018/19, Stirling Crescent, north of Kalamunda Road, carried on average 4,507 vehicles per weekday, including nearly 400 trucks daily (8.8%). Additionally, the segment of Stirling Crescent south of the Great Eastern Highway Bypass carried an average of 6,007 vehicles per weekday, based on the data from 2021/22. Despite the low density of development along Stirling Crescent between Kalamunda Road and Adelaide Street, these traffic volumes indicate a significant amount of through traffic to and from the Great Eastern Highway Bypass.

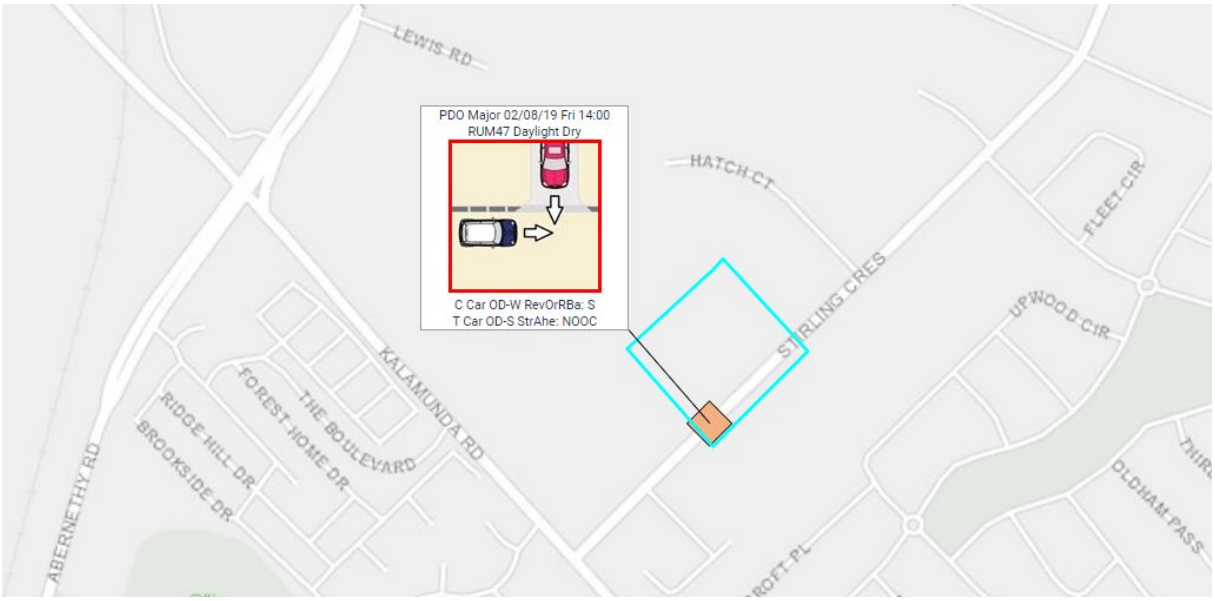
Assuming an annual growth rate of 3%, the projected traffic volume for Stirling Crescent in 2024 is approximately 5,224 vehicles per weekday. With 8.8% of these vehicles being heavy vehicles, this translates to around 460 trucks daily.

The planned closure of Stirling Crescent at the Great Eastern Highway Bypass and the connection of Adelaide Street to Abernethy Road are expected to drastically reduce this through traffic on Stirling Crescent. It is anticipated that Adelaide Street and the northern section of Stirling Crescent (north of Adelaide) will absorb the majority of non-residential traffic, including trucks. Consequently, if Lot 9 becomes the sole site with direct access to Stirling Crescent, it would be challenging to argue that any additional traffic generated by the development of Lot 9 would significantly impact the road capacity with overall reduced traffic volumes compared to current levels.

Additionally, the City of Swan and Greater Connect Alliance have confirmed that the proposed roundabout at Stirling Crescent and Adelaide Street will be designed to RAV 7 network standards. This design will facilitate truck access to the site from Abernethy Road via Adelaide Street and Stirling Crescent, eliminating the need for trucks to use Kalamunda Road.

2.8 Vehicular Crash Information

Is Crash Data Available on Main Roads WA website?	YES
If YES, nominate important survey locations:	
Location 1	Stirling Crescent (SLK 0.27-0.41)
Period of crash data collection	01/01/2019 - 31/12/2023



The following tables shows crash rates and crash densities in Perth Metropolitan area on local roads and state roads for the period from 2018 to 2022, as obtained from Main Roads WA on the 31st May 2022 by email request:

Crash Density and Crash Rate on Metropolitan State Roads Network only

	All Crashes		Serious Injury Crashes (Fatal+Hospital)	
	Average Annual Crash Density (All Crashes/KM)	Average Annual Crash Rate (All Crashes/MVKT)	Average Annual Crash Density (Ser. Inj. Crashes/KM)	Average Annual Crash Rate (Ser. Inj. Crashes/MVKT)
Metro State Roads - Midblock	20.12	0.37	0.89	0.02
Metro State Roads - All	46.28	0.85	1.80	0.03

Note: Based on 5-years data for the period 2017 to 2021.

Definitions of acronyms and terms used in this analysis can be found below:

- PDO Crash - a crash that results in property damage only (major or minor) and does not require hospitalisation or medical treatment, as listed in Main Roads WA's Crash Analysis Reporting System (CARS).
- KSI Crashes - Killed and serious injury crash
- MVKT - Million Vehicle Kilometres Travelled.

Road Name	SLK	Road Hierarchy	Speed Limit	Crash Statistics			
				No of KSI Crashes	No of Medical Attention Crashes	No of PDO Major Crashes	No of PDO Minor Crashes
Stirling Crescent	0.27-0.41	Local Distributor	60kph	0	0	1	0

MR Type	Involving Overtaking	Involving Parking	Involving Animal	Involving Pedestrian	Entering / Leaving Driveway	Other / Unknown
Count	0	0	0	0	0	0

No of MVKT Travelled at Location	App. 5,500 VPD * 365 * 5 years * 0.14 km = 1.4 MVKT
KSI Crash Rate	0 KSI crashes/MVKT
All Crash Rate	1 crashes / 1.4 MVKT = 0.71 crashes/MVKT
Comparison with Crash Density and Crash Rate Statistics	All crashes rate of 0.71 is higher than the network average of 0.37 Crashes per MVKT for Metropolitan State Roads Network

In order to identify black spots being the locations noted for a high incidence of crashes involving death and injury, it is important to conduct the crash criteria analysis as shown in the table below. If the below crash criteria are met, there is a way to measure the cost-effectiveness of the proposed treatment. It is called BCR and it ensures that the black spot exhibits a significant number of crashes that are correctable by infrastructure treatment.

Table 3.1: Crash criteria for the State Black Spot Program

Crash Criteria	*Highway and Main Roads*		*Local Roads*	
	Metro	*Rural*	*Metro*	*Rural*
Intersection or Mid-block or Short road section (<3km)	*10 crashes over 5 years*	*3 crashes over 5 years*	*5crashes over 5 years*	*3 crashes over 5 years*
Road length (>3km)	*Average of 3 crashes per km over 5 years*	*Average of 1 crash per km over 5 years*	*Average of 2 crashes per km over 5 years*	*Average of 1 crash per km over 5 years*
Benefit-cost ratio (BCR)	*1*			

(Main Roads/ WALGA 2004)

2.9 Vehicular Parking

Local Government	City of Kalamunda
Local Government Document Utilised	Local Planning Scheme No 3
Other Documents Used	Car parking requirements for non-residential land uses in Perth and Peel - draft Interim Guidance document, WAPC

Description of Parking Requirements in accordance with Scheme:

- *Warehouse - 3 bays for up to the first 200m2 of floor area and thereafter 1 bay for every 100m2 of NLA or part thereof.*
- *Office- 4 bays per 100m2 of NLA.*

Description of Parking Requirements in accordance with Car parking requirements for non-residential land uses in Perth and Peel - draft Interim Guidance document:

- *Warehouse - 1 bay for every 100m2 of Floor Area or part thereof.*
- *Office – 1 bay per 60m2 of FA – minimum and 1 bay per 25m2 of FA - maximum.*

Calculation of Parking

Land Use	Requirements	Yield	Total Parking
Warehouse / Storage and Distribution Centre	*3 bays for up to the first 200m2 of floor area and thereafter 1 bay for every 100m2 of NLA or part thereof.*	2,530 + 2,075m^2 NLA	47.05
Warehouse / Office Area	*4 bays per 100m2 of NLA*	360m^2 NLA	14.4
		Total Car Parking Requirement	**61**
		Total Volume of Parking Provided by Proponent	**62**

Justification

Car parking requirements for non-residential land uses in Perth and Peel - draft Interim Guidance document provide guidance similar to LPS, with the proposed office parking component being considered as a maximum parking provision. The development can be deemed to have a statutory surplus of 1 parking bay, while practically it is likely to have a significant spare capacity.

Considering anticipated traffic generation, the proposed parking can easily cater to the requirements of the proposed development.

It is recommended that visitor and employee parking be clearly marked with signage. Parking along the southern and northern lot boundaries should be designated for staff and employees. Long-term parking in these areas will have minimal vehicle movement throughout the day, reducing the potential for safety issues since the proposed crossovers and circulation lanes for these bays are shared with delivery vehicles, including 19-meter semitrailers.

Please refer to Appendix 3 for a Suggested Parking Management Plan.

2.10 Compliance with AS2890 Parking facilities

Which Austroads documents are referenced?	• Australian/New Zealand Standard, Parking facilities, Part 1: Off-street car parking - AS 2890.01 • Australian/New Zealand Standard, Parking facilities, Part 6: Off-street parking for people with disabilities – AS2890.06
Number of Parking Bays on-site	• 62 bays
Proposed development User Class	• 1A - Residential, domestic and employee parking • 3 - Short-term city and town centre parking, parking stations, hospital, and medical centres • 4 - Parking for people with disabilities
Driveway category and dimensions	• Category 2 access driveway • 11.0m driveway width • 6.2m driveway length

2.10.1 Compliance Overview

FULL COMPLIANCE | PARTIAL DEPARTURE | FULL DEPARTURE | NOT APPLICABLE

Element	Compliance	Comment
Car Bay Class 1A	FULL COMPLIANCE	
Car Bay Class 1	NOT APPLICABLE	
Car Bay Class 2	NOT APPLICABLE	
Car Bay Class 3	NOT APPLICABLE	
Car Bay Class 3A	FULL COMPLIANCE	
Car Bay Class 4 (ACROD)	FULL COMPLIANCE	
Aisle width	FULL COMPLIANCE	
Blind Aisle Extension	NOT APPLICABLE	
Single-sided aisle width	NOT APPLICABLE	
Reversing bay	NOT APPLICABLE	
Driveway grade	NOT APPLICABLE	
Parking grade	NOT APPLICABLE	
Ramp grade	NOT APPLICABLE	
Columns location	NOT APPLICABLE	
Vertical Clearance	FULL COMPLIANCE	
Location of driveway	FULL COMPLIANCE	
Sight distance requirements at access driveways	FULL COMPLIANCE	
Minimum sight lines for pedestrian safety	FULL COMPLIANCE	

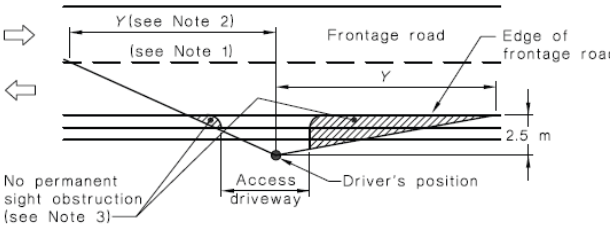
2.10.2 Comparison of proposed layout to AS2890.01 requirements

Parking Bay Type	AS2890.1:2004 Off-street car parking AS2890.6 Off-street parking for people with disabilities					
	Parking Bay Length		Parking Bay Width		Aisle Width	
	Required	Proposed	Required	Proposed	Required	Proposed
All bays at 90° (User Class 1A) **STAFF**	5.4m	4.8+0.6m	2.4m	2.5m	5.8m +0.5m*	6.0m / 7.0m
All bays at 90° (User Class 2) **VISITORS**	5.4m	4.8+0.6m	2.5m	2.5m	5.8m +0.5m*	6.0m / 7.0m
All bays at 0° *(intermediate space)*	5.9m	6.0m	2.1m	2.5m	3.6m (one-way)	7.0m
All bays at 0° *(obstructed end space)*	6.2m	5.6+0.6m	2.1m	2.5m	3.6m (one-way)	7.0m
ACROD Parking	5.4m	4.8+0.6m	2.4m–ACROD 2.4m–shared space	2.5m–ACROD 2.5m–shared space	5.8m	6.0m / 7.0m

Note: AS2890.1:2004 stipulates that for combination of parallel parking at one side and angle parking at the other side, the aisle width should be taken from the table for the relevant angle parking and another 0.5m added to that value.*

Name other requirements in the AS2890.1:2004 document.

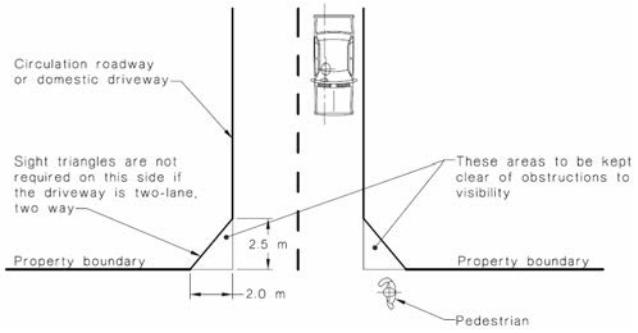
*" **Entering sight distance***
Unsignalized access driveways shall be located so that the intersection sight distance along the frontage road available to drivers leaving the car park or domestic driveway is at least that shown in Figure 3.2."



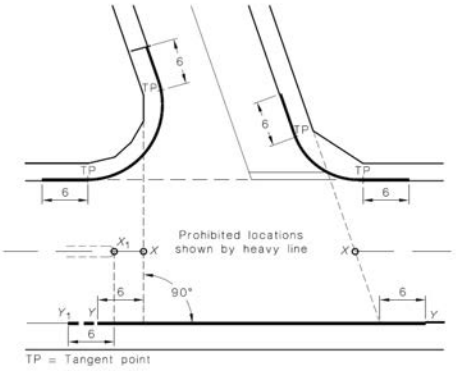
Frontage road speed (Note 4) km/h	Distance (Y) along frontage road m		
	Access driveways other than domestic (Note 5)		Domestic property access (Note 6)
	Desirable 5 s gap	Minimum SSD	
40	55	35	30
50	69	45	40
60	83	65	55

Sight distance requirements at access driveways	65m sight distance achievable as required

*" **Sight distance to pedestrians***
Clear sight lines as shown in Figure 3.3 shall be provided at the property line to ensure adequate visibility between vehicles leaving the car park or domestic driveway and pedestrians on the frontage road footpath."



Minimum sight lines for pedestrian safety	Clear pedestrian sightlines provided

*" **Width requirements at low volume (Category 1) access driveways and connecting roadways**: Where the circulation roadway leading from a Category 1 access driveway is 30 m or longer, or sight distance from one end to the other is restricted, and the frontage road is an arterial or sub-arterial road, both the access driveway and the circulation roadway for at least the first 6 m from the property boundary shall be a minimum of 5.5 m wide. In other cases subject to consideration of traffic volumes on a case-by-case basis, lesser widths, down to a minimum of 3.0 m at a domestic property, may be provided. As a guide, 30 or more movements in a peak hour (in and out combined) would usually require provision for two vehicles to pass on the driveway, i.e. a minimum width of 5.5 m. On long driveways, passing opportunities should be provided at least every 30 m. Reversing movements to public roads shall be prohibited wherever possible."*	
Access driveway width	Both crossovers have 11.0m width
*" **Access driveway location*** *Driveway Categories 1 and 2 At unsignalized intersections of sub-arterial, collector or local streets with each other or with an arterial road, access driveways in Categories 1 and 2 (see Table 3.1) shall not be located in the sections of kerb shown by heavy lines in Figure 3.1. This requirement shall not apply to accesses to domestic driveways in the kerb section opposite the entering road at any intersection including signalized intersections. Furthermore, it shall not apply to any access driveway serving a property which would otherwise be denied access due to the physical impossibility of meeting the requirement."*	
Access driveway location	The proposed crossovers will be located more than 6m from the neighbouring intersections tangent points.

2.10.3 Vehicle Swept Paths

Have Vehicle Swept Paths been checked for Parking? YES

If YES, provide description of performance:

The swept paths have been checked for a B99 Passenger Vehicle (5.2m), a Semi-trailer (19.0m), a Service Vehicle (8.8 m) and a Fire Truck (12.4m). No navigability issues have been detected.

The proposed driveways are sufficiently wide to accommodate movement of largest anticipated vehicles. However, simultaneous two-way movement is not possible for larger heavy vehicles. The movement of heavy vehicles will be streamlined so that the eastern crossover will be used as an entry crossover and the other, western crossover used as an exit crossover. Both crossovers allow full movement for passenger vehicles.

For swept path drawings please refer to Appendix 3.

2.11 Bicycle Parking

Local Government City of Kalamunda

Reference Document Utilised Local Planning Scheme No.3

Description of Parking Requirements in accordance with Scheme:

The City of Kalamunda does not stipulate requirements for the provision of bicycle parking.

Justification

The proponent's plans indicate provision of 7 bicycle racks adjacent to the staff room.

2.12 ACROD Parking

Class of Building: Class 5 - An office building
Class 7(b) – a storage building or building where goods are wholesaled (eg: a warehouse);

Does this building class require specific provision of ACROD Parking? YES

Reference Document Utilised: Building Code of Australia

Description of Parking Requirements:
Class 5: An office building;
- 1 space for every 100 carparking spaces or part thereof

Class 7(b) – a storage building or building where goods are wholesaled (eg: a warehouse);
- 1 space for every 100 carparking spaces or part thereof.

Parking Requirement in accordance with regulatory documents

Land Use	Requirements	Yield	Total Parking
Warehouse/ Storage and Distribution Centre Warehouse/ Office Area	1 space for every 100 carparking spaces or part thereof	63 parking bays	1
	Total Volume of ACROD Parking Required		**1**

One ACROD parking bay is provided in line with the requirements stipulated by the BCA.

2.13 Delivery and Service Vehicles

Guideline Document used as reference: NSW RTA Guide to Traffic Generating Developments

Requirements

Wholesale, Industrial (all spaces adequate for trucks):
- 1 space per 800m^2 (if GFA < 8,000m^2); 10 + 1 space per 1,000m^2 (over 8,000 m^2).

Other uses (50% of spaces adequate for trucks):
- 1 space per 2,000m^2.

Parking Requirement in accordance with regulatory documents

Land Use	Minimum Requirements	Yield	Total Parking
Warehouse/ Storage and Distribution Centre	1 space per 800m^2 (if GFA < 8,000m^2)	2,565 + 2,104m^2 GFA	5.84
Warehouse/ Office Area	1 space per 2,000m^2	368m^2 GFA	0.18
	Total Volume of Service and Delivery Parking Required		6
	Total Volume of Service and Delivery Parking Provided by Proponent		-

Justification

The plans for the proposed development feature a large, covered loading and unloading zone tailored to meet the logistics demands for container deliveries. KCTT believes this solution is suitable for the scale and intended use of the development. It is assumed that tenants' logistics departments will manage delivery schedules to ensure trucks arrive at reasonable intervals, thereby minimizing waiting costs and preventing larger delivery vehicles from

obstructing parking spaces designated for staff and visitors. Additionally, the proposed driveways and internal lanes provide ample space for waste trucks to manoeuvre. It is anticipated that visitors' parking will be used by smaller delivery vehicles conducting deliveries to the office. Therefore, KCTT believes the proposed development will offer sufficient parking to meet all delivery and service needs.

2.14 Restricted Access Vehicles (RAV) Network

Description of RAV Networks:

The Restricted Access Vehicle Network (RAV) is a network of roads approved by Main Roads Western Australia that can cater to certain heavy vehicles' safe movement. There are several types of RAV networks:

- **Standard RAVs** are those vehicle combinations specified as Category 1 to 10 vehicle combinations under the Prime Mover, Trailer Combinations and Truck, Trailer Combinations Notice. The standard width of the RAV vehicle will not exceed 2.5m, while standard height will not exceed 4.6m.
- **Tri-drive Restricted Access Vehicle (RAV) Network** are required to meet the requirements under the Standard Restricted Access Vehicle (RAV) Route Assessment Guidelines, with the exception of the structures assessments, gradient assessments and swept path assessments, which must be assessed in accordance with these Tri-drive Route Assessment Guidelines.
- **Concessionally loaded RAVs** provide the quantitative limits recommended to ensure additional safety margins for concessionally loaded RAVs, as the extra mass considerably impacts the vehicle's performance characteristics. For this reason, additional road width, stopping distances etc. are required.
- **Over Size Over Mass Vehicles** must have relevant Main Roads WA permits and may require pilot vehicles and/or police escorts if they exceed Main Roads WA specified size thresholds.

1.

Existing RAV Networks surrounding subject site: YES (MRWA RAV Network Map)

If YES Nominate RAV Networks in vicinity of the subject site

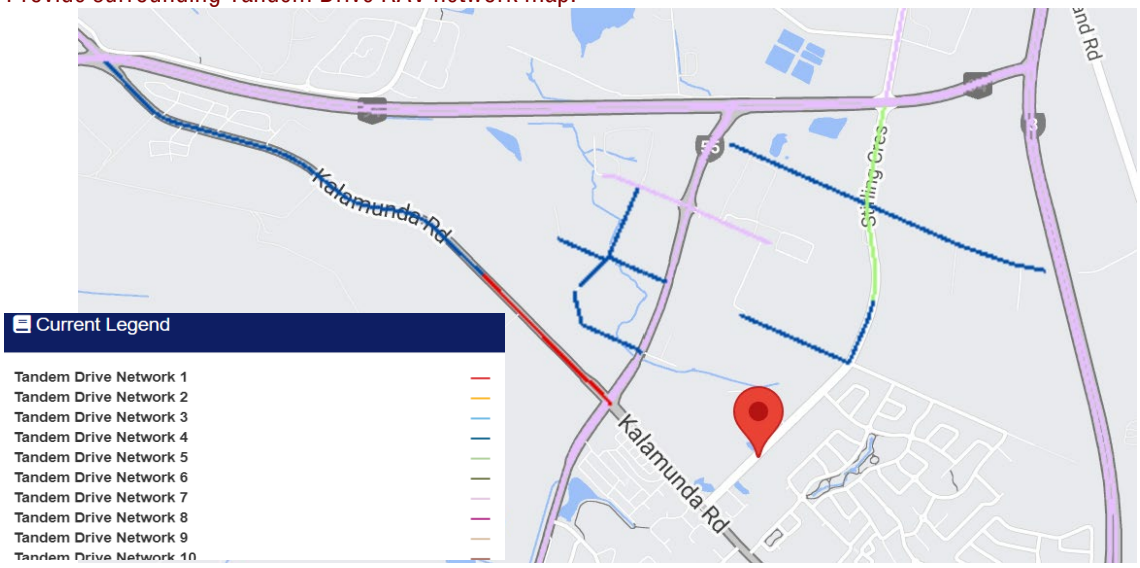
Stirling Crescent north of the intersection with the Adelaide Street is approved for Tandem Drive Network 4 and further north to Tandem Drive Network 5 RAV access. Section of Stirling crescent, between the intersections with Adelaide Street and Kalamunda Road, adjacent to the subject site area, has not been approved for RAV access; therefore the largest vehicle that can access the site on current network is a semi-trailer (19m), as the largest as-of-right vehicle. Additionally, Stirling Crescent north of the intersection with the Adelaide Street is approved for Tri Drive Network 1.

What is the largest vehicle allowed on this network?

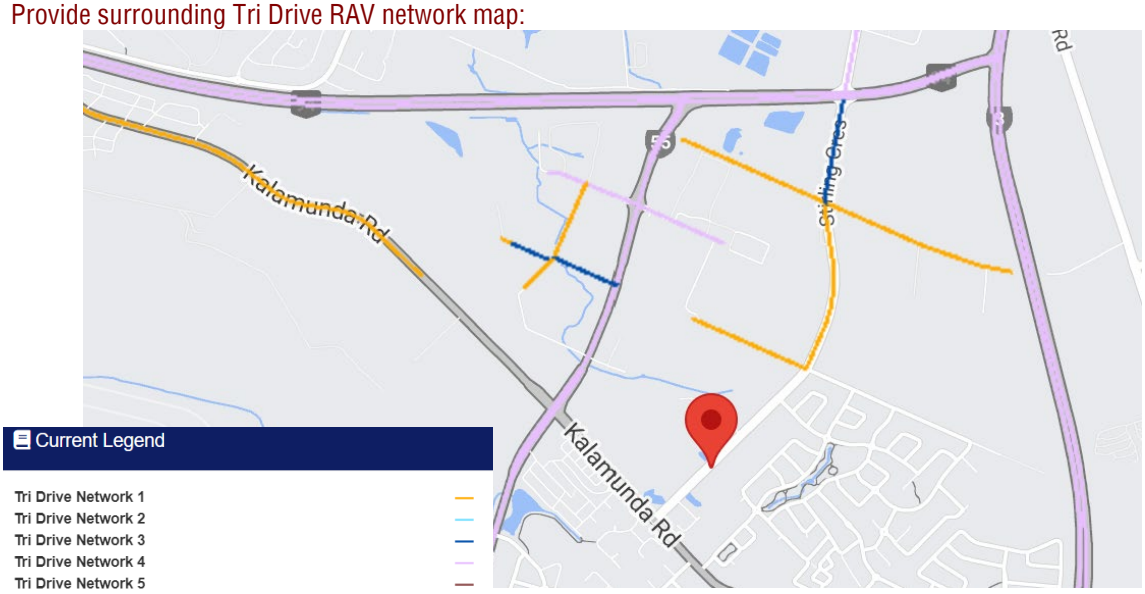
Tri Dive RAV Category 1 - a vehicle that would otherwise be a general access vehicle if it was tandem drive, this category has access to the tandem drive RAV Network 2. The larger vehicle that could use Tandem Drive Network 4 is less or equal to 27.5m in length.

The section of Stirling Crescent adjacent to the subject site is not a part of RAV network, therefore the largest vehicle that can legally access the site on current network is semi-trailer (19m). Swept path analysis is provided in Appendix 3 confirmed that semi-trailer (19m) could use the facility, approach and depart the site in forward motion.

Provide surrounding Tandem Drive RAV network map:



Provide surrounding Tri Drive RAV network map:



What is the largest vehicle planned to utilise the site?

A semi-trailer up to 19 meters in length. It is considered as an "as-of-right" vehicle in Western Australia. Such vehicles can operate on the road network without the need for special permits as long as they comply with the general mass and dimension limits set out in the Road Traffic (Vehicles) Regulations 2014. (Width: Up to 2.5 meters, Height: Up to 4.3 meters, Length: Prime mover and semi-trailer combinations: Up to 19 meters, Mass: Axle loads and gross vehicle mass (GVM) must comply with the limits specified in the regulations.)

If a vehicle exceeds these dimensions or mass limits, it would be classified as a Restricted Access Vehicle (RAV) and would require specific permits and adherence to designated RAV networks.

What are the expected routes for large vehicles entering and exiting the site?

19m semi-trailers will be able to approach the site from both, east and west along Stirling Crescent.

2.15 Calculation of Development Generated / Attracted Trips

What are the likely hours of operation?	The proposed development is expected to be operational from 00:00 to 24:00 Monday to Friday.
What are the likely peak hours of operation?	The expected peak usage of the facility will be between 07:00 - 08:00 in the AM Peak and between 16:00 - 17:00 in the PM Peak. It is expected that this land usage will be operational on all days of the week.
Do the development generated peaks coincide with existing road network peaks?	YES
If YES, Which:	Both peaks
Guideline Document Used	**WAPC Transport Assessment Guidelines for Developments**
Rates from above document:	**Office and Commercial Area** - 2 per 100m^2 of GFA in the PM Peak hour. The same rate is assumed for the AM peak. An 80% IN / 20% OUT split has been assumed for the AM peak and the reverse for the PM peak.
Guideline Document Used	**NSW RTA Guide to Traffic Generating Developments**
Rates from above document:	**Office and Commercial Area** – 10 vehicular trips per 100m^2 of GFA. **Warehouse -** 4 vehicular trips per 100m^2 GFA per day and 0.5 vehicular trips in the peak hour per 100m^2 GFA. KCTT is assumed same rate for the PM peak.
Does the site have existing trip generation / attraction?	YES
No of Daily Trips	9 VPD
No of AM/PM Peak Hour Trips	1 VPH

Land Use Type	Rate above	Yield	Daily Traffic Generation	Peak Hour Traffic Generation	
				AM	PM
Existing					
Residential		*1 dwelling*	*9*	*1*	*1*
Proposed					
Warehouse/ Storage and Distribution Centre	4 VPD per 100m^2 GFA AM Peak 0.5 VPH per 100m^2 GFA. PM Peak 0.5 VPH per 100m^2 GFA;	2,565 + 2,104m^2 GFA	187	23	23
Warehouse/ Office Area	10 vehicle trips per 100m^2 GFA AM Peak - 2 vehicle trips per 100m^2 GFA; PM Peak - 2 vehicle trips per 100m^2 GFA;	368m^2 GFA	37	7	7
Total traffic from the proposed development (A)			**224**	**30**	**30**
Total Existing Traffic from the subject site (A^0)			**9**	**1**	**1**
Total Additional traffic from the proposed development ($A-A^0$)			**215**	**29**	**29**

What is the total impact of the new proposed development?	The total traffic from the proposed development will be up to **224 vehicular trips per day and 30 vehicular trips per hour in peak hours.** The proposed development is expected to generate additional **215 vehicular movements per day** with a forecasted impact of around **29 vehicular movements per hour** in the peak hours. According to WAPC guidelines, all developments generating 10-100 VPH can be deemed to have a **moderate** impact on the network. KCTT believes the surrounding road network can accommodate additional traffic from the proposed development.

2.16 Traffic Flow Distribution

How many routes are available for access / egress to the site?	
Route 1 / Movement 1	
Provide details for Route No 1	From/to north via Stirling Crescent
Percentage of Vehicular Movements via Route No 1	**60%**
Route 2 / Movement 2	
Provide details for Route No 2	From/to south via Stirling Crescent
Percentage of Vehicular Movements via Route No 2	**40%**

Note - For more detailed plans of the estimated vehicular traffic volumes and distribution please refer to the plans provided in Appendix 2.

2.17 Vehicle Crossover Requirements

Are vehicle crossovers required onto existing road networks?	YES
How many existing crossovers?	One unpaved crossover on Stirling Crescent
How many proposed crossovers?	Two on Stirling Crescent • Eastern Crossover - Heavy vehicle access & Light vehicle access/egress – 11m wide • Western Crossover - Heavy vehicle egress & Light vehicle access/egress – 11m wide

If there are greater numbers of new crossovers, than existing, provide justification:
The proposed warehouse facility will accommodate movement of heavy vehicles. Two planned crossovers will facilitate forward-only truck movements. Trucks will enter the site via the eastern crossover, access the covered loading/unloading area between the two warehouse storage facilities and exit the site using the western crossover.

How close are proposed crossovers to existing intersections?	Below are listed the distances of the proposed crossovers to nearest intersections: • Eastern Crossover – app. 100m south of the intersection with Hatch Court • Western Crossover – app. 290m north of the intersection with Kalamunda Road
Does this meet existing standards?	YES – The AS 2890.1 stipulates that crossovers should be at least 6m from the tangent point of the intersection.
Crossover Dimensions	City of Kalamunda standard specifies the minimum width of 5m and a maximum with of 11m for industrial crossovers. Therefore, the width of the proposed crossovers complies to City of Kalamunda standard.

2.18 Public Transport Accessibility

How many bus routes are within 400 metres of the subject site?	One
How many rail routes are within 800 metres of the subject site?	None

Bus Route	Description	Peak Frequency	Off-Peak Frequency
278	High Wycombe Station - Midland Station via Wittenoom Road & Abernethy Road	30 minutes	60 minutes

Walk Score Rating for Accessibility to Public Transport

32 | Some Transit. A few nearby public transportation options.

Is the development in a Greenfields area?	NO

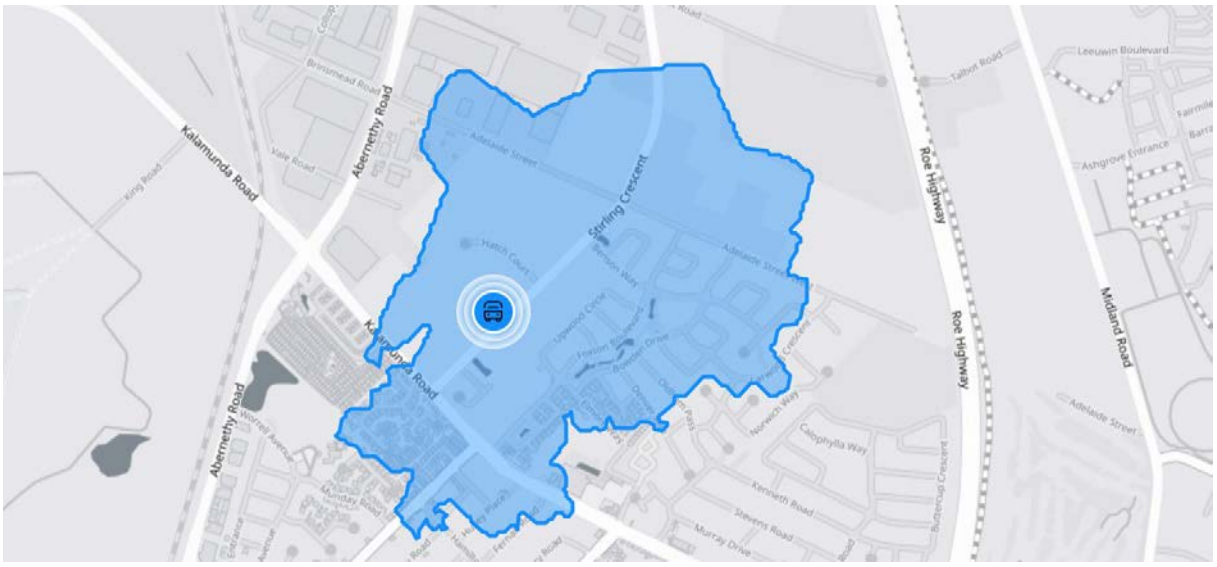


Figure 2 - Public Transport catchment - 15minutes (source: TravelTime app)

2.19 Pedestrian Infrastructure

Describe existing local pedestrian infrastructure within a 400m radius of the site:

Classification	Road Name
" Other Shared Path (Shared by Pedestrians and Cyclists)"	Stirling Crescent, Benson Way, Foxton Boulevard, Kalamunda Road

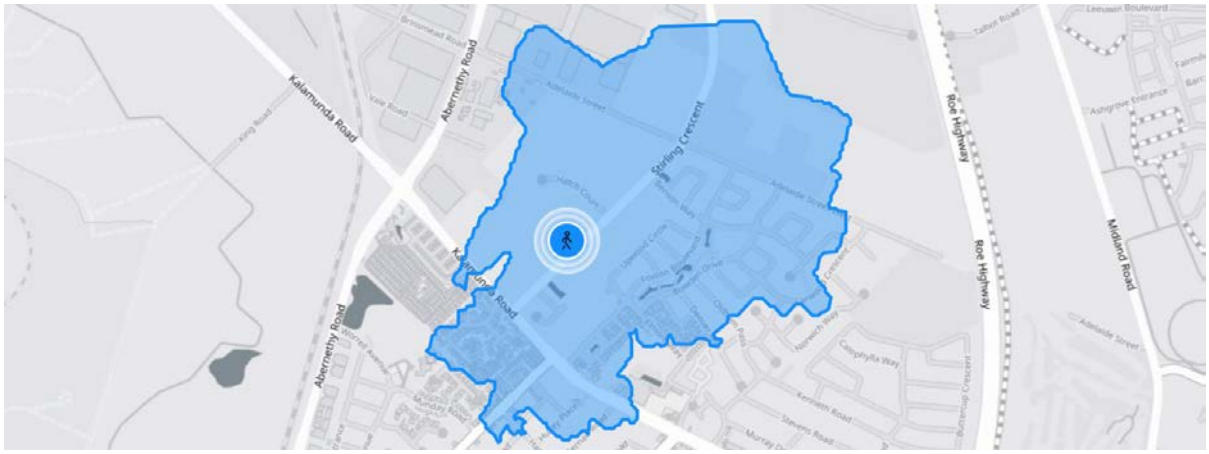


Figure 3 – Pedestrian walking catchment – 15 minutes (source: Travel Time app)

Does the site have existing pedestrian facilities — NO

Does the site propose to improve pedestrian facilities? — YES

If YES, describe the measures proposed.

Internal pedestrian zones as shown on proposed plans enclosed in Appendix 1.

What is the Walk Score Rating?

31 | Car-Dependent. Most errands require a car.

2.20 Cyclist Infrastructure

Are there any PBN Routes within an 800m radius of the subject site? YES

If YES, describe:

Classification	Road Name
" Other Shared Path (Shared by Pedestrians and Cyclists)"	Stirling Crescent, Benson Way, Foxton Boulevard, Kalamunda Road, Adelaide Street, Hamilton Road, etc
" Good Road Riding Environment"	Wittenoom Road, Newburn Road
" Bicycle Lanes or Sealed Shoulder Either Side"	Kalamunda Road, Abernethy Road

Are there any PBN Routes within a 400m radius of the subject site? YES

If YES, describe:

Classification	Road Name
" Other Shared Path (Shared by Pedestrians and Cyclists)"	Stirling Crescent, Benson Way, Foxton Boulevard, Kalamunda Road
" Good Road Riding Environment"	Wittenoom Road

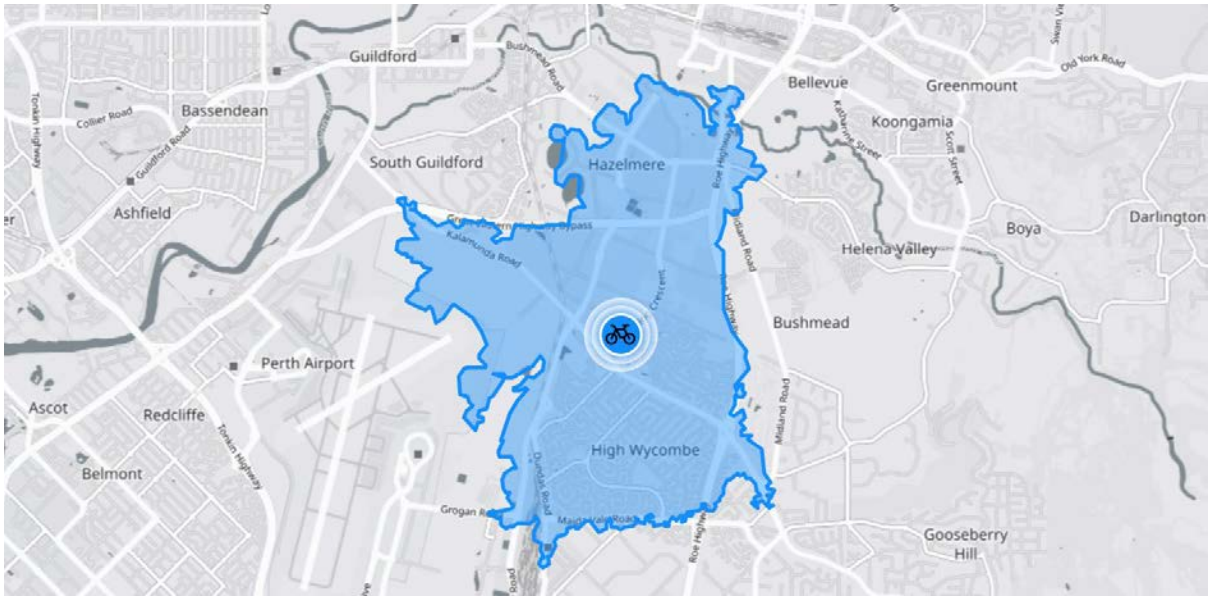


Figure 4 – Cycling walking catchment - 15minutes (source: TravelTime app)

Are there any Perth and Peel Long-term cycle network in the vicinity of the subject site? YES

If YES, describe:

The long-term cycle network (LTCN) identifies an aspirational blueprint for all ages and abilities cycling infrastructure. It seeks to make sure state and local governments work together to deliver continuous bicycle networks throughout Western Australia that will:

- provide additional transport options
- contribute to recreational opportunities
- support tourism and commercial activity.

The cycle networks identify routes according to the WA Cycling Network Hierarchy; routes are designated by function rather than built form:

- *Primary routes* are high demand corridors connecting major destinations and are the backbone of cycle networks. Primary routes are often located next to major roads and railways.
- *Secondary routes* have a moderate level of demand and connect primary routes and major activity centres such as shopping precincts, industrial areas, as well as health, education and sporting facilities.
- *Local routes* experience a lower level of demand than primary and secondary routes, and provide access to other routes, local amenities and recreational spaces.

Road cycling routes and transport trails form part of the complementary network, supporting more select user groups, primarily for recreational, sport and/or tourism purposes. *Road cycling routes* are designated routes for bike riders undertaking long distance rides in (predominantly) on-road environments, for training, sport or recreational purposes. *Transport trails* provide long-distance, off-road (predominantly unsealed) riding experiences through natural settings, away from motorised traffic. They often support recreational and tourism trips between towns and regions.

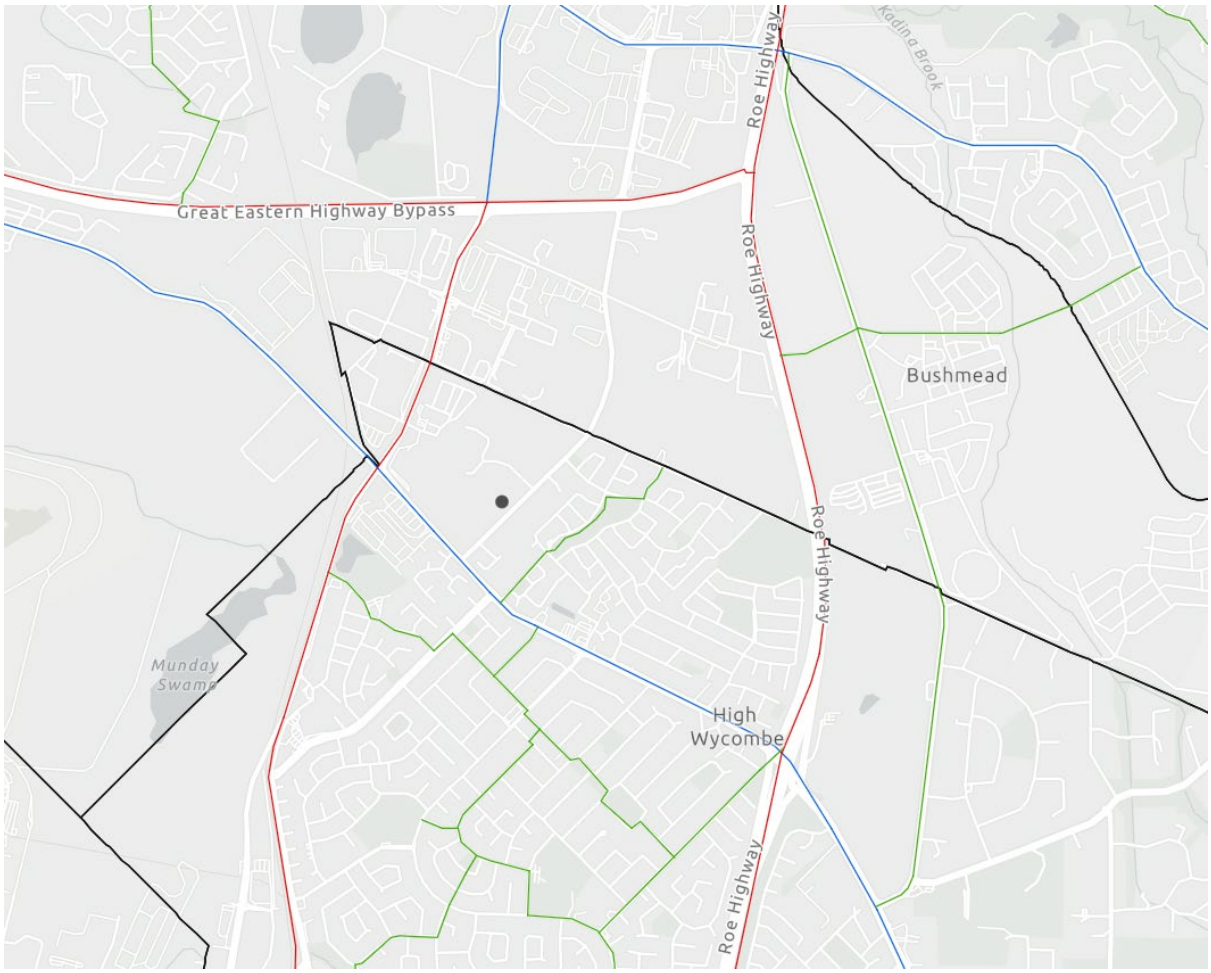


Figure 5 - Long Term Cycling Network (LTCN) for the Project Area and immediate surroundings

Does the site have existing cyclist facilities?	NO
Does the site propose to improve cyclist facilities?	YES

If YES, describe the measures proposed.

The proposed plans indicate provision of 7 bicycle racks.

LTCN designates Kalamunda Road as a Secondary Cycling Route, while Abernethy Road is designated as a Primary Cycling Route. While the area is not conducive to cycling at present, this is likely to change in future.

2.21 Site-Specific Issues and Proposed Remedial Measures

How many site-specific issues need to be discussed?	
Site-Specific Issue No 1	**none**
Remedial Measure / Response	/

Appendix 1

The Layout of the Proposed Development

EXTERNAL WALLS MIN 20MM SET OFF BOUNDARY

BOUNDARY 89 480

88°20'0"

WAREHOUSE 2
INTERNAL NLA 2530m2
GROSS BLDG AREA 2565m2

FFL 24.200

NOTIONAL 8M STRUCTURAL GRID TO SUIT 200 'Z' PURLINS SPECIFIC STRUCTURAL SYSTEM BY BUILDERS STRUCTURAL ENGINEER

RL 24.200

BOLLARDS OUTSIDE REQUIRED EMERGENCY EGRESS DOORS ARE MANDATORY TO STOP BLOCKING WITH STORAGE OR PARKING OF VEHICLES

SIDE LOAD AND UNLOAD

LOT 9
1.0032ha

ONE WAY

RL 23.900

COVERED LOADING/UNLOADAING AREA
R.CONCRETE HARDSTAND

2.4M HIGH SOLID CONCRETE PANEL BARRIER TO SCREEN HEADLIGHTS FROM NEIGHBOURING PROPERTY

LOT 200

BOUNDARY 110 250

10770. SIDE BOUNDARY SETBACK

8435. SIDE BOUNDARY SETBACK

BIN

Trevenny PTY LTD ATF Chudleigh Family Trust ABN: 69 116 630 744 TRADING AS

ALLAN J DAVIES & TREVOR CHUDLEIGH ARCHITECTS

SHOP 8, 2 THE CRESCENT, MIDLAND W.A. 6056 TEL: (08) 9250 1811 EMAIL: trevor@adtcarchitects.com.au

PROJECT: PROPOSED NEW OFFICE WAREHOUSE
DEVELOPMENT FOR MR & MRS D JONES
LOT 9, 29 STIRLING CRESCENT
HIGH WYCOMBE WA 6057

DRAWING NO: 24 442 DD01 REV NO: 4

Not to be used for constuction unless signed as approved

Scale: 1:200 @A1 Date: MAY 2024 Drawn: TCC Design: TCC Datum: AHD

No:	Date:	Revision:	By:
3	31/07/24	ISSUE FOR DEVELOPMENT APPROVAL APPLICATION	TCC
4	13/08/24	RE-ISSUED WITH TURNING ON SITE ATU SYSTEM ADDED, TRUCK TURNING AS PER TRAFFIC CONSULTANT REPORT	TCC

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OUTLINE OF EXISTNG DRIVEWAY AND TRACK AROUND EXISTNG RESIDENCE

FFL 24.200

WAREHOUSE 1
INTERNAL NLA 2345m2
NON NLA SERVICES 90m2
GROSS BLDG AREA 2472m2

INCLUDES 360M2 OF INTERNAL OFFICE AND AMENITY AREA

SITE PLAN 1:200 @A1

LOT 8

89.51

BOUNDARY 110 250

R.CONCRETE HARDSTAND

PEDESTRIAN ZONE

ONE WAY

BITUMEN PAVING

MIN. REQUIRED 6M FIRE BRIGADE ACCESS

2 X 4M DIA. FIRE FIGHTING WATER TANKS- SIZE TBC

FIRE BRIGADE BOOSTER CONNECTION MANIFOLD

MEETING/ OFFICE 3 CARPET

OFFICE 2 CARPET

OFFICE 1 CARPET

RECEPTION VINYL

ENTRY

MALE TILES

FEMALE TILES

PASSAGE VINYL

STAFF RM. VINYL

12 COVERED BAYS

ACCESS BAY

SHARE ZONE

TWO WAY LV TRAFFIC ONLY

STAFF/ VISITOR PARKING
BITUMEN PAVING

REFER TO ARCHITECTURAL DRAWING A05 FOR DETAILS OF LANDSCAPING (TYP)

HV/LV EXIT ONLY

HV/LV ENTRY ONLY

SITE MAIN ELECT. SWITCHBOARD

NEW R. CONC. CROSSOVER

LOW LEVEL PLANTING

ONE TREE PER FOUR BAYS WHERE SHOWN (TYP)

DENSE LANDSCAPING

150M2 ATU DISPERSEMENT FIELD

OPEN DRAIN TO REMAIN

EXISTING POWER POLE

EX.SIDE ENTRY PIT

TURF

BOUNDARY 92 500

STIRLING CRESCENT

CENTRELINE OF BITUMEN

LOT10
No 26

LOT 9
No 30

LOT 8
No 34

APPROXIMATE LOCATION OF NEIGHBOURING PROPERTY DRIVEWAYS (TYP)

BOUNDARY

EXISTING RESIDENCE

Trevenny PTY LTD ATF Chudleigh Family Trust ABN: 69 116 630 744 TRADING AS

ALLAN J DAVIES & TREVOR CHUDLEIGH ARCHITECTS

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DEVELOPMENT FOR MR & MRS D JONES
LOT 9, 29 STIRLING CRESCENT
HIGH WYCOMBE WA 6057

DRAWING NO: 24 442 DD02 REV NO: 4

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Scale: 1:100 @A1 Date: MAY 2024 Drawn: TCC Design: TCC Datum: LOCAL

No:	Date:	Revision:	By:
3	31/07/24	ISSUE FOR DEVELOPMENT APPROVAL APPLICATION	TCC
4	13/08/24	ISSUED WITH ON SITE ATU SYSTEM SHOWN	TCC

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FLOOR PLAN 1:100 @A1

WAREHOUSE 1
INTERNAL NLA 2345m2
NON NLA SERVICES 90m2
GROSS BLDG AREA 2472m2

INCLUDES 360M2 OF INTERNAL OFFICE AND AMENITY AREA

FFL 24.200

PEDESTRIAN ZONE

RL 23.950

RL 24.200

FIRE HOSE REEL

BOLLARD

EMERGENCY EXIT

FIRE HYDRANT

ONE WAY

EMERGENCY EXIT

LANDSCAPING

2 X 4M DIA. FIRE FIGHTING WATER TANKS- SIZE TBC

MEETING/ OFFICE 3
CARPET

OFFICE 2
CARPET

OFFICE 1
CARPET

120/120/120 RATED SELF CLOSING FIRE RATED DOOR

RECEPTION
VINYL

EMERGENCY EXIT

ENTRY
RL 24.200

DURAMAT DURAMAT

MALE
TILES

SHR

OFFICE CLEANER

ACCESS FACILITY WITH SHR

PASSAGE
VINYL

ELECT. DIST. BRD

COMS. MDF

FEMALE
TILES

STAFF RM
VINYL

BIKE RACK

FR

FIRE HOSE REEL

PAVING

KERB RAMP

RL 24.000

ATU SEWER SYSTEM

FIRE BRIGADE BOOSTER CONNECTION MANIFOLD

REFER TO ARCHITECTURAL DRAWING A05 FOR DETAILS OF LANDSCAPING (TYP)

600

5400 TYPICAL

ACCESS BAY
DISABLED PARKING SIGN AND ROAD MARKING TO DISABLED BAY AND TRIMED DWG'S TO COE

SHARE ZONE

12 COVERED BAYS

TWO WAY LV ONLY

RL 24.000

RL 23.950

6000

STAFF/ VISITOR PARKING

ATU SYSTEM & DISPERSEMENT FIELD DETAILS TO BE FINALISED AT TIME OF DEVELOPMENT WHEN FINAL OCCUPANCY NUMBERS KNOWN TO LOCAL AUTHORITY HEALTH DEPARTMENT APPROVAL

20000.

HV/LV EXIT ONLY

HV/LV ENTRY ONLY

LOW LEVEL PLANTING

ONE TREE PER FOUR BAYS WHERE SHOWN (TYP)

2500 TYPICAL

LOW LEVEL PLANTING

CENTRELINE OF PROPERTY

RL 24.000

5400

800

DENSE LANDSCAPING

150M2 ATU DISPERSEMENT FIELD

11000

NEW R. CONC. CROSSOVER

RL 23.800

DENSE LANDSCAPING

BOUNDARY 92 500

1500. TYP

1500. TYP

TURF

TURF

TURF

PP

EXISTING POWER POLE

EX.SIDE ENTRY PIT

NEW R. CONC. CROSSOVER

STIRLING CRESCENT

Trevenny PTY LTD ATF Chudleigh Family Trust ABN: 69 116 630 744 TRADING AS

ALLAN J DAVIES & TREVOR CHUDLEIGH ARCHITECTS

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LOT 9, 29 STIRLING CRESCENT
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Scale: REFERE SCALE BAR **Date: MAY 2024** **Drawn: TCC** **Design: TCC** **Datum: LOCAL**

No:	Date:	Revision:	By:
3	31/07/24	ISSUE FOR DEVELOPMENT APPROVAL APPLICATION	TCC
4	13/08/24	ISSUED WITH POTENTIAL FULL CANOPY OUTLINES ADDED	TCC

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DEVELOPMENT APPLICATION
LANDSCAPE PLAN 1:100 @ A1

-2 0 2 4 6 8 10

LOT 9
1.0032ha

LAWN & TREE PLANTING SCHEDULE

① - KIKUYU VILLAGE GREEN TURF TO VERGE AREAS

② - SPECIES - EUCALYPTUS TORQUATA, COMMON NAME - CORAL GUM, SIZE 4M (w) X 5M(h) SMALL EUCALYPTUS WITH ABUNDANCE OF PINK FLOWERS IN SUMMER - SELECTED FOR VERGE LOCATION TO LIMIT HEIGHT UNDER EXISTING POWER LINES

③ - SPECIES - DELONIX REGIA, COMMON NAME - POINCIANA TREE, SIZE 7M (h) X 7M (w), LARGE LUSH, SHINY, DEEP GREEN FOLIAGE WITH ROUNDED GROWING HABIT. NEW GROWTH IS TINGED IN COPPER, SWEETLY PERFUMED GOLDEN YELLOW FLOWERS APPEAR IN SUMMER (100lt)

④ - SPECIES - EUCALYPTUS VICTRIX, COMMON NAME - DWARF GHOST GUM, SIZE - 6M (h) X 8M (w), SMOOTH TRUNK WITH CREAM TO GREY COLOURING, BRIGHT GREEN LEAVES WITH A LOW AND WIDE CANOPY (100lt)

⑤ - SPECIES - MELALEUCA QUINQUERVIA, COMMON NAME - CAJEPUT TREE, 8M (h) X 2-4M (w), A SMALL TO MEDIUM-SIZED TREE WHICH IS USUALLY UP TO 12M IN CULTIVATION. MULTIPLAYERED PAPERY HABITAT (100lt)

PLANT MIX SCHEDULE

- PLANT MIX 1 - DRAINAGE SPECIES - 6/SQ M
  LEPIDOSPERMA GLADIATUM
  BAUMEA JUNCEA
  FINCINIA NODOSA
  ANIGOZANTHUS VIRIDIS
  JUNCUS KRAUSII

- PLANT MIX 2 - LOW FEATURE PLANTING - 4/SQ M
  LOMANDRA LONGIFOLIA - TANIKA
  DIANELLA REVOLTA
  ANIGOZANTHUS FLAVIDUS
  KENNEDIA PROSTRATA
  GREVILLEA OBTUSIFOLIA
  PIMELEA IMBRICATA
  EREMOPHILA NIVEA
  OLERIA AXILLARIS
  SCAEVOLA AEMULA

- PLANT MIX 3 - LOW SCREENING PLANTING - 3/SQ M
  WESTRINGEA FRUTICOSA
  PITTOSPORUM 'MOUNTAIN GREEN'
  HARDENBURGIA COMPTONIANA
  LOMANDRA LONGIFOLIA - TANIKA
  MELALEUCA INCANA-NANA

GENERAL NOTES AND AREAS

- TOTAL LANDSCAPING AREA WITHIN LOT 448M2 (+VERGE)
- PLANT MIX 1: DRAINAGE PLANTING - 150.0M2
- PLANT MIX 2: FEATURE PLANTING - 135.0M2
- PLANT MIX 3: SCREENING PLANTING - 163.0M2
- VERGE AREA TURF - 409.5M2
- ALL LANDSCAPING AREA TO BE FULLY IRRIGATED - IRRIGATION MAY BE SWITCHED OFF OR REDUCED BEYOND THE TWO YEAR MAINTENANCE/ ESTABLISHMENT PERIOD
- PM01 TO HAVE GRAVEL MULCH 100MM THICK
- PM02 AND PM03 TO HAVE ORGANIC PINEBARK MULCH 100MM THICK

BOUNDARY 110 250

BOUNDARY 110 250

R.CONCRETE HARDSTAND TO LOADING/ UNLOADING AREAS (TYP)

FIRE FIGHTING WATER TANKS

ENTRY

BRICK PAVING

LANDSCAPING

PLANT MIX 2 LOW FEATURE PLANTING

BLACK BITUMEN PAVING TO CARPARKING (TYP)

POTENTIAL EXPECTED FULL CANOPY OF MATURE TREE OF SELECTED TREES IF NOT PRUNED OR CONTROLLED

4

LOW LEVEL PLANTING

ONE TREE PER FOUR BAYS WHERE SHOWN (TYP)

LOW LEVEL PLANTING

DENSE LANDSCAPING

PLANT MIX 3 LOW SCREENING PLANTING

PLANT MIX 1 DRAINAGE PLANTING

PLANT MIX 3 LOW SCREENING PLANTING

PLANT MIX 1

PLANT MIX 3 LOW SCREENING PLANTING

KIKUYU VILLAGE GREEN TURF TO VERGE AREAS ①

VERGE TREES EVERY 10M - 4M(W) X 5M(H)

KIKUYU VILLAGE GREEN TURF TO VERGE AREAS ①

EX.SIDE ENTRY PIT

PP

PP

89°57'0"

86°29'0"

BOUNDARY 92 500

600

3000 ROADSIDE LANDSCAPE STRIP

STIRLING CRESCENT

Appendix 2

Transport Planning and Traffic Plans



PARKS AND RECREATION
WATERWAYS
PUBLIC PURPOSE
SHOPPING AREA
ROAD
Hay Street — STREET NAME
RAILWAY
ROAD BRIDGE
LOCATION BOUNDARY
DISTANCE FROM LOCATION
CITY OF PERTH — LOCAL GOVERNMENT NAME
NORTHBRIDGE — SUBURB NAME
LOCAL AUTHORITY BOUNDARY

LEGEND

No	DATE	AMENDMENT
A	20-06-2024	ISSUED FOR REVIEW

PROJECT: LOT 9 (NO 29) STIRLING CRESCENT, HIGH WYCOMBE

TITLE: LOCALITY PLAN - 800M RADIUS

DRAWING NUMBER: KC01905.000_ S01

DRAWN BY: J.S.

Civil & Traffic Engineering Consultants
KCTT (Trading as KC Traffic and Transport Pty Ltd)
PO Box 1456 Scarborough WA 6922
PH: 08 9441 2700
WEB: www.kctt.com.au
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PARKS AND RECREATION
WATERWAYS
PUBLIC PURPOSE
SHOPPING AREA
ROAD
Hay Street — STREET NAME
RAILWAY
ROAD BRIDGE
LOCATION BOUNDARY
DISTANCE FROM LOCATION
CITY OF PERTH — LOCAL GOVERNMENT NAME
NORTHBRIDGE — SUBURB NAME
LOCAL AUTHORITY BOUNDARY
OTHER SHARED PATH (SHARED BY PEDESTRIANS & CYCLISTS)
GOOD ROAD RIDING ENVIRONMENT
BICYCLE LANES OR SEALED SHOULDER EITHER SIDE
BIKE SHOP
TRAFFIC LIGHT

LEGEND

No	DATE	AMENDMENT
A	20-06-2024	ISSUED FOR REVIEW

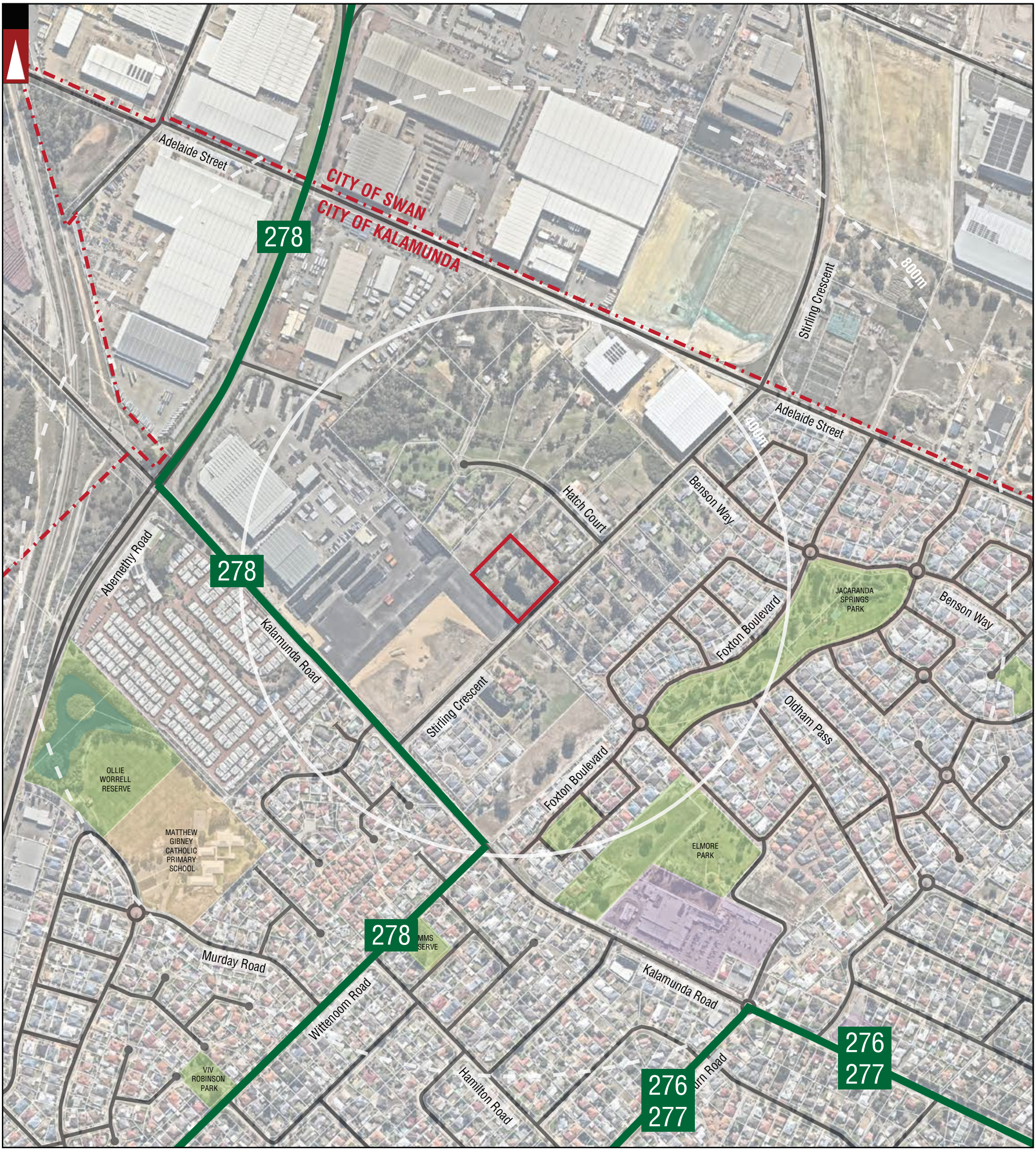
PROJECT: LOT 9 (NO 29) STIRLING CRESCENT, HIGH WYCOMBE

TITLE: BICYCLE NETWORK PLAN - 800M RADIUS

DRAWING NUMBER: KC01905.000_ S02

DRAWN BY: J.S.

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PARKS AND RECREATION
WATERWAYS
PUBLIC PURPOSE
SHOPPING AREA

ROAD
Hay Street STREET NAME
RAILWAY
ROAD BRIDGE

LOCATION BOUNDARY
DISTANCE FROM LOCATION
CITY OF PERTH LOCAL GOVERNMENT NAME
NORTHBRIDGE SUBURB NAME
LOCAL AUTHORITY BOUNDARY

BUS ROUTES
103 BUS ROUTE NUMBER

NOTE : FOR MORE INFORMATION REGARDING THE DESCRIPTION OF BUS ROUTES AND THEIR INDICATIVE PEAK AND OFF-PEAK FREQUENCIES REFER TO THE REPORT.

LEGEND

No	DATE	AMENDMENT
A	20-06-2024	ISSUED FOR REVIEW

PROJECT: LOT 9 (NO 29) STIRLING CRESCENT, HIGH WYCOMBE

TITLE: PUBLIC TRANSPORT PLAN - 800M RADIUS

DRAWING NUMBER: KC01905.000_ S03

DRAWN BY: J.S.

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PARKS AND RECREATION
WATERWAYS
PUBLIC PURPOSE
SHOPPING AREA
ROAD
Hay Street — STREET NAME
RAILWAY
ROAD BRIDGE
LOCATION BOUNDARY
DISTANCE FROM LOCATION
CITY OF PERTH — LOCAL GOVERNMENT NAME
NORTHBRIDGE — SUBURB NAME
LOCAL AUTHORITY BOUNDARY
OTHER SHARED PATH (SHARED BY PEDESTRIANS & CYCLISTS)

LEGEND

No	DATE	AMENDMENT
A	20-06-2024	ISSUED FOR REVIEW

PROJECT: LOT 9 (NO 29) STIRLING CRESCENT, HIGH WYCOMBE

TITLE: PEDESTRIAN PATHS PLAN - 800M RADIUS

DRAWING NUMBER: KC01905.000_ S04

DRAWN BY: J.S.

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PARKS AND RECREATION
WATERWAYS
PUBLIC PURPOSE
SHOPPING AREA
ROAD
Hay Street — STREET NAME
RAILWAY
ROAD BRIDGE
LOCATION BOUNDARY
DISTANCE FROM LOCATION
CITY OF PERTH — LOCAL GOVERNMENT NAME
NORTHBRIDGE — SUBURB NAME
LOCAL AUTHORITY BOUNDARY
5,512 — NUMBER OF VEHICLES PER DAY
AM 1145 – 381 / PM 1630 – 480 — NUMBER OF VEHICLES PER AM PEAK HOUR / NUMBER OF VEHICLES PER PM PEAK HOUR
2014 — YEAR
EAST OF HARLOW ROAD — LOCATION

LEGEND

A	20-06-2024	ISSUED FOR REVIEW
No	DATE	AMENDMENT

PROJECT: LOT 9 (NO 29) STIRLING CRESCENT, HIGH WYCOMBE

TITLE: EXISTING TRAFFIC COUNTS - 800M RADIUS

DRAWING NUMBER: KC01905.000_ S05

DRAWN BY: J.S.

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LOCATION BOUNDARY

Lewis Road ROAD NAME

1,389 Total Expected Traffic Generation from the proposed development

503 Total Expected Traffic Generation from Subject Site on the specific section of road - **IN and OUT direction**

Traffic Flow IN Direction

Traffic Flow OUT Direction

NOTE: THE PLAN IS COURTEOUSY OF ALLAN J DAVIES & TREVOR CHUDLEIGH ARCHITECTS

LEGEND

No	DATE	AMENDMENT
B	13-08-2024	PROPOSED LAYOUT AMENDED
A	20-06-2024	ISSUED FOR REVIEW

PROJECT: LOT 9 (NO 29) STIRLING CRESCENT, HIGH WYCOMBE

TITLE: TRAFFIC FLOW DIAGRAM - DAILY

DRAWING NUMBER: KC01905.000_S06

DRAWN BY: J.S.

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LOCATION BOUNDARY

Lewis Road ROAD NAME

1,389 Total Expected Traffic Generation from the proposed development

503 Total Expected Traffic Generation from Subject Site on the specific section of road - **IN and OUT direction**

Traffic Flow IN Direction

Traffic Flow OUT Direction

NOTE: THE PLAN IS COURTEOUSY OF ALLAN J DAVIES & TREVOR CHUDLEIGH ARCHITECTS

LEGEND

No	DATE	AMENDMENT
B	13-08-2024	PROPOSED LAYOUT AMENDED
A	20-06-2024	ISSUED FOR REVIEW

PROJECT: LOT 9 (NO 29) STIRLING CRESCENT, HIGH WYCOMBE

TITLE: TRAFFIC FLOW DIAGRAM - PEAK HOUR

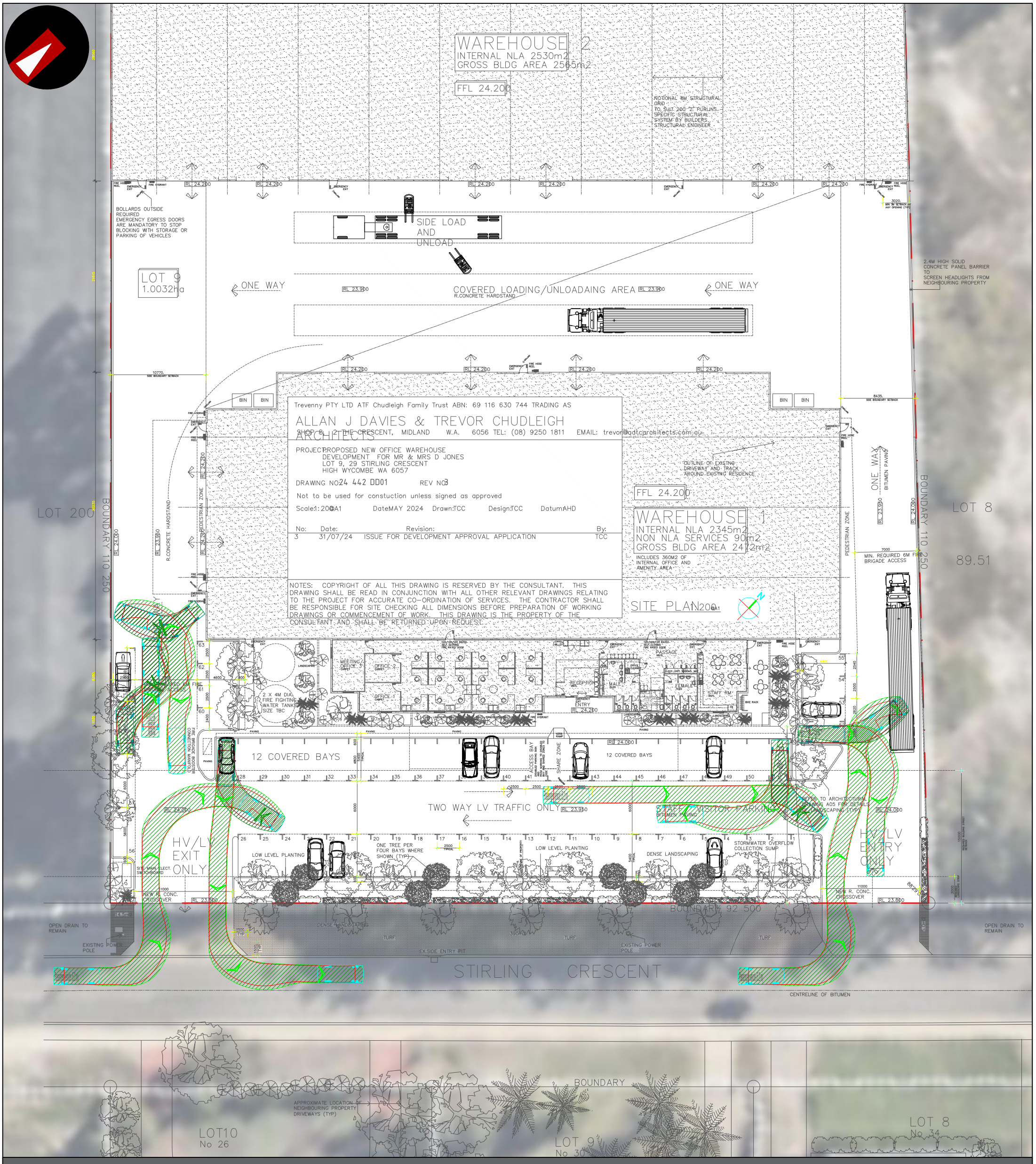
DRAWING NUMBER: KC01905.000_S07

DRAWN BY: J.S.

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Appendix 3

Vehicle Turning Circle Plans, Suggested Parking Management Plan & Sightlines review



NO	DATE	AMENDMENT
B	04-11-2024	AMENDED ACCORDING TO RECEIVED COMMENTS
A	01-08-2024	PROPOSED LAYOUT AMENDED
Draft	20-06-2024	ISSUED FOR REVIEW

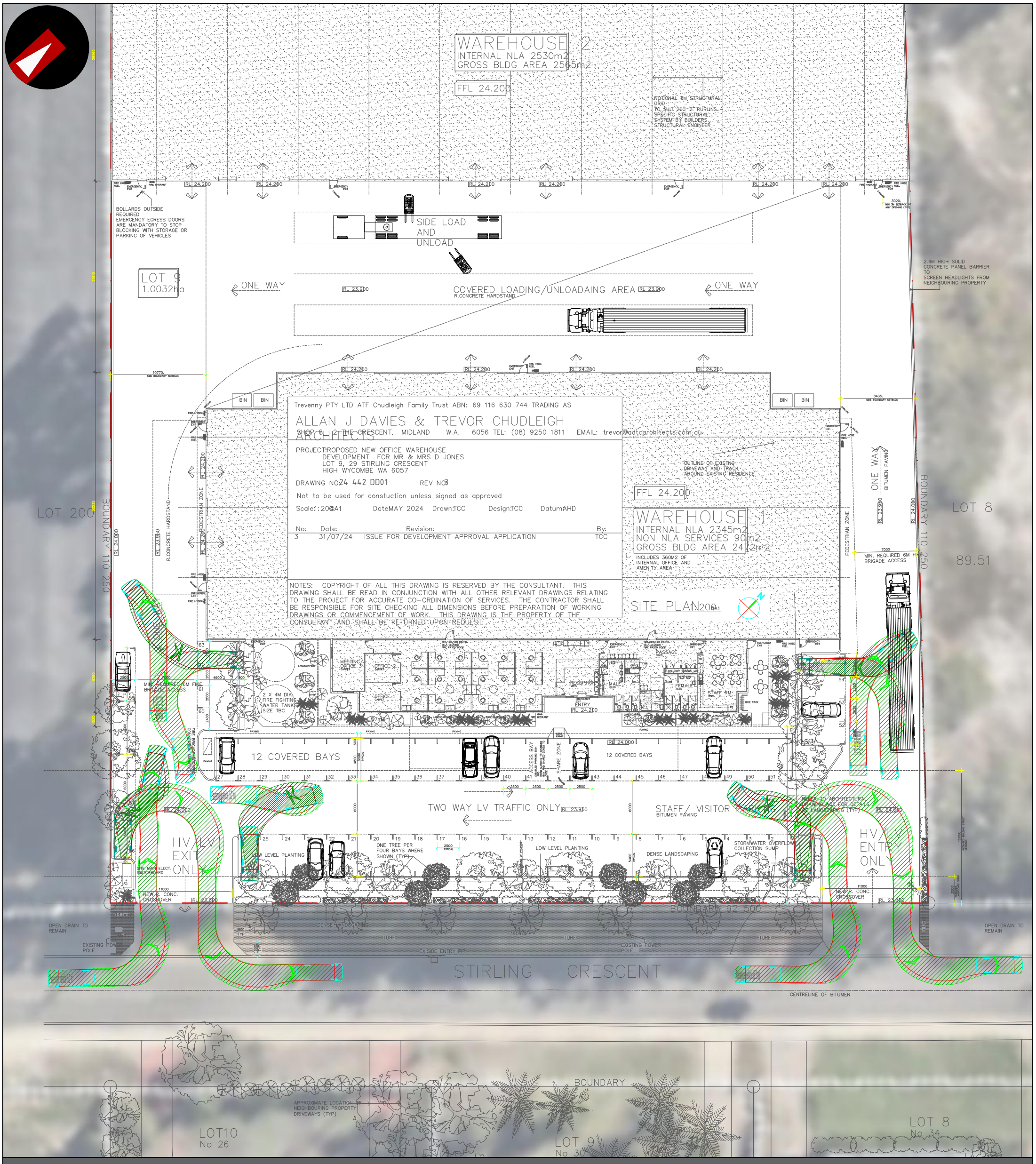
PROJECT:
Lot 9 (No 29) Stirling Crescent, High Wycombe

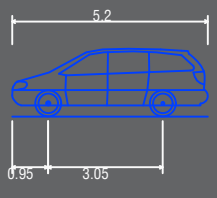
TITLE:
Vehicle Turning Circle Plan - B99 Passenger Vehicle (5.2m)

DRAWING NUMBER:
KC01905.000_S10

DRAWN BY:
J.S.

Civil & Traffic Engineering Consultants
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Passenger vehicle (5.2 m)	
Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.804m
Min Body Ground Clearance	0.295m
Track Width	1.840m
Lock to Lock Time	4.00s
Kerb to Kerb Turning Radius	6.300m

- Lot boundary
- Wheel Path (Forward Vehicle Motion)
- Vehicle Chasis Envelope (Forward Vehicle Motion)
- Wheel Path (Reverse Vehicle Motion)
- Vehicle Chasis Envelope (Reverse Vehicle Motion)

LEGEND

NO	DATE	AMENDMENT
B	04-11-2024	AMENDED ACCORDING TO RECEIVED COMMENTS
A	01-08-2024	PROPOSED LAYOUT AMENDED
Draft	20-06-2024	ISSUED FOR REVIEW

PROJECT: Lot 9 (No 29) Stirling Crescent, High Wycombe

TITLE: Vehicle Turning Circle Plan - B99 Passenger Vehicle (5.2m)

DRAWING NUMBER: KC01905.000_S11

DRAWN BY: J.S.

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PH: 08 9441 2700
WEB: www.kctt.com.au

WAREHOUSE 2
INTERNAL NLA 2530m2
GROSS BLDG AREA 2565m2

FFL 24.200

NOTIONAL 8M STRUCTURAL GRID
TO SUIT 200 "Z" PURLINS
SPECIFIC STRUCTURAL SYSTEM BY BUILDERS STRUCTURAL ENGINEER

BOLLARDS OUTSIDE REQUIRED EMERGENCY EGRESS DOORS ARE MANDATORY TO STOP BLOCKING WITH STORAGE OR PARKING OF VEHICLES

SIDE LOAD AND UNLOAD

LOT 9
1.0032ha

ONE WAY

COVERED LOADING/UNLOADAING AREA
R.CONCRETE HARDSTAND

ONE WAY

2.4M HIGH SOLID CONCRETE PANEL BARRIER TO SCREEN HEADLIGHTS FROM NEIGHBOURING PROPERTY

BIN BIN

BIN BIN

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ALLAN J DAVIES & TREVOR CHUDLEIGH
ARCHITECTS

SHOP 8, 2 THE CRESCENT, MIDLAND W.A. 6056 TEL: (08) 9250 1811 EMAIL: trevor@adtcarchitects.com.au

PROJECT: PROPOSED NEW OFFICE WAREHOUSE
DEVELOPMENT FOR MR & MRS D JONES
LOT 9, 29 STIRLING CRESCENT
HIGH WYCOMBE WA 6057

DRAWING NO 24 442 DD01 REV NO 3

Not to be used for constuction unless signed as approved

Scale: 1:200@A1 Date: MAY 2024 Drawn: TCC Design: TCC Datum: AHD

No:	Date:	Revision:	By:
3	31/07/24	ISSUE FOR DEVELOPMENT APPROVAL APPLICATION	TCC

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OUTLINE OF EXISTING DRIVEWAY AND TRACK AROUND EXISTING RESIDENCE

FFL 24.200

WAREHOUSE 1
INTERNAL NLA 2345m2
NON NLA SERVICES 90m2
GROSS BLDG AREA 2472m2

INCLUDES 360M2 OF INTERNAL OFFICE AND AMENITY AREA

SITE PLAN 1:200@A1

LOT 200

BOUNDARY 110 250

LOT 8

89.51

MIN. REQUIRED 6M FIRE BRIGADE ACCESS

2 X 4M DIA. FIRE FIGHTING WATER TANKS SIZE TBC

MEETING OFFICE 3 · OFFICE 2 · OFFICE 1 · RECEPTION · MALE · FEMALE · STAFF RM · ENTRY

12 COVERED BAYS

ACCESS BAY · SHARE ZONE · 12 COVERED BAYS

TWO WAY LV TRAFFIC ONLY

STAFF/ VISITOR PARKING
BITUMEN PAVING

REFER TO ARCHITECTURAL DRAWING A05 FOR DETAILS OF LANDSCAPING (TYP)

HV/LV EXIT ONLY

HV/LV ENTRY ONLY

LOW LEVEL PLANTING

ONE TREE PER FOUR BAYS WHERE SHOWN (TYP)

LOW LEVEL PLANTING

DENSE LANDSCAPING

STORMWATER OVERFLOW COLLECTION SUMP

SITE MAIN ELECT. SWITCHBOARD

NEW R. CONC. CROSSOVER

NEW R. CONC. CROSSOVER

OPEN DRAIN TO REMAIN

OPEN DRAIN TO REMAIN

EXISTING POWER POLE

EXISTING POWER POLE

DENSE LANDSCAPING

TURF

TURF

TURF

EX.SIDE ENTRY PIT

BOUNDARY 92 500

STIRLING CRESCENT

CENTRELINE OF BITUMEN

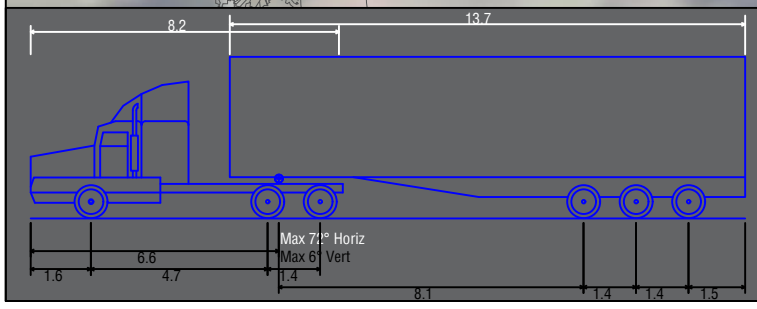
APPROXIMATE LOCATION OF NEIGHBOURING PROPERTY DRIVEWAYS (TYP)

BOUNDARY

LOT10
No 26

LOT 9
No 30

LOT 8
No 34



AV - Articulated Vehicle	
Overall Length	19.000m
Overall Width	2.500m
Overall Body Height	4.301m
Min Body Ground Clearance	0.418m
Track Width	2.500m
Lock to Lock Time	6.00s
Kerb to Kerb Turning Radius	12.500m

Lot boundary
Wheel Path (Forward Vehicle Motion)
Vehicle Chasis Envelope (Forward Vehicle Motion)
Wheel Path (Reverse Vehicle Motion)
Vehicle Chasis Envelope (Reverse Vehicle Motion)

LEGEND

NO	DATE	AMENDMENT
B	04-11-2024	AMENDED ACCORDING TO RECEIVED COMMENTS
A	01-08-2024	PROPOSED LAYOUT AMENDED
Draft	20-06-2024	ISSUED FOR REVIEW

PROJECT:
Lot 9 (No 29) Stirling Crescent, High Wycombe

TITLE:
Vehicle Turning Circle Plan - Semi-trailer (19.0m)

DRAWING NUMBER:
KC01905.000_S20

DRAWN BY:
J.S.

Civil & Traffic Engineering Consultants
KCTT (Trading as KC Traffic and Transport Pty Ltd)
PO Box 1456 Scarborough WA 6922
PH: 08 9441 2700
WEB: www.kctt.com.au

kctt PART OF Premise

WAREHOUSE 2
INTERNAL NLA 2530m2
GROSS BLDG AREA 2565m2

FFL 24.200

NOTIONAL 8M STRUCTURAL GRID
TO SUIT 200 'Z' PURLINS
SPECIFIC STRUCTURAL SYSTEM BY BUILDERS STRUCTURAL ENGINEER

BOLLARDS OUTSIDE REQUIRED
EMERGENCY EGRESS DOORS ARE MANDATORY TO STOP BLOCKING WITH STORAGE OR PARKING OF VEHICLES

SIDE LOAD AND UNLOAD

LOT 9
0.0032ha

ONE WAY

COVERED LOADING/UNLOADAING AREA
R.CONCRETE HARDSTAND

ONE WAY

2.4M HIGH SOLID CONCRETE PANEL BARRIER TO SCREEN HEADLIGHTS FROM NEIGHBOURING PROPERTY

BIN BIN

BIN BIN

Trevenny PTY LTD ATF Chudleigh Family Trust ABN: 69 116 630 744 TRADING AS

ALLAN J DAVIES & TREVOR CHUDLEIGH
ARCHITECTS

SHOP 8, 2 THE CRESCENT, MIDLAND W.A. 6056 TEL: (08) 9250 1811 EMAIL: trevor@adtcarchitects.com.au

PROJECT: PROPOSED NEW OFFICE WAREHOUSE
DEVELOPMENT FOR MR & MRS D JONES
LOT 9, 29 STIRLING CRESCENT
HIGH WYCOMBE WA 6057

DRAWING NO 24 442 DD01 REV NO 3

Not to be used for constuction unless signed as approved

Scale: 1:200@A1 Date: MAY 2024 Drawn: TCC Design: TCC Datum: AHD

No:	Date:	Revision:	By:
3	31/07/24	ISSUE FOR DEVELOPMENT APPROVAL APPLICATION	TCC

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OUTLINE OF EXISTING DRIVEWAY AND TRACK AROUND EXISTING RESIDENCE

FFL 24.200

WAREHOUSE 1
INTERNAL NLA 2345m2
NON NLA SERVICES 90m2
GROSS BLDG AREA 2472m2

INCLUDES 360M2 OF INTERNAL OFFICE AND AMENITY AREA

MIN. REQUIRED 6M FIRE BRIGADE ACCESS

SITE PLAN 1:200@A1

LOT 200

BOUNDARY 110 250

LOT 8

89.51

BOUNDARY 110 250

MIN. REQUIRED 6M FIRE BRIGADE ACCESS

2 X 4M DIA. FIRE FIGHTING WATER TANK SIZE TBC

12 COVERED BAYS

ACCESS BAY

SHARE ZONE

12 COVERED BAYS

TWO WAY LV TRAFFIC ONLY

STAFF/ VISITOR PARKING
BITUMEN PAVING

REFER TO ARCHITECTURAL DRAWING A05 FOR DETAILS OF LANDSCAPING (TYP)

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HV/LV ENTRY ONLY

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ONE TREE PER FOUR BAYS WHERE SHOWN (TYP)

LOW LEVEL PLANTING

DENSE LANDSCAPING

STORMWATER OVERFLOW COLLECTION SUMP

SITE MAIN ELECT. SWITCHBOARD

NEW R. CONC. CROSSOVER

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OPEN DRAIN TO REMAIN

OPEN DRAIN TO REMAIN

EXISTING POWER POLE

EXISTING POWER POLE

DENSE LANDSCAPING

TURF

TURF

TURF

EX.SIDE ENTRY PIT

STIRLING CRESCENT

BOUNDARY 92 500

11.0m 16.0m 3.5m 11.0m

CENTRELINE OF BITUMEN

REQUIRED SPLAY WIDTH TO ENSURE THE VEHICLE CAN MAKE A LANE-CORRECTED TURN.

REQUIRED SPLAY WIDTH TO ENSURE THE VEHICLE CAN MAKE A LANE-CORRECTED TURN.

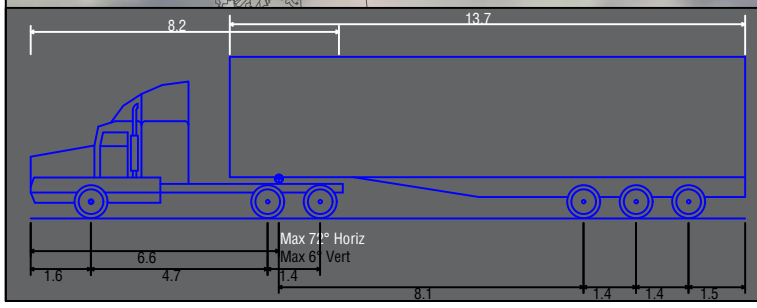
APPROXIMATE LOCATION OF NEIGHBOURING PROPERTY DRIVEWAYS (TYP)

BOUNDARY

LOT10
No 26

LOT 9
No 30

LOT 8
No 34



AV - Articulated Vehicle	
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Overall Width	2.500m
Overall Body Height	4.301m
Min Body Ground Clearance	0.418m
Track Width	2.500m
Lock to Lock Time	6.00s
Kerb to Kerb Turning Radius	12.500m

Lot boundary
Wheel Path (Forward Vehicle Motion)
Vehicle Chasis Envelope (Forward Vehicle Motion)
Wheel Path (Reverse Vehicle Motion)
Vehicle Chasis Envelope (Reverse Vehicle Motion)

LEGEND

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B	04-11-2024	AMENDED ACCORDING TO RECEIVED COMMENTS
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PROJECT:
Lot 9 (No 29) Stirling Crescent, High Wycombe

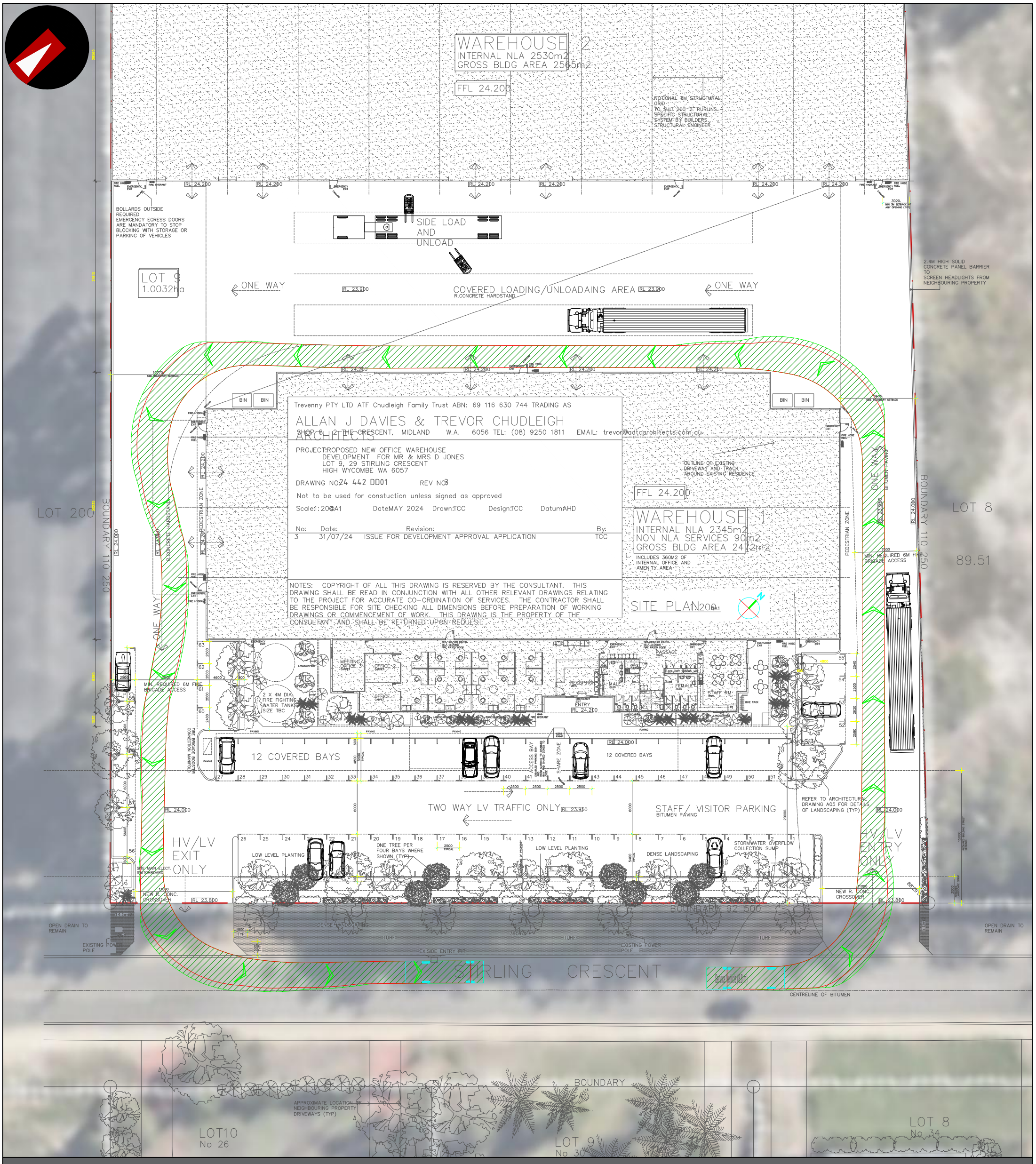
TITLE:
Vehicle Turning Circle Plan - Semi-trailer (19.0m)

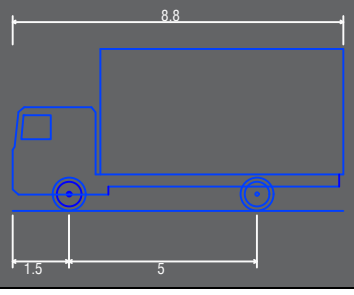
DRAWING NUMBER:
KC01905.000_S21

DRAWN BY:
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PH: 08 9441 2700
WEB: www.kctt.com.au

kctt PART OF Premise





Service Vehicle (8.8 m)	
Overall Length	8.800m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.427m
Track Width	2.500m
Lock to Lock Time	4.00s
Kerb to Kerb Turning Radius	12.500m

Lot boundary
Wheel Path (Forward Vehicle Motion)
Vehicle Chasis Envelope (Forward Vehicle Motion)
Wheel Path (Reverse Vehicle Motion)
Vehicle Chasis Envelope (Reverse Vehicle Motion)

LEGEND

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PROJECT:
Lot 9 (No 29) Stirling Crescent, High Wycombe

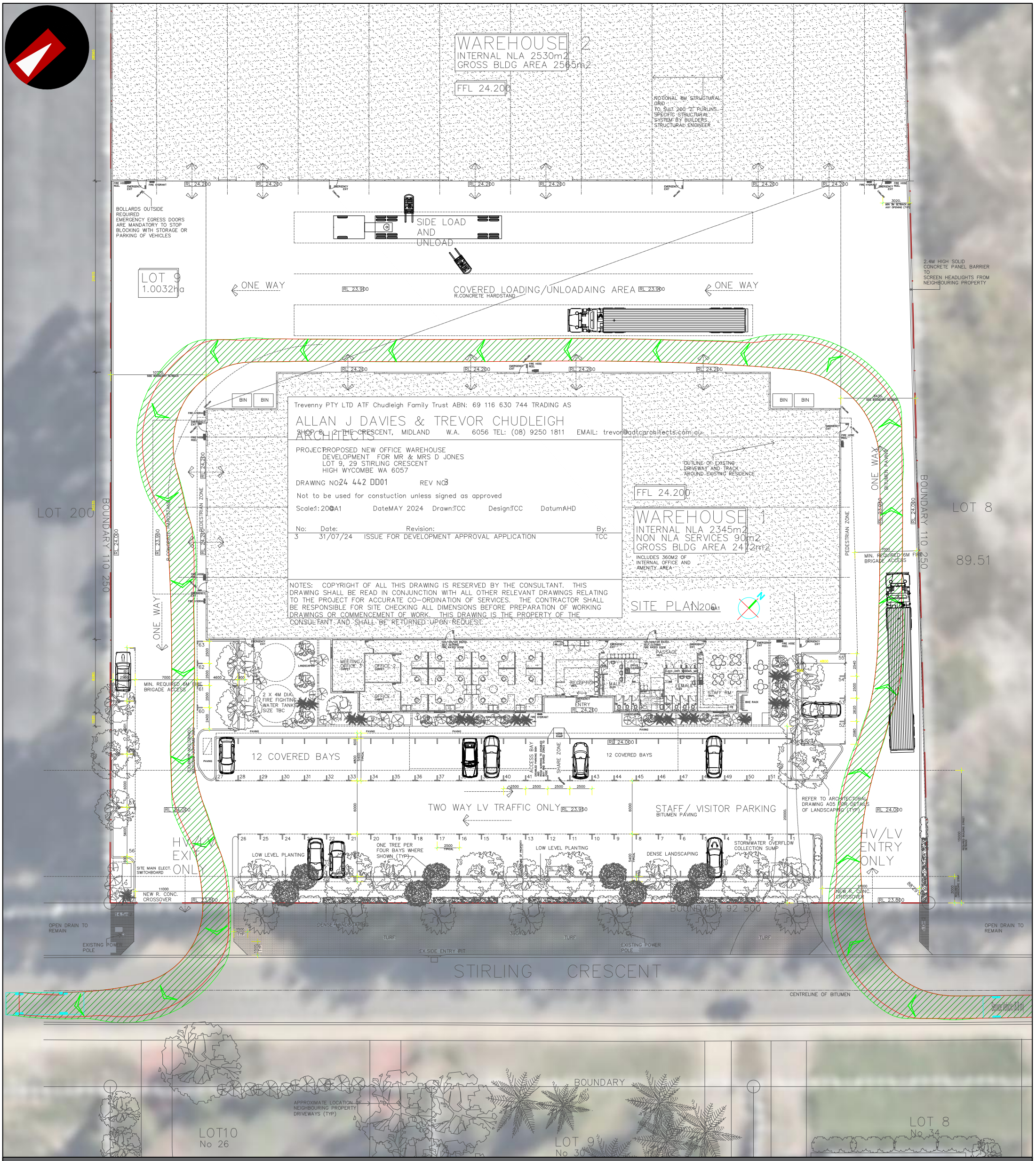
TITLE:
Vehicle Turning Circle Plan - Service Vehicle (8.8m)

DRAWING NUMBER:
KC01905.000_S30

DRAWN BY:
J.S.

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B	04-11-2024	AMENDED ACCORDING TO RECEIVED COMMENTS
A	01-08-2024	PROPOSED LAYOUT AMENDED
Draft	20-06-2024	ISSUED FOR REVIEW

PROJECT:
Lot 9 (No 29) Stirling Crescent, High Wycombe

TITLE:
Vehicle Turning Circle Plan - Service Vehicle (8.8m)

DRAWING NUMBER:
KC01905.000_S31

DRAWN BY:
J.S.

Civil & Traffic Engineering Consultants
KCTT (Trading as KC Traffic and Transport Pty Ltd)
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PH: 08 9441 2700
WEB: www.kctt.com.au

WAREHOUSE 2
INTERNAL NLA 2530m2
GROSS BLDG AREA 2565m2

FFL 24.200

NOTIONAL 8M STRUCTURAL GRID
TO SUIT 200 "Z" PURLINS
SPECIFIC STRUCTURAL SYSTEM BY BUILDERS STRUCTURAL ENGINEER

BOLLARDS OUTSIDE REQUIRED EMERGENCY EGRESS DOORS ARE MANDATORY TO STOP BLOCKING WITH STORAGE OR PARKING OF VEHICLES

SIDE LOAD AND UNLOAD

LOT 9
1.0032ha

ONE WAY

COVERED LOADING/UNLOADAING AREA
R.CONCRETE HARDSTAND

ONE WAY

2.4M HIGH SOLID CONCRETE PANEL BARRIER TO SCREEN HEADLIGHTS FROM NEIGHBOURING PROPERTY

BIN BIN

BIN BIN

Trevenny PTY LTD ATF Chudleigh Family Trust ABN: 69 116 630 744 TRADING AS

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LOT 9, 29 STIRLING CRESCENT
HIGH WYCOMBE WA 6057

DRAWING NO 24 442 DD01 REV NO 3

Not to be used for constuction unless signed as approved

Scale: 1:200@A1 Date: MAY 2024 Drawn: TCC Design: TCC Datum: AHD

No:	Date:	Revision:	By:
3	31/07/24	ISSUE FOR DEVELOPMENT APPROVAL APPLICATION	TCC

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SITE PLAN 1:200@A1

OUTLINE OF EXISTING DRIVEWAY AND TRACK AROUND EXISTING RESIDENCE

FFL 24.200

WAREHOUSE 1
INTERNAL NLA 2345m2
NON NLA SERVICES 90m2
GROSS BLDG AREA 2472m2

INCLUDES 360M2 OF INTERNAL OFFICE AND AMENITY AREA

MIN. REQUIRED 6M FIRE BRIGADE ACCESS

LOT 200 BOUNDARY 110 250 LOT 8 89.51 BOUNDARY 110 250

MIN. REQUIRED 6M FIRE BRIGADE ACCESS

2 X 4M DIA. FIRE FIGHTING WATER TANKS SIZE TBC

MEETING OFFICE 3 · OFFICE 2 · OFFICE 1 · RECEPTION · MALE · FEMALE · STAFF RM · PASSAGE · ENTRY

12 COVERED BAYS

ACCESS BAY · SHARE ZONE · 12 COVERED BAYS

TWO WAY LV TRAFFIC ONLY

STAFF/ VISITOR PARKING
BITUMEN PAVING

REFER TO ARCHITECTURAL DRAWING A05 FOR DETAILS OF LANDSCAPING (TYP)

HV/LV EXIT ONLY

HV/LV ENTRY ONLY

LOW LEVEL PLANTING · ONE TREE PER FOUR BAYS WHERE SHOWN (TYP) · LOW LEVEL PLANTING · DENSE LANDSCAPING · STORMWATER OVERFLOW COLLECTION SUMP

SITE MAIN ELECT. SWITCHBOARD

NEW R. CONC. CROSSOVER

NEW R. CONC. CROSSOVER

OPEN DRAIN TO REMAIN

OPEN DRAIN TO REMAIN

EXISTING POWER POLE

EXISTING POWER POLE

DENSE LANDSCAPING · TURF · TURF · TURF

EX.SIDE ENTRY PIT

STIRLING CRESCENT

CENTRELINE OF BITUMEN

11.0m 9.5m

REQUIRED SPLAY WIDTH TO ENSURE THE VEHICLE CAN MAKE A LANE-CORRECTED TURN.

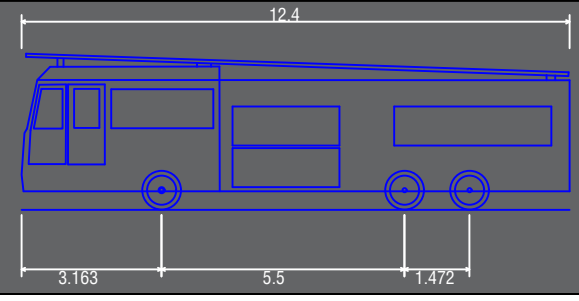
APPROXIMATE LOCATION OF NEIGHBOURING PROPERTY DRIVEWAYS (TYP)

BOUNDARY

LOT10 No 26

LOT 9 No 30

LOT 8 No 34



Fire Truck (12.4m)	
Overall Length	12.400m
Overall Width	2.500m
Overall Body Height	3.533m
Min Body Ground Clearance	0.418m
Track Width	2.500m
Lock-to-lock time	4.00s
Wall to Wall Turning Radius	14.000m

Lot boundary
Wheel Path (Forward Vehicle Motion)
Vehicle Chasis Envelope (Forward Vehicle Motion)
Wheel Path (Reverse Vehicle Motion)
Vehicle Chasis Envelope (Reverse Vehicle Motion)

LEGEND

NO	DATE	AMENDMENT
B	04-11-2024	AMENDED ACCORDING TO RECEIVED COMMENTS
A	01-08-2024	PROPOSED LAYOUT AMENDED
Draft	20-06-2024	ISSUED FOR REVIEW

PROJECT:
Lot 9 (No 29) Stirling Crescent, High Wycombe

TITLE:
Vehicle Turning Circle Plan - Fire Truck (12.4m)

DRAWING NUMBER:
KC01905.000_S40

DRAWN BY: J.S.

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WEB: www.kctt.com.au

kctt PART OF Premise

WAREHOUSE 2
INTERNAL NLA 2530m2
GROSS BLDG AREA 2565m2

FFL 24.200

NOTIONAL 8M STRUCTURAL GRID
TO SUIT 200 'Z' PURLINS
SPECIFIC STRUCTURAL SYSTEM BY BUILDERS STRUCTURAL ENGINEER

BOLLARDS OUTSIDE REQUIRED EMERGENCY EGRESS DOORS ARE MANDATORY TO STOP BLOCKING WITH STORAGE OR PARKING OF VEHICLES

SIDE LOAD AND UNLOAD

LOT 9
1.0032Ha

ONE WAY

COVERED LOADING/UNLOADAING AREA
R.CONCRETE HARDSTAND

ONE WAY

2.4M HIGH SOLID CONCRETE PANEL BARRIER TO SCREEN HEADLIGHTS FROM NEIGHBOURING PROPERTY

BIN BIN

BIN BIN

Trevenny PTY LTD ATF Chudleigh Family Trust ABN: 69 116 630 744 TRADING AS

ALLAN J DAVIES & TREVOR CHUDLEIGH
ARCHITECTS

SHOP 8, 2 THE CRESCENT, MIDLAND W.A. 6056 TEL: (08) 9250 1811 EMAIL: trevor@adtcarchitects.com.au

PROJECT: PROPOSED NEW OFFICE WAREHOUSE
DEVELOPMENT FOR MR & MRS D JONES
LOT 9, 29 STIRLING CRESCENT
HIGH WYCOMBE WA 6057

DRAWING NO 24 442 DD01 REV NO 3

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OUTLINE OF EXISTING DRIVEWAY AND TRACK AROUND EXISTING RESIDENCE

FFL 24.200

WAREHOUSE 1
INTERNAL NLA 2345m2
NON NLA SERVICES 90m2
GROSS BLDG AREA 2472m2

INCLUDES 360M2 OF INTERNAL OFFICE AND AMENITY AREA

SITE PLAN 1:200@A1

LOT 200

BOUNDARY 110 250

LOT 8

89.51

MIN. REQUIRED 6M FIRE BRIGADE ACCESS

2 X 4M DIA. FIRE FIGHTING WATER TANK SIZE TBC

MEETING OFFICE 3 · OFFICE 2 · OFFICE 1 · RECEPTION · MALE · FEMALE · STAFF RM · ENTRY

12 COVERED BAYS

ACCESS BAY · SHARE ZONE

12 COVERED BAYS

TWO WAY LV TRAFFIC ONLY

STAFF/ VISITOR PARKING
BITUMEN PAVING

REFER TO ARCHITECTURAL DRAWING A05 FOR DETAILS OF LANDSCAPING (TYP)

HV/LV EXIT ONLY

HV/LV ENTRY ONLY

LOW LEVEL PLANTING

ONE TREE PER FOUR BAYS WHERE SHOWN (TYP)

LOW LEVEL PLANTING

DENSE LANDSCAPING

STORMWATER OVERFLOW COLLECTION SUMP

SITE MAIN ELECT. SWITCHBOARD

NEW R. CONC. CROSSOVER

NEW R. CONC. CROSSOVER

OPEN DRAIN TO REMAIN

EXISTING POWER POLE

DENSE LANDSCAPING

TURF

TURF

TURF

EXISTING POWER POLE

OPEN DRAIN TO REMAIN

EX.SIDE ENTRY PIT

STIRLING CRESCENT

CENTRELINE OF BITUMEN

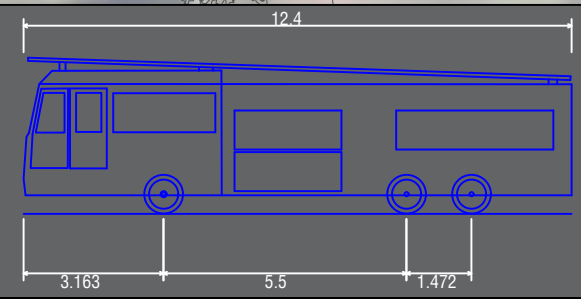
BOUNDARY

APPROXIMATE LOCATION OF NEIGHBOURING PROPERTY DRIVEWAYS (TYP)

LOT10
No 26

LOT 9
No 30

LOT 8
No 34



Fire Truck (12.4m)
Overall Length 12.400m
Overall Width 2.500m
Overall Body Height 3.533m
Min Body Ground Clearance 0.418m
Track Width 2.500m
Lock-to-lock time 4.00s
Wall to Wall Turning Radius 14.000m

Lot boundary
Wheel Path (Forward Vehicle Motion)
Vehicle Chasis Envelope (Forward Vehicle Motion)
Wheel Path (Reverse Vehicle Motion)
Vehicle Chasis Envelope (Reverse Vehicle Motion)

LEGEND

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Draft	20-06-2024	ISSUED FOR REVIEW

PROJECT:
Lot 9 (No 29) Stirling Crescent, High Wycombe

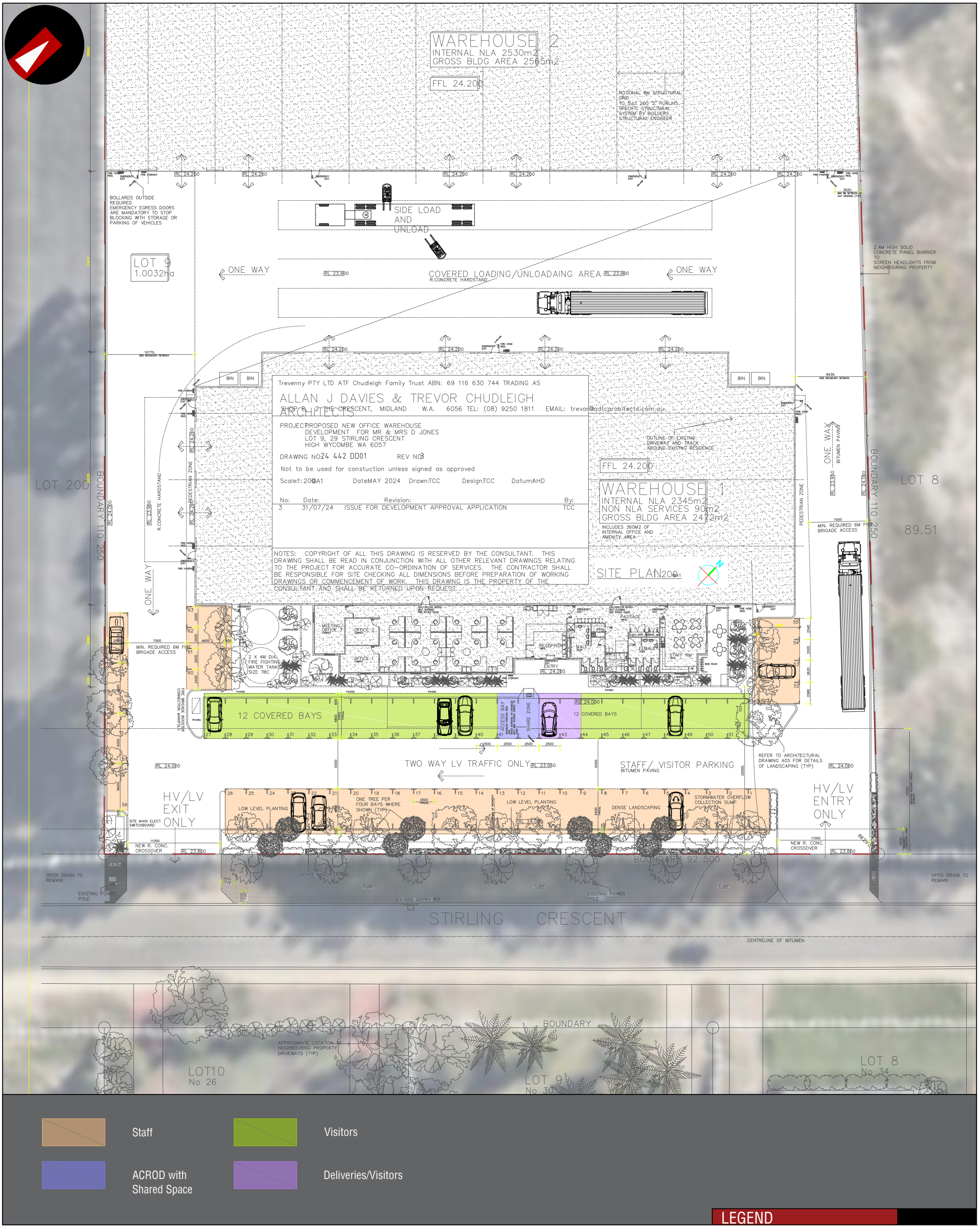
TITLE:
Vehicle Turning Circle Plan - Fire Truck (12.4m)

DRAWING NUMBER:
KC01905.000_S41

DRAWN BY:
J.S.

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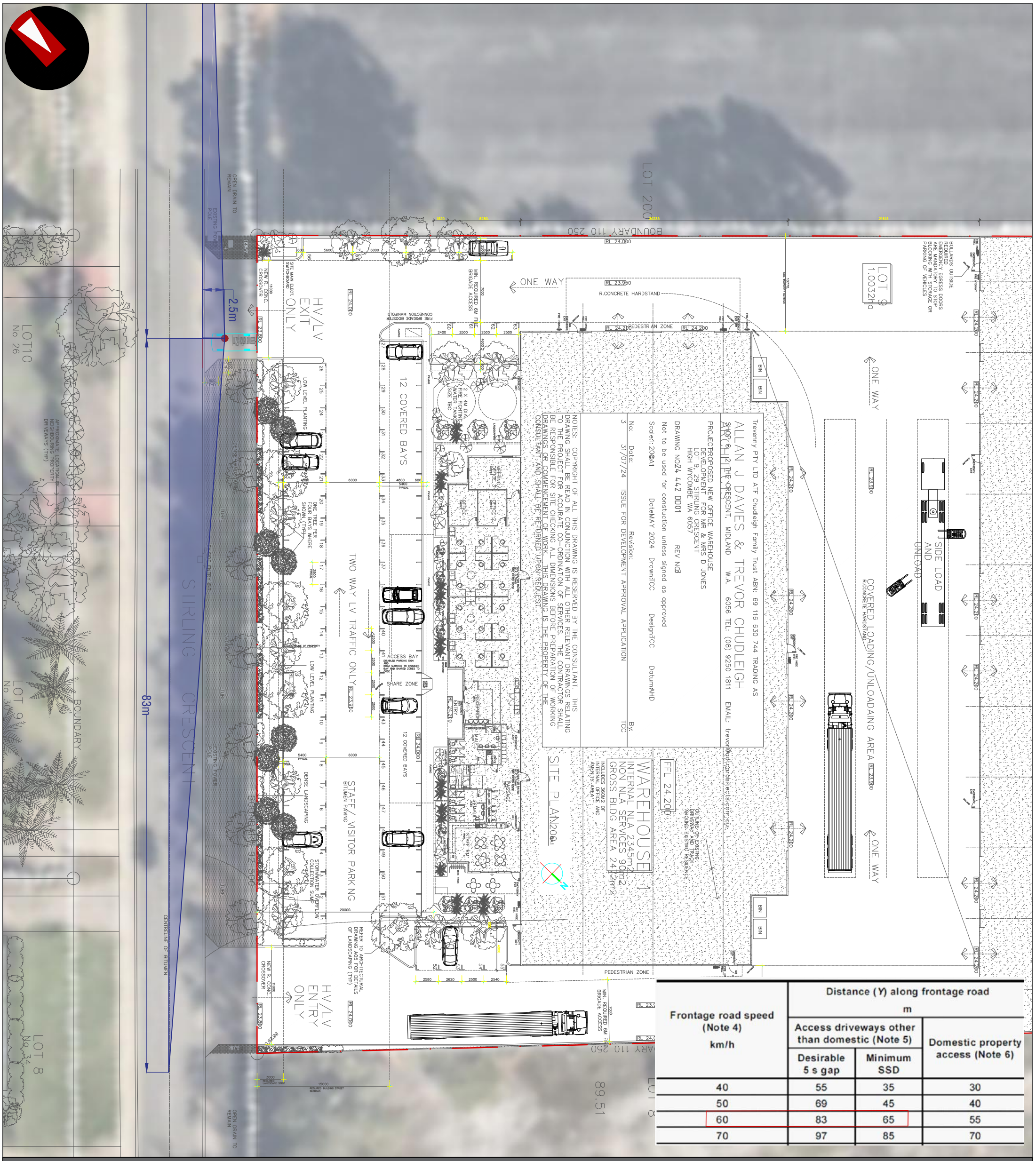
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Lot 9 (No 29) Stirling Crescent, High Wycombe

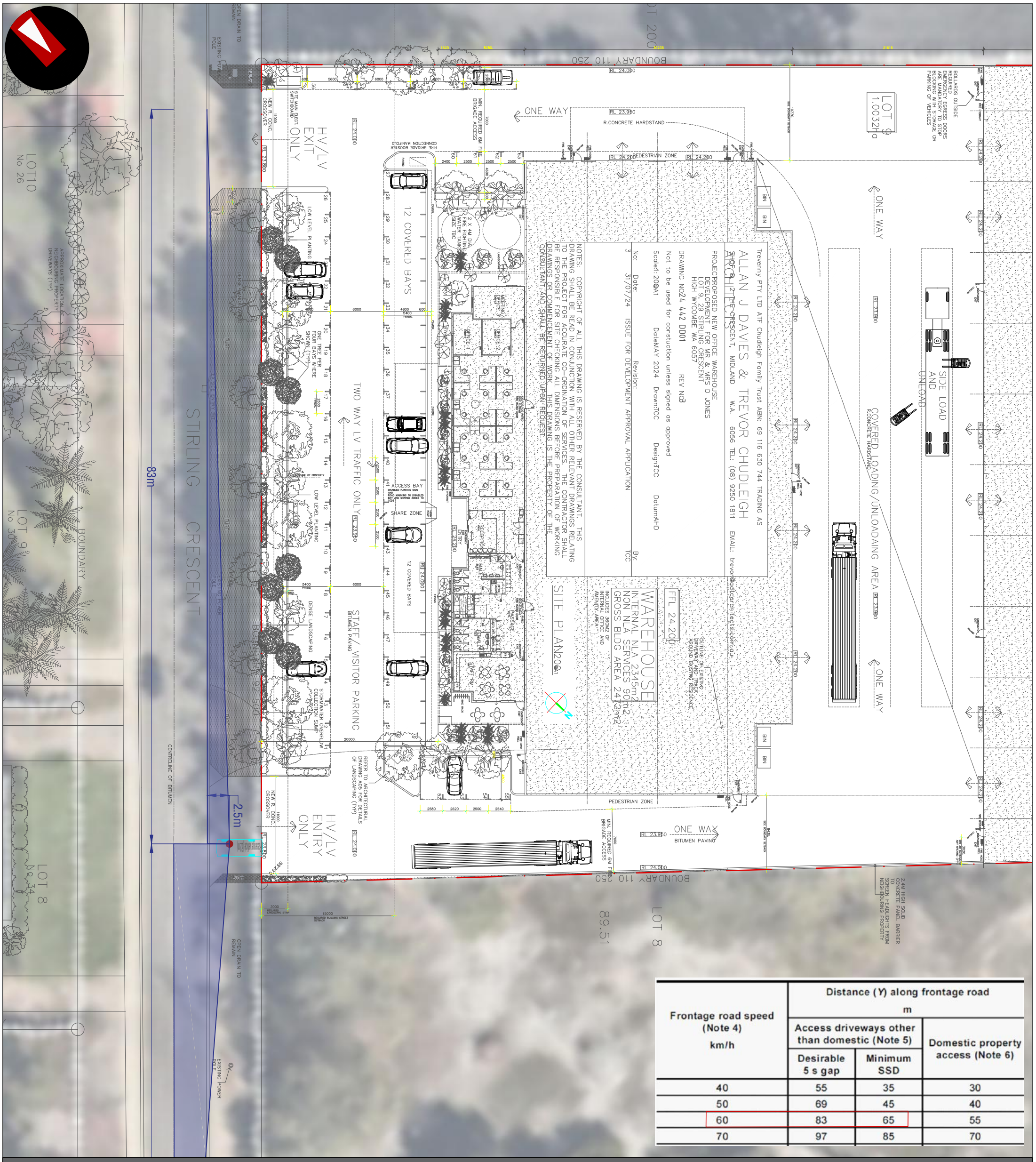
TITLE:
Suggested Parking Management Plan

DRAWING NUMBER:
KC01905.000_S100

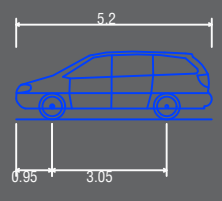
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J.S.

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PO Box 1456 Scarborough WA 6922
PH: 08 9441 2700
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LOT 200
BOUNDARY 110 250
RL 24.000
ONE WAY
R.CONCRETE HARDSTAND
RL 23.950
PEDESTRIAN ZONE
RL 24.200
LOT 9
1.0032ha
BOLLARDS OUTSIDE REQUIRED. EMERGENCY EGRESS DOORS ARE MANDATORY TO STOP BLOCKING WITH STORAGE OR PARKING OF VEHICLES
SIDE LOAD AND UNLOAD
COVERED LOADING/UNLOADING AREA
R.CONCRETE HARDSTAND
RL 23.390
ONE WAY
BIN
BIN
OPEN DRAIN TO REMAIN
EXISTING POWER POLE
2.5m
NEW R. CONC. CROSSOVER
HV/LV EXIT ONLY
RL 23.800
RL 24.000
MIN. REQUIRED 6M FIRE BRIGADE ACCESS
FIRE BRIGADE BOOSTER CONNECTION MANIFOLD
2 X 4M DIA FIRE FIGHTING WATER TANK SIZE TBC
LOW LEVEL PLANTING
ONE TREE PER FOUR BAYS WHERE SHOWN (TYP)
DENSE LANDSCAPING
12 COVERED BAYS
TWO WAY LV TRAFFIC ONLY
STAFF/ VISITOR PARKING
BITUMEN PAVING
ACCESS BAY
DISABLED PARKING SIGN AND ROAD MARKING TO DISABLED BAY AND SHARED ZONES TO CODE
SHARE ZONE
RECEPTION
MEETING / OFFICE 1
OFFICE 2
STAFF RM
MALE
FEMALE
PASSAGE
LUNCHROOM
STORMWATER OVERFLOW COLLECTION SUMP
REFER TO ARCHITECTURAL DRAWING A05 FOR DETAILS OF LANDSCAPING (TYP)
HV/LV ENTRY ONLY
NEW R. CONC. CROSSOVER
OPEN DRAIN TO REMAIN
APPROXIMATE LOCATION OF NEIGHBOURING PROPERTY DRIVEWAYS (TYP)
LOT10 No 26
LOT 8 No 34
LOT 9 No 30
BOUNDARY
STIRLING CRESCENT
CENTRELINE OF BITUMEN
83m
89.51
5.0m
3000 REQUIRED LANDSCAPE STRIP
15000 REQUIRED BUILDING STREET SETBACK
20000
6000
5400 TYPICAL
2580
2620
2500
2540
2400
2500
2500
2500
4500
7000
11900
11000
3500 TYP
3550
3500
2500
2500
2



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



Passenger vehicle (5.2 m)

Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.804m
Min Body Ground Clearance	0.295m
Track Width	1.840m
Lock to Lock Time	4.00s
Kerb to Kerb Turning Radius	6.300m

Vehicle Chasis Envelope

Sightlines

Driver's position

LEGEND

NO	DATE	AMENDMENT
A	28-10-2024	ISSUED FOR REVIEW

PROJECT: Lot 9 (No 29) Stirling Crescent, High Wycombe

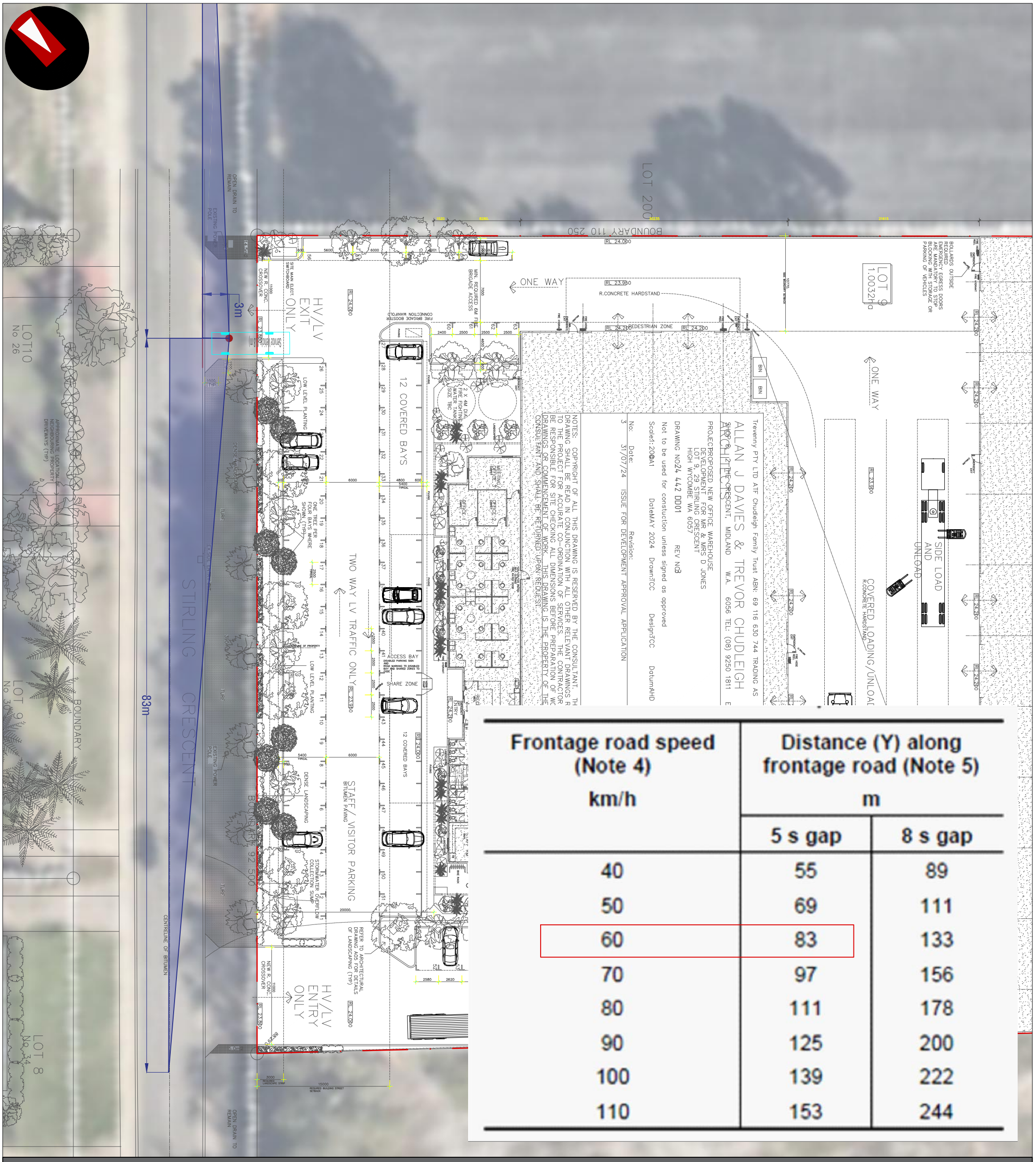
TITLE: Sightlines review - PASSENGER VEHICLE

DRAWING NUMBER: KC01905.000_S101

DRAWN BY: J.S.

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LOT 200
BOUNDARY 110 250
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PEDESTRIAN ZONE
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BOLLARDS OUTSIDE
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SIDE LOAD
AND
UNLOAD
COVERED LOADING/UNLOAD
R.CONCRETE HARDSTAND
RL 24.200
RL 23.200
RL 24.200
RL 24.200
RL 24

Galt GEOTECHNICS

Report on:

SITE AND SOIL EVALUATION
PROPOSED WAREHOUSE DEVELOPMENT
29 STIRLING CRESCENT
HIGH WYCOMBE WA

WAG240437-01 001 R Rev1 SSE

Submitted to:

Planning Solutions
Level 1, 251 St Georges Terrace
PERTH WA

2 September 2024

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Appendix A: Proposed Development Plan Provided
Appendix B: Brown Geotechnical Report
Appendix C: Water Balance

Understanding your Report

1. INTRODUCTION

This revised report presents the outcomes of Galt Geotechnics' (Galt's) Site and Soil Evaluation (SSE) for the proposed warehouse development, at 29 Stirling Crescent, High Wycombe WA ("the site", refer In Line Image 1). This revision includes the proposed LAA provided by the client and update to dripper disposal.

This report is to be read in conjunction with the appended "Requirements and Limitations" found at the back of this report.

2. DEFINITIONS

Site and Soil Evaluation (SSE): an assessment of all relevant constraints and the risks to public health and the environment in accordance with AS1547-2012 "On-site domestic wastewater management". This SSE is a general assessment SSE, with the purpose being to undertake a site suitability assessment for onsite wastewater management and to recommend the type of onsite wastewater system for the proposed development.

A specific assessment is required to support an "application to install" an onsite wastewater system. This is for when a particular type of system/model is proposed, and a detailed design, including management recommendations and operation requirements. This document is not a specific assessment.

Land Application Area (LAA): The unencumbered plan area to which treated sewage from an on-site sewage system is distributed for further in-soil treatment and absorption or evaporation. This area is restricted to the distribution of treated sewage and may not be developed for other purposes.

Land Application System (LAS): The system used to apply effluent from a wastewater treatment unit into or onto the soil for further in-soil treatment and absorption or evaporation.

Effluent: The liquid discharged from a wastewater treatment unit.

Primary Treatment: The separation of suspended material from sewage in septic tanks, primary settling chambers or other structures before discharge to either a LAS or secondary treatment process.

Secondary Treatment: Microbiological digestions and physical settling and filtering processes and decomposition of sewage constituents following primary treatment.

Sewage: Any kind of sewage, faecal matter or urine, and any waste composed wholly or in part of liquid.

Infiltrative Area: Is the area within an LAA that has treated effluent directly discharged onto, and does not include setback areas. I.e., the base of drip irrigation, evapotranspiration beds etc.

3. GOVERNING STANDARDS, REGULATIONS AND POLICIES

SSEs are governed by various National and State Standards, Regulations and Policies, including:

- AS/NZS 1547:2012, On-site domestic wastewater management.
- Western Australia Government Sewerage Policy (2019)
- Western Australia Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations (1974)
- Western Australia State Planning Policy 2.9, Water Resources (2005)

Other regulatory requirements may become relevant depending on the outcomes of any SSE.

SSEs can be rejected on the basis of not meeting the regulatory requirements of the above. This report is intended to address all these various requirements.

4. SITE DESCRIPTION

Table 1: Summary of Site

Item	Comment
Site Extent	About 8,600 m^2
Site Area	Refer In Line Image 1.
Current Site Surface Levels[1]	About RL 24 m AHD around existing residence and estimated to be RL 21 m AHD within lake.
Vegetation	Typically grass with mature trees mostly around residence and site perimeter.
Current Land Use	Residence
Site Drainage	Stormwater appears to be disposed of on site, either by soakwells or into the manmade lake in southern part of site. Regional groundwater and some surface water appears to be controlled via swales draining to the north west towards the Helena River.
Site History[2]	**Prior to 1953**: Judged to be partially cleared Pastoral land. Low lying Palusplain present in southern part of site. **1961 to 1965**: agricultural development in northern part of site. **1983 to 1985**: Agricultural works discontinued. **1985 to 1989**: Construction of existing residence and lake in southern part of site. **1989 to present**: Site relatively unchanged.

NOTES: ***1.*** *Site levels based on feature survey provided.*

2. *Site history based on aerial imagery (Landgate).*

5. PROPOSED DEVELOPMENT

Table 2: Summary of Proposed Development

Item	Comment
Proposed Development	Warehouse developments and associated hardstand areas (refer Appendix A).
Proposed Finished Level	About RL 23.9 m AHD for most of site.
Cut/Fill	Excavation of surficial clay and replacement (with sand fill) in northern and western part of site, extending to depths of up 1.6 m. Bulk fill of about 0.9 m to 1.5 m over most of the site with deeper filling required within the existing lake to form finished site levels.
Assumed Stormwater Disposal	On site via soakwells and cellular structures with some above ground storage as per Porter Engineering stormwater management plan.
Assumed Sewage Disposal	Via drip irrigation in areas shown in Appendix A.

6. PRELIMINARY HYDRAULIC LOADING

We have been provided with the following wastewater flow rates which we understand were derived using Health Regulations 29. We have assumed that no industrial liquid waste is to be disposed of on site.

Table 3: Summary of Preliminary Hydraulic Loading

Source	Personnel	Rate (L/ person/day)	Total Volume (L/day)
Full Time Staff, Members - Office and Warehouse (non showering)	30	30	900
Full Time staff - showering	5	70	350
Visitors	0	10	0
TOTAL	-	-	**1,250**

7. GEOTECHNICAL INFORMATION PROVIDED

We have been provided with a geotechnical investigation report prepared by Brown Geotechnical dated 22 July 2024 (Referenced 24040) which has been relied upon. The investigation work summarised in the report includes:

- Excavation of 3 test pits (TH18 to TH20), extending to depths of 1.5 m to 2.5 m; and
- Cone Penetration tests probes at 4 locations (CPT1 to CPT4), extending to depths of 2.3 m to 4.2;

Test locations are shown on In Line Image 1.

The report also states that surficial sands have an unsaturated hydraulic conductivity of about 40 m/day.

Inline Image 1 – Test Location Plan from Brown Geotechnical Report. Nominal area where surficial clay / clayey fill was encountered indicated in red.



8. SITE CONDITIONS

8.1. Geology

Table 4: Summary of Geology Mapping

Map Sheet	Map Scale	Mapped Soils	Site Findings
Perth	1:50,000	**NORTHERN PART OF SITE**: thin layer of Bassendean Sand overlying typically clay / clayey soils of the Guildford Formation. **SOUTHERN PART OF SITE**: Peaty clay swamp deposits.	**Clayey sand / sandy clay fill** up to about 1.6 m thick (in northern and western parts of the site only), over **natural sand, over** of **COFFEE ROCK. Some soft soils anticipated within lake.**

NOTE: Thin surficial topsoil layers generally present over the site.

8.2. Ground Model

The subsurface conditions encountered by Brown Geotechnical (refer Section 7) can be summarised as comprising:

- **Surficial TOPSOIL**; overlying
- **In TH19, TH20 and CPT2 to CPT4 ONLY - FILL: Sandy CLAY / Clayey SAND (SC)**, extending to depths of up to about 1.6 m; overlying
- **SAND (SP),** extending to depths of up to 4.2 m; overlying
- **COFFEE ROCK** inferred from CPT refusal at CPT1 at 3 m depth and CPT4 at 2.3 m depth.

Notes:

- We understand the insitu clayey sand / sandy clay fill is to be removed from site and replaced with free draining sand; and
- **Soft soils are anticipated at the base of the existing lake**. We understand that these soils are to be removed and the lake backfilled with free draining sand. Dewatering is proposed to enable these works.

8.3. Groundwater and Surface Water

Table 5: Summary of Groundwater and Surface Water Levels

Item	Date	Depth Range (m)[1]	Elevation Range (m AHD)	Comment
Perth Groundwater Atlas[2]	2004	9.4	14.5	End of summer level in 2004 only
	2019	4.4 to 5.9	18 to 19.5	Range of water levels in 2019 only
Brown Geotechnical Site Observations	June 2024	2.5 to 2.2	21.4 to 21.7	Encountered in CPT01 to CPT03
	July 2024	3.7	20.5	Encountered in TH19
Feature Survey	February 2024	3.0	21.2	Level in manmade lake at site measured in survey by Scanlan Surveys.
DBCA Mapping	-	-	-	Site mapped as sumpland.
Design water level at proposed LAA	-	-	22.0	Groundwater levels can be impacted by stormwater disposal. Design groundwater levels must also be assessed by project civil designer. This is unlikely to be an issue unless LAA is in close proximity to stormwater disposal elements.

NOTES: ***1.*** *Depth below proposed site level of RL 23.9 m AHD.*

2. *Perth Groundwater Atlas observations based on levels in nearby boreholes.*

9. SITE ASSESSMENT

9.1. General

The results of our site assessment are presented in Attached Table 1.

9.2. Horizontal Setbacks

Table 6: Required Horizontal Setback Distances (AS1547)

Feature	Sub-Type	Horizontal Setback Distances (m)
Treatment tanks to buildings, property boundaries, driveways, paths and other tanks	-	1.2
Trenches, beds and soak wells to boundary, building, tanks and other land application systems	-	1.8
Trenches, beds and soak wells to trafficable areas	-	1.2
Any land application system to wells, streams, private bores or underground source of water intended for human consumption	-	30.0
Trenches, beds and soak wells to subsoil drains or open drainage channels	-	6.0
Spray irrigation	Boundaries, buildings, driveways etc.	1.8
	Subsoil and open drains	6.0
	Swimming pools	3.0
	Treatment tanks	1.2
Subsurface Drippers	Boundaries, buildings, driveways etc.	0.5
	Subsoil and open drains	3.0
	Swimming pools	2.0
	Garden bore	10.0
On-site waste system to water resources (river, stream etc.)	-	100.0

9.3. Land Application Areas

9.3.1. Government Sewerage Policy (GSP, 2019)

The minimum LAA size in accordance with the GSP (2019) has been calculated and is shown below. The LAA may need to be resized if the hydraulic loading changes.

Table 7: GSP LAA Calculation

Soil Category (AS1547)	Conversion Factor (Table 2 of GSP)	Hydraulic Loading (L/day, Section 6)	Minimum LAA (m^2)
1	0.2	1,250	250

NOTE: *Conversion factor based on secondary treated effluent.*

9.3.2. Water Balance

Water balance calculations are presented in Appendix C. We note that the irrigation rate used in the water balance calculation accounts for the high permeability of the insitu soil in relation to disposal of rainfall. This is based on the mingled infiltration of stormwater and wastewater. We have nonetheless based the sewage loading for sizing of the dripper system on the maximum indicated in AS1547-2012.

The proposed drip irrigation configuration must have an infiltrative area not less than the minimum required to meet the infiltrative area requirements (in accordance with the WA Health Regulations Method). Drip irrigation must be installed to meet the horizontal setback requirements outlined in Section 9.2. The LAA shown in appendix A appears to meet required setbacks to the infiltrative area.

9.3.3. Summary

The minimum drip irrigation infiltrative area for the proposed loading is 250 m^2, within a minimum 250 m^2 total LAA. This may need to be resized if the hydraulic loading changes.

A detailed plan will be required with the application to install that shows the dripper configuration and that the required setbacks are met.

10. SOIL ASSESSMENT

Details of our soil assessment are presented in Attached Table 2.

11. SITE SUITABILITY AND RECOMMENDATIONS

Based on our assessment, the site is suitable for disposal of wastewater. Wastewater must have secondary treatment (i.e. an ATU). The WA Health Regulations method indicates a minimum LAA of 250 m^2 is required for wastewater disposal, with the LAA appropriately set back from drains, driveways, site boundaries, buildings etc... This will need to be resized if the hydraulic loading changes.

LAA Location and Setbacks

The location of the proposed LAA is shown in Appendix A. The proposed LAA appears to satisfy the setback requirements, including meeting the appropriate distances from site boundaries, buildings, trafficable areas, drainage basins and driveways etc…

Disposal Method

We recommend the use of drip irrigation for wastewater disposal.

Separation to Groundwater and LAA Surface Level

The disposal area must be minimum 1.5 m above maximum groundwater levels. Based on the information available (refer Table 5), this would require a ground level of not lower than RL 23.5 m AHD in drip irrigation areas. Stormwater runoff must be diverted away from the disposal area to ensure groundwater levels are controlled in the vicinity of the LAA.

Although we have nominated a design groundwater level of RL 22 m AHD, groundwater levels can be impacted by stormwater disposal. Design groundwater levels must also be assessed by project civil designer. There is unlikely to be an impact unless the LAA is in close proximity to stormwater disposal elements.

Treatment Units

The wastewater may be treated using an ATU (secondary treatment), also known as aerated wastewater treatment systems (AWTS). ATU's use the processes of aeration followed by clarification to achieve biological treatment of wastewater.

ATU's (or any other proposed system) must be certified to AS1546.3 (2008) and require approval by the Chief Health Officer. A list of approved ATU's is presented in Table 2 on the Department of Health website. The selected ATU must meet the hydraulic loading for the site and must treat sewage to achieve the following nutrient targets:

- Phosphorous: <1 mg/L
- Nitrogen: <10 mg/L

Soil Improvement

Improvement of the disposal areas must be done to achieve a phosphorous retention index (PRI) of at least 20, and monitored 3-yearly, in accordance with Department of Health requirements. This can be done with a product like 'gypsum', or by importing a high-PRI sand from off site. Improvement must be carried out to a minimum depth of 200 mm below the base of all infiltration zones and at least 0.5 m in plan outside the irrigation area.

12. CLOSURE

GALT GEOTECHNICS



Owen Woodland CPEng
Geotechnical Engineer

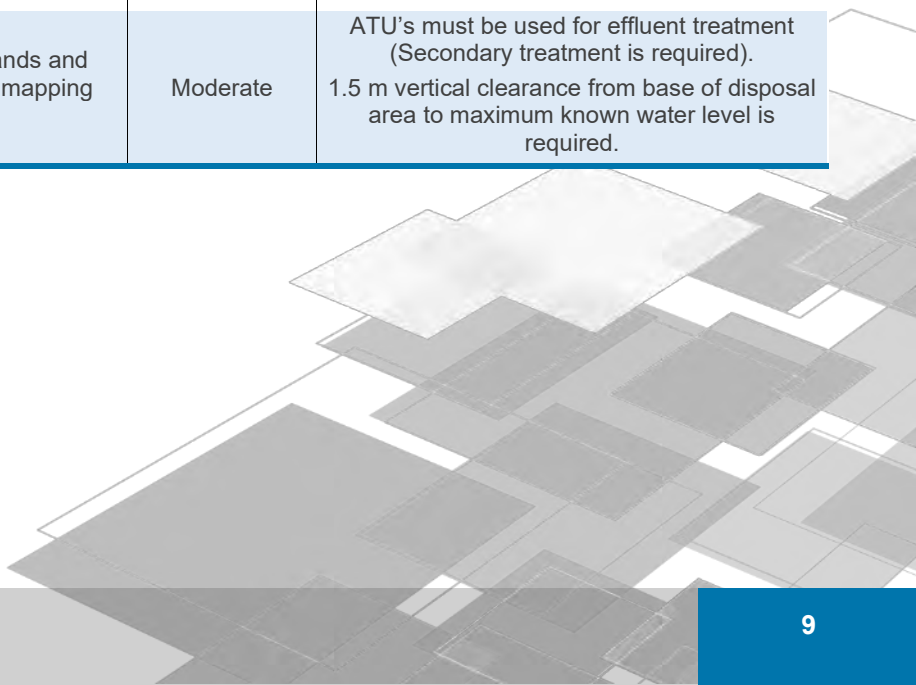


Tyrone Mardesic CPEng
Geotechnical Engineer

https://galtgeo.sharepoint.com/sites/wag240437/shared documents/01 ps sse/03 correspondence/wag240437-01 001 r rev1 sse.docx

Attached Table 1: Site Assessment

Consideration	Assessment / Discussion	Reference	Level of Constraint	Mitigation Measures
Geology	NORTHERN PART OF SITE: thin layer of Bassendean Sand overlying typically clay / clayey soils of the Guildford Formation. SOUTHERN PART OF SITE: Peaty clay swamp deposits.	Perth Sheet of the 1:50,000 Environmental Geology Series Map	Nil	Peat soils not encountered at site.
Climate	To satisfy zero storage requirements, minimum LAA's to be sized as required for hydraulic loading.	Appendix C, Water Balance Calculation	Low	LAA to be greater than area required to meet zero storage requirement.
Exposure	Site will be cleared and broadly levelled - minimal/no tree cover or significant site aspect.	-	Low	-
Vegetation	Assume light grass at surface, no significant vegetation	-	Moderate	LAA designed to accommodate water balance and have nutrient stripping capabilities.
Landform and Drainage	Stormwater appears to be disposed of on site, either by soakwells or into the manmade lake in southern part of site. Regional groundwater and some surface water appears to be controlled via swales draining to the north west towards the Helena River.	-	Low to Moderate	Civil design to minimise rainfall run-on and run-off (using bunds/curbs etc.).
Slope	The site has a gentle slope generally to south.	-	Low	Slope is <5% grade.
Fill (Imported)	Site to be filled to about RL 24.2 m AHD. Imported fill must be high permeability sand soil (Soil Category 1).	-	Low	Imported fill must high permeability sand soil (Soil Category 1).
PDWSAs	The site is **not** mapped as being within a public drinking water source area.	Department of water (DoW) mapping service	-	-
SSAs	The site is mapped as a Sewage Sensitive Area (within the estuary catchment of the Swan River Plain, and within 1 km of a significant wetland)	Department of lands and heritage (DPLH) mapping service.	Moderate	ATU's must be used for effluent treatment (Secondary treatment is required). 1.5 m vertical clearance from base of disposal area to maximum known water level is required.



Attached Table 1: Site Assessment CONTINUED (Page 2 of 2)

Consideration	Assessment / Discussion	Reference	Level of Constraint	Mitigation Measures
Groundwater Level	AAMGL of about RL 22 m AHD inferred for LAA from Information provided, (refer Table 5). Groundwater levels can be impacted by stormwater disposal. Design groundwater levels must also be assessed by project civil designer.	Table 5	Moderate	The ground level in drip irrigation areas must be at least 1.5 m above maximum groundwater levels. This could require a ground level of not lower than RL 23.5 m AHD in irrigation areas. Stormwater runoff must be diverted away from the disposal area to ensure groundwater levels are controlled in the vicinity of the LAA (subject to civil design).
Groundwater Separation	Because the site is in an SSA, a minimum separation of 1.5 m is required from the base of the disposal area to the maximum known groundwater level.	Government Sewerage Policy (2019)	Moderate	See comments above
Rainfall Run-on/Seepage	There is a gentle slope down towards the south. Some rainfall run-on and run-off may occur	-	Moderate	Incident rainfall must be diverted away from LAA's using curbs or diversion bunds. Similarly, any run-off must be prevented by either having a level LAA, or by using retention bunds.
Surface Water/Water Resources	Surface water could occur in the table drains along Stirling crescent along the southern site boundary.	-	Moderate	The required minimum setbacks to water resources must be met for the proposed LAA configuration. Site is over 100 m from nearby open water bodies or public drainage swales.
Flood Potential	The site is **not** in a floodplain area	DWER floodplain mapping	Low	-
Setbacks	All setbacks to be met.	Section 9.2, Appendix A	Moderate	LAA appears to meet setback requirements (refer Appendix A).
LAA	Within the LAA, minimum 250 m^2 is required to meet the minimum infiltrative area for drip irrigation, based on assumed hydraulic loading. The minimum total LAA area by the GSP 2019 method is 250 m^2 and should not be dual use. This will need to be resized as required for the hydraulic loading if a different hydraulic loading applies.	Section 9.3.3, Appendix A	Moderate	LAA appears to be appropriately sized and meet the minimum required infiltrative area and setbacks (refer Appendix A). Design Loading Rate to be confirmed.

Attached Table 2: Soil Assessment

Consideration	Assessment / Discussion				Reference	Level of Constraint	Mitigation Measures
Subsurface Soil Conditions	At proposed LAA, we understand soil conditions will comprise SAND (Category 1). This will involve removal of surficial clay / clayey fill (where the LAA is in the north west part of site (refer In Line Image 1).				Section 8	Low	-
Acid Sulfate Soils	Site soils are mapped as "High to moderate" risk of ASS due to peat soils being mapped in the area. No Peat encountered at site. No indicators of ASS are noted, and the LAA will be above groundwater.				Department of Environmental Regulation (DER) mapping	Low to Moderate	Organic soils could be present in the base of lake at site. It is proposed to remove these soils and backfill the lake with free draining sand. Any organic acid generating soils removed from the lake would require treatment and disposal off site.
Soil Category	Insitu SAND Soil Category 1 based on provided geotechnical report.				AS1547-2012	Low to Moderate	LAA is being placed in southwest of the site away from clayey fill area (refer In Line Image 1).
Design Loading Rates	5 mm/day (for treated effluent)				Table L1, AS1547-2012	-	Secondary treated effluent
Laboratory Testing	**Level of Constraint**						-
	Result	**Low**	**Medium**	**High**			
Coarse Fragments[1]	<10	<10%	10-40%	>40%		Low	Erosion risk is relatively low for sand and can be controlled using vegetation etc... as per civil design requirements.
Phosphorous Retention Index (PRI)[2]	<5 (Presumptive)	>20	5-20	<5	-	Low to Moderate	Bassendean sand as found on the site is known to have a low PRI. Therefore, the upper 0.2 m of soil below the disposal area must comprise either imported high PRI (PRI>20) sand, or the in situ sand amended with gypsum to improve nutrient stripping capability.
pH[1]	NA	6-8	4.5-6	<4.5,>8		-	Erosion risk is relatively low for sand and can be controlled using vegetation etc... as per civil design requirements.
Exchangeable Sodium Percentage[1]	NA	<10	10-20	<20		-	
Electric Conductivity (dS/m)[1]	NA	<0.3	0.3 – 2.0	>2.0		-	
Emerson Class[1]	NA	> 4	4	1 - 3		-	

Notes

1. *Level of constraint based on our interpretation of AS1547 description of "non-dispersive soils".*
2. *Phosphorus retention index requirements are based on our interpretation of The Department of Primary Industries and Regional Development Standards for Land Resource Mapping (2005), as this is not specified in AS1547.*

Appendices

Appendix A: Proposed Development Plan Provided

EXTERNAL WALLS MIN 20MM SET OFF BOUNDARY

BOUNDARY 89 480

88°20'0"

WAREHOUSE 2
INTERNAL NLA 2530m2
GROSS BLDG AREA 2565m2

FFL 24.200

NOTIONAL 8M STRUCTURAL GRID TO SUIT 200 'Z' PURLINS
SPECIFIC STRUCTURAL SYSTEM BY BUILDERS STRUCTURAL ENGINEER

RL 24.200

BOLLARDS OUTSIDE REQUIRED EMERGENCY EGRESS DOORS ARE MANDATORY TO STOP BLOCKING WITH STORAGE OR PARKING OF VEHICLES

SIDE LOAD AND UNLOAD

LOT 9
1.0032ha

ONE WAY

RL 23.900

COVERED LOADING/UNLOADAING AREA
R.CONCRETE HARDSTAND

2.4M HIGH SOLID CONCRETE PANEL BARRIER TO SCREEN HEADLIGHTS FROM NEIGHBOURING PROPERTY

10770.
SIDE BOUNDARY SETBACK

BIN BIN

8435.
SIDE BOUNDARY SETBACK

Trevenny PTY LTD ATF Chudleigh Family Trust ABN: 69 116 630 744 TRADING AS

ALLAN J DAVIES & TREVOR CHUDLEIGH ARCHITECTS
SHOP 8, 2 THE CRESCENT, MIDLAND W.A. 6056 TEL: (08) 9250 1811 EMAIL: trevor@adtcarchitects.com.au

PROJECT: PROPOSED NEW OFFICE WAREHOUSE
DEVELOPMENT FOR MR & MRS D JONES
LOT 9, 29 STIRLING CRESCENT
HIGH WYCOMBE WA 6057

DRAWING NO: 24 442 DD01 REV NO: 5

Not to be used for constuction unless signed as approved

Scale: 1:200 @A1 Date: MAY 2024 Drawn: TCC Design: TCC Datum: AHD

No:	Date:	Revision:	By:
3	31/07/24	ISSUE FOR DEVELOPMENT APPROVAL APPLICATION	TCC
4	13/08/24	RE-ISSUED WITH TURNING ON SITE ATU SYSTEM ADDED, TRUCK TURNING AS PER TRAFFIC CONSULTANT REPORT	TCC
5	19/08/24	ATU SYSTEM INCREASE ATU DISBERSEMENT FIELD TO 250M2	TCC

NOTES: COPYRIGHT OF ALL THIS DRAWING IS RESERVED BY THE CONSULTANT. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS RELATING TO THE PROJECT FOR ACCURATE CO-ORDINATION OF SERVICES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SITE CHECKING ALL DIMENSIONS BEFORE PREPARATION OF WORKING DRAWINGS OR COMMENCEMENT OF WORK. THIS DRAWING IS THE PROPERTY OF THE CONSULTANT AND SHALL BE RETURNED UPON REQUEST.

OUTLINE OF EXISTNG DRIVEWAY AND TRACK AROUND EXISTNG RESIDENCE

FFL 24.200

WAREHOUSE 1
INTERNAL NLA 2345m2
NON NLA SERVICES 90m2
GROSS BLDG AREA 2472m2

INCLUDES 360M2 OF INTERNAL OFFICE AND AMENITY AREA

ONE WAY
BITUMEN PAVING
RL 23.950

RL 24.000

PEDESTRIAN ZONE

7000
MIN. REQUIRED 6M FIRE BRIGADE ACCESS

LOT 200

BOUNDARY 110 250

LOT 8

89.51

SITE PLAN 1:200 @A1

2500
MIN. REQUIRED 6M FIRE BRIGADE ACCESS

2 X 4M DIA. FIRE FIGHTING WATER TANKS- SIZE TBC

FIRE BRIGADE BOOSTER CONNECTION MANIFOLD

MEETING/ OFFICE 3 CARPET
OFFICE 2 CARPET
OFFICE 1 CARPET
RECEPTION VINYL
ENTRY
MALE TILES
FEMALE TILES
PASSAGE VINYL
STAFF RM. VINYL
BIKE RACK

12 COVERED BAYS

ACCESS BAY
DISABLED PARKING SIGN AND BOLLARD IN BAY AND SHARED ZONE TO COD

SHARE ZONE

REFER TO ARCHITECTURAL DRAWING A05 FOR DETAILS OF LANDSCAPING (TYP)

ATU SEWER SYSTEM
36.57m2
8.3m2
=28.3m2

500 (TYP) DISPERSEMENT FIELD SETBACK

28M2 ATU DISPERSEMENT FIELD No1

TWO WAY LV TRAFFIC ONLY

STAFF/ VISITOR PARKING
BITUMEN PAVING

HV/LV EXIT ONLY

HV/LV ENTRY ONLY

ATU DISPERSEMENT FIELD No2 CONTINUED

224M2 ATU DISPERSEMENT FIELD No2

ONE TREE PER FOUR BAYS WHERE SHOWN (TYP)

LOW LEVEL PLANTING

DENSE LANDSCAPING

SITE MAIN ELECT. SWITCHBOARD

NEW R. CONC. CROSSOVER

RL 23.800

BOUNDARY 92 500

OPEN DRAIN TO REMAIN

EXISTING POWER POLE

DENSE LANDSCAPING

TURF

EX.SIDE ENTRY PIT

STIRLING CRESCENT

CENTRELINE OF BITUMEN

APPROXIMATE LOCATION OF NEIGHBOURING PROPERTY DRIVEWAYS (TYP)

LOT10
No 26

LOT 9
No 30

LOT 8
No 34

BOUNDARY

EXISTING RESIDENCE

Appendix B: Brown Geotechnical Report

Brown Geotechnical

Consulting Engineers – Land Development
Geotechnical/Acid Sulphate Soil/Groundwater Monitoring

Our reference: 24040 22 July 2024

David Jones & Anita Jones
29 Stirling Crescent
High Wycombe WA 6057

C/- Planning Solutions
Attention: Joshua Carmody

Geotechnical Investigation – 29 Stirling Crescent, High Wycombe.

Dear Joshua

Introduction

Brown Geotechnical visited the above site on 2nd July 2024 to carry out a geotechnical investigation for a proposed commercial development including warehouses, offices and truck parking.

In addition to the three test holes previously carried out by Brown Geotechnical as part of the preliminary investigation for the area Structure Plan, four additional test holes were extended to a depth of 4m using an electric friction cone penetrometer (CPT) rig to allow for confirmation of soil depth and type across the site.

At the time of the investigation the site was occupied by an existing single storey residence and out-buildings. A large, approximately 1.5m deep, pond occupied the southern corner of the lot, and occasional medium to large tree were scattered across the property.

Brief

The report will address:

- Subsurface conditions,
- The existing soil classification in accordance with (AS2870-2011),
- Any earthworks required to obtain a classification suitable for development,
- Suitability of in-situ soil for use as engineering fill in the development,
- Soil bearing capacity and settlements,
- Retaining wall parameters,
- CBR for car park pavement design,
- Earthquake sub-soil class (AS1170.4-2007),
- Groundwater levels,
- Site permeability and drainage issues.

Laboratory Test Results

Table 1 – Geotechnical Test Results

Sample Location	Depth (m)	Fines (%)	Sand (%)	Gravel (%)	LL (%)	PL (%)
CPT4	0.5	43	57	0	39	17

Ground Conditions

The natural in-situ soil below the site is a medium grained, non-cohesive, well-draining sand. CPT 1 and 4 noted a very dense / cemented layer at approx. 2.5m to 3m. Experience in the area suggests this to be an iron cemented silty sand layer, locally know as coffee rock. It is usually approx. 0.5m thick. CPT2 and CPT3 pushed through the layer, though the zone still appears to be cemented.

The rear third of the site has a layer of clayey sand fill approx. 0.5m - 1m thick (see attached plan). The fill is compact and appears free from any deleterious materials but has some cohesive (plastic) fines, though only a small area was investigated. The area is raised 0.5m – 1.0m above the adjacent paddocks to the northwest. A sample taken at CPT4 has a moderate fines content, with low plasticity and low shrink swell potential.

The ground either side of the pond has a thin layer of fill to approx. 0.3m - 0.5m.

Site Classification

The site classification for the site will depend on whether the clayey sand fill is removed or retained.

If the clayey sand fill remains, specifically in the rear third of the site, it has been determined that the appropriate site classification for footing design in this area is Class 'S' in accordance with AS2870-2011 (refer Table 2) and following the earthworks and foundation considerations below.

If the clayey sand fill is removed, which is recommended, the site classification will be Class 'A'.

It is therefore considered that the land is suitable for development.

Table 2 - Definition of Site Classifications (Australian Standard AS2870-2011)

Class	Foundation
A	Most sand and rock sites with little or no ground movement from moisture changes
S	Slightly reactive clay sites with only slight ground movement for moisture changes (y_s<20mm).
M	Moderately reactive clay or silt sites, which can experience moderate ground movement from moisture changes (y_s 20–40mm).
H1	Highly reactive clay site, which can experience moderate to high ground movement from moisture changes (y_s 40–60mm)
H2	Highly reactive clay site, which can experience high ground movement from moisture changes (y_s 60–75mm)
E	Extremely reactive sites, which can experience extreme ground movement from moisture changes (y_s>75mm)

y_s: Characteristic Surface Movement

Earthworks

All earthworks should be undertaken in accordance with AS3798-1996 “Guidelines on earthworks for commercial and residential developments”.

Topsoil / Fill

Topsoil is not suitable for foundation support and should be removed. There are some trees across the site. Unless they are to be retained, they should be removed with the entire root bulb material. The excavations should then be backfilled with material exhibiting the same geotechnical properties as the surrounding soils, then compacted as stated below.

All uncontrolled materials associated with the demolition of the existing structures, including footings, etc, should be removed from site.

Proof Rolling and Site Compaction

Prior to footing placement or placing any additional fill on site, the sand should be proof rolled to achieve at least 98% SMDD.

Should the clayey sand fill be retailed, or re-worked, it should be compacted to a dry density ratio of at least 95% MMDD. Compaction should be checked using nuclear dry density tests.

Imported Fill Material

Any sand fill imported to obtain site formation levels, should be compacted in layers not more than 300mm thick to at least 98% SMDD. In-situ density tests should be carried out to calibrate the PSP to specific densities of the compacted material. Moisture conditioning (wetting) of the sand may be required to optimise compaction. Imported sand should ideally contain less than 5% non-plastic fines to retain good drainage characteristics and should be compacted at optimum moisture content.

Following excavation for foundations, the bases of pad and strip footings should also be compacted to achieve at least 98% SMDD.

Earthwork Inspections

A geotechnical consultant should be engaged to inspect the site following the removal of topsoil, trees, buildings and other unsuitable materials, and to confirm the compaction of the subsurface following proof rolling. Inspections and auditing of the earthworks should be carried out by the geotechnical consultant to enable confirmation of the final site classification.

Pond Backfill

It is understood, following discussions with the owner, that the pond is man-made and does not contain a clay liner. It is assumed the water within the pond is natural groundwater at the natural groundwater level.

Prior to backfilling, the pond should be dewatered, and any fines and sludge removed. The excavations should then be backfilled with material exhibiting the same geotechnical properties as the surrounding soils, then compacted as stated above. Only following the backfill and compaction should the dewatering be stopped.

Note: On no account should sand fill be placed into standing water in an attempt to backfill the pond. Saturated soils cannot be compacted and may result in excessive settlement below the future development.

Suitability of Existing Soils for use in the Development

The in-situ sands on site have low fines, are medium grained, cohesionless and free draining. They will be suitable for use as engineering fill in the development.

The clayey sand fill may be retained, however will likely form an impermeable layer restricting drainage. Further inspection and testing of the fill should be carried out as it is uncovered during the development.

Note: If the clayey sand fill is retained below proposed building envelopes, care should be taken avoid placing pad and strip footing across area of differing soil types to avoid differential settlement.

Bearing Capacity

It is understood that approximately 1m of clean sand fill will be imported on to the site during the bulk earthworks. For the estimate bearing capacity purposes, we considered the fill to have been proof rolled to a dense condition.

The following allowable bearing pressures have been based on a dense sand and a Young's modulus, E = 40 MPa. Potential settlements should be taken into account for design bearing pressures.

Table 3 - Strip Footing Allowable Bearing Pressure and Estimated Settlement

Footing Depth (m)	Footing Width (m)	Allowable Bearing Pressure (kPa)	Estimated Settlement (mm)
0.5	0.5	125	<5
	1.0	150	5-10
	1.5	200	10-15

Table 4 - Pad Footing Allowable Bearing Pressure and Estimated Settlement

Footing Depth (m)	Footing Dimension (m)	Allowable Bearing Pressure (kPa)	Estimated Settlement (mm)
0.5	0.5 x 0.5	150	<5
	1.0 x 1.0	200	5-10
	1.5 x 1.5	250	10-15

The bearing pressures presented in Table 3 and 4 are also based on the following:

- Loading is isolated, vertical, non-eccentric, on level ground, and not influenced by any nearby cuttings or embankments,
- Factor of Safety of 2.5,
- It is recommended that the total settlement be limited to 15mm,
- Differential Settlement to be no greater than nominally half the total.

California Bearing Ratio

An average CBR correlation value of 18% for dense sand (in-situ) is considered adequate for access road and car park pavement design based on the CPT data.

For imported Perth sand fill, typical CBR values can vary from 12 to 20. Testing of additional imported fill should be carried out to determine more accurate values.

Earthquake Sub-Soil Class

The site Sub-Soil Class is considered as a Class C_e.

Retaining Wall Parameters

Assuming compaction / proof rolling of the soils has been carried out as stated above, the following retaining wall parameters have been based on a medium dense sand soil with ϕ=30°.
γ=18 kN/m^3

Ko=0.50

Ka=0.29

Kp=4.

The parameters detailed above assume design of the retaining structure and compaction of the foundations are in accordance with AS 4678-2002, and that backfill material is composed of clean cohesionless sand.

Groundwater

Groundwater was encountered at approx. 1.5m bgl in the CPT probes. The preliminary investigation noted groundwater at 2.3m in TH19, below a 1m layer of fill. This equates to approximately the same level noted in CPT1 where there is no fill present.

The Perth groundwater map indicates the groundwater level to be approx. 19mAHD, or approx. 4m below ground level. The DoW notes these values can vary locally by up to 3m.

The layer of cemented sand / coffee rock seen in the CPT probes at approx. 2.5m could influence the local groundwater level, being an aquiclude to vertical drainage or causing perching of groundwater in sands above the layer.

For more accurate groundwater information, groundwater monitoring bores should be considered.

Permeability and Site Drainage

Drainage within the clayey sand fill will be poor. It is recommended that the material be removed if soakwells are required in the future development.

The drainage characteristics of the sand on site are good. The near surface soil permeability is 5x10^{-4} m/s. Soakwells will be suitable for stormwater runoff within the sand.

Permeability and drainage conditions may be reduced during earthworks due to compaction of in-situ and imported sands. Over compaction during earthworks can seriously reduce soil permeability and drainage potential. It is recommended that further permeability testing be carried out following the completion of earthworks.

Regards

Ken Brown

Senior Geotechnical Engineer
BROWN GEOTECHNICAL

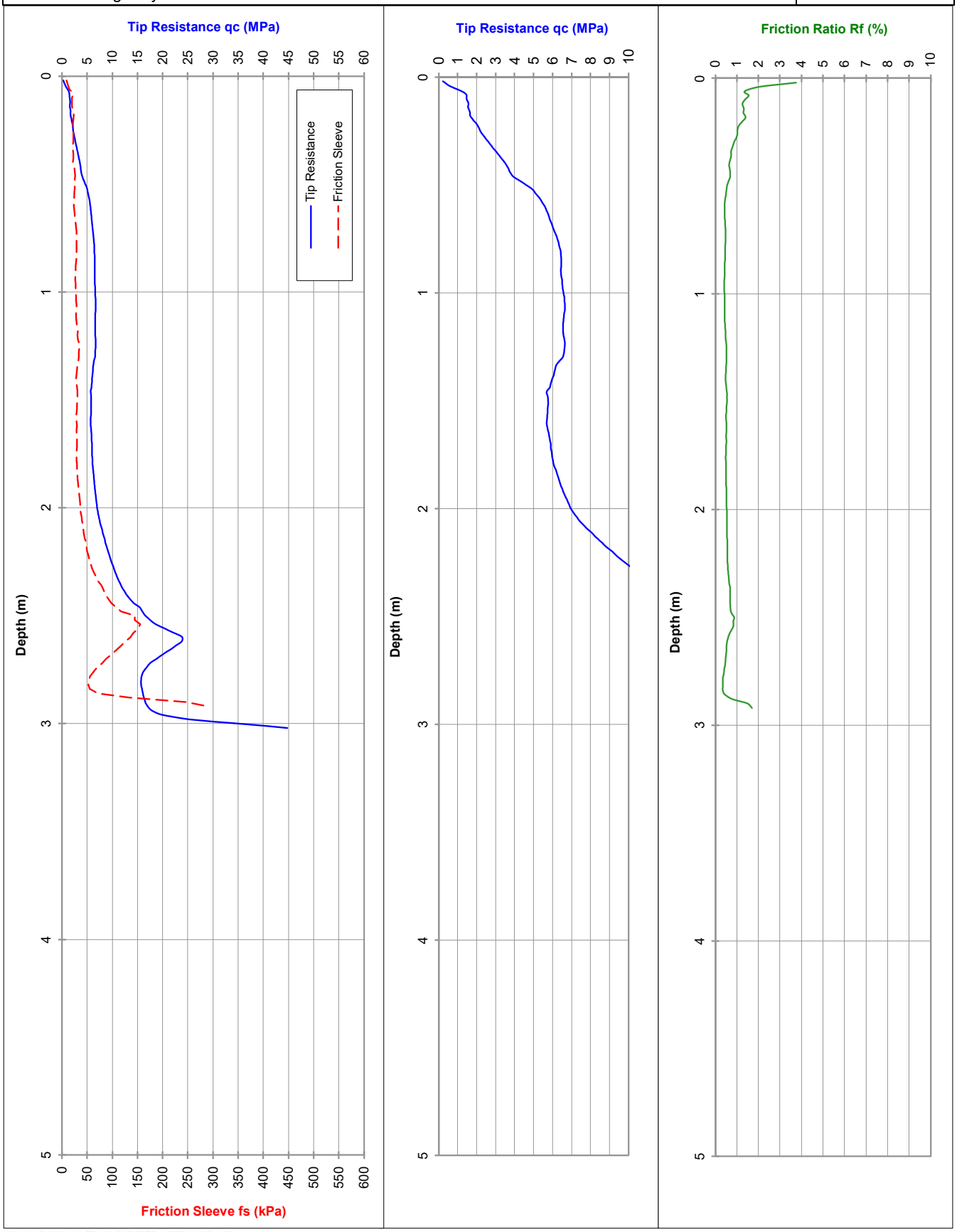
Attachments: 1. Site and Test Location Plan
2. CPT Plots and Test Hole Logs
3. Laboratory Test Certificates
3. Conditions Relating to this Report

Site and Test Location Plan



ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: Brown Geotechnical	Job No.: 24024	Probe I.D
PROJECT: 29 Stirling Crescent	RL (m):	**CPT 01**
LOCATION: High Wycombe	Co-ords:	02-Jul-24



PROBEDRILL GEOTECHNICAL SURVEY

Tested in accordance with AS 1289.6.5.1-1999 and IRTP 2001 for friction reducer

Approx. water (m): 1.6

Dummy probe to (m):

Refusal: Rod Friction

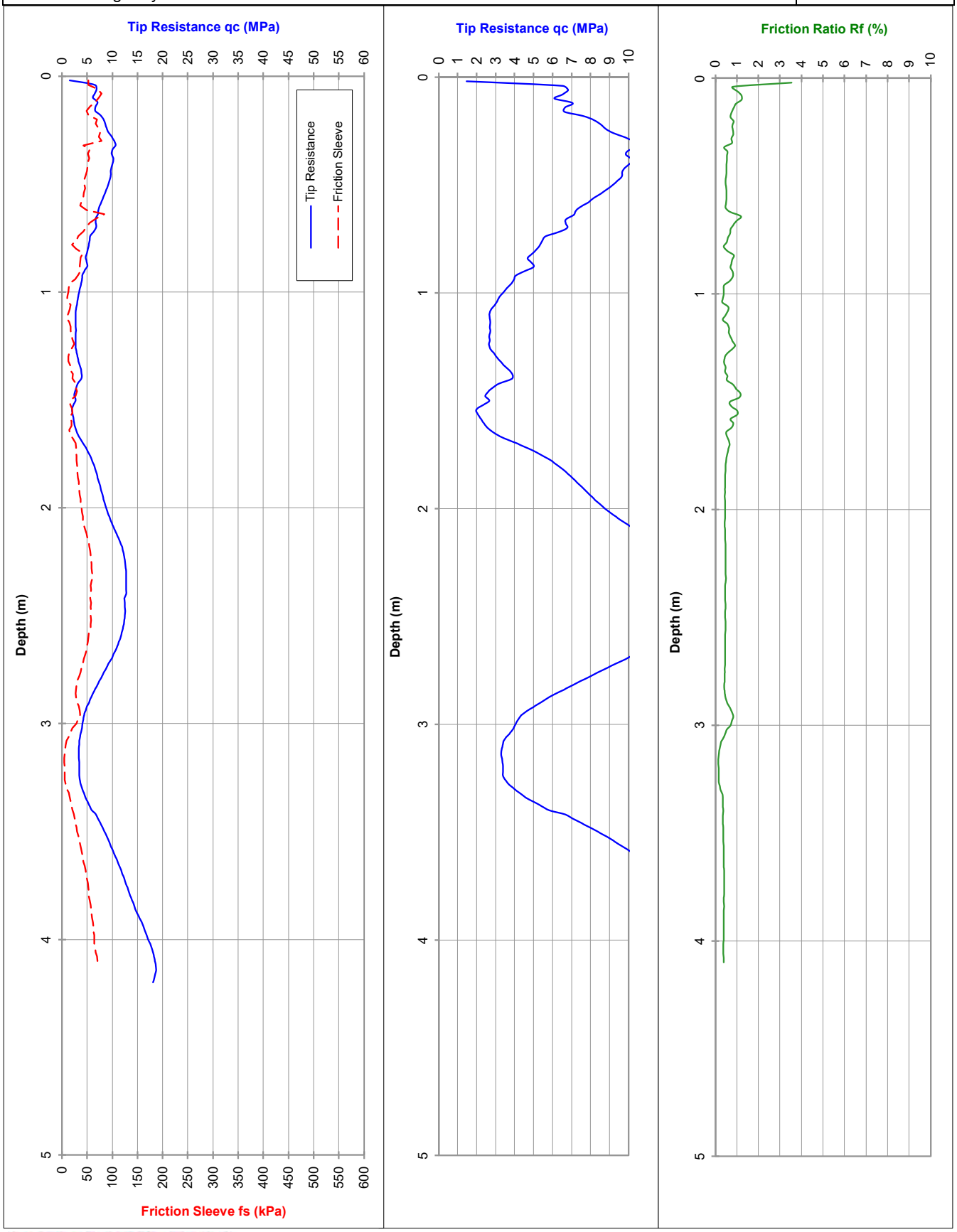
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File: BG0122T

Rig Type: 7t track

ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: Brown Geotechnical	Job No.: 24024	Probe I.D
PROJECT: 29 Stirling Crescent	RL (m):	**CPT 02**
LOCATION: High Wycombe	Co-ords:	02-Jul-24



PROBEDRILL GEOTECHNICAL SURVEY

Tested in accordance with AS 1289.6.5.1-1999 and IRTP 2001 for friction reducer

Approx. water (m): 1.5

Dummy probe to (m):

Refusal:

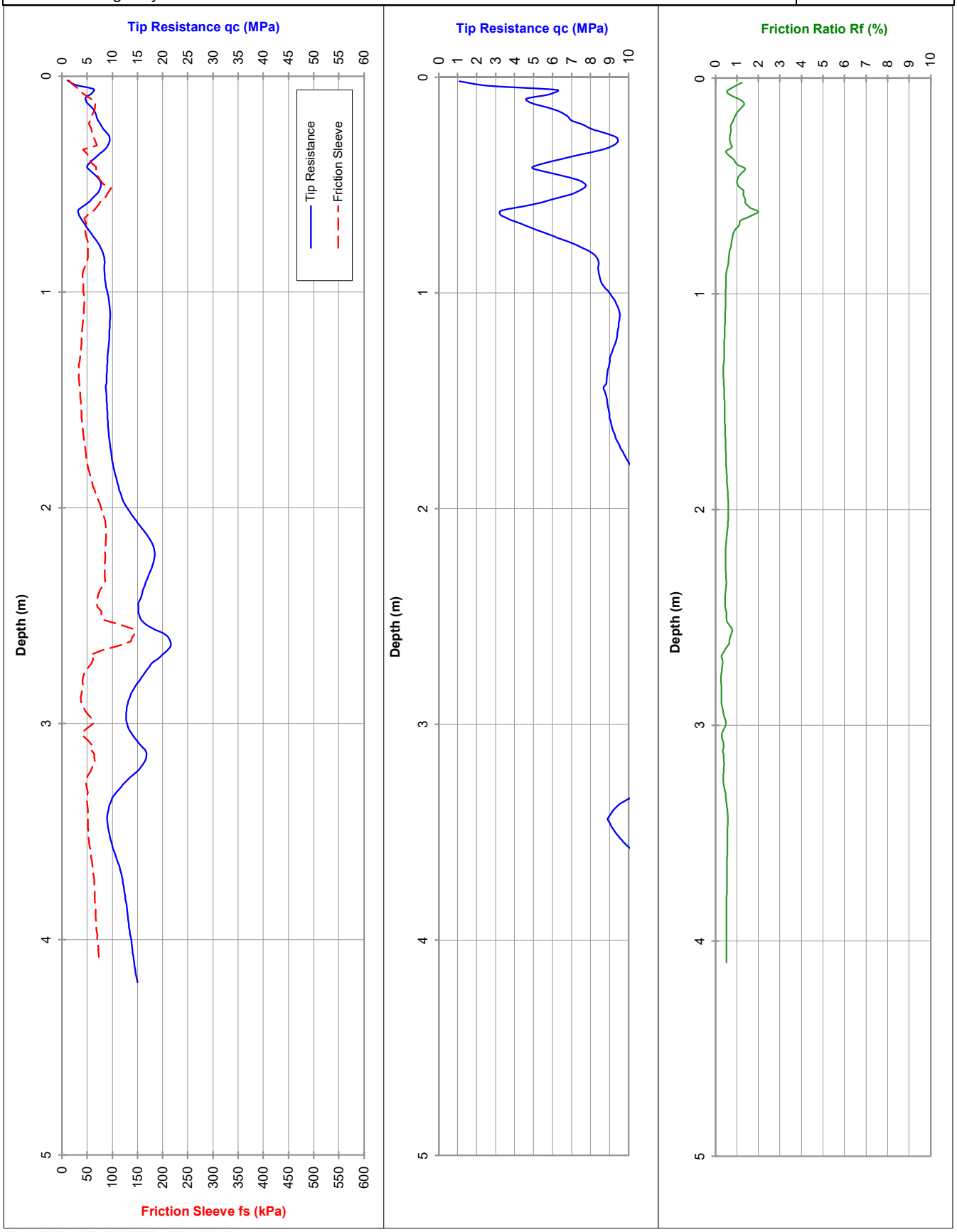
Cone I.D.: EC39

File: BG0123T

Rig Type: 7t track

ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: Brown Geotechnical	Job No.: 24024	Probe I.D
PROJECT: 29 Stirling Crescent	RL (m):	**CPT 03**
LOCATION: High Wycombe	Co-ords:	02-Jul-24



PROBEDRILL GEOTECHNICAL SURVEY

Tested in accordance with AS 1289.6.5.1-1999 and IRTP 2001 for friction reducer

Approx. water (m): 1.3

Dummy probe to (m):

Refusal:

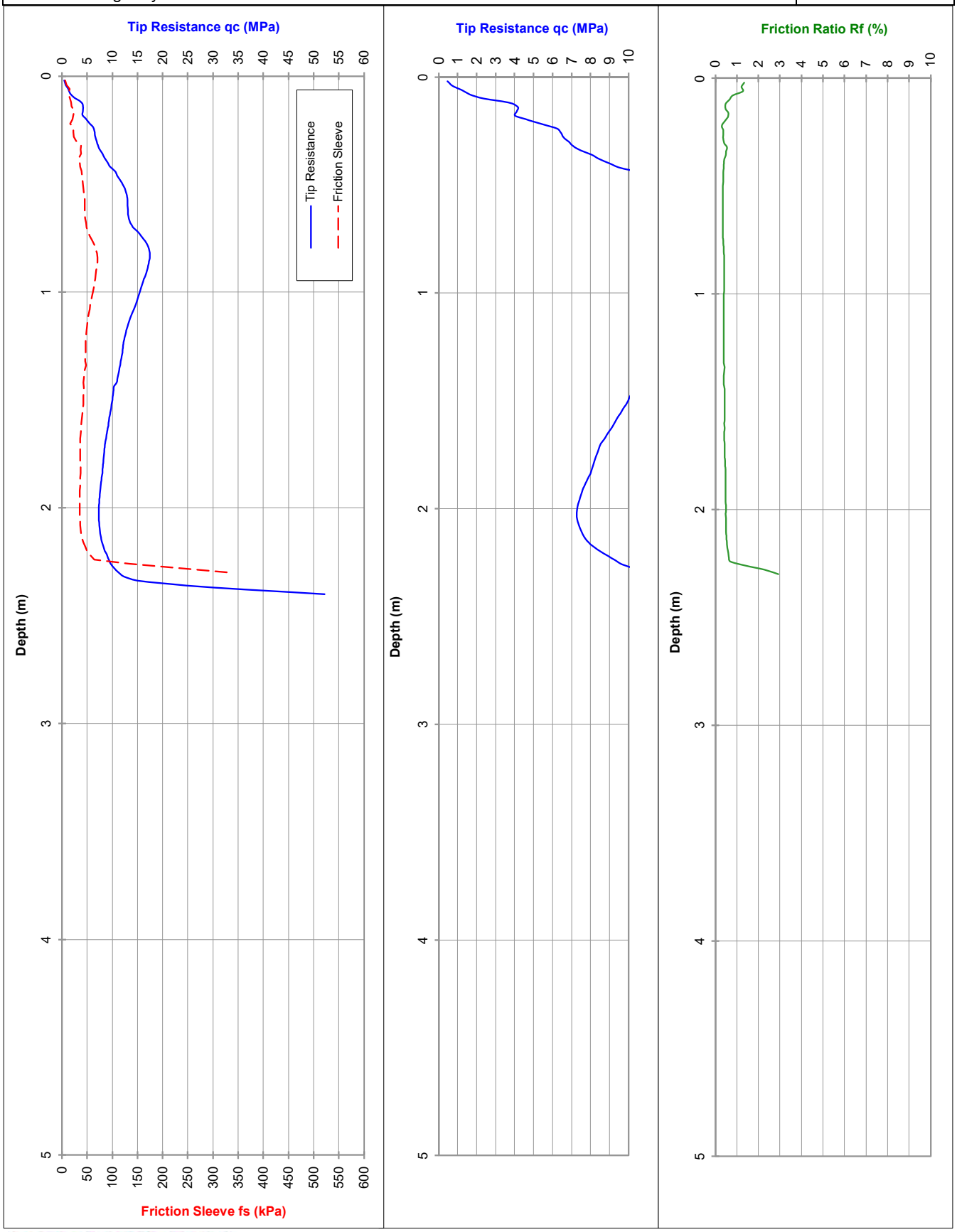
Cone I.D.: EC39

File: BG0124T

Rig Type: 7t track

ELECTRIC FRICTION-CONE PENETROMETER

CLIENT: Brown Geotechnical	Job No.: 24024	Probe I.D
PROJECT: 29 Stirling Crescent	RL (m):	**CPT 04**
LOCATION: High Wycombe	Co-ords:	02-Jul-24



PROBEDRILL GEOTECHNICAL SURVEY

Tested in accordance with AS 1289.6.5.1-1999 and IRTP 2001 for friction reducer

Approx. water (m): Dry to 1.8

Dummy probe to (m):

Refusal: Rod Friction

Cone I.D.: EC39

File: BG0125T

Rig Type: 7t track

BG Brown Geotechnical

BOREHOLE NUMBER TH18

CLIENT Marwon Pty Ltd **PROJECT NAME** Stirling Crescent/Hatch Court LSP

PROJECT NUMBER 14010 **PROJECT LOCATION** High Wycombe

DATE STARTED 25/06/14 **COMPLETED** 25/06/14 **R.L. SURFACE** 23.1 **DATUM** m AHD

DRILLING CONTRACTOR **SLOPE** 90° **BEARING** ---

EQUIPMENT 5 tonne excavator **HOLE LOCATION** 31.993031S 116.00253E MGA

HOLE SIZE 0.5m x 1m **LOGGED BY** KB **CHECKED BY** KB

NOTES

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
		23.0				TOPSOIL: Fine to medium, grey, silty sand, with rootlets, moist		
					FILL	FILL: Dense, grey & brown, sandy gravel fill		
			0.5		SP	SAND: Medium dense, medium, grey, trace silt, moist		
		22.5						
	Not Encountered		1.0					
		22.0						
			1.5					
		21.5						
			2.0					
		21.0						
						Collapse Borehole TH18 terminated at 2.3m		
			2.5					
		20.5						
			3.0					

BG Brown Geotechnical

BOREHOLE NUMBER TH19

CLIENT Marwon Pty Ltd **PROJECT NAME** Stirling Crescent/Hatch Court LSP

PROJECT NUMBER 14010 **PROJECT LOCATION** High Wycombe

DATE STARTED 25/06/14 **COMPLETED** 25/06/14 **R.L. SURFACE** 24.0 **DATUM** m AHD

DRILLING CONTRACTOR **SLOPE** 90° **BEARING** ---

EQUIPMENT 5 tonne excavator **HOLE LOCATION** 31.92991S 116.00179E MGA

HOLE SIZE 0.5m x 1m **LOGGED BY** KB **CHECKED BY** KB

NOTES

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
						TOPSOIL: Fine to medium, grey, silty sand, with rootlets, moist		
					FILL	FILL: Dense, brown, clayey sand fill		
		23.5	0.5					
		23.0	1.0					
					SP	SAND: Medium dense, medium, grey, trace silt, moist		
		22.5	1.5					
		22.0	2.0					
	▼ 2.3m					wet below 2.3m		
		21.5	2.5					
						Borehole TH19 terminated at 2.5m		
		21.0	3.0					

BOREHOLE / TEST PIT STIRLING HATCH.GPJ GINT AUSTRALIA.GDT 13/08/14

BG Brown Geotechnical

BOREHOLE NUMBER TH20

CLIENT Marwon Pty Ltd **PROJECT NAME** Stirling Crescent/Hatch Court LSP

PROJECT NUMBER 14010 **PROJECT LOCATION** High Wycombe

DATE STARTED 25/06/14 **COMPLETED** 25/06/14 **R.L. SURFACE** 23.8 **DATUM** m AHD

DRILLING CONTRACTOR **SLOPE** 90° **BEARING** ---

EQUIPMENT hand auger **HOLE LOCATION** 31.93049S 116.005206E MGA

HOLE SIZE 0.5m x 1m **LOGGED BY** KB **CHECKED BY** KB

NOTES

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
						TOPSOIL: Fine to medium, grey, silty sand, with rootlets, moist		
		23.5	0.5		FILL	FILL: Dense, brown, clayey sand fill		
	Not Encountered	23.0	1.0		SP	SAND: Medium dense, medium, grey, trace silt, moist		
		22.5	1.5			Borehole TH20 terminated at 1.5m		
		22.0	2.0					
		21.5	2.5					
		21.0	3.0					

WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

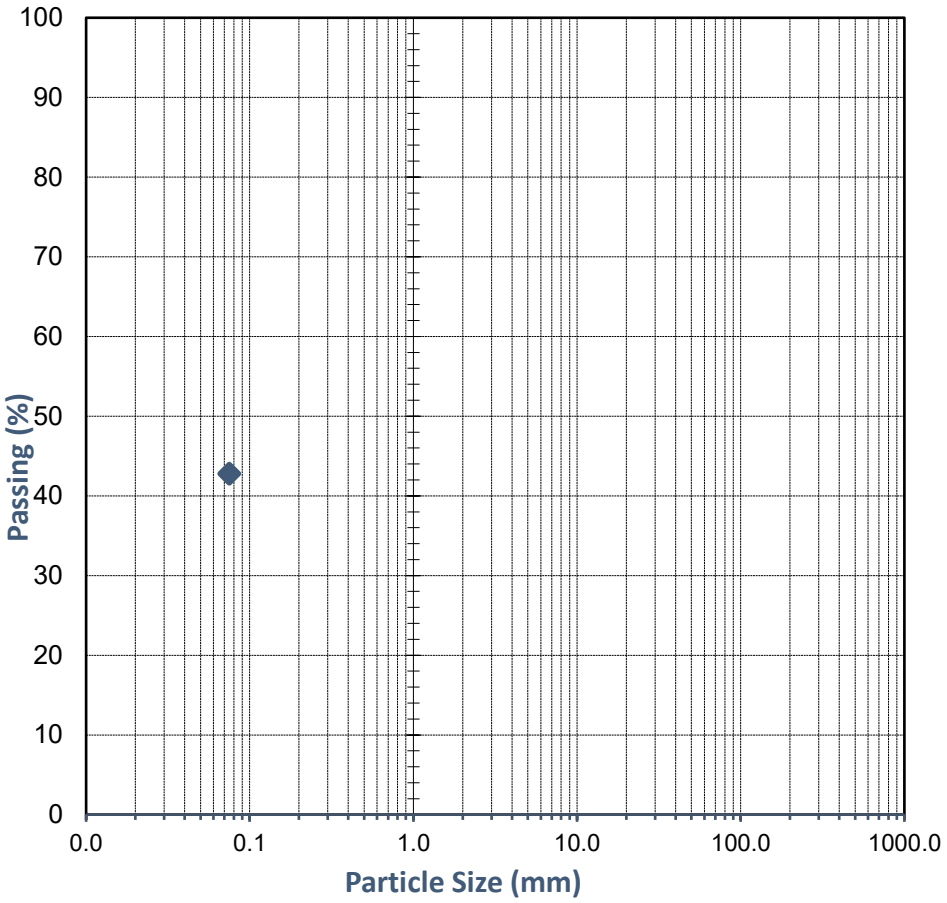
TEST REPORT - AS 1289.3.6.1 (% Fines)

Client:	Brown Geotechnical	*Ticket No.*	S13725
Client Address:	PO Box 278, Como WA 6952	*Report No.*	WG24.10365_1_%FINES
Project:	29 Stirling Crescent	*Sample No.*	WG24.10365
Location:	High Wycombe	*Date Sampled:*	2/07/2024
Sample Identification:	CPT4 - 0.5m	*Date Tested:*	04/07 - 05/07/2024

TEST RESULTS - Particle Size Distribution of Soil

Sampling Method: **Sampled by Client, Tested as Received**

Sieve Size (mm)	Percent Passing Sieve (%)
75.0	
37.5	
19.0	
9.5	
4.75	
2.36	
1.18	
0.600	
0.425	
0.300	
0.150	
0.075	43



Comments: Clients request for the % Fines of Material passing 0.075mm only.

Approved Signatory:

Name: Natasha Bielawski

Date: 05/July/2024

NATA WORLD RECOGNISED ACCREDITATION

Accreditation No. 20599
Accredited for compliance with ISO/IEC 17025 - Testing

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WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.3.1.2, 3.2.1, 3.3.1 & 3.4.1

Client:	Brown Geotechnical	*Ticket No.*	S13725
Client Address:	PO Box 278, Como WA 6952	*Report No.*	WG24.10365_1_PI
Project:	29 Stirling Crescent	*Sample No.*	WG24.10365
Location:	High Wycombe	*Date Sampled:*	2/07/2024
Sample Identification:	CPT4 - 0.5m	*Date Tested:*	5/07/2024

TEST RESULTS - Consistency Limits (Casagrande)

Sampling Method:	**Sampled by Client, Tested as Received**
History of Sample:	**Oven Dried <50°C**
Method of Preparation:	**Dry Sieved**

AS 1289.3.1.2	**Liquid Limit (%)**	**39**
AS 1289.3.2.1	**Plastic Limit (%)**	**17**
AS 1289.3.3.1	**Plasticity Index (%)**	**22**
AS 1289.3.4.1	**Linear Shrinkage (%)**	**8.0**
AS 1289.3.4.1	**Length of Mould (mm)**	**250**
AS 1289.3.4.1	**Condition of Dry Specimen**	**-**

Comments:

Approved Signatory:

Name: Cody O'Neill

Date: 08/July/2024

NATA WORLD RECOGNISED ACCREDITATION

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CONDITIONS RELATING TO THIS REPORT

1. This report has been prepared for the sole use of the client. It has been issued in accordance with the agreed terms and scope detailed in the proposal for the investigation. No responsibility or liability to any third party is accepted for any damages arising out of the use of this report.

2. This report has been prepared by suitably qualified and experienced personnel for the purposes stated herein. Every care is taken with the report as it relates to interpretation of sub-surface conditions, discussion of findings and recommendations given. No responsibility for the consequences of extrapolation by others is accepted by the company.

3. Findings and conclusions produced in the report are based on the investigation of the sub-surface through isolated locations. Conditions between investigated sites are based on extrapolation, interpretation and professional estimates. Unexpected variations in ground conditions often occur which cannot always be anticipated. The conclusions and recommendations in the report were considered accurate at the time of issue and based on certain assumptions at the time. Conditions and assumptions change with time and may affect the accuracy of the report.

4. Certain content within this report is based on information provided by the client and/or other parties and the accuracy of this information cannot be guaranteed.

5. These conditions must be read as part of the report and must be reproduced with all future copies.

6. The recommendations of this report should be considered a starting point. Recommendations should be continuously reviewed during the earthworks stage as sub-surface information and results from monitoring become available. It is strongly recommended that the Brown Geotechnical be retained to provide consultancy and/or inspections during the earthwork stages.

Appendix C: Water Balance

WA Site & Soil Evaluation
Irrigation area sizing

Please read the attached notes before using this spreadsheet

Water Balance for Zero Storage

Site Address:	**29 Stirling Crescent, High Wycombe WA**		
Date:	Monday, 26 August 2024	**Assessor:**	Tyrone Mardesic

INPUT DATA

Design Wastewater Flow	Q	1,250	L/day	Based on maximum potential occupancy and derived from the Supplement to Regulation 29 and Schedule 9 - Wastewater system loading rates
Design Irrigation Rate	DIR	50.0	mm/day	Based on soil texture class/permeability and derived from Table M1 of AS/NZS 1547:2012
Nominated Land Application Area	L	30	m^2	[1]
Crop Factor	C	0.8-1.0	unitless	Estimates evapotranspiration as a fraction of pan evaporation; varies with season and crop type[2]
Rainfall Runoff Factor	RF	1.0	unitless	Proportion of rainfall that remains onsite and infiltrates, allowing for any runoff
Mean Monthly Rainfall Data		Midland		BoM Station and number
Mean Monthly Pan Evaporation Data		Upper Swan		BoM Station and number or data from the Evaporation Data for Western Australia Report (https://researchlibrary.agric.wa.gov.au/cgi/viewcontent.cgi?article=1058&context=rmtr

Parameter	Symbol	Formula	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Days in month	D		days	31	28	31	30	31	30	31	31	30	31	30	31	**365**
Rainfall	R		mm/month	10	13.1	16.9	40.3	100.1	159.1	162	122.1	74.1	46.7	22.3	10.7	**777.4**
Evaporation	E		mm/month	327	281	241	136	89	63	60	87	110	161	221	303	**2079**
Crop Factor	C		unitless	1.00	1.00	0.90	0.90	0.80	0.80	0.80	0.80	0.90	1.00	1.00	1.00	
OUTPUTS																
Evapotranspiration	ET	ExC	mm/month	327	281	217	122	71	50	48	70	99	161	221	303	**1970.5**
Percolation	B	DIRxD	mm/month	1550.0	1400	1550.0	1500.0	1550.0	1500.0	1550.0	1550.0	1500.0	1550.0	1500.0	1550.0	**18250.0**
Outputs		ET+B	mm/month	1877.0	1681	1766.9	1622.4	1621.2	1550.4	1598.0	1619.6	1599.0	1711.0	1721.0	1853.0	**20220.5**
INPUTS																
Retained Rainfall	RR	RxRF	mm/month	10	13.1	16.9	40.3	100.1	159.1	162	122.1	74.1	46.7	22.3	10.7	**777.4**
Applied Effluent	W	(QxD)/L	mm/month	1291.7	1166.7	1291.7	1250.0	1291.7	1250.0	1291.7	1291.7	1250.0	1291.7	1250.0	1291.7	**15208.3**
Inputs		RR+W	mm/month	1301.7	1179.8	1308.6	1290.3	1391.8	1409.1	1453.7	1413.8	1324.1	1338.4	1272.3	1302.4	**15985.7**
STORAGE CALCULATION																
Storage remaining from previous month			mm/month	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Storage for the month	S	(RR+W)-(ET+B)	mm/month	-575.3	-501.2	-458.3	-332.1	-229.4	-141.3	-144.3	-205.8	-274.9	-372.6	-448.7	-550.6	
Cumulative Storage	M		mm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Maximum Storage for Nominated Area	N		mm	0.00												
	V	NxL	L	0												
LAND AREA REQUIRED FOR ZERO STORAGE			m^2	21	21	22	24	25	27	27	26	25	23	22	21	

MINIMUM AREA REQUIRED FOR ZERO STORAGE: 27 m^2

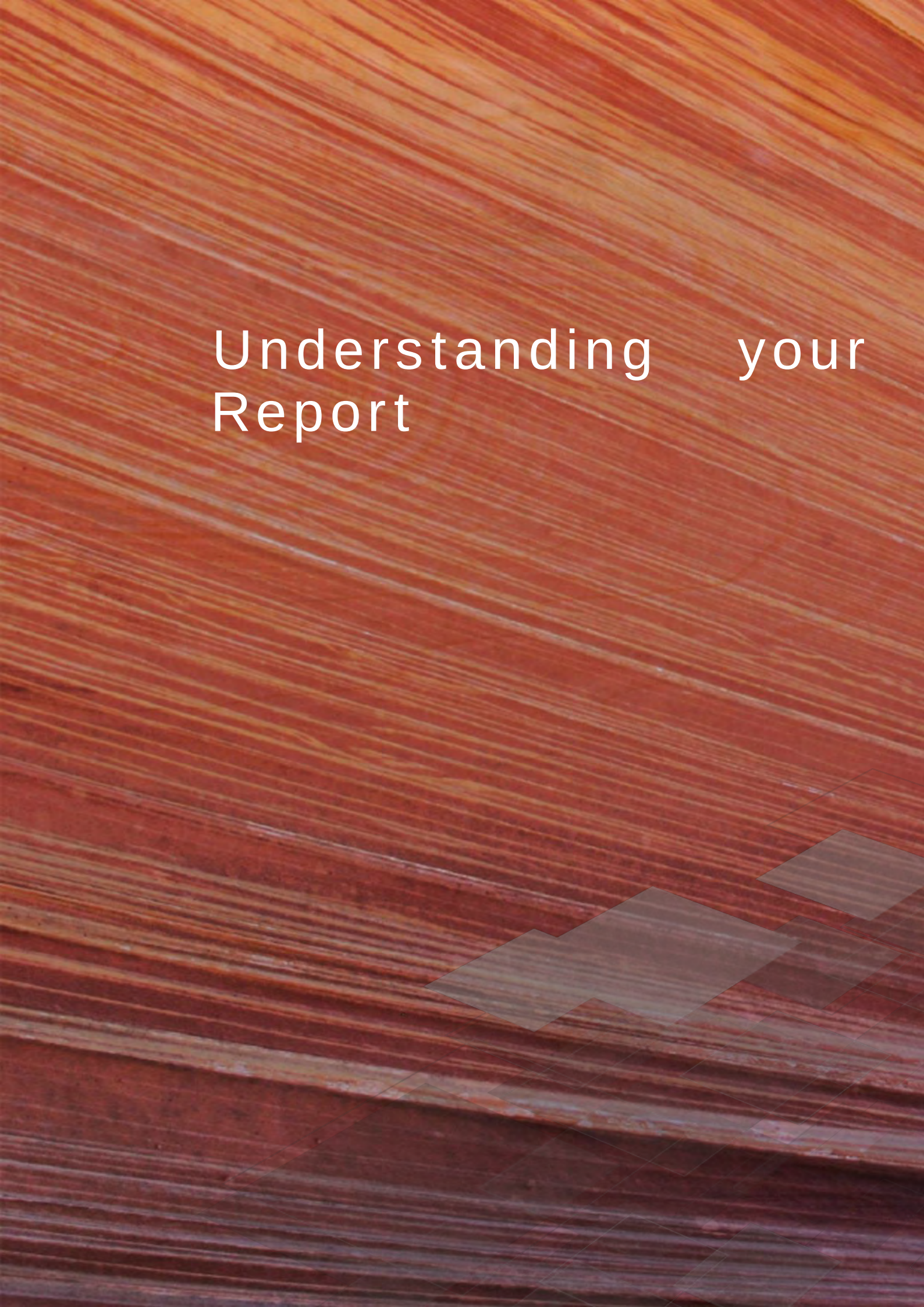
CELLS

	Please enter data in blue cells
XX	Enter available Land Application Area
XX	Data in yellow cells is calculated by the spreadsheet, DO NOT ALTER THESE CELLS

NOTES

[1] This value should be the largest of the following: land application area required based on the most limiting nutrient balance or minimum area required for zero storage

[2] Values selected are suitable for grass in WA



Understanding your Report

1. EXPECTATIONS OF THE REPORT

The following sections have been prepared to clarify what is and is not provided in your report. It is intended to inform you of what your realistic expectations of this report should be and how to manage your risks associated with the conditions on site.

Geotechnical engineering and environmental science are less exact than other engineering and scientific disciplines. We include this information to help you understand where our responsibilities begin and end. You should read and understand this information. Please contact us if you do not understand the report or this explanation. We have extensive experience in a wide variety of projects and we can help you to manage your risk.

2. THIS REPORT RELATES TO PROJECT-SPECIFIC CONDITIONS

This report was developed for a unique set of project-specific conditions to meet the needs of the nominated client. It took into account the following:

- the project objectives as we understood them and as described in this report;
- the specific site mentioned in this report; and
- the current and proposed development at the site.

It should not be used for any purpose other than that indicated in the report. You should not rely on this report if any of the following conditions apply:

- the report was not written for you;
- the report was not written for the site specific to your development;
- the report was not written for your project (including a development at the correct site but other than that listed in the report); or
- the report was written before significant changes occurred at the site (such as a development or a change in ground conditions).

You should always inform us of changes in the proposed project (including minor changes) and request an assessment of their impact.

Where we are not informed of developments relevant to your report, we cannot be held responsible or liable for problems that may arise as a consequence.

Where design is to be carried out by others using information provided by us, we recommend that we be involved in the design process by being engaged for consultation with other members of the project team. Furthermore, we recommend that we be able to review work produced by other members of the project team that relies on information provided in our report.

3. DATA PROVIDED BY THIRD PARTIES

Where data is provided by third parties, it will be identified as such in our reports. We necessarily rely on the completeness and accuracy of data provided by third parties in order to draw conclusions presented in our reports. We are not responsible for omissions, incomplete or inaccurate data associated with third party data, including where we have been requested to provide advice in relation to field investigation data provided by third parties.

4. SOIL LOGS

Our reports often include logs of intrusive and non-intrusive investigation techniques prepared by Galt. These logs are based on our interpretation of field data and laboratory results. The logs should only be read in conjunction with the report they were issued with and should not be re-drawn for inclusion in other documents not prepared by us.

5. THIRD PARTY RELIANCE

We have prepared this report for use by the client. This report must be regarded as confidential to the client and the client's professional advisors. We do not accept any responsibility for contents of this document from any party other than the nominated client. We take no responsibility for any damages suffered by a third party because of any decisions or actions they may make based on this report. Any reliance or decisions made by a third party based on this report are the responsibility of the third party and not of us.

6. CHANGE IN SUBSURFACE CONDITIONS

The recommendations in this report are based on the ground conditions that existed at the time when the study was undertaken. Changes in ground conditions can occur in numerous ways including anthropogenic events (such as construction or contaminating activities on or adjacent to the site) or natural events (such as floods, groundwater fluctuations or earthquakes). We should be consulted prior to use of this report so that we can comment on its reliability. It is important to note that where ground conditions have changed, additional sampling, testing or analysis may be required to fully assess the changed conditions.

7. SUBSURFACE CONDITIONS DURING CONSTRUCTION

Practical constraints mean that we cannot know every minute detail about the subsurface conditions at a particular site. We use professional judgement to form an opinion about the subsurface conditions at the site. Some variation to our evaluated conditions is likely and significant variation is possible. Accordingly, our report should not be considered as final as it is developed from professional judgement and opinion.

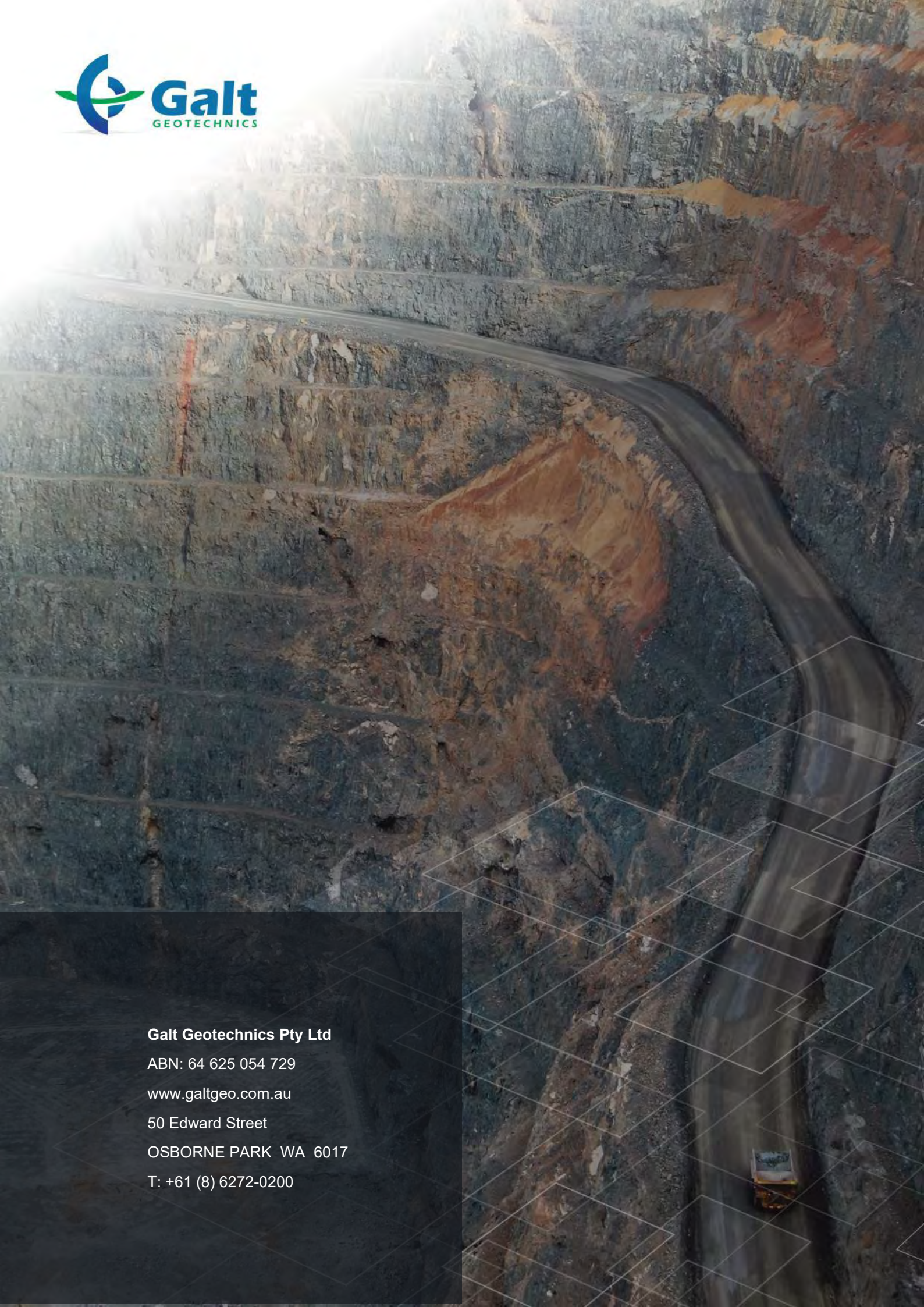
The most effective means of dealing with unanticipated ground conditions is to engage us for construction support. We can only finalise our recommendations by observing actual subsurface conditions encountered during construction. We cannot accept liability for a report's recommendations if we cannot observe construction.

8. ENVIRONMENTAL AND GEOTECHNICAL ISSUES

Unless specifically mentioned otherwise in our report, environmental considerations are not addressed in geotechnical reports. Similarly, geotechnical issues are not addressed in environmental reports. The investigation techniques used for geotechnical investigations can differ from those used for environmental investigations. It is the client's responsibility to satisfy themselves that geotechnical and environmental considerations have been taken into account for the site.

Geotechnical advice presented in a Galt Environmental report has been provided by Galt Geotechnics under a sub-contract agreement. Similarly, environmental advice presented in a Galt Geotechnics report has been provided by Galt Environmental under a sub-contract agreement.

Unless specifically noted otherwise, no parties shall draw any inferences about the applicability of the Western Australian state government landfill levy from the contents of this document.



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OSBORNE PARK WA 6017
T: +61 (8) 6272-0200

Waste Management Plan

Lot 9 (29) Stirling Crescent, High Wycombe

Prepared for David Jones and Anita Jones

5 July 2024

Project Number: WMP24057

DOCUMENT CONTROL

Version	Description	Date	Author	Reviewer	Approver
1.0	First Approved Release	5/07/2024	MA	DP	DP

Approval for Release

Name	Position	File Reference
Dilan Patel	Project Manager – Waste Management Consultant	WMP24057-01_Waste Management Plan_1.0
Signature		

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Executive Summary

David Jones and Anita Jones is seeking development approval for the proposed warehouse development located at Lot 9 (29) Stirling Crescent, High Wycombe (the Proposal).

To satisfy the conditions of the development application the City of Kalamunda (the City) requires the submission of a Waste Management Plan (WMP) that will identify how waste is to be stored and collected from the Proposal. Talis Consultants has been engaged to prepare this WMP to satisfy the City's requirements.

A summary of the bin size, numbers, collection frequency and collection method is provided in the below table.

Proposed Waste Collection Summary

Waste Type	Generation (L/week)	Bin Size	Number of Bins	Collection Frequency	Collection
Bin Storage Area 1					
Refuse	5,114	4.5m^3	One	Twice each week	Private Contractor
Recycling	5,114	4.5m^3	One		
Bin Storage Area 2					
Refuse	5,313	4.5m^3	One	Twice each week	Private Contractor
Recycling	5,313	4.5m^3	One		

A private contractor will service the Proposal onsite, directly from the Bin Storage Areas. The private contractor's waste collection vehicle will enter and exit the Proposal in forward gear via Stirling Crescent.

A site manager will oversee the relevant aspects of waste management at the Proposal.

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Diagram 1: Bin Storage Area 1

Diagram 2: Bin Storage Area 2

Figures

Figure 1: Locality Plan

1 Introduction

David Jones and Anita Jones is seeking development approval for the proposed warehouse development located at Lot 9 (29) Stirling Crescent, High Wycombe (the Proposal).

To satisfy the conditions of the development application the City of Kalamunda (the City) requires the submission of a Waste Management Plan (WMP) that will identify how waste is to be stored and collected from the Proposal. Talis Consultants has been engaged to prepare this WMP to satisfy the City's requirements.

The Proposal is bordered by vacant land to the north, east and west, and Stirling Crescent to the south, as shown in Figure 1.

1.1 Objectives and Scope

The objective of this WMP is to outline the equipment and procedures that will be adopted to manage waste (refuse and recyclables) at the Proposal. Specifically, the WMP demonstrates that the Proposal is designed to:

- Adequately cater for the anticipated volume of waste to be generated;
- Provide adequately sized Bin Storage Areas, including appropriate bins; and
- Allow for efficient collection of bins by appropriate waste collection vehicles.

To achieve the objective, the scope of the WMP comprises:

- Section 2: Waste Generation;
- Section 3: Waste Storage;
- Section 4: Waste Collection;
- Section 5: Waste Management; and
- Section 6: Conclusion.

2 Waste Generation

The following section shows the waste generation rates used and the estimated waste volumes to be generated at the Proposal.

2.1 Proposed Tenancies

The anticipated volume of refuse and recyclables is based on the floor area (m^2) of the proposed Warehouses. The Proposal consists of the following:

Bin storage Area 1:

- Warehouse 1 – 2,435m^2.

Bin Storage Area 2:

- Warehouse 2 – 2,530m^2.

2.2 Waste Generation Rates

In order to achieve an accurate projection of waste volumes for the Proposal, consideration was given to the Randwick City Council's *Waste Management Guidelines for Proposed developments, Annexure A, Waste Generation Rate* (2004) as they contain contemporary estimates of waste generated from Warehouses.

Table 2-1 shows the waste generation rates which have been applied to the Proposal.

Table 2-1: Waste Generation Rates

Tenancy Use Type	Randwick Guideline Reference	Refuse Generation Rate	Recycling Generation Rate
Warehouse	Warehouse	30L/100m^2/day	30L/100m^2/day

2.3 Waste Generation Volumes

Waste generation is estimated by volume in litres (L) as this is generally the influencing factor when considering bin size, numbers and storage space required.

2.3.1 Waste Generation – Bin Storage Area 1

Waste generation volumes in litres per week (L/week) adopted for Warehouse 1 of this waste assessment is shown **Error! Reference source not found.**. It is estimated that Warehouse 1 will g enerate 5,114L of refuse and 5,114L of recyclables each week.

Table 2-2: Estimated Waste Generation – Bin Storage Area 1

Warehouse 1	Area (m^2)	Waste Generation Rate (L/100m^2/day)	Waste Generation (L/week)
Refuse	2,435	30	**5,114**
Recyclables	2,435	30	**5,114**
		Total	**10,228**

2.3.2 Waste Generation – Bin Storage Area 2

Waste generation volumes in litres per week (L/week) adopted for this Warehouse 2 of this waste assessment is shown Table 2-3. It is estimated that Warehouse 2 will generate 5,313L of refuse and 5,313L of recyclables each week.

Table 2-3: Estimated Waste Generation – Bin Storage Area 2

Warehouse 2	Area (m^2)	Waste Generation Rate ($L/100m^2/day$)	Waste Generation (L/week)
Refuse	2,530	30	**5,313**
Recyclables	2,530	30	**5,313**
		Total	**10,626**

3 Waste Storage

Waste materials generated within the Proposal will be collected in the bins located in the Bin Storage Areas, as shown in Diagram 1 and Diagram 2 , and discussed in the following sub-sections.

Note: the waste generation volumes are best practice estimates and the number of bins to be utilised represents the maximum requirements once the Proposal is fully operational. Bin requirements may be impacted as the development becomes operational and the nature of the tenants, staff and cleaners and waste management requirements are known.

3.1 Internal Transfer of Waste

To promote positive recycling behaviour and maximise diversion from landfill, internal bins will be available throughout the Proposal for the source separation of refuse and recycling.

These internal bins will be collected by the staff/cleaners and transferred to the Bin Storage Areas for consolidation into the appropriate bins. This internal servicing method may be conducted outside of main operational hours to mitigate disturbances to tenants and staff.

All bins will be colour coded and labelled in accordance with Australian Standards (AS 4123.7) to assist tenants, staff/cleaners to dispose of their separate waste materials in the correct bins.

3.2 Bin Sizes

Table 3-1 gives the typical dimensions of standard bins sizes that may be utilised at the Proposal. It should be noted that these bin dimensions are approximate and can vary slightly between suppliers.

Table 3-1: Typical Bin Dimensions

Dimensions (m)	Bins Sizes				
	240L	660L	1,100L	3.0m³	4.5m³
Depth	0.730	0.780	1.070	1.505	1.600
Width	0.585	1.260	1.240	1.805	2.050
Height	1.060	1.200	1.330	1.225	1.520

Reference: SULO and Veolia Bin Specification Data Sheets

3.3 Bin Storage Area Size

3.3.1 Bin Storage Area 1 Size

To ensure sufficient area is available for storage of the Warehouse 1 bins, the amount of bins required for Bin Storage Area 1 was modelled utilising the estimated waste generation in Table 2-2, bin sizes in Table 3-1 and based on collection of refuse and recyclables twice each week.

Based on the results shown in Table 3-2, Bin Storage Area 1 has been sized to accommodate:

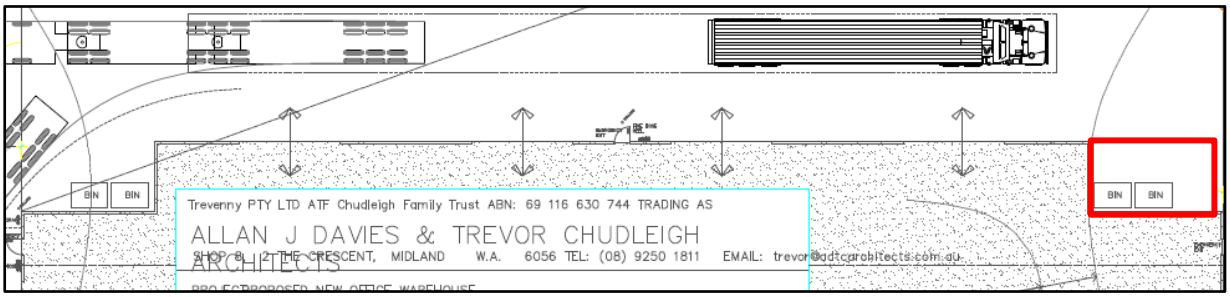
- One 4.5m³ refuse bin; and
- One 4.5m³ recycling bin.

Table 3-2: Bin Requirements for Bin Storage Area 1

Waste Stream	Waste Generation (L/week)	Number of Bins Required				
		240L	660L	1,100L	3.0m³	4.5m³
Refuse	5,114	11	4	3	1	1
Recycling	5,114	11	4	3	1	1

The configuration of these bins within Bin Storage Area 1 is shown in Diagram 1. It is worth noting that the number of bins and corresponding placement of bins shown in Diagram 1 represents the maximum requirements assuming two collections each week of refuse and recyclables.

Diagram 1: Bin Storage Area 1



3.3.2 Bin Storage Area 2 Size

To ensure sufficient area is available for storage of the Warehouse 2 bins, the amount of bins required for Bin Storage Area 2 was modelled utilising the estimated waste generation in Table 2-3, bin sizes in Table 3-1 and based on collection of refuse and recyclables twice each week.

Based on the results shown in Table 3-3, Bin Storage Area 2 has been sized to accommodate:

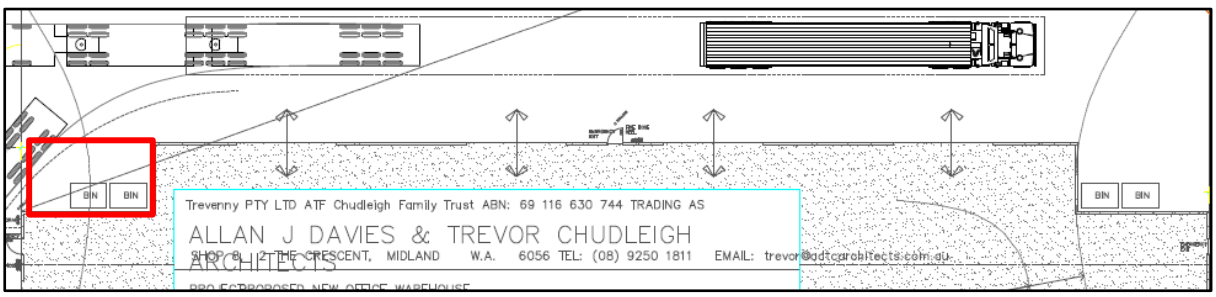
- One 4.5m³ refuse bin; and
- One 4.5m³ recycling bin.

Table 3-3: Bin Requirements for Bin Storage Area 2

Waste Stream	Waste Generation (L/week)	Number of Bins Required				
		240L	660L	1,100L	3.0m³	4.5m³
Refuse	5,313	12	5	3	1	1
Recycling	5,313	12	5	3	1	1

The configuration of these bins within Bin Storage Area 2 is shown in Diagram 2. It is worth noting that the number of bins and corresponding placement of bins shown in Diagram 2 represents the maximum requirements assuming two collections each week of refuse and recyclables.

Diagram 2: Bin Storage Area 2



3.4 Bin Storage Area Design

The design of the Bin Storage Areas will take into consideration:

- Smooth impervious floor sloped to a drain connected to the sewer system;
- Taps for washing of bins and Bin Storage Areas;
- Adequate aisle width for easy manoeuvring of bins;
- No double stacking of bins;
- Ventilated to a suitable standard;
- Appropriate signage;
- Designed to not permit stormwater to enter into the drain;
- Located behind the building setback line;
- Bins not to be visible from the property boundary or areas trafficable by the public; and
- Bins are reasonably secured from theft and vandalism.

Bin numbers and storage space within the Bin Storage Areas will be monitored by the site manager during the operation of the Proposal to ensure that the number of bins and collection frequency is sufficient.

4 Waste Collection

A private waste collection contractor will service the Proposal utilising a front lift waste collection vehicle as follows:

Bin Storage Area 1:

- One 4.5m³ refuse bin, collected twice each week; and
- One 4.5m³ recycling bin, collected twice each week.

Bin Storage Area 2:

- One 4.5m³ refuse bin, collected twice each week; and
- One 4.5m³ recycling bin, collected twice each week.

The private contractor's waste collection vehicle will service the bins onsite, directly from the Bin Storage Areas. The private contractor's waste collection vehicle will travel with left hand lane traffic flow on Stirling Crescent and turn into the Proposal in forward gear and pull up directly in front of the Bin Storage Areas for servicing.

Servicing may be conducted outside of normal operating hours to allow the waste collection vehicle to mitigate impacts on traffic movements within the Proposal.

The private contractor will be provided with key/PIN code access to the Bin Storage Areas and security access gates to facilitate servicing, if required.

Once servicing is complete the private contractor's waste collection vehicle will exit in a forward motion, turning onto Stirling Crescent moving with traffic flow.

4.1 Bulk and Speciality Waste

Adequate space may be allocated throughout the Proposal for placement of cabinets/containers for collection and storage of bulk and specialty wastes that are unable to be disposed of within the bins in the Bin Storage Areas. These may include items such as:

- Refurbishment wastes from fit outs;
- White goods/appliances;
- Cleaning chemicals; and
- Commercial Light globes.

These materials will be removed from the Proposal once sufficient volumes have been accumulated to warrant disposal. Specialty waste collection will be monitored by the site manager who will organise their transport to the appropriate waste facility, as required.

5 Waste Management

A site manager will be engaged to complete the following tasks:

- Monitoring and maintenance of bins and the Bin Storage Areas;
- Cleaning of bins and Bin Storage Areas, when required;
- Ensure all tenants, staff/cleaners at the Proposal are made aware of this WMP and their responsibilities thereunder;
- Monitor tenants, staff/cleaners behaviour and identify requirements for further education and/or signage;
- Monitor bulk and speciality waste accumulation and assist with its removal, as required;
- Regularly engage with tenants, staff/cleaners to develop opportunities to reduce waste volumes and increase resource recovery; and
- Regularly engage with the private contractors to ensure efficient and effective waste service is maintained.

6 Conclusion

As demonstrated within this WMP, the Proposal provides a sufficiently sized Bin Storage Areas for storage of refuse and recyclables, based on the estimated waste generation volumes and suitable configuration of bins. This indicates that adequately designed Bin Storage Areas have been provided, and collection of refuse and recyclables can be completed from the Proposal.

The above is achieved using:

Bin Storage Area 1:

- One 4.5m³ refuse bin, collected twice each week; and
- One 4.5m³ recycling bin, collected twice each week.

Bin Storage Area 2:

- One 4.5m³ refuse bin, collected twice each week; and
- One 4.5m³ recycling bin, collected twice each week.

A private contractor will service the Proposal onsite, directly from the Bin Storage Areas. The private contractor's waste collection vehicle will enter and exit the Proposal in forward gear via Stirling Crescent.

A site manager will oversee the relevant aspects of waste management at the Proposal.

Figures

Figure 1: Locality Plan

P: PO Box 454, Leederville WA 6903 | A: 604 Newcastle St, Leederville WA 6007 | T: 1300 251 070 | W: www.talisconsultants.com.au

405,550 405,600 405,650 405,700 405,750 405,800

6,466,950 6,466,900 6,466,850 6,466,800

Hatch Ct

Stirling Cr

Data source: Roads, Cadastre - Landgate, 2024; Imagery: Nearmap, 2024.

LEGEND

Site Boundary

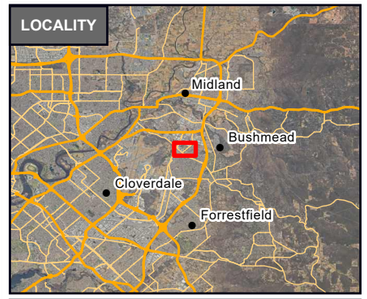
Cadastre

Freehold

Road

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LOCALITY



0 5 10 15 20 km

LOCALITY

9/29 Stirling Cres
High Wycombe WA 6057

David Jones and Anita Jones

N 0 10 20 30 40 m

Coordinate System: GDA2020 MGA Zone 50
Scale @ A3: 1:900

Prepared:	C Firth	Date:	17/06/2024
Reviewed:	M Ang	Revision:	A
Project:	WMP24057		

talis consultants

Figure 01

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Assets | Engineering | Environment | Noise | Spatial | Waste

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Development Application Report

High Wycombe Industrial Development

Lot 9 (29) Stirling Crescent
High Wycombe, WA 6057

PLANNING SOLUTIONS
URBAN & REGIONAL PLANNING

PS



Prepared for

David Jones

September 2024

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Client	David Jones	
Prepared by	Planning Solutions	
Consultant Team	Town Planning Architect Traffic Engineering Bushfire Acoustic Stormwater Management Plan Geotechnical Site and Soil Evaluation	Planning Solutions Trevor Chudleigh KCTT Western Environmental Herring Storer Acoustics Porter Consulting Engineers Brown Engineering Galt Engineering

Document Control

Revision number	Document purpose	Document date	Prepared by	Checked by
Rev 0	DA report for lodgement	24 July 2024	OM/JC	TE
Rev 1	Amended DA report for lodgement	14 August 2024	JC	TE
Rev 2	Amended DA report (changes arising from ATU system)	3 September 2024	JC	JC

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1 EXECUTIVE SUMMARY

Proposal	A development comprising two warehouses, and an ancillary office with associated hardstand, parking and landscaping, and two crossovers facilitating one-way circulation.	
Lot size	10,038m^2	
Existing land use	Residential	
Zoning	MRS Zone: Urban LPS3 Zone: Light Industry	
Land use class / permissibility	Warehouse/Storage	'P' - Permitted
Approval pathway	JDAP Determination (Opt-in)	
Decision sought	Exercise of discretion to grant development approval	
Summary of the nature of discretion sought	• Variation to clause 5.23 of LPS3 to approve the development application in the absence of an endorsed local structure plan. • Minor variation to clause 5.15.4 of LPS3 to approve a street facing elevation not wholly concrete, brick or masonry.	
Key statutory instruments	***Planning Schemes*** *Metropolitan Region Scheme* *Planning and Development (Local Planning Schemes) Regulations 2015 – deemed provisions* *City of Kalamunda Local Planning Scheme No. 3* ***State planning policies*** *SPP 3.7 – Planning in Bushfire Prone Areas* *SPP 4.1 – State Industrial Interface* *SPP 7.0 – Design of the Built Environment* *Government Sewerage Policy 2019* ***Structure plans*** None ***Local planning policies*** *LPP 26 – Public Art* *LPP 14 – Car Parking* *LPP 2.2 – Outdoor Advertising and Signage*	
Seriously entertained planning instruments	*Draft LPP35 – Hatch Court Light Industrial Precinct*	
Design Review	Post-lodgement	
Mapped cconstraints	Heritage	None identified
	Bushfire	Addressed
	Environmental	None identified
	Contamination	None identified
Statutory referrals	None	

2 PRELIMINARY

2.1 Introduction

Planning Solutions acts on behalf of David Jones, the proponent of the proposed development of Lot 9 (29) Stirling Crescent, High Wycombe (**subject site**).

The key components of the proposed development are summarised below:

- Two (2) warehouses with an ancillary office, car parking and landscaping on the subject site.
- Both warehouses are connected by an undercover loading/unloading area suitable for serving heavy vehicles.
- The ancillary office is situated at the front of Warehouse 1 with an area of 360m^2.
- The proposed development has a total net lettable area of 4,965m^2.
- 53 car parking bays are provided at the front of the lot, which includes one ACROD bay.
- Two crossovers to Stirling Crescent with one-way vehicle circulation.

Planning Solutions has prepared the following report in support of an application for development approval. This report will discuss various matters pertinent to the proposal, including:

- Site details.
- Proposed development.
- Statutory planning framework.

2.2 Background

The development is located within the Hatch Court Light Industrial Precinct which has an area of approximately 30 hectares and is bounded by Abernathy Road, Adelaide Street, Stirling Crescent and Kalamunda Road.

- In 2010, the Hatch Court precinct was rezoned from Rural to Urban under the Metropolitan Region Scheme by Amendment No. 1187/57.
- On 6 February 2016, Amendment No. 80 to the City's Local Planning Scheme No. 3 (**LPS3**) was gazetted rezoning the precinct from 'Urban Development' to 'Light Industry' and inserting a requirement to prepare a structure plan to address access considerations and the interface to existing residential land uses. Subsequently no structure plan has been endorsed over the Hatch Court precinct.
- On 17 September 2019 the City granted approval for a hardstand and warehouse on Lot 201 (614) Kalamunda Road within the structure plan area.
- In 2021, Main Roads completed the detailed planning of modifications to the Great Eastern Bypass Interchange to improve traffic flow and regional connectivity in and around the subject site (refer **Figure 2** below). These changes will include closing access to Great Eastern Highway from Stirling Crescent, reducing industrial traffic along Stirling Crescent considerably as non-local traffic shifts to Abernathy Road and Stirling Crescent north of Adelaide Street.

- In August 2021, Main Roads released an update regarding additional local upgrade works to be undertaken by the City of Stirling[1] to Stirling Crescent and Talbot Road in support of the proposed changes to the regional road network (refer Figure 3 below).
- In July 2022, *State Planning Policy 4.1 – Industrial interface* was gazetted by the Western Australian Planning Commission establishing the current state policy towards the use of compatible land use zones between industrial and sensitive land uses. The policy clearly states that *"The Light Industry zone can be used … to achieve a compatible land use transition at the interface of General Industry or Strategic Industry zones"* and provides a clear framework for the assessment and management of impacts within transitional areas.
- On 26 April 2022, the Council of the City resolved to advertise *Draft Local Planning Policy 35 – Hatch Court Industrial Precinct* (**LPP35**) for public comment. The intent of LPP35 was to guide the development of Lot 1499 only, in the absence of a structure plan, and to prevent the development of the remainder of the precinct—including the subject site. The response to draft LPP35 by local landowner was as follows:
    - On 26 June 2022, Council received a petition from 15 landowners within the Hatch Court Industrial Precinct requesting Council to initiate a scheme amendment deleting the structure planning requirement from LPS3.
    - On 25 October 2022 the proponent lodged a strong objection to draft LPP35 on the grounds that a structure plan was simply no longer required for the subject site, nor the precinct generally and that all relevant considerations have been resolved by the proposed changes to the regional movement network, or are already capable of resolution via the existing framework and decision-making powers.
- On 17 May 2023, the Metro Outer Joint Development Assessment Panel (**JDAP**) approved the development of Lot 1499 for industrial purposes in the absence of either the structure plan, or the finalisation of draft LPP35—with the support of the City.

Subsequent to this, LPP35 has **never** been re-considered by Council, and has been given little to no weight in the assessment of the proposed development application in favour of a detailed consideration of the requirements of all endorsed planning instruments.

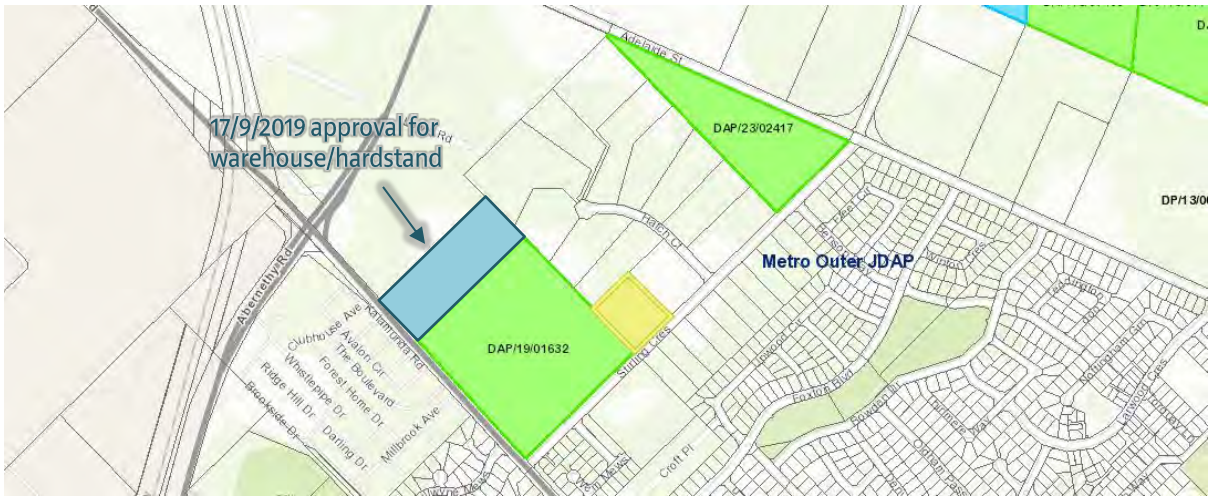


Figure 1 – DAP applications within the surrounding area

[1] *'Great Eastern Highway Bypass Interchanges Project'* (August 2021) Main Roads Western Australia, https://www.mainroads.wa.gov.au/globalassets/projects-initiatives/projects/metro/great-eastern-highway-bypass/gehbi-stirling-crescent-talbot-road-and-adelaide-street.docx

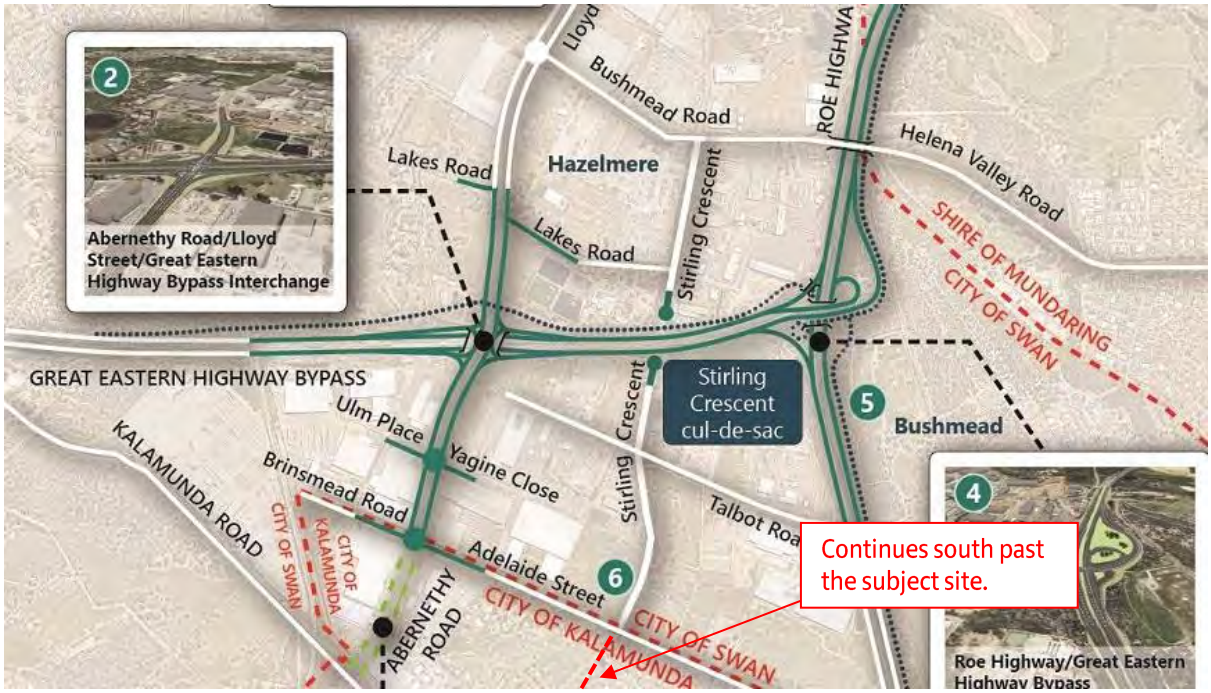


Figure 2 – Extract from Main Roads infographic with annotations showing location of subject site

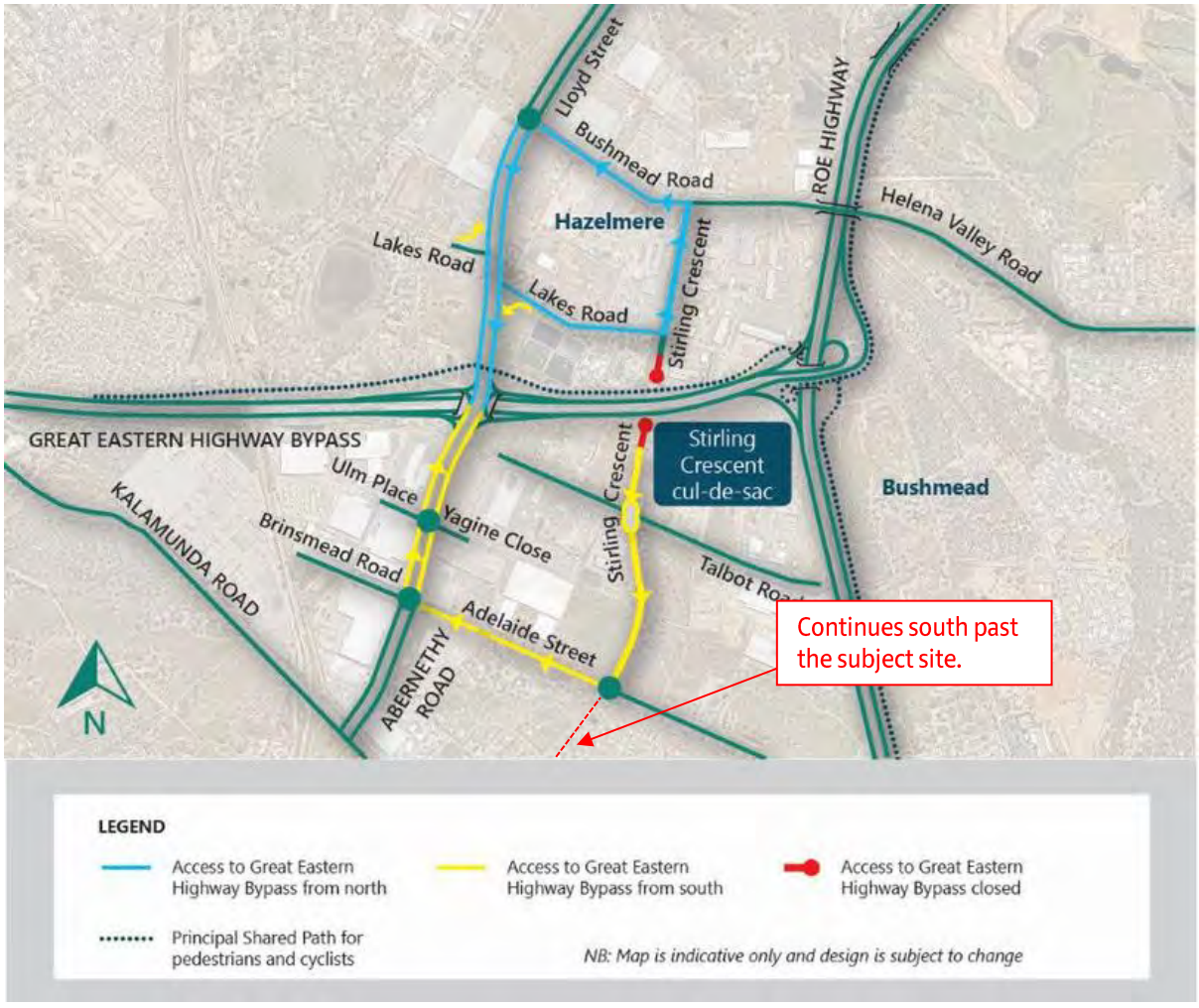


Figure 3 – Extract from August 2021 project update from Main Roads with annotations showing location of subject site

3 SITE DETAILS

3.1 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 (m²)
9	67603	1689	342	10,032

The land is not subject to any encumbrances.

Refer **Appendix 1** for a copy of the Certificate of Title and Deposited Plan.

3.2 Servicing

The subject site is connected to reticulated water supply, but is not currently connected to any reticulated sewage. The development will be serviced by an on-site effluent disposal system in accordance with the *Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974* and the Government Sewerage Policy 2019. This is capable of being addressed with a suitably worded condition of approval.

3.3 Location

3.3.1 Regional context

The subject site is located within the Hatch Court Light Industrial Precinct. This precinct borders the western edge of Airport land and sits along the southern boundary of the Hazelmere industrial precinct to the north. It is approximately 13.5 kilometres north-east of the Perth city centre, 4km south of the Midland town centre, and 7km north-west of the Kalamunda town centre.

The subject site fronts Stirling Crescent (a local road under the jurisdiction of the City) at its south-eastern boundary. Stirling Crescent connects to the Great Eastern Highway Bypass and Kalamunda Road, connecting the site to main transport corridors including Roe Highway and Great Eastern Highway.

3.3.2 Local context

The area surrounding the subject site to the north and north-east are generally characterised by either industrial land uses or formerly rural-residential land uses now transitioning to industrial activities. Land uses to the east and south of the subject are generally residential, increasing in density as one move further south away from the subject site.

Specifically, the immediate context of the subject site is as follows:

- To the north and the west are former rural-residential lots now rezoned for industrial development.
- To the south, across Stirling Crescent, are existing large residential lots providing a transition to standard residential housing.
- To the east, the site has been predominantly developed with a hardstand for a logistics operation.

Refer to **Figure 1** below for an aerial photograph.



Figure 4 – Aerial context figure

3.3.3 Current land use

The site currently has an existing residential dwelling with access from Stirling Crescent via an existing crossover and driveway.

The site contains a number of mature trees primarily planted by the landowner around the periphery of the property prior to 1985 and a man-made pond. The trees are primarily non-native species (Lemon Scented Gum, Spotted Gum).



Figure 5 – Aerial photograph of the subject site dated 19 June 1985 (Source: Landgate)

3.3.4 Topography and soils

A feature survey has been undertaken by Scanlan Surveys, and a geotechnical investigation undertaken by Brown Geotechnical.

The site is generally flat, with an artificial duck pond measuring approximately 25 by 50 metres in the southern corner of the lot.

Undeveloped areas of the site generally comprise levels of approximately 23.0m AHD, with the pad of the existing dwelling sitting at 24.0m AHD and the artificial pond at 21.2m AHD.

The topography of the site does not reflect the natural ground levels, as the excavated sand from the pond has presumably been used to create the pad on which the house was constructed and a layer of clay has been deposited unevenly across the entirety of the subject site.

It is likely that this clay will need to be removed to facilitate the proposed development.

Refer **Appendix 2** for a copy of the feature survey, and **Appendix 9** for the geotechnical report.



Photograph 1 – The subject site as seen from Stirling Crescent, looking west (Source: Google Maps)



Photograph 2 – View looking north towards the subject site



Photograph 3 – View from the front of the subject site looking south-west along Stirling Crescent



Figure 6 – View looking north along Stirling Crescent with the subject site to the left



Photograph 4 – View from southern end of the subject site looking north towards the existing dwelling



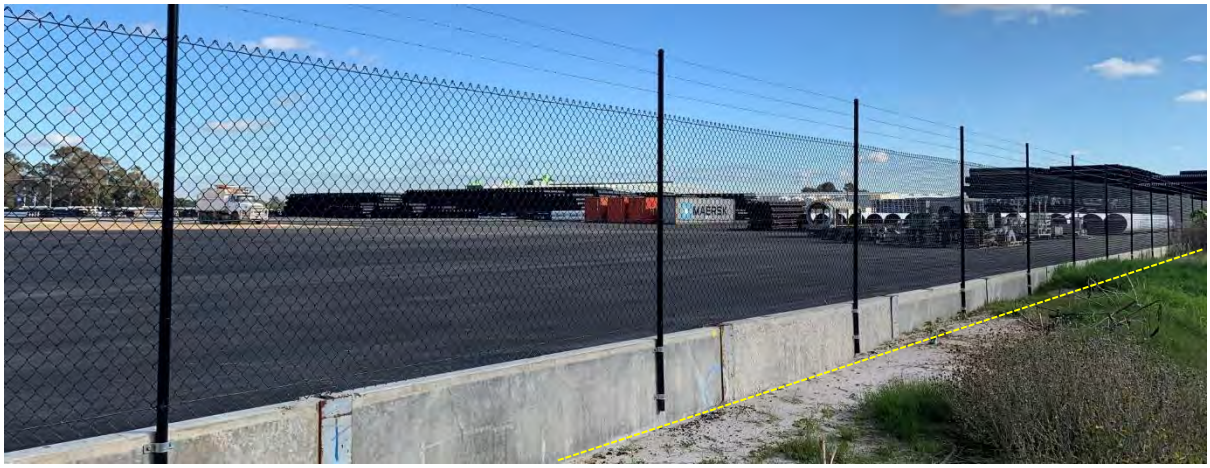
Photograph 5 – View looking north along the driveway towards the existing dwelling



Photograph 6 – View south along the western boundary



Photograph 7 – View from centre of the block looking south over the duck pond towards Stirling Crescent



Photograph 8 – View from the western boundary looking west towards the existing warehouse and hardstand



Photograph 9 – View from the north-western corner of the subject site looking south along the western boundary



Photograph 10 – View from the eastern boundary looking east over the adjoining Lot 8



Photograph 11 – View from the subject site looking east towards Stirling Crescent

4 PROPOSED DEVELOPMENT



Figure 7 – Perspective of proposed development from Stirling Street looking north towards ancillary office

4.1 Development Summary

The proposal involves a light industrial development comprising two warehouses and an ancillary office with associated landscaping, parking and access.

Specifically, the proposed development comprises the following:

- Two warehouses with a combined net lettable area of approximately 4,875m^2 separated by a 21.6m wide undercover loading/unloading area:
  - Warehouse 1 has 2,345m^2 of NLA with setbacks of 10.78m to the western boundary and 8.9m to the eastern boundary.
  - Warehouse 2 has 2,530m^2 of NLA with nil setbacks to the northern, eastern and western boundaries.
- An ancillary office adjoining Warehouse 1, comprising a floor area of 360m^2 containing a reception centre, office space, staff room and bathroom facilities with a 20m setback to Stirling Crescent, 19.6m to the eastern boundary and 25m to the western boundary.
- External car parking areas (which we understand are designed in accordance with the relevant Australian Standards) comprising the following:
  - 53 light-vehicle car parking bays located to the south and east of the proposed office (inclusive of an accessible bay).
- One bicycle rack with space for six bicycles.
- Heavy vehicle access to the loading/unloading area along the south-west and north-east boundaries of the subject site. This driveway passes along both sides of Warehouse 1 to create drive-through access to the loading/unloading area.

- Access arrangements are provided as follows:
  - One 11m wide crossover providing ingress movements for light and heavy vehicles at the eastern end of the Stirling Crescent boundary.
  - One 11m wide crossover providing egress movements for light and heavy vehicles at the western end of the Stirling Crescent boundary.
  - One-way heavy vehicle circulation in anti-clockwise direction through the subject site.

The proposed development incorporates landscaping and a range of façade treatments to achieve a high quality built form outcome. These treatments include complementary finishes and treatments contributing positively to the public realm and the Hatch Court Light Industrial Precinct.

The facility has been designed to accommodate up to 24/7 hours of operations.

Refer to **Appendix 4** for the development plans which depict the proposed development.

4.2 Technical reporting

This application is supported by the following technical reporting and co-consultant inputs:

4.2.1 Traffic impact statement

The proposed development and access arrangements are supported by a Transport Impact Statement (**TIS**), prepared by KCTT. The conclusions of the report are summarised as follows:

- Swept path analysis confirms that the site is capable of being accessed by vehicles up to 19m, including service vehicles (8.8m) and fire trucks (12.4m).
- Any additional traffic generated by the development would have a negligible impact on traffic volumes along the Stirling Crescent.
- The proposed amount of parking can easily accommodate the requirements of the proposed development.
- The planned closure of Stirling Crescent at the Great Eastern Highway Bypass and the connection of Adelaide Street to Abernathy road is expected to drastically reduce heavy vehicle traffic along Stirling Crescent.

In summary KCTT believe that the proposed development will not result in any negative impact on the surrounding road network.

Refer to **Appendix 4** or the TIS prepared by KCTT.

4.2.2 Environmental Noise Assessment

The subject site is located within a precinct transitioning from residential land uses towards industrial activities, meaning that existing residential dwellings are still located to the north and east of the subject site. Further, the subject site directly fronts residential dwellings on the southern side of Stirling Crescent.

The proposed development seeks approval to operate warehousing and logistics activities up to 24 hours a day, 7 days a week.

An Environmental Noise Assessment has been undertaken by Herring Storer Acoustics. The report conclusions are summarised as follows:

- Noise emissions relating to the movement of forklifts **within** the two warehouses have been assumed as capable of retention within the buildings themselves.
- Noise emissions relating to the external movement of trucks around the site and loading dock activities (including forklift movements) have been assessed over a 24/7 period assuming worst day conditions.
- Truck movements are identified as the main determinate of overall environmental noise–based on the assumption that each truck arrival generates a corresponding level of forklift movement due to unloading activity.
- During the Daytime, Sunday/Public Holiday and Evening periods the site is capable of operating in compliance with the Noise Regulations without limitations or restrictions on truck arrivals.
- Within the Nighttime period, compliance can be achieved with a limitation restricting movements to a maximum of 10 trucks within a four-hour period.

Refer **Appendix 5** for a copy of the report.

4.2.3 Bushfire management plan

A BAL contour map and bushfire management plan (**BMP**) have been prepared by Western Environmental. The BMP confirms BAL-levels within the entirety of the subject site to be BAL-12.5 to BAL-LOW, and concludes that the development satisfies the intent, aims and objectives of *State Planning Policy 3.7 Planning in bushfire prone areas* (**SPP3.7**) and the guidelines, and is recommended for approval.

Refer **Appendix 7** for a copy of the report.

4.2.4 Geotechnical reporting

The subject site falls within a mapped 'Multiple Use' wetland and contains an artificial duck pond with a surface water level corresponding to the surrounding groundwater level.

Brown Geotechnical was engaged to undertake an investigation in support of the proposed development. This involved a site inspection and new soil samples in addition to three previous samples taken from a June 2014 investigation of the subject site.

The conclusions of the report have informed the preparation of a stormwater management plan, and will be relevant to the earthworks associated with the proposed development, but otherwise has limited relevance to the assessment of the proposed application.

Refer **Appendix 9** for a copy of the report.

4.2.5 Site and Soil Evaluation

A site and soil evaluation report has been prepared by Galt Engineering in support of the proposed development and demonstrating that the proposed drip-irrigation ATU system is capable of being installed on the subject site. The following key points are noted:

- The default calculation method in AS1547 recommends using the same calculation rate for the infiltration of stormwater and treated effluent, generating a requirement of more than 1,000m^2 for the Land Application Area (**LAA**)–the minimum area that must be retained as landscaping.
- However, the geotechnical investigation undertaken confirms that the site contains soil which is highly permeable allowing stormwater to go straight through and not significantly impact the water balance.

- This higher infiltration rate allows for the LAA area to be reduced to the WA Government Sewerage Policy minimum (250 m^2 + setbacks).

4.2.6 Stormwater management plan

A stormwater management plan has been prepared by Porters Engineers confirming that the development is capable of adequately retaining stormwater on-site, subject to filling and retaining to achieve clearance above the expected maximum groundwater levels.

Refer **Appendix 10** for a copy of the plan.

4.2.7 Waste Management Plan

The development is supported by a Waste Management Plan (WMP) prepared by Talis. This plan confirms that bin size, area, collection frequency and collection method associated with the proposed development satisfy the City's requirements.

Refer **Appendix 11** for a copy of the report.

4.3 Additional inputs and advice

4.3.1 Vegetation assessment

The subject site contains a number of trees around the site boundaries which are proposed to be cleared to facilitate the warehouse development. Western Environmental conducted a preliminary assessment to identify any potential environmental considerations and provide advice as to whether any additional reporting is necessary.

Refer **Appendix 8** for a copy of the advice.

4.3.2 Aboriginal cultural heritage advice

Although a development application does not trigger any requirement under the *Aboriginal Cultural Heritage Act 1972* – Waru consultants were engaged to undertake a preliminary desktop review and site inspection and provide advice. This advice is summarised as follows:

- Many decades prior to the subdivision of the subject site for housing the area was cleared and used for farming and grazing resulting in considerable ground disturbance.
- Subsequent site development has resulted in further low-level disturbance associated with excavation of a pond, construction of a residential dwelling on an elevated sand pad, and non-native tree planting.
- Given the number of heritage sites mapped in proximity to the subject site, it is likely that the subject site was surveyed in the 1970s and early 1980s as part of the Perth Area Archaeological Survey Project and that no heritage places were identified.
- A historic camping site abutting the subject site has been filled, drained, cleared and flattened and no longer exists.
- A physical inspect of the subject site confirmed that the land was unlikely to have been suitable for camping and that given historic ground disturbance there is very little potential for any archaeological material to survive in situ and in context.
- There is negligible risk that development of the land will affect any Aboriginal heritage sites.

Refer **Appendix 12** for a copy of the written advice.

5 STATUTORY PLANNING FRAMEWORK

5.1 State planning policies

5.1.1 State Planning Policy 3.7 – Planning in Bushfire Prone Areas

State Planning Policy 3.7 – Planning in Bushfire Prone Areas (**SPP3.7**) applies to the subject site as part of the site is in a Bushfire Prone Area. SPP3.7 is applied in the planning framework through the LPS3 and Schedule 2 (deemed provisions) of the *Planning and Development (Local Planning Schemes) Regulations 2015*.

5.2 Metropolitan Region Scheme

Under the provisions of the Metropolitan Region Scheme (**MRS**) the subject site is zoned Urban. The proposed development is consistent with the intent of the Urban zone and may be approved accordingly.

The subject site is not affected by land reserved by the MRS, nor is it subject to any resolution or declaration made under the MRS.

5.3 City of Kalamunda Local Planning Scheme No. 3

5.3.1 Zoning

The subject site is zoned 'Light Industry' under the provisions of the City of Kalamunda Local Planning Scheme No. 3 (**LPS3**). Refer to **Figure 8**, zoning map below.

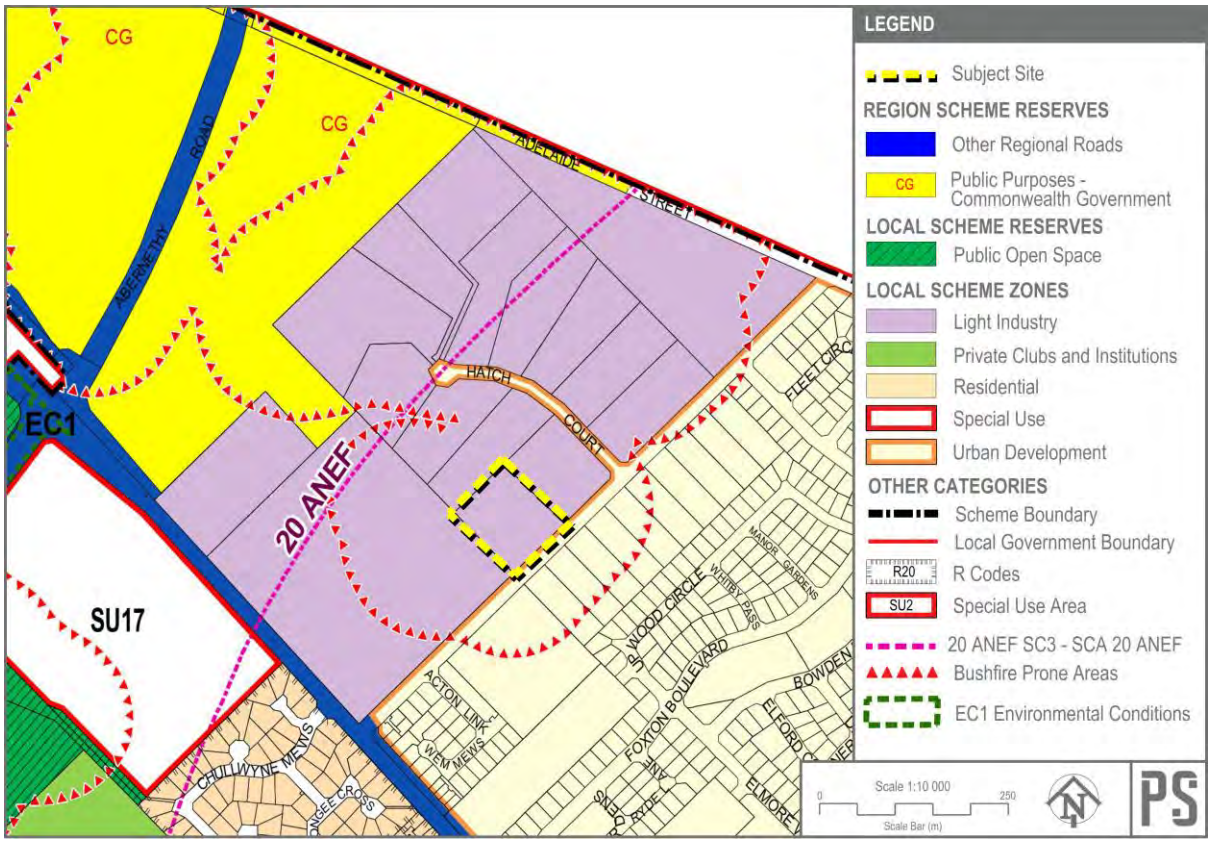


Figure 8 – Zoning map extract of LPS3 (Source: DPLH)

5.3.2 Land use permissibility

Pursuant to the provisions of Schedule 1 of LPS3, the proposed development seeks approval for a 'Warehouse/Storage' land use, meaning:

> ***"warehouse/storage"*** *means premises including indoor or outdoor facilities used for –*
>
> (a) *the storage of goods, equipment, plant or materials; or*
>
> (b) *the display or sale by wholesale of goods.*

The proposed development is entirely consistent with the general definition of a Warehouse/Storage use, as it provides for the indoor storage of goods, equipment, plant and/or materials.

Pursuant to Table 1 – Zoning Table of LPS3, Warehouse/Storage a 'P' (permitted) use within the Light Industry zone and is capable of approval. The proposed use is entirely appropriate and suitable for establishment on the development site in consideration of its zoning under the MRS and LPS3.

5.4 Local planning policies

5.4.1 Local Planning Policy 26 – Public Art

The City has adopted *Local Planning Policy 26 – Public Art Contribution* (**LPP26**) to deliver public art via the development assessment process. LPP26 requires all development with a value in excess of $500,000 to make 1% contribution towards public art unless it can be demonstrated that the provision of public art is not reasonably necessary, having regard to the purpose and objectives of the policy.

The proposed development seeks an exemption from the contribution requirement on the grounds that the development makes an alternate contribution to the broader community by providing a high-quality residential interface to a significantly higher level than surrounding developments.

5.4.2 Draft Local Planning Policy 35 – Hatch Court Light Industrial Precinct

Pursuant to LPS3, development occurring on the subject site cannot take place without an approved structure plan. Draft LPP35 identifies Precinct B (to the north-east of the subject site) as being capable of development without an approved structure plan.

Precinct A (containing the subject site) has been identified under this Draft LPP35 as not capable of development until such time as a local structure plan has been prepared.

Whilst Draft LPP35 is *technically* considered a seriously entertained planning instrument–it's a valid question as to whether this status can continue indefinitely, and our position is that **little to no weight should be given to it in the assessment of this application** for the following reasons:

- Draft LPP35 has never been re-considered by Council following public consultation in July 2022. This must be understood to indicate **little to no will or desire on the part of the City or the elected members to** progress this planning instrument any further.
- As previously outlined in this report, the rationale for requiring a structure plan to address interface considerations is no longer applicable as a result of changes to the planning framework since the Hatch Court precinct was rezoned in 6 February 2016. This includes the gazettal of both *SPP4.1 – Industrial interface* and *SPP7.0 – Design of the Built Environment*, which provide a framework for assessing interface considerations.
- Planned changes to the local and regional movement network will shift heavy traffic away from Adelaide Crescent reducing the need to deliver a connecting road between Adelaide Street and Hatch Court.

- Development applications within both precincts A and B (Lots 201, 200 and 1499) have been approved for industrial development in the absence of a structure plan demonstrating that all relevant considerations addressed by the LPP35 are capable of being addressed by other elements of the existing planning framework.

In light of the above, the existence of Draft LPP35 does not create a presumption against the development of the subject site in the absence of a local structure plan. A detailed assessment against Draft LPP35 is not warranted as the relevant considerations are described in the additional site and development requirements of LPS3 and are addressed elsewhere in this report.

6 DEVELOPMENT ASSESSMENT

6.1 Development standards and requirements

6.1.1 Development requirements

An assessment against the relevant requirements of Clause 5.15 of LPS3 is provided in **Table 2** below.

Table 2 – Assessment against applicable clause 5.15 development requirements

Requirement			Compliance	
Setbacks	Front (Stirling Crescent)	15m	20m	✓
	Side	Nil	Nil – 10.7m	✓
	Rear	Nil	Nil	✓
Site requirement	Site Coverage	60%	53%	✓
	Plot Ratio	0.5		✓
	Landscaping Strip (Road Frontage)	3m to all road frontages		✓

The development is demonstrated to be compliant with site development requirements and warrants approval accordingly.

6.1.2 Car parking requirements

The proposed development is for a Warehouse land use comprising two warehouse buildings and an ancillary office. It is our position that the appropriate assessment methodology is for the office to be treated as incidental to the predominant use with a single parking assessment methodology applied to the whole development. This approach is warranted for the following reasons:

- Individual components of a development should only be assessed independently as when they are capable of operating separate and distinct from each other with a clearly identifiable difference in parking demand generation.
- The warehouse and office component function as a single land use, as demonstrated by the office abutting and opening directly onto the Warehouse 1 floor, and staff amenities (toilets, kitchen and internal and external eating areas) being provided only within the office building. The warehouse would be unable to function without access to the office building.
- Any notion of a clear distinction between "white collar" administrative and "blue collar" roles on the warehouse floor is highly outdated and not reflective of contemporary warehouse and logistics businesses which require flexible roles with staff working in both the office area and on the warehouse floor.
- Whilst the office building gives the illusory appearance of a distinct land use—this is simply a function of the size of the development as a whole. Most commercial land uses include an administrative component—and we would not, for example, suggest that the reception area of a doctor's studio be assessed separate and distinctly from the doctor's consulting rooms.

In light of the above, an assessment against the Clause 5.7 parking requirements using this methodology is provided in the following table.

Table 3 – Assessment against LPS3 car parking requirements

Land use	Minimum parking rate	Assessment	Requirement
Warehouse / Storage	3 bays for up to the first 200m² of floor area and thereafter 1 bay for every 100m² of NLA or part thereof.	4,965m² NLA	51 bays
		Total number of parking bays required	**51 bays**
		Number of parking bays provided	**53 bays**
		Total parking shortfall/surplus	**2 bays**

The development is demonstrated to be compliant with minimum parking requirements and warrants approval accordingly.

Justification for a theoretical parking shortfall

Notwithstanding—in light of the City's previous approach to parking assessment for developments within this area, we acknowledge that they may elect to assess the Office area as a separate and distinct land use. Whilst, for the reasons already stated, we do not agree to this approach, if the JDAP was to accept this methodology then the proposed development would generate a parking shortfall of 10 bays.

A parking shortfall is capable of variation under LPS3, and is justifiable for the following reasons:

- The subject site is not connected to the reticulated sewer network is required to be serviced by an on-site wastewater system requiring 250m² of landscaped area for drip irrigation. It is not possible to deliver this area without reducing the amount of sealed parking bays.
- The additional landscaping area associated with the on-site wastewater treatment achieves a better outcome for the development interface to Stirling Crescent, and will support the growth of larger trees in and around the customer and staff parking areas.
- Notwithstanding the above—the Traffic Impact Statement (refer **Appendix 4**) has conservatively assessed the ancillary office as a separate land use for the purpose of assessing parking demand generation. This generates an overall vehicle demand for 30 vehicles during peak hour traffic generation. The TIS concludes that *"Considering anticipated traffic generation, the proposed parking can easily cater to the requirements of the proposed development."*
- The DPLH's *Interim Guidelines for Car Parking requirements for non-residential land uses in Perth and Peel* recommends that parking requirements be treated as discretionary, rather than relying on rigid minimum parking rates.

The amount of parking is demonstrated to be acceptable, and to warrants approval accordingly.

6.1.3 Industrial zone development requirements

Table 4 – Assessment against LPS3 development requirements for industrial zones

Clause / requirements		Assessment	Compliance
5.15.1	**Setbacks** – Setback area not to be used for anything other than parking, access, landscaping, deliveries and trade display.	It is proposed that the front setback be used for landscaping, access and car parking. For the side setbacks, it is proposed that this area is used for vehicle access to the loading/unloading area.	✓
5.15.2	**Proximity to Residential Zones** – No building closer than 15m from a Residential Zone.	At the closest point, the proposed buildings are 40 metres away from a residential zone.	✓
5.15.3	**Access** – All vehicular access designed to enable vehicles to enter and leave in forward gear.	All vehicles servicing the proposed development can enter and leave in forward gear as a result of the drive-through loading/unloading area.	✓
5.15.4	**Storage** – No storage within 2 meters of side boundaries or forward of building line.	The proposal does not include storage within 2 metres of side boundaries or forward of the building line.	✓
5.15.4	**Materials** – Street facing walls or buildings to be wholly brick, concrete or masonry and may not be clad with Zincalume.	The southern elevation of Warehouse 1 is colorbond and partially visible from the street meaning that the development is not strictly compliant with this requirement. However, the variation is considered supportable given that the warehouse is largely screened by the office building which is wholly concrete treated with colours, articulations, windows, cement cladding and awning features over the main entrances.  **Figure 9 – Render of proposed street facing façade**	Variation – Justified
5.15.6	**Loading/Unloading Bays** – Paved with dimensions 3.5m x 7m with a clearance of 3.5m.	The proposed loading/unloading bays exceed the minimum area and clearance requirements.	✓
5.15.7	**Service Yards & Refuse Storage** – Screening to be provided to these areas.	Two refuse areas located to the rear of Warehouse 1 within an alcove screened from view of the street.	✓
5.15.8	**Landscaping** – Shade trees to be provided in car parking areas with more than 12 car bays.	The following 28 bays are capable of receiving shade from trees as follows: • 17 bays (bays 1-17) along the street boundary are shaded by 10 trees.	✓

Clause / requirements		Assessment	Compliance
		• 4 bays (bays 18-21) are capable of receiving shade from trees planted in the adjacent landscaping strip. • 4 bays (bays 22-25) adjacent to the firefighting tanks are capable of receiving shade from two trees planted in the nearby landscaping area. • 3 bays (bays 51-53) adjacent to the ATU sewer system are capable of receiving shade from two trees planted in nearby landscaping areas. The following bays are not capable of being shaded by trees for the following reasons: • 12 bays (bays 35-45) along the southern elevation of the Office are covered by a shade structure. • 12 bays (bays 26-34 and 46-50) are not shaded by trees due to the need to provide pedestrian access. Overall, 40 of 51 bays (78%) are capable of receiving shade from trees or shade structures.	
5.15.9	**Drainage** – On-site storage and stormwater treatment to achieve water sensitive design standards.	Geotechnical investigations and a stormwater management plan have been provided in support of this application.	✓

The development is demonstrated to be compliant with the development requirements applicable to the industrial zone and warrants approval accordingly.

6.1.4 Removal of vegetation

Clause 5.18 of LPS3 states that vegetation shall not be removed unless it is in accordance with relevant legislation.

The subject site contains a number of trees around the site boundaries which are proposed to be cleared to facilitate the warehouse development. Western Environmental conducted a preliminary assessment to identify any potential environmental considerations and provide advice as to whether any additional reporting is necessary (refer **Appendix 8**).

The advice is summarised as follows:

- The quality of existing vegetation, including planted trees along the site boundary, is very poor and primarily non-native species.
- Some trees were identified as potential "low value" foraging and breeding habitat for Black Cockatoos—but no evidence of them being used as such was observed, most were non-native trees, and the total potential foraging area was less than 1 hectare.
- Clearing of the trees was identified as exempt under Regulation 5, Item 1 of the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*.
- Clearing of the trees does not require referral under the EPBC Act as it amounts to less than 1 hectare of potential foraging habitat.

Regulation 5, Item of the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* is quoted as follows:

> *Clearing of a site for the lawful construction of a building or other structure on a property, being clearing which does not, together with all other limited clearing on the property in the financial year in which the clearing takes place, exceed five hectares, if – (a) the clearing is to the extent necessary; and (b) the vegetation is not riparian vegetation.*

This advice demonstrates that clearance of any existing vegetation does not require any additional approvals.

6.1.5 Special Control Area – Bushfire Prone Areas

LPS3 sets out development requirements for lots in the 'Bushfire Prone Areas' Special Control Area (**SCA**). Pursuant to clause 6.7.3, all applications must be accompanied by a Bushfire Attack Level (**BAL**) assessment and a suitable fire management plan. This requirement has been addressed with the provision of a BMP (refer **Appendix 7**) inclusive of a BAL contour assessment.

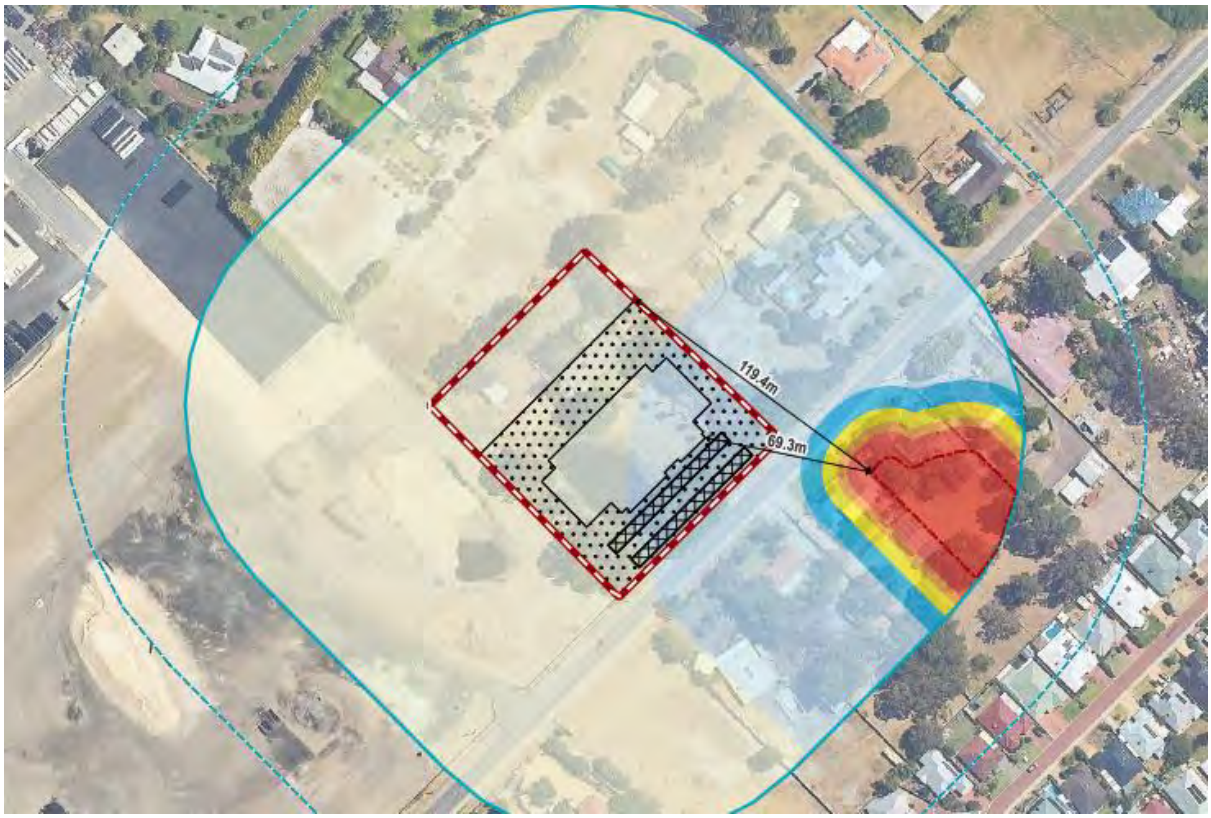


Figure 10 – Extract from BMP showing BAL contour assessment

6.1.6 Additional requirements that apply to land in scheme area

Clause 5.23 of LPS 3 lists the following site and development requirements that apply to the land zoned Light Industry bounded by Kalamunda Road, Stirling Crescent, Adelaide Street and land reserved for Perth Airport under the MRS. The subject site is one of 16 lots that fall within this area.

Table 5 – Additional development requirements applicable to the subject site

No.	Description of Land	Requirement
1	Lots 10, 11, 12, 13, 14, 15, 16, 51, 52 and 53 Hatch Court, Lots 1, 8, 9, and 1499 Stirling Crescent and Lots 200 and 201 Kalamunda Road, High Wycombe.	1. A structure plan is to be prepared and approved for the land pursuant to Part 4 of the deemed provisions and is to specifically address: (a) Traffic management including: • Provision of future vehicular access to be primarily via Adelaide Street; • Ensuring any vehicular access to Kalamunda Road does not reduce existing levels of access for adjacent properties; and • Access for lots with frontage to Stirling Crescent being provided via an internal road only. (b) Appropriate interface with existing residential development along Stirling Crescent including setbacks, landscaping, fencing and façade treatment provisions; (c) the identification and protection of environmentally significant areas within the land through the provision of appropriate buffers; and (d) The identified bushfire risk in accordance with State Planning Policy 3.7 and Guidelines for Planning in Bushfire Prone Areas. 2. Subdivision and / or development is to generally be in accordance with the approved structure plan.

A structure plan has not been prepared or adopted over the subject site and surrounding precinct.

The proposed development seeks a variation to clause 5.23 to approve the development in the absence of an approved structure plan.

Clause 27(2) of the deemed provisions, allows for development approval to be granted on land in the absence of a structure plan (where one is required) if the decision maker is satisfied that:

(a) the proposed development or subdivision does not conflict with the principles of orderly and proper planning; and

(b) the proposed development or subdivision would not prejudice the overall development potential of the area.

These considerations are addressed in detail as follows:

(a) The development does not conflict with the principles of orderly and proper planning

The principles of orderly and proper planning, as summarised by the DPLH[2],

> *"relates to a proposal's consistency with the established planning framework for an area, including instruments such as State planning policy, planning strategy or planning scheme. Use of the term depends on the context of the site, location and planning framework in question."*

This report demonstrates that the proposed development is compliant with the requirements of the applicable state and local planning framework.

Critically, the proposed use is a 'P-class', permitted use within the zone, and note 2 of clause 4.3.3 of LPS3 states in part that *"The local government will not refuse a 'P' use because of the unsuitability of the use for the zone..."*

Given that the development proposes a land use capable of approval "as of right", the proposal is inherently consistent with the local planning framework.

This leads us to the second question of whether the development is prejudicial to the development of the area the primary planning consideration. This requires an evaluation of the specific built form, access considerations and other matters provided for under the local planning framework.

(b) the proposed development or subdivision would not prejudice the overall development potential of the area.

To determine whether the development has the potential to prejudice the overall development of the area, a detailed assessment against the structure planning objectives is provided in the following table:

Table 6 – Assessment against structure planning objectives for the Hatch Court Industrial precinct

Structure planning objective	Assessment / response	Outcome
(a) Traffic management including:		
• Provision of future vehicular access to be primarily via Adelaide Street;	The proposed access arrangements between the development and Stirling Crescent is wholly consistent with the intent of this clause for the following reasons: • This clause is applicable on a precinct level and includes the word 'primarily' which means *'for the most part' or 'mainly'*. This is highly relevant as it indicates that this particular clause cannot be interpreted as an absolute requirement. In other words, this clause requires the *"provision of future vehicular access [for the precinct] to be [mostly] via Adelaide Street"*. This clearly allows for a level of traffic on streets other than Adelaide Street including Stirling Crescent. • The subject site is the only lot within the precinct which solely fronts Stirling Crescent. All other lots fronting Stirling Crecent have a secondary frontage to Kalamunda Road, Hatch Court or Adelaide Street. As a result, exercising discretion in support of the proposed development is based on the specific merits and circumstances of the site and cannot establish a precedent for other lots fronting Stirling Crescent to achieve access from it.	Satisfied

[2] 'Making good planning decision' (26 June 2024) *Planning Online*, Department of Planning, Lands & Heritage, https://www.planning.wa.gov.au/how-does-planning-work/making-good-planning-decisions

Structure planning objective	Assessment / response	Outcome
	• Development of the subject site **does not prejudice the delivery of a future link between Hatch Court and Adelaide Street.** Draft LPP identifies an indicative alignment across Lot 1499 and 13 but the subject site has not been identified as a lot that would be required to either cede land or achieve direct access to that future road. As such, **the proposed development has been demonstrated to be non-prejudicial to the delivery of this particular planning objective** and warrants support accordingly.	
• Ensuring any vehicular access to Kalamunda Road does not reduce existing levels of access for adjacent properties	The subject site does not have access to Kalamunda Road.	Not applicable
• Access for lots with frontage to Stirling Crescent being provided via an internal road only	This provision requires existing lots fronting Stirling Crescent to achieve access from Adelaide Street, Hatch Court or Kalamunda Road via an *"internal road only"*. This includes the subject site. The term "internal road" is ambiguous, but based on general usage within various WA government documents it could mean either a public road internal to the Industrial zoned precinct; or a private road internal to the boundaries of a private lot or lot/s. **Public internal road** **The subject site is unable to achieve access to any public road other than Stirling Crescent, either now or in the future regardless of whether a structure plan is adopted.** This is because the indicative alignment of the public road linking Hatch Court with Adelaide Street, as shown on draft LPP35, does not connect to the subject site.  **Figure 11 – Extract of the draft LPP35 map showing the indicative public road alignment between Adelaide Street and Hatch Court.** The proposed development has been demonstrated to not be prejudicial to the delivery of the public road shown indicatively in draft LPP35 and warrants support accordingly.	Variation required

Private internal road

Whilst this clause could be interpreted as requiring the subject site to achieve access to the subject site from Hatch Court via an access easement over the adjoining lots, this is not a requirement that should be treated as prescriptive and determinative for the following reasons:

- This is just one of several key considerations under LPS3 which need to evaluated and weighed appropriately in the decision-making process.
- Whilst clause 5.23 of LPS3 purports to restrict the subject site from being developed with access via Stirling Crescent– LPS3 also zones the site Light Industry and identifies the development as a 'P' use, legally capable of approval "as of right". The development is also demonstrated to be **compliant** with the LPS3 requirements for development within the zone. **This should weigh heavily in favour of approval.**
- The apparent restriction on access to Stirling Crescent must also be read in context of all three clauses addressing 'Traffic Management', which specifically state that access is to be *"primarily via Adelaide Street"*. Opposition to this development on the grounds that it seeks access to Stirling Crescent would be to re-interpret this clause to mean that access is to be *"exclusively via Adelaide Street"*, which is inconsistent with the overarching planning objectives.
- Draft LPP35 itself makes no references to any private, internal roads providing access other than the **public** internal road proposed to connect Hatch Court. This supports the view that achieving private internal roads has not previously been understood as essential or necessary to the implementation of this particular clause.
- Finally, it is standard practice to read and understand structure planning objectives as being applicable to the precinct as a whole, and not necessarily to achievable on every single individual lot.

Requiring multiple adjoining landowners to provide access to Lot 9 will significantly reduce the land use efficiency of both the subject site and the neighbouring lots. This imposition on private property rights **cannot** be sustained for the following reasons:

- Planned upgrades and modifications to the regional and local road network which will be delivered over the next couple of years resulting in the redirection of **most** heavy vehicle traffic away from Stirling Crescent.
- As a result, the heavy traffic volumes will significantly ***decrease*** along Stirling Crescent regardless of whether the subject site achieves direct access or not. This could not have been anticipated at the time of the gazettal of Scheme Amendment No. 80.
- The fact that it is not possible for the proposed development to cause any additional long-term impact on the Stirling Crescent traffic flows, undermines any prohibition on access via Stirling Crescent.

Structure planning objective	Assessment / response	Outcome
	• The proposed development has been demonstrated to be acceptable from a traffic perspective (refer **Appendix 4**), and capable of being accessed by "as-of-right" vehicles up to 19m. It is questionable whether the subject site can be prevented from being developed when it will be accessed by as-of-right vehicles. For these reasons, the proponent requests that the decision-maker exercise their discretion in varying this requirement to allow access directly via Stirling Court.	
(c) Appropriate interface with existing residential development along Stirling Crescent including setbacks, landscaping, fencing and façade treatment provisions	The development complies with all applicable development requirements, including setbacks and landscaping. The façade is not compliant—but only in the highly technical sense that some portions of the warehouse are visible from the street—otherwise the office building, which is the main built form visible from Stirling Crescent is compliant in terms of façade materials and designed to a much higher standard than surrounding industrial developments. Furthermore, generous tree planting along the street frontage will provide additional screening. In terms of amenity impacts, the development is supported by an acoustic report demonstrating that residences will not be impacted by the proposed land use activities. Further, the potential impact of headlight spill on the residential dwellings fronting the site was considered in the site design. The proposed one-way circulation allows vehicles to enter the south-eastern crossover and exit onto Stirling at the south-western crossover. These access arrangements prevent vehicles exiting the site directly fronting Lot 8 (refer Figure 12) which has limited screening between the existing residential dwelling and the proposed crossover on the subject site. By comparison, the significant setback of the residential dwelling on Lot 26 (refer Figure 13) facing the egress crossover provides a total separation distance of 50m which combined with the presence of screening vegetation mitigates any impact from vehicle headlines.  **Figure 12 – View of Lot 26 fronting ingress crossover with smaller setback and very limited screening vegetation. There will be no headlight spill onto this property.**  **Figure 13 – View of Lot 26 facing egress crossover showing residential setback distance and presence of screening vegetation**	Satisfied

Structure planning objective	Assessment / response	Outcome
(d) The identification and protection of environmentally significant areas within the land through the provision of appropriate buffers	No environmentally significant areas have been identified within the subject site from a desktop review or a site inspection by an environmental consultant (refer **section 6.1.4** and **Appendix 8**). We reiterate that the pond situated in the southern corner of the subject site is artificial, and not naturally occurring. There is no requirement to protect this artificial pond.	Satisfied
(e) The identified bushfire risk in accordance with State Planning Policy 3.7 and Guidelines for Planning in Bushfire Prone Areas.	All SPP3.7 requirements have been addressed and met (refer sections **4.2.3** and **6.1.5** and **Appendix 7**).	Satisfied

The assessment above demonstrates that all relevant planning objectives have either been satisfied, or simply do not apply to the subject site demonstrating the development to be non-prejudicial to the development of the surrounding area.

6.1.7 Draft Local Planning Policy 35 – Hatch Court Light Industrial Precinct

Notwithstanding our position that a detailed assessment against the provisions of Draft LPP35 is not required—we provide the following comments in relation to the policy provisions.

Table 7 – Comments in relation to the provisions of draft LPP35

Clause		Comment	
5.1.1.	The delineation and staged connection of new roads that connect the precinct to Adelaide Street to alleviate the use of Stirling Crescent by heavy vehicle and to minimize the increase of light vehicle volumes on Stirling Crescent.	Firstly, Table 4 of LPS 3 states that *"future vehicular access to be **primarily** via Adelaide Street"*. The use of the term 'primarily' is relevant as it is not absolute. The draft LPP proposes an initial road connection across Lot 1499 and 13. If this were to be implemented it would result in all Hatch Court Lots (12 in total) being provided with a road that gives access primarily via Adelaide Street. Given the subject site does not have frontage to Hatch Court, under this arrangement the site would access Adelaide Street via Stirling Crescent. **Only lot with sole frontage to Stirling Crescent** The effect of the above is that the subject site is the only lot to have sole access to Stirling Crescent. It would be difficult to argue that traffic from one lot onto Stirling Crescent would result in a traffic issue, particularly given volumes along Stirling Crescent will significantly reduce once Adelaide Street connects to Abernethy Road and access to Great Eastern Highway Bypass is closed.	Not Applicable

Clause		Comment	
5.1.2.	The investigation, delineation and ongoing management of areas identified as Resource Enhancement Wetlands (REW's) and any necessary buffers associated in the context of proposed Light Industrial Development in consultation with the Department for Biodiversity, Conservation and Attractions (DBCA), Department of Water and Environmental Regulation (DWER) and the City of Kalamunda.	The site is not subject to any REW's or buffers.	Not Applicable
5.1.3.	The upgrade and potential widening of Hatch Court road reserve to accommodate heavy vehicles seeking access and egress from land parcels within the precinct.	The site does not have frontage to Hatch Court, nor will it require access to Hatch Court as the gazetted road network of Stirling Crescent connects to Adelaide Street.	Not Applicable
5.1.4.	Managing the interface between the precinct and Stirling Crescent, and particularly to the residential areas to the east of Stirling Crescent.	All relevant interface considerations have been addressed elsewhere in this report, and clearly do not require a local structure plan.	Satisfactorily addressed
5.1.5.	The facilitation of utility infrastructure upgrades and connections as required to support light industrial development.	The facilitation of utilities is not a requirement under Table 4 of LPS3 and is not applicable. In any event, the subject site is currently developed and serviced. Upgrades will be discussed with the relevant service providers at development application stage. This will include the provision of any land fill to achieve the necessary ground water clearances for on site effluent disposal.	Not Applicable
5.1.6.	The integrated management of stormwater, inclusive of investigation of the potential realignment of the surface water drainage from its existing flow path, and the management of this in the context of the identified REW's, through the preparation of appropriate studies and management plans in consultation with the DWER, DBCA and the City of Kalamunda.	Detailed geotechnical investigations in support of a stormwater management plan have been provided, demonstrating that the site is capable of on-site stormwater retention.	Satisfactorily addressed
5.1.7.	The staging and shared cost arrangements for infrastructure upgrades to facilitate industrial development.	There is no Developer Contribution Plan identified or required by Table 4 of LPS3 and is not applicable. In any event, the subject site is capable of being developed without the need for infrastructure upgrades.	Not Applicable

In light of the comments above, the provisions of draft LPP35 is demonstrated to be either unnecessary or duplicating requirements already set-out elsewhere within the planning framework, and the proposed development warrants approval accordingly.

6.2 Other policies/guidelines

6.2.1 Government Sewerage Policy

A detailed assessment against the Government Sewerage Policy has been provided within the Site and Soil Evaluation (SEE) provided in support of this development. The SSE demonstrates that the proposed wastewater treatment system is capable of meeting the requirements of the policy.

6.3 Matters to be considered

Clause 67(2) of the Deemed Provisions sets out the matters for which due regard is to be given when considering a development application. The following matter is identified as having not previously been addressed in this assessment:

> *(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;*

Existing mature trees around the periphery of the site have been investigated as part of the design process for potential protection and retention. Tree retention is not possible for the following reasons:

- Geotechnical investigations identified that a layer of clay has been deposited across the site prior to the tree planting and will need to be removed to facilitate on-site stormwater retention.
- The stormwater management plan confirms that the site filling and retaining will be necessary to achieve clearance of stormwater retention above the groundwater levels.
- Overlaying the development plans on the feature survey demonstrates that the trees are predominantly located in the centre of proposed access routes and parking areas.

The combination of removing soil and raising the site levels vastly complicates any process of tree retention. Further, there is no scope for minor adjustments to the site layout to accommodate any existing trees as it necessitates a wholescale redesign.

For this reason, we consider the preferable outcome to be the planting of new trees in the locations proposed on the concept landscaping plan. These trees will have the opportunity to prosper and ultimately provide a similar function over the next few years.

7 CONCLUSION

This application seeks approval for the development of two warehouses on the subject site, including associated office buildings, access, landscaping and car parking. Approval of the proposal is warranted for the following reasons:

- The development is appropriately located within an area zoned for light industrial development and capable of approval within the zone 'as-of-right'.
- The proposed development will not by nature of its operations and location, detrimentally impact upon the locality.
- The development is designed to an exceptionally high standard and will present attractively to the surrounding residential developments.
- The development appropriately responds to all relevant aspects of the planning framework with any variations to the framework appropriately justified. It has been demonstrated to be satisfactory from a bushfire and traffic perspective with access and circulation arrangements providing for a high level of functionality, convenience and safety.

Having regard to the above, the proposal clearly demonstrates the suitability of the industrial development on the subject site.

We therefore respectfully request the application for development approval be considered on its merits and favourably determined.

SUMMARY OF SUBMISSIONS

DA24/0315

DAP/24/02756

Proposal: Two (2) Warehouses and an Incidental Office – Lot 9 (No. 29) Stirling Crescent, High Wycombe

Submission	Applicant response	City of Kalamunda response
This proposal contradicts the City of Kalamunda's stated objective of establishing a light industrial precinct in the Hatch Court area, as outlined in the 'Shire of Kalamunda Local Planning Scheme No. 3 – Updated to include AMD 109 GG 15/12/2023'. This plan specifically indicates that all vehicle access should be directed through Adelaide Street. As stipulated in 'Table 4 – Additional Requirements that Apply to Land in Scheme Area No. 1': 1. "A structure plan is to be prepared and approved for the land pursuant to Part 4 of the deemed provisions and is to specifically address: (a) Traffic management, including: • Provision of future vehicular access to be primarily via Adelaide Street; • Access for lots with frontage to Stirling Crescent being provided via an internal road only."	This matter is addressed in detail within the DA report provided in support of the application. Approval in the absence of a structure plan is permitted when it can be demonstrated that the development is not prejudicial to the principles of orderly and proper planning. We have demonstrated this within our report. With regard to the point about vehicular access—the clause quoted here applies to the precinct as a whole, and states *"vehicle access to be **primarily** via Adelaide Street"* [emphasis ours]. The word primarily means 'for the most part' or 'mainly' which is highly relevant as it indicates that this clause cannot be interpreted as an absolute requirement. We read this clause to mean *"provision of future vehicle access [for the precinct] to be [mostly] via Adelaide Street"*. This clearly allows for some level of access for lots fronting Stirling Crescent and needs to be read into the clause that follows. The subject site is the only lot within the precinct that solely fronts Stirling Crescent and clearly the discretion provided within this clause was intended to apply to this lot. As such, the development is consistent with the objectives of LPS3.	The City acknowledges that the proposal has not met the requirements of the local planning scheme. Whilst an approval can be granted in the absence of a structure plan, the development must not prejudice the principles of orderly and proper planning. The City is not satisfied that the interface between the site and the adjacent residential properties has been appropriately managed in regards to a traffic sense. The intent of provision (a) of Clause 5.23 of LPS3 is to ensure that vehicular access is provided by an internal road, particularly to manage and limit the number of heavy vehicles utilising Stirling Crescent to access these sites. As there is currently no internal road established through a structure plan, vehicle access cannot be obtained in such a manner. The vehicle access onto Stirling Crescent is considered to jeopardize the overall development of Hatch Court Precinct which the intent is to centralize all vehicular movements, limiting vehicles, particularly heavy vehicles from using Stirling Crescent.
The City of Kalamunda has previously stated its intention to reduce traffic on Stirling Crescent. This proposal directly conflicts with that aim, as it would significantly increase traffic on this road. The anticipated vehicle movements from this business would create traffic congestion, impacting both nearby residential properties and the overall traffic flow along Stirling Crescent. Furthermore, the increased noise levels would adversely affect the area's residential amenity.	This is addressed in detail in our DA report and the Traffic Impact Statement provided. By way of summary—Stirling Crescent is projected to carry up to 5,224 vehicles daily in 2024—being almost entirely through traffic. Changes to the regional road network will redirect almost all through traffic away from Stirling Crescent in the next couple of years. At an absolutely minimum—8.8% of heavy vehicle traffic can be expected to redirect.	The applicant has provided a Transport Impact Statement (TIS) to support the application. The TIS concludes the total traffic from the development will be 224 vehicular trips per day and 30 vehicular trips per hour in peak hours. The peak hours are 7am – 8am for the morning peak and 5pm – 6pm for the evening peak. The development will have a moderate impact on the road network.

Submission	Applicant response	City of Kalamunda response
	The TIS conservatively projects the development to generate 215 additional trips per day—or a 4.1% increase in traffic volumes. The TIS states *"It would be challenging to argue that any additional traffic generated by the development of Lot 9 would significantly impact the road capacity with overall reduced traffic volumes compared to current levels."*	Whilst the TIS and swept paths are generally supported by the City, in the absence of a structure plan which would allow for access via an internal road within the Hatch Court precinct, the proposal is required to obtain access from Stirling Crescent. The introduction of these crossovers and subsequently approval of this development which allows vehicular access onto Stirling Crescent in lieu of an internal road pushes all of the traffic and vehicular movements onto Stirling Crescent which would prejudice the desired character and outcome of the area.
The proposal indicates that the new facility would operate 24/7, leading to an increase in vehicle movements at all hours. This is entirely unacceptable, as it raises the prospect of large trucks and other vehicles disrupting the peace of our residential neighbourhood during early morning hours.	The applicant seeks the option of running 24/7—but it is not guaranteed to do so. As above—the increase in daytime vehicle volumes would be indistinguishable from existing traffic levels. For the nighttime, Main Roads data for 2023 shows 665 vehicles from 10pm to 6am, 104 of which are trucks (15.6%).	The applicant has submitted an Environmental Noise Assessment (ENA) with the application. The ENA notes that the predicted noise emissions received at the adjoining residential premises will be compliant with the assigned levels of the *Environmental Protection (Noise) Regulations 1997,* for all hours of the 24/7 operation noting: • A restriction to a maximum of 10 truck movements in and out of the site on evenings, nights, Sundays and Public Holidays. • No restrictions to forklift activities No restrictions to truck movements during the day time. Notwithstanding this, the City notes that vehicular access should be from an internal road in lieu of from Stirling Crescent.
The proposed vegetation barrier between existing residences and the new warehousing is grossly inadequate. The 'Planning Scheme No. 3' clearly states that: 1. "A structure plan is to be prepared and approved for the land pursuant to Part 4 of the deemed provisions and is to specifically address: (a) Appropriate interface with existing residential development along Stirling Crescent, including setbacks, landscaping, fencing, and façade treatment provisions."	The proposed development has been specifically designed to provide an appropriate interface to the residential housing fronting the site and significantly improves upon the interface delivered by the adjoining lot. See images below.	The City is satisfied that the proposed development has sufficiently addressed the interface requirements of the scheme in relation to built form, setbacks, fencing, façade treatments and landscaping. The City notes that the trees along the boundary are proposed to be removed, however, should the JDAP resolve to approve the application, a condition can be imposed recommending that the applicant retain some of the trees to further improve the interface.

Submission	Applicant response	City of Kalamunda response
As a minimum requirement, a 2-metre-high limestone wall should be provided if the City decides to proceed with the proposal, despite our objections.		
Interface between adjoining industrial Lot 200  **Proposed interface for Lot 9 (indicative only)** 		As above.
Approving this proposal will negatively affect the value of residential properties along Stirling Crescent. The increased noise, traffic, and proximity to industrial operations would diminish the appeal and marketability of our homes.	Property values are not a valid planning consideration. Noise and traffic considerations are addressed in detail in our report and in the supporting reports provided, as described in our comments above.	Property values are not a valid planning consideration.

Submission	Applicant response	City of Kalamunda response
Lot 9 seeks to be developed WITHOUT the requirement of a Local Structure Plan (LSP). Should this be approved, all individual landowners within the broader Hatch Court Industrial Precinct should be granted the same outcome, so as not to be prejudiced against, and for an equitable outcome for all.	Under the Planning and Development (Local Planning Schemes) Regulations 2015 it is already open to all landowners to apply to develop their property in the absence of a structure subject to satisfying the relevant criteria and the decision-maker exercising their discretion.	As above.
Lot 200, Lot 201, Lot 1499 and should this DA be approved, Lot 9 will have effectively been removed from the LSP and DCP requirement for the area. Should the DA for Lot 9 be approved without the requirement for a LSP, this will set the precedent for a fourth time, for all the remaining individual Hatch Court Industrial precinct lots to be able to be developed individually, without the requirement for a LSP or DCP. Otherwise, the decision would again disadvantage the remainder of the Hatch Court precinct, which would certainly not be equitable given approximately half of the total precinct land area, has been approved for isolated light industrial development.	It has been the landowners' long-standing position that a structure plan is not needed to achieve the relevant planning objectives. The fact that the decision-makers have a history of issuing approvals issued over other lots within the precinct certainly does add weight to this position. This does not disadvantage other landowners.	It is noted that Lot 1499 received planning approval, however, the development at No.160 Adelaide Street, High Wycombe is an example of a light industrial development that was able to demonstrate, through the preservation of part of the lot for 'road land', that a proposal including buildings can avoid prejudicing the overall development potential of the area.
Further information requested: - A formal native title review of the area as previous efforts were poor & contradicted themselves - Presentation of current transport data that is not from 2019 or earlier, as that would be horribly out of date & the growth formula used in such an instance also appears to be floored	Aboriginal cultural heritage investigations were conducted with a report provided in support of the application. The TIS has used 2019 data as the baseline whilst adding in a projected growth rate based on historic traffic growth rates.	As per the applicants' response.
With the recent warehouses built on the corner of Stirling Cres and Adelaide Street the traffic has become very heavy and the roads have deteriorated so that that it is difficult to get out of Benson Way onto Stirling Cres to get to work in the morning. The increased number of trucks on the road is very high and the surface of the road has deteriorated so that it is dangerous. More warehouses will just make it worse. This is a residential area not industrial and there has been no infrastructure put into place to protect the residents in Jacaranda Springs from the increased commercial use.	As per the comments above—almost all heavy vehicle traffic is through-traffic, and reflects the broader industrialisation of the surrounding area. It is not solely generated by the new warehouses in the immediate locality. The situation is projected to improve dramatically once the upgrades to the regional road network are completed.	Refer comments above.

City of Kalamunda Design Review Panel

Minutes

Meeting Date and Time:	9 October 2024 – 4.10pm		
Meeting Number:	DRP2024/5		
Meeting Venue:	City of Kalamunda – 2 Railway Road, Kalamunda		
Meeting Items:	5.1	Warehouses and an incidental Office at Lot 9 (No. 29) Stirling Crescent, High Wycombe	
	5.2	Use not listed – Liquor Store – Large. Lot 15 & 16 (No. 10 & 12) Canning Road, Kalamunda	
<u>Attendance</u>			
DRP Members:	David Barr	Design Advisory Committee Member (Chair)	
	Jurg Hunziker	Design Advisory Committee Member	
	Amanda Morgan	Design Advisory Committee Member	
	Ross Montgomery	Design Advisory Committee Member	
	Walter van der Loo	Design Advisory Committee Member	
Officers in attendance:	Cardia Mariani	Principal Statutory Planner	
	Anjali Parmar	Senior Statutory Planner	
	Tracey Cooney-Walsh	Statutory Planner	
Apologies	Nil		
Declarations of Interest	None		
Other	Amanda Morgan to sit out of Item 5.1 – Unable to view plans		
Applicants:	Item 5.1	Trevor Chudleigh Tayne Evershed Planning Solutions	
	Item 5.2	Phil Cockman Eduardo Cardoso	

Item 5.1 –

DRP Recommendations:	• Consider levels and implications of amount of fill to determine if a retaining wall is required at the front of the site. Landscaping to reconcile proposed levels and slope to deliver a positive interface between the development and the street edge • Incorporate as much renewable energy use as possible mindful of likely future trends for transport vehicles, automation and storage logistics • The built form (height and massing) of the proposal is considered generally appropriate for the zone and location.		
General Comments	• This development is setting a precedent for the design standard of future developments, with a progressive vision for the light industrial precinct as a modern economic contributor to the Kalamunda business profile. • The DRP would like to see a compensatory offset to account for the removal of the mature existing trees from the site • Scope for improvement however a sound design philosophy is provided in the approach to the project, evidenced with some good elements in the design		
Design Principle Assessment:	MATRIX		Supported
			Pending further attention
			Not supported
			Not considered / discussed
			Not addressed as further information required
	DESIGN PRINCIPLE	EVALUATION	DRP COMMENT
	CONTEXT & CHARACTER		• Consider how the development sets a precedent and vision for the future light industrial precinct and to seek a complimentary interface

			with the residential area across Stirling Crescent. • Consider the reduction of the crossover width and more importantly the direct access from Stirling Crescent.
	LANDSCAPE QUALITY		• Consider retention of mature and native trees within the front of the site to address the interface with the road reserve and increase canopy shade over a proportion of the site. • Consider if there is a possibility to decrease the parking provision to facilitate tree retention. • Consider using native trees, of the area and ensure that the tree selection achieves a certain scale for canopy shade cover to reduce radiant heat. The DRP notes that the species cannot be too large due to the power lines. • Existing trees at the front of the site contribute to the amenity and streetscape at the front of the site and are therefore important to be retained. • Recommend retention of trees at the front of the site. • Increase the type of native species of landscaping and consider the frontage of the site to increase natural tree canopy shade. • Consider re-planting of comparable species for native flora and ensure tree

			selection can achieve sufficient shading for hard surfaces on site
	BUILT FORM & SCALE		• Reconsider signage on the Stirling Crescent elevation to not be a major element of the street elevation. • The DRP commends the applicant on using the office/administration at the front to set a buffer and reduce the impact of the bulk and scale of the warehouse from the residential across the road. • Good use of windows and canopy to provide shading. • DRP comments the use of office and administration area as a buffer to the warehouse and mediating the bulk of warehouses to the street
	FUNCTIONALITY & BUILD QUALITY		• Ensure air conditioning units and waste storage areas are concealed from view. • Ensure that the outdoor covered canopy space is not used for storage of materials and is only used as a loading dock for fire and safety reasons. • Concerns insufficient toilet access from rear warehouse, which may impact the convenience and comfort of future workers. • Concerns with no toilets provided to both warehouses which has issues future if warehouses are operated separately

	SUSTAINABILITY		• No measurable commitments were provided in DA package. Recommend providing commitments on solar panels, EV charging, carbon footprint, solar shading, lighting and natural ventilation in the proposal. • Recommend provision of solar panels on the covered canopy as an opportunity.
	AMENITY		• Good amenity provided for staff in front office. Consider amenity for rear warehouses for ease of access. • Consider shifting the staff outdoor area to increase the space available for staff for better use
	LEGIBILITY		• Panel commends applicant that good pedestrian access way is provided, and orientation encourages use. • Front entry is clearly defined
	SAFETY		• Consider how light and heavy vehicles will access the large crossovers and whether these can be separated, or demarked. • Consider reduction of crossover widths to Stirling Crescent • Consider one way movement through staff car park to avoid potential front on conflicts between cars and trucks entering and existing the site. • Consider paving / materiality changes for

			hardscaping to reduce crossover scale. • Consider location of fencing and impacts upon safety
	COMMUNITY		• Consideration recommended to address how public art policy requirements can be provided for the site • Consider increase in tree retention which will provide an ecological and community benefit • Consider how this development contributes to the community via the street frontage design. • Consider how design can accommodate provision of footpath (change of level?)
	AESTHETICS		• Grading of the interface and built form from the street to the warehouse is important, with minor clarification can be done well • Encourage considering scale of signage pattern and location on facade. • Consider design opportunities to reduce the scale of large blank walls at the rear of the site • Consider materiality of the checkerboard patterns – they need to be effective at reducing the scale of wall surfaces. • Concerns with the diminishing quality of the materiality and finishes applied to the building from the front of the site to the rear, especially when

			there is no industrial development currently at the rear of the site, it is important design quality is evident throughout the site.

Chair Approval:	**DAVID BARR**
Chair Signature:	
City of Kalamunda Contact:	Cardia Mariani Principal Statutory Planner 08 9257 9875 Cardia.Mariani@kalamunda.wa.gov.au

Design Principle	DRP comments / recommendations	Applicant's response
1. Context and character	• Consider how the development sets a precedent and vision for the future light industrial precinct and to seek a complimentary interface with the residential area across Stirling Crescent.	Interface and amenity considerations are incorporated into the design and addressed in detail in our report. The design is of a high quality and reflects the standard of development for other recent development in the general locality.
	• Consider the reduction of the crossover width and more importantly the direct access from Stirling Crescent.	This request conflicts with the City's request to widen the crossover.
2. Landscape quality	• Consider retention of mature and native trees within the front of the site to address the interface with the road reserve and increase canopy shade over a proportion of the site.	Due to the design and various constraints of the site it is not possible to retain the trees as requested. This is canvassed in detail at **section 6.1.4** of our planning report.
	• Consider if there is a possibility to decrease the parking provision to facilitate tree retention.	
	• Existing trees at the front of the site contribute to the amenity and streetscape at the front of the site and are therefore important to be retained.	
	• Recommend retention of trees at the front of the site. Increase the type of native species of landscaping and consider the frontage of the site to increase natural tree canopy shade.	
	• Consider re-planting of comparable species for native flora and ensure tree selection can achieve sufficient shading for hard surfaces on site	This can be addressed with a standard condition of approval requiring clearance of the landscaping plan to the satisfaction of the City.
	• Consider using native trees, of the area and ensure that the tree selection achieves a certain scale for canopy shade cover to reduce radiant heat. The DRP notes that the species cannot be too large due to the power lines.	
3. Built form and scale	• Reconsider signage on the Stirling Crescent elevation to not be a major element of the street elevation.	Signage proposed is minimal in the context of the overall façade and was complimented by the DRP at the review meeting as being integrated with the building facade.
	• DRP commends the use of office and administration area as a buffer to the warehouse and mediating the bulk of warehouses to the street	Noted.

Design Principle	DRP comments / recommendations	Applicant's response
4. Functionality and build quality	• Ensure air conditioning units and waste storage areas are concealed from view.	Capable of being addressed with a standard condition.
	• Ensure that the outdoor covered canopy space is not used for storage of materials and is only used as a loading dock for fire and safety reasons.	Whilst these comments are noted this is an operational consideration for the development. If this is referring to the rear canopy area between the rear warehouses than there is absolutely no basis to seek to control the use of this area in the manner suggested.
	• Concerns insufficient toilet access from rear warehouse, which may impact the convenience and comfort of future workers. • Concerns with no toilets provided to both warehouses which has issues future if warehouses are operated separately.	We understand there are costs associated with locating toilets in the rear warehouse due to the site grading and distance between the toilets and the ATU system. A sewer pump system would be required due to the 1:100 grades for the sewer pipes. The architect advises that these are usually avoided as they entail ongoing costs associated with running and maintaining on a regular basis. The proposed toilets in the front office have been designed to service employees across the site as a whole. The DRP commended the fact that a singular area of shared amenity (bathroom facilities and lunch areas) could have a positive influence of bringing the workforce together and create opportunities for incidental interaction between administrative and 'back of house' staff.
5. Sustainability	• No measurable commitments were provided in DA package. Recommend providing commitments on solar panels, EV charging, carbon footprint, solar shading, lighting and natural ventilation in the proposal. • Recommend provision of solar panels on the covered canopy as an opportunity.	No measurable commitments were identified under the local planning framework. The applicant will investigate opportunities to include solar panels on the roof of the building.
6. Amenity	• Good amenity provided for staff in front office. Consider amenity for rear warehouses for ease of access.	The area provided is consistent with prevailing practice and staff expectations for a development this nature. The DRP commended the fact that a singular area of shared amenity could have a positive influence of bringing the workforce together and create opportunities for incidental interaction between administrative and 'back of house' staff.
	• Consider shifting the staff outdoor area to increase the space available for staff for better use	
7. Legibility	• Panel, and orientation encourages use. • Front commends applicant that good pedestrian access way is provided entry is clearly defined	Noted.

Design Principle	DRP comments / recommendations	Applicant's response
8. Safety	• Consider how light and heavy vehicles will access the large crossovers and whether these can be separated, or demarked.	The proposed vehicular circulation and access arrangements are supported by a traffic impact statement.
	• Consider reduction of crossover widths to Stirling Crescent.	
	• Consider one way movement through staff car park to avoid potential front on conflicts between cars and trucks entering and existing the site.	
	• Consider paving / materiality changes for hardscaping to reduce crossover scale.	
	• Consider location of fencing and impacts upon safety.	
9. Community	• Consideration recommended to address how public art policy requirements can be provided for the site	This can be dealt with as a condition of development approval.
	• Consider increase in tree retention which will provide an ecological and community benefit	Refer previous comments.
	• Consider how this development contributes to the community via the street frontage design.	Refer previous comments.
	• Consider how design can accommodate provision of footpath (change of level?)	It's unclear what these comments are referring to.
10. Aesthetics	• Grading of the interface and built form from the street to the warehouse is important, with minor clarification can be done well.	It's unclear what these comments are referring to as the development achieves this outcome.
	• Encourage considering scale of signage pattern and location on facade.	Refer previous comments
	• Consider design opportunities to reduce the scale of large blank walls at the rear of the site	This is an industrial zoned precinct with the focus of design quality being toward the streetscape. Blank walls at the rear are appropriate as they will not be visible from the public realm as the precinct develops over time. We consider all façade treatments to be appropriate. Notwithstanding, the requirement for a schedule of materials and finishes can be included as a condition of development approval.
	• Consider materiality of the checkerboard patterns –they need to be effective at reducing the scale of wall surfaces.	
	• Concerns with the diminishing quality of the materiality and finishes applied to the building from the front of the site to the rear, especially when there is no industrial development currently at the rear of the site, it is important design quality is evident throughout the site.	

Enquiries: Didier Ah-Sue on (08) 9323 4806
Our Ref: 24/8479 (D24#1222043)
Your Ref: DA24/0315
DAP Ref: DAP/24/02756

2 October 2024
Chief Executive Officer
City of Kalamunda
PO Box 42
KALAMUNDA WA 6926

Email: enquiries@kalamunda.wa.gov.au (via email)

Dear Sir/Madam,

PROPOSED TWO WAREHOUSES AND INCIDENTAL OFFICE – DA24/0315 – DAP/24/02756 - LOT 9 (29) STIRLING CRESCENT, HIGH WYCOMBE

In response to correspondence received on 19 September 2024 please be advised that the proposed development is located on Stirling Crescent (between Kalamunda Road and Adelaide Street West) which is not a state road. Main Roads has reviewed the application and has no objections to the proposal.

Advice

a) The Great Eastern Highway (GEH) Bypass Interchanges Project is at the construction stage and is currently on hold until Main Roads secure the approvals required to deliver the works.

   The project involves changes to the State Road network in the subject locality, including but not limited to the upgrade of Abernethy Road, Lloyd Street and GEH Bypass interchange, extension of Lloyd Street over the Helena River and closure of the road between GEH Bypass and Stirling Crescent into a cul-de-sac.

   Information can be found at https://www.mainroads.wa.gov.au/projects-initiatives/all-projects/metropolitan/Great-Eastern-Highway-Bypass-Interchanges/.

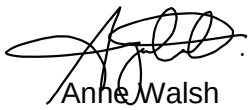
   It is recommended the applicant take into account the changes to the State Road network when considering future Restricted Access Vehicles access for the development.

b) The site currently does not have access to the Restricted Access Vehicle (RAV) network. Any changes to RAVs to service the development will be subject to a separate approval process. Main Roads is the relevant authority to issue such approvals. Information about adding or amending a road on a RAV Network can be found on the Main Roads website > Heavy Vehicles > Access Requirements in WA.

Should the JDAP disagree with the above advice or require further information please do not hesitate to contact Didier Ah-Sue on (08) 9323 4806.

Please ensure a copy of the JDAP's final determination is sent to planninginfo@mainroads.wa.gov.au.

Yours sincerely



Anne Walsh
A/Road Access and Planning Manager

PO Box 6
Cloverdale WA 6985
Australia

Your Ref: DA24/0315
24 September 2024

Anjali Parmar
Senior Statutory Planner
Planning Services
City of Kalamunda

Dear Anjali,

29 STIRLING CR, HIGH WYCOMBE – WAREHOUSE AND OFFICE

I refer to the email dated 19 September 2024 inviting comment on the above proposal. Perth Airport has reviewed the documentation, conducted an assessment against the relevant policies and guidelines, and provides the following response.

AIRSPACE AND WINDSHEAR ASSESSMENT

Perth Airport has assessed the proposal against the Perth Airport airspace protected under the *Airports (Protection of Airspace) Regulations 1996 (C'th)*. Based on the maximum heights indicated by the supplied plans of 36m AHD (finished floor level ~24.2m AHD and height of ~10m AGL, plus an allowance for the top of roof above the indicated eave, and antennae/plant/equipment) the proposed structure will not infringe Perth Airport's protected airspace. This is on the basis that Perth Airport considers the maximum elevation of the structure to be the absolute highest point (top of monopole, antennae etc.) and not just the highest point of the roof ridgeline.

Additionally, cranes used in the construction are a height consideration. Cranes are generally assessed separately, closer to construction, when accurate information regarding crane operating heights and locations are available. Information regarding the Perth Airport crane assessment and permit process is available at perthairport.com.au. Alternatively, Perth Airport would encourage the City and/or the proponent to contact the airport's Airspace line on 6278 8122.

Similarly, cranes used on site during the operation phase of the development will be required to seek airspace permits from Perth Airport in accordance with the aforementioned regulations.

AIRCRAFT NOISE ASSESSMENT

State Planning Policy 5.1 – Land Use Planning in the Vicinity of Perth Airport (SPP 5.1) is the key statutory document available in Western Australia for assessing and planning for land uses in aircraft noise affected areas. This document is predicated on the endorsed Australian Noise Exposure Forecast (ANEF) contours to determine what intensity and type of development can be approved, and under what conditions.

Additionally, the National Airports Safeguarding Advisory Group (NASAG), comprising of Commonwealth and State Government planning and transport Departments and Authorities, has developed the 'National Airports Safeguarding Framework.' The NASF contains nine guideline documents which assist in achieving the listed aims. Guideline A of the framework is titled '*Measures for Managing Impacts of Aircraft Noise*' and specifically addresses the suitability of different development scenarios in aircraft noise affected areas.

Guideline A uses "noise above" contours as its reference, which relate to the specific number

of events that a certain decibel level is exceeded. The N65 is a 'noise above' metric produced by Perth Airport, which demonstrates the likely effect of aircraft noise exposure on an area or a development, at the ultimate airfield capacity. The N65 is publicly available on the Aircraft Noise Information Portal, viewable from Perth Airport's website.

The NASF is consistent with SPP 5.1, in that it aims to ensure landowners and prospective landowners are sufficiently informed regarding aircraft noise. Although both documents are considered and referenced in this response, SPP 5.1 is ultimately the prevailing document used in Western Australia.

Assessment of the subject site

The site is located approximately 1000m from the extended centreline of the Perth's New Runway and approximately 1000m from the extended centreline of runway 06/24. This means aircraft operating from these runways will frequently fly by the subject site at low altitudes. The proximity of the subject development site to Perth's existing main runway is demonstrated in Attachment 1.

The proposal is located outside the endorsed 2020 Australian Noise Exposure Forecast (ANEF). The ANEF overlaid with the subject area is included for reference in Attachment 2. The warehouse portion of this particular proposal as outlined under Appendix 1 of SPP 5.1 is listed as 'Acceptable.' The Office portion of this proposal (considered as building type 'Commercial Building' as per Table 2.1) is listed as 'Conditionally Acceptable'. In line with clause 5.4.5 of SPP 5.1 noise insulation for the office should be determined in consideration of:

- levels of aircraft noise likely to be experienced at the site;
- likely noise attenuation from the type of construction proposed;
- background noise level to which the site is subject;
- times of day or night when overflights are likely to occur;
- frequency of overflights by the various classes of aircraft; and
- occupational characteristics of the proposed development.

Using the NASF recognised N65 contour, the subject site will experience up to 200 aircraft noise events above 65 decibels across an average day. Noise at this level is disruptive to a normal conversation even inside a building and will be unacceptable to most people. The N65 overlaid with the subject area is included in Attachment 3.

PERTH AIRPORT RECOMMENDATION

Notwithstanding the high levels and frequencies of aircraft noise the site will experience, the proposal is acceptable under SPP 5.1 and poses no impacts to assessed airspace criteria. As the land-use is moving from a more noise-sensitive land-use (residential) to a less noise sensitive land use (industrial), Perth Airport supports the proposal subject to the conditions recommended below being met.

The Office land use is required to be constructed with insulation to meet Australian Standard AS2021:2015 Acoustics – Aircraft Noise Intrusion – Building Siting and Construction. This will ensure future building occupants are not unreasonably impacted from the aircraft noise level due to the frequency of aircraft movements overhead.

Should the City resolve to approve the proposal, Perth Airport recommends the following conditions and advice notes:

Condition 1: The development shall not exceed a maximum height of 36m AHD.

Condition 2: The applicant or responsible contractor shall lodge an online application to Perth Airport's Protected Airspace Assessment Tool (PAAT) prior to the erection of a crane on the subject site during both construction and operation of the subject site in accordance with their obligations under the *Airports (Protection of Airspace) Regulations 1996 (C'th)*.

Condition 3: The Office portion of the development shall be constructed to achieve compliance with AS2021:2015 (Indoor Design Noise Levels).

Advice i: The subject area is located within the 100-200 N65 contours. For further information on aircraft noise the applicant/owner(s) may contact Perth Airport's Infrastructure Planning team on 9478 8888 or planning@perthairport.com.au or visit Perth Airport's Aircraft Noise Portal at https://aircraftnoise.perthairport.com.au/.

Advice ii: In relation to Condition 2, applications are to be made online at https://paat.perthairport.com.au/. Queries can be directed to Perth Airport's airspace line or inbox at 6278 8122 or airspace@perthairport.com.au.

Advice iii: In relation to Condition 3, in line with Guideline A of the National Airports Safeguarding Framework, building insulation is strongly recommended for the proposed office for the following reasons:

- Due to the proximity of the site to Perth's New Runway and existing runway 06/24,
- The excessive aircraft noise the site will experience (up to 200 noise events above 65dBA across an average day), and
- The occupational characteristics of the proposed office land use which will necessitate building users to be provided a reasonable indoor noise level to appropriately undertake their duties of employment.

Advice iv: Perth Airport kindly requests the City of Kalamunda inform Airport Officers of the outcome of the Development Application process once finalised.

Summary

Given the above assessment, Perth Airport supports the proposal subject to the advice provided. Perth Airport appreciates the opportunity to comment, and should you require any additional information, please contact Dean Pettit (Land Use Coordinator) on (08) 9478 8438.

Yours sincerely



Jaxon Thomas
General Manager Planning (Acting)



Perth Airport

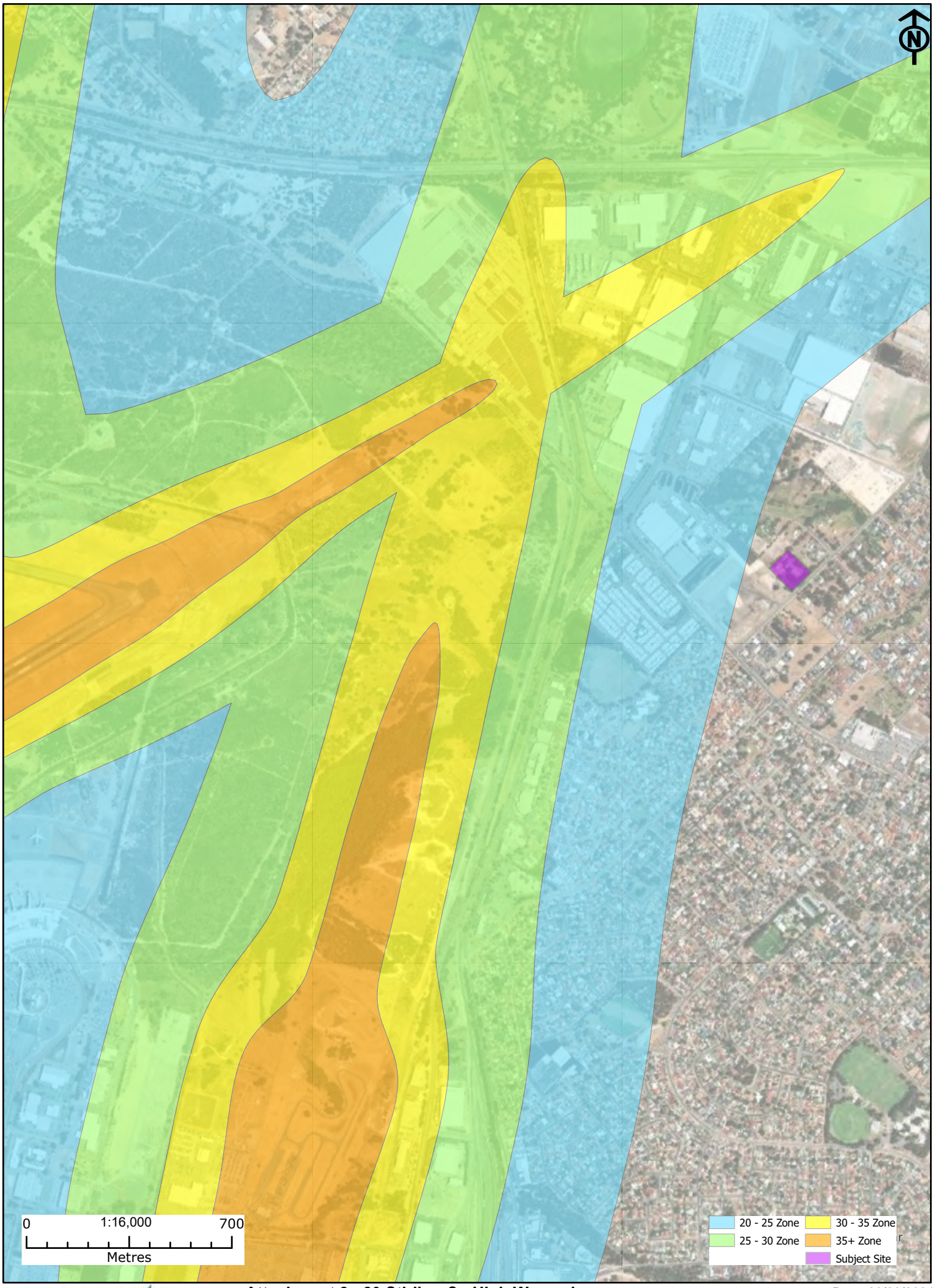
Note: Drawing is not an official document WORKING PLAN ONLY

Attachment 1 - 29 Stirling Cr, High Wycombe

Perth Airport extended runway centrelines - includes Perth's New Runway

Date: 20/09/2024

A4



Perth Airport

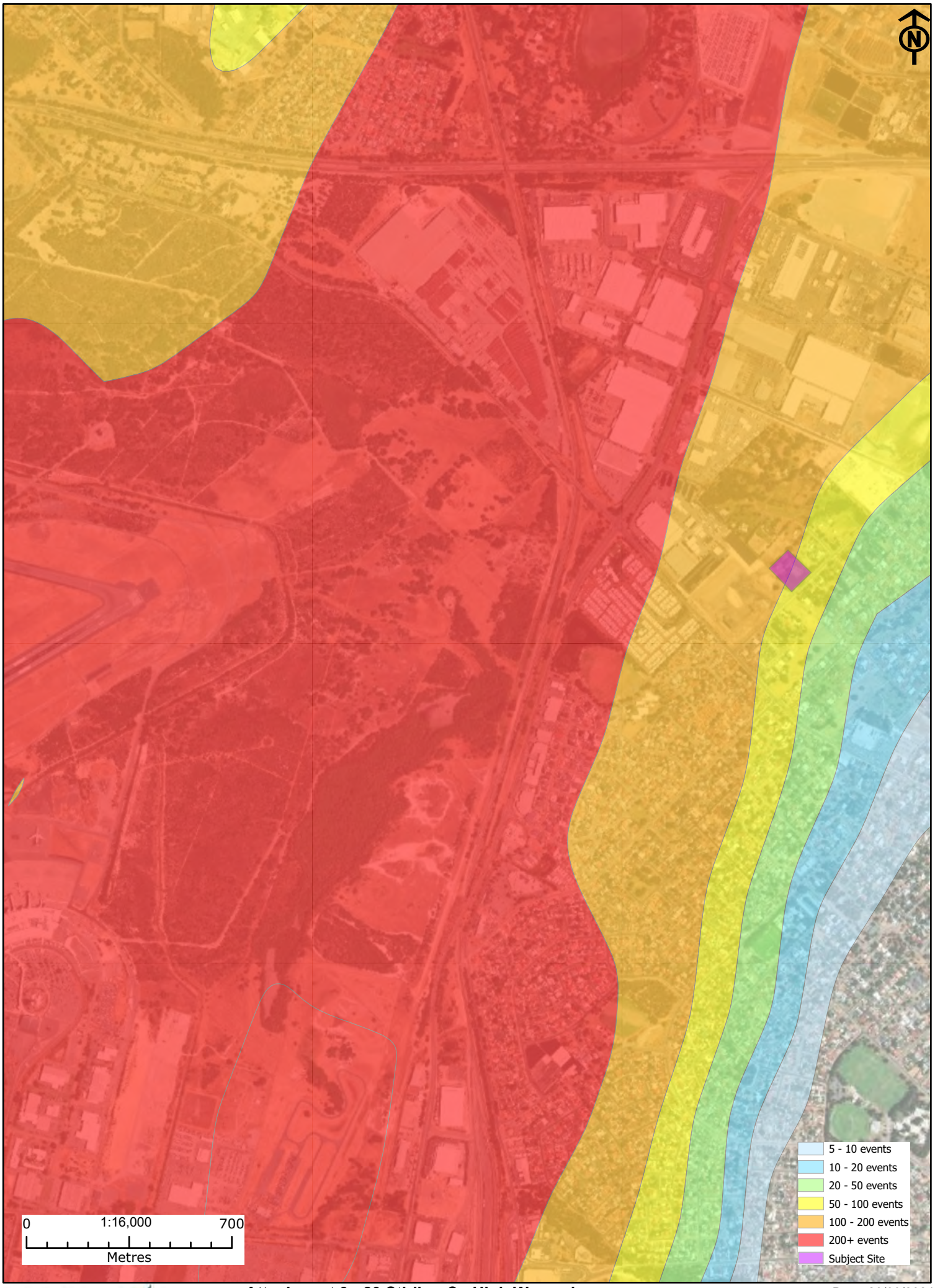
Note: Drawing is not an official document WORKING PLAN ONLY

Attachment 2 - 29 Stirling Cr, High Wycombe

Subject site with reference to 2020 Ultimate ANEF

Date: 20/09/2024

A4



Perth Airport

Note: Drawing is not an official document WORKING PLAN ONLY

Attachment 3 - 29 Stirling Cr, High Wycombe

2020 N65. Average number of aircraft noise events exceeding 65dBA across an average day once the airport is at its ultimate capacity.

Date: 20/09/2024

A4

PART D – OTHER BUSINESS

1. State Administrative Tribunal Applications and Supreme Court Appeals

2. Meeting Closure