



Metro Outer Joint Development Assessment Panel Agenda

Meeting Date and Time: Monday, 13 September 2021; 1pm
Meeting Number: MOJDAP/123
Meeting Venue: via Zoom

To connect to the meeting via your computer - <https://zoom.us/j/95480983171>

To connect to the meeting via teleconference dial the following phone number -
8 7150 1149

Insert Meeting ID followed by the hash (#) key when prompted - 954 8098 3171

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

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Attendance

DAP Members

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

Officers in attendance

Mr David Banovic (City of Rockingham)
Mr Mike Ross (City of Rockingham)
Mr James Henson (City of Rockingham)
Mr Danny Sriono (City of Rockingham)

Minute Secretary

Ms Adele McMahon (DAP Secretariat)
Ms Megan Ventris (DAP Secretariat)

Applicants and Submitters

Mr Josh Watson (Planning Solutions)
Mr Julius Skinner (Thomson Greer)
Mr Behnam Bordbar (Transcore)
Dr James Fox (Land and Water Consulting)
Mr Hamish Brown (Leyton Property)
Mr David Wilkins (i3 Consultants)
Ms Nikki Bombak
Ms Mirella Goetzmann (Department of Health)

Members of the Public / Media

Nil.

1. Opening of Meeting, Welcome and Acknowledgement

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

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

2. Apologies

Cr Deb Hamblin (Local Government Member, City of Rockingham)

3. Members on Leave of Absence

Nil



4. Noting of Minutes

Signed minutes of previous meetings are available on the [DAP website](#).

5. Declarations of Due Consideration

The Presiding Member notes an addendum to the agenda was published to include details of a DAP request for further information and responsible authority response in relation to Item 10.1, received on 8 September 2021.

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

6. Disclosure of Interests

Member	Item	Nature of Interest
Cr Lorna Buchan	10.1	<p>Impartiality Interest –</p> <p>Under clause 2.4.9 of the DAP Code of Conduct, Cr Buchan participated in the prior Council decision in accordance with her functions as a member of a local government.</p> <p>However, under section 2.1.2 of the DAP Code of Conduct, Cr Buchan acknowledges that she is not bound by any previous decision or resolution of the local government. Cr Buchan undertakes to exercise independent judgment in relation to any DAP application before her, which she will consider on its planning merits.</p> <p>Cr Buchan is a member of the Golden Bay Progress Association and met with the association at a regular monthly meeting and whom made a submission to the Local Government consultation.</p>
Cr Mark Jones	10.1	<p>Impartiality Interest –</p> <p>Under clause 2.4.9 of the DAP Code of Conduct, Cr Jones participated in the prior Council decision in accordance with his functions as a member of a local government.</p> <p>However, under section 2.1.2 of the DAP Code of Conduct, Cr Jones acknowledges that he is not bound by any previous decision or resolution of the local government. Cr Jones undertakes to exercise independent judgment in relation to any DAP application before him, which he will consider on its planning merits.</p>



7. Deputations and Presentations

- 7.1** Ms Nikki Bombak presenting in support of the recommendation but against the application at Item 10.1. The presentation will address the chronic health effects that the development poses to the residents and people who attend the sensitive land use are within the buffer zone of the location. Specifically, the adverse effects of benzene.
- 7.2** Mr Julius Skinner (Thomson Greer) presenting against the recommendation but in support of the application at Item 10.1. The presentation will address introductory comments relating to the presentations to be made on behalf of the Applicant in support of the proposed development and against the reasons set out in the RAR for recommending refusal, as well a summary by way of concluding comments regarding any legal issues raised during the course of the presentations.
- 7.3** Dr James Fox (Land and Water Consulting) presenting against the recommendation but in support of the application at Item 10.1. The presentation will address the merits of the proposal from a vapour analysis perspective and discuss analysis and reporting that has been undertaken in relation to the proposed development.
- 7.4** Mr Behnam Bordbar (Transcore) presenting against the recommendation but in support of the application at Item 10.1. The presentation will address the merits of the proposal from a traffic engineering and traffic safety perspective and respond to reason for refusal number 2.
- 7.5** Mr Josh Watson (Planning Solutions) presenting against the recommendation but in support of the application at Item 10.1. The presentation will address support of the proposed development and addressing the EPA separation distance requirements.

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

8. Form 1 – Responsible Authority Reports – DAP Applications

Nil.

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

Nil.



10. State Administrative Tribunal Applications and Supreme Court Appeals

10.1 Lot 265 (No.40) Talisker Bend, Golden Bay

Development Description:	Mixed Commercial Development
Summary of Modifications:	<ul style="list-style-type: none"> • Submission of Amended plans • Emissions Impact Assessment prepared • Verbal confirmation of incorporation of Stage 1 (VR1) and Stage 2 (VR2) fuel vapour recovery system; and • A Road Safety Audit (RSA) has been submitted in relation to the proposed Left-in/Left-out access via Aurea Boulevard
Applicant:	Planning Solutions
Owner:	Peet Golden Bay Housing Authority
Responsible Authority:	City of Rockingham
DAP File No:	DAP/21/01952 (DR96/2021)

Current SAT Applications				
File No. & SAT DR No.	LG Name	Property Location	Application Description	Date Lodged
DAP/19/01708 DR 138/2020	City of Kwinana	Lot 108 Kwinana Beach Road, Kwinana	Proposed Bulk Liquid Storage for GrainCorp Liquid Terminals	01/07/2020
DAP/01729 DR 176/2020	City of Kalamunda	Lot 130 (74) Warlingham Drive, Lesmurdie	Aged Residential Care Facility	28/8/2020
DAP/20/01764 DR 204/2020	City of Swan	Lot 780 (46) Gaston Road, Bullsbrook	Proposed Stock Feed Grain Mill	8/09/2020
DAP/20/01829 DR 001/2021	City of Swan	Lot 1 (42) Dale Road & Lot 4 (43) Yukich Close, Middle Swan	Aged care and community purpose	08/01/2021
DAP/21/01952 DR 096/2021	City of Rockingham	Lot 265 (40) Talisker Bend, Golden Bay	Mixed commercial development	14/05/2021

11. General Business

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

12. Meeting Closure



Direction for Further Services from the Responsible Authority

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

Guidelines

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

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

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

DAP Application Details

DAP Name	Metro Outer JDAP
DAP Application Number	DAP/21/01952 (DR96/2021)
Responsible Authority	City of Rockingham
Property Location	Lot 265 (40) Talisker Bend, Golden Bay

Presiding Member Authorisation

Presiding Member Name	Mr Ian Birch
Signature	
Date	3 September 2021
Response Due	8 September 2021; 12pm

Nature of technical advice or information required*

1	DAP query	Please provide Alternate recommendation for Approval
	Response	Insert response to DAP query

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

Regulation 13 Request - Alternative Recommendation



On 3 September 2021, the Presiding Member of the Metro Outer Joint Development Assessment Panel (MOJDAP) directed the City of Rockingham to provide a response to the following:

“Please provide Alternate recommendation for Approval.”

The alternative recommendation and conditions are provided below:

That the Metro Outer Joint Development Assessment Panel resolves to:

Approve Development Assessment Panel Application reference DAP/21/01952 and accompanying plans:

- Site Plan, Revision N, dated 20.07.2021;
- Gym Floor Plan and Elevations, Revision L, dated 25.03.2021;
- Commercial Floor Plan and Elevations, Revision L, dated 25.03.2021;
- Service Station Floor Plan and Elevations, Revision L, dated 25.03.2021;
- Pylon Signage, Revision K, dated 29.01.2021;
- Staging Plan, Revision K, dated 29.01.2021; and
- Landscaping Sketch, Revision N, dated 20.07.2021

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

Conditions

1. This decision constitutes development approval only and is valid for a period of four years from the date of approval (**this is inclusive of the additional two years available under ‘Clause 78H Notice of Exemption from planning requirements during State of Emergency’ issued by the Minister for Planning on 8 April 2020**). If the subject development is not substantially commenced within the specified period, the approval shall lapse and be of no further effect.
2. All development must be carried out in accordance with the approved plans, save that, in the event of an inconsistency between the approved plans and a requirement of the conditions set out below, the requirement of the conditions shall prevail.
3. Prior to applying for a Building Permit, the applicant must demonstrate to the satisfaction of the City of Rockingham that any glazing fronting Aurea Boulevard, Thundelarra Drive and Warnbro Sound Avenue has a minimum visible light transmission rate of at least 79% and a maximum visible reflectivity rate of 9% in order ensure that a commercial, interactive frontage is available to the development from all streets. The glazing must thereafter be installed and maintained to the satisfaction of the City of Rockingham for the duration of the development.

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

- (i) the location of bin storage areas and bin location areas;
- (ii) the number, volume and type of bins, and the type of waste to be placed in the bins;
- (iii) management of the bins and the bin storage areas, including cleaning, rotation and moving bins to and from the bin collection areas;
- (iv) demonstrate there would be no conflict with vehicles accessing the Golden Bay Primary School site during school's peak drop-off/pick-up periods;
- (v) frequency of bin collections; and
- (vi) the collection of the bins from an approved position.

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

5. Prior to the commencement of development, a Construction Management Plan must be prepared and approved by the City of Rockingham to ensure appropriate management of construction related impacts. The approved plan must be implemented for the duration of construction works, to the satisfaction of the City of Rockingham.
6. Stormwater from all roofed and paved areas shall be collected and contained on site. Stormwater must not affect or be allowed to flow onto or into any property or road reserve. All stormwater generated by the development must be managed in accordance with Planning Policy 3.4.3 - Urban Water Management to the satisfaction of the City of Rockingham. The approved plans must be implemented and all works must be maintained for the duration of the development.
7. Prior to applying for a Building Permit, an external lighting plan is to be submitted and approved by the City of Rockingham, demonstrating compliance with AS/NZS 4282 – Control of Obtrusive Effects of Outdoor Lighting and AS/NZS 1158.3.1:2005 – Lighting for Roads and Public Spaces. External lighting is to be implemented in accordance with the City of Rockingham approved lighting plan for the duration of the development, to the satisfaction of the City of Rockingham.
8. Prior to occupation of the development, any damage to existing City infrastructure within the road reservation including, kerb, road pavement, street lighting, irrigation and footpaths is to be repaired and/or replaced to the satisfaction of the City of Rockingham at the cost of the applicant.
9. Prior to occupation of the development, the applicant/landowner shall implement the recommendations detailed in the Environmental Noise Assessment report prepared by Reverberate Consulting, dated 2 February 2021.
10. Prior to occupation of development, a 3.0m high masonry wall shall be erected for the entire length along the southern boundary of the development site. The internal facing side of the wall shall be articulated with decorative panels and is to include artwork so that it does not present as a blank wall to the street, to the satisfaction of the City of Rockingham.
11. Earthworks over the site associated with the development must be stabilised to prevent sand or dust blowing off the site, and appropriate measures shall be implemented within the time and in the manner directed by the City of Rockingham in the event that sand or dust is blown from the site.
12. Materials, sea containers, goods or bins must not be stored within the carpark at any time.
13. Street awnings must be provided to Aurea Boulevard and Thundelarra Drive as illustrated on the approved plans, with lighting provided under the street awnings.
14. All service area and service related hardware, including antennae, satellite dishes and air-conditioning units, being suitably located away from public views and/or screened, the details of which are to be provided to the City of Rockingham's satisfaction prior to applying for a Building Permit.

15. The proposed Warnbro Sound Avenue Pylon Sign must be a multi tenancy sign serving the whole development.
16. All commercial vehicle movements associated with service delivery and refuelling shall occur outside the AM and PM peak hour periods to minimise traffic safety risk.
17. Entries and window frontages facing the street of tenancies must not be covered, closed or screened off (including by means of dark tinting, shutters, curtains, blinds, roller doors or similar), to ensure that a commercial, interactive frontage is available to the development from Aurea Boulevard, Thundelarra Drive and Warnbro Sound Avenue, for the duration of the development.

The gymnasium building door fronting Aurea Boulevard must be kept unlocked at all times during staffed hours.

18. In accordance with City of Rockingham Planning Policy 3.3.14 - Bicycle parking and End of Trip Facilities, 5 short-term bicycle parking spaces and 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.

19. The carpark must:

- (i) provide a minimum of 48 car parking spaces;
- (ii) be designed constructed, sealed, kerbed, drained and marked in accordance with User Class 3 in accordance with Australian/New Zealand Standard AS/NZS 2890.1:2004, Parking facilities, Part 1: Off- street car parking unless otherwise specified by this approval, prior to applying for a Building Permit;
- (iii) provide 3 car parking space dedicated to people with disabilities, which are designed, constructed, sealed, kerbed, drained and marked in accordance with Australian/New Zealand Standard AS/NZS 2890.6:2009, Parking facilities, Part 6: Off-street parking for people with disabilities and which are linked to the main entrance of the development by a continuous accessible path of travel designed and constructed in accordance with Australian Standard AS 1428.1—2009, Design for access and mobility, Part 1: General Requirements for access—New building work;
- (iv) be constructed, sealed, kerbed, drained and marked prior to the development being occupied and maintained thereafter; and
- (v) comply with the above requirements for the duration of the development.

20. Prior to applying for a Building Permit, revised plans shall be provided, illustrating:

- The Service Station Floor Plan layout reflects the Overall Site Plan;
- Relocated Service Station ice box to permit universal access; and
- A kerb ramp adjacent to the universal bays to facilitate universal access for the proposed Gymnasium and Commercial tenancy.

21. A Landscaping Plan must be prepared and include the following detail, to the satisfaction of the City, prior to the issue of a Building Permit:

- i. The Location, number and type of existing and proposes trees (including shade trees) and shrubs, indicating calculations for the landscaping area;
- ii. Any lawns to be established;
- iii. Those areas to be reticulated or irrigated;
- iv. Garden edge treatment to all sections where garden areas adjoin turf to provide separation and maintenance;
- v. All verge areas to be irrigated;
- vi. Shade trees with triangular nibs where possible for car parking bays at a rate of one tree per four car parking bays;
- vii. A minimum of eight (8) slender growth type trees planted adjoining the 3m high masonry wall;

- viii. Retention of two (2) on-site perimeter trees and relocation of two (2) on-site perimeter trees as illustrated on the Landscape Plan;
- ix. All other existing trees approved to be removed are to be relocated within the development site or the verge, otherwise replacement trees are to be planted with a minimum 100Lt size and of the same species;
- x. A minimum of two trees with a minimum 100Lt size are to be planted within the landscape area adjacent to the eastern side of the gymnasium building;

The 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.

- 22. Prior to the issue of a Building Permit, the applicant/landowner shall provide a maintenance agreement (between Peet Golden Bay Pty Ltd and the proponent) for the existing Golden Bay entry statement. The agreement must outline maintenance responsibilities of the entry statement in perpetuity, to the satisfaction of the City of Rockingham.
- 23. The supply, storage or sale of liquefied petroleum gas for refuelling purposes is not permitted.
- 24. The Service Station development shall incorporate Stage 1 vapour recovery and Stage 2 vapour recovery systems.

Advice

- 1. Applicant/landowner is reminded of their obligations under the Dangerous Goods Safety Act 2004 and Regulations.
- 2. The development must comply with the Environmental Protection (Noise) Regulations 1997; contact the City of Rockingham's Health Services for information on confirming requirements.
- 3. A Sign Permit must be obtained for any advertising associated with the development, including signage painted on the building; the applicant should liaise with the City of Rockingham's Building Services in this regard.
- 4. With respect to the Landscaping Plan, the applicant and owner should liaise with the City of Rockingham's Land Development and Infrastructure Services to confirm requirements for the landscaping plan, including the requirements for developing and maintaining of the street verges abutting the development site. Further:
 - All existing irrigation assets within the verge areas of Warnbro Sound Avenue, Aurea Boulevard and Thundelarra Drive will require disconnection from the current source and reconnected to the proposed Developments private water supply. Irrigation plans will be required to be submitted to the City of Rockingham for approval, prior to the building permit. The applicant is advised to contact the City of Rockingham's Irrigation Supervisor, prior to commencing any works.
 - The landowner/applicant must be cognizant to the existing street trees when designing the building awnings, no unnecessary pruning is supported to the existing street trees.
- 5. Existing retained 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.
- 6. In relation to Condition 5, the Construction Management Plan should also address the following matters raised by the Department of Education:

- Management of car parking, delivery vehicles and traffic associated with the construction of the development. Construction and delivery vehicles should not utilise the bays surrounding the Golden Bay Primary School site during peak drop-off/pick-up times; and
 - How dust, odour and noise will be mitigated so that it does not materially affect the students and staff of Golden Bay Primary School.
7. In relation to Condition 6, the approved Golden Bay Stage 3 Urban Water Management Plan specifies that all lot types, including commercial, must manage the 1% AEP (100yr) onsite with no overflow to the adjacent road reserve.
 8. In relation to Condition 8, it is recommended that a photographic dilapidation report is undertaken by the applicant/landowner, to record the current condition of these assets.
 9. In relation to Condition 16, the swept path analysis suggests that the movement for the commercial vehicles within the site would be encroaching into the opposing traffic lane as well as incorporating reversing movements which increases traffic safety risks and would impact upon traffic flow within the car parking areas.



Presentation Request Form

[Regulation 40\(3\)](#) and [DAP Standing Orders 2020](#) cl. 3.5

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

Presentation Request Guidelines

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

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

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

Presenter Details

Name	Nikki Bombak
Company (if applicable)	Click or tap here to enter text.
Please identify if you have any special requirements:	YES <input checked="" type="checkbox"/> NO <input checked="" type="checkbox"/> If yes, please state any accessibility or special requirements: I will still be engaged in active supervision of the children enrolled in my family day care.

Meeting Details

DAP Name	Metro Outer
Meeting Date	13 th September 2021
DAP Application Number	DAP/MOJDAP/123
Property Location	Lot 265 Talisker Bend, Golden Bay
Agenda Item Number	8

Presentation Details

I have read the contents of the report contained in the Agenda and note that my presentation content will be published as part of the Agenda:	YES <input checked="" type="checkbox"/>
Is the presentation in support of or against the <u>report recommendation</u> ? (<i>contained within the Agenda</i>)	SUPPORT <input checked="" type="checkbox"/> AGAINST <input type="checkbox"/>
Is the presentation in support of or against the <u>proposed development</u> ?	SUPPORT <input type="checkbox"/> AGAINST <input checked="" type="checkbox"/>
Will the presentation require power-point facilities?	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> Not at this stage



Presentation Content*

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

Brief sentence summary for inclusion on the Agenda	<i>The presentation will address:</i> The chronic health effects that the development poses to the residents and people who attend the sensitive land use areas within the buffer zone of the location. Specifically the adverse effects of benzene.
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In accordance with Clause 3.5.2 of the [DAP Standing Orders](#), your presentation request must also be accompanied with a written document detailing the content of your presentation.

Please attach detailed content of presentation or provide below:

For the first time in our very long history as human beings, every human is now subjected to contact with dangerous chemicals from the moment of conception until death.

*In the book ‘**Silent Spring**’ biologist, Rachel Carson writes – pesticides have been recovered from most of the major river systems, and ground water, in fish in remote mountain lakes, in earthworms burrowing in soils, in the eggs of birds and in humans. They occur within breast milk and in the tissues of the unborn child. I can assert, from the research I have done, the same can be said of Benzene and BTEX.*

*Rachel Carson’s research, while centred around pesticides is no less true today in relation to benzene as it was in the 1950’s **in relation to arsenic** pesticide. In Australia, the arsenic pesticides that Rachel reports on are no longer in use due to its toxic effects. Our reliance on the oil industry means that me or my children will unlikely see a world where benzene use is eradicated.*

What gives me hope for our future is that when a society knows better, they do better!

I called on the community of Golden Bay to stand behind me in challenging this development. At the first round of public comment, we had few people who wrote in their concerns. 30 odd, by memory. During the second round of public comment, we had 6 times that amount of people (180), do their research, stand together, email their concerns, protest, discuss the issue in the local Facebook groups and STILL there are people who are unaware of the potential harm this development could have on them, their children and subsequent generations. Imagine how many more people would object to this development if I had even just a little more time.

*I call on the developers to withdraw their intent to develop a petrol station within the Golden Bay Community. We **don’t** want it! In the last JDAP it was stated that more money is made from the convenience store than the petrol. Build a convenience store, there’s **one on every corner in** Melbourne city that **doesn’t** have a petrol station attached. I **don’t** just call on you, I implore you to withdraw the intent to build a petrol station in Golden Bay. It is not Progress when it is at the sake of the future generations of Golden Bay.*

I call on you, Ian, Sheryl, Jason, Mark and Lorna the people with the decision-making power today to uphold the original vote to reject this proposal. In their response, The Department of Health have reiterated what I have quoted all along, direct from the World Health Organisation ‘there is

no safe level of benzene'. This development poses a health risk to residents and children who will attend the two childcare centres.

*A cautionary approach has been suggested. What is a cautionary approach when the DoH states that there is no safe level of benzene? A reduction of benzene is not the goal, the elimination is. The installation of VR2's at the pump **don't** eliminate benzene escaping. There is no legislation in WA that ensures the correct installation, use, monitoring and ongoing maintenance of the VR2. If the development goes ahead, are the community supposed to trust that 'robust inspections and maintenance are carried out to ensure the effectiveness of this control'? Who monitors that compliance? What is the penalty for non-compliance? Are the community supposed to trust the company who insists on putting the health and wellbeing of the residents and its future generations at stake?*

*To quote Rachel Carson **'The public must decide** whether it wishes to continue on the present road and it can do so only when in full possession of the facts.*

Fact – Benzene is a known human carcinogen

Fact – Benzene causes a myriad of health problems, including headaches, nausea, numbness in the distal extremities (at low exposures), bone marrow and central nervous system depression, miscarriage and reproductive health issues (at increased and longer-term exposure).

Fact – Benzene at any level poses a significant health risk.

Fact – VR2's do not eliminate Benzene - the only benzene elimination control is to not build a petrol station.

Fact – the development of a petrol station within the Golden Bay Village will NEVER be able to maintain EPA separation distances to sensitive land use areas.

Fact - In November 2018, Metro Central JDAP unanimously refused a development of a petrol station in Eden Hill in part due to the health concerns and separation distances. There were no appeals.

Fact - In May 2020, Metro Inner South JDAP refused the development of a petrol station in part due to the health concerns and separation distances. (voting 3:2).



*Fact - In August 2020, South Metro JDAP refused the development of a childcare centre on a main road. JDAP Specialist member John Syme moved for an amended motion that included pollution concerns for the children enrolled at the childcare centre. This motion carried unanimously and the panel voted to reject the proposal. The City of Melville then went ahead with planning scheme changes to formally deem childcare centres an **'unpermitted use'** on sections of Leach and Canning Highways due to pollution concerns. I will be very surprised if the developers, Sonas Early Learning attempt to appeal that decision.*

Rachel Carson wrote that we are in an era dominated by industry, in which the right to make a dollar at whatever cost is seldom challenged. That which was true for the 1950's I am hoping today, 70 years later, her statement is no longer applicable and a new precedent will be set. Reject this proposal and protect the children of Golden Bay being exposed to increased levels of dangerous chemicals that they will never truly escape.



Presentation Request Form

[Regulation 40\(3\)](#) and [DAP Standing Orders 2020](#) cl. 3.5

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

Presentation Request Guidelines

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

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

Presenter Details

Name	Julius Skinner
Company (if applicable)	Thomson Geer
Please identify if you have any special requirements:	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> If yes, please state any accessibility or special requirements: Click or tap here to enter text.

Meeting Details

DAP Name	Metro Outer Joint Development Assessment Panel
Meeting Date	13 September 2021
DAP Application Number	DAP/21/01952
Property Location	Lot 265 (40) Talisker Bend, Golden Bay
Agenda Item Number	10.1

Presentation Details

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



Presentation Content*

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

Brief sentence summary for inclusion on the Agenda	<i>The presentation will address:</i> Introductory comments relating to the presentations to be made on behalf of the Applicant in support of the proposed development and against the reasons set out in the RAR for recommending refusal, as well a summary by way of concluding comments regarding any legal issues raised during the course of the presentations.
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In accordance with Clause 3.5.2 of the [DAP Standing Orders](#), your presentation request must also be accompanied with a written document detailing the content of your presentation.

Please attach detailed content of presentation or provide below:

Introductory comments relating to the presentations to be made on behalf of the Applicant in support of the proposed development and against the reasons set out in the RAR for recommending refusal, as well a summary by way of concluding comments regarding any legal issues raised during the course of the presentations.



Presentation Request Form

[Regulation 40\(3\)](#) and [DAP Standing Orders 2020](#) cl. 3.5

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

Presentation Request Guidelines

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

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

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

Presenter Details

Name	Dr James Fox
Company (if applicable)	Land and Water Consulting
Please identify if you have any special requirements:	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> If yes, please state any accessibility or special requirements: Click or tap here to enter text.

Meeting Details

DAP Name	Metro Outer JDAP/123
Meeting Date	13 September 2021
DAP Application Number	DAP/21/01952
Property Location	Lot 265 (40) Talisker Bend, Golden Bay
Agenda Item Number	10.1

Presentation Details

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



Presentation Content*

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

Brief sentence summary for inclusion on the Agenda	<i>The presentation will address:</i> The merits of the proposal from a vapour analysis perspective and discuss analysis and reporting that has been undertaken in relation to the proposed development
--	--

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

Please attach detailed content of presentation or provide below:

Please refer attached.



9 September 2021

Our Reference: LWC GK-09-02A

**Metro Outer Joint Development Assessment Panel
Via electronic means**

Attention: Presiding Member and Panel Members

Dear Sirs and Madams,

**RE: LOT 265 (NO.40) TALISKER BEND, GOLDEN BAY, DAP REF NO.
DAP/21/01952: Emissions Impact Assessment (EIA)**

Context

Land & Water Consulting (LWC) is acting as environmental consultant for Leyton Property for the proposed mixed commercial development at the abovementioned site.

Following the refusal of the Development Application by Metro Outer Joint Development Assessment Panel (MOJDAP), the Applicant referred the matter to State Administrative Tribunal (SAT). The SAT Mediation occurred on 7 July 2021.

EIA

LWC prepared an EIA¹ for the proposed development to determine potential impacts to nearby sensitive receptors from fuel vapour. The EIA used dispersion screening modelling which predicted the concentration of benzene to be ~70% less than the relevant national air quality level for benzene² at the boundary between the Site and a potential future residential area (20 m from the bowsters, tanks and tank vent stacks), when using Vapour Recovery System 1 and 2 technologies (VR1 and VR2).

Please refer to Figure 1 (Attachment A) that presents the predicted benzene concentrations at 20 m distance (boundary with the future residential properties) and 78 m (boundary with the proposed childcare centre).

The City commissioned a peer review of the EIA.

EIA Peer Review

The main point/ statement of the peer review is as follows:

The submitted EIA argues that based on the low predicted ground level concentrations (assumed 2.9 µg/m³), vapours from the Service Station will not negatively impact the health of the nearest future sensitive receptors or other sensitive land uses i.e. Child Care Premises within the prescribed 200m buffer. The City notes, assumed 2.9 µg/m³ concentration contour³ is 29% of the exposure limit for Benzene prescribed within the National Environmental Protection Measures to the nearest sensitive receptor to the south.

The predicted ground level concentrations at the Child Care Premises could therefore be lower than this 29%, as noted within the City's EIA peer review, which presumes that the

¹ Emissions Impact Assessment – Proposed Service Station, Aurea Boulevard, Golden Bay, Western Australia, 2 July 2021, reference LWC GK-09 FR001 NTC.

² The National Environment Protection (Air Toxics) Measure sets a monitoring investigation level for benzene at an annual average of 0.003ppm, which equates to 9.6 µg/m³, rounded to 10 µg/m³.

³ Report concludes 3.1 µg/m³ at 20 m, which is southern boundary residential.

ground level pollutant concentrations at the Child Care Premises may be lower than those predicted concentrations at the closest 20m receptor, however, this cannot be verified without further modelling.

*Whilst the City's EIA peer review does not concur with the steps within the submitted EIA to reach the assumed conclusion, **it does acknowledge that the concentration of benzene when employing a full AERMOD model and Mandurah Automatic Weather Station meteorological trends would likely be comparable to the assumed concentration.***

The peer review of the EIA does not disagree with the specific conclusion of the EIA that benzene concentrations at a distance of 20 m from the fuel storage and dispensing infrastructure is significantly less than the National Environment Protection (Air Toxics) Measure monitoring investigation level of 10 µg/m³. The predicted concentration at 20 m when using VR1 and VR2 therefore demonstrates that the proposed facility does not present an unacceptable risk to sensitive receptors at such distance.

LWC Comments on the Peer Review Findings

We would like to note the following with respect to the EIA:

1. Choice of Modelling Software

- a. The EIA used AERSCREEN. The United States Environment Protection Agency (US EPA) states that AERSCREEN is the recommended screening model for emission assessment and is based on AERMOD⁴. The AERSCREEN model will produce estimates of "worst-case" 1-hour concentrations for a single source, without the need for hourly meteorological data, and also includes conversion factors to estimate "worst-case" 3-hour, 8-hour, 24-hour, and annual concentrations.
- b. **AERSCREEN is intended to produce concentration estimates that are equal to or greater than the estimates produced by AERMOD** with a fully developed set of meteorological and terrain data, but the degree of conservatism will vary depending on the application.

c. The modelling software adopted is therefore a conservative approach.

2. Meteorological Data

- a. The City's EIA peer review outlines use of the meteorological data from Mandurah Automated Weather Station (MAWS, located ~15 km south of the Site) in place of the Medina Research Station (MRS) data used.
- b. The assessment did consider using this data but it is only available for the last 14 months according to the Bureau of Meteorology website.
- c. The closest Bureau of Meteorology station with a full dataset (rainfall, temperature, wind direction and speed) over a long term period is (in our review of available Bureau of Meteorology data) is understood to be MRS (ID 009194, located ~25 km north of the Site with a data range 1983 – 2018).
- d. MRS was selected over MAWS, as it has a longer (larger) climate data-set.
- e. Further, as reported at <https://www.der.wa.gov.au/your-environment/air/air-quality-index>, MAWS is located on the coast and is influenced by strong

⁴ <https://www.epa.gov/scram/air-quality-dispersion-modeling-screening-models>

westerly winds. In this sense, MRS in our view was a more conservative option.

- f. The modelling software used (AERSCREEN) does not dictate/ allow for a specific wind direction; rather it pushes the vapour out in all directions so that vapour is independent of wind direction – which we view as being conservative.
- g. We note that MAWS has similar mean wind speed (3.88 m/sec) as MRS (this value was used in the EIA model) when viewing recent months. In August 2021, the lowest MAWS windspeed was 'calm' (occurred once in 62 measurements, i.e. 1.6% of the time based on measurements) and the next lowest windspeed was 1.1 m/sec.

3. Fraction of benzene in fuel

- a. The current EIA uses 0.31% benzene in fuel which is based on amendments made after NPI (1999) to the Fuel Standard (Petrol) Determination 2001 and also accounts for some of the fuel being dispensed being diesel. We accept that the City's EIA peer review is correct in terms of NPI (1999) using 0.95%. We note the Fuel Quality Standards (Petrol) Determination 2019 which requires unleaded fuels to have benzene <1% (i.e. some fuels may therefore have benzene up to this level).
- b. At 20 m, using solely 0.95% benzene composition with no other changes, the predicted 20 m benzene concentration would be 6.1 $\mu\text{g}/\text{m}^3$ as opposed to 3.1 $\mu\text{g}/\text{m}^3$ (using both VR1 and VR2).
- c. The distance to the childcare centre is estimated as 78 m. The predicted concentration of benzene (annual average) at 78 m from the emission source area using 0.95% benzene and VR1 and VR2 is predicted to be 0.9 $\mu\text{g}/\text{m}^3$ (conservative distance).
- d. With 0.31% benzene the sum is predicted to be 1.9 $\mu\text{g}/\text{m}^3$.
- e. In addition to the National Environment Protection (Air Toxics) Measure monitoring investigation level for benzene (10 $\mu\text{g}/\text{m}^3$), the **draft** (December 2019) Western Australia Air Emissions Guideline (Department of Water and Environmental Regulation⁵) prescribes an annual ambient benzene guideline limit of 9.6 $\mu\text{g}/\text{m}^3$. Assuming modern day Western Australia background benzene is <1 $\mu\text{g}/\text{m}^3$ (based on available data from an air quality study undertaken across the Kwinana region – no available data for the specific region)⁶, then the sum of predicted facility benzene concentration and ambient concentration (summed) at 78 m would amount to 1.9 $\mu\text{g}/\text{m}^3$ (i.e. ~20 % of the draft WA standard and the national standard).

4. Incremental lifetime cancer risk (ILCR)

- a. Besides assessment against the aforementioned standard, we can also look at what the predicted concentrations mean in terms of the incremental risk of developing cancer as a result of exposure to the predicted concentrations of benzene.

⁵ <https://www.der.wa.gov.au/images/documents/our-work/consultation/air%20emissions/Guideline%20-%20Air%20emissions.pdf>

⁶ https://www.der.wa.gov.au/images/documents/your-environment/air/publications/background_AQ_kwinana_2005-2010.pdf

- b. The distance from the emission source area to the proposed childcare centre is 78 m.
- c. Using the predicted (VR1 and VR2) concentration of benzene at 78 m (and adopting 0.95% benzene fuel composition) the ILCR can be calculated, assuming a child:
 - i. Spends 8 hours a day for 261 days per year (365 days minus weekends) at the childcare centre.
 - ii. The child spends three years at the childcare centre.
- d. The predicted exposure concentration is $0.9 \mu\text{g}/\text{m}^3$.
- e. The ambient concentration is taken as $1.0 \mu\text{g}/\text{m}^3$.
- f. The combined exposure concentration is therefore $1.9 \mu\text{g}/\text{m}^3$.
- g. Using US EPA RAGS F inhalation protocol⁷, the predicted ILCR is 1.5×10^{-7} (i.e. 1 incidence in 15,000,000 people). In Australia, the ILCR target is $<1 \times 10^{-5}$ (i.e. less than 1 incidence in 100,000).
- h. The exposure concentration of $1.9 \mu\text{g}/\text{m}^3$ ($\sim 1 \mu\text{g}/\text{m}^3$ of this is ambient contribution) at the boundary of the childcare centre does not result in an unacceptable incremental risk in developing cancer as a function of proposed facility emission.

Conclusions

The EIA⁸ prepared for the proposed development with respect to the assessment of potential impacts to nearby sensitive receptors from fuel vapour predicted the concentration of benzene to be 70% less than the National Environment Protection (Air Toxics) Measure monitoring investigation level for benzene at the boundary between the Site and a potential future residential area (20 m from the bowzers, tanks and tank vent stacks), and ~81% less than such standard at a distance of 78 m (child care centre) when using Vapour Recovery System 1 and 2 technology (VR1 and VR2).

Assessment of site specific exposure in terms of incremental cancer risk related to the predicted concentrations at 78 m from the facility found that the risk to be two orders of magnitude lower than the Australian incremental lifetime cancer risk guideline of 1 incidence per 100,000 people.

The peer review commissioned by the City does not disagree with the specific conclusion of the EIA that benzene concentrations at a distance of 20 m from the fuel storage and dispensing infrastructure is significantly less than the national standard. The peer review concluded that using different modelling software and meteorological data, the results would be similar ('comparable') to the findings of the EIA.

The predicted concentration of benzene at 20 m and 78 m (when using VR1 and VR2) demonstrates the proposed facility does not present an unacceptable risk to sensitive receptors at such distances.

⁷ https://www.epa.gov/sites/default/files/2015-09/documents/partf_200901_final.pdf

⁸ Emissions Impact Assessment – Proposed Service Station, Aurea Boulevard, Golden Bay, Western Australia, 2 July 2021, reference LWC GK-09 FR001 NTC.

Yours Sincerely,



Dr James Fox | Principal Geochemist



Land & Water Consulting

Suite 3, 4-8 Goodwood Road, WAYVILLE, SA 5034

P: +61 8 8271 5255|M: +61 417 58 50 58

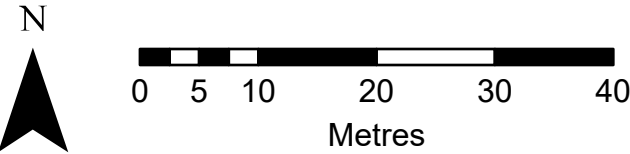
E: jfox@lwconsulting.com.au | www.lwconsulting.com.au



Attached – Figure 1 showing site layout and predicted concentration boundaries of benzene at 20 m and 50 m

Attachment A
Figure 1

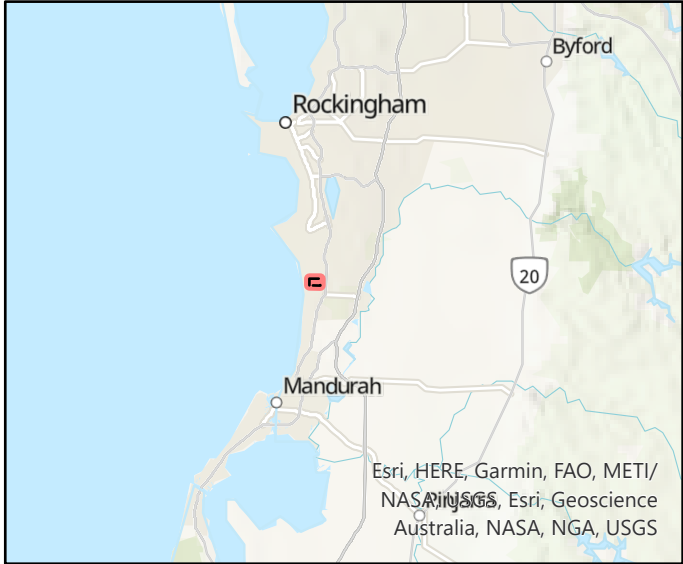
PROJECT: Golden Bay Impact Assessment		
FIGURE TITLE: Predicted Benzene Concentration in Air		
Site Address: Aurea Blvd Golden Bay, WA 6174	FIGURE 1	Date: 09/09/2021
		Projection: GDA94 Z50
Figure in set: 1 of 1	Revision E	Scale: 1:639



Legend	
Site Boundary	Parking Area
Stage 1	Vent Stack
Stage 2	Benzene Source Area
Site Features	
Commercial Lot	Predicted Range of Benzene Concentration in Air
Commercial Use	20m
Convenience Store (Petrol Station)	50m
Fuel Tanks (underground)	80m
Fuelling Canopy and Bowsers	Proposed Childcare Centre
Gym	Minimum Distance

Distance (m) from the fuel storage and dispensing infrastructure	Predicted benzene concentration (µg/m³)	NEPM National Environment Protection (Air Toxics) Measure monitoring investigation level for benzene	Predicted concentration is below the monitoring investigation level?
20	6.1	10	<input checked="" type="checkbox"/>
50	2.5		<input checked="" type="checkbox"/>
78	0.9		<input checked="" type="checkbox"/>

The annual average background Benzene concentration in Perth is approximately 1.44 ppb (4.6 µg/m³) with 90th percentile of 2.95 ppb (9.4 µg/m³).
-Dept. of Environment Regulation (2000)





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

Presenter Details

Name	Behnam Bordbar
Company (if applicable)	Transcore
Please identify if you have any special requirements:	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> If yes, please state any accessibility or special requirements: Click or tap here to enter text.

Meeting Details

DAP Name	Metro Outer JDAP/123
Meeting Date	13 September 2021
DAP Application Number	DAP/21/01952
Property Location	Lot 265 (40) Talisker Bend, Golden Bay
Agenda Item Number	10.1

Presentation Details

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



Presentation Content*

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

Brief sentence summary for inclusion on the Agenda	<i>The presentation will address:</i> The merits of the proposal from a traffic engineering and traffic safety perspective and respond to reason for refusal number 2.
--	---

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

Please attach detailed content of presentation or provide below:

Please refer attached.

3 September 2021

Metro Outer Joint Development Assessment Panel
Via electronic means

Attention: Presiding Member and Panel Members

Dear Sirs and Madams,

**Re: LOT 265 (NO.40) TALISKER BEND, GOLDEN BAY
DAP REF NO. DAP/21/01952**

INTRODUCTION

Transcore is acting as traffic engineers for Leyton Property for the proposed mixed commercial development at the abovementioned site.

Following the refusal of the Development Application by Metro Outer Joint Development Assessment Panel (MOJDAP), the Applicant referred the matter to State Administrative Tribunal (SAT). the SAT Mediation occurred on 7 July 2021. It was the Applicant's understanding that the outcome of the Mediation on traffic matters was as follows:

- The City no longer have any concerns about traffic issues internal to the development site.
- The City acknowledged that the only remaining issue was the safety aspects of the proposed Aurea Boulevard crossover.
- In order to investigate the safety aspects of Aurea Boulevard crossover, an independent Road Safety Auditor will be appointed to undertake the Road Safety Audit.

Transcore suggested that the City should appoint the Road Safety Auditor and Transcore and the City should jointly brief the Auditor, however the City advised that they will be happy for Transcore to engage and brief the Auditor.

Accordingly, i3 Consultants and Mr David Wilkins were commissioned to undertake the Road Safety Audit. Mr Wilkins is a reputable Traffic Engineer who specialises (amongst other skills) in Road Safety Audits. Transcore provided the necessary background information to Mr Wilkins including a copy of the development plan, a copy of Transcore's Transport Impact Assessment dated December 2020, the MOJDAP agenda for May 2021 and the MOJDAP resolution to refuse the application.

A copy of the Road Safety Audit report is provided in the RAR, however I have attached the Corrective Action Report (CAR) of the Road Safety Audit in Attachment 1. The CAR summarises the Auditor's recommendations and invites the Responsible Project Representatives (RPR) to agree or disagree, provide reason for disagreeing and provide proposed action and comments with respect to each recommendation of the Audit. In the attached CAR, the Audit recommendations are provided in black and the RPR responses in green. As evident from the last page of the CAR, the comments documented by RPR were provided by myself.

The RAR is recommending refusal of the application based on two reasons. Reason 2 of the refusal states that *"The potential traffic volume and movements resultant from the proposed development, based on the Left-in/Left-out access via Aurea Boulevard and Left-in/Left-out access via Thundelarra Drive, is likely to have an adverse impact on traffic flow associated with vehicles queuing during peak hours of operation within the development site and is likely to overflow into the adjacent road network including the traffic light intersection of Warnbro Sound Avenue and Aurea Boulevard and Thundelarra Drive and Aurea Boulevard intersection."*

ADDRESSING ISSUES RAISED

My submission to MOJDAP is in support of the development and will address this reason of refusal and comments provided in the RAR under the heading of Traffic Safety on Pages 13 and 14.

Even though, as an outcome of the SAT Mediation, it was understood that the City no longer had any issues with the internal traffic congestion of the development and the proposed left in/left out crossover on Thundelarra Drive, Reason 2 of the refusal states a likely overflow of the development traffic onto the surrounding road network. Transcore's TIA of December 2020 and my first submission to MOJDAP dated 3 May 2021 comprehensively address the internal traffic issues and demonstrated that there is no risk of the development traffic overflowing onto the adjacent road network. I do not intend to go over this material again in this current submission.

It is however interesting that in the body of the RAR under the heading of Traffic and Safety on Pages 13 and 14, the potential issue outlined in the reason for Refusal 2 is not addressed at all. Nevertheless, in the subsequent sections of my submission, I have addressed the issued identified under the heading of Traffic and Safety.

This section basically deals with the Road Safety Audit and CAR, and raises a number of issues which are addressed as follows:

The Road Safety Audit has not addressed the functional area of the traffic signals

The concept of intersection functional area is a recent phenomenon which is outlined in Austroads Guidelines. The functional area of an intersection is calculated by a mathematical formula based on a number of factors and Austroads Guidelines indicates that access to properties should not be provided within the functional area. Notwithstanding that the Austroads document is only a guideline, the industry has had issues with the notion of functional area as, in effect, it will sterilise many corner blocks and unless corner blocks have a long frontage on the secondary road, they basically cannot have any access and therefore, cannot be developed. It is my (and many other colleagues in the industry) view that the Austroads Guidelines has been prepared by scientists and not by engineers and so is somewhat out of touch with the implications of some of the frameworks documented in the guidelines. As a result, personally, I never put any weight or give any serious consideration of the notion of the functional area of an intersection as there are other standards and other means to establish the suitability of an access point to a corner lot.

It is my understanding that Mr Wilkins will be available at the MOJDAP meeting to answer any queries that the members may have.

Through volumes of traffic articulated in the TIA

The TIA use the existing traffic volumes on Aurea Boulevard and Thundelarra Drive and increased these volumes by 2% per year to estimate the projected 10-year traffic volumes on these roads.

The City refers to the traffic report which was prepared by Transcore in 2010/11 for the Golden Bay Structure Plan. The City quotes traffic projections from this report for Aurea Boulevard and Thundelarra Drive. The area subject to the structure plan is shown in the aerial photo (Nearmap, June 2021) in Attachment 2. This plan also shows the subject site and Aurea Boulevard. The plan shows a neighbourhood centre to the north of Aurea Boulevard which apparently started construction in 2017 but has not progressed beyond concrete floor slab + steel roof frame during the last 3 years. So completion of this development appears to be uncertain at this stage.

As evident, the northern part of the structure plan area is about 85% developed and the southern part of the structure plan is about 30% developed. Transcore's TIA estimated the 10-year post development traffic volumes on Aurea Boulevard would be about 4,500 vehicles per day (compared to about 9,500 vehicles per day estimated by the structure plan traffic report based on full build out of the structure plan). Similarly, Transcore's TIA estimated 2,700 vehicles per day for Thundelarra Drive (compared to about 5,000 vehicles per day estimated by the structure plan traffic report based on full build out of the structure plan).

Considering the areas yet to be developed within the structure plan area, in my view, traffic volumes on Aurea Boulevard and Thundelarra Drive will not double the estimated volumes in Transcore's TIA with full build out of the structure plan.

It should be noted that the structure plan traffic report estimated these future traffic volumes 10 years ago. The reality of the situation is the actual traffic volumes which will be achieved in future are not always as per the estimated and projected traffic volumes. The traffic modelling and projection undertaken as part of the structure plan is to inform the road network development and ensure that the road network can accommodate the future traffic volumes with full build out of the structure plan.

The constructed standards of Aurea Boulevard and Thundelarra Drive are in line with the projected traffic volumes by the structure plan traffic report. If we accept that the full build out of the structure plan will not result in the projected traffic volumes then it can be concluded that both Aurea Boulevard and Thundelarra Drive will have reasonable spare capacities even with full build out. Therefore, in my view, the City's approach to this matter is a simplistic one and the information that I have provided in this submission demonstrates that the traffic projections documented in Transcore's TIA are reasonable and are based on the actual traffic volumes on these roads following significant development of the structure plan area.

RSA finding suggests higher traffic volumes resulting from this development would impact upon road safety

With reference to the Road Safety Audit and the CAR, I cannot understand how the City could have come to such a conclusion. The RSA suggests no such thing. The only recommendation of the RSA that may be related to this issue raised by the City are Finding 2.2 and Recommendation 2.2.1 in the CAR.

In the Proposed Action and Comments column of the CAR, I have responded to that finding and recommendation and an expanded version of those responses is what I have outlined in the previous section of this submission.

The only committed developments are some residential dwellings that are in the process of being developed in the balance of the structure plan area and the 2% annual growth assumed in the TIA report adequately caters for these developments. Importantly, the completion of the construction of the neighbourhood centre to the north of Aurea Boulevard is uncertain at this stage.

CONCLUSION

In conclusion, in my view, Reason 2 of the Refusal is not justified and it has been comprehensively addressed in my submission to MOJDAP in May 2021. Further, the issues raised under the heading of Traffic and Safety in the RAR are also not justified and the information I have provided in this submission adequately demonstrates why this is the case.

It is therefore respectfully requested Reason 2 of the Refusal should be set aside and the development should be approved.

Regards,

A handwritten signature in black ink, consisting of a long horizontal stroke with a small loop at the beginning and a vertical line at the end.

Behnam Bordbar
Managing Director

ATTACHMENT 1

Corrective Action Report - Lot 265 (40) Talisker Bend (cnr Aurea Blvd/ Warnbro Sound Ave), Golden Bay- Proposed Mixed Commercial Development with access off Aurea Blvd & Thundelarra Dr | Stage 3 - Detailed Design

Findings and Recommendations	Project Manager		
	Agree / Disagree	Reason for Disagreeing	Proposed Action and Comments
Finding 2.1 – No previous road safety audits There are no known previous road safety audits for the Adelong Ave/ Aurea Blvd/ Warnbro Sound Ave traffic signal-controlled intersection, the layouts of Aurea Blvd and Thundelarra Dr intersection, or the <i>Golden Bay Structure Plan</i> .	Agree		
Recommendation 2.1.1 That the City of Rockingham develops and adopts a Road Safety Audit Policy as per guidance provided in Section 2.4, and the Policy example provided in Appendix G, of <i>Austroads Guide to Road Safety Part 6: Managing Road Safety Audits</i> . HIGH	Agree		This is a matter for City of Rockingham to consider and action as appropriate.

Findings and Recommendations	Project Manager		
<p>Finding 2.2 – Adjacent developments</p> <p>Areas to the north and west of the development site are currently under construction and appear to be commercial developments that are consistent with the ‘Neighbourhood Centre Precinct’, i.e., an ‘Activity Centre’, as described in the <i>Golden Bay Structure Plan</i>. It is not clear if traffic generation associated with these developments has been included in the forecast volumes and hence assessment of queueing on Aurea Blvd back to Warnbro Sound Ave.</p>	Agree		
<p>Recommendation 2.2.1</p> <p>Ensure that the forecast 10-year volumes included in the <i>TIA</i> and the associated modelling takes into account traffic generation from committed developments and transport proposals.</p> <p>IMPORTANT HIGH</p>	Agree		<p>The assessment of the ultimate developments has been undertaken as part of the structure plan. The traffic assessment undertaken in the <i>TIA</i> for this development is limited to the development crossovers only which are left in/left out, but has allowed for 2% annual growth in traffic on abutting roads to allow for any future growth in traffic.</p>

Findings and Recommendations	Project Manager		
<p>Finding 2.3 – Visibility and sight distance</p> <p>A detailed assessment of the required and available sight distance for readability and safe operation of the Adelong Ave/ Aurea Blvd/ Warnbro Sound Ave intersection and the proposed left turn lane into the development site off Aurea Blvd, as well as the access off Thundelarra Dr, is required.</p>	Choose an item.		
<p>Recommendation 2.3.1</p> <p>Ensure that the required sight lines at each access driveway are kept clear of any objects or landscaping greater than 300 mm in height.</p> <p>IMPORTANT HIGH</p>	Agree		<p>Adelong Avenue and Aurea Boulevard are straight flat roads and therefore there are adequate sight lines available for approaching motorists to the proposed crossover on Aurea Boulevard. This has been confirmed through several site inspections by Transcore.</p> <p>This specific recommendation of the RSA is noted and will be actioned during the detailed design stage of the project.</p>

Findings and Recommendations	Project Manager		
<p>Finding 2.4 – Safety performance of similar service station accesses</p> <p>An assessment of a service station on a side road off Warnbro Sound Ave and its crash record can provide an indication of the likelihood of crashes associated with a service station access on a side road close to Warnbro Sound Ave. No Identified concerns.</p>	NA	NA	NA
<p>Finding 2.5 – Existing deficiencies (pedestrians)</p> <p>There are no Tactile Ground Surface Indicators (TGS/s) at any of the crossing locations and the zebra crossings on each left turn slip lane at the Adelong Ave/ Aurea Blvd/ Warnbro Sound Ave intersection have spotlights that are not working or energised.</p>	Agree		
<p>Recommendation 2.5.1</p> <p>Defer installing TGS/s in isolation, opting instead to have TGS/s installed throughout the Neighbourhood Centre Precinct as part of a city-wide program by the City of Rockingham.</p> <p>HIGH</p>	Agree		<p>This is a matter for City of Rockingham to consider and action as appropriate.</p>

Findings and Recommendations	Project Manager		
Recommendation 2.5.2 City of Rockingham to ensure that the spotlights on each zebra crossing location at the Adelong Ave/ Aurea Blvd/ Warnbro Sound Ave intersection are repaired or energised. HIGH	Choose an item.		
Finding 2.6 – Maintaining on-road cycle route facilities As indicated in Section 1.7.2 , all the roads in the vicinity of the development site have on-road cycle lanes. Some of these do not have the cycle logo on them and some do.	Agree		
Recommendation 2.6.1 Install cycle logos at the start of each on-road cycle lane on Aurea Blvd between Warnbro Sound Ave and Thundelarra Dr and on Thundelarra Dr between Aurea Blvd and Kalli St/ Talisker Bend as well as at each access driveway to the development site. LOW	Agree		This is a matter for City of Rockingham to consider and action as appropriate.

Findings and Recommendations	Project Manager		
Finding 2.7 – Street lighting Street lighting is provided throughout the audit area, but a failure of a street light on Aurea Blvd reduces night time visibility for pedestrians in this area (in addition to Finding 2.5).	Choose an item.		
Recommendation 2.7.1 Direct Western Power to repair all broken street lights in the vicinity of the audit area. HIGH	Agree		This is a matter for City of Rockingham to consider and action as appropriate.
Finding 2.8 – Drainage The existing parking embayment on the south side of Aurea Blvd slopes back to the road. It is not clear if the proposed left turn lane will also slope back or continue the road crossfall back	Choose an item.		
Recommendation 2.8.1 Ensure that drainage is considered for the proposed left turn lane off Aurea Blvd. HIGH	Agree		The drainage will be investigated and addressed during the detailed design stage of the project.

Corrective Action Report - Lot 265 (40) Talisker Bend (cnr Aurea Blvd/ Warnbro Sound Ave), Golden Bay- Proposed Mixed Commercial Development with access off Aurea Blvd & Thundelarra Dr | Stage 3 - Detailed Design

NOTE:

- This Corrective Action Report is to be read in conjunction with the full Road Safety Audit Report and its findings and recommendations.
- The asset owners (MRWA and/or LGA) **must** be informed of these findings, recommendations, and proposed actions.
- Items not under the responsibility of this project representative must be forwarded to the persons / agencies who are responsible.

These findings and recommendations have been considered, and the actions listed will be taken accordingly.

Behnam Bordbar	Transcore	Managing Director	20/07/2021
Responsible Project Representative	Company / Agency / Division	Position	Date

Asset Owner Representative	Company / Agency / Division	Position	Date

ATTACHMENT 2





Presentation Request Form

[Regulation 40\(3\)](#) and [DAP Standing Orders 2020](#) cl. 3.5

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

Presentation Request Guidelines

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

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

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

Presenter Details

Name	Josh Watson
Company (if applicable)	Planning Solutions
Please identify if you have any special requirements:	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> If yes, please state any accessibility or special requirements: Click or tap here to enter text.

Meeting Details

DAP Name	Metro Outer JDAP/123
Meeting Date	13 September 2021
DAP Application Number	DAP/21/01952
Property Location	Lot 265 (40) Talisker Bend, Golden Bay
Agenda Item Number	10.1

Presentation Details

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



Presentation Content*

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

Brief sentence summary for inclusion on the Agenda	<i>The presentation will address:</i> Speaking in support of the proposed development and addressing the EPA separation distance requirements
--	--

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

Please attach detailed content of presentation or provide below:

Please refer attached.

Presentation Summary

To:	Metro Outer JDAP	From:	Josh Watson
Attention:	Presiding Member and JDAP Members	Job No:	6840
Copy to:	DAP Secretariat	Date:	9 September 2021
Subject:	DAP Meeting Number: MOJDAP/123 – Item 10.1 Lot 265 (40) Talisker Bend, Golden Bay Proposed Mixed Commercial Development		

Planning Solutions acts on behalf of Leyton Property in support of the proposed Mixed Commercial Development at Lot 265 (40) Talisker Bend, Golden Bay (subject site).

We are disappointed to receive the officer recommendation for refusal following the further detailed technical investigations and reporting that was provided to address the reasons for refusal following Mediation. We consider the proposed development clearly addresses the previous concerns and consider the proposed development should be considered on its merits and approved by the Metro Outer JDAP in accordance with the Alternate Recommendation.

My presentation will address these reason for refusal 1 and outline why the development can and should be approved. Further information will be provided by our environmental and traffic consultant to address the reasons for refusal from a technical perspective.

HEALTH IMPACTS ON SENSITIVE RECEPTORS

The City's officers have recommended the proposed development be refused for the following reason:

The proposed development is not compatible with development on other land in this locality due to its unacceptable health risk impacts on sensitive receptors, specifically to children, from benzene exposure.

The reason for refusal has clearly been addressed through the information provided as part of this application and summarised below:

1. **The previous concerns from the City's** officers related to a lack of understanding in relation to the impact of gaseous emissions from the proposed service station development. A detailed investigation and report was undertaken by Land and Water Consulting which concludes the proposed development would achieve the national safe limit for benzene within a distance of 20m from the canopy location as detailed by the figure contained in Attachment 1. It is clear from this reporting that the impact from gaseous emissions is entirely safe and well below national standards to ensure the service station can operate safely.
2. Although there is a difference in modelling considerations outlined within the peer review, it is acknowledged that the **likely outcome of the Peer Reviewer's modelling would achieve** a comparable outcome as expressed **within Land and Water Consulting's report**. This position is further conveyed on page 13 of the RAR, which states:

Whilst the City's EIA peer review does not concur with the steps within the submitted EIA to reach the assumed conclusion, it does acknowledge that the concentration of benzene when employing a full AERMOD model and Mandurah Automatic Weather Station meteorological trends would likely be comparable to the assumed concentration.

Taking into consideration the above, the technical advice confirms the proposed service station will meet the necessary national standards in less than 20m from the source of benzene. Modelling also suggests that benzene levels anticipated at the childcare centres are well below the national standards and are comparable to ambient levels.

3. The proposed development will now also incorporate a VR2 system which would capture the majority of vapour from the bowser when people refuel. This is just another piece of infrastructure being employed on the site to address concerns about vapour emissions to further confirm that a service station can operate on the site safely without impacting surrounding sensitive land uses.

4. The EPA Guidance Statement identifies four impacts associated with service stations, being Gaseous, Noise, Odour and Risk, and prescribes generic buffer distances of 200m for 24-hour operating service stations and 50m for time-limited service stations (i.e. 7am-7pm) to sensitive land uses. **The City's officers concerns are** around impacts on health of children at the childcare centres located approximately 78m from the proposed 7 Eleven gaseous source. These childcare centres operate during the hours of 6.30am and 7pm, which is consistent with the time limited hours associated with the 50m separation requirements of the EPA Guidance Statement. Therefore, the proposed development should not warrant an assessment against the EPA Guidance Statement for proximity of the service station to the child care premises as it is located beyond 50m.
5. Over the past 20 years, the design and equipment used in service stations has improved considerably. Service stations within Australia are highly regulated and are required to meet industry standards associated with risk and vapour/gas emissions. This allows service stations to be constructed adjacent to or within proximity to sensitive land uses (which is a regular occurrence within Perth and the City of Rockingham) with comfort that no adverse amenity impacts would be experienced by sensitive land uses (or any properties at all).
6. The EPA Guidance Statement has also been considered by many local governments, DAPs and the State Administrative Tribunal (SAT) in the assessment of service station developments since its inception. The SAT case of Puma Energy Australia and City of Cockburn [2016] WASAT 36 considered the same matters in making a determination for a service station within proximity to residential properties. Specifically, paragraph 160 of this case in part states:

He also gave evidence, which was not questioned or contradicted, and which we accept, that he is aware of 'several other retail fuel sites which have been approved (after adoption of the EPA Guidance Statement), along with a number of established sites, with lesser separation distance to sensitive land uses than the generic buffer, and where site specific odour and risk assessments have not be presented'.

[emphasis added]

It is very common for service stations to be constructed within the 200m generic buffer distance (24hr operating) and 50m (restricted hours) prescribed by the EPA Guidance Statement.

In Puma Energy Australia and City of Cockburn 2016 WASAT 36, paragraph 161 states:

In relation to gaseous and odour impacts, although Puma has not presented a sound site-specific technical analysis / scientific study based on site-specific and industry-specific information, it has presented evidence which satisfies the Tribunal that the proposed development would have an acceptable impact in terms of gaseous and odour impacts.

It is clear when taking into consideration the above matters that the technical analysis has been completed which confirms that the development would represent a safe outcome in terms of gaseous output and traffic safety. Modern infrastructure is being utilised for the site to further ensure the proposed service station operates in accordance with the regulatory and community expectations. Furthermore, the proposed development is consistent with the planning framework and will provide much needed community infrastructure for the emerging Golden Bay community. It is clear that this development should be supported by the JDAP.

SERVICE STATION EXAMPLES

The development of service stations within proximity to residential and sensitive land uses is common within Perth. The state-of-the-art systems and technology used for service stations ensures these developments do not have an unreasonable impact on surrounding sites. Some examples of these developments are provided below. These examples have been approved by the DAP and or local authority, and consider the same EPA separation distance requirements that are being considered for this development:

- 7 Eleven Northlands – 377 Wanneroo Road, Balcatta
- BP Dixon Road – 137 Dixon Road, East Rockingham
- Puma Baldivis – 67 Ridge Boulevard, Baldivis
- BP Clarkson - 28 Caloundra Road, Clarkson
- BP Jindalee – 2471 Marmion Avenue, Jindalee
- 7 Eleven Gosnells – 303 Corfield Street, Gosnells
- Puma Phoenix – 216 Rockingham Road, Hamilton Hill
- Liberty Oil Gosnells – 2341-2345 Albany Highway Gosnells
- BP Embleton – 484 Walter Road East, Embleton

Each of these examples above are located adjacent to regional/significant roads, adjacent to residential properties (i.e. sensitive land uses) and operate 24 hours a day. Service stations have been consistently approved in proximity to sensitive land uses, having demonstrated the appropriateness of their location and operational safety measures.

To further convey how sensitive land uses and service stations can work harmoniously together with childcare centres, Attachment 2 contains a list of 25 childcare sites within Western Australia that already operate within 100m of service stations. If there was a problem with human health associated with childcares centres within proximity to service stations, this would not be able to occur.

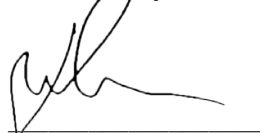
SUMMARY

In summary, the proposed development is generally consistent with the relevant planning framework, an appropriate land use and development for the locality and will have no significant impact on nearby sensitive land uses. Through the mediation process it has clearly been confirmed the proposed development is well below the national requirements for gaseous output and is satisfactory from a traffic safety perspective.

Accordingly, we respectfully request the application for development approval be considered on its merits and the Metro Outer JDAP makes a favourable determination.

Thank you for your time and consideration. I would be pleased to answer any questions from the JDAP members at the meeting on 13 September 2021.

Yours faithfully,

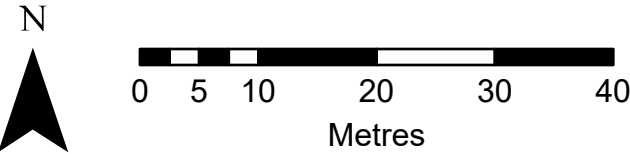
A handwritten signature in black ink, appearing to read 'Josh Watson', written over a horizontal line.

JOSH WATSON
SENIOR ASSOCIATE



Land & Water Consulting
Email: enquiries@lwconsulting.com.au
Web: www.lwconsulting.com.au

PROJECT: Golden Bay Impact Assessment		
FIGURE TITLE: Predicted Benzene Concentration in Air		
Site Address: Aurea Blvd Golden Bay, WA 6174	FIGURE 1	Date: 09/09/2021
		Projection: GDA94 Z50
Figure in set: 1 of 1	Revision E	Scale: 1:639



- Legend
- Site Boundary

Stage 1

Stage 2

Site Features

Commercial Lot

Commercial Use

Convenience Store (Petrol Station)

Fuel Tanks (underground)

Fuelling Canopy and Bowsers

Gym
- Parking Area

Vent Stack

Benzene Source Area

Predicted Range of Benzene Concentration in Air

20m

50m

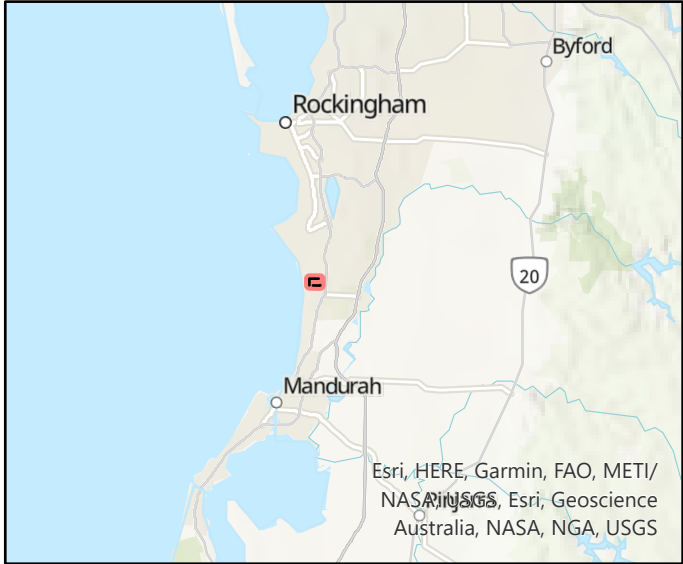
80m

Proposed Childcare Centre

Minimum Distance

Distance (m) from the fuel storage and dispensing infrastructure	Predicted benzene concentration (µg/m³)	NEPM National Environment Protection (Air Toxics) Measure monitoring investigation level for benzene	Predicted concentration is below the monitoring investigation level?
20	6.1	10	<input checked="" type="checkbox"/>
50	2.5		<input checked="" type="checkbox"/>
78	0.9		<input checked="" type="checkbox"/>

The annual average background Benzene concentration in Perth is approximately 1.44 ppb (4.6 µg/m³) with 90th percentile of 2.95 ppb (9.4 µg/m³).
-Dept. of Environment Regulation (2000)



Esri, HERE, Garmin, FAO, METI/
NASA, USGS, Esri, Geoscience
Australia, NASA, NGA, USGS

ATTACHMENT 1



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Esri Community Maps Contributors, Esri, HERE, Garmin, METI/NASA, USGS

ATTACHMENT 2 – CHILDCARE CENTRES IN PROXIMITY TO SERVICE STATIONS

Fuel operator	Distance to childcare (m)	Childcare centre	Childcare address	Suburb
BP	13	Buggles Child Care - Beldon	255 Eddystone Avenue	BELDON
Puma	15	Keiki Early Learning Mindarie Keys	1/18 Anchorage Drive	MINDARIE
7-Eleven	20	Nido Early School Southern River	481 Balfour St	SOUTHERN RIVER
United	26	Kiddies Learning Hub	797 Beaufort St	MOUNT LAWLEY
Puma	35	Lollipops Child Care Centre	504 Rockingham Road	MUNSTER
Puma	40	Green Leaves Early Learning Byford	125 Kalyang Loop	BYFORD
Shell	40	Keiki Early Learning Alkimos	12 Longstaff Avenue	ALKIMOS
BP	40	Goodstart Early Learning Maida Vale	268 Kalamunda Road	MAIDA VALE
Caltex	40	Little Peoples Place Early Learning Centre Scarborough	81 Scarborough Beach Rd	SCARBOROUGH
7-Eleven	40	Happy Tone	65 Norma Rd	MYAREE
7-Eleven	45	MercyCare Early Learning Service- Banksia Grove	300 Joseph Banks Boulevard	BANKSIA GROVE
7-Eleven	45	Wanslea Rockingham Early Learning and Development Centre	1 Sepia Court	ROCKINGHAM
Shell	45	YMCA Bunbury Early Learning Centre	8 Claughton Way	GLEN IRIS
7-Eleven	50	Curam Early Learning School	227a Treasure Rd	QUEENS PARK
Ampol	65	Cuddly Bear Day Care Centre	271-273 Ewen Street	WOODLANDS
Puma	65	Little VIP's Child Care & Early Education Centre	7 Lynwood Avenue	LYNWOOD
Caltex	65	Care for Kids School of Early Learning Duncraig	555 Beach Road	DUNCRAIG
United	72	Wool and Thimble School of Early Learning	227 Leach Hwy	WILLAGEE
7-Eleven	75	Sonas Early Learning & Care Wattle Grove	332 Hale Rd	WATTLE GROVE
Shell	80	MercyCare Early Learning Services Ellenbrook	11 Goodwood Cres	ELLENBROOK
BP	85	Bluebird Busselton	15 Albert St	BUSSELTON
Coles Express	90	KinderPark Early Learning Centre	23 Railway Pde	MOUNT LAWLEY
Puma	90	Piccolo Early Learning Centre	51 Walter Rd W	DIANELLA
Puma Roadhouse	90	Waroona Childcare Centre	39 South Western Hwy	WAROONA
BP	95	Goodstart Early Learning Edgewater	Unit 2 Gateway Commercial Cent	EDGEWATER
BP	95	South Perth Early Learning School Pty Ltd	Level 1, 96 Mill Point Rd	SOUTH PERTH



LOT 265 (NO.40) TALISKER BEND, GOLDEN BAY - MIXED COMMERCIAL DEVELOPMENT

State Administrative Tribunal Reconsideration - Responsible Authority Report (Regulation 12)

DAP Name:	Metro Outer Joint Development Assessment Panel	
Local Government Area:	City of Rockingham	
Summary of Modifications:	Refer to Proposal section of this Report	
Applicant:	Planning Solutions	
Owner:	Peet Golden Bay Housing Authority	
Value of Development:	\$3 million <input type="checkbox"/> Mandatory (Regulation 5) <input checked="" type="checkbox"/> Opt In (Regulation 6)	
Responsible Authority:	City of Rockingham	
Authorising Officer:	Mr Bob Jeans, Director Planning and Development Services	
LG Reference:	DD020.2021.00000031.001	
DAP File No:	DAP/21/01952	
SAT File No (DR reference):	DR96/2021	
Date of Decision under Review:	7 May 2021	
Application for Review Lodgement Date:	14 May 2021	
Attachment(s):	<u>Attachment 1</u> Revised Plans <u>Attachment 2</u> Emissions Impact Assessment <u>Attachment 3</u> Traffic Safety Audit and Corrective Action Report <u>Attachment 4</u> Emission Impact Assessment – Peer Review <u>Attachment 5</u> Schedule of Submissions <u>Attachment 6</u> 7 May 2021 Meeting Agenda and Minutes	
Is the Responsible Authority Recommendation the same as the Officer Recommendation?	<input checked="" type="checkbox"/> Yes	Complete Responsible Authority Recommendation section
	<input type="checkbox"/> No	Complete Responsible Authority and Officer Recommendation sections

Responsible Authority Recommendation

That the Metro Outer Joint Development Assessment Panel, pursuant to section 31 of the State Administrative Tribunal Act 2004 in respect of SAT application DR 96 of 2021, resolves to:

1. **Reconsider** its decision dated 7 May 2021; and
2. Vary its decision to **Refuse** DAP Application reference DAP/21/01952 and accompanying plans:
 - Site Plan, Revision N, dated 20.07.2021;
 - Gym Floor Plan and Elevations, Revision L, dated 25.03.2021;
 - Commercial Floor Plan and Elevations, Revision L, dated 25.03.2021;
 - Service Station Floor Plan and Elevations, Revision L, dated 25.03.2021;
 - Pylon Signage, Revision K, dated 29.01.2021;
 - Staging Plan, Revision K, dated 29.01.2021; and
 - Landscaping Sketch, Revision N, dated 20.07.2021

in accordance with Clause 68 of the Planning and Development (Local Planning Schemes) Regulations 2015 and the provisions of 68(2)(c) of the deemed provisions of the City of Rockingham Town Planning Scheme No.2, subject to the following reasons as follows:

Reasons for Responsible Authority Recommendation

1. The proposed development is not compatible with development on other land in this locality due to its unacceptable health risk impacts on sensitive receptors, specifically to children, from benzene exposure.
2. The potential traffic volume and movements resultant from the proposed development, based on the Left-in/Left-out access via Aurea Boulevard and Left-in/Left-out access via Thundelarra Drive, is likely to have an adverse impact on traffic flow associated with vehicles queuing during peak hours of operation within the development site and is likely to overflow into the adjacent road network including the traffic light intersection of Warnbro Sound Avenue and Aurea Boulevard and Thundelarra Drive and Aurea Boulevard intersection.

Background:

The following outlines the history of the development proposal.

History of Application

- On 2 February 2021, the Applicant lodged a Development Assessment Panel (DAP) application for a proposed Mixed Commercial Development comprising of a Gymnasium, Service Station and a Commercial/Retail tenancy.
- On 25 April 2021, Council resolved to the Metro Outer Joint Development Assessment Panel (MOJDAP) that the application be refused on human health, traffic and safety, signage and vegetation removal grounds.

- On 7 May 2021, the MOJDAP resolved to refuse DAP Application DAP/21/01952 in accordance with recommendations from Council for the following reasons:
 - "1. *Sensitive Land Uses, including two approved Child Care Centres are located within the 200m generic separation distance recommended by Environmental Protection Authority Guidance Statement No.3 (Separation Distance between Industrial and Sensitive Land Uses 2005). The applicant has not submitted a scientific study based on site and industry-specific information which demonstrates that a lesser distance will not result in unacceptable health impacts.*
 2. *The potential traffic volume and movements resultant from the proposed development, based on the Left-in/Left-out access via Aurea Boulevard and Left-in/Left-out access via Thundelarra Drive, is likely to have an adverse impact on traffic flow associated with vehicles queuing during peak hours of operation within the development site and is likely to overflow into the adjacent road network including the traffic intersection of Warnbro Sound Avenue and Aurea Boulevard and Thundelarra Drive and Aurea Boulevard intersection.*
 3. *The proposed development is situated at the prominent intersection of Warnbro Sound Avenue and Aurea Boulevard, which is a major entry into the Golden Bay Estate. The removal of existing on-street parking bays and perimeter vegetation does not satisfy the requirements of the approved Local Development Plan and has an adverse impact on the amenity of the estate entry.*
 4. *The proposed Pylon Sign adjacent to Warnbro Sound Avenue will result in signage that is not considered appropriate for its location as required by Planning Policy 3.3.1 - Control of Advertisements."*

Application to the State Administrative Tribunal

- On 14 May 2021, the Applicant lodged an application for review with State Administrative Tribunal (SAT) for the refusal of the DAP application.
- On 11 June 2021, the matter was listed for a Directions Hearing and a Mediation followed as part of the SAT proceedings on 7 July 2021, which the City participated in. The Presiding Member of the MOJDAP (respondent in the application for review) to the SAT also attended the Mediation, along with an officer from the State Solicitor's Office and staff representing Department of Health and Department of Water and Environmental Regulations. The Applicant also attended the Mediation along with relevant representation.
- On 22 July 2021, the Applicant provided additional information in support of the reconsideration as a result of the concerns discussed in the Mediation session, the assessment of which forms the basis of this report. Orders were subsequently issued pursuant to section 31 of State Administrative Tribunal 2004, requiring the respondent to reconsider its decision on or before 15 September 2021.

The matter is adjourned to a Directions Hearing on 1 October 2021.

The outcomes of SAT Mediation are discussed in the following 'Proposal' section of this report which provides context to this matter.

The decision-maker may:

- affirm the previous decision,
- vary the decision, or
- set aside the decision and substitute a new decision.

Proposal:

The MOJDAP is invited to reconsider its decision to Refuse the DAP application for the Mixed Commercial Development, pursuant to section 31 of the State Administrative Tribunal Act 2004, on or before 15 September 2021. As part of this reconsideration, the Applicant provided additional information and revised plans in Order to attempt to address the reasons for Refusal, which resulted in the following changes to the proposed development:

- Amended Plans (Attachment 1) have been submitted which:
 - Retain and/or transplant a greater number of established trees along perimeter of the development site;
 - Remove one car parking bay fronting the Service Station component of the development and shifting of the air/water bay further south to increase the size of the landscaping area;
 - Move the Warnbro Sound Avenue pylon sign has been moved further south and reduced its height to 9m; and
 - Clearly illustrate location of the vent pipes to the north west of the fuelling canopy.
- An Emissions Impact Assessment (EIA) has been prepared on the impacts of fuel vapour (benzene) from the proposed development (Attachment 2);
- Verbal confirmation of incorporation of Stage 1 (VR1) and Stage 2 (VR2) fuel vapour recovery system; and
- A Road Safety Audit (RSA) has been submitted in relation to the proposed Left-in/Left-out access via Aurea Boulevard to confirm if there are any safety concerns (Attachment 3).

The revised application, now being considered, remains the same in all other aspects as previously presented to MOJDAP on 7 May 2021 (Attachment 6).

As part of its assessment, the City engaged an independent Odour Emission Consultant to undertake a peer review of the applicant's EIA, details of which are discussed in the 'Planning Assessment' sections of this report (Attachment 4).



Figure 1. Revised Site Plan

Legislation and Policy:

Legislation

- State Administrative Tribunal Act 2004
- Planning and Development Act 2005
- Metropolitan Region Scheme
- City of Rockingham Town Planning Scheme No.2 (TPS2)
- Planning and Development (Local Planning Schemes) Regulations 2015

State Government Policies

- Environmental Protection Authority - Separation Distance between Industrial and Sensitive Land Uses No.3
- State Planning Policy 7.0 - Design of the Built Environment

Structure Plans/Activity Centre Plans

- Golden Bay Neighbourhood Centre Local Development Plan (LDP)

Local Policies

- Planning Policy 3.3.1 - Control of Advertisements (PP3.3.1)

Other

- Austroads' Guide to Road Design Part 4: Intersections and Crossings

Consultation:

Public Consultation

The revised proposal was advertised for public comment over a period of 18 days, commencing on 23 July 2021 and concluding on 10 August 2021 in accordance with Clause 64 of the deemed provisions of the City's Town Planning Scheme No.2 (TPS2).

Advertising was carried out in the following manner:

- The landowners and occupiers identified on the Consultation Plan in Figure 2 below were notified in writing of the revised development as well as submissioners on the February 2021 Refusal; and
- The application documents and plans of the development were made available for public inspection at the City's Administration Offices and placed on the City's website.

The information available for viewing of the revised proposal on the website did not include the City's EIA peer review, as it was finalised post the consultation period.

At the close of the public consultation period, a total of 158 submissions were received, comprising of seven submissions in support of the revised proposal and 151 submissions objecting the proposal. Out of the 151 objections received, 38 consisted of individually signed letters quoting the same wording i.e pro-forma.

All of the objections related to the Service Station component of the proposal.

The locations from where the nearby submissions originated are shown on the Consultation Plan below.

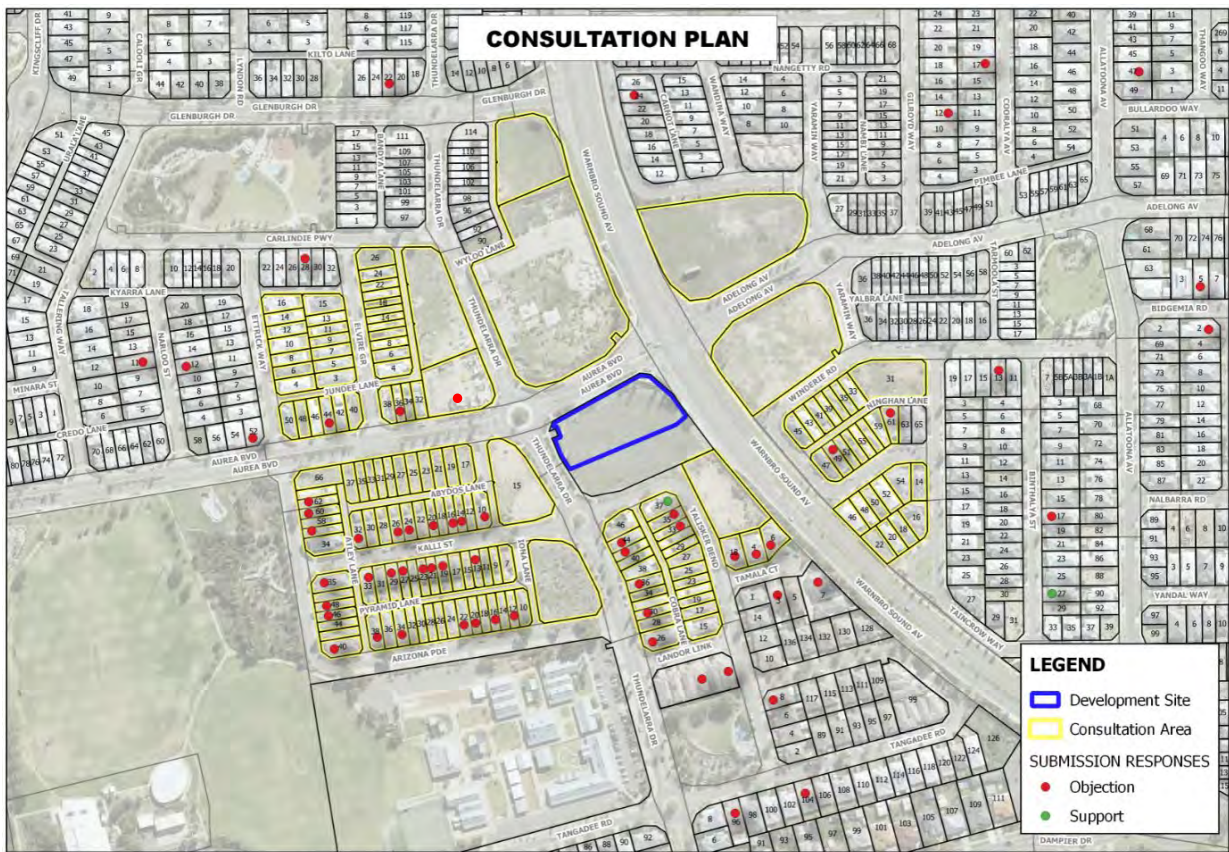


Figure 2. Consultation Plan

It is noted that out of the 151 objections received on the revised proposal, only eight new matters were raised. All objections of the revised proposal had raised human health as a matter of concern and this was previously identified as a key area of consideration within the Officer’s report. Human health remains a key consideration within this report.

Matters on the revised proposal are summarised in the Schedule of Submissions table below, along with the City’s responses to the submissioner concerns. For completeness, all submissions are contained in the Schedule of Submissions (Attachment 5).

Issue Raised	Officer Comments
<p><u>Health</u></p> <p>An emissions study and fuel vapour recovery systems do not negate the benzene exposure concern. There is no safe limit for benzene exposure.</p>	<p>The health related impacts of the proposal are discussed below within the ‘Planning Assessment’ section of this report.</p>

Issue Raised	Officer Comments
<p>The health risks associated with residing near a petrol station for the nearby residents should far outweigh any positive business outcomes that could arise from this development.</p>	<p>Risk to human health and safety is a matter that the Local Government is required to give regard to in its assessment of an application for Development Approval.</p> <p>Economic competition between new and existing businesses is not a relevant planning consideration.</p>
<p><u>Sustainability</u></p> <p>Think of the long term sustainability impacts on the community resultant from this development.</p>	<p>Noted.</p>
<p><u>Reporting</u></p> <p>There is no evidence the commissioned company specialises in odour emission modelling.</p> <p>The relevant concerns have been expressed with respect to the submitted emissions study:</p> <ul style="list-style-type: none"> a. Neither of the Child Care premises have been assessed; and b. The wind readings do not account for seasonal variation in winds. 	<p>The City cannot verify whether the company specialises in odour emission modelling.</p> <ul style="list-style-type: none"> a. Below are the City's EIA peer review comments in this regard: <i>"The assessment modelled a receptor at 20m from the central emission source. The receptor is a near-field location at the southern edge of the proposed Service Station boundary. The childcare premises are at distances of approximately 80-100m or more from the proposed Service Station. It is therefore logical to assume that those ground level pollutants concentrations at the 20m receptor will be larger than those predicted ground level pollutants concentrations at the child care premises; i.e. the childcare premises predicted pollutant concentrations would be lower than those listed in Table 5-5 of the Assessment."</i> b. The wind modelling assumptions do not account for the prevailing easterlies which are likely to blow fumes in a western and south-western direction toward sensitive land uses. This is resultant due to utilisation of the AERSCREEN (in lieu of AERMOD) emissions modelling scenario, which only generates a single meteorological condition in 'all' directions surrounding the emission source but is not able to discern concentrations at varying receptors surrounding the development under different wind conditions. <p>Clause 2.7 and 2.8 of the City's EIA peer review provide further detail in this regard.</p>

Issue Raised	Officer Comments
<u>Traffic and Safety</u> Based on finding 2.2 of the traffic audit, it is not clear if traffic generation associated with adjoining developments has been considered in the forecast volumes and hence assessment of queueing on Aurea Boulevard and back to Warnbro Sound Avenue.	Noted.
<u>Commercial Viability and Operation</u> The Child Care premises in proximity may lose out on business due to the Service Station.	The land use conflict associated with the proposal is discussed in the 'Planning Assessment' section of this report.
<u>Tree Removal</u> Despite the amendments, mature trees will be cut down and is a poor planning outcome.	This submission is also addressed below in the 'Planning Assessment' section of this report where it is concluded that the revised tree retention/transplantation strategy is considered to be acceptable.

Referrals/consultation with Government/Service Agencies

The revised proposal was referred to Department of Health and Department of Water and Environmental Regulations for comment.

Previous advice received by Department of Planning, Lands and Heritage is also of relevance to the revised proposal and is also considered below.

1. Department of Health (DoH) - summarised
<p>DoH is aware the Environmental Protection Authority – Separation Distance Between Industrial and Sensitive Land Uses No.3 (2005 EPA Guidance Statement), is over 15 years old and may not reflect current fuel standards and emission controls. Therefore, DoH provides an estimate of risk of leukaemia from benzene, the chemical of concern from petrol emissions based on the estimated benzene concentrations presented in the emissions report. Increased risk is estimated for both the nearest sensitive receptor (residential development) and the child care centres. Benzene is a known human carcinogen with no safe limit of exposure, although the risk of leukaemia from low exposures is extremely low. The increased lifetime risk for continuous exposure to 1ug/m³ is estimated to be about 6 cases/1,000,000.</p> <p><u>Residential development</u></p> <p>The maximum predicted annual benzene concentrations from the modelling were 6.7ug/m³ with VR1 (required) and 3.1ug/m³ (with both VR1 and VR2). Both are below the National Environmental Protection Measures monitoring investigation level. However, there will still be a risk. In the report, the background benzene concentration was assumed to be 2.9ug/m³. Therefore, with VR1 only, approximately 3.8ug/m³ benzene (annual average) could be attributed to petrol stations. The excess risk of leukaemia from continuous long-term exposure to this concentration of benzene will be about 2 cases/100,000. There will be negligible risk, above background, if VR2 is also installed.</p>

1. Department of Health (DoH) - summarised (cont...)

Child Care Centres

There are no calculations for benzene at the child-care centres in the emissions report. The cancer risk for benzene used above is based on occupational exposures and there are limited data for children. However, a small number of epidemiological studies have investigated leukaemia risk for children living near service stations. The risk is based on proximity rather than measured concentrations. A few studies used neighbouring (i.e. adjoining) businesses to determine proximity and one study used a 100m buffer. A summary risk of all the studies combined showed at least a doubling risk of leukaemia for children living in close proximity to a petrol station. For DoH 'close proximity' will be defined as within 100m. The background incidence for childhood leukaemia in Western Australia is 5-6 children/100,000. This suggest that there is a possible excess risk of 5-6 children for living within 100m of petrol stations. The target risk level for carcinogens is 1/100,000³. The risk is likely to be decreased for children in childcare as less time is spend in childcare than at home. The use of VR2 will decrease the risk but the DoH cannot estimate by how much.

Conclusion

DoH supports a precautionary approach to siting petrol stations proximal to residential areas and child care centres to positively benefit children health. Without VR2 the risk is not acceptable. Should the development proceed, to decrease risk, VR2 controls should be installed as a minimum along with robust inspections and maintenance to ensure the effectiveness of the control.

City's Comment:

The DoH supports a precautionary approach to siting petrol stations proximal to residential areas and child care centres due to an increased risk of leukaemia in children caused by benzene emissions.

The DoH does not support the application with VR1 alone and advises that VR2 will reduce, but not eliminate, benzene emissions.

The DoH notes the applicant has not provided evidence of estimated benzene concentrations at the ChildCare Premises if VR1 and/or VR2 are used.

The City supports the DoH's precautionary approach.

2. Department of Water and Environmental Regulations (DWER) - summarised

DWER advised that it does not have a regulatory role, policy position or guidance statement for fuel stations.

Due to uncertainties with air dispersion modelling for this land use, resulting from absence of standard methodology and validated data, adherence to separation distances within EPA Guidance Statement is generally recommended to inform planning decisions.

The amended approach employs both stage 1 and stage 2 vapour recovery systems (VR1 and VR2). Although it is estimated that these additional emission controls would reduce the emissions, owing to the uncertainties in emission estimations there is limited ability to determine if these additional emissions controls are required or, if installed, would result in acceptable impacts.

City's Comment:

There are differences between the planning and environmental guidance in regard to emissions from petrol stations.

2. Department of Water and Environmental Regulations (DWER) - summarised (cont...)

As odour emission modelling (relevant to the revised proposal) is outside of the expertise of the City, DoH and DWER, it has relied upon the advice of the EIA peer review to give due consideration to the matter. In summary, the submitted EIA was found to be deficient by the use of the AERSCREEN assessment, the use of inaccurate meteorological information and a lack of calculation steps, however, the reviewer did find that the results of the report would have been similar should the appropriate data have been input.

The City supports the DWER's precautionary approach.

It is difficult for the City to be confident in the results of the EIA.

The City advocates a precautionary approach.

3. Department of Planning, Lands and Heritage (DPLH) - summarised

February 2021 JDAP Application Submission:

No access is proposed from Warnbro Sound Avenue. This is in accordance with the WAPC Policy D.C 5.1, which seeks to minimise the number of new crossovers onto regional roads.

The traffic report states that the development will generate approximately 1376 vehicular trips per day (both inbound and outbound) with approximately 115 and 124 trips during the weekday AM and PM peak hours respectively.

This is below the WAPC Transport Impact Assessment Guidelines for Developments (2016) threshold for further analysis. SIDRA analysis indicates a satisfactory level of service for both intersections to 2031.

DPLH has no objection to the proposal on Other Regional Road planning grounds.

City's Comment - February 2021 Refusal:

DPLH comments are noted, however, the City's Land and Development Infrastructure Services has a number of concerns regarding how the traffic analysis was completed in the TIA and therefore has concerns as to its validity. The main concern is listed as follows:

- The analysis for vehicle stacking capacity for the Service Station has not incorporated random vehicle arrivals, therefore diminishing its validity. Further, there is insufficient queueing space provided for the proposed Service Station. It is therefore highly likely to impact upon internal traffic flow and consequently has the potential to overflow onto Aurea Boulevard impacting on surrounding road networks, completely blocking access, heading west past the development site.

Further, the City does not support the proposed Left-In/Left-Out access off Aurea Boulevard due to the following reasons:

- There is insufficient separation distance between the road intersections to accommodate the proposed access. Austroads' Guide to Road Design Part 4 - Intersections and Crossings – General recommends a minimum access spacing of 55m (based on "Stopping Sight Distance"). This suggests that the existing distance between the stop lines of the existing intersection should be at least 110m therefore access arrangements as proposed are unlikely able to be located between the Aurea Boulevard and Thundelarra Drive roundabout and traffic signal at the intersection of Aurea Boulevard and Warnbro Sound Avenue. The proposed intersection spacing is 40m, hence, why the approved Local Development Plan requires that no access be provided off Aurea Boulevard.
- The Aurea Boulevard access would significantly impact the performance of the two adjacent intersections as well as increase traffic safety risks.

3. Department of Planning, Lands and Heritage (DPLH) - summarised (cont...)

- Vehicle queues at the adjacent roundabout would impact on the proposed access.
- Loss of all four existing on-street parallel bays on Aurea Boulevard.

In light of the findings of the TIA report, it was concluded that the potential traffic generated from this development based on intended access arrangements could have an adverse impact on the site and its surrounding road network.

Design Review Panel Advice

Not Applicable

Swan Valley Planning

Not applicable

Planning Assessment:

The revised proposal has been assessed against all the relevant legislative requirements of the Scheme, State and Local Planning Policies, Local Development Plan as well as the Austroads Guidelines, as outlined in the 'Legislation and Policy' section of this report.

The following matters have been identified as key considerations for the determination of this application:

- EPA Separation Guidelines;
- Traffic and Safety;
- LDP Design;
- Car Parking; and
- Signage.

These matters are discussed below.

EPA Separation Guidelines

The EPA Guidance Statement provides advice to proponents, responsible authorities, stakeholders and the public, on the minimum requirements for environmental management which the EPA would expect to be met when the Authority considers a development proposal. For the purpose of the Guidance Statement, "industrial land use" is used in a general way to encompass a range of industrial, commercial and rural activities, associated with off-site emissions that may affect adversely the amenity of sensitive land uses. A table of land uses is provided in the Guidance Statement, however, it is recognised that the list is not definitive. Service Station land use is identified in the table.

The generic separation distances are based on the consideration of typical emissions that may affect the amenity of nearby sensitive land uses. These include gaseous and particulate emissions, noise, dust and odour. For developments of this kind, the EPA recommends a 200m separation distance to all 24 hour Service Station operations from sensitive land uses because of gaseous, noise, odour and risk associated implications. It should be noted that the separation distances recommended by the Guidance Statement are not absolute but instead are default distances providing general guidance in the absence of a site-specific technical study.



Figure 3. Generic 200m separation buffer

Figure 3 above depicts the extent of existing and planned development within 200m generic separation distance from the two main sources of gaseous vapour. Within the 200m separation distance, a total of five (5) sensitive land uses are identified, comprising of:

- 130 established residential dwellings;
- a minor portion of the Golden Bay Primary School site;

- seven (7) vacant Grouped Dwelling sites (approximate lot yield of 75 units); and
- three (3) vacant Commercial sites which have current Development Approvals for independent living purposes (89 apartments) and two Child Care Premises, approved for 92 places at Lot 716 Thundelarra Drive and 100 places at Lot 263 Aurea Boulevard. The Child Care Premises at Lot 716 Thundelarra Drive is nearing completion of construction and is expected to open in September 2021.

It is also understood two family day care centres operate from within residential homes in the buffer.

The two main sources of gaseous vapour identified as part of this Service Station development are:

1. The refilling of the underground fuel storage tanks to the west of the canopy along the northern side of the development site. This also includes the vent pipes connected to the underground tanks which are proposed to be located adjacent to Aurea Boulevard.
2. The refuelling of vehicles beneath the fuel canopy, isolated to the petrol bowers and nozzles.

The Applicant has verbally confirmed at the SAT Mediation proceeding that it will agree to a condition of Development Approval requiring the installation and operation of both a VR1 and VR2 vapour recovery system in the event development is approved.

The underground fuel storage tanks are proposed to be equipped with a VR1. It is understood VR1 captures 95% of all vapour during the refuelling process.

When vehicles are refuelled at petrol stations, the vapour in vehicle fuel tanks is displaced by the fuel. VR2 equipment is designed to capture the displaced vapour and then return it to the underground fuel storage tank or other appropriate vessel. It is understood VR2 recovers at least 85% of the displaced vapour during the refuelling process.

The submitted EIA argues that based on the low predicted ground level concentrations (assumed $2.9\mu\text{g}/\text{m}^3$), vapours from the Service Station will not negatively impact the health of the nearest future sensitive receptors or other sensitive land uses i.e. Child Care Premises within the prescribed 200m buffer. The City notes, assumed $2.9\mu\text{g}/\text{m}^3$ concentration contour is 29% of the exposure limit for Benzene prescribed within the National Environmental Protection Measures to the nearest sensitive receptor to the south. The predicted ground level concentrations at the Child Care Premises could therefore be lower than this 29%, as noted within the City's EIA peer review, which presumes that the ground level pollutant concentrations at the Child Care Premises may be lower than those predicted concentrations at the closest 20m receptor, however, this cannot be verified without further modelling.

Whilst the City's EIA peer review does not concur with the steps within the submitted EIA to reach the assumed conclusion, it does acknowledge that the concentration of benzene when employing a full AERMOD model and Mandurah Automatic Weather Station meteorological trends would likely be comparable to the assumed concentration.

Traffic and Safety

The City has reviewed the RSA and accompanying Corrective Action Report (CAR) and notes that the functional area of the traffic signal has not been considered.

Also, concerns over the true volume of traffic articulated in the TIA have again been raised in the RSA despite this information being available within the Structure Plan report.

Review of the Structure Plan report suggests that the estimated peak hour traffic volumes are grossly under estimated for both Aurea Boulevard (should be 940vph, assuming peak is 10% of daily traffic instead of 437vph) and Thundelarra Drive (should be 500vph assuming peak is 10% of daily traffic instead of 264vph).

The RSA findings suggest higher traffic volumes resultant from this development would impact upon traffic safety, hence, the overall implication to road safety cannot be fully determined.

In light of the findings of the RSA and accompanying CAR, it is concluded that the additional traffic volumes are likely to increase the traffic and safety risk at the development site and its surrounding road network.

LDP Design

Assessment of LDP is limited to areas where discretion is sought to vary a requirement.

Provision	Requirement	Proposal	Assessment
Preferred vehicle access point	Preferred vehicle access from Thundelarra Drive	Two access points are proposed, one from Thundelarra Drive and one from Aurea Boulevard	<p>The LDP illustrates that no access is to be provided off Aurea Boulevard due in part to residential development as suggested in the IDP.</p> <p>A crossover is also proposed from Aurea Boulevard as part of this development and is said to be required to ensure optimal and efficient circulation of vehicles throughout the development site. The City agrees with this comment, however, the City considers that the potential traffic generated from this development based on the access arrangement will have an impact on the site and its surrounding road network.</p> <p>The submitted TSA and accompanying CAR verifies the City's traffic and safety concerns.</p>
Parallel parking	Parallel parking required on Aurea Boulevard.	Removal of existing parallel parking bays on Aurea Boulevard to make way for a slip lane/access point	<p>As above, the City has raised concern in relation to the proposed crossover from Aurea Boulevard due to traffic related matters. Therefore, the removal of all four existing parallel parking bays is not considered to be justified in the City's view.</p>

Provision	Requirement	Proposal	Assessment
Special vegetation screens	Special vegetation screens provided to Aurea Boulevard and Warnbro Sound Avenue	Removal of special vegetation screens inclusive of shrubs and 13 (from 16) trees to Aurea Boulevard and Warnbro Sound Avenue	<p>The intention of the vegetation screen was to provide a visual green buffer from residential development to Aurea Boulevard and commercial development to the north. Given that the development site is zoned Commercial and proposed purely for commercial purposes, there is a valid argument that screening is not required, although, it is noted that the vegetation also serves as an entry statement into the Golden Bay estate.</p> <p>A more balanced approach has not been considered as part of the revised proposal, as the proponent genuinely seeks to retain (with option to transplant two) perimeter trees where reasonable, without entirely prioritising unimpeded views of the fuel retailing building and associated signage.</p> <p>The revised landscaping strategy provides sufficient visual relief from the public realm.</p>

Car Parking

The table below provides an assessment of the proposal against the relevant car parking requirements of TPS2.

Use	Rate	Required	Provided
Service Station	1 bay for every service bay, plus 1 bay per employee and 6 bays per 100m ² NLA of retail floorspace	0 service bay plus 2 employee bays and 9 retail bays	45 regular bays plus 3 accessible bays and 1 air + water bay
Recreation - Private	1 bay per every 4 persons the building is designed to accommodate	18 bays (up to 68 visitors and 4 staff)	
Shop	6 bays per 100m ² NLA	11 bays (183m ²)	
OR			
Restaurant/Cafe	1 bay for every 4 persons the building is designed to accommodate	20 bays (up to 80 persons)	
Total		40/49	48 bays

A total of 40 car parking bays are required for the proposed development if the south eastern commercial tenancy is used as a Shop, or 49 bays if it is used as a Restaurant/Café with an estimated capacity of 80 people. In the scenario where a Shop operates, development satisfies Clause 4.15 of TPS2. In the scenario where a Restaurant/Café operates instead, development does not comply with the car parking requirements of Clause 4.15 of TPS2, as it results in an on-site parking shortfall of one bay.

The development is highly accessible to pedestrians due to the established footpath connections in the locality. The development also includes bowser bays which are commonly used by patrons when filling up at the Service Station. In light of the above reasons, the variation to Clause 4.15 of TPS2 is sufficiently addressed.

It is noted that the floor plan for the Service Station component of the development does not reflect the revised changes illustrated on the overall site plan.

Signage

The following is an assessment of revised signage strategy seeking to vary Policy requirements.

Pylon Sign must:	Officer Comment	Compliance - 9m high Pylon Sign	Compliance - 6m high Pylon Sign
(a) shall not be located within 1.8m of a lot boundary.	The 9m high pylon sign has a Nil setback from Warnbro Sound Avenue road reserve and results in removal of an established tree. The 6m high pylon sign associated with the fuel retailing building also has a Nil setback from the Thundelarra Drive road reserve.	No	No
(f) have a face area exceeding more than 3.5m width or height	The face area of both proposed pylon signs exceed 3.5m in height.	No	No
(g) have a face area of more than 4m ² on each side (single tenancy) or 13m ² on each side (multiple tenancy).	The pylon signs have face areas of approximately 19.7m ² and 12m ² respectively.	No	No

The following objectives of PP3.3.1 are relevant for the consideration of pylon signs:

- "(a) Ensure that advertisements are appropriate for their location;*
- (b) Minimise the proliferation of advertisements;*
- (c) Ensure that advertisements do not adversely impact on traffic circulation and management, or pedestrian safety."*

Both signs are considered to be designed in a way which ensures vehicles are able to read the content of sign panels without any visual impact to the surrounding amenity, traffic circulation or pedestrian safety.

Although still of a prominent height, the 9m high pylon sign complies with the height requirements of the Policy. In light of the above, two pylon signs can now be supported on this development site subject to the 9m high pylon sign providing multi-tenancy promotion.

Conclusion:

Where matters have not been covered already in this report, they are discussed below.

Human Health

It is considered that the potential health impacts in terms of odour emissions, specifically resultant from benzene exposure associated with the proposed Service Station operations to the local community out-weighs the planning merit of having it in this location. There are multiple sensitive land uses within the 200m separation distance set out by the EPA. It is noted the Applicant has submitted an EIA to assist in justifying the Service Station location less than 200m from the prescribed buffer distances from sensitive land uses.

Whilst it is acknowledged that air quality dispersion modelling has a number of areas of uncertainty, all external feedback points to the risk of benzene exposure from the Service Station being no greater than low.

The Applicant has not provided evidence of estimated benzene concentrations at the Child Care Premises if VR1 and/or VR2 are used. As such, despite the fact the risk of benzene exposure from the proposed Service Station operations have been identified by the Department of Health as low risk to the majority of the sensitive land uses in the prescribed buffer, the City considers a precautionary approach should be applied to avoid any risk of benzene exposure to children. With regards to the limitations of modelling within the EIA, the City is not satisfied that the development does not pose an unacceptable health risk.

This position is amplified by the fact that children are likely to reside within the defined 200m buffer and be exposed to benzene throughout their childhood.

The proposed development is therefore not compatible with the nearby development in this locality.

Traffic and Safety

The development is likely to disrupt traffic flows as it does not provide for vehicle access from Aurea Boulevard in a safe manner.

Conclusion

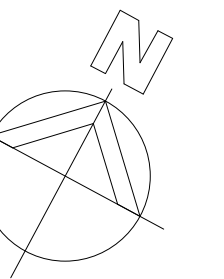
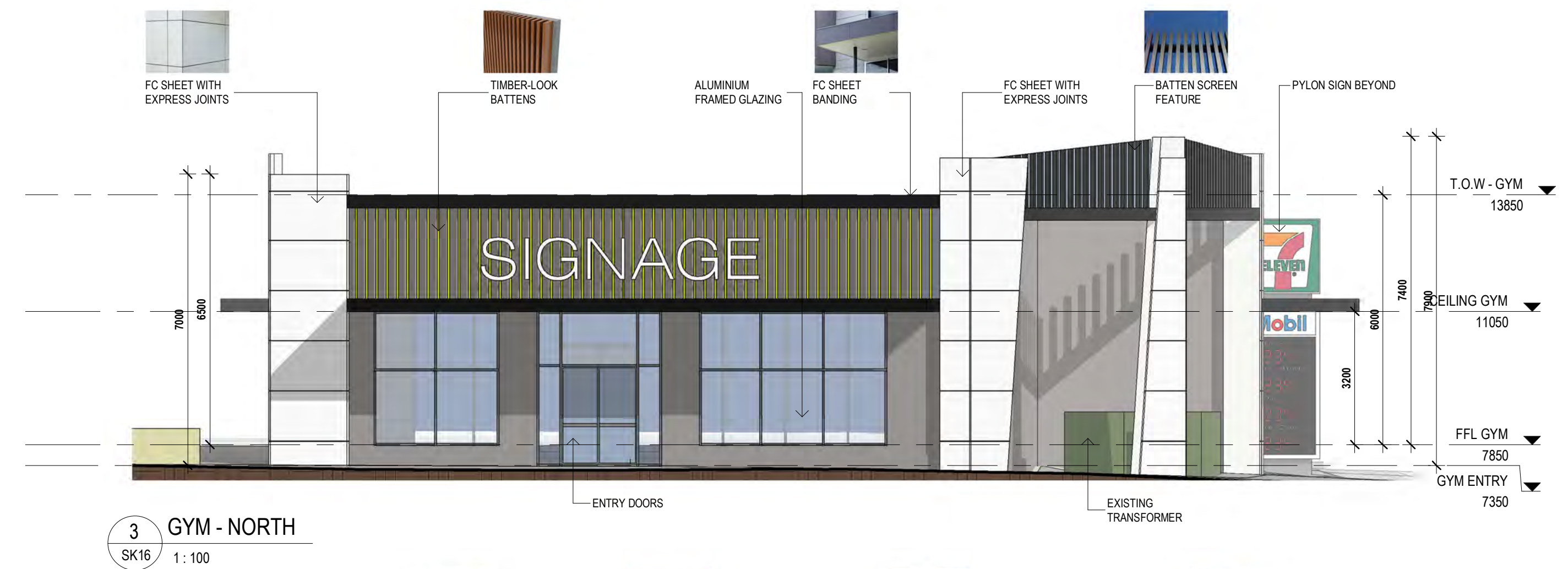
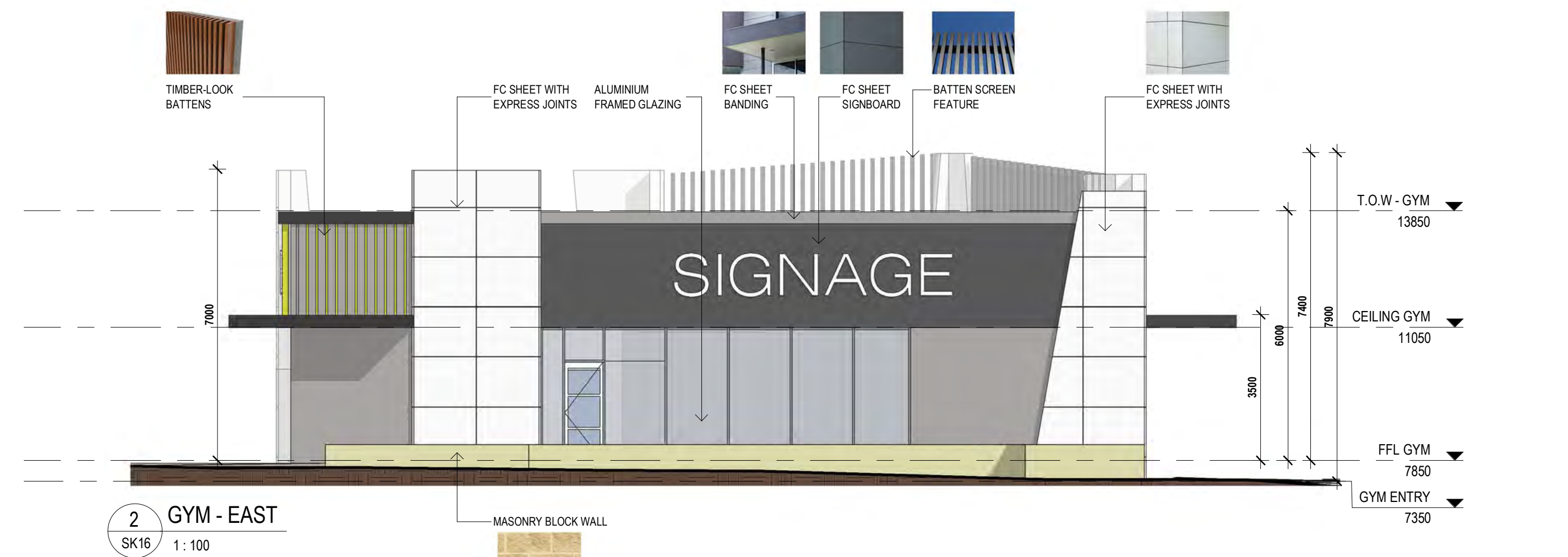
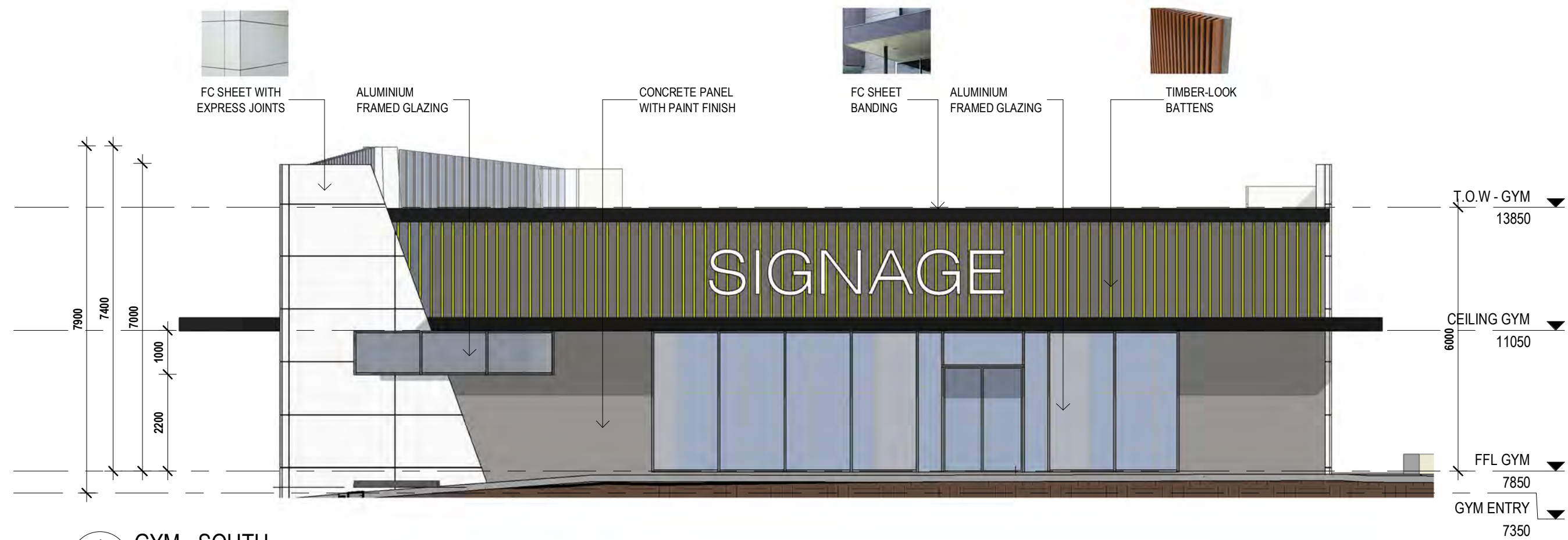
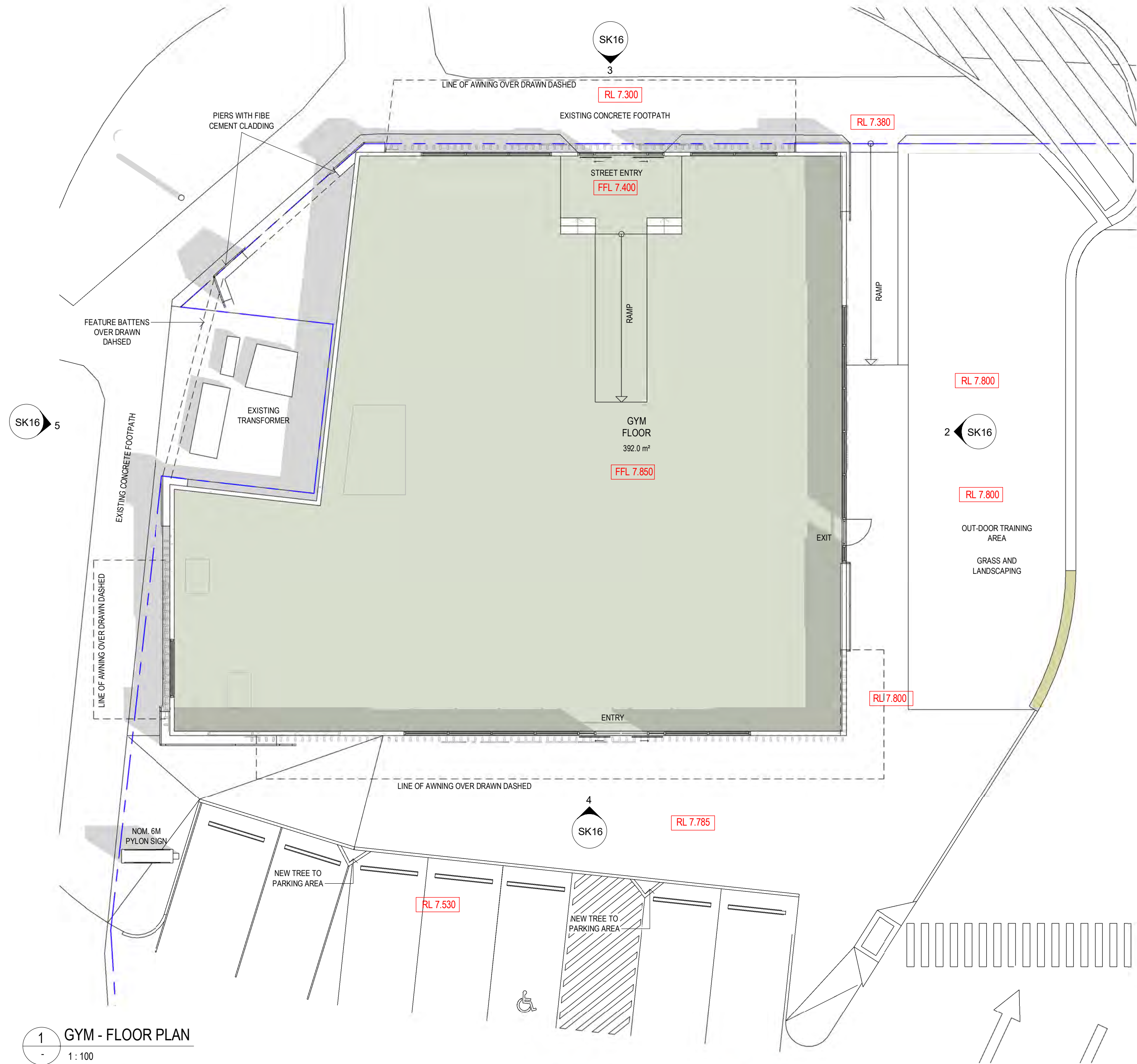
On the basis that the proposal will pose an unacceptable health risk impact by way of benzene exposure to children and has significant traffic and safety issues, the proposal is recommended for refusal.

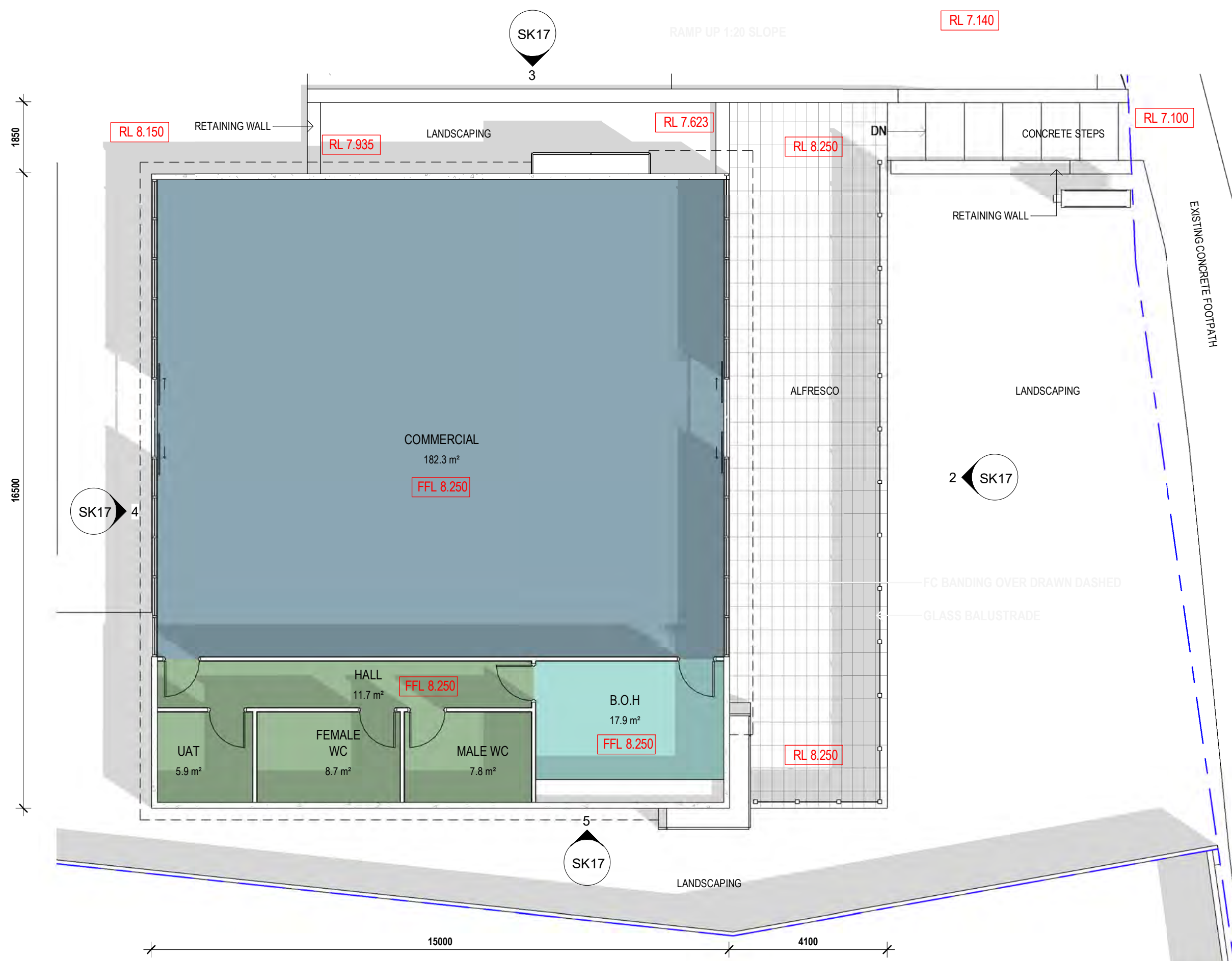


SCHEDULE OF KEY INFORMATION

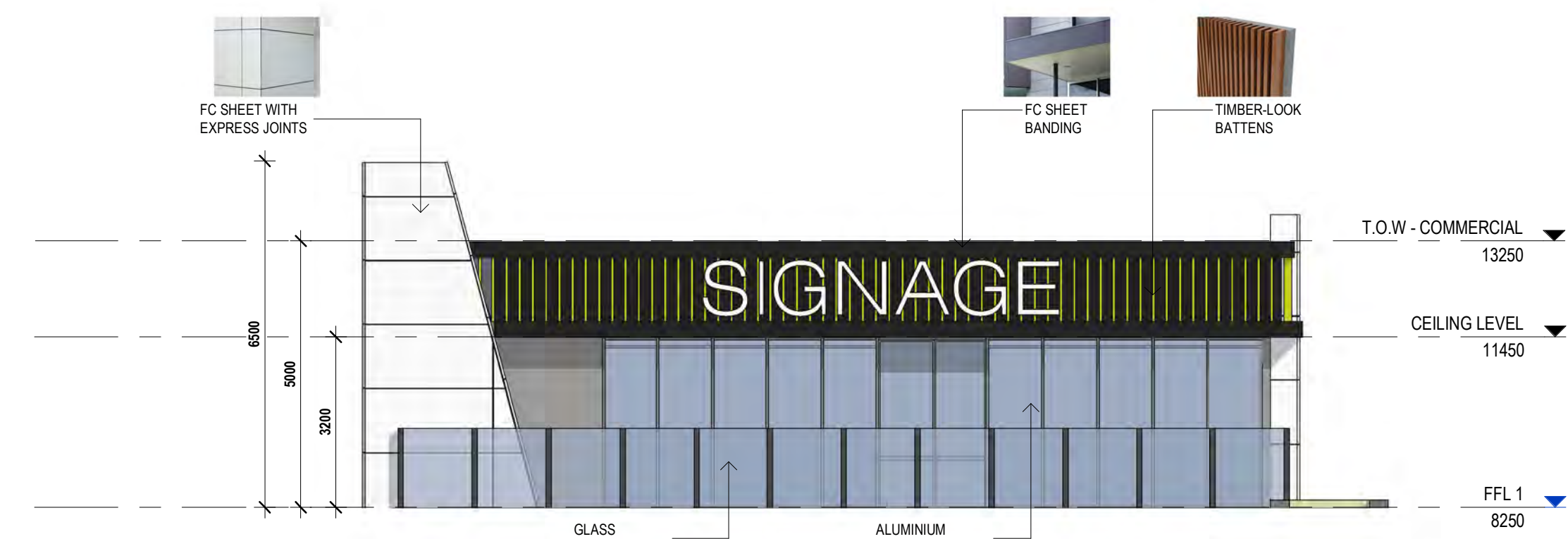
TOTAL SITE AREA:	4,543m ²
TOTAL NO. OF CAR BAYS:	47 BAYS
TOTAL LANDSCAPE AREA:	521m ²
BUILDING FOOTPRINT AREAS:	
• GYMNASIUM	404m ²
• PETROL STATION	243m ²
• COMMERCIAL	247m ²
NOMINAL PARKING BAYS:	
• 711	4 STANDARD 1 ACCESSIBLE 1 AIR/WATER 6 BOWSER BAYS
• COMMERCIAL	5 STANDARD 1 ACCESSIBLE
• GYMNASIUM	14 STANDARD 1 ACCESSIBLE
• SHARED	21 STANDARD
TOTAL	47 CAR BAYS 1 AIR/WATER BAY 6 BOWSER BAYS

* TREE TO BE REMOVED (OR RELOCATED WHERE POSSIBLE).
IF RELOCATION IS NOT POSSIBLE, AN ADVANCED TREE OF THE SAME
SPECIES CAN BE PROVIDED TO COMPENSATE FOR THE REMOVAL.

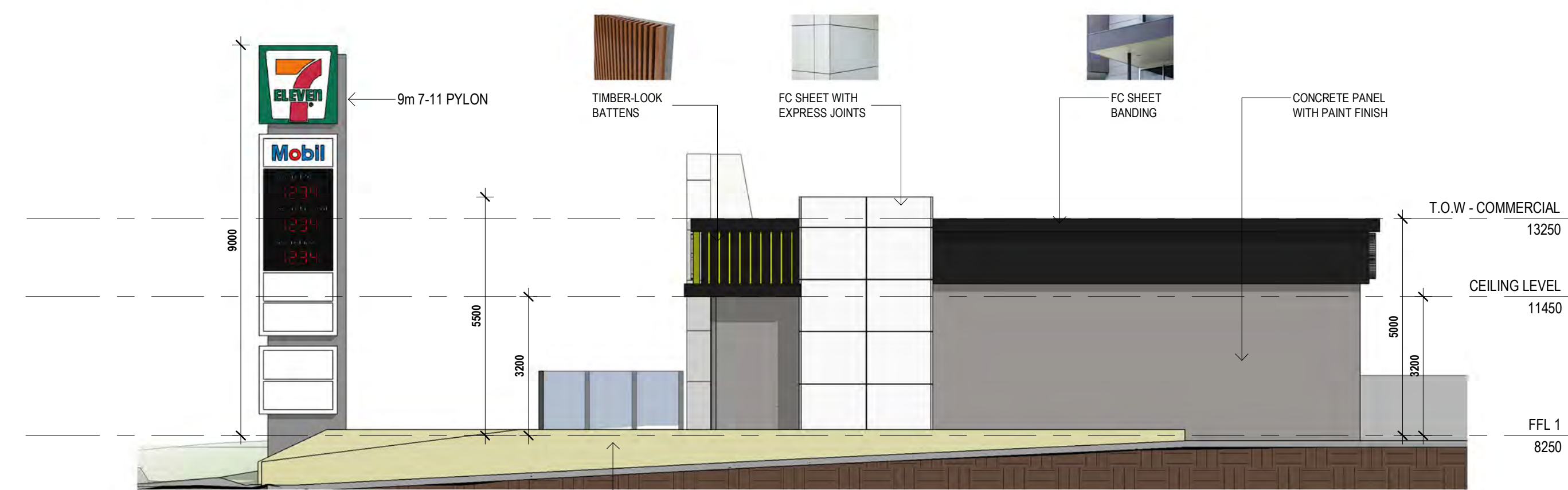




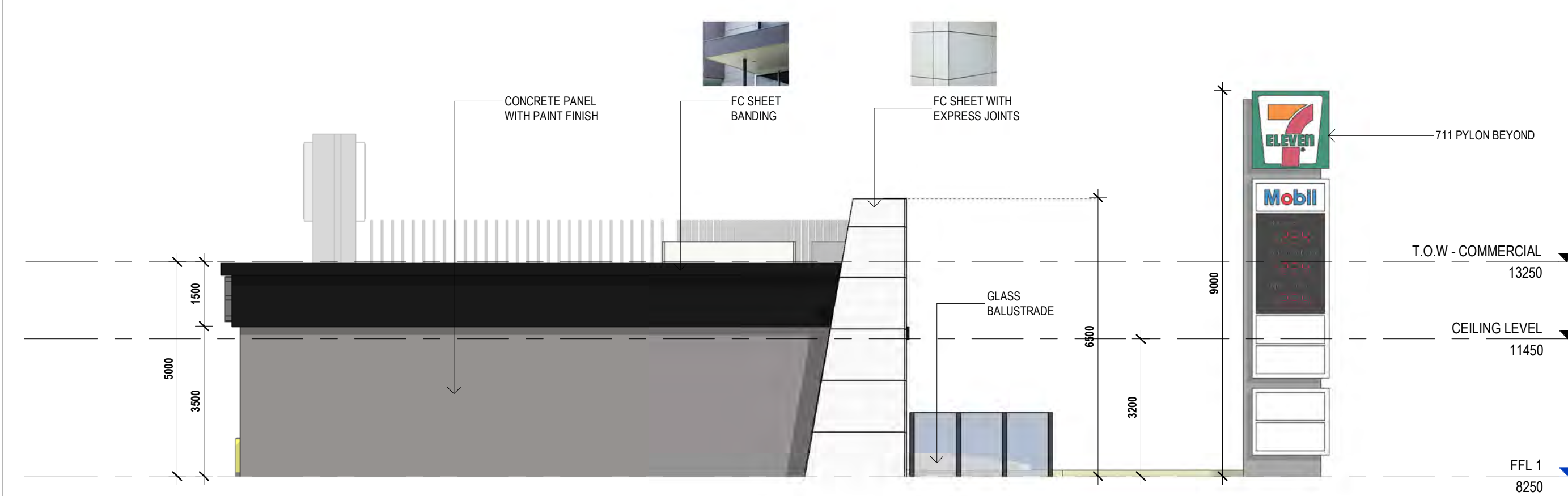
1 COMMERCIAL - FLOOR PLAN
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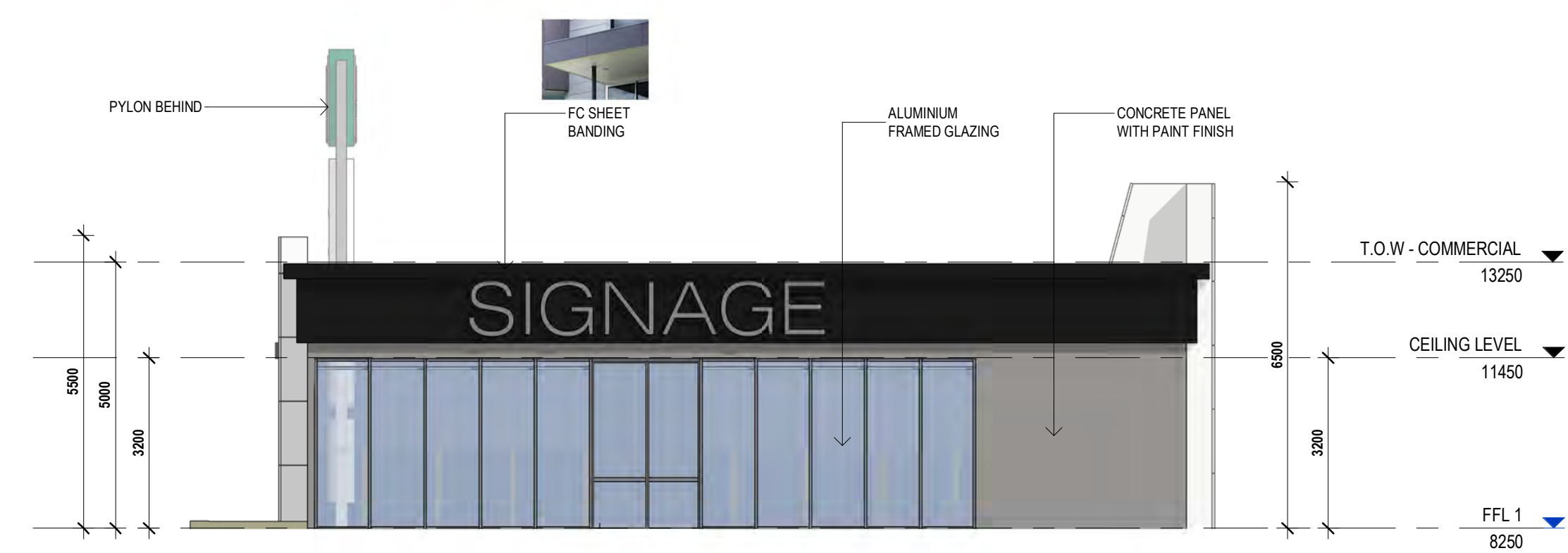
2 COMMERCIAL - EAST
SK17 1: 100



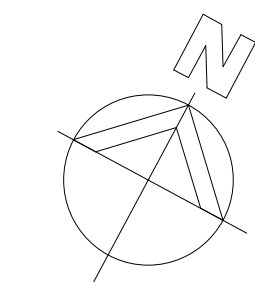
3 COMMERCIAL - NORTH
SK17 1: 100

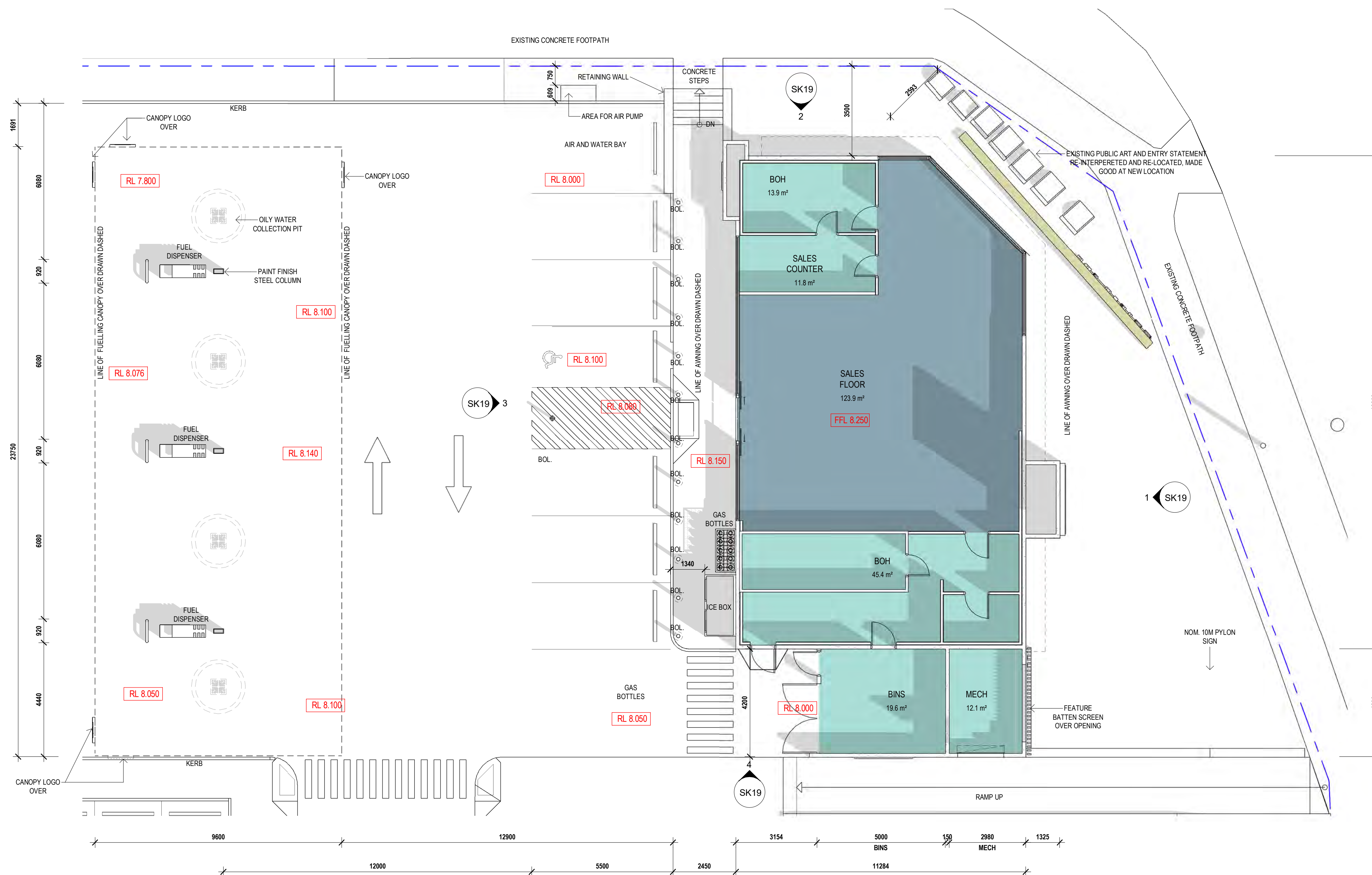


5 COMMERCIAL - SOUTH
SK17 1: 100

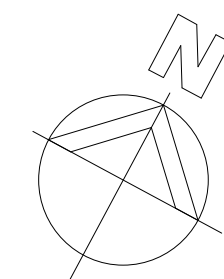


4 COMMERCIAL - WEST
SK17 1: 100





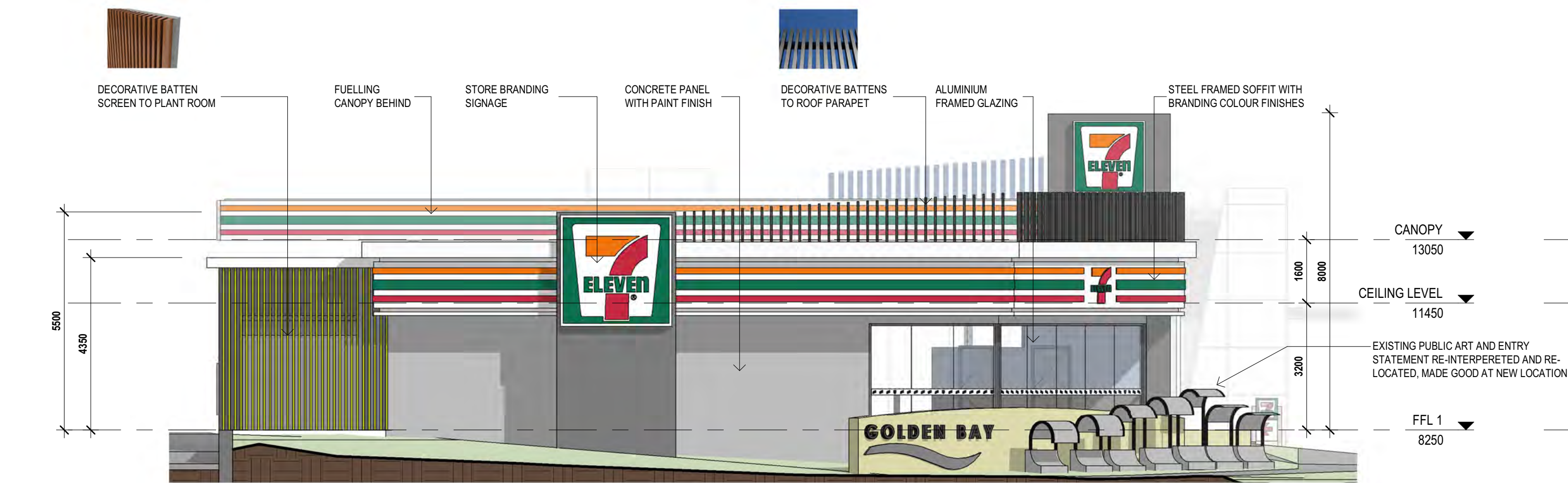
1 7-11 - FLOOR PLAN
1 : 100



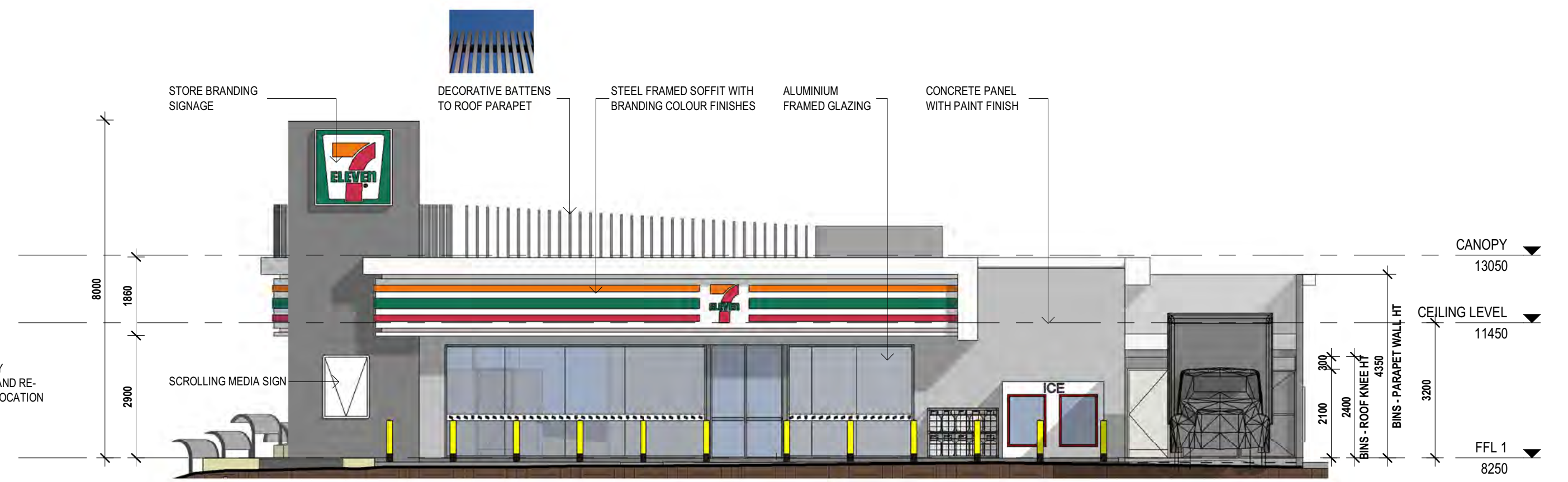
SK18

PROPOSED MIXED COMMERCIAL
Lot 265 (40) Talisker Bend, Golden Bay
REVISION L PROJECT NO. 161.20 DATE 25.03.2021

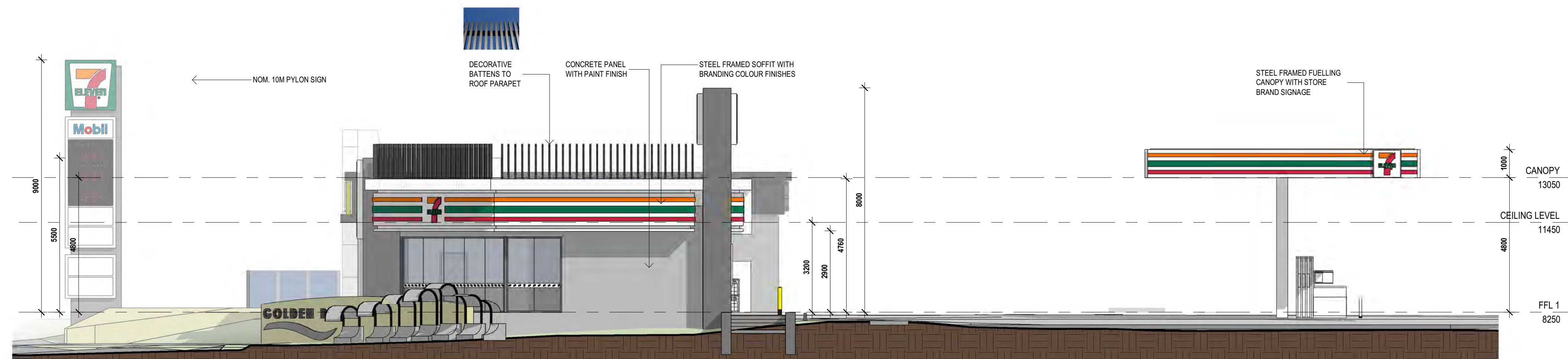
Hodge Collard Preston
ARCHITECTS



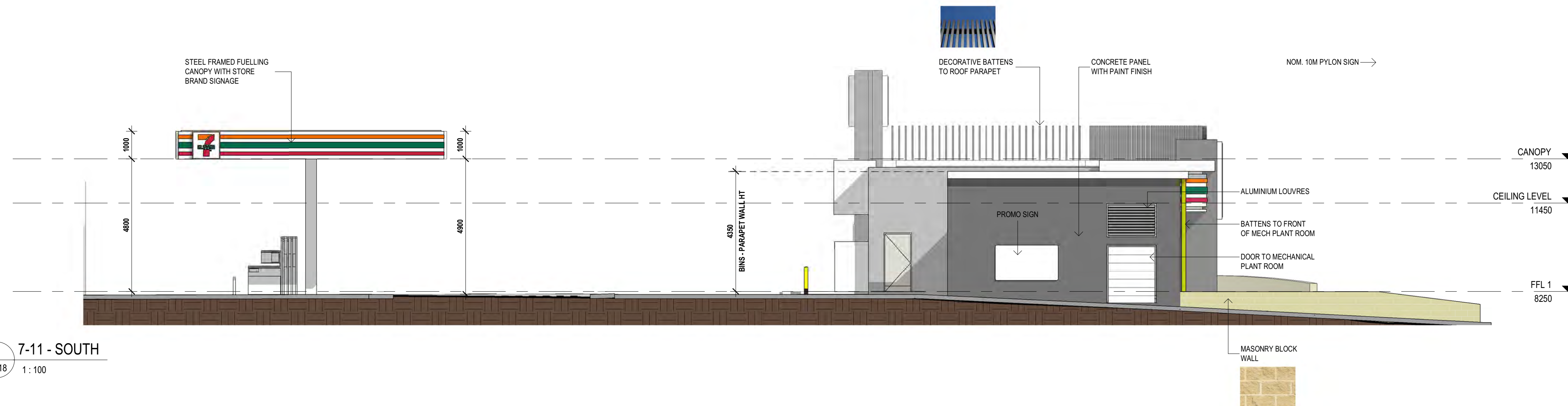
1 7-11 - EAST
SK18 1:100



3 7-11 - WEST
SK18 1:100



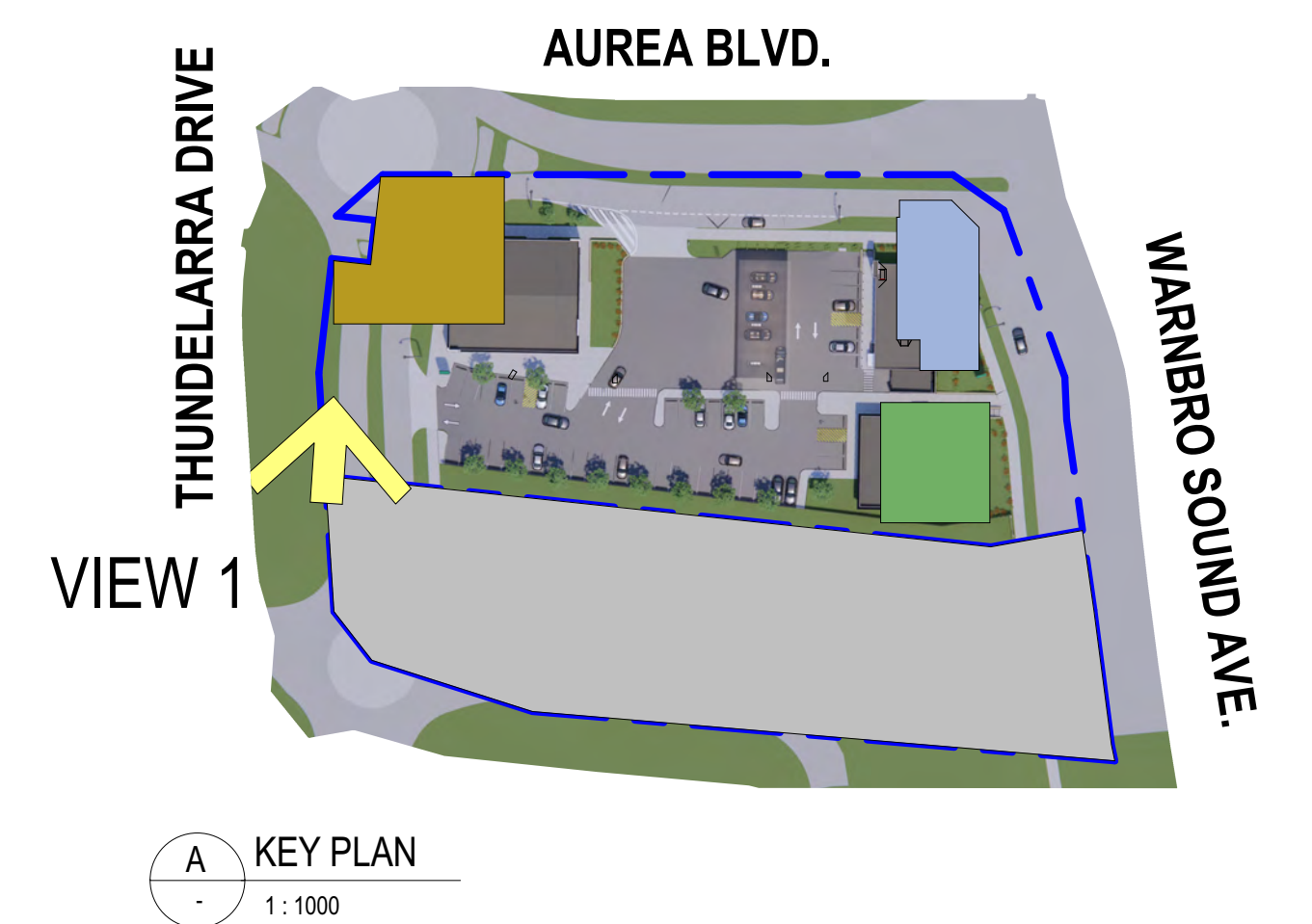
2 7-11 - NORTH
SK18 1:100



4 7-11 - SOUTH
SK18 1:100

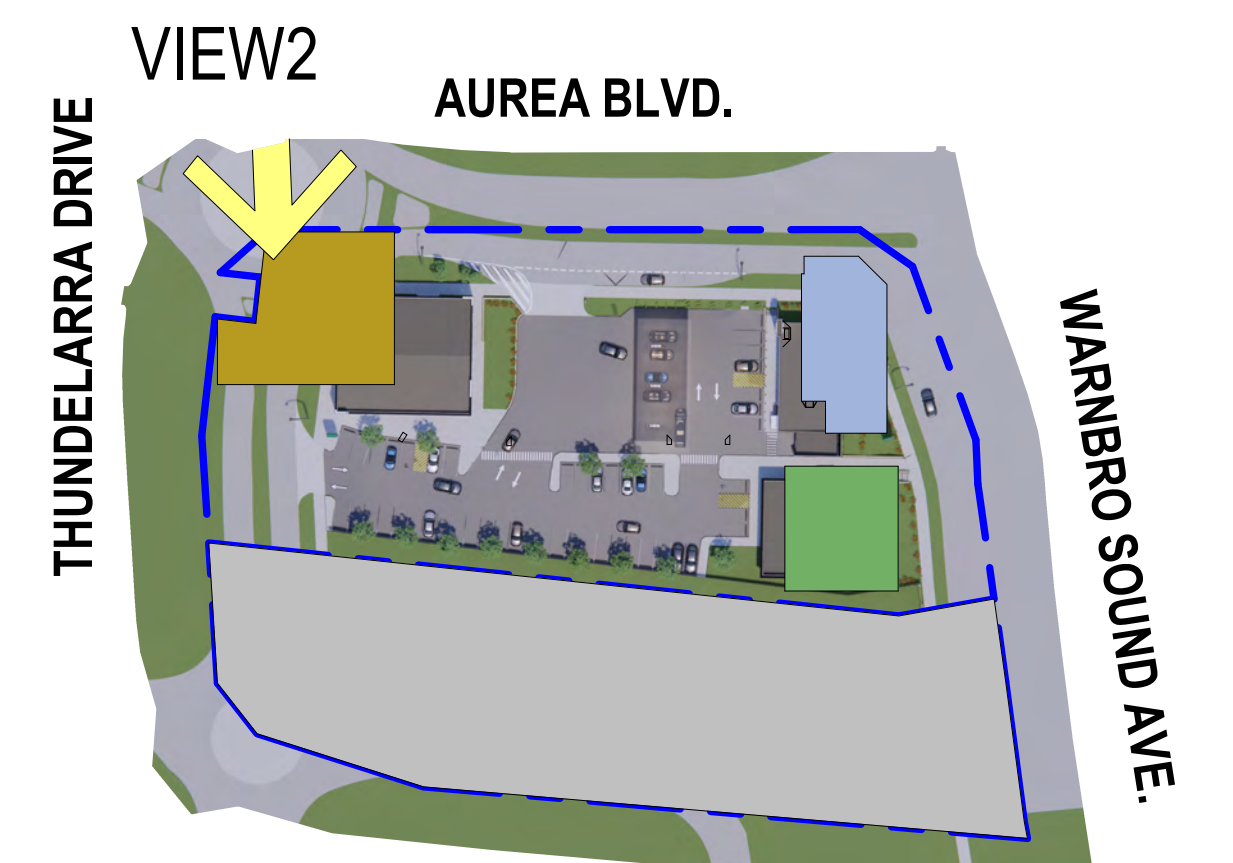


1 3D VIEW
1:1





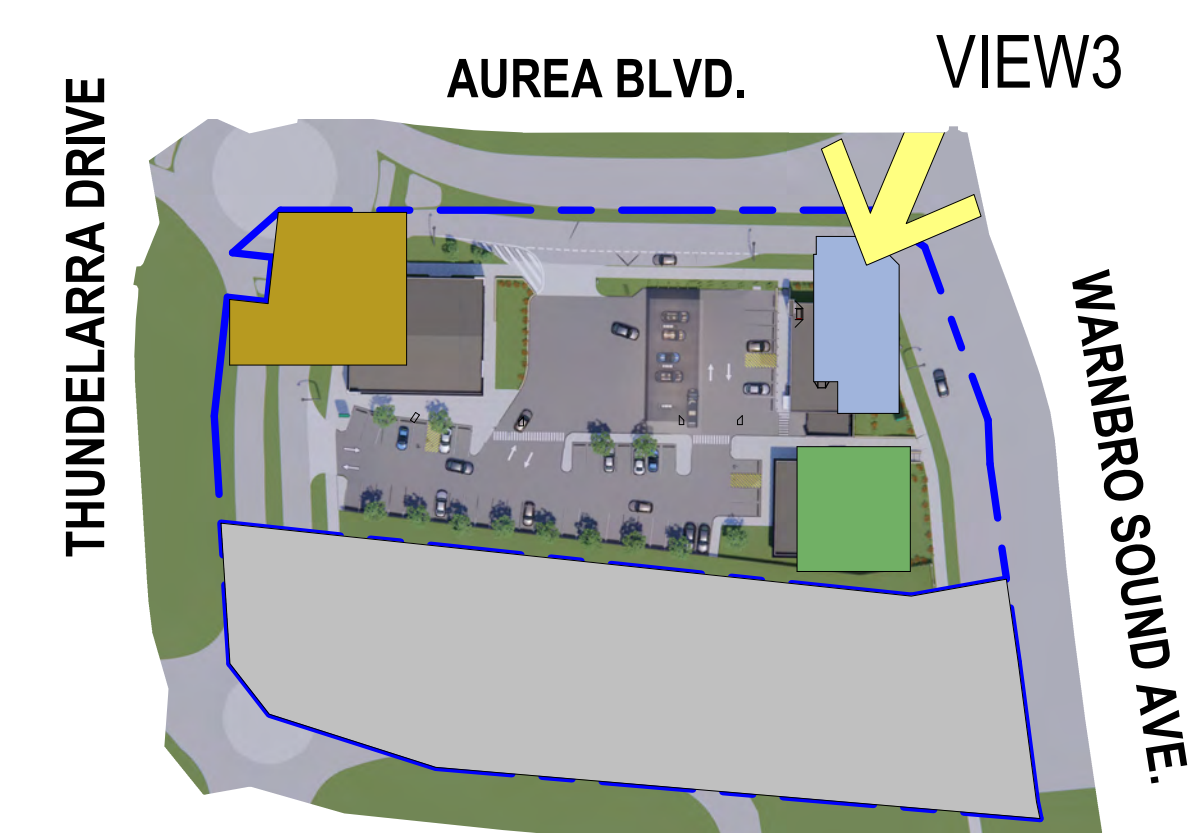
2 3D VIEW
1:1



A KEY PLAN
1:1000



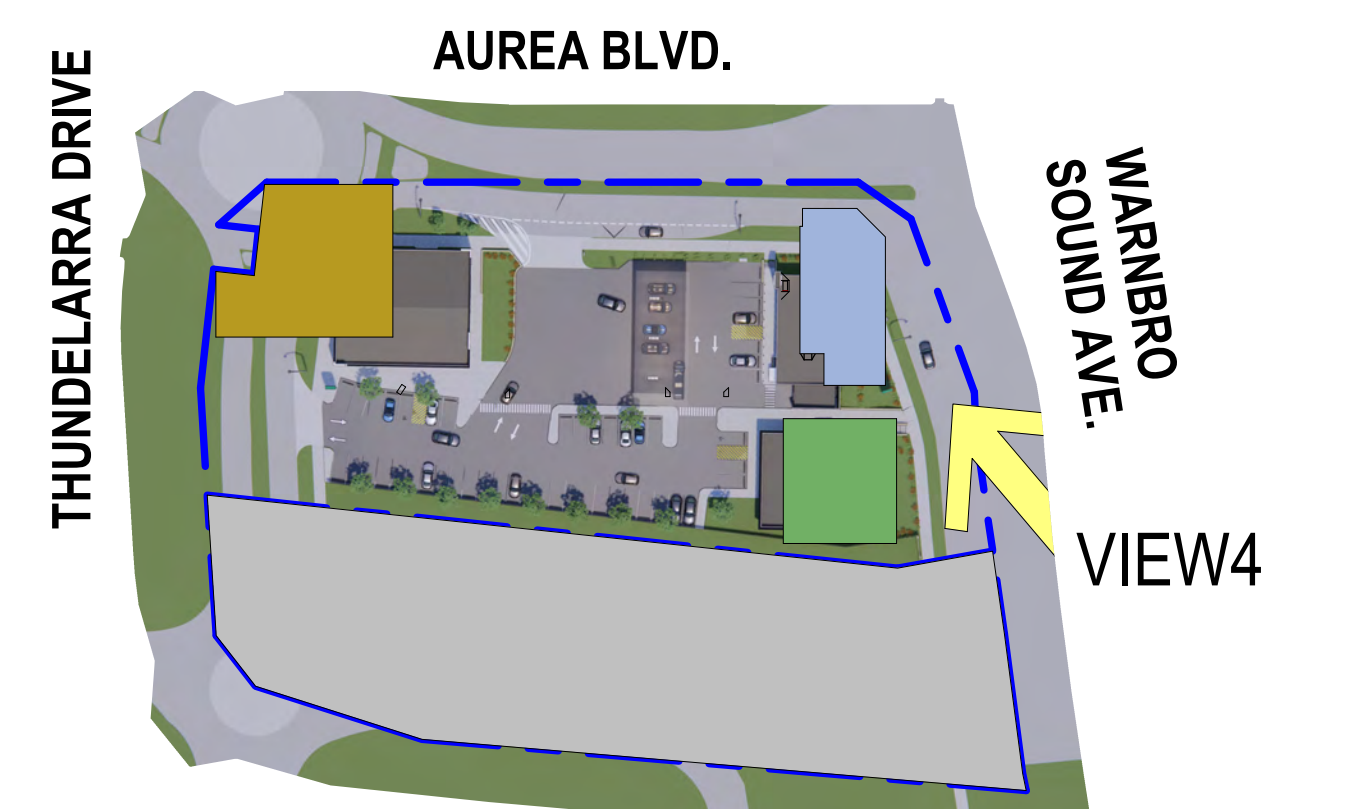
3 3D VIEW
1:1



1 KEY PLAN
1:1000



4 3D VIEW
1:1

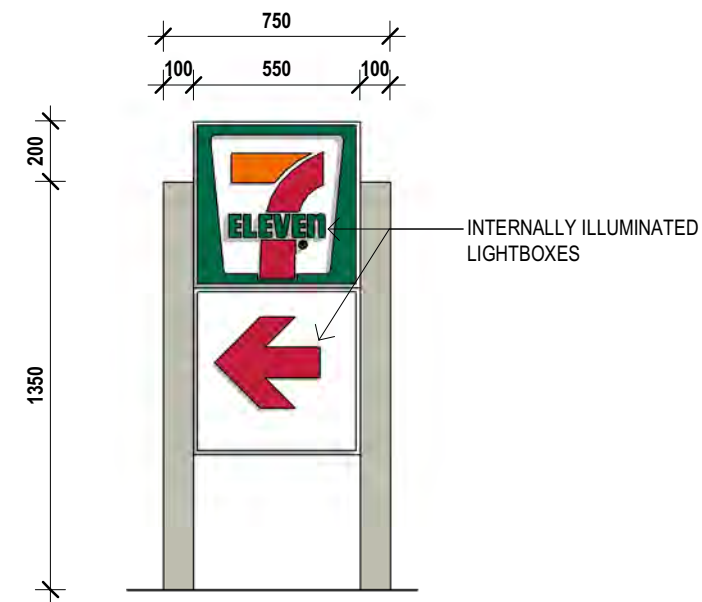


1 KEY PLAN
1:1000

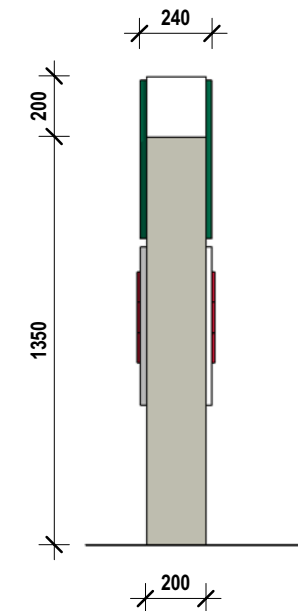
SK24

PROPOSED MIXED COMMERCIAL
Lot 265 (40) Talisker Bend, Golden Bay
REVISION K PROJECT NO. 161.20 DATE 29.01.2021

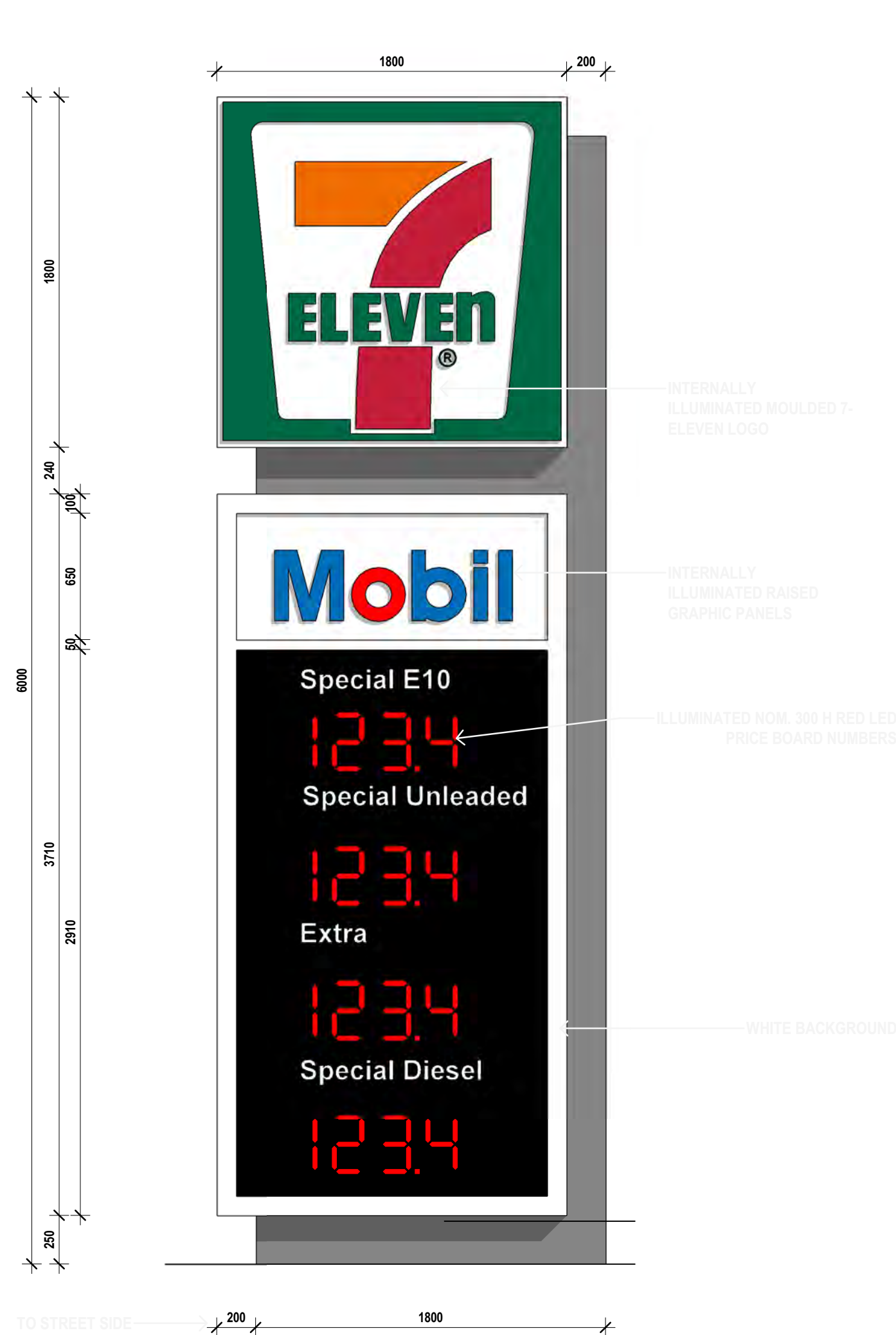
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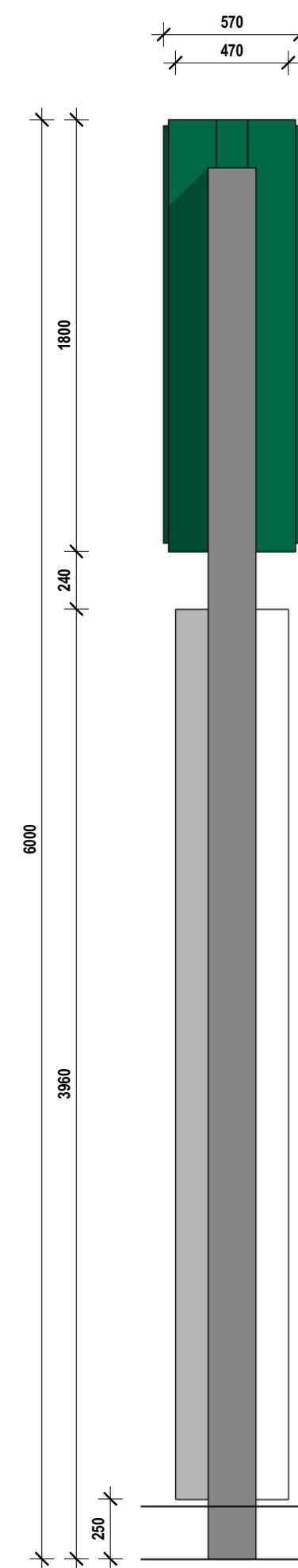
1 711 - DIRECTIONAL SIGN FRONT ELEVATION
1:25



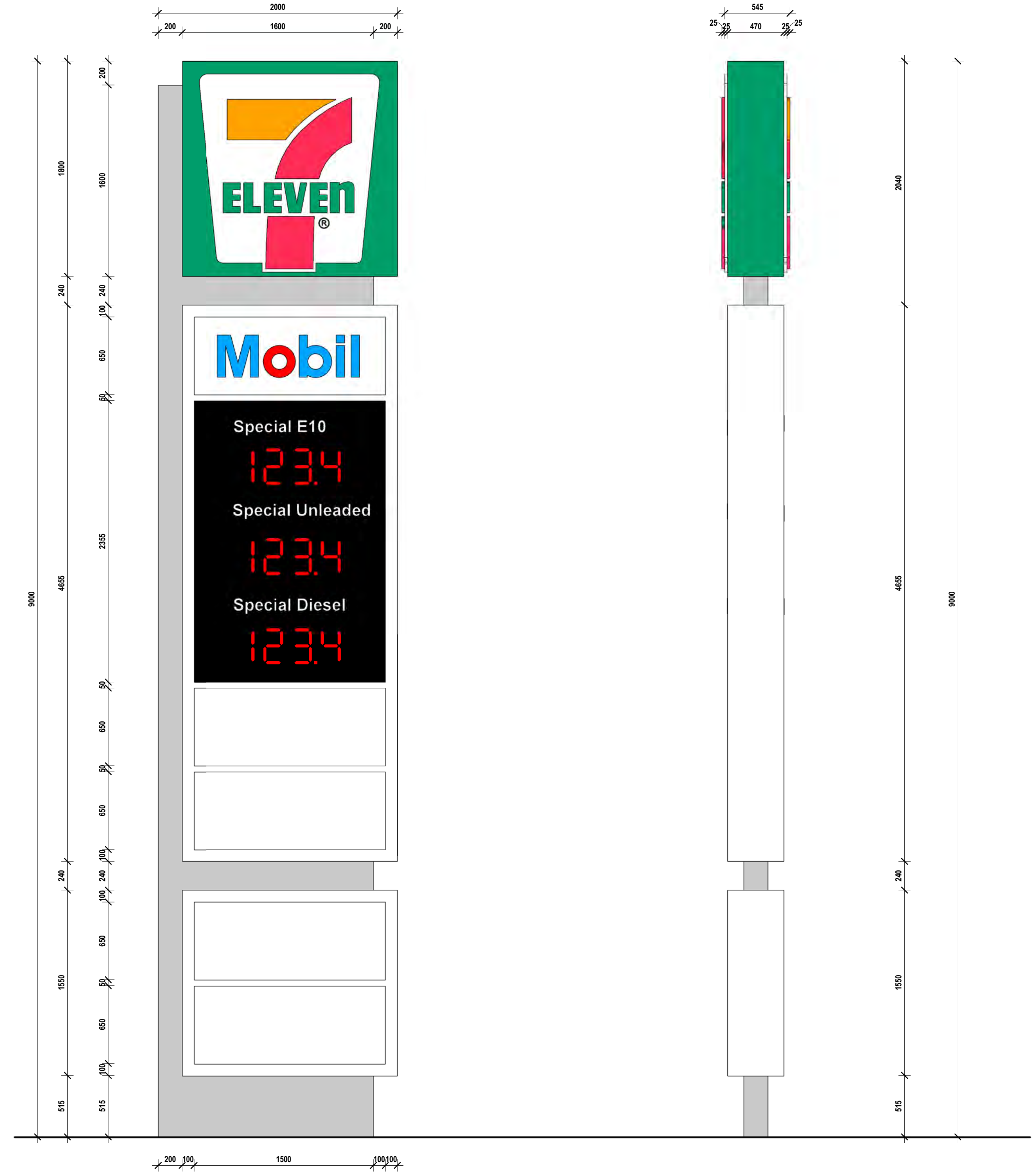
2 711 - DIRECTIONAL SIGN SIDE ELEVATION
1:25



3 711 - 6m PYLON - FRONT ELEVATION
1:25



4 711 - 6m PYLON - SIDE ELEVATION
1:25



711 - 9m PYLON - FRONT & SIDE ELEVATION
1:25

SK32

PROPOSED MIXED COMMERCIAL
Lot 265 (40) Talisker Bend, Golden Bay
REVISION K PROJECT NO. 161.20 DATE 29.01.2021

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1 SITE PLAN STAGE 2 - SKETCH
1:200

NOTE: CONCEPT ONLY FOR DEMONSTRATION PURPOSES -
PLANNER AND TRAFFIC ENGINEER INPUT REQUIRED.

SK33

PROPOSED MIXED COMMERCIAL

Lot 265 (40) Talisker Bend, Golden Bay
REVISION K PROJECT NO. 161.20 DATE 29.01.2021

Hodge Collard Preston
ARCHITECTS



LANDSCAPING LEGEND

NOTE - CONCEPT ONLY, ALL INFORMATION TO BE CONFIRMED WITH DETAILED LANDSCAPING PLAN

LOW SHRUB COMBINATION ON MULCH GROUND COVER. (LANDSCAPED AREA)

COMBINATIONS:
 - 'CORAL CARPET' SHRUBS
 - 'LITTLE SMOKIE PBR' COMPACT SHRUBS
 - 'PRICKLY CONOSTYLIS' COMPACT SHRUBS

POT SIZES TO COUNCIL REQUIREMENTS.

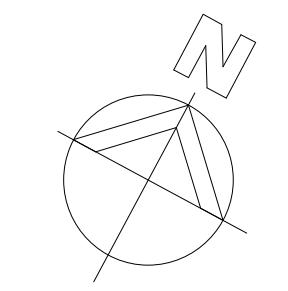
TOTAL AREA: 521m²

PROPOSED TREES - CASUARINA OBESA SWAMP SHEOAK (TO MATCH EXISTING STREET TREES IN THE AREA)

POT SIZES TO COUNCIL REQUIREMENTS.

TOTAL NUMBER: 13

1 SITE PLAN - LANDSCAPING SKETCH
1:200



Emissions Impact Assessment

Proposed Service Station, Aurea Boulevard,
Golden Bay, Western Australia

Leyton Property

July 2021



Document Status

Version	Doc type	Reviewed by	Approved by	Date issued
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Client	Leyton Property
Client Project Manager	Mr Lukas Weeks
LWC Project Manager	Dr James Fox
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Definition of Acronyms

AHD	Australian Height Datum
AS	Australian Standard
BGL	Below Ground Level
BTEX	Benzene, Toluene, Ethyl-benzene and (total) Xylenes
CEC	Cation Exchange Capacity
CSM	Conceptual Site Model
CRC CARE	Cooperative Research Centre for Contamination Assessment and Remediation of the Environment
EIL	Ecological Investigation Levels
ESL	Ecological-based Screening Levels
EPA	Environmental Protection Authority
ESA	Environmental Site Assessment
HIL	Health-based Investigation Levels
HSL	Health-based Screening Levels
JSEA	Job Safety and Environment Analysis
LNAPL	Light Non-Aqueous Phase Liquid
LWC	Land and Water Consulting
Eurofins	Eurofins – MGT Laboratory Pty Ltd
NATA	National Association of Testing Authorities
NEPM	National Environmental Protection Measures
OH&S	Occupational, Health and Safety
PID	Photo-Ionisation Detector
TRH	Total Recoverable Hydrocarbons
TPH	Total Petroleum Hydrocarbons
UST	Underground Storage Tank
VOC	Volatile Organic Compound

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1 INTRODUCTION

Land & Water Consulting (LWC) was engaged by Leyton Property (Leyton) to undertake a site specific predictive fuel vapour assessment (emissions impact assessment) for a proposed service station located on Aurea Boulevard, Golden Grove, Western Australia ('the Site'), located within the City of Rockingham.

The assessment has been completed to determine any potential impacts on nearby existing sensitive receivers from fuel vapours associated with the Site.

1.1 SUBJECT SITE

The Site is a currently undeveloped parcel of land (refer to Figure 1-1 below). It is proposed to develop the lot to include a convenience store / service station with the following features:

- Three bowser ranks;
- two underground service tanks;
- fuel vents;
- fuel tank fill points;
- on-site car parking; and
- a store.

The surrounding area is comprised of sensitive uses to the north, south and west (residential) and Warnboro Sound Avenue to the east. The closest sensitive use is estimated to be ~20 m to the south of the Site (assumed residential - not yet built).

Table 1-1 Land uses surrounding the Site (bold = most sensitive)

Direction from the Site	Assumed Land Use	Approximate Distance from the Site boundary (m)
North	Non-sensitive – north of Aurea Blvd	26
East	Sensitive – east of Warnbro Sound Avenue	68
South	Sensitive – southern boundary	20
West	Sensitive – west of Thundelarra Drive	58

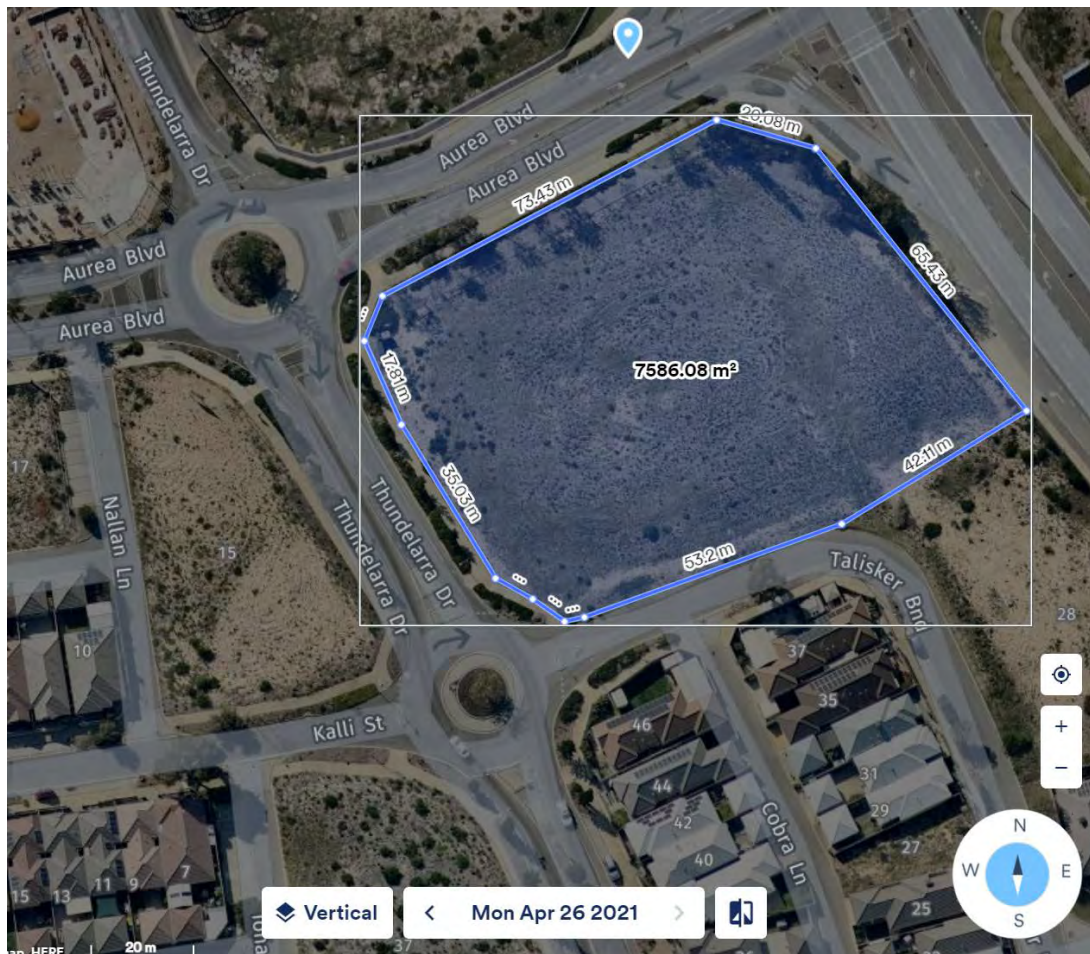


Figure 1-1 – Approximate Site location, extent and surrounding land layout (Stage 1 and 2)



Figure 1-2 – Proposed site layout, note fuel vents are to extreme east of the Site

The fuel vents (breather pipes) are located on the northern boundary of the Site (commercial land use adjacent).

2 REGULATORY GUIDELINES

2.1 LEGISLATION

The Environment Protection Authority's (EPA) environmental objective for the factor Air Quality is: "To maintain air quality and minimise emissions so that environmental values are protected". The objective recognises the fundamental link between air quality and the environmental values supported by good air quality. It also recognises the principle of waste minimisation as set out in the *Environmental Protection Act* 1986. In the context of this factor and objective, the EPA's primary focus is maintaining air quality and minimising emissions for human health and amenity (EPA, 2016).

Considerations for EIA for the factor Air Quality include, but are not necessarily limited to:

- application of the mitigation hierarchy to avoid and minimise emissions, where possible.
- characterisation of potentially harmful emissions and the pathways by which they may be released to air.
- whether numerical modelling and other analyses to predict potential impacts has been undertaken using recognised standards with accepted inputs and assumptions.
- whether existing background air quality, including natural variations, has been established through monitoring and accepted proxy data.
- whether analysis of potential health and amenity impacts has been undertaken using recognised criteria and standards, where relevant, informed by Australian and international standards.
- the application of technology appropriate to the potential environmental impacts and risks.
- the significance of the likely change to air quality as well as the environmental values affected by those changes, in the context of existing and predicted cumulative impacts.
- whether proposed mitigation is technically and practically feasible.
- **whether siting of the proposal's main emission sources takes into consideration current and future sensitive land uses.**

2.2 ASSESSMENT CRITERIA

Australia does not have national air quality emissions standards. Environment protection authorities in individual States and Territories set such standards. In December 2004, the National Environment Council (NEPC) made the National Environment Protection (Air Toxics) Measure (known as the 'Air Toxics NEPM') which establishes 'monitoring investigation levels' for 5 air toxics - benzene; formaldehyde; benzo(a)pyrene as a marker for Polycyclic Aromatic Hydrocarbons; toluene; and xylenes. Monitoring data gathered under the Air Toxics NEPM will inform future decisions on the management of these pollutants. Reference has been made to criteria for compounds associated with service station emissions as presented in the Environmental Protection (Air) Policy 2008 and the Brisbane City Council Service Station Code (2014). Table 2-1 summarises the criteria adopted for the target compounds considered in the air quality assessment.

Table 2-1 - Adopted air quality criteria ($\mu\text{g}/\text{m}^3$)

Compound	Air Quality Criteria $\mu\text{g}/\text{m}^3$	Averaging Period	Outcome	Source
Toluene	1100	30 Minutes	Protecting aesthetic environment	Queensland EPP (Air) 2008
	4100	24 Hours	Health and Well Being	
	410	Annual	Health and Well Being	
Xylene	1200	24 Hours	Health and Well Being	Queensland EPP (Air) 2008
	950	Annual	Health and Well Being	
Benzene	10	Annual	Health and Well Being	Queensland EPP (Air) 2008 NEPM Air Toxics
Cyclohexane	19,000	1 Hour	Health and Well Being	BCC 2014
n-Hexane	3,200	1 Hour	Health and Well Being	BCC 2014
Ethylbenzene	8,000	1 Hour	Health and Well Being	BCC 2014
Styrene	75	30 Minutes	Protecting aesthetic environment	Queensland EPP (Air) 2008
	280	7 Days	Health and Well Being	

3 SERVICE STATION DATA

3.1 OVERVIEW

As noted in Section 2.1, there is an absence of specific WA guidance and legislation regarding air quality predictions for proposed service stations in WA. As noted in ANE (2016), petrol station emissions can be estimated through use of emissions estimation equations. In terms of emission calculations the following sources have been referenced in this assessment:

- National Pollutant Inventory (Environment Australia);
- Gasoline Service Stations Industrywide Risk Assessment Guidelines (Toxics Committee of the California Air Pollution Control Officers Association 1997);
- AP42 Emissions Database (United States Environmental Protection Agency 1996); and
- NSW Metropolitan Air Quality Study (MAQS) (New South Wales. Environment Protection Authority 1996).

The estimated emissions have been used in an air screening model (AERSCREEN) to predict pollutant concentrations at the development site and surrounding the site. The following sections provide a summary of service station emission sources, estimated emission rates, modelling methodology and results.

3.2 Site Operational Data

Table 3-2 presents a summary of the proposed service station operational data. Figure 1-2 presents the emission stack and the fugitive source locations.

Table 3-1 – Service station operating data (Source: 7-Eleven Stores Pty Ltd, 29 June 2021)

Parameter	Operating Data
Operating Hours	24 Hours a day 7 days a week (8,760 hours per day)
Tanker Delivery	Maximum 40,000 L / hour (assume no VR1)
Tanks	2 x 90 kL Tank 1 – 30/30/30 ULP 98 / 95 / 91 Tank 2 – 40 / 50 ULP 91 / Deisel Total vol. Diesel – 50 kL Total vol. ULP – 130 kL
Vent Stacks	4.0 m high / 75 mm diameter
Filling Stations/Petrol Browsers	3 bowser ranks (2 filling points each side = 6 filling points) located below a 4.5 m high canopy
Average Annual Fuel Sales	13,800 L/ day 1,270 L average for peak hour (4-5 pm)

Table 3-2 summarises the available literature estimates for emissions from the various emission sources at services stations as sourced by ANE (2016).

Table 3-2 – Literature emissions rated for service stations (after ANE (2016))

Emission Sources		NPI 1999	Lorax Reports	Lorax Reports	Value Selected (mg/litre)
		mg/ litre throughput	Lbs/ 1000 gallons throughput	mg/L throughput (where 1lb / 1000 gallon = 119.8 mg/L)	
Underground Tank Filling					
ES1	Submerged Filling	880	8.4	1,006	1,006
	Splash Filling	1380	-		X
	Submerged Filling with vapour balance (VR1)	40	0.42	50	X
Breathing Losses					
ES2	Underground tank breathing losses	120	0.84	101	120
Vehicle Refuelling (no VR2)					
ES3	“Whoosh” Emissions	-	0.26-0.66	31 - 79	79
	Displacement (Filling) Losses (uncontrolled)	1320	8.4	1,006	1,006
	Displacement (Filling) Losses (controlled (VR2))	132	0.74	89	X
Spillages					
ES4	Uncontrolled	80	0.61	73	73
	Controlled	-	0.41	49	X

3.3 EMISSIONS SOURCES

As noted in ANE (2016), emissions at service stations can occur from a number of different sources and activities. Air emissions may be categorised as fugitive emissions or point source emissions.

NPI (1999) categorises emissions from storage tanks as working and standing losses. Working losses are the combined loss from filling and emptying a tank. As the liquid level increases, the pressure inside the tank increases and vapours are expelled from the tank. A loss during emptying occurs when air drawn into the tank becomes saturated with organic vapour and expands, thus exceeding the capacity of the vapour space.

Standing losses occur through the expulsion of vapour from a tank due to the vapour expansion and contraction as a result of changes in temperature and barometric pressure. This loss occurs without any change in the liquid level in the tank.

The following sections consider these sources in the context of the assessment.

3.3.1 Bulk Filling (Emission Source 1)

Service station fuel tanks are filled primarily by one of two methods in Australia (New South Wales. Environment Protection Authority 1996):

1. Splash filling; and
2. Submerged loading.

Splash filling occurs when the fill pipe from the fuel delivery tanker is lowered into the underground tank but above the level of the fuel. Fuel is then dispensed under gravity into the underground tank. This type of filling creates significant turbulence and increased vapour/ liquid turbulence resulting in a high level of emissions to the atmosphere.

Submerged loading occurs when the fuel delivery tanker fill pipe is lowered below the surface of the existing fuel in the underground tank and then filling commences. This results in approximately 36 % less vapour loss than splash filling (New South Wales Environment Protection Authority 1996).

When a vapour return system is used on the road tanker to return vapours to the tanker rather than allowing them to be emitted to the atmosphere, emissions can be reduced substantially (in the order of 95%). This type of mitigation is called Phase 1 vapour recovery (VR1) (NSW EPA, 2017). It is noted that the design of the proposed service station is to incorporate VR1.

3.3.2 Tank Breathing via Vent Stack (Emission Source 2)

Tank breathing or venting is a point source into the atmosphere. It is a constant occurrence comprising fuel evaporation from bulk tanks at the service station. These emissions are direct to atmosphere through the ~4 m tall venting stack(s) on the Site. ANE (2016) notes that emissions are variable depending on a number of conditions such as fuel types, temperatures and tank level. Point source emissions are directed into a vent or stack and Motor Vehicle Filling (Emission Source 3)

Toxics Committee of the California Air Pollution Control Officers Association (CAPCOA, 1997) notes that the filling of motor vehicles constitutes a major source of emissions at a service station. These emissions result from two main processes:

- 'whoosh' emissions; and
- Filling emissions.

'Whoosh' emissions occur when the fuel cap on a vehicle is removed prior to refuelling. ANE (2016) notes that these emissions are subject to much debate currently as to actual levels and the factors that are used to derive emission estimates, although the CAPCOA study recognises these complexities and provides a range for emissions estimates.

Filling emissions occur due to the displacement of vapours in the vehicle fuel tank as it is filled with fuel and also due to evaporative emissions related to the fuel entering the tank.

Phase 2 vapour recovery (VR2) is a control available to reduce fugitive emissions during fuel filling operations. The displaced fuel vapour that occurs when vehicles are refuelling is captured via a vapour return line attached to a vacuum pump within the fuel dispenser hose (NSW EPA, 2017). These captured vapours are returned to the underground fuel storage tank. These systems are capable of capturing at least 85% of the displaced vapour (Toxics Committee of the California Air Pollution Control Officers Association 1997).

It is understood that the proponent does currently not propose to apply VR2 at the proposed service station.

3.3.3 Fugitive Emissions (Emission Source 4)

Fugitive emissions from service stations can occur as a result of nozzle drips, spit-back of petrol and tank overflows (New South Wales Environment Protection Authority 1996), and can occur at any location where vehicles are refuelled at a service station site.

3.4 CHEMICALS

3.4.1 VOC Emissions

In terms of differing fuel types (ULP, LRP, Diesel), most emissions data available is for ULP with emissions for ULP considered to be the dominant source of fuel emissions at a service station. As noted in ANE (2016), for the proposed service station, it is likely that the majority of fuel sold will be ULP-based (with ~80% of expected sales being associated with ULP-based fuels and the remaining ~20% associated with diesel).

As petrol contains a higher volatile fraction, all emissions in this assessment have been assumed as originating from a petrol source. This is a conservative estimate of the predicted impacts as petrol is considered more volatile than diesel.

The composition of petroleum fuel has been reported in the Emission Estimation Technique Handbook for Aggregated Emissions from Service Stations (National Pollutant Inventory 1999) and amended for Benzene based on the Fuel Standard (Petrol) Determination 2001 (Office of Legislative Drafting and Publishing 2008) document as shown in Table 3-1, and as listed in ANE (2016).

Table 3-3 - Composition of petrol (NPI 1999)

Species	% Composition in vapour
Benzene	0.31350
Cyclohexane	0.07096
Ethylbenzene	0.08812
n-Hexane	1.92722
Styrene	0.00314
Toluene	1.20313
Xylenes	0.48236

The data presented in Table 3-1 is used in Section 5 in the calculation of emissions of individual chemicals from the identified service station emission sources. Section 3.5 of this report considers the emissions sources at the service station.

Modelling of emissions was completed as “petrol vapour” with the composition set out in Table 3-1 applied to determine the contribution of individual constituents of the vapour.

3.5 SERVICE STATION EMISSIONS CALCULATIONS

3.5.1 ES1 Estimation (Bulk Filling of Underground Tanks)

Two tanks are shown on plan SK37. These tanks are 90,000 L each and will be filled twice per week, indicating a fuel usage of 180,000 L per week / 9,360 kL (or tonne) per year.

50 kL of volume is diesel, which has much lower volatility profile than ULP. Revised storage for volatile fuels is 130 kL. Dominant ULP volume is 91 RON (70 kL).

7-Eleven advise that tanks are filled based on rounds, which means tanks are not filled from empty or near empty each time. Annual average fuel sales is given as 13,800 L. Some of this will include diesel. Assuming all of this volume is ULP, then fuel sales per week would be 96 kL. This would assume that fuel delivery needs to be at least 96 kL with reserve. A delivery volume of 110 kL is assumed.

This volume is close to NPI (1999) Appendix G, Table 9 assessment recommendation default tank dimensions of 3 m x 14 m with a volume of 100 m³ (100,000 L). Site specific data is used.

California Air Pollution Control Officers Association (CAPCOA) provides a test result of 1,006 mg of vapour emission per litre of fuel during loading, assuming no VR1 but assuming submerged loading.

Delivering 110 kL into a tank without VR1 in place is predicted to result in a vapour emission (mass) of 110.7 kg of emission per week (and noting Table 3-1, this equates to ~0.3 kg of benzene per week).

Weekly filling for a year results in emission of 5.8 tonne of fuel vapour from ULP delivery volume required, using CAPCOA data.

With a VR1 system, using CAPCOA figures (Scenario 5A of CAPCOA), the emission factor is 50.3 mg emission per litre of fuel, resulting in a yearly emission of 0.94 tonne fuel vapour.

Table 3-4 ES1 Bulk filling estimated emissions with and without VR1

Parameter	No VR1 System	With VR1 system (assume 95% control)
Tank Volume (L)	90,000	90,000
# of Tanks	2	2
Estimated ULP requiring to be delivered based on average annual sales (kL per week)	110	110
CAPCOA emission factor (mg of emission per litre of fuel)	1,006	50.3
Fuel emission from loading based on assumed delivery (kg per week)	110.7	5.5
Annual fuel emission from loading based on assumed delivery (kg/ year)	5,756	288
Fuel emission per hour (averaged) (kg/hr)	0.66	0.033
Fuel emission per hour of loading (kg/hr) assuming two hours per week	55	2.8

3.5.2 ES2 Estimation (Tank Breathing)

CAPCOA reports a tank vent emission factor of 100.6 mg per L of fuel, thus if there is 180,000 L of fuel in the tanks, then mass of fuel vapour emission would be 18.1 kg for two full tanks, with no controls. This would represent emission to ullage (headspace of tank), not necessarily emission to the environment. This also doesn't represent a volumetric nor mass flow rate (i.e. time dependant).

Hilpert et al., 2018 quantified evaporative fuel releases through the vent pipe of a storage tank based on measured volumetric flow of the mixture of the gasoline vapour and air. Mass flow of gasoline (m_{gas}) that is released through the vent pipe in the form of a mixture of gasoline and fresh air was estimated based on a study by CAPCOA that assessed risks from fuel emissions from service stations, where density of fuel vapours in this mixture is given as ($p^{(v)}_{gas}$) 0.824 kg/m³ i.e. the molar percentages of fuel and air were 30% and 70% respectively. Volumetric flow rate (Q) is then converted into a mass flow rate of vapourised fuel:

$$m_{gas} = p^{(v)}_{gas} Q$$

To arrive at vent emission factors we first calculate the mean volumetric flow rate Q_{mean} and then the mean mass flow rate $m_{gas-mean} = p^{(v)}_{gas} Q_{mean}$. From the latter, one can calculate the vent emission factor (i.e. mean mass flow rate divided by volume of sales (V_{sales})).

$$EF_{vent} = m_{gas-mean} / V_{sales}$$

V_{sales} is calculated by number of vehicles peak period hour using 6 filling points at a fuelling rate of 10L / min taking 4 minutes on average (based on ANE, 2016 data of 40L / 4 min). Where 57 vehicles assumed fuelling in peak period, this equates to V_{sales} estimation of 2,280 L per hour for the Site.

Hilpert et al., 2018 reports Q_{mean} as 7.9 L/min (0.474 m³/hour) for a mid-sized service station with V_{sales} of 2,333 L per hour, which agrees well with the V_{sales} estimation for the Site. Hilpert et al., (2018) reports a $m_{gas-mean}$ of 0.39 kg/hour (without air, this equates to 0.11 g/sec) for such scenario, with an EF_{vent} as 1.4 in units lb/kgal, which equates to 0.17 kg per 1000 L.

To estimate benzene concentration **in the fuel vapour** (not air at receptor), CAPCOA assumed the density of the fuel vapour and fresh air was $p^{(v)}_{mix} = 1.682 \text{ kg/m}^3$ and that the emitted vapour / air mixture contained 0.3% of benzene by weight, and so mass flow rate of benzene is estimated as:

$$m_{benz} = 0.003 p^{(v)}_{mix} Q$$

Key parameters for this assessment are:

- **Volumetric Emission Rate** - Q_{mean} as 0.474 m³/hour based on Hilpert et al., 2018 value of 7.9 L/min (mid-sized service station with similar fuel sales as the proposed service station); and
- **Mass Emission Rate** - $m_{gas-mean}$ of 0.39 kg/hour (without air, this equates to 0.11 g/sec)

3.5.3 ES3 Estimation (Vehicle Filling)

CAPCOA presents an emissions factor of 1006 mg of fuel vapour per L of fuel for refuelling without VR2. With VR2 this drops significantly to 88.6 mg/L of fuel.

Assuming each vehicle fills up with 40 L of fuel per visit, then emission mass per refuelling visit is estimated to be 3.5 g per event.

Where highest peak hour traffic is 38 vehicles (Table 2 of Transcore, 2021, service station data only), a mass of 135 g of fuel vapour would be theoretically generated in such hour. This traffic volume represents 3.4% of daily trips.

Table 3-5 ES3 vehicle refuelling emission estimation

Parameter	No VR2 System	With VR2 system (assume 90% control)
Fuel volume per filling event (L)	40	40
# of events in peak hour (Transcore, 2021)	38	38
Fuel volume used in peak hour (L)	1,270	1,270
CAPCOA emission factor (mg of emission per litre of fuel)	1,006	88.6
Fuel emission from refuelling based on assumed usage (g per peak hour)	1,278	113
Estimated (modelled) visits per 24 hours (Transcore, 2021)	1,109	1,109
kL per day (from 7-eleven)	13.8	13.8
Daily fuel emission from refuelling based on assumed usage (kg per 24 hours)	13.9	1.2
Annual fuel emission from refuelling based on assumed usage (tonne per year)	5.1	0.44
Normalised to kg/hr (8760 hours per year)	0.6	0.05
g/sec	0.17	0.014

3.5.4 ES4 Estimation (Spilling / Fugitive)

ES4 covers spillage and other random fugitive emissions CAPCOA defines this as occurring during refuelling. CAPCOA gives an emission factor of 73 mg per litre of fuel for this parameter. For a annual daily average of 13.8 kL, this would generate 0.99 kg per day, 361.4 kg per year, normalised to 0.04 kg per hour.

3.6 Summary of Predicted Emission Rates

A summary of the calculated emissions / rates is presented in Table 3-6 (annual sums divided by hours per year).

Table 3-6 – Summary of emissions per source (without VR1 and VR2)

Emission Source (S) Reference	Stacks/ Sources	Emission Sources	Fuel Vapour Emission (kg/hour)	Fuel Vapour Emission Rate (g/sec)	Height Above Ground (m)	Diameter (m)	Flow Rate (m ³ /hr)	Temperature (°C)
Point Source								
ES1	Filling the Storage Tanks (no VR1)	Escape from filling inlet during delivery	0.66***	0.18*	0.0	-	0.54**	Ambient
ES2	Tank Vent Stack(s) (Total) – Assumes 1 stack per tank (2)	Stack (uncapped)	0.39	0.11	4.0	0.075	0.47	Ambient
Area Source								
ES3 & ES4	Filling of vehicles and Fugitive Emissions from Bowser Area – Volume Source (no VR2)	Refuelling (Spillage and Whoosh)	0.6 + 0.04	0.18	1.0	-	0.53**	Ambient
Total			1.7	1.26	-	-	1.5	
Benzene			5.2 x 10 ⁻³	1.5 x 10 ⁻³			0.0048	
Notes								
*	Converted from emission mass per hour							
**	Converted from emission mass per hour using density of fuel vapour as per CAPCOA (0.824 kg/m ³)							
***	This assumes the annual tonnage is split over 8760 hours (#hours per year). In effect the loading occurs for four hours per week, therefore the hourly emission per loading figure of 91 kg / hour (25.3 g/sec) is used in the ES1 model to identify 1 hour maximum and then this is adjusted by hours of loading per year to give an annual average.							

Table 3-7 – Summary of emissions per source (with VR1 and VR2)

Emission Source (S) Reference	Stacks/ Sources	Emission Sources	Fuel Vapour Emission (kg/hour)	Fuel Vapour Emission Rate (g/sec)	Height Above Ground (m)	Diameter (m)	Flow Rate (m ³ /hr)	Temperature (°C)
Point Source								
ES1	Filling the Storage Tanks	Escape from filling inlet	0.033***	0.0092	0.0	-	0.03**	Ambient
ES2	Tank Vent Stack(s) (Total) – Assumes 1 stack per tank (2)	Stack (uncapped)	0.39	0.11	4.0	0.075	0.47	Ambient
Area Source								
ES3 & ES4	Filling of vehicles and Fugitive Emissions from Bowser Area – Volume Source	Refuelling (Spillage and Whoosh)	0.05 + 0.04	0.025	1.0	-	0.074**	Ambient
Total			0.51	0.144	-	-	0.57	
Benzene			1.6 x 10 ⁻³	4.5 x 10 ⁻⁴			1.8 x 10 ⁻³	
Notes								
*	Converted from emission mass per hour							
**	Converted from emission mass per hour using density of fuel vapour as per CAPCOA (0.824 kg/m ³)							
***	This assumes the annual tonnage is split over 8760 hours (#hours per year). In effect the loading occurs for four hours per week, therefore the hourly emission per loading figure of 4.5 kg / hour (1.25 g/sec) is used in the ES1 model to identify 1 hour maximum and then this is adjusted by hours of loading per year to give an annual average.							

Comparison of the emissions and emission rates shown in Table 3-6 and Table 3-7 demonstrates the benefits of VR 1 and VR2 systems in lowering emissions of fuel vapour with respect to the assessed operation (Table 3-8).

Table 3-8 Summary of estimated VR reduction benefit

Emission Source	Without VR1 and VR2	With VR1 and VR2	% (estimated) Reduction in emission provided by VR1 and VR2
Total (ES1 – ES4) (kg/hour)	1.7	0.51	~30

The footprint of the Area Source is calculated from the SK37 site plan:

- Canopy of the proposed Service Station = 3 m x 17 m = 51 m²
- Height – 4.5 m

4 METEOROLOGICAL DATA

A site specific meteorological data set (i.e. based on a site based weather station) is not available.

The immediate area (~100 m radius) surrounding the Site is considered to be relatively flat, with the result that specific significant changes in climate as a result of topography or specific areas are not likely to occur.

The closest Bureau of Meteorology station is understood to be Mandurah (ID 94605) located approximately 15 km south.

The closest Bureau of Meteorology station with a **full** dataset (rainfall, temperature, wind direction and speed) is understood to be Medina Research Station (MRS, ID 009194) (Data range 1983 – 2018). MRS is located ~25 km north of the Site.



Figure 4-1 Location of MRS relevant to Perth and the Site (red dot)

MRS is chosen based on the longevity of the data available.

The annual average wind rose for MRS shows a predominantly strong south westerly wind (the wind blows from the southwest ~36% of the time) with ~6% of wind speed readings being in the range 30 - 40 km/hr from this direction. The predominant wind speed is in the range 10 – 20 km/hr.

Mean maximum temperature per month is given as 31.5°C (February) with annual (mean maximum) average being 24.5°C and minimum being 12.3°C.

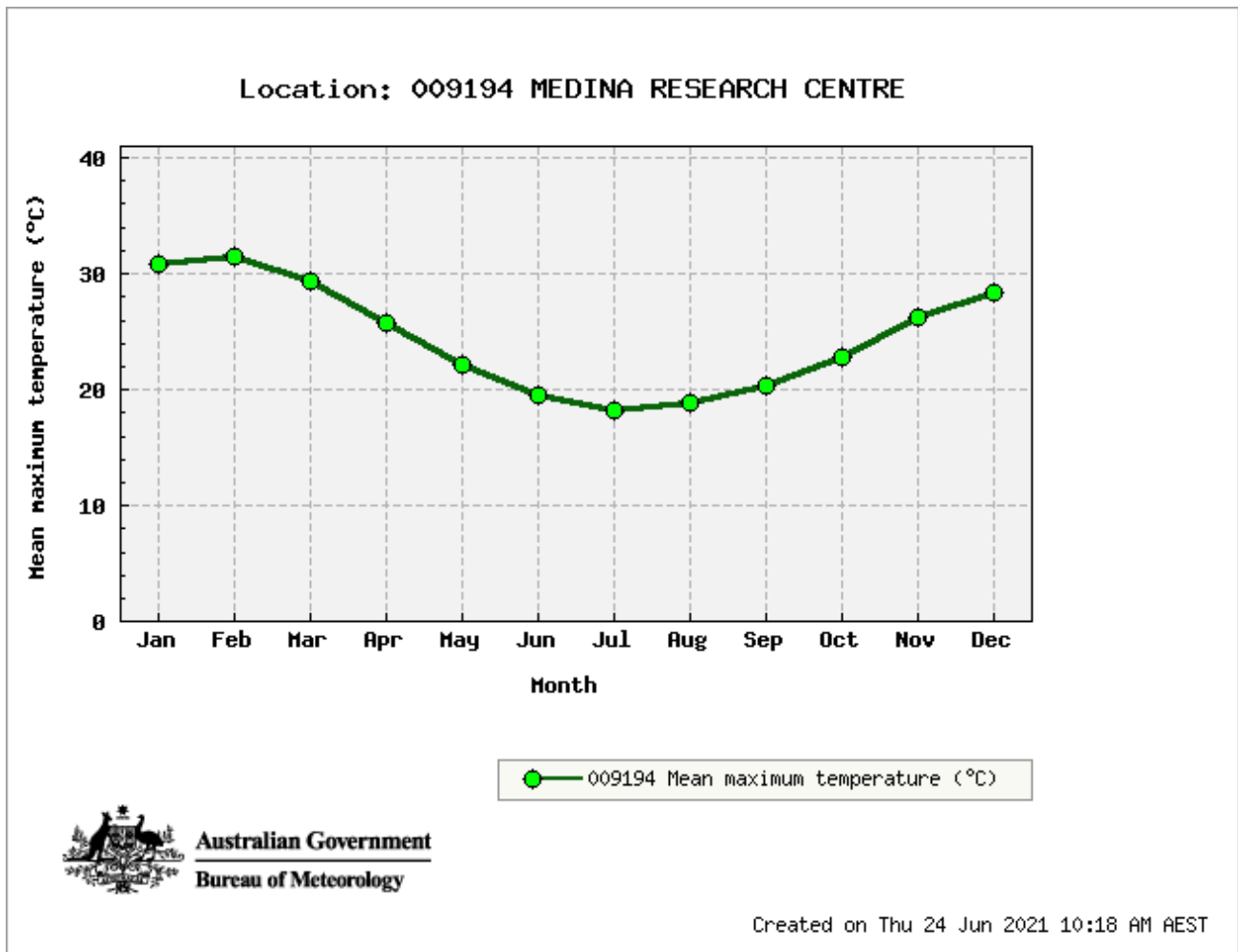
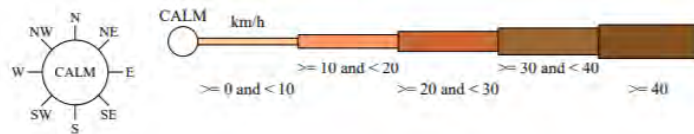


Figure 4-2 Mean maximum temperature (°C) for MRS



3 pm
6729 Total Observations

Calm 1%

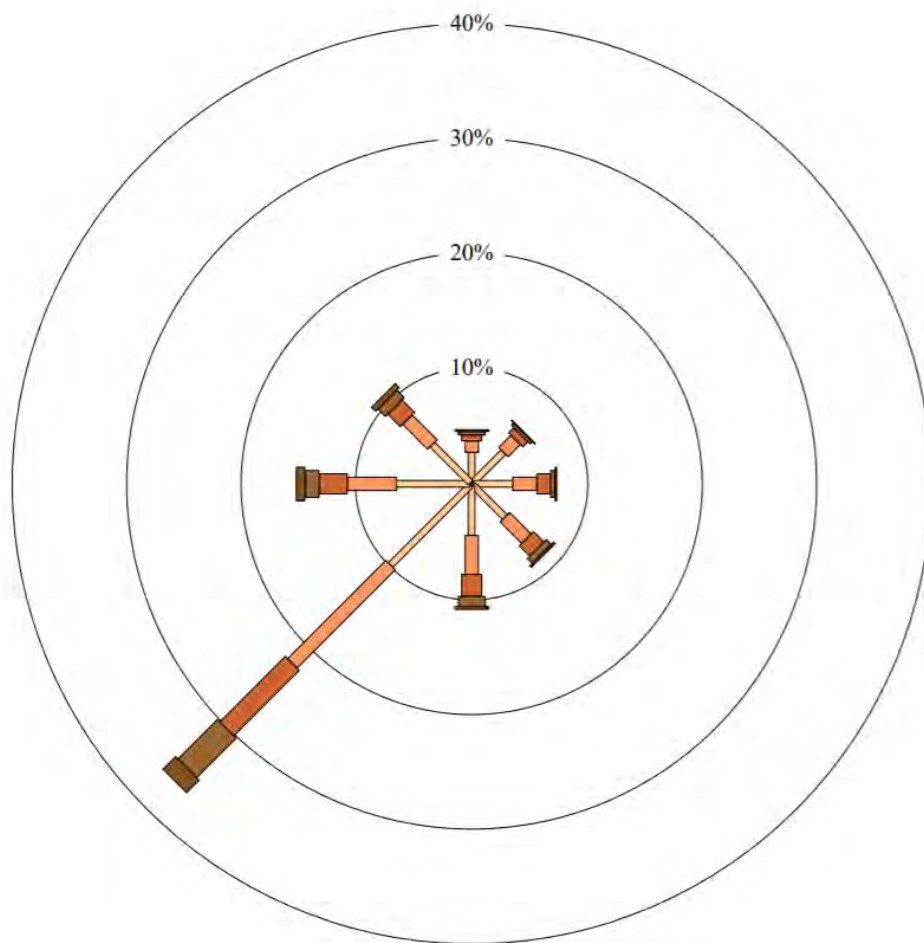


Figure 4-3 MRS (Station 009194) wind rose (average readings 1983 – 2018)

Key meteorological details are summarised in Table 4-1.

Table 4-1 Key meteorological data for the Site

Parameter	Value	Rationale
Mean Max. Temp.	24.5°C / 297.65 K	MRS Data
Mean Min. Temp.	12.3°C / 285.45 K	MRS Data
Mean 9 am wind speed	11.6 km/h	MRS Data
Mean 3 pm wind speed	16.4 km/h	MRS Data
Mean daily wind speed	14 km/h	Mean of 9 am and 3 pm wind speed
Mean daily solar exposure	19.2 MJ/m ²	MRS Data
Albedo	0.075 – 0.125	Lawrence, P (2004)

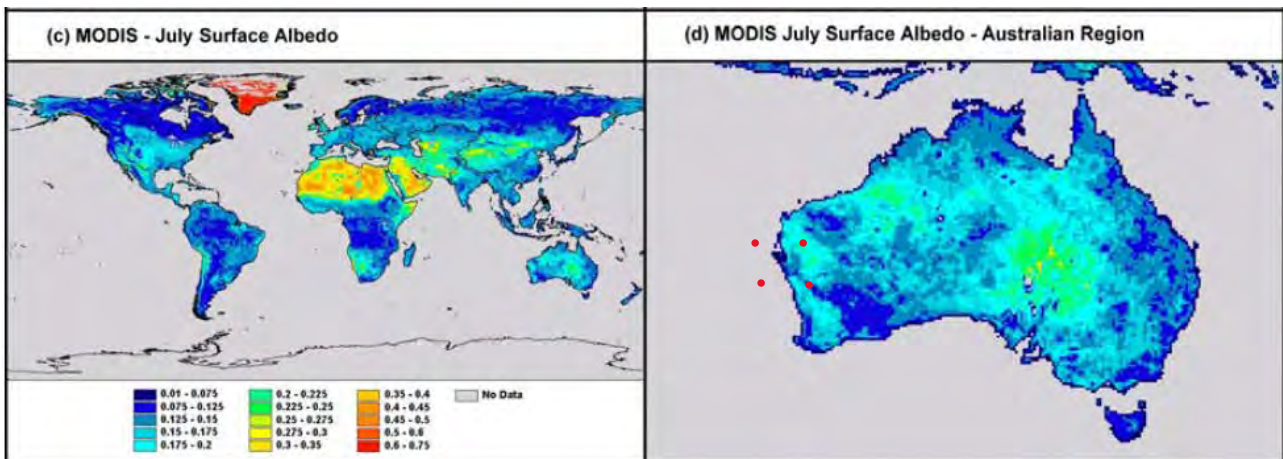


Figure 4-4 Surface Albedo of Australia after Lawrence, 2004

5 DISPERSION MODELLING

5.1 MODELLING APPROACH

The AERSCREEN model (version 6.0) has been used in this assessment. AERSCREEN is the US EPA recommended screening model based on AERMOD. The model will produce estimates of "worst-case" 1-hour concentrations for a single source, without the need for hourly meteorological data, and also includes conversion factors to estimate "worst-case" 3-hour, 8-hour, 24-hour, and annual concentrations. AERSCREEN is intended to produce concentration estimates that are equal to or greater than the estimates produced by AERMOD with a fully developed set of meteorological and terrain data, but the degree of conservatism will vary depending on the application.

The model accounts for meteorological data, building wake effects and terrain effects in the prediction of ground level concentrations of pollutants from stack, area, or volume sources. The model assumes steady state meteorology for the field of influence of the source being considered.

Steady state meteorology assumes that for any given time period of model calculation (usually 1 hour), the wind and other meteorological conditions are uniform over the entire area being modelled, and that a plume is assumed to travel instantaneously to the edge of the modelled area in a straight line. A number of additional parameters are considered in the modelling. Each of these parameters is considered in the following sections.

Given the relatively simple terrain in the surrounding area and the small separation of source and receptor, adoption of a screening model such as AERSCREEN is considered appropriate.

5.2 INPUT EMISSIONS

The input emissions are represented by the cumulative total in Table 3-6 – Summary of emissions per source (without VR1 and VR2).

5.3 RECEPTORS

Noting the position of the site features – the closest sensitive receptor is considered to be potential future residential development immediately adjacent to the southern boundary of the Site.

Approximate distances from ES are provided in Table 5-1.

Table 5-1 Distance between ES and sensitive receptors (southern boundary)

ES	Distance (m)	Rationale
ES1	41	Plan SK37
ES2	23	Plan SK37
ES3 & ES4	18	Plan SK37

5.4 BACKGROUND AIR QUALITY

Assessment of cumulative pollutant concentrations at the proposed development are accounted for by considering background concentrations. Background air quality data has been compiled for the types of compounds emitted from service stations, noting that there is an absence of WA specific data other than DEP

(2000) – Table 5-1. These values correspond well with background air quality data over a three year period from the period October 2013 to September 2015, published by the Queensland Department of Science, Information Technology, Innovation and the Arts (DSITIA) refer Table 5-2.

Table 5-2 DEP (2000) Data

Table 2: Annual Average, Maximum, 90th Percentile and Minimum 24-h Concentrations of Air Toxics Detected in Perth

Air Toxics	Concentration (ppb)			
	Annual Average	Maximum	90 th Percentile	Minimum*
Freon-12	1.00	11.7	1.46	0.10
Methyl Chloride	0.18	5.60	0.10	0.10
Freon-114	0.18	0.78	0.44	0.10
Freon-11	0.54	3.00	1.22	0.10
Dichloromethane	0.21	1.72	0.61	0.10
Freon-113	0.26	1.14	0.74	0.10
cis-1,2-Dichloroethylene	0.18	2.06	0.10	0.10
Methyl chloroform	0.19	0.84	0.33	0.10
Benzene	1.44	17.6	2.95	0.10
Carbon tetrachloride	0.26	1.06	0.67	0.10
Toluene	2.56	30.0	5.00	0.10
Tetrachloroethylene	0.22	1.57	0.35	0.10
Chlorobenzene	0.21	1.16	0.32	0.10
Ethylbenzene	0.44	4.84	0.82	0.10
(m+p)- Xylene	1.46	16.7	2.81	0.10
Styrene	0.28	2.10	0.63	0.10
o-Xylene	0.63	5.86	1.25	0.10
1,3,5-Trimethylbenzene	0.27	1.92	0.60	0.10
1,2,4-Trimethylbenzene	0.63	5.02	1.65	0.10
1,3-Dichlorobenzene	0.21	1.06	0.37	0.10
1,4-Dichlorobenzene	0.24	1.34	0.52	0.10
1,2-Dichlorobenzene	0.19	1.23	0.36	0.10
1,2,4-Trichlorobenzene	0.22	2.10	0.66	0.10

*Half the limit of determination

Table 5-3 – Summary of average ambient pollutant concentrations for Queensland (October 2013 to September 2015)

Compound	Averaging Period	Ambient Pollutant Concentration	Monitoring Station
Benzene	70 th percentile, 24 hr	3.5 µg/m ³	Springwood
	Maximum Annual Average	2.9 µg/m ³	
Toluene	70 th percentile, 24 hr	25.6 µg/m ³	Springwood
	Maximum Annual Average	16.2 µg/m ³	
Total Xylenes	70 th percentile, 24 hr	43.8 µg/m ³	Springwood
	Maximum Annual Average	26.8 µg/m ³	

5.5 DOWNWASH STRUCTURES

Based on a review of the plausible stack heights (4 m) and surrounding area (sensitive receptors), there are no buildings considered as a downwash structure.

5.6 SUMMARY OF MODELLING ASSUMPTIONS

As noted above, several assumptions were adopted for the purposes of estimating emissions from the service station. Overall, these assumptions represent a conservative approach and are consistent with recommendations made by overseas regulatory authorities. The assumptions adopted are as follows:

- all fuel handling is considered to be petrol providing a conservative emissions generation procedure (i.e., petrol has a higher volatility than diesel);
- a minimum efflux velocity was adopted for the vent stack emissions of 0.1 m.s⁻¹. This allows modelling of these as point sources;
- all fugitive emissions were assumed to occur in the working area of the service station (i.e. a rectangular volume source located around the petrol bowsers) below the roofed area;
- Sensitive receptors were given as 20 m to the south (closest).
- Worst case CAPCOA “whoosh” emissions adopted to represent slightly higher volatility of Australian fuels.

5.7 SUMMARY OF MODEL INPUTS

Table 5-4 – Model Inputs for ES (without VR1 and VR2)

Parameter	Value					Unit	Reference Rationale /
ES	ES1 – no VR1	ES1 – VR1	ES2	ES3 & ES4	ES3 & ES4 with VR2	-	Table 3-6
Source Emission Rate	0.18	0.009	0.11	0.18	0.025	g/sec	Table 3-6
Stack Height	N/A		4.0	N/A		m	Standard service station stack height
Stack Inner Diameter	N/A		0.075	N/A		m	Hilpert, et al., 2018
Flow rate	0.54	0.03	0.47	0.53	0.074	m ³ /hour	Table 3-6
Rural or Urban Setting	Urban					-	Urban area
Initial Probe Distance	200					m	Maximum downwind distance of receptors. Receptors at ~30 m or so, so 200 m is okay.
Probe Analysis	25 m spacing					m	Linked to Maximum downwind distance of receptors: model checks that such distance is multiple of 25 m (or other value as entered).
Minimum and Maximum Temperature	12.3°C – 24.5 °C converted to K					Kelvin	Refer Table 4-1
Wind Speed	14 km/h = 3.8 m/sec					m/ sec	Bureau of Meteorology 009194 MRS - Table 4-1
Anemometer Height	10					m	The suggested default values for routine application of

Parameter	Value	Unit	Reference / Rationale
			MAKEMET are 0.5 m/s for the minimum wind speed and 10 meters for the anemometer height (US EPA).
Albedo	0.125	- (fraction)	Refer Figure 4-4.
Bowen	0.4	- (fraction)	
Surface Roughness Length	0.05	m	There does not appear to be any data indicating a value for Golden Bay or WA, and so the AERSCREEN default was used in the first instance.
Surface Friction Velocity	Not adjusted/ input	-	Not altered from AERSCREEN MAKEMET default.

5.8 MODELLING RESULTS

5.8.1 Transect Trends

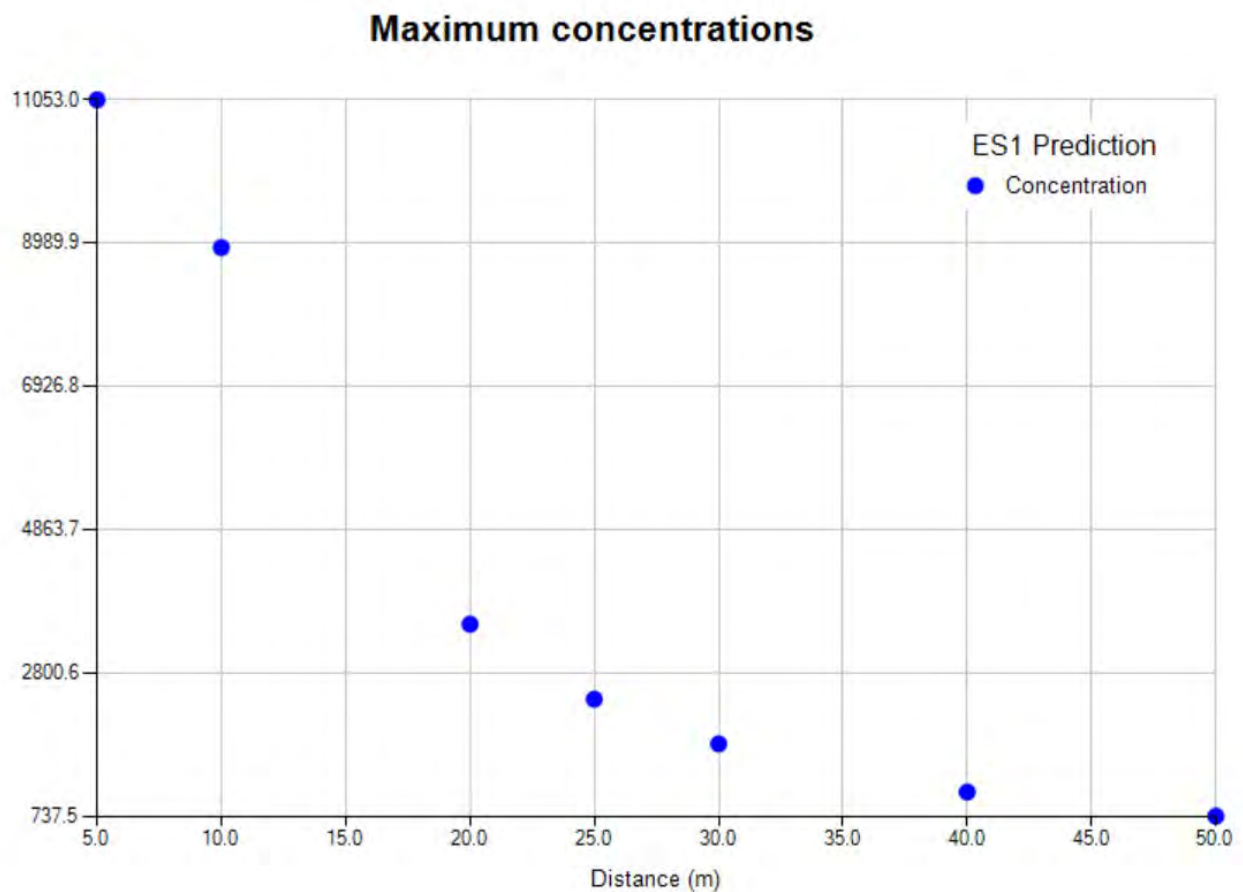


Figure 5-1 ES1 Prediction (no VR1) ($\mu\text{g}/\text{m}^3$)

Maximum concentrations

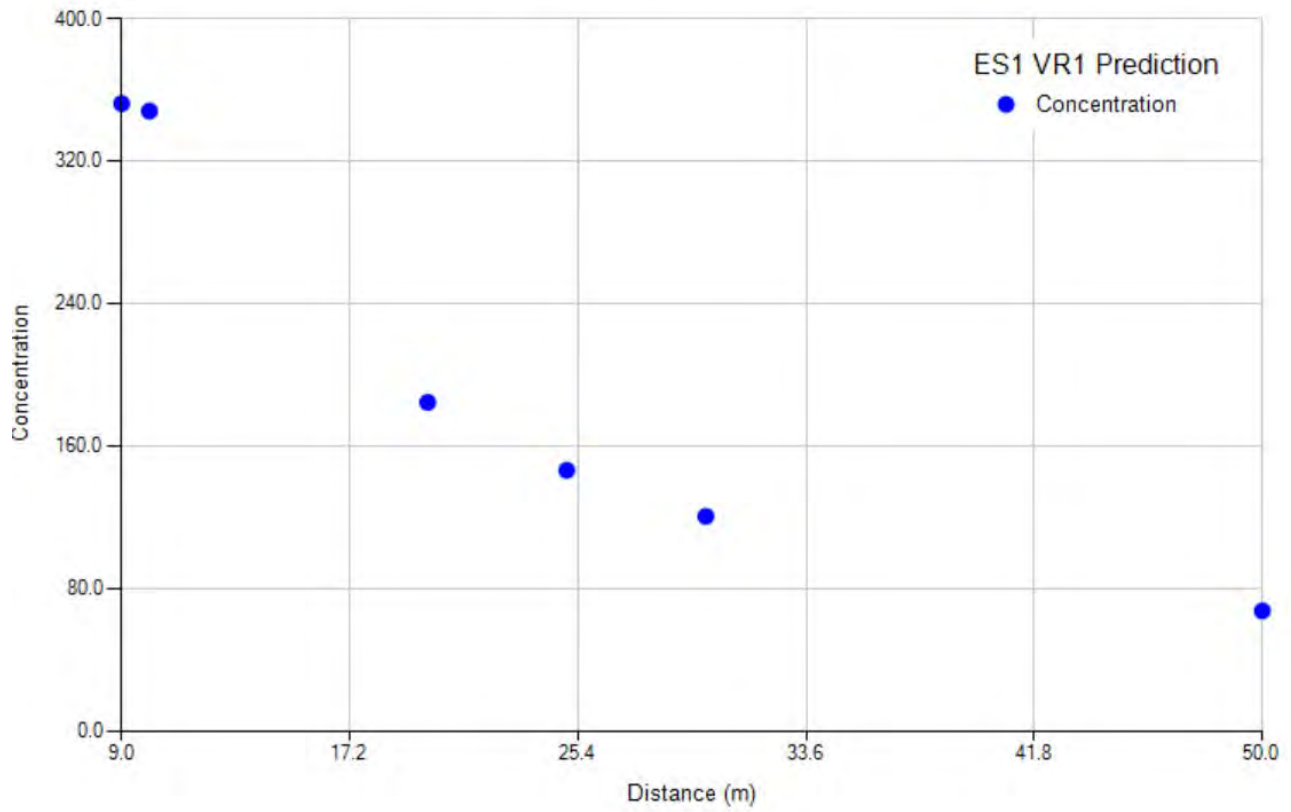


Figure 5-2 ES1 Prediction (+ VR1) ($\mu\text{g}/\text{m}^3$)

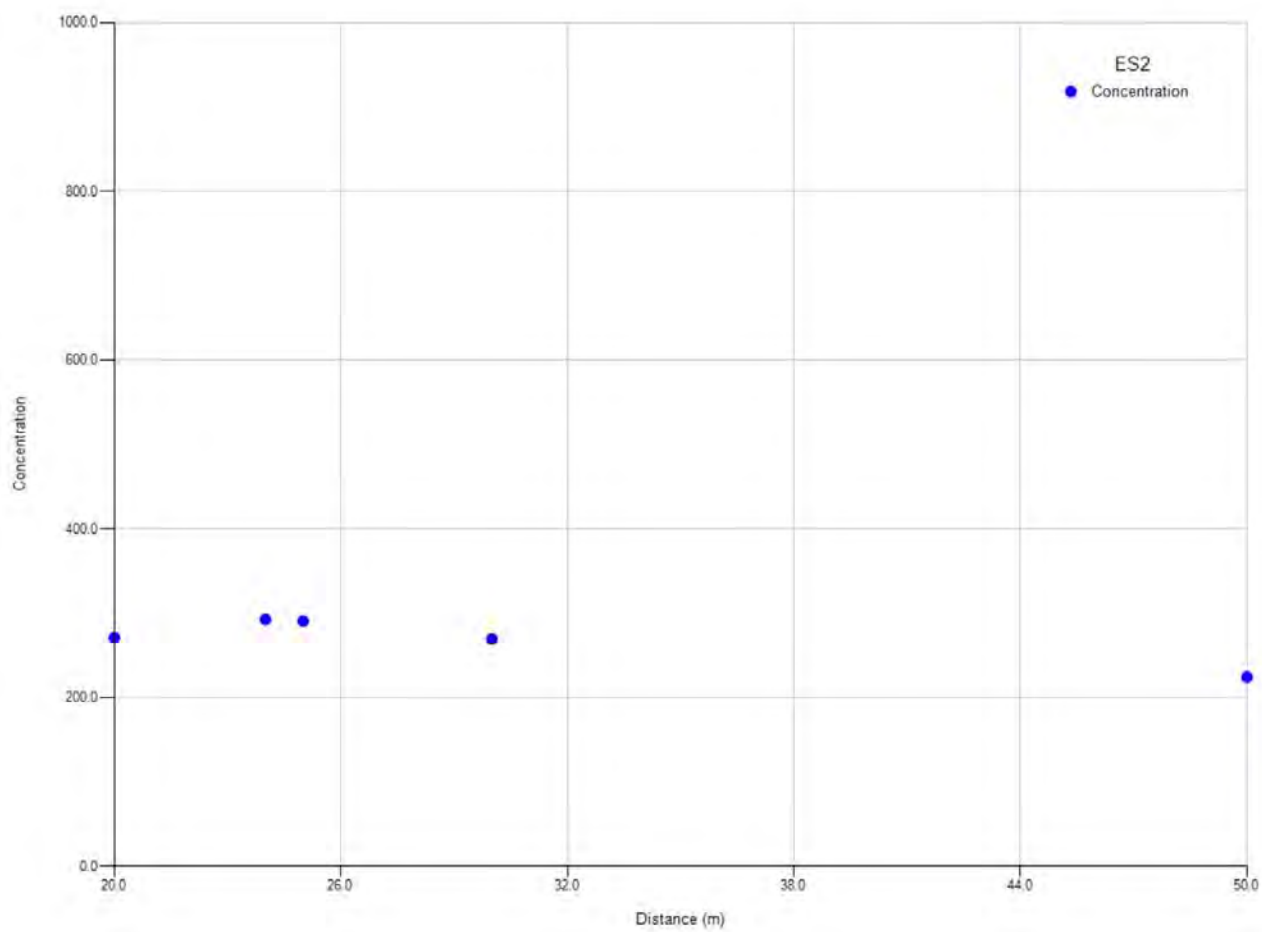


Figure 5-3 ES2 Prediction ($\mu\text{g}/\text{m}^3$)

Maximum concentrations

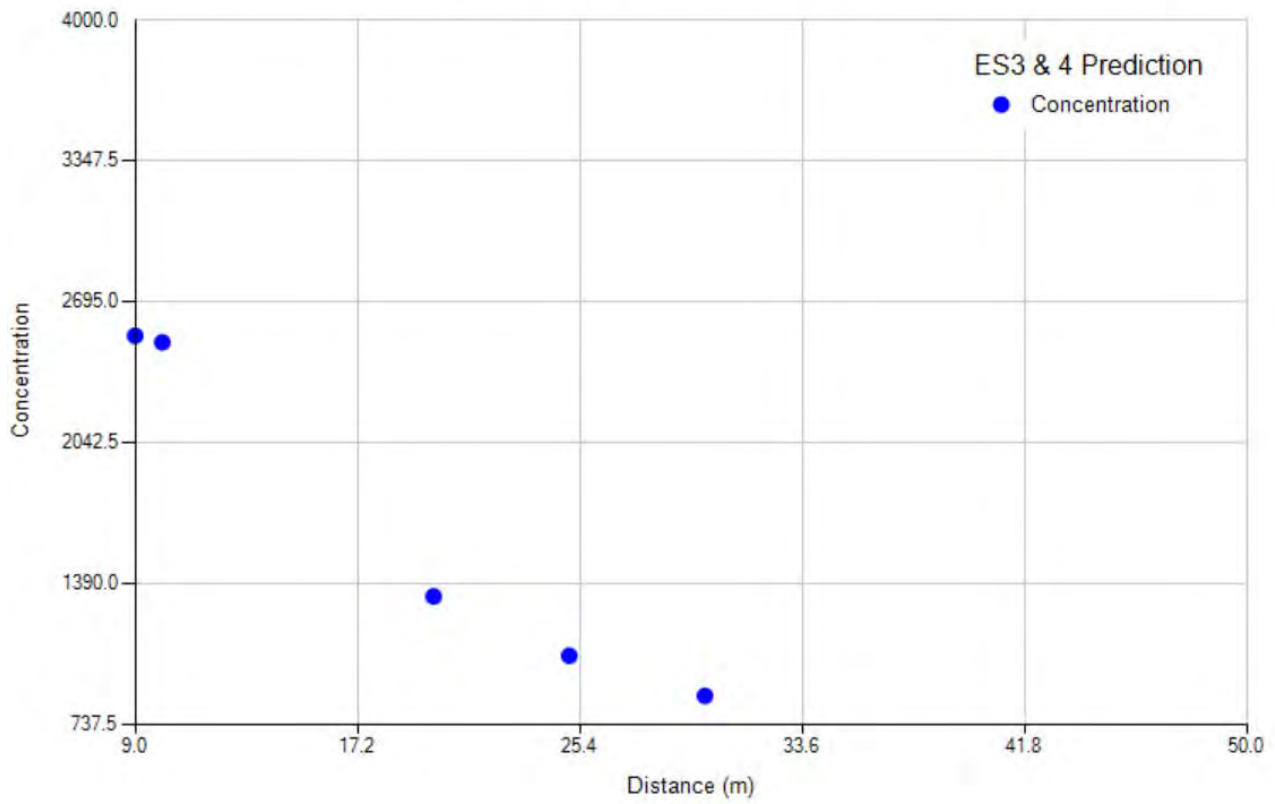


Figure 5-4 ES3 & 4 Prediction (no VR2) ($\mu\text{g}/\text{m}^3$)

Maximum concentrations

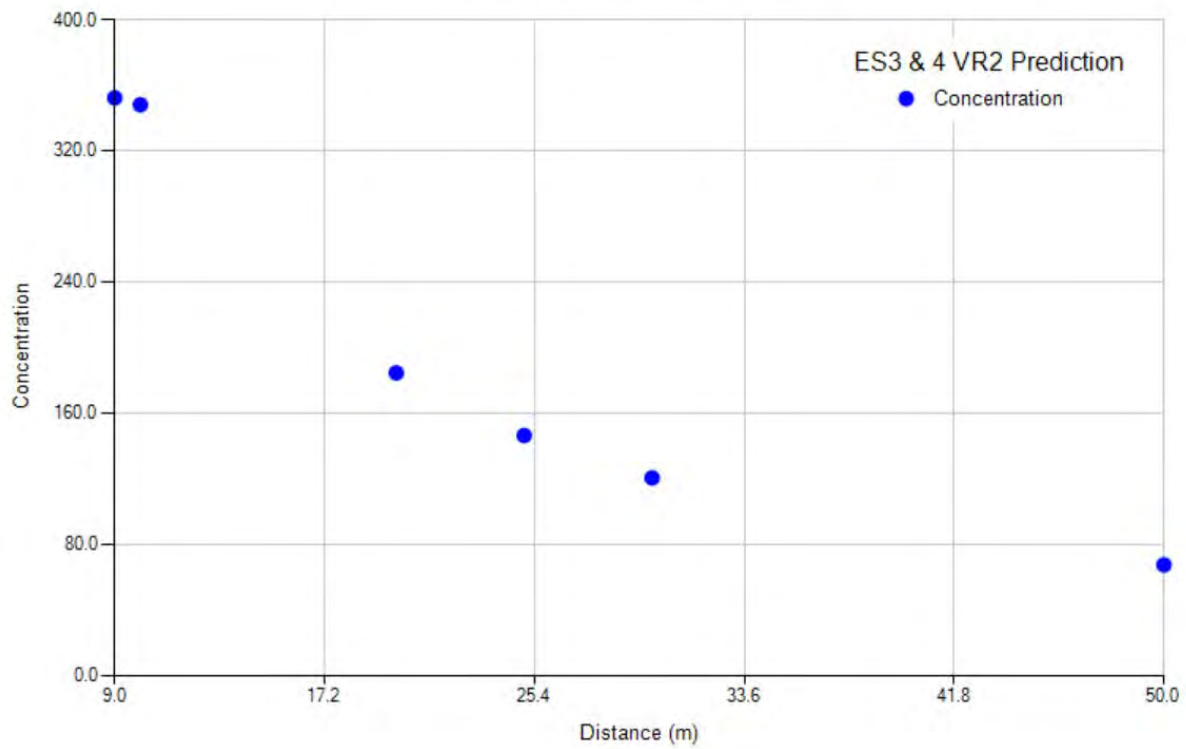


Figure 5-5 ES3 & 4 Prediction (VR2) ($\mu\text{g}/\text{m}^3$)

5.8.2 Predicted Concentrations: Receptors

Appendix C presents detailed mass conversion results as $\mu\text{g}/\text{m}^3$ for the chemicals listed in Table 3-3.

The summarised modelling results are presented as Table 5-5.

Table 5-5 – Predicted benzene results – maximum predicted concentrations at modelled sensitive receptor of southern boundary

ES Scenario	Predicted benzene at receptor (sum ES1 – ES4) ($\mu\text{g}/\text{m}^3$)	Annual Average Criterion ($\mu\text{g}/\text{m}^3$) for benzene
Without VR1 & VR2	8.6	10
With VR1 & VR2	3.1	
With VR1 / no VR2	6.7	
With VR2 / no VR1	3.2	

Compliance for benzene is predicted at the modelled 20 m sensitive receptors.

5.9 UNCERTAINTY / SENSITIVITY

5.9.1 Uncertainty

Uncertainty assessment in predictive modelling relates to the analysis of uncertainties in both computational and real world applications. It tries to determine how likely certain outcomes are if some aspects of the system are not exactly known.

The following qualitative parameters are identified that would impact on the predictions made, uncertainty can be reduced on several of these in terms of careful planning and design:

- Position / location and number of vents stacks – decreasing the distance to the receptor would increase concentration at the receptor.
- Volume and location of tanks and tank fill points - – decreasing the distance to the receptor would increase concentration at the receptor.

Other areas of uncertainty that are less easily controlled and which would impact the modelling are:

- Number of vehicles refuelling (increase whoosh and spillage).
- Bulk fuel delivery parameters (volume, events, time).
- Lower wind speeds than evident in the 1983 – 2018 MRS data

5.9.2 Sensitivity

The modelling is obviously very sensitive to the emission factors used for all ES. These were sourced (with exception of ES2) from CAPCOA (1997). Verification calculations were undertaken using the protocol set out in NPI (1999) in terms of emissions from tanks for unleaded petrol:

ES2 prediction uses a volumetric flow rate for tank venting from Hilpert et al 2018 (Q_{mean}). This paper presents volumetric flow rate as measured quantitatively and demonstrates that the rate is variable, being mostly low (i.e. $< Q_{mean}$ – see purple 'Q' data in Figure 5-1) with occasional spikes. Little vapour was typically released in the late night and in the very early morning, while releases were generally higher during the daytime and evenings presumably when more fuel was dispensed (or increase in temperature and internal tank pressure due to volatility?). This would suggest that application of the Q_{mean} is reasonably conservative.

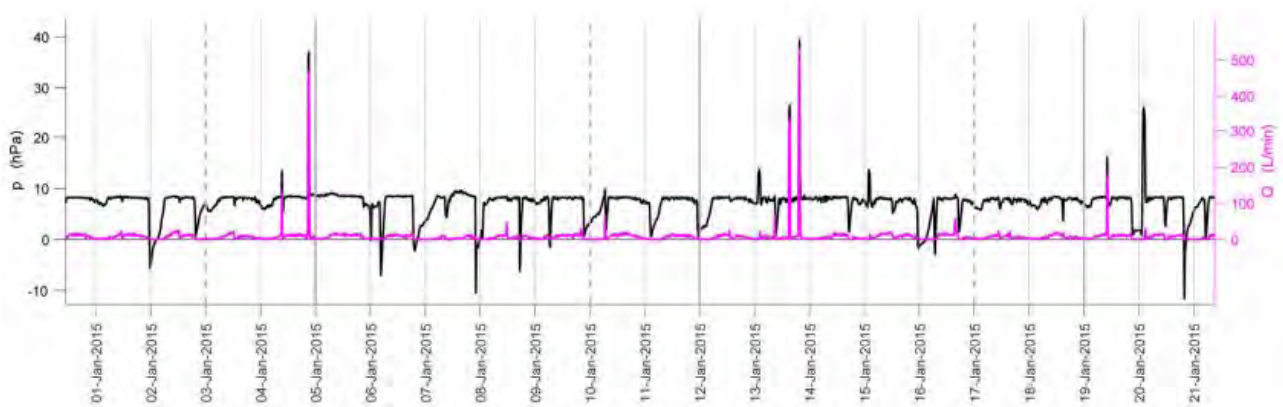


Figure 5-6 Time series of ullage pressure p (left ordinate) and volumetric flow rate Q (right ordinate) for medium sized service station. Horizontal tick marks indicate midnights. The vertical dashed and thick solid gray lines enclose weekends (after Hilpert et al., 2018).

Model inputs as reported in Section 5.7 are assess in terms of sensitivity of each value used (in the model) to analyse and quantify (where possible) the uncertainty of the predictive assessment (Table 5-6 – Sensitivity analysis).

Table 5-6 – Sensitivity analysis

Parameter	Value	Unit	Effect of Increasing	Effect of Decreasing	Relevance
Source Emission Rate ES1	Value is subject to CAPCOA emission factor and volume of fuel delivered / hours taken.	g/s	Would increase emission concentration at receptor	Will decrease predicted concentration.	Conservative 2 hours per event
Source Emission Rate ES2	Value is subject to Hilpert et al., 2018 Qmean (see text above) and volume of fuel delivered / hours taken.	g/s	Would increase emission concentration at receptor	Will decrease predicted concentration.	See text
Source Emission Rate ES3	Value is subject to CAPCOA emission factor and volume of fuel sold	g/s	Based on traffic study.	Based on traffic study.	Based on traffic study. Sensitive
Source Emission Rate ES4	Value is subject to CAPCOA emission factor and volume of fuel delivered / hours taken.	g/s	Would increase emission concentration at receptor	Will decrease predicted concentration.	Minor component
Stack Height	4.0	m	Reasonable increase may be 1 m – increases the concentration but lowers the distance of maximum concentrations to 28 m.	Reasonable decrease may be 1 m (unlikely) – decreases maximum concentration distance to 22 m and decreases concentrations also.	Increasing height greatly reduces maximum travel distance of maximum concentrations – decreasing to 3 m increases concentrations and reduces maximum distances slightly.

Parameter	Value	Unit	Effect of Increasing	Effect of Decreasing	Relevance
Stack Inner Diameter	0.075	m	Based on normal diameter of 4 m stack height as referenced in Hilpert 2018 -	Based on normal case of 4 m stack height -	Decreases concentrations overall (not exceeding) but maximum distance extended to 50 m.
Rural or Urban Setting	Urban	-	Urban environment, no analysis required.		
Initial Probe Distance	200	m	Receptors at ~20 m, no analysis required.		
Probe Analysis	10 m spacing	m	Linked to probe distance, designed to give readings at 10 m increments – no significant effect on results as graph is shown and can be read at any point on the transect.		
Minimum and Maximum Temperature	-12.3 - 24.5	°C	1983 – 2018 mean minimum and mean maximum temperature from BoM.		
Minimum Wind Speed	3.8	m/ sec	WA BOM average of ~3. Mean of 9 am and 3 pm wind used from BoM data	Not required.	
Anemometer Height	10	m	Suggested US EPA AERSCREEN default in lieu of site data.		
Albedo	0.125	- (fraction)	Increase to 0.8	Decreased to 0.01	Increase: Same concentrations as main model but maximums at 20 m as opposed to 35 m. Decrease: no significant changes.
Bowen	0.4	- (fraction)	Increase to 2.0	No necessary	Increase: Same concentrations as main model but maximums at 20 m as opposed to 35 m.

Parameter		Value	Unit	Effect of Increasing	Effect of Decreasing	Relevance
Surface Roughness Length		0.05	m	Suggested US EPA AERSCREEN default in lieu of site data.		
Surface Velocity	Friction	Not adjusted/ input	-	Suggested US EPA AERSCREEN default in lieu of site data.		

6 CONCLUSIONS

Emission modelling has been completed for a proposed convenience store / service station to determine the potential impacts on nearby existing sensitive receivers.

The modelling is based on fuel throughput data provided by the operator and published emission factor data for studies undertaken globally and elsewhere in Australia, based on apparent best current practice and noting the absence of specific Western Australian guidance in such matters.

Site specific data was applied with respect to layout and dimensions and also number of tanks and fuel storage and delivery parameters.

Conservative inputs such as continuous emission rates based on peak fuel throughputs and worst- case meteorology have been included in the modelling.

The results of the dispersion screening modelling indicate compliance for benzene at the boundary of the sensitive receptors (future residential area immediately south of the Site).

VR1 has a significant reduction in reducing acute benzene releases from bulk filling of the tanks. Transient concentrations of benzene are significant within 5 – 9 m of tank filling, although the annual average is relatively innocuous when annualised with non-delivery days.

VR2 has a significant reduction in 'whoosh' reduction and this would reduce benzene emissions particularly in peak traffic periods.

Note that predominant wind direction is from the southwest which would infer flow of volatiles predominantly to the northeast away from the sensitive receptor.

The assessment would be sensitive to:

- Position / location and number of vents stacks – decreasing the distance to the receptor would increase concentration at the receptor.
- Volume and location of tanks and tank fill points - – decreasing the distance to the receptor would increase concentration at the receptor.
- Number of vehicles refuelling (increase whoosh and spillage).
- Bulk fuel delivery parameters.
- Lower wind speeds than evident in the 1983 – 2018 MRS data

Uncertainty analysis indicates that the main model as prescribed satisfactorily estimates potential fuel related emissions based on factors applied.

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APPENDIX A AIR QUALITY GLOSSARY

APPENDIX A: GLOSSARY OF AIR QUALITY TERMINOLOGY

Conversion of ppm to mg/m ³	<p>Where R is the ideal gas constant; T, the temperature in kelvin (273.16 + T°C); and P, the pressure in mm Hg, the conversion is as follows:</p> $\mu\text{g m}^{-3} = (P/RT) \times \text{Molecular weight} \times (\text{concentration in ppm})$ $= \frac{P \times \text{Molecular weight} \times (\text{concentration in ppm})}{62.4 \times (273.2 + T^{\circ}\text{C})}$ <p>For the purposes of the air quality assessment all conversions were made at 25°C.</p>
g/s	Grams per second
mg/m ³	Milligrams (10 ⁻³) per cubic metre. Conversions from mg/m ³ to parts per volume concentrations (ie, ppm) are calculated at 25 °C as required by the SEPP(AQM).
µg/m ³	Micrograms (10 ⁻⁶) per cubic metre. Conversions from µg/m ³ to parts per volume concentrations (ie, ppb) are calculated at 25 °C.
ppb	Parts per billion.
ppm	Parts per million.
PM ₁₀ , PM _{2.5} , PM ₁	Fine particulate matter with an equivalent aerodynamic diameter of less than 10, 2.5 or 1 micrometres respectively. Fine particulates are predominantly sourced from combustion processes. Vehicle emissions are a key source in urban environments.
50th percentile	The value exceeded for 50 % of the time.
NO _x	Oxides of nitrogen – a suite of gaseous contaminants that are emitted from road vehicles and other sources. Some of the compounds can react in the atmosphere and, in the presence of other contaminants, convert to different compounds (eg, NO to NO ₂).
VOC	Volatile Organic Compounds. These compounds can be both toxic and odorous.

APPENDIX B AERSCREEN MAIN MODEL

13:56:36

TITLE: POINT SOURCE - FLAT - NO BD

***** STACK PARAMETERS *****

SOURCE EMISSION RATE: 0.1800 g/s 1.429 lb/hr
STACK HEIGHT: 1.00 meters 3.28 feet
STACK INNER DIAMETER: 0.075 meters 2.95 inches
PLUME EXIT TEMPERATURE: Ambient
PLUME EXIT VELOCITY: 0.000 m/s 0.00 ft/s
STACK AIR FLOW RATE: 0 ACFM
RURAL OR URBAN: URBAN
POPULATION: 200

INITIAL PROBE DISTANCE = 50. meters 164. feet

***** BUILDING DOWNWASH PARAMETERS *****

NO BUILDING DOWNWASH HAS BEEN REQUESTED FOR THIS ANALYSIS

***** PROBE ANALYSIS *****

25 meter receptor spacing: 1. meters - 50. meters

Zo	ROUGHNESS	1-HR CONC	DIST	TEMPORAL
SECTOR	LENGTH	(ug/m3)	(m)	PERIOD

1*	0.050	8926.	10.0	ANN
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* = worst case flow sector

***** MAKEMET METEOROLOGY PARAMETERS *****

MIN/MAX TEMPERATURE: 293.0 / 303.0 (K)

MINIMUM WIND SPEED: 3.9 m/s

ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: USER ENTERED

ALBEDO: 0.12

BOWEN RATIO: 0.40

ROUGHNESS LENGTH: 0.050 (meters)

SURFACE FRICTION VELOCITY (U*) NOT ADJUSTED

METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR MO DY JDY HR

10 01 05 5 12

H0 U* W* DT/DZ ZICNV ZIMCH M-O LEN Z0 BOWEN ALBEDO REF WS

60.95 0.329 0.600 0.020 128. 435. -52.8 0.050 0.40 0.12 4.00

HT REF TA HT

10.0 293.0 2.0

WIND SPEED AT STACK HEIGHT (non-downwash): 2.9 m/s

STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 0.8 meters

ESTIMATED FINAL PLUME RISE (non-downwash): 0.0 meters

ESTIMATED FINAL PLUME HEIGHT (non-downwash): 0.8 meters

METEOROLOGY CONDITIONS USED TO PREDICT AMBIENT BOUNDARY IMPACT

YR MO DY JDY HR

-- -- -- -- --

10 01 24 5 12

H0 U* W* DT/DZ ZICNV ZIMCH M-O LEN Z0 BOWEN ALBEDO REF WS

175.35 0.351 1.200 0.020 355. 479. -22.2 0.050 0.40 0.12 4.00

HT REF TA HT

10.0 293.0 2.0

WIND SPEED AT STACK HEIGHT (non-downwash): 3.0 m/s

STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 0.8 meters

ESTIMATED FINAL PLUME RISE (non-downwash): 0.0 meters

ESTIMATED FINAL PLUME HEIGHT (non-downwash): 0.8 meters

***** AERSCREEN AUTOMATED DISTANCES *****

OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

MAXIMUM		MAXIMUM	
DIST	1-HR CONC	DIST	1-HR CONC
(m)	(ug/m3)	(m)	(ug/m3)
-----		-----	
1.00	0.3176E-06	30.00	1779.
10.00	8926.	40.00	1084.
20.00	3501.	50.00	737.5
25.00	2423.		

***** AERSCREEN MAXIMUM IMPACT SUMMARY *****

	MAXIMUM	SCALED	SCALED	SCALED	SCALED
	1-HOUR	3-HOUR	8-HOUR	24-HOUR	ANNUAL
CALCULATION	CONC	CONC	CONC	CONC	CONC
PROCEDURE	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)

FLAT TERRAIN 0.1105E+05 0.1105E+05 9948. 6632. 1105.

DISTANCE FROM SOURCE 5.00 meters

IMPACT AT THE

AMBIENT BOUNDARY 0.3176E-06 0.3176E-06 0.2859E-06 0.1906E-06 0.3176E-07

DISTANCE FROM SOURCE 1.00 meters

ES1 + VR

AERSCREEN 16216 / AERMOD 16216r

07/02/21

14:09:04

TITLE: POINT SOURCE - FLAT - NO BD

***** STACK PARAMETERS *****

SOURCE EMISSION RATE: 0.900E-02 g/s 0.714E-01 lb/hr

STACK HEIGHT: 1.00 meters 3.28 feet

STACK INNER DIAMETER: 0.075 meters 2.95 inches

PLUME EXIT TEMPERATURE: Ambient

PLUME EXIT VELOCITY: 0.000 m/s 0.00 ft/s

STACK AIR FLOW RATE: 0 ACFM

RURAL OR URBAN: URBAN

POPULATION: 200

INITIAL PROBE DISTANCE = 50. meters 164. feet

***** BUILDING DOWNWASH PARAMETERS *****

NO BUILDING DOWNWASH HAS BEEN REQUESTED FOR THIS ANALYSIS

***** PROBE ANALYSIS *****

25 meter receptor spacing: 1. meters - 50. meters

Zo	ROUGHNESS	1-HR CONC	DIST	TEMPORAL
SECTOR	LENGTH	(ug/m3)	(m)	PERIOD

1*	0.050	446.3	10.0	ANN
----	-------	-------	------	-----

* = worst case flow sector

***** MAKEMET METEOROLOGY PARAMETERS *****

MIN/MAX TEMPERATURE: 293.0 / 303.0 (K)

MINIMUM WIND SPEED: 3.9 m/s

ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: USER ENTERED

ALBEDO: 0.12

BOWEN RATIO: 0.40

ROUGHNESS LENGTH: 0.050 (meters)

SURFACE FRICTION VELOCITY (U*) NOT ADJUSTED

METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR MO DY JDY HR

10 01 05 5 12

H0 U* W* DT/DZ ZICNV ZIMCH M-O LEN Z0 BOWEN ALBEDO REF WS

60.95 0.329 0.600 0.020 128. 435. -52.8 0.050 0.40 0.12 4.00

HT REF TA HT

10.0 293.0 2.0

WIND SPEED AT STACK HEIGHT (non-downwash): 2.9 m/s

STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 0.8 meters

ESTIMATED FINAL PLUME RISE (non-downwash): 0.0 meters

ESTIMATED FINAL PLUME HEIGHT (non-downwash): 0.8 meters

METEOROLOGY CONDITIONS USED TO PREDICT AMBIENT BOUNDARY IMPACT

YR MO DY JDY HR

-- -- -- -- --

10 01 24 5 12

H0 U* W* DT/DZ ZICNV ZIMCH M-O LEN Z0 BOWEN ALBEDO REF WS

175.35 0.351 1.200 0.020 355. 479. -22.2 0.050 0.40 0.12 4.00

HT REF TA HT

10.0 293.0 2.0

WIND SPEED AT STACK HEIGHT (non-downwash): 3.0 m/s

STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 0.8 meters

ESTIMATED FINAL PLUME RISE (non-downwash): 0.0 meters

ESTIMATED FINAL PLUME HEIGHT (non-downwash): 0.8 meters

***** AERSCREEN AUTOMATED DISTANCES *****

OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

MAXIMUM		MAXIMUM	
DIST	1-HR CONC	DIST	1-HR CONC
(m)	(ug/m3)	(m)	(ug/m3)
-----		-----	
1.00	0.1588E-07	30.00	88.93
10.00	446.3	40.00	54.21
20.00	175.0	50.00	36.87
25.00	121.2		

***** AERSCREEN MAXIMUM IMPACT SUMMARY *****

	MAXIMUM	SCALED	SCALED	SCALED	SCALED
	1-HOUR	3-HOUR	8-HOUR	24-HOUR	ANNUAL
CALCULATION	CONC	CONC	CONC	CONC	CONC
PROCEDURE	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)

FLAT TERRAIN	552.7	552.7	497.4	331.6	55.27

DISTANCE FROM SOURCE 5.00 meters

IMPACT AT THE

AMBIENT BOUNDARY 0.1588E-07 0.1588E-07 0.1429E-07 0.9529E-08 0.1588E-08

DISTANCE FROM SOURCE 1.00 meters

AER ES2

AERSCREEN 16216 / AERMOD 16216r

06/25/21

09:10:02

TITLE: POINT SOURCE - FLAT - NO BD

***** STACK PARAMETERS *****

SOURCE EMISSION RATE: 0.1100 g/s 0.873 lb/hr
STACK HEIGHT: 4.00 meters 13.12 feet
STACK INNER DIAMETER: 0.075 meters 2.95 inches
PLUME EXIT TEMPERATURE: Ambient
PLUME EXIT VELOCITY: 0.000 m/s 0.00 ft/s
STACK AIR FLOW RATE: 0 ACFM
RURAL OR URBAN: URBAN
POPULATION: 200

INITIAL PROBE DISTANCE = 50. meters 164. feet

***** BUILDING DOWNWASH PARAMETERS *****

NO BUILDING DOWNWASH HAS BEEN REQUESTED FOR THIS ANALYSIS

***** PROBE ANALYSIS *****

25 meter receptor spacing: 1. meters - 50. meters

Zo	ROUGHNESS	1-HR CONC	DIST	TEMPORAL
SECTOR	LENGTH	(ug/m3)	(m)	PERIOD

1*	0.050	290.7	25.0	ANN
----	-------	-------	------	-----

* = worst case flow sector

***** MAKEMET METEOROLOGY PARAMETERS *****

MIN/MAX TEMPERATURE: 293.0 / 303.0 (K)

MINIMUM WIND SPEED: 3.9 m/s

ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: USER ENTERED

ALBEDO: 0.12

BOWEN RATIO: 0.40

ROUGHNESS LENGTH: 0.050 (meters)

SURFACE FRICTION VELOCITY (U*) NOT ADJUSTED

METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR MO DY JDY HR

10 01 05 5 12

H0 U* W* DT/DZ ZICNV ZIMCH M-O LEN Z0 BOWEN ALBEDO REF WS

60.95 0.329 0.600 0.020 128. 435. -52.8 0.050 0.40 0.12 4.00

HT REF TA HT

10.0 293.0 2.0

WIND SPEED AT STACK HEIGHT (non-downwash): 3.4 m/s

STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 3.8 meters

ESTIMATED FINAL PLUME RISE (non-downwash): 0.0 meters

ESTIMATED FINAL PLUME HEIGHT (non-downwash): 3.8 meters

METEOROLOGY CONDITIONS USED TO PREDICT AMBIENT BOUNDARY IMPACT

YR MO DY JDY HR

-- -- -- -- --

10 01 24 5 12

H0 U* W* DT/DZ ZICNV ZIMCH M-O LEN Z0 BOWEN ALBEDO REF WS

175.35 0.351 1.200 0.020 355. 479. -22.2 0.050 0.40 0.12 4.00

HT REF TA HT

10.0 293.0 2.0

WIND SPEED AT STACK HEIGHT (non-downwash): 3.5 m/s

STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 3.8 meters

ESTIMATED FINAL PLUME RISE (non-downwash): 0.0 meters

ESTIMATED FINAL PLUME HEIGHT (non-downwash): 3.8 meters

***** AERSCREEN AUTOMATED DISTANCES *****

OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

MAXIMUM		MAXIMUM	
DIST	1-HR CONC	DIST	1-HR CONC
(m)	(ug/m3)	(m)	(ug/m3)
-----		-----	
1.00	0.000	25.00	290.7
10.00	10.01	30.00	269.3
20.00	271.0	50.00	224.2

***** AERSCREEN MAXIMUM IMPACT SUMMARY *****

	MAXIMUM	SCALED	SCALED	SCALED	SCALED
	1-HOUR	3-HOUR	8-HOUR	24-HOUR	ANNUAL
CALCULATION	CONC	CONC	CONC	CONC	CONC
PROCEDURE	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)

FLAT TERRAIN	292.5	292.5	263.2	175.5	29.25

DISTANCE FROM SOURCE 24.00 meters

IMPACT AT THE

AMBIENT BOUNDARY 0.000 0.000 0.000 0.000 0.000

DISTANCE FROM SOURCE 1.00 meters

ES3 & ES4 NO VR2

AERSCREEN 16216 / AERMOD 16216r

07/02/21

14:20:41

TITLE: POINT SOURCE - FLAT - NO BD

***** AREA PARAMETERS *****

SOURCE EMISSION RATE: 0.1800 g/s 1.429 lb/hr

AREA EMISSION RATE: 0.353E-02 g/(s-m2) 0.280E-01 lb/(hr-m2)

AREA HEIGHT: 1.00 meters 3.28 feet

AREA SOURCE LONG SIDE: 17.00 meters 55.77 feet

AREA SOURCE SHORT SIDE: 3.00 meters 9.84 feet

INITIAL VERTICAL DIMENSION: 4.50 meters 14.76 feet

RURAL OR URBAN: URBAN

POPULATION: 200

INITIAL PROBE DISTANCE = 50. meters 164. feet

***** BUILDING DOWNWASH PARAMETERS *****

BUILDING DOWNWASH NOT USED FOR NON-POINT SOURCES

***** FLOW SECTOR ANALYSIS *****

25 meter receptor spacing: 1. meters - 50. meters

MAXIMUM IMPACT RECEPTOR

Zo	SURFACE	1-HR CONC	RADIAL DIST	TEMPORAL
SECTOR	ROUGHNESS (ug/m3)	(deg)	(m)	PERIOD

1*	0.050	2507.	0	10.0	ANN
----	-------	-------	---	------	-----

* = worst case diagonal

***** MAKEMET METEOROLOGY PARAMETERS *****

MIN/MAX TEMPERATURE: 293.0 / 303.0 (K)

MINIMUM WIND SPEED: 3.9 m/s

ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: USER ENTERED

ALBEDO: 0.12

BOWEN RATIO: 0.40

ROUGHNESS LENGTH: 0.050 (meters)

SURFACE FRICTION VELOCITY (U*) NOT ADUSTED

METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR MO DY JDY HR

10 01 01 1 01

H0 U* W* DT/DZ ZICNV ZIMCH M-O LEN Z0 BOWEN ALBEDO REF WS

-27.85 0.258 -9.000 0.020 -999. 302. 55.6 0.050 0.40 0.12 4.00

HT REF TA HT

10.0 293.0 2.0

***** AERSCREEN AUTOMATED DISTANCES *****

OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

MAXIMUM		MAXIMUM	
DIST	1-HR CONC	DIST	1-HR CONC
(m)	(ug/m3)	(m)	(ug/m3)
1.00	1676.	25.00	1054.
10.00	2507.	30.00	867.8
20.00	1329.	50.00	485.2

***** AERSCREEN MAXIMUM IMPACT SUMMARY *****

3-hour, 8-hour, and 24-hour scaled

concentrations are equal to the 1-hour concentration as referenced in

SCREENING PROCEDURES FOR ESTIMATING THE AIR QUALITY

IMPACT OF STATIONARY SOURCES, REVISED (Section 4.5.4)

Report number EPA-454/R-92-019

http://www.epa.gov/scram001/guidance_permit.htm

under Screening Guidance

	MAXIMUM	SCALED	SCALED	SCALED	SCALED
	1-HOUR	3-HOUR	8-HOUR	24-HOUR	ANNUAL
CALCULATION	CONC	CONC	CONC	CONC	CONC
PROCEDURE	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)

-----	-----	-----	-----	-----	-----
FLAT TERRAIN	2538.	2538.	2538.	2538.	N/A

DISTANCE FROM SOURCE 9.00 meters

IMPACT AT THE

AMBIENT BOUNDARY	1676.	1676.	1676.	1676.	N/A
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DISTANCE FROM SOURCE 1.00 meters

ES3 & ES4 WITH VR2

AERSCREEN 16216 / AERMOD 16216r

07/02/21

14:29:48

TITLE: POINT SOURCE - FLAT - NO BD

***** AREA PARAMETERS *****

SOURCE EMISSION RATE: 0.0250 g/s 0.198 lb/hr

AREA EMISSION RATE: 0.490E-03 g/(s-m2) 0.389E-02 lb/(hr-m2)

AREA HEIGHT: 1.00 meters 3.28 feet

AREA SOURCE LONG SIDE: 17.00 meters 55.77 feet

AREA SOURCE SHORT SIDE: 3.00 meters 9.84 feet

INITIAL VERTICAL DIMENSION: 4.50 meters 14.76 feet

RURAL OR URBAN: URBAN

POPULATION: 200

INITIAL PROBE DISTANCE = 50. meters 164. feet

***** BUILDING DOWNWASH PARAMETERS *****

BUILDING DOWNWASH NOT USED FOR NON-POINT SOURCES

***** FLOW SECTOR ANALYSIS *****

25 meter receptor spacing: 1. meters - 50. meters

MAXIMUM IMPACT RECEPTOR

Zo	SURFACE	1-HR CONC	RADIAL DIST	TEMPORAL
SECTOR	ROUGHNESS (ug/m3)	(deg)	(m)	PERIOD

1*	0.050	348.2	0	10.0	ANN
----	-------	-------	---	------	-----

* = worst case diagonal

***** MAKEMET METEOROLOGY PARAMETERS *****

MIN/MAX TEMPERATURE: 293.0 / 303.0 (K)

MINIMUM WIND SPEED: 3.9 m/s

ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: USER ENTERED

ALBEDO: 0.12

BOWEN RATIO: 0.40

ROUGHNESS LENGTH: 0.050 (meters)

SURFACE FRICTION VELOCITY (U*) NOT ADUSTED

METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR MO DY JDY HR

10 01 01 1 01

H0 U* W* DT/DZ ZICNV ZIMCH M-O LEN Z0 BOWEN ALBEDO REF WS

-27.85 0.258 -9.000 0.020 -999. 302. 55.6 0.050 0.40 0.12 4.00

HT REF TA HT

10.0 293.0 2.0

***** AERSCREEN AUTOMATED DISTANCES *****

OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

MAXIMUM		MAXIMUM	
DIST	1-HR CONC	DIST	1-HR CONC
(m)	(ug/m3)	(m)	(ug/m3)
1.00	232.8	25.00	146.4
10.00	348.2	30.00	120.5
20.00	184.6	50.00	67.40

***** AERSCREEN MAXIMUM IMPACT SUMMARY *****

3-hour, 8-hour, and 24-hour scaled
concentrations are equal to the 1-hour concentration as referenced in
SCREENING PROCEDURES FOR ESTIMATING THE AIR QUALITY

IMPACT OF STATIONARY SOURCES, REVISED (Section 4.5.4)

Report number EPA-454/R-92-019

http://www.epa.gov/scram001/guidance_permit.htm

under Screening Guidance

	MAXIMUM	SCALED	SCALED	SCALED	SCALED
	1-HOUR	3-HOUR	8-HOUR	24-HOUR	ANNUAL
CALCULATION	CONC	CONC	CONC	CONC	CONC
PROCEDURE	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)

FLAT TERRAIN	352.5	352.5	352.5	352.5	N/A
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DISTANCE FROM SOURCE 9.00 meters

IMPACT AT THE

AMBIENT BOUNDARY	232.8	232.8	232.8	232.8	N/A
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DISTANCE FROM SOURCE 1.00 meters

APPENDIX C VOC CALCULATIONS



ES1 no VR1					Max 1 hour	Scaled 3 hour	Scaled 8 hour	Scaled 24 hour	Scaled Annual
Component	%	Fraction	Criterion	Basis	1.11E+04	1.11E+04	9.95E+03	6.63E+03	1105
			1 hour max @ 20 m		3.50E+03	3.50E+03	3.50E+03	3.50E+03	3.50E+03
Benzene	0.3135	0.003135	10	Annual Average	35	35	31	21	3
			1 hour max @ 20 m		10.98	10.98	10.98	10.98	10.98
Cyclohexane	0.07096	0.0007096	19000	1 hour	8	8	7	5	1
Ethylbenzene	0.08812	0.0008812	8000	1 hour	10	10	9	6	1
n-Hexane	1.92722	0.0192722	3200	1 hour	213	213	192	128	21
Styrene	0.00314	0.0000314	280	7 Days	0.35	0.35	0.31	0.21	0.03
Toluene	1.20313	0.0120313	410	Annual Average	133	133	120	80	13
Xylenes	0.48236	0.0048236	950	Annual Average	53	53	48	32	5

ES1 + VR1					Max 1 hour	Scaled 3 hour	Scaled 8 hour	Scaled 24 hour	Scaled Annual
Component	%	Fraction		Basis	552	552	497	331	55
Benzene	0.3135	0.003135	10	Annual Average	1.7	1.7	1.6	1.0	0.2
Cyclohexane	0.07096	0.0007096	19000	1 hour	0.4	0.4	0.4	0.2	0.0
Ethylbenzene	0.08812	0.0008812	8000	1 hour	0.5	0.5	0.4	0.3	0.0
n-Hexane	1.92722	0.0192722	3200	1 hour	11	11	10	6	1
Styrene	0.00314	0.0000314	280	7 Days	0.02	0.02	0.02	0.01	0.00
Toluene	1.20313	0.0120313	410	Annual Average	7	7	6	4	1
Xylenes	0.48236	0.0048236	950	Annual Average	2.7	2.7	2.4	1.6	0.3

	Time Weighted Average		ES1	Delivery Days	Non-Delivery Days
	Hour	benzene			
	0:00	µg/m3			
1	1:00:00 AM	1.44		1.44	1.44
2	2:00:00 AM	1.44		1.44	1.44
3	3:00:00 AM	1.44		1.44	1.44
4	4:00:00 AM	1.44		1.44	1.44
5	5:00:00 AM	1.44		1.44	1.44
6	6:00:00 AM	1.44		1.44	1.44
7	7:00:00 AM	1.44		1.44	1.44
8	8:00:00 AM	1.44		1.44	1.44
9	9:00:00 AM	1.44		1.44	1.44
10	10:00:00 AM	10.98	1.44	12.42	1.44
11	11:00:00 AM	10.98	1.44	12.42	1.44
12	12:00:00 PM	1.44		1.44	1.44
13	1:00:00 PM	1.44		1.44	1.44
14	2:00:00 PM	1.44		1.44	1.44
15	3:00:00 PM	1.44		1.44	1.44
16	4:00:00 PM	1.44		1.44	1.44
17	5:00:00 PM	1.44		1.44	1.44
18	6:00:00 PM	1.44		1.44	1.44
19	7:00:00 PM	1.44		1.44	1.44
20	8:00:00 PM	1.44		1.44	1.44
21	9:00:00 PM	1.44		1.44	1.44
22	10:00:00 PM	1.44		1.44	1.44
23	11:00:00 PM	1.44		1.44	1.44
24	12:00:00 AM	1.44		1.44	1.44
				57	34.56
				Daily Av.	2.35
				Days	104
				Sum	245
				Sum	621
				Days per year	365
				Mean annual average for ES1 no VR1	1.7 µg/m3

	Time Weighted Average		BK	Delivery Days	Non-Delivery Days
	Hour	benzene			
	0:00	µg/m3			
1	1:00:00 AM	1.44		1.44	1.44
2	2:00:00 AM	1.44		1.44	1.44
3	3:00:00 AM	1.44		1.44	1.44
4	4:00:00 AM	1.44		1.44	1.44
5	5:00:00 AM	1.44		1.44	1.44
6	6:00:00 AM	1.44		1.44	1.44
7	7:00:00 AM	1.44		1.44	1.44
8	8:00:00 AM	1.44		1.44	1.44
9	9:00:00 AM	1.44		1.44	1.44
10	10:00:00 AM	5.80	1.44	7.24	1.44
11	11:00:00 AM	5.80	1.44	7.24	1.44
12	12:00:00 PM	1.44		1.44	1.44
13	1:00:00 PM	1.44		1.44	1.44
14	2:00:00 PM	1.44		1.44	1.44
15	3:00:00 PM	1.44		1.44	1.44
16	4:00:00 PM	1.44		1.44	1.44
17	5:00:00 PM	1.44		1.44	1.44
18	6:00:00 PM	1.44		1.44	1.44
19	7:00:00 PM	1.44		1.44	1.44
20	8:00:00 PM	1.44		1.44	1.44
21	9:00:00 PM	1.44		1.44	1.44
22	10:00:00 PM	1.44		1.44	1.44
23	11:00:00 PM	1.44		1.44	1.44
24	12:00:00 AM	1.44		1.44	1.44
				46	34.56
				Daily Av.	1.92
				Days	104
				Sum	200
				Sum	376
				Sum	576
				Days per year	365
				Mean annual average for ES1 no VR1	1.6 µg/m3

ES2	24 m				Max 1 hour	Scaled 3 hour	Scaled 8 hour	Scaled 24 hour	Scaled Annual
Component	%	Fraction	Criterion	Basis	293	293	263	175	29
Benzene	0.3135	0.003135	10	Annual Average	0.9	0.9	0.8	0.5	0.1
Cyclohexane	0.07096	0.0007096	19000	1 hour	0.2	0.2	0.2	0.1	0.0
Ethylbenzene	0.08812	0.0008812	8000	1 hour	0.3	0.3	0.2	0.2	0.0
n-Hexane	1.92722	0.0192722	3200	1 hour	5.6	5.6	5.1	3.4	0.6
Styrene	0.00314	0.0000314	280	7 Days	0.0	0.0	0.0	0.0	0.0
Toluene	1.20313	0.0120313	410	Annual Average	3.5	3.5	3.2	2.1	0.3
Xylenes	0.48236	0.0048236	950	Annual Average	1.4	1.4	1.3	0.8	0.1

ES3 & 4 no VR2	9 m				Max 1 hour	Scaled 3 hour	Scaled 8 hour	Scaled 24 hour	20 m
Component	%	Fraction	Criterion	Basis	2540	2540	2540	2540	1330
Benzene	0.3135	0.003135	10	Annual Average	8	8	8	8	4.2
Cyclohexane	0.07096	0.0007096	19000	1 hour	2	2	2	2	1
Ethylbenzene	0.08812	0.0008812	8000	1 hour	2	2	2	2	1
n-Hexane	1.92722	0.0192722	3200	1 hour	49	49	49	49	26
Styrene	0.00314	0.0000314	280	7 Days	0.08	0.08	0.08	0.08	0.04
Toluene	1.20313	0.0120313	410	Annual Average	31	31	31	31	16
Xylenes	0.48236	0.0048236	950	Annual Average	12	12	12	12	6

All concentrations are µg/m³

Benzene mean annual average			
No VR	With VR	VR1 only	VR2 only
8.6	3.1	6.7	3.2

Sum

Note, values in text differ slightly for 'with VR' as depends on exact m interval taken and using scaled 24 hours. Both results / values are <10. ES3 & 4 does not provide scaled annual amd scaling is done for 1, 3, 8 and 24 at 9 m, which is too short a distance for the receptor. Adjustment is made using 20 m 1 maximum.

ES1 no VR1 is 5 m distance from source

1 hour max at 20 m is scaled at same rate as 5 m basis

ES3 & 4 + VR2	9 m				Max 1 hour	Scaled 3 hour	Scaled 8 hour	Scaled 24 hour	20 m
Component	%	Fraction	Criterion	Basis	352	352	352	352	185
Benzene	0.3135	0.003135	10	Annual Average	1.1	1.1	1.1	1.1	0.6
Cyclohexane	0.07096	0.0007096	19000	1 hour	0.2	0.2	0.2	0.2	0.1
Ethylbenzene	0.08812	0.0008812	8000	1 hour	0.3	0.3	0.3	0.3	0.2
n-Hexane	1.92722	0.0192722	3200	1 hour	7	7	7	7	4
Styrene	0.00314	0.0000314	280	7 Days	0.01	0.01	0.01	0.01	0.01
Toluene	1.20313	0.0120313	410	Annual Average	4.2	4.2	4.2	4.2	2.2
Xylenes	0.48236	0.0048236	950	Annual Average	1.7	1.7	1.7	1.7	0.9

APPENDIX D STATEMENT OF LIMITATIONS

STATEMENT OF LIMITATIONS & IMPORTANT INFORMATION REGARDING YOUR REPORT

THIS REPORT IS BASED ON A UNIQUE SET OF PROJECT SPECIFIC FACTORS

This report has been prepared in accordance with an agreement between LWC Management Pty Ltd trading as Land & Water Consulting (LWC) and Leyton Property (the Client). The services provided by LWC have been conducted in a manner consistent with the level of quality and skill generally exercised by members of its profession and consulting practice. No warranty or guarantee of the site conditions is intended.

This report was prepared for the sole use of the Client and may not contain sufficient information for purposes of other parties or for other uses. Any reliance on this report by third parties shall be such parties sole risk. This report shall only be presented in full and may not be used to support any other objectives than those set out in the report, except where written approval with comments are provided by LWC.

The scope of works undertaken and the report prepared to complete the assessment was in accordance with the information provided by the client and the specifications for works required by the Client under the contract. As such, works undertaken and statements made are based on those specifications (such as levels of risks and significance of any contamination) and should be considered and interpreted within this context.

Your environmental report should not be used without reference to Land & Water Consulting in the first instance:

- When the nature of the proposed development is changed, for example if a residential development is proposed instead of a commercial one;
- When the size or configuration of the proposed development is altered;
- When the location or orientation of the proposed structures are modified;
- When there is a change in ownership;
- For application to an adjacent site.

ENVIRONMENTAL ASSESSMENT “FINDINGS” ARE PROFESSIONAL ESTIMATES

The information in this report provides predictive estimations considering the inherent limitations associated with predictive modelling and extrapolating information from a sample set or from literature based values. Actual conditions may differ from those inferred to exist as no professional and no environmental assessment program can reveal every detail in relation to a site.



Lot 265 (40) Talisker Bend (cnr Aurea Blvd/
Warnbro Sound Ave), Golden Bay

Proposed Mixed Commercial Development
with access off Aurea Blvd & Thundelarra Dr

Road Safety Audit Stage 3 - Detailed Design

Audit Ref: i3c20405 F

Prepared for:

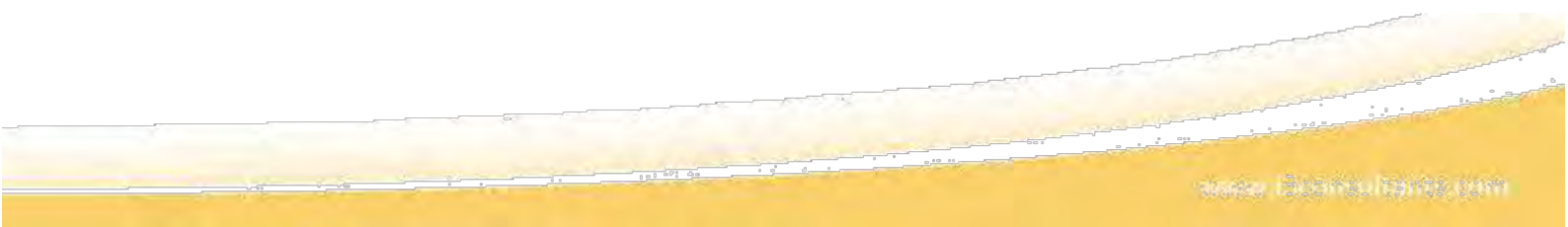
Transcore

By:

David Wilkins

i3 consultants WA

Report Issue Date: **20/07/2021**





Safety Audit Document Control Sheet

Project Location:	Lot 265 (40) Talisker Bend (cnr Aurea Blvd/ Warnbro Sound Ave), Golden Bay
Project Proposal:	Proposed Mixed Commercial Development with access off Aurea Blvd & Thundelarra Dr
Audit Stage:	Stage 3 - Detailed Design
Prepared for:	Transcore
Prepared by 1:	David Wilkins
Prepared by 2:	i3 consultants WA
Audit Team Leader:	David Wilkins
Audit Team Leader Organisation:	i3 consultants WA
Audit Reference:	i3c20405 F
Report Issue Date:	20/07/2021

The Safety Audit Document Control Sheet Above Should be Completed Prior to Editing Any Other Part of the Report Template

This is not an approved document unless certified here.

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1. INTRODUCTION

1.1 Scope of Audit

This Road Safety Audit has been undertaken in accordance with the requirements contained in the Main Roads Western Australia Policy and Guidelines for Road Safety Audit.

This report results from a Stage 3 - Detailed Design Road Safety Audit carried out on the Proposed Mixed Commercial Development with access off Aurea Blvd & Thundelarra Dr at Lot 265 (40) Talisker Bend (cnr Aurea Blvd/ Warnbro Sound Ave), Golden Bay.

Hodge Collard Preston Architects has prepared a development drawing for the provision of an auxiliary left turn lane for westbound traffic on Aurea Blvd into the proposed development via a single 9 m wide left-in/ left-out only two-way access and an 8 m wide left-in/ left-out only two-way access off Thundelarra Dr, as shown in Figure 1 below.



Figure 1 – Overlay of design drawing with aerial photograph of existing site showing proposed layout and accesses off Aurea Blvd & Thundelarra Dr

The intent of the design is to provide safe, convenient, and functional vehicular access to each of the commercial land uses on the site, i.e., the service station and associated convenience store, the commercial tenancy and Gymnasium.

The City of Rockingham has expressed concerns regarding the potential for queues at the Aurea access to extend back to the Warnbro Sound Ave traffic signal-controlled intersection and the potential impact of this on the safe performance of the road network.



The audit team was provided with background documents, including a Transport Impact Assessment (TIA) report, JDAP Form 1 details, Technical Notes, and letters. These documents have been used by the audit team to determine the appropriate design guidelines, design vehicles, queue assessments, existing and forecast traffic volumes. They are listed in **Appendix B** of this report.

The audit was undertaken by an audit team led by David Wilkins of i3 consultants WA with reference to the 'Commencement Meeting' held by telephone with Behnam Bordbar from Transcore, (the Designer's representative), on Wednesday 9th July 2021.

The audit comprised an examination of the drawings and other information supplied by Transcore, as listed in **Appendix B**.

Unless indicated otherwise, all the findings described in **Section 2** of this report are considered by the audit team to require action in order to improve the safety of the proposed project and to minimise the risk of crash occurrence and reduce potential crash severity.

The audit team has examined and reported on the road safety implications of the project as presented and has not examined or verified the compliance of the design to any other criteria.

1.2 The Audit Team

Auditor No.	Name	Role	Organisation
101 (S)	David Wilkins	Audit Team Leader	i3 consultants WA
514 (A)	Marina Kleyweg	Audit Team Member	KCTT

The audit team inspected the site on Friday 16th July during the afternoon road network peak hour of 4.30 to 5.30 PM and at night at 6.00 PM. At the time of the day and night inspections it was raining heavily, and the road surface was wet. A shared 'cloud' folder was created to allow for the team members to share photos, videos, observations, and findings with each other.

1.3 Specialist Advisors

None.

1.4 Risk Assessment

The risk assessment tables used in this report are from *AGRS06A* ⁽¹⁾ as shown in Table 1 below. These use relative risk ratings of “**Intolerable**”, “**High**”, “**Medium**” and “**Low**”.

The following tables may be useful to provide an indication of the level of risk and how to respond to it. Determine into which category in Table 4.1 and Table 4.2 the issue best fits. From this select the risk category in Table 4.3 and its suggested treatment approach in Table 4.4. This is not a scientific system and professional judgement should be used. Section 9.3 provides an evidence based approach to prioritising the treatment of works emanating from road safety audits of existing roads.

Table 4.1: How often is the problem likely to lead to a crash?

Frequency	Description
Frequent	Once or more per week
Probable	Once or more per year (but less than once a week)
Occasional	Once every five or ten years
Improbable	Less often than once every ten years

Table 4.2: What is the likely severity of the resulting crash type?

Severity	Description	Examples
Catastrophic	Likely multiple deaths	High-speed, multi-vehicle crash on a freeway. Car runs into crowded bus stop. Bus and petrol tanker collide. Collapse of a bridge or tunnel.
Serious	Likely death or serious injury	High or medium-speed vehicle/vehicle collision. High or medium-speed collision with a fixed roadside object. Pedestrian or cyclist struck by a car.
Minor	Likely minor injury	Some low-speed vehicle collisions. Cyclist falls from bicycle at low speed. Left-turn rear-end crash in a slip lane.
Limited	Likely trivial injury or property damage only	Some low-speed vehicle collisions. Pedestrian walks into object (no head injury). Car reverses into post.

Table 4.3: The resulting level of risk

	Frequent	Probable	Occasional	Improbable
Catastrophic	Intolerable	Intolerable	Intolerable	High
Serious	Intolerable	Intolerable	High	Medium
Minor	Intolerable	High	Medium	Low
Limited	High	Medium	Low	Low

Table 4.4: Treatment approach

Risk	Suggested treatment approach
Intolerable	Must be corrected.
High	Should be corrected or the risk significantly reduced, even if the treatment costs is high.
Medium	Should be corrected or the risk significantly reduced, if the treatment cost is moderate, but not high.
Low	Should be corrected or the risk reduced, if the treatment cost is low.

Table 1 – Extract from *AGRS06A* showing risk ranking of safety issues used

1.5 Safe System Findings

The aim of Safe System Findings is to focus the Road Safety Audit process on considering safe speeds and by providing forgiving roads and roadsides. This is to be delivered through the Road Safety Audit process by accepting that people will always make mistakes and by considering the known limits to crash forces the human body can tolerate. This is to be achieved by focusing the Road Safety Audit on particular crash types that are known to result in higher severity outcomes at relatively lower speed environments to reduce the risk of fatal and serious injury crashes.

The additional annotation “**IMPORTANT**” shall be used to provide emphasis to any road safety audit finding that has the potential to result in fatal or serious injury or findings that are likely to result in the following crash types above the related speed environment: head-on (>70 km/h), right angle (>50 km/h), run off road (>40 km/h), and crashes involving vulnerable road users (>30 km/h), as these crash types are known to result in higher severity outcomes at relatively lower speed environments.

Crash Type		Impact speed
	head on	70 km/h
	side-impact	50 km/h
	side impact with tree	30 km/h
	pedestrian	30 km/h

Figure 2 – Safe System Impact speeds for different crash types after which the risk of death escalates

Figure 2 does not include ‘rear-end’ crashes. It is generally accepted that the safe system threshold speed for rear-end crashes is 40 km/h, based on the speed differential between the two vehicles travelling in the same direction, as shown in Figure 3 below.



Figure 3 – Safe System Impact speeds for rear end crashes after which the risk of death escalates

The exposure and likelihood of crash occurrence shall then be considered for all findings deemed “**IMPORTANT**” and evaluated based on an auditor’s professional judgement. Auditors should consider factors such as, traffic volumes and movements, speed environment, crash history, and the road environment, and apply road safety engineering and crash investigation experience to determine the likelihood of crash occurrence. The likelihood of crash occurrence shall be considered either “**INTOLERABLE**”, “**HIGH**”, “**MEDIUM**” or “**LOW**” and this additional annotation shall be displayed following the “**IMPORTANT**” annotation on applicable findings.

1.6 Previous Safety Audits

There are no known previous audits for the audit area.

A search of the [Main Roads WA/ IPWEA Road Safety Audit Portal](#) and the [National Register of Road Safety Audits](#) did not reveal any record of audits undertaken on Aurea Blvd, Thundelarra Dr or the Adelong Ave/ Aurea Blvd/ Warnbro Sound Ave traffic signal controlled intersection.

1.7 Background Data

1.7.1 Changes to layout or pavement markings

A review of historical aerial photographs back to January 2016, i.e., the start of the latest 5-year crash record and assessment in **Section 1.7.3**, has revealed that while there have not been any changes to the layout or road markings, the section of Thundelarra Dr north of Aurea Blvd was not constructed as a through road until April 2016, as shown in Figure 4 below.



Figure 4 – Aerial photographs of audit site at start of crash record period (Jan 2016) and latest (June 2021)

1.7.2 Road Hierarchy, function, and characteristics

The Main Roads WA and Liveable Neighbourhoods road hierarchy in the vicinity of the development site is provided as Figure 5 and Figure 6 below.



Figure 5 – Road hierarchy in the vicinity of the audit area (2)

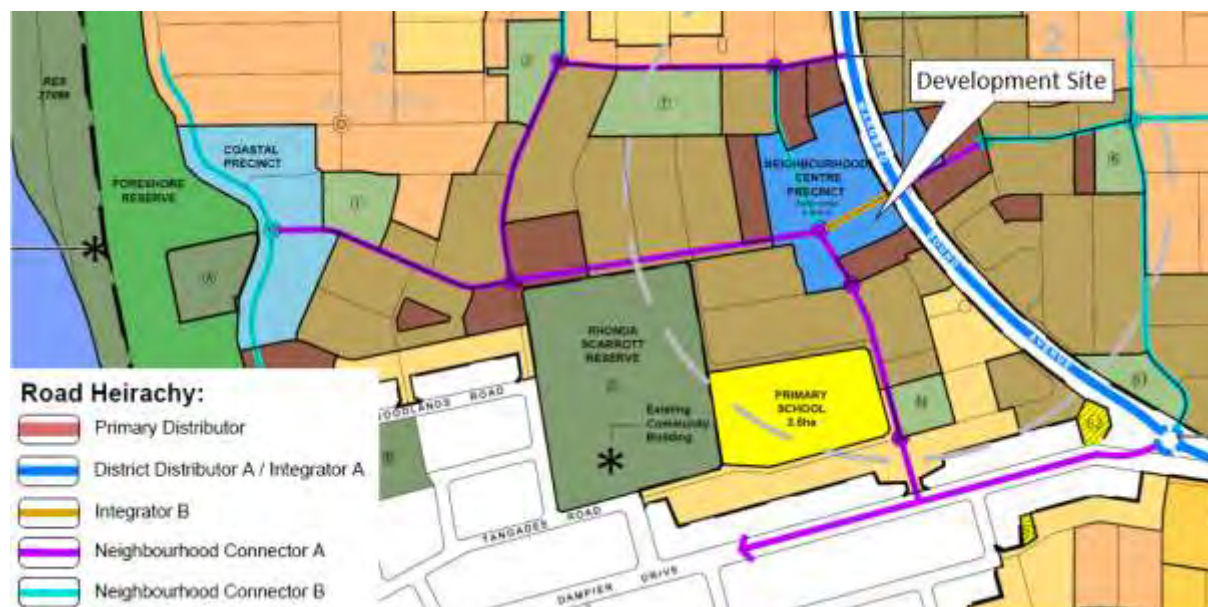


Figure 6 – Road Hierarchy within the Golden Bay Structure Plan (3)

Warnbro Sound Ave is classified as a Distributor A road in the Main Roads WA *Perth Metropolitan Area Functional Road Hierarchy* ⁽²⁾ and an Integrator A Arterial road in *Liveable Neighbourhoods (LN)* ⁽⁴⁾. It is also classified as a 'blue' or 'Other Regional Road' in the Metropolitan Region Scheme (MRS).

The intended characteristics and function of a Distributor B road and Integrator A Arterial Rd, along with the actual function and characteristics are shown in Table 2 below.

Warnbro Sound Ave	Main Roads WA Functional Hierarchy	Liveable Neighbourhoods Classification	Actual
Criteria and Activity	Distributor B	LN Integrator Arterial A	
Predominant Activity	Less important network.	Generally for high density (R80+) residential and business/ mixed use adjacent to activity centres but not for retail main street.	Functions as a Primary Distributor road connecting Golden Bay to Rockingham Town Centre. Parallel Ennis Ave (Melville Mandurah Hwy route) does not connect to Rockingham Town Centre. This is consistent with its 'Other Regional Road' in the MRS, i.e. future 'Arterial' classification.)
Intersections	Controlled with appropriate Local Area Traffic Management.		Controlled by traffic signals or large roundabouts at spacings of 500 m to 1 km.
Indicative Traffic Volume	Above 6000 vehicles per day.	15,000 - 35,000 vehicles per day.	10,480 vehicles per day.
Frontage Access Allowed	Residential and commercial access due to its historic status Prefer to limit when and where possible.	Service Street with parking.	No frontage access.
Pedestrians Allowed	With appropriate measures for control and safety, e.g., median/islands refuges.	Paths both sides.	Footpaths on both sides with on-road cycle lanes.
Recommended Operating Speed	60 km/h.	70 km/h.	70 km/h.
Buses Allowed	Yes.	Yes - 3.5 m lane for buses + 3.3 m lane for cars.	Yes (Route 558).
Parking Allowed	Not preferred. Clearways where necessary.	In service streets only.	No.
Truck Routes	Yes.	Yes.	Yes (6.4% HV).
Responsibility	Local Government.	Local Government.	City of Rockingham.

Table 2 – Warnbro Sound Ave: function and characteristics

Table 2 indicates that Warnbro Sound Ave functions as an arterial road, not a distributor road. This is most likely due to its *MRS* status as this indicates that it will become a Primary Distributor road under the care and control of Main Roads WA sometime in the future.

Aurea Blvd is classified as a Local Distributor in the Main Roads WA *Perth Metropolitan Area Functional Road Hierarchy* ⁽²⁾ and a Neighbourhood Connector A street in *LN*, although the section between Warnbro Sound Ave and Thundelarra Dr has been classified as an 'Integrator B' in the *Golden Bay Structure Plan* ⁽³⁾ (refer Figure 6 on page 8).

The intended characteristics and function of a Local Distributor, a Integrator Arterial B and Neighbourhood Connector A streets, along with the actual function and characteristics are shown in Table 3 and Table 4 on the following page.

Aurea Blvd	Main Roads WA Functional Hierarchy	Liveable Neighbourhoods Classification	Actual
Criteria and Activity	Local Distributor	LN Integrator Arterial B	
Predominant Activity	Minor network.	Primarily designed to facilitate efficient and safe regional and local traffic movement while maximising community integration via fronting development.	Links Activity Centre to Distributor/ Connector/ Arterial road (Warnbro Sound Ave) and residential and commercial areas to the west, north and south.
Intersections	Controlled with minor Local Area Traffic Management.	Integrator arterials need to be planned so the points of intersection with other busy streets – such as neighbourhood connectors – are potential new activity centre locations, with integrator B arterials and neighbourhood connectors forming the central spines of centres and neighbourhoods.	Roundabouts with local access roads, traffic signals with Distributor/ Connector/ Arterial road (Warnbro Sound Ave).
Indicative Traffic Volume	Maximum desirable volume 6,000 vpd.	7,000 - 15,000 with two lanes 15,000 - 20,000 with four lanes	3,035 vpd (based on SCATS data).
Frontage Access Allowed	Yes except at intersections where side entry is preferred and traffic signals are involved.	Yes. Designed to enable development to front the street. Liveable Neighbourhoods encourages development to front integrator arterials.	No frontage access for its current length (850 m) except two lots on the north side between Ettrick Way and Narloo Way (Nos 54 and 56).
Pedestrians Allowed	With minor safety measures.	Footpaths or shared paths on both sides.	Paths on both sides with on-road cycle lanes.
Recommended Operating Speed	60 km/h.	60 km/h.	Default urban speed limit of 50 km/h.
Buses Allowed	Yes.	Yes.	Not a bus route. Could be used by school buses to Golden Bay Primary School.
Parking Allowed	Yes.	Yes. On-street parking accommodated.	Yes - parking embayments provided.
Truck Routes	Only to service properties.	Yes.	Yes.
Responsibility	Local Government.	Local Government.	Local Government (City of Rockingham).

Table 3 – Aurea Blvd (Warnbro Sound Ave- Thundelarra Dr): function and characteristics

Aurea Blvd	Main Roads WA Functional Hierarchy	Liveable Neighbourhoods Classification	Actual
Criteria and Activity	Local Distributor	Neighbourhood Connector A	
Predominant Activity	Minor network.	Links neighbourhoods with activity centres.	Links Activity Centre to Distributor/ Connector/ Arterial road (Warnbro Sound Ave) and residential and commercial areas to the west, north and south.
Intersections	Controlled with minor Local Area Traffic Management.	Frequent local street connections. Provide for safe and convenient local travel to and from arterial routes, sometimes at signal-controlled intersections.	Roundabouts with local access roads, traffic signals with Distributor/ Connector/ Arterial road (Warnbro Sound Ave).
Indicative Traffic Volume	Maximum desirable volume 6,000 vpd.	Maximum 7,000 vpd.	3,035 vpd (based on SCATS data).
Frontage Access Allowed	Yes except at intersections where side entry is preferred and traffic signals are involved.	When traffic volume exceeds 5,000 vehicles per day, vehicles reversing out of driveways may trigger safety issues. In these cases, access to the lot should be designed to allow vehicles to be able to exit in a forward direction, or alternative access provided, e.g. laneway. For traffic volumes between 5,000 vpd and 7,000 vpd, and when embayment parking is provided, an alternative solution may be to allow vehicles to reverse into protected embayment parking.	No frontage access for its current length (850 m) except two lots on the north side between Ettrick Way and Narloo Way (Nos 54 and 56).
Pedestrians Allowed	With minor safety measures.	Shared path on one verge, path on other.	Paths on both sides with on-road cycle lanes.
Recommended Operating Speed	60 km/h.	50 km/h.	Default urban speed limit of 50 km/h.
Buses Allowed	Yes.	Yes.	Not a bus route. Could be used by school buses to Golden Bay Primary School.
Parking Allowed	Yes.	Yes.	Yes - parking embayments provided.
Truck Routes	Only to service properties.	Yes.	Yes.
Responsibility	Local Government.	Local Government.	Local Government (City of Rockingham).

Table 4 – Aurea Blvd (west of Thundelarra Dr): function and characteristics

Thundelarra Dr is classified as an Access Road in the Main Roads WA *Perth Metropolitan Area Functional Road Hierarchy* ⁽²⁾ and a Neighbourhood Connector A street in *LN*. The intended characteristics and function of an Access Road and a Neighbourhood Connector A street, along with the actual function and characteristics are shown in Table 5 below.

Thundelarra Dr	Main Roads WA Functional Hierarchy	Liveable Neighbourhoods Classification	Actual
Criteria and Activity	Access Road	Neighbourhood Connector A	
Predominant Activity	Limited access to traffic. Forms part of local distribution network.	Links neighbourhoods with activity centres.	Predominantly residential street with commercial land uses at the Aurea Blvd intersection as part of the Golden Bay Neighbourhood Activity Centre Local Development Plan.
Intersections	Self-controlling with minor measures.	Frequent local street connections. Provide for safe and convenient local travel to and from arterial routes, sometimes at signal-controlled intersections.	Roundabouts at 4-way intersections, T at all other.
Indicative Traffic Volume	Maximum desirable volume 3,000 vehicles per day.	Maximum 7,000 vpd.	Unknown.
Frontage Access Allowed	Yes.	When traffic volume exceeds 5,000 vehicles per day, vehicles reversing out of driveways may trigger safety issues. In these cases, access to the lot should be designed to allow vehicles to be able to exit in a forward direction, or alternative access provided, e.g. laneway. For traffic volumes between 5,000 vpd and 7,000 vpd, and when embayment parking is provided, an alternative solution may be to allow vehicles to reverse into protected embayment parking.	Yes but limited. Majority of vehicular access is via rear laneways.
Pedestrians Allowed	Yes.	Shared path on one verge, path on other.	Paths on both sides. Informal on-road cycle lane south of Aurea Blvd.
Recommended Operating Speed	40 - 60 km/h (desired speed)	50 km/h.	Default urban speed limit of 50 km/h.
Buses Allowed	If required.	Yes.	Not a bus route. Could be used by school buses to Golden Bay Primary School.
Parking Allowed	Yes.	Yes.	In embayments.
Truck Routes	Only to service properties.	Yes.	To service commercial land uses and school.
Responsibility	Local Government.	Local Government.	City of Rockingham.

Table 5 – Thundelarra Dr: function and characteristics

1.7.3 Crash History

A study of the crash history has been conducted by the audit team leader. This has revealed that there were 3 reported crashes at the traffic signal-controlled intersection of Adelong Ave/ Aurea Blvd/ Warnbro Sound Ave intersection and no reported crashes on Aurea Blvd or Thundelarra Dr or their intersections with each other or Kalli St/ Talisker Bend within the audit area in the five-year period ending 31st December 2020.

A plan showing the assessed area and details of the three reported crashes is provided as Figure 7 below. Two of the reported crashes are non-injury crashes, i.e., Property Damage Only (PDO). The injury crash was a rear-end crash, described by the driver of the car in front as *“I was the first car in the right turning lane at a set of traffic lights waiting for the green turning arrow. Vehicle 2 was behind me, also stopped. The light was about to turn green so I eased slightly off my brake in preparation to go, which I can only assume made the back brake light at the top go out and she took off forward at a normal full speed not realising I had only just begun moving slowly as the light turned green. It was later noted that she had been preoccupied with looking at her hand which was bandaged due to a scald she got that morning from spilling hot tea. The impact was enough to launch myself and my car forward into the intersection and stall my engine. I started it again quickly and motioned to her to follow me around the corner and we both pulled into a parking bay on the left of Aurea Blvd just before the roundabout.”*



Figure 7 – Crash Plot Map (Audit Area Only) 5 years to 31/12/20

1.7.4 Traffic and Speed Data

Warnbro Sound Ave is subject to a posted speed limit of 70 km/h. Aurea Blvd and Thundelarra Dr are both subject to the default urban speed limit of 50 km/h.

A summary of the recent traffic volume data is provided below. There is no daily data for Thundelarra Dr.

Location	Vehicles per day (% heavy vehicles)	Date	Source
Warnbro Sound Ave, west of Mandurah Rd.	M-F NB 4,772 M-F SB 5,710 10,482 (6.4%)	2020/ 2021	MRWA Traffic Map
Warnbro Sound Ave at Adelong Ave/ Aurea Blvd traffic signals.	M-F NB 3,484 M-F SB 5,058 8,542	Feb 2021	SCATS Data
Aurea Blvd, west of Warnbro Sound Ave.	M-F EB 1,633 M-F WB 1,403 3,035	Feb 2021	SCATS Data

There is no known speed data for any of the roads in the vicinity of the development site.

Average weekday hourly volume data for Aurea Blvd west of Warnbro Sound Ave, based on the traffic signal data in February 2021, is shown in Figure 8 below. Peak hour volumes on the weekend are lower (maximum 150).

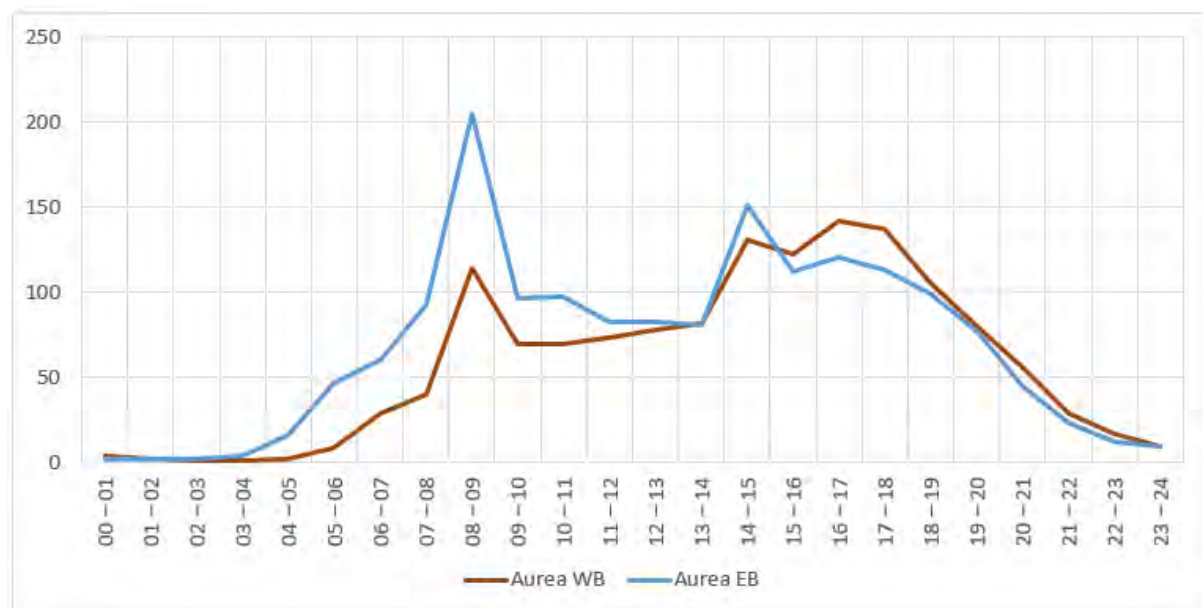


Figure 8 – Hourly weekday volumes on Aurea Blvd west of Warnbro Sound Ave (22-26 Feb 2021)



The existing AM and PM Peak Hour volumes for Aurea Blvd and Thundelarra Dr in the vicinity of the development site are shown in Figure 7 in the *TIA* ⁽⁵⁾, reproduced as Figure 9 below.

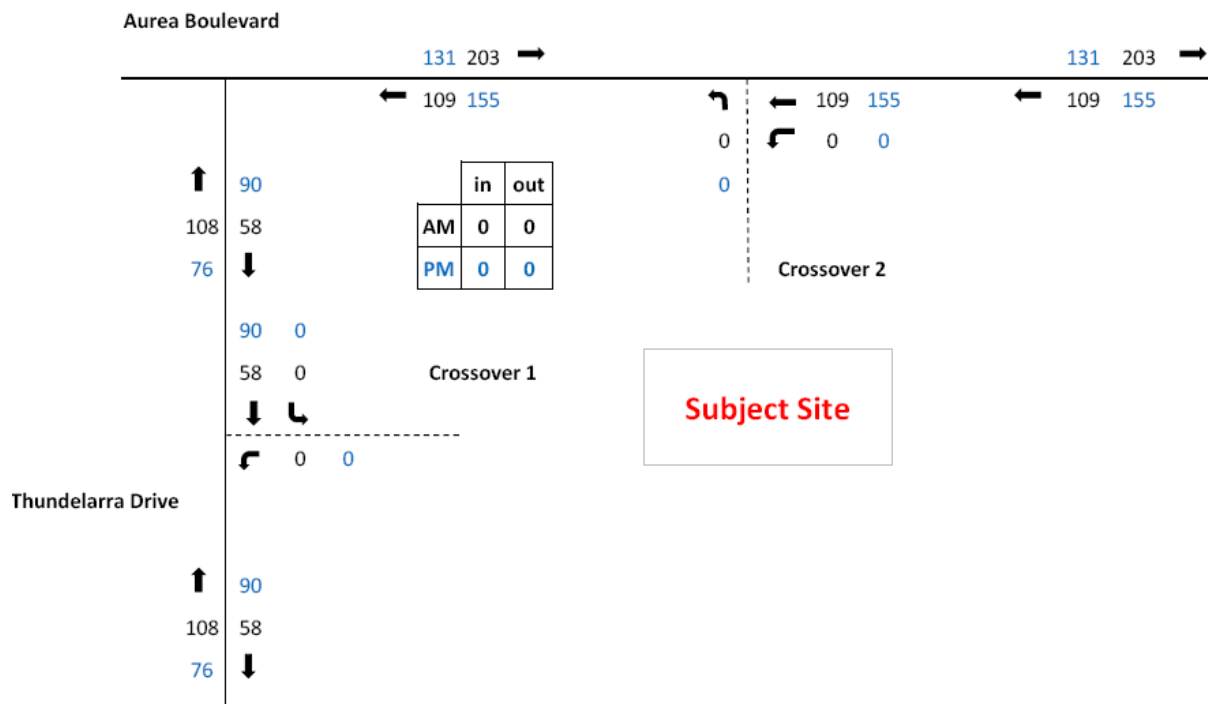


Figure 9 – Existing AM and PM peak hours in the *TIA*

The forecast AM and PM Peak Hour volumes for Aurea Blvd and Thundelarra 10 years after development of the site are shown in Figure 16 in the *TIA* ⁽⁵⁾, reproduced as Figure 9 below.

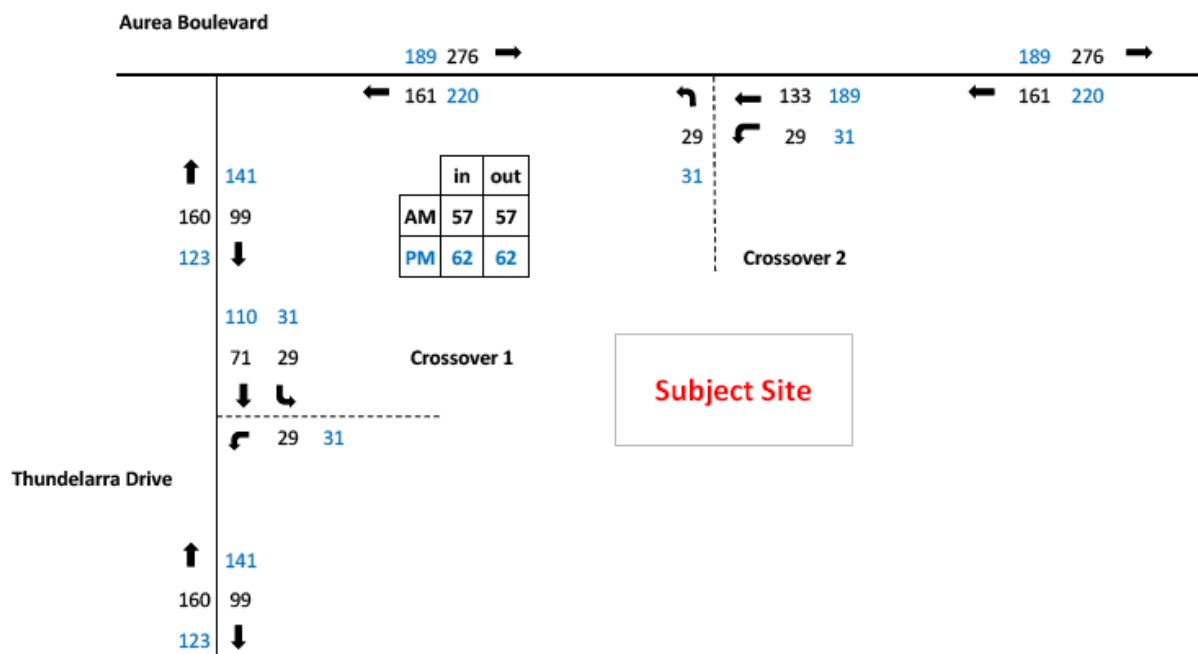


Figure 10 – Forecast 10-year AM and PM peak hours in the *TIA*



1.7.5 Appendices

Appendix A – Audit Photographs

Appendix B – List of Documents Provided for the Audit

Appendix C – Corrective Action Report (CAR)

2. ITEMS RAISED IN THIS STAGE 3 - DETAILED DESIGN AUDIT

2.1 Finding – No previous road safety audits

There are no known previous road safety audits for the Adelong Ave/ Aurea Blvd/ Warnbro Sound Ave traffic signal-controlled intersection, the layouts of Aurea Blvd and Thundelarra Dr intersection, or the *Golden Bay Structure Plan* ⁽³⁾.

Justification of the finding:

There are typically four opportunities within the design and development process for a road or traffic project when a road safety audit can be conducted, regardless of the size or nature of the project:

- At the structure plan (i.e., feasibility) stage
- once the preliminary design stage has been developed
- once the detailed design stage is complete
- at the pre-opening stage (or soon after the project is complete).

A road safety audit can also be undertaken at any stage of a project's life cycle or in stages throughout the design or construction of large projects.

The earlier a project is audited within the design and development process the better. If an inappropriate concept or treatment (i.e., one with inherent safety problems in the particular context) is chosen at the feasibility stage, it is very difficult and often impossible to remove the safety problems at later design stages or once traffic is using it. Early auditing can also lead to the early elimination of problems and, consequently, minimisation of wasted design time at later stages.

The City of Rockingham does not have a formal Road Safety Audit Policy that requires road safety audits to be undertaken for road and path projects in the City although it does have an award winning* 'Road Safety Action Plan' *"focused on achieving the targets of the State Government's 'towards zero' strategy, with the ultimate goal of zero fatalities and serious injuries on local roads"*, a good recent record of undertaking or requesting audits for these types of projects and many of its staff have undertaken training in this area.

Section 3.8 (The Future) of Austroads *Guide to Road Safety Part 6A: Implementing Road Safety Audits* ⁽¹⁾ states *"As the process of road safety audit becomes more widely practised, legislation may well include mandatory adoption of certain road safety audit procedures. Time frames and documentation of responses to audit findings may be specified. Presently, it is left to the road authority to determine how to provide reasonable safety on the roads. Perhaps in the future the failure to conduct audits during various stages of the road life cycle will constitute evidence of negligence. Prudent authorities will begin to plan for that eventuality."*

* Excellence in Road Safety Projects award at the Institute of Public Works Engineering Australasia (IPWEA) WA state conference on 12 March 2021.

The Road Safety Audit process has been in existence since the mid-1980s and “*There exists compelling evidence that procuring and conducting audits in a timely and disciplined manner has been, and remains, a highly effective and proactive way of identifying safety-related risks and hazards so that they can be mitigated, with the ultimate intention of preventing fatal and serious injury crashes from occurring. Conducting RSAs and implementing audit recommendations have saved many lives and therefore remain fundamental components of many road agencies’ network safety strategies*”⁽¹⁾

Safe System Review:

Conducting Road Safety Audits for new and existing facilities is an identified contribution to ‘Safe roads and roadsides’ and ‘Planning’ in Table 1.1 (Contributions of local government road safety to the Safe System approach) of the Austroads document *Safe System Roads for Local Government*⁽⁶⁾.

Section 2.3.8 of the Austroads document *Embedding Safe System in the Guide to Traffic Management*⁽⁷⁾ recognises that “*As with any form of physical planning and urban design, traffic-related safety needs to be given specific consideration at the planning and design stages, and throughout the development and operation of a centre. **This requires applying road safety engineering skills to the project, through an audit, Safe System assessment or some other approved and effective procedures***”.

Recommendation 2.1.1

That the City of Rockingham develops and adopts a Road Safety Audit Policy as per guidance provided in Section 2.4, and the Policy example provided in Appendix G, of *Austroads Guide to Road Safety Part 6: Managing Road Safety Audits*⁽⁸⁾.

HIGH

2.2 Finding – Adjacent developments

Areas to the north and west of the development site are currently under construction and appear to be commercial developments that are consistent with the 'Neighbourhood Centre Precinct', i.e., an 'Activity Centre', as described in the *Golden Bay Structure Plan*. It is not clear if traffic generation associated with these developments has been included in the forecast volumes and hence assessment of queueing on Aurea Blvd back to Warnbro Sound Ave.

Justification of the finding:

The development areas west and north of the development site are shown in Photograph 1 and Photograph 2 below.



Photograph 1 – Looking north from south side of Aurea Blvd east of Thundelarra Dr



Photograph 2 – Looking west from Aurea Blvd to Thundelarra Dr roundabout

Note development work on the north side and to the north west of Photograph 1 and on both sides beyond the roundabout in Photograph 2.



The *TIA* does not include a section to assess other traffic generating developments in the area. The *WAPC Guidelines* ⁽⁹⁾ indicate that this should be included and includes a checklist item “*committed developments and transport proposals*” to ensure that it is.

Including traffic generation from committed developments and transport proposals will ensure that the assessed performance of the road network and impacts on the Warnbro Sound Ave intersection for the 10-year projections in the *TIA* are valid.

Safe System Review:

Congestion of roads can influence safe and efficient post-crash care in the event of a severe injury. ⁽¹⁰⁾

Crash risk is reduced due to low instances of conflict in low congestion areas. ⁽¹¹⁾

Recommendation 2.2.1

Ensure that the forecast 10-year volumes included in the *TIA* and the associated modelling takes into account traffic generation from committed developments and transport proposals.

IMPORTANT | HIGH

2.3 Finding – Visibility and sight distance

A detailed assessment of the required and available sight distance for readability and safe operation of the Adelong Ave/ Aurea Blvd/ Warnbro Sound Ave intersection and the proposed left turn lane into the development site off Aurea Blvd, as well as the access off Thundelarra Dr, is required.

Justification of the finding:

Visibility plays a big role in allowing drivers time to react to hazards. It also allows for prior recognition (readability) of the layout ahead to enable them to prepare for potential conflicts.

Sight distance is different to visibility as it refers to the minimum visibility required to an object, vehicle, or other item in order to react and stop prior to conflict. In some instances, it is considered safer to restrict visibility to less than the sight lines in order to force drivers to slow down. For example, restricting the field of view to adjacent roads on the approach to a roundabout can force drivers to slow down and therefore lead to a safer road environment. ⁽¹⁰⁾

The presence of the service station, gymnasium, and commercial tenancy on the south west corner of the Adelong Ave/ Aurea Blvd/ Warnbro Sound Ave is likely to be very obvious due to its size and associated signs and branding. An example of an entry to a 'Neighbourhood Centre Precinct' off Warnbro Sound Ave to the north of the site is provided as Photograph 3 below.



Photograph 3 – Example of 'Neighborhood Centre Precinct' entry off Warnbro Sound Ave

The existing "Neighbourhood Centre Precinct" entry is shown in Photograph 4 below.



Photograph 4 – Existing Aurea Blvd entry to 'Neighbourhood Centre Precinct' off Warnbro Sound Ave

The site observations and measurements indicate that existing bushes/ shrubs restrict sight distance for cars using the existing parking embayments on the south side of Aurea Blvd as well as for vehicles leaving the proposed development, as shown in Photograph 5 below. The development drawing indicates that this will be removed as part of the left turn lane construction works. (The Measure Tool shown leaning against the yellow post in Photograph 5 is 1.2 m high. There should not be any objects higher than 0.3 m within the sight line).

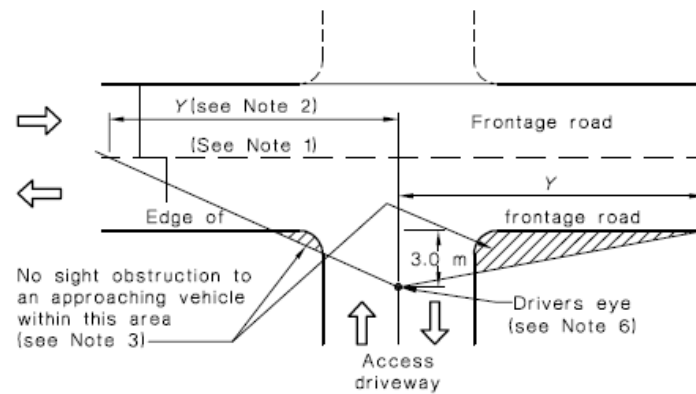


Photograph 5 – Existing obstruction to sight lines to traffic from Warnbro Sound Ave into Aurea Blvd

In terms of compliance with the Standards, the required sight distances to and from commercial access driveways are described in Clause 3.4.5 (Sight distance requirements) of *Australian Standard AS 2890.2* ⁽¹²⁾. This Standard states:

“Sight distance requirements for commercial vehicle traffic entering a public roadway from an access driveway, are as follows:

- (a) Sight distance to oncoming traffic on the public roadway. Sight distance requirements to enable a commercial vehicle to find a safe gap in oncoming traffic when leaving an access driveway are specified in Figure 3.3 (reproduced as Figure 11 on the following page), and*
- (b) Sight distance to pedestrians. Minimum dimensions for sight distance splays required to enable a pedestrian on the public road footpath to evade a vehicle emerging from an access driveway shall be as illustrated in Figure 3.4 (reproduced as Figure 12 on the following page). Wherever practicable, larger splays should be provided.”*

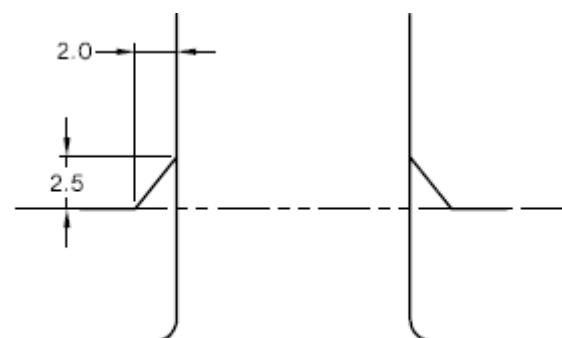


Frontage road speed (Note 4) km/h	Distance (Y) along frontage road (Note 5) m	
	5 s gap	8 s gap
40	55	89
50	69	111
60	83	133
70	97	156
80	111	178
90	125	200
100	139	222
110	153	244

NOTES:

- 1 Centre-line or centre of roadway (undivided road), or right hand edge of right hand through lane (divided road).
- 2 A check to the left is not required at a divided road where the median is wide enough to shelter a vehicle leaving the driveway.
- 3 Parking on this side of the frontage road may need to be restricted on either side of the driveway so that the sight distance required by the above table to an approaching vehicle is not obstructed.
- 4 This is the posted or general speed limit unless the 85th percentile speed is significantly higher.
- 5 These distances are equivalent to minimum gap sight distance (MGSD) for an exiting vehicle. The minimum requirement is a 5 second gap. A right turn exit into a six lane road may require up to an 8 second gap, unless the median is wide enough to shelter a vehicle leaving the driveway.
- 6 When checking sight distance the height of the object (approaching vehicle) is to be taken as 1.15 m above the road surface. The driver's eye height is to be taken as any height in the range 1.15 m to 2.5 m, to cater for both car and commercial vehicle drivers.

Figure 11 – Sight distance requirements at commercial access driveways (Fig 3.3 AS 2890.2)



DIMENSIONS IN METRES

Figure 12 – Minimum dimensions for commercial access driveway sight splays for pedestrians (Fig 3.4 AS 2890.2)

Based on Note 4 in Figure 11 on the previous page, the frontage road speed is 50 km/h, hence the required sight distance is 69 m (refer Note 5 regarding selection of 5 s gap for left turn out only arrangement).

An overlay of the required 69 m sight distances radius from a point in the centre of each access driveway exit side 3 m back from the edge of the road is shown in Figure 13 below. This indicates that the indicated required sight lines in AS 2890.2 are met, provided that these areas are kept clear of items or landscaping above 300 mm height.



Figure 13 – Overlay of 69 m sight distance to and from access driveway as per AS 2890.2

An overlay of the required pedestrian sight splays is shown in Figure 14 below. This indicates that the required pedestrian sight lines in AS 2890.2 are also met.



Figure 14 – Overlay of required pedestrian sight splays at each access driveway as per AS 2890.2



Safe System Review:

Improved sight distance and conspicuity is a supporting treatment in the 'Safe System' and influences the likelihood, but not severity, of crashes occurring (Table 4.8 Safe System Assessment Framework ⁽¹³⁾).

Recommendation 2.3.1

Ensure that the required sight lines at each access driveway are kept clear of any objects or landscaping greater than 300 mm in height.

IMPORTANT | HIGH

2.4 Finding – Safety performance of similar service station accesses

An assessment of a service station on a side road off Warnbro Sound Ave and its crash record can provide an indication of the likelihood of crashes associated with a service station access on a side road close to Warnbro Sound Ave.

Justification of the finding:

The audit team has identified a service station on the southwest corner of Secret Harbour Blvd/ Warnbro Sound Ave that has an access within 60 m of Warnbro Sound Ave, similar to the development site, although it is acknowledged that the intersection with Warnbro Sound Ave is a roundabout, and not traffic signals as per the proposed site, as shown in Photograph 6 below.



Photograph 6 – Similar Service Station Example 1 (left turn 60 m from Warnbro Sound Ave)

A review of the five-year crash record for the above site indicates that there have not been any reported crashes associated with the left turn into the service station.

Based on the above assessment, there are no identified concerns with the location and length of the proposed left turn lane into the development site off Aurea Blvd **provided that** all other **Findings** in this audit report are adequately addressed.

2.5 Finding – Existing deficiencies (pedestrians)

There are no Tactile Ground Surface Indicators (TGSIs) at any of the crossing locations and the zebra crossings on each left turn slip lane at the Adelong Ave/ Aurea Blvd/ Warnbro Sound Ave intersection have spotlights that are not working or energised.

Justification of the finding:

Examples of the lack of TGSIs on site are shown in Photograph 7 and Photograph 8 below.



Photograph 7 – Lack of TGSIs at Adelong Ave/ Aurea Blvd/ Warnbro Sound Ave intersection



Photograph 8 – Lack of TGSIs at Aurea Blvd/ Thundelarra Dr roundabout

At pedestrian crossings, both pedestrians and drivers approach the crossing with caution and any device which may potentially give a pedestrian an illusory sense of safety when crossing the road should not be used. Crossing roads is particularly difficult for people with disabilities and this can inhibit them from moving about on the street system. People with limited or no vision have difficulty identifying where to cross, and people in wheelchairs and those with limited mobility sometimes have trouble moving on and off crossings or completing a crossing in the time available.

The *Disability Services Act 1993* (amended 2004) requires all state and local government agencies to ensure that services and facilities, provided for the general public, are accessible to people with a disability.

The provisions of the *Disability Services Act* are important in relation to road safety audit. This is because auditors have to consider how disabled pedestrians can use existing and alterations to road infrastructure.

If proposed or existing facilities are difficult to negotiate or are unclear, it may result in a disabled person crossing in a hazardous location. This also relates to other public access areas such as a private car park.

In a Safe System (**Section 1.4**) it is recognised that crashes involving vulnerable road users at speeds greater than 30 km/h are known to result in higher severity outcomes.

TGSI's are not provided at other intersections on in the area or along Warnbro Sound Ave.

The lack of inconsistent facilities for people with a disability can lead people with reduced cognitive and mobility abilities to areas where they can then be stranded due to lack of continuity.

Based on the above, it is recommended that *TGSI's* are not installed as part of the development proposal but are installed throughout the area as part of a city-wide program by the City of Rockingham.

Recommendation 2.5.1

Defer installing *TGSI's* in isolation, opting instead to have *TGSI's* installed throughout the Neighbourhood Centre Precinct as part of a city-wide program by the City of Rockingham.

HIGH

Recommendation 2.5.2

City of Rockingham to ensure that the spotlights on each zebra crossing location at the Adelong Ave/ Aurea Blvd/ Warnbro Sound Ave intersection are repaired or energised.

HIGH

2.6 Finding – Maintaining on-road cycle route facilities

As indicated in **Section 1.7.2**, all the roads in the vicinity of the development site have on-road cycle lanes. Some of these do not have the cycle logo on them and some do.

Justification of the finding:

An example of an on-road cycle lane with a cycle logo is provided as Photograph 9 below.



Photograph 9 – Example of marked cycle lanes on Adelong Ave

Whilst the ‘cycle lanes’ on Aurea Blvd and Thundelarra Dr do not have the cycle logo, they are an extension of the cycle facilities shown in Photograph 9 above and throughout the area and should be provided with the logos. The development should maintain this on-road cycle facility past the access off Aurea Blvd and Thundelarra Dr. The Development Drawing indicates that they will be, but this may not be obvious to drivers entering and leaving the site. It is therefore recommended that cycle logos are applied to the on-road cycle lane at these locations.

Recommendation 2.6.1

Install cycle logos at the start of each on-road cycle lane on Aurea Blvd between Warnbro Sound Ave and Thundelarra Dr and on Thundelarra Dr between Aurea Blvd and Kalli St/ Talisker Bend as well as at each access driveway to the development site.

LOW

2.7 Finding – Street lighting

Street lighting is provided throughout the audit area, but a failure of a street light on Aurea Blvd reduces night time visibility for pedestrians in this area (in addition to the spot light issue in **Finding 2.5**).

Justification of the finding:

The street light failure is shown in Photograph 10 below. The street lights on the southwest corner of Adelong Ave and Warnbro Sound Ave were also not working at the time of the inspection.



Photograph 10 – Street light failure on south side of Aurea Blvd just west of Warnbro Sound Ave

Recommendation 2.7.1

Direct Western Power to repair all broken street lights in the vicinity of the audit area.

HIGH

2.8 Finding – Drainage

The existing parking embayment on the south side of Aurea Blvd slopes back to the road. It is not clear if the proposed left turn lane will also slope back or continue the road crossfall back.

Justification of the finding:

An example of existing ‘adverse’ crossfall within the parking embayment on the south side of Aurea Blvd (proposed left turn lane) is shown in Photograph 11 below.



Photograph 11 – Existing parking embayment crossfall back to road on Aurea Blvd

There was no evidence of ponding associated with the current crossfalls during the heavy rain events experienced during the site inspections, as shown in Photograph 12 below.



Photograph 12 – Existing parking embayment crossfall back to road on Aurea Blvd during wet conditions

Recommendation 2.8.1

Ensure that drainage is considered for the proposed left turn lane off Aurea Blvd.

HIGH



3. AUDIT TEAM STATEMENT

I hereby certify that the audit team have examined the documents listed in **Appendix B** in undertaking this Road Safety Audit and confirm that this audit has been carried out independently of the design team and in accordance with Main Roads Policy and Guidelines for Road Safety Audit.

Audit Team Leader

David Wilkins

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Signature

20/07/2021

Date



APPENDIX A: AUDIT PHOTOGRAPHS



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APPENDIX B: LIST OF DOCUMENTS PROVIDED FOR THE AUDIT



Figure 15 – Development Drawing



Document Ref.	Document Title	Date
TIA (5)	Transport Impact Assessment	Jan 2021
2021-05-03 Letter	Letter and Technical Note from Transcore to Metro Outer Joint Development Assessment Panel	3 May 2021
T20.349-TN1	Transcore Technical Note No 1	30 June 2021
DAP/21/01952	Metro Outer Joint Development Assessment Panel Determination	12 May 2021

Referenced Documents

1. **Austroads.** *Guide to Road Safety Part 6A: Implementing Road Safety Audits (2019)*. Sydney NSW : Austroads Ltd, 2019. p. 175, Austroads Guide to Road Safety. ISBN 978-1-925671-99-5.
2. **Main Roads Western Australia.** Perth Metropolitan Area Functional Road Hierarchy. [ed.] Asset & Network Information. Perth, WA, Australia : Main Roads Western Australia, August 1997.
3. **Government of Western Australia | Peet | CLE Town Planning + Design.** *Golden Bay Structure Plan | Part one - Implementation*. Perth WA : CLE Town Planning + Design, October 2020. p. 12. 2187Rep373E.
4. **Western Australian Planning Commission.** *Liveable Neighbourhoods 2015 Draft*. Department of Planning | Western Australian Planning Commission. Perth : Western Australian Planning Commission, 2015. p. 141, Draft.
5. **Transcore.** *Proposed Mixed Commercial Development | Lot 265 (40) Talisker Bend, Golden Bay | Transport Impact Assessment*. Perth WA : Transcore, January 2021. p. 43. t20.270 r01a.
6. **Austroads.** *Safe System Roads for Local Government*. Sydney, NSW : Austroads Ltd, 2016. p. 107, Research Report. ISBN 978-1-925451-12-2.
7. —. *Embedding Safe System in the Guide to Traffic Management*. Sydney : Austroads Ltd, January 2019. p. 78, Research Report. ISBN 978-1-925671-94-0.
8. —. *Guide to Road Safety Part 6: Managing Road Safety Audits*. Sydney : Austroads Ltd, 2019. p. 49. ISBN 978-1-925671-98-8.
9. **Western Australian Planning Commission.** *Transport Impact Assessment Guidelines*. Department of Planning, Government of Western Australia. Perth, Western Australia : Western Australian Planning Commission, August 2016. p. 182, Revised August 2016. The current version of the TIA guidelines (August 2016) has been endorsed by the WAPC.
10. **Austroads.** *Guide to Traffic Management Part 13: Safe System Approach to Transport Management*. Sydney : Austroads Ltd, 2020. p. 94, Guide to Traffic Management. ISBN 978-1-925854-87-9.



11. —. *Safe System in the Planning Process*. Sydney : Austroads Ltd, 2015. p. 82, Research Report. ISBN 978-1-925294-44-6.

12. **Standards Australia**. *AS 2890.2-2002 Parking facilities Part 2: Off-street commercial vehicle facilities*. Second. Sydney : Standards Australia International, 2002. p. 49. Vol. 2. ISBN 0 7337 4870 8.

13. **Austroads**. *Safe System Assessment Framework*. Sydney : Austroads Ltd, 2016. p. 73, Research Report. ISBN 978-1-925451-01-6.



APPENDIX C: CORRECTIVE ACTION REPORT



Corrective Action Report - Lot 265 (40) Talisker Bend (cnr Aurea Blvd/ Warnbro Sound Ave), Golden Bay- Proposed Mixed Commercial Development with access off Aurea Blvd & Thundelarra Dr | Stage 3 - Detailed Design

Findings and Recommendations	Project Manager		
	Agree / Disagree	Reason for Disagreeing	Proposed Action and Comments
Finding 2.1 – No previous road safety audits There are no known previous road safety audits for the Adelong Ave/ Aurea Blvd/ Warnbro Sound Ave traffic signal-controlled intersection, the layouts of Aurea Blvd and Thundelarra Dr intersection, or the <i>Golden Bay Structure Plan</i> .	Choose an item.		
Recommendation 2.1.1 That the City of Rockingham develops and adopts a Road Safety Audit Policy as per guidance provided in Section 2.4, and the Policy example provided in Appendix G, of <i>Austrroads Guide to Road Safety Part 6: Managing Road Safety Audits</i> . HIGH	Choose an item.		



Findings and Recommendations	Project Manager		
	Agree / Disagree	Reason for Disagreeing	Proposed Action and Comments
Finding 2.2 – Adjacent developments Areas to the north and west of the development site are currently under construction and appear to be commercial developments that are consistent with the 'Neighbourhood Centre Precinct', i.e., an 'Activity Centre', as described in the <i>Golden Bay Structure Plan</i> . It is not clear if traffic generation associated with these developments has been included in the forecast volumes and hence assessment of queueing on Aurea Blvd back to Warnbro Sound Ave.	Choose an item.		
Recommendation 2.2.1 Ensure that the forecast 10-year volumes included in the <i>TIA</i> and the associated modelling takes into account traffic generation from committed developments and transport proposals. IMPORTANT HIGH	Choose an item.		



Findings and Recommendations	Project Manager		
	Agree / Disagree	Reason for Disagreeing	Proposed Action and Comments
Finding 2.3 – Visibility and sight distance A detailed assessment of the required and available sight distance for readability and safe operation of the Adelong Ave/ Aurea Blvd/ Warnbro Sound Ave intersection and the proposed left turn lane into the development site off Aurea Blvd, as well as the access off Thundelarra Dr, is required.	Choose an item.		
Recommendation 2.3.1 Ensure that the required sight lines at each access driveway are kept clear of any objects or landscaping greater than 300 mm in height. IMPORTANT HIGH	Choose an item.		
Finding 2.4 – Safety performance of similar service station accesses An assessment of a service station on a side road off Warnbro Sound Ave and its crash record can provide an indication of the likelihood of crashes associated with a service station access on a side road close to Warnbro Sound Ave. No Identified concerns.	NA	NA	NA



Findings and Recommendations	Project Manager		
	Agree / Disagree	Reason for Disagreeing	Proposed Action and Comments
Finding 2.5 – Existing deficiencies (pedestrians) There are no Tactile Ground Surface Indicators (<i>TGS</i> 's) at any of the crossing locations and the zebra crossings on each left turn slip lane at the Adelong Ave/ Aurea Blvd/ Warnbro Sound Ave intersection have spotlights that are not working or energised.	Choose an item.		
Recommendation 2.5.1 Defer installing <i>TGS</i> 's in isolation, opting instead to have <i>TGS</i> 's installed throughout the Neighbourhood Centre Precinct as part of a city-wide program by the City of Rockingham. HIGH	Choose an item.		
Recommendation 2.5.2 City of Rockingham to ensure that the spotlights on each zebra crossing location at the Adelong Ave/ Aurea Blvd/ Warnbro Sound Ave intersection are repaired or energised. HIGH	Choose an item.		



Findings and Recommendations	Project Manager		
	Agree / Disagree	Reason for Disagreeing	Proposed Action and Comments
Finding 2.6 – Maintaining on-road cycle route facilities As indicated in Section 1.7.2 , all the roads in the vicinity of the development site have on-road cycle lanes. Some of these do not have the cycle logo on them and some do.	Choose an item.		
Recommendation 2.6.1 Install cycle logos at the start of each on-road cycle lane on Aurea Blvd between Warnbro Sound Ave and Thundelarra Dr and on Thundelarra Dr between Aurea Blvd and Kalli St/ Talisker Bend as well as at each access driveway to the development site. LOW	Choose an item.		
Finding 2.7 – Street lighting Street lighting is provided throughout the audit area, but a failure of a street light on Aurea Blvd reduces night time visibility for pedestrians in this area (in addition to Finding 2.5).	Choose an item.		
Recommendation 2.7.1 Direct Western Power to repair all broken street lights in the vicinity of the audit area. HIGH	Choose an item.		



Findings and Recommendations	Project Manager		
	Agree / Disagree	Reason for Disagreeing	Proposed Action and Comments
Finding 2.8 – Drainage The existing parking embayment on the south side of Aurea Blvd slopes back to the road. It is not clear if the proposed left turn lane will also slope back or continue the road crossfall back	Choose an item.		
Recommendation 2.8.1 Ensure that drainage is considered for the proposed left turn lane off Aurea Blvd. HIGH	Choose an item.		



Corrective Action Report - Lot 265 (40) Talisker Bend (cnr Aurea Blvd/ Warnbro Sound Ave), Golden Bay- Proposed Mixed Commercial Development with access off Aurea Blvd & Thundelarra Dr | Stage 3 - Detailed Design

NOTE:

- This Corrective Action Report is to be read in conjunction with the full Road Safety Audit Report and its findings and recommendations.
- The asset owners (MRWA and/or LGA) **must** be informed of these findings, recommendations, and proposed actions.
- Items not under the responsibility of this project representative must be forwarded to the persons / agencies who are responsible.

These findings and recommendations have been considered, and the actions listed will be taken accordingly.

Responsible Project Representative	Company / Agency / Division	Position	Date

Asset Owner Representative	Company / Agency / Division	Position	Date



Corrective Action Report - Lot 265 (40) Talisker Bend (cnr Aurea Blvd/ Warnbro Sound Ave), Golden Bay- Proposed Mixed Commercial Development with access off Aurea Blvd & Thundelarra Dr | Stage 3 - Detailed Design

Findings and Recommendations	Project Manager		
	Agree / Disagree	Reason for Disagreeing	Proposed Action and Comments
Finding 2.1 – No previous road safety audits There are no known previous road safety audits for the Adelong Ave/ Aurea Blvd/ Warnbro Sound Ave traffic signal-controlled intersection, the layouts of Aurea Blvd and Thundelarra Dr intersection, or the <i>Golden Bay Structure Plan</i> .	Agree		
Recommendation 2.1.1 That the City of Rockingham develops and adopts a Road Safety Audit Policy as per guidance provided in Section 2.4, and the Policy example provided in Appendix G, of <i>Austroads Guide to Road Safety Part 6: Managing Road Safety Audits</i> . HIGH	Agree		This is a matter for City of Rockingham to consider and action as appropriate.



Findings and Recommendations	Project Manager		
	Agree / Disagree	Reason for Disagreeing	Proposed Action and Comments
Finding 2.2 – Adjacent developments Areas to the north and west of the development site are currently under construction and appear to be commercial developments that are consistent with the 'Neighbourhood Centre Precinct', i.e., an 'Activity Centre', as described in the <i>Golden Bay Structure Plan</i> . It is not clear if traffic generation associated with these developments has been included in the forecast volumes and hence assessment of queueing on Aurea Blvd back to Warnbro Sound Ave.	Agree		
Recommendation 2.2.1 Ensure that the forecast 10-year volumes included in the <i>TIA</i> and the associated modelling takes into account traffic generation from committed developments and transport proposals. IMPORTANT HIGH	Agree		The assessment of the ultimate developments has been undertaken as part of the structure plan. The traffic assessment undertaken in the <i>TIA</i> for this development is limited to the development crossovers only which are left in/left out, but has allowed for 2% annual growth in traffic on abutting roads to allow for any future growth in traffic.



Findings and Recommendations	Project Manager		
	Agree / Disagree	Reason for Disagreeing	Proposed Action and Comments
Finding 2.3 – Visibility and sight distance A detailed assessment of the required and available sight distance for readability and safe operation of the Adelong Ave/ Aurea Blvd/ Warnbro Sound Ave intersection and the proposed left turn lane into the development site off Aurea Blvd, as well as the access off Thundelarra Dr, is required.	Choose an item.		
Recommendation 2.3.1 Ensure that the required sight lines at each access driveway are kept clear of any objects or landscaping greater than 300 mm in height. IMPORTANT HIGH	Agree		Adelong Avenue and Aurea Boulevard are straight flat roads and therefore there are adequate sight lines available for approaching motorists to the proposed crossover on Aurea Boulevard. This has been confirmed through several site inspections by Transcore. This specific recommendation of the RSA is noted and will be actioned during the detailed design stage of the project.

Findings and Recommendations	Project Manager		
	Agree / Disagree	Reason for Disagreeing	Proposed Action and Comments
Finding 2.4 – Safety performance of similar service station accesses An assessment of a service station on a side road off Warnbro Sound Ave and its crash record can provide an indication of the likelihood of crashes associated with a service station access on a side road close to Warnbro Sound Ave. No Identified concerns.	NA	NA	NA
Finding 2.5 – Existing deficiencies (pedestrians) There are no Tactile Ground Surface Indicators (TGS/s) at any of the crossing locations and the zebra crossings on each left turn slip lane at the Adelong Ave/ Aurea Blvd/ Warnbro Sound Ave intersection have spotlights that are not working or energised.	Agree		
Recommendation 2.5.1 Defer installing TGS/s in isolation, opting instead to have TGS/s installed throughout the Neighbourhood Centre Precinct as part of a city-wide program by the City of Rockingham. HIGH	Agree		This is a matter for City of Rockingham to consider and action as appropriate.



Findings and Recommendations	Project Manager		
	Agree / Disagree	Reason for Disagreeing	Proposed Action and Comments
Recommendation 2.5.2 City of Rockingham to ensure that the spotlights on each zebra crossing location at the Adelong Ave/ Aurea Blvd/ Warnbro Sound Ave intersection are repaired or energised. HIGH	Choose an item.		
Finding 2.6 – Maintaining on-road cycle route facilities As indicated in Section 1.7.2 , all the roads in the vicinity of the development site have on-road cycle lanes. Some of these do not have the cycle logo on them and some do.	Agree		
Recommendation 2.6.1 Install cycle logos at the start of each on-road cycle lane on Aurea Blvd between Warnbro Sound Ave and Thundelarra Dr and on Thundelarra Dr between Aurea Blvd and Kalli St/ Talisker Bend as well as at each access driveway to the development site. LOW	Agree		This is a matter for City of Rockingham to consider and action as appropriate.



Findings and Recommendations	Project Manager		
	Agree / Disagree	Reason for Disagreeing	Proposed Action and Comments
Finding 2.7 – Street lighting Street lighting is provided throughout the audit area, but a failure of a street light on Aurea Blvd reduces night time visibility for pedestrians in this area (in addition to Finding 2.5).	Choose an item.		
Recommendation 2.7.1 Direct Western Power to repair all broken street lights in the vicinity of the audit area. HIGH	Agree		This is a matter for City of Rockingham to consider and action as appropriate.
Finding 2.8 – Drainage The existing parking embayment on the south side of Aurea Blvd slopes back to the road. It is not clear if the proposed left turn lane will also slope back or continue the road crossfall back	Choose an item.		
Recommendation 2.8.1 Ensure that drainage is considered for the proposed left turn lane off Aurea Blvd. HIGH	Agree		The drainage will be investigated and addressed during the detailed design stage of the project.



Corrective Action Report - Lot 265 (40) Talisker Bend (cnr Aurea Blvd/ Warnbro Sound Ave), Golden Bay- Proposed Mixed Commercial Development with access off Aurea Blvd & Thundelarra Dr | Stage 3 - Detailed Design

NOTE:

- This Corrective Action Report is to be read in conjunction with the full Road Safety Audit Report and its findings and recommendations.
- The asset owners (MRWA and/or LGA) **must** be informed of these findings, recommendations, and proposed actions.
- Items not under the responsibility of this project representative must be forwarded to the persons / agencies who are responsible.

These findings and recommendations have been considered, and the actions listed will be taken accordingly.

Behnam Bordbar	Transcore	Managing Director	20/07/2021
Responsible Project Representative	Company / Agency / Division	Position	Date

Asset Owner Representative	Company / Agency / Division	Position	Date



PEER REVIEW OF PROPOSED GOLDEN BAY SERVICE STATION EMISSIONS IMPACT ASSESSMENT



Peer Review of Proposed Golden Bay Service Station Emissions Impact Assessment

Prepared for: City of Rockingham

Project Ref: EAQ-21024
August 2021



Environment | Air Quality



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Final_1.1	Clarifications on VR2	10.08.2021	J. Hurley	City of Rockingham
Final_1.2		17.08.2021		

Approved for Release

Name	Position	File Reference
John Hurley	Principal Air Quality Consultant	EAQ21024-CityofRockingham-PeerReview-GoldenBaySStation_Final.v1.2

Signature

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1 Background

Environmental & Air Quality Consulting Pty Ltd (EAQ) was engaged by the City of Rockingham to perform an independent Peer Review (the Review) of an Environmental Emissions Impact Assessment (the Assessment) undertaken by Land and Water Consulting (LWC), as detailed within the report titled “Emissions Impact Assessment: Proposed Service Station, Aurea Boulevard, Golden Bay, Western Australia, July 2021”.

The Assessment estimates mass emission rates and provides a screening analysis of toxic pollutants from fuel vapour for a proposed service station (the Proposal), where the Assessment predicts toxic pollutant impacts at the nearest sensitive receptor. The magnitude of those predicted impacts is then considered with respect to human health at the nearest sensitive receptor.

The Assessment advice was provided on behalf of the Proposal to assist in a Metro Outer Joint Development Assessment Panel (JDAP) determination for approval or refusal of the Proposal. JDAP refused an initial application for the Proposal on the basis that the initial assessment did not adequately address human health impacts. Subsequent to this, the current LWC Assessment was undertaken and the JDAP has since been invited by the State Administrative Tribunal (SAT) to reconsider its refusal of the Proposal based on the current LWC Assessment.

This Review will assist the City of Rockingham in making its own determination for an approval or refusal of the Proposal and will further inform the JDAP in its revised decision for SAT.

The Assessment confirms that:

- The Proposal will include Vapour Recovery (VR) Phase 1 within its design;
- The Proposal does not currently propose to apply VR Phase 2 within its design, however;
 - It has been verbally confirmed that the Assessment will employ VR Phase 2.

The Assessment concluded that:

- The Assessment utilised worst-case meteorological conditions to predict the impacts of Benzene at the nearest future sensitive receptor; and
- The toxic pollutant Benzene is unlikely to impact at the nearest sensitive receptor.

This report presents the findings of the peer review of the Assessment.

1.1 Capacity to offer Expert Opinion

This Review has been commissioned by the City of Rockingham and has been undertaken by John Hurley. John is EAQ’s Principal Scientific Air Quality Consultant with 16 years’ experience in air quality environmental consultancy in Australia.

John holds a Bachelor of Sciences in Chemistry and Biotechnology, is a Certified Air Quality Practitioner (CAQP) and a member of the Clean Air Society Australia and New Zealand (CASANZ).

Specialising in Environment & Air Quality assessments including odour, air toxics and particulates (dust), licence applications, works approvals and amendments, site-specific air capture and treatment mitigation technologies and dispersion modelling assessments, John also has a comprehensive research and consulting record in odour measurement using Australian and International Standards for laboratory based dynamic olfactometry and field odour intensity determination to include training of odour assessors.

He has worked intrinsically in air emissions capture and treatment design and project delivery, whilst consulting on management and internal procedures for the ongoing improvement and delivery of controlled emissions and impact mitigation.

He has undertaken a considerable number of air quality impact assessments as well as personnel exposure for dust and chemical emissions (toxics), assessments in process control (chemical fingerprinting) and OH&S exposure, as well as undertaking comprehensive air quality emission works in key areas such as: Industrial Resources Sector – Alumina Industry, Waste Water, Solid Waste and Recycling, Poultry, Livestock and Animal Rendering, Refineries, Oil Recycling, Biofuels, Asphalt, Grain Feed, Land Developments, General Industry, Restaurants and Cafes and even Seagrass Wrack Accumulations.

John has undertaken large scale, site-wide audits in airborne pollutant and odour emissions and has delivered improvement plans on the basis of those audits.

He is extensively skilled in the development of meteorological datasets and dispersion modelling of air emissions which are used to:

- determine empirical impacts at sensitive receivers;
- informing the risk of amenity and health impacts at those receivers;
- planning applications and urban development;
- siting of facilities as best-practice based on land use, terrain and locality meteorological characteristics; and
- abatement and mitigation studies of air pollutant emissions.

John has worked integrally with emissions capture and treatment techniques for emissions mitigation and has consulted on best-practice mitigation technologies for a wide range of industries including procurement, scheduling, supervision and installation services for purpose-built treatment technologies.

His experience in Air Quality and his reputation has made him a widely respected consultant that strives to solve air emission problems by delivering outcomes based on scientific and technical approaches. He has been extensively retained by key clientele during his career and continues to maintain those relationships across Australia.

John has regularly provided expert opinion and witness for both State Administrative Tribunal Mediation and Hearings.

2 Peer Review

The structure of the Review will address key areas raised by the JDAP and the subsequent Assessment provided by LWC addressing those concerns, as follows;

- i. *The application did not adequately address human health impacts as the development was within the 200m generic separation distance recommended by Environmental Protection Authority Guidance Statement No.3 (Separation Distance between Industrial and Sensitive Land Uses 2005); and*
- ii. *Sensitive land uses, including two approved child care premises were within 200m from the service station. The applicant did not submit a scientific study based on site and industry-specific information which demonstrates that a lesser distance will not result in unacceptable health impacts.*

The Review steps through those relevant sections of the Assessment and discusses those Assessment statements, methods and conclusions, within these sections, in relation to their accuracy, relevance and appropriateness with respect to the Proposal. Subsequent to this the Reviewer provides his own opinion, commentary and recommendations on the Assessment.

2.1 General Peer Review Comments

- **In the opinion of the Reviewer;**
 - The Assessment has several textual/editing errors that confuse the interpretation of methods, assumptions, results and conclusions of the Assessment; and
 - The Assessment often refers to a 3rd party assessment undertaken by ANE (ANE, 2016), however; LWC should be deriving emission estimates and process relationships based on primary reference and guidance documents as per first principals.

2.2 Assessment Section '1 Introduction'

The Assessment states that the methods are site-specific for the Proposal.

- **In the opinion of the Reviewer** the Assessment does not satisfy a site-specific methodology given the meteorological data utilised for predicting Benzene impacts is not specific to the Golden Bay location in any regard, where;
 - The Assessment should have employed a full modelling approach that incorporates local meteorological trends over at least one (1) full year of observations, rather than simplifying the meteorology by utilising only minimum and maximum temperatures and a wind speed that lacks conservatism with respect to worst-case dispersion.

2.3 Assessment Section '2.2 Assessment Criteria'

Table 2-1 within the Assessment lists the adopted air quality criteria utilised in the Assessment.

- **In the opinion of the Reviewer** the Assessment utilises air quality criteria from other Australian jurisdictions that fails to address the existing, albeit [Draft, air quality criteria](#) prescribed by the Western Australian Department of Water and Environmental Regulation (DWER).

2.4 Assessment Section '3 Service Station Data'

The Assessment literature emissions factors presented in Table 3-2 of the Assessment appear to be correct.

2.5 Assessment Section '3.4 Chemicals'

The Assessment states that:

"The composition of petroleum fuel has been reported in the Emission Estimation Technique Handbook for Aggregated Emissions from Service Stations (National Pollutant Inventory 1999) and amended for Benzene based on the Fuel Standard (Petrol) Determination 2001 (Office of Legislative Drafting and Publishing 2008) document as shown in Table 3-1, and as listed in ANE (2016)".

Following this statement, the Assessment presents the Composition of Petrol (NPI 1999) in NPI document Table 3-3 as follows:

Table 3-3 - Composition of petrol (NPI 1999)

Species	% Composition in vapour
Benzene	0.31350
Cyclohexane	0.07096
Ethylbenzene	0.08812
n-Hexane	1.92722
Styrene	0.00314
Toluene	1.20313
Xylenes	0.48236

However, the NPI, 1999 data is as follows:

Table 3: Composition of Petrol

Species	Petrol Liquid (% weight) ^a	Petrol Vapour (% weight) ^b
Benzene	2.9 ^c	0.950
Cyclohexane	0.2	0.0637
Ethylbenzene	2.0	0.0791
n-Hexane	3.5	1.73
Styrene	0.1	0.00282
Toluene	10.4 ^c	1.08
Xylenes	12.2	0.433

^a Ye et al (1995) unless otherwise specified.

^b Calculated from Equation 2, with the figure for styrene based on the boiling point of m-xylene.

^c Octel (1994).

The Assessment assumes that the NPI, 1999 data is as stated within the ANE, 2016 report; however, this is not the case. The ANE, 2016 report has revised the NPI data and the reasoning for this revision is not provided or referred adequately too within the Assessment.

- **In the opinion of the Reviewer;**
 - the Assessment has relied upon literature data taken from a 3rd party report (ANE, 2016) which has not been verified; and
 - The NPI, 1999 data should be utilised in it's entirety for the purposes of deriving spill and vapour losses of Benzene, where:
 - The NPI 1999 composition of Petrol Vapour (Benzene) is 0.950 % and not 0.31350 % as utilised in the Assessment.

2.6 Assessment Section '3.5 Service Station Emissions Calculations'

- **In the opinion of the Reviewer;**
 - The Assessment has several calculation inconsistencies that do not logically progress the overall calculation methods making it improbable for the Reviewer to verify the calculation data; and
 - The CAPCOA data are emission rate factors and should be applied directly to the total daily volume (average) of fuel dispensed and the number of dispensing nozzles (6 as stated in the Assessment).

2.7 Assessment Section '4 Meteorological Data'

The Assessment states that "The closest Bureau of Meteorology station with a full dataset (rainfall, temperature, wind direction and speed) is understood to be Medina Research Station (MRS, ID 009194) (Data range 1983 – 2018). MRS is located ~25 km north of the Site".

- **In the opinion of the Reviewer:**

- The nearest suitable meteorological station with reliably logged data is the Bureau of Meteorology (BoM) Mandurah Automatic Weather Station (AWS), where:
 - the Mandurah AWS is approximately 12 kilometres south, south-west from the Proposal,
 - the Medina AWS (closed) was approximately 25 kilometres north, north-east of the Proposal, and therefore;
 - the Mandurah AWS is closer to the Proposal and of higher relevance.
- The Mandurah data is readily accessible through the BoM Data Request system;
- The Medina data is referred to in the Assessment as annual trends, however; the Medina data presented in the Assessment is not annual with respect to all wind directions, it is wind direction at 3pm only;
 - The Medina Windrose (3pm) reports 6,729 total observations for 3pm, this represents 76.82% of annual data recovery, for 3pm, which is too low for modelling purposes ([DoE, 2006](#)).
- The annual assumptions made with respect to the Medina AWS in the Assessment are incorrect when considering annual trends and daily, annual wind characteristics.

2.8 Assessment Section '5 Dispersion Modelling'

- **The Reviewer has** run the emission scenarios using AERSCREEN and the Assessment inputs and confirms the screening model outputs in Appendix B of the Assessment.

Given the Proposal is seeking to achieve approval of a service station that fails to meet the recommended separation distance by the WA EPA, the appropriate assessment approach **in the opinion of the Reviewer** is to utilise at least one (1) full year of site-representative meteorological data and assessment of mass emission rates using a full modelling approach i.e. using AERMOD.

In the opinion of the Reviewer the use of the AERSCREEN utility and the inputs utilised are lacking, based on;

- The minimum wind speed used in the Assessment was 3.8 metres per second (m/s), conservatively the Assessment should have adopted the default value of 0.5 m/s;
- The vent stack should be placed next to building structures to account for building downwash, which will conservatise predicted impacts at non near-field receptors;
- The single meteorological data point derived within AERSCREEN generates a single meteorological condition in 'all' directions surrounding the emission source but is not able to discern concentrations at varying receptors surrounding the Proposal under differing wind conditions, where:
 - The dominant wind flows in the locality of Golden Bay are from the east to south-west origins, and

- Based on prevailing winds and the location of emission points at the Proposal, there is likely to be less impacts at the childcare premise directly west of the Proposal.
- The use of AERSCREEN, with regard to the childcare premises, does not allow for further interrogation of times-of-day that impacts are likely to occur (if any) based on the hours of operations at those childcare premises.

2.9 Assessment Section '5.8 Modelling Results'

The Reviewer has not been able to verify the final annual predictions at the assessed receptor when interrogating the result graphs in Section 5.8.1 given the graphical results represent maximum 1-hourly concentrations of fuel vapour losses.

The final annual predicted impacts in Table 5-5 (Section 5.8.2) are difficult to verify based on the information presented within the Assessment.

The Reviewer advises that there are no calculation steps other than Appendix C of the Assessment where those Appendix C calculations offer no logical insight into how the final predicted concentrations were arrived at.

The Reviewer comments that:

- The Assessment determines the pollutant mass emission rates and subsequent ground level pollutant concentration predictions by modelling the emission source. The ground level predictions will generally decrease at incremental distances outward from the emission source i.e. from the proposed Service Station;
- The Assessment modelled a receptor at 20 m from the central emission source. This receptor is a near-field location at the southern edge of the proposed Service Station boundaries. From there the AERSCREEN model predicts incremental ground level pollutant concentrations outward from the emission source based on dispersion parameters built into the AERSCREEN model; and
- The childcare premises are at distances of approximately 80-100 m or more from the proposed Service Station. It is therefore logical to assume that those ground level pollutant concentration predictions at the 20 m receptor will be larger than those predicted ground level pollutant concentrations at the childcare premises; i.e. the childcare premises predicted pollutant concentrations would be lower than those listed in Table 5-5 (pg. 33) of the Assessment.



3 Conclusions of Peer Review Findings and Risk Assessment

3.1 Conclusions of Peer Review

As a summary of the Assessment work completed, **the Reviewers'** main points of review are:

- The Assessment calculation steps are not clear;
- The Assessment utilised a screening approach which is not appropriate for assessments seeking a reduction in separation distances;
 - The screening approach is appropriate for preliminary planning and further investigations.
- The Assessment relied upon Medina meteorological trends where the data recovery for the presented 3pm characteristics is less than the required 90% suggesting that the total annual data recovery may also be < 90%; and
- The graphical data presented in Section 5.8.1 are 1-hourly data points where the calculation steps to annual predictions are not provided.

The findings of the Assessment (presented in Table 5-5 of Assessment report) shows that the predicted Benzene concentration at the nearest 20 m receptor is $3.1 \mu\text{g}/\text{m}^3$, which is 31% of the exposure limit for Benzene i.e. 'Pass'. The predicted ground level pollutant concentrations at the childcare premises would therefore be lower than this 31%.

In considering the overestimation of a screening model; the actual concentration of Benzene when employing a full model and meteorological trends is likely to be comparable to this predicted concentration or lower.

Although the Assessment lacks appropriate clarity and methods of assessment, **the Reviewer** having undertaken site-specific modeling assessments for service stations of this type and surrounding land uses, would suggest that the conclusions of the Assessment are likely to be accurate where predicted ground level pollutant concentrations, applying VR Phases 1 & 2, are lower than the mandated exposure limits.

3.2 Risk Assessment

The following Risk Assessment details those sections/conclusions/findings of the Assessment that were identified in this Peer Review. Each point is rated in terms of its level of Risk and how that Risk may affect the conclusions and outcomes of the Assessment.

Table 3-1: Peer Review Risk Assessment Hierarchy

High	The issue has significant implications based on the technical data/results/methodology and the conclusions drawn from the Assessment
------	--

Medium	The issue has implications that may alter the conclusions that are drawn from the Assessment
Low	The issue may need to be addressed but is considered unlikely to alter the conclusions of the Assessment
Observation Only	An issue has been raised purely as an observation

The risk assessment system does not represent a “pass” or “fail”, rather it mostly relates to a lack of adequate justification or evidence in the Assessment undertaking.

Table 3-2 identifies areas of concern and/or deficiency.

Table 3-2: Peer Review Risk Assessment Outcomes

Medium	<ul style="list-style-type: none"> The Assessment has relied heavily upon literature data taken from a 3rd party report (ANE, 2016) which has not been verified. The Assessment utilises Vapour Composition values that are different to the NPI 1999 values and are not substantiated within the Assessment. The Assessment does not satisfy a site-specific methodology given the meteorological data utilised for predicting Benzene impacts is not specific to the Golden Bay location. The assumptions made with respect to the Medina AWS in the Assessment are incorrect when considering annual trends and daily, annual wind characteristics. A screening model does not satisfy a suitable scientific assessment approach for the Proposal given, among others, the lack of representative meteorological data. The Assessment presents no clear calculation steps other than Appendix C of the Assessment where those Appendix C calculations offer no logical insight into how the final predicted impacts were arrived at.
Low	<ul style="list-style-type: none"> The Assessment has several textual and editing errors that confuse the interpretation of methods, assumptions, results and conclusions. The Assessment attempts to ‘explain’ the methods but the explanations give rise to confusion where simple tables and calculations would better describe the intent. The Assessment utilises air quality criteria from other Australian jurisdictions, however; there are existing, albeit Draft, air quality criteria prescribed by the Western Australian Department of Water and Environmental Regulation (DWER).

Schedule of Submissions

Proposed Mixed Commercial Development - Lot 265 Warnbro Sound Avenue, Golden Bay (20.2021.31.1)

* SAT Reconsideration Comments

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
1. Mrs Kirsten Leeder	47 Allatoona Avenue GOLDEN BAY WA 6174	I am happy to hear that a development has been proposed as there current empty blocks are a waste of space and make the area look a bit run down, however I do not think that it is a suitable place for a service station. There is already a service station in secret harbour, about 2kms away and another on Mandurah Road, roughly the same distance in the opposite direction. I do support the idea of a gym being built there as it would be good for the residents of Gbay to have one in easy walking distance. In my opinion a I, baker, deli type establishment would be great for the community and even attract people to the area. An IGA would be great as well. The eyesore of a building carcass across the street also needs to be dealt with. The abandoned structure just makes the place look forlorn and I know most if not all residents hate looking at every day.
2. Mr David Gull	11 Erlistoun Street GOLDEN BAY WA 6174	we don't want or need any more servos or gyms! SAT Reconsideration Comments – Submission 2 We do not want another fuel station in golden bay!
3. Ms Adelle Smith	104 Aurea Boulevard GOLDEN BAY WA 6174	My view on this is a firm NO we do not need nor want this development in Golden Bay. There are already multiple servos and gyms in the local area. I don't support this development at all. You still let the eye sore ¼ finished failed IGA sit there for years, sort that disgrace out before you look at approving any others.
4. Mr Thomas Boltz	15 Patman Road SECRET HARBOUR WA 6173	I am for the proposal. Another service station and gym would increase competition in the area and takeaway the monopoly Caltex and anytime fitness have. More competition equals lower prices for all SAT Reconsideration Comments – Submission 2 I think this should go ahead as it would be great for local jobs and more space for a local I etc. I'm not a fan of people pushing to reject to benefit their own agenda instead of the greater community. This area has always been zoned for commercial. I fully support this proposal.
5. Mr Gregg Bohan	98 Bancoura Parkway SECRET HARBOUR WA 6173	We do not need another petrol station within a few hundred metres of the Caltex service station in Secret Harbour. Furthermore, there is another BP station within a couple of kms. These impose significant impacts on the coastal environment, particularly installation of underground fuel storage tanks etc. This is not a service required within this are. I am not in support of this proposal.
6. Mr Steven During	96 Tangadee Road GOLDEN BAY WA 6174	I am against the above proposal because of the impact traffic will have coming through golden bay. I live on tangadee road near the school and I believe that there will be an increase in traffic coming the area. I believe that we do not need another service station in the area as there is one in golden bay and one in secret harbour. The council should not approve this development in my opinion. SAT Reconsideration Comments – Submission 2 I am still against this development in golden bay as it a hazard to the 2 childcare centres and the people that are opposite the development site. I believe that there is a carcinogen risk to the kids in the centres. Also the increased traffic flow in the area is a hazard to the kids in golden bay primary and the childcare centres. It is for these reasons that I am still against this development Regards Steven Durning.

Schedule of Submissions

Proposed Mixed Commercial Development - Lot 265 Warnbro Sound Avenue, Golden Bay (20.2021.31.1)

* SAT Reconsideration Comments

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
7. Mrs Elaine Durning	96 Tangadee Road GOLDEN BAY WA 6174	<p>This email is to highlight the thoughts and I have on the proposal for said development above.</p> <p>I live adjacent to Sam Sila reserve and across from the Golden bay Primary School. It is bad enough here with hoon driving through roundabouts and such at weekends never mind during school hours. Barely anyone allows their kids to play in park now due to people speeding on our roads.</p> <p>Now if you were to put in a service station we would have more traffic, more crime in area with volume of vagrants coming through. We definitely do not need another service station we have one at end Dampier on Mandurah Road and Secret Harbour shops.</p> <p>I agree the place is an utter mess with half finished development on other corner, but to propose what you have is a no from me and I of folk in area. We like our beach side living we do not need a service station Gym or shop of unknown description.</p>
8. Ms Jessica Boak	38 Emerald Boak SINGLETON WA 6175	I am a rate payer of RCC. I am opposed to building a service station near where children frequent such as a school or childcare centre.
9. Ms Janelle Mathieson (Murphy)	2 Tamala Court GOLDEN BAY WA 6174	<p>As a current Golden bay resident I hereby disagree to a petrol station going in to the new development. I think it will be too close to homes. And they are an eye sore. We currently have enough petrol stations if anything you should make a northbound entrance for the bp on Mandurah road for people returning from the freeway or Mandurah. I would love to see a gym that would be lovely, a Chinese restaurant would be great as our closest is singleton or port Kennedy and we need a deli or IGA with the population of kids in the area it would be nice to be able to send them to the shop to grab a few things and an ice cream for themselves, like I did as a child. It's also a good location for coffee shops for the current new golden bay foreshore playground I think having a little lunch bar/coffee shop in that location would get a lot of interest as it's just off Warnbro sound and people may be on their way to McDonalds and see the lunch bar and decide to go there for something healthier.</p> <p><u>SAT Reconsideration Comments – Submission 2</u></p> <p>'reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use'</p> <p>With further consideration that there will be children accommodating facilities less than 50 Metres way from the service station I actually feel appalled that this is being reconsidered.</p>
10. Ms Jackie Mellor	39 Impressions Way SINGLETON WA 6175	I just want to share an objection to the proposed service station being built in Golden Bay. I don't believe we need a service station that close to schools and child care centres.
11. Ms Gemma Hardiman	24 Mallina Crescent GOLDEN BAY WA 6174	I agree with the Gymnasium and a small commercial entity being built for Golden Bay residents who cannot utilise the Secret Harbour facilities. I do not agree with the petrol station as there is a newly refurbished BP station on Mandurah Road and another Caltex station at Secret Harbour. Both of these stations are less than 1 km away from the proposed site and service the needs of Golden Bay and Secret Harbour – there is no requirement for a 3 rd petrol station.

Schedule of Submissions

Proposed Mixed Commercial Development - Lot 265 Warnbro Sound Avenue, Golden Bay (20.2021.31.1)

* SAT Reconsideration Comments

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
No.11 - cont...		<p>Ratepayer health is more important than corporate attempts to 'tap' into markets to attempt to grab a slice of the profits. I have read the Environmental report, petrochemicals are not substances that I would like anywhere near my property due to known health and environmental complications despite the advances in technology designed to 'safeguard' against petrochemicals. I bought my property for the location, amenities on offer and local services. Not for access to petrol stations across the street, but further away from my house!</p> <p>SAT Reconsideration Comments – Submission 2</p> <p>Is this revised mixed commercial development also known as Lot 265 Warnbro Sound Avenue, Golden Bay? As per correspondence from the City of Rockingham (23rd July 2021) notifying me of the developers appeal lodged via the SAT? If Lot 256 Talisker Bend and Lot 265 Warnbro Sound are the same, I do NOT agree with any petrol station development due to health and environmental concerns despite beautification and amendment of the proposed site. There are already two petrol stations within the stretch of Warnbro Sound Ave and Mandurah Road that serve the suburbs. Any further additional petrol stations to access the share of drivers is corporate greed. I agree with a new fitness center and small centers to assist with the vibrancy of the suburb.</p>
12. Ms Kate Williams	36 Aurea Boulevard GOLDEN BAY WA 6174	<p><u>Submission 1</u></p> <p>This development proposal does not make sense from the perspective of residents in the area – placing a petrol station in the heart of homes and schools and child care centres is not acceptable. Residents want appropriate development and amenity – shops and cafes are fine – not a service station. I oppose this development with specific reference to the 7-11 service station. We do not need a service station in this location – there are already 2 service stations close enough, with one at Secret Harbour shopping centre and another on Warnbro Sound Rd – near the Paganoni traffic lights. This service station development does not suit the area – it is too close to residential lots and the public school. Service stations should not be in the middle of a residential development. My concerns related to: a) noise (24 hour traffic) b) pollution (fumes especially) as well as the rubbish that people chuck out of their cars. We already have enough rubbish in our area so why create more opportunity with take away cups and packaging. C) additional traffic in a residential location. D) it is too close to the primary school (air borne pollution, increased traffic) e) it will be too close to TWO proposed child care centres. Seriously put amenity and common sense before profit.</p> <p><u>Submission 2</u></p> <p>Further to my last feedback I have now learned that the roundabout located at Aurea Blvd and Thunelarra Drive is a major crossing point for families and children at end of school peak hour. The construction of the mixed development at the proposed location therefore presents as a major hazard to the families leaving this school zone.</p> <p>I would be taking a very close look at the traffic studies presented by the proponent as I believe that they may not have given adequate attention to the detail of children using this area in the afternoon peak. I would urge Council to conduct their own traffic studies to ensure that all the relevant and current information regarding this very important issue is fully understood before making any recommendations/decision.</p>

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No.12 - cont...		<p><u>SAT Reconsideration Comments – Submission 3</u></p> <p>Reject the Golden Bay service station proposal based on the public health risk of exposure to Benzene.</p> <p>This development does not meet the EPA guidelines of 200m from sensitive land use.</p>
13. Mrs Jessica Partington	11 Narloo Way, Golden Bay 6174	<p>I dispute the proposal for a service station at Lot 265 Warnbro Sound Ave, Golden Bay!</p> <p><u>SAT Reconsideration Comments – Submission 2</u></p> <p>I am writing to reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use.</p> <p>I own and run a family daycare in Golden bay and am concerned about the health implications for not only my clients, but for my own family and children.</p>
14. Mr Phil Reilly	37 Talisker Bend GOLDEN BAY WA 6174	<p>I have resided in Golden Bay for eight years and I am happy to see the new developments. I would be one of the closest properties to the development and understand that there may be some inconvenience during the build. I am also aware of the possibility that some damages may occur to the surround properties during the development. I am specifically concerned with property damages caused by compaction during the ground works. In anticipation of this I would ask the city to inspect the surrounding properties prior to the works to assess and note any existing property damages therefore avoiding the possibility of false claims at a later date. I have previously worked for an insurance repair building company where we were tasked to assess property damages caused by the Southern freeway extension, several years ago. Before and after house inspections were carried out and the property owners were compensated for any damages caused by the construction according. The damages mainly consisted of minor cracks to walls, ceilings and eaves caused by ground vibrations during the compaction process. Being in such a close proximity to the development, I would appreciate your consideration and acknowledgement of my concern. Many thanks.</p> <p><u>SAT Reconsideration Comments – Submission 2</u></p> <p>Having already being knocked back, I find it confusing that the fuel station development would be suggested a second time. Being the closest resident to this proposed facility, I fear that the development will endanger the health of myself and my family, lower the value of local properties, and increase road traffic unnecessarily. A study from Spain found that living within 100m of a petrol station is dangerous, and people who are more at risk should not be living within 50m of a petrol station (https://www.sciencedaily.com/releases/2011/02/110204130315.htm). I am a veteran, and I am physically incapacitated. Due to this, I am unable to work and spend most of my days at home. My neighbours are a retired elderly couple who also spend most of their time at home. This would increase both our families exposure to airborne chemicals by the fuel station, including benzene, which has been linked to leukemia. A nationwide case study from Switzerland found an increased risk of childhood cancer in children living close to petrol stations</p>

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No.14 – cont...		<p>https://journals.lww.com/environepidem/fulltext/2019/10001/childhood_cancer_and_residential_proximity_to.808.aspx). Local schools and daycare facilities are being built, which are close to the proposed fuel station. Students and parents passing the station daily would be exposed to airborne chemicals. The Thundellara Dr and Aurea Blvd roundabout would have an increased flow of traffic from those dropping off and picking up their children from Golden Bay Primary School and the new Daycare centres, combined with the traffic from vehicles entering and exiting the fuel station. This would bring unnecessary traffic to Golden Bay as there are several other fuel stations nearby. The increase in traffic and noise, and the health risk associated with living near a petrol station will deter possible residents from buying homes and land in Golden Bay, lowering our property values and weakening the tranquil lifestyle that the area is known for. Please consider the future ramifications for Golden Bay and the lives of the families that live here should this proposal be approved.</p>
15. Mrs Bonita Jamieson	Unit 383, 106 Oakleigh Drive ERSKINE WA 6210	<p>My worry regarding this proposal is the position of this as being on the main road after lights where multiple high school and primary school along with day care familys cross I feel this could be a real danger to people.</p> <p><u>SAT Reconsideration Comments – Submission 2</u></p> <p>Once again this is even closer to my familys home day cares being constructed and schools.</p>
16. Mrs Kim Sheehy	59 Crystaluna Drive GOLDEN BAY WA 6174	<p>There is absolutely no need or reason to add another service station in Golden Bay. The community doesn't need it there is no demand for it and businesses are struggling as it is. I live on Crystaluna Drive: From my house to Caltex Secret Harbour 4.3 kms 7 mins From my house to BP Karnup 3.4 kms 6 mins From my house to Shell Express 2.7 kms 4 mins Caltex and Shell are both 24 hours.</p> <p>We actually don't even need any more retail space as there are vacant shops within Secret Harbour Square and the IGA in Golden Bay, is now incomplete with no finish date in sight. It would be a poor decision to allow this development to be approved.</p> <p><u>SAT Reconsideration Comments – Submission 2</u></p> <p>I wish to state my disapproval for this development, it's absolutely disgusting that a petrol satiation could even be considered in such a area. 460 kids go to Golden Bay Primary School, two new day cares are currently being built and somehow you all think this ok.</p> <p>We have a petrol station in Secret Harbour its 24 hour and only 2km or 4 mins down the road, another petrol station is at Golden Bay, 2.1kms or 4mins down the road.</p> <p>How on earth could there possibly be a need for another petrol station in the area.</p> <p>There is already an increased crime rate on that particular side of Golden Bay and this development should be rejected immediately and it should never be about money but clearly this is.</p>
17. Ms Victoria Pearson	29 Indiana Parade SINGLETON WA 6175	<p>Good afternoon,</p> <p>I would like to lodge my objection to the proposed Service Station at Lot 265 Warnbro Sound Avenue.</p> <p>Shops and gyms would not be an issue, but there is no need for another petrol station in such a high density residential area. Petrol stations have been linked to health issues for many years now. There is a primary school and sporting facilities nearby. It would negatively impact the surrounding homes.</p>

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No.17 - cont...		<p>There are a number of petrol stations in close proximity it seems crazy to add another one in that position.</p> <p><u>SAT Reconsideration Comments – Submission 2</u></p> <p>I would like to lodge my strongly objection to the proposed petrol station at Lot 265 Talisker Bend.</p> <p>The area has high density housing, primary schools and a high school in close proximity.</p> <p>A petrol station was not in any planning documents when I purchased my home which is only streets away from this site.</p> <p>I am worried about the health risks for my family and the community of Golden Bay that have been proven to exist with exposure to benzene.</p> <p>There are so many petrol stations close by, we don't need another one in a location like this.</p>
18. Mr Daniel Byers	27 Melilla Terrace SECRET HARBOUR WA 6173	Fully supported. The area is an eyesore and anything that can bring jobs is great.
19. Mr Gordon Waycott	4 Tamala Court GOLDEN BAY WA 6174	<p>Thanks 4 returning my call on Friday 26/2/2021.</p> <p>My main concerns regarding the proposed Service Station in Golden Bay, Cnr Aurea Bvd and Warnbro Sound Ave are:</p> <ol style="list-style-type: none"> 1. Pollution to air. 2. Fuel leakage to ground water. 3. Position next to traffic lights. 4. In middle of residential housing. 5. Why the need as 7 servo's in 5 minute radius. 6. Too close to primary school. 7. Can cause antisocial behaviour + noise especially at night. 8. Traffic congestion. 9. Could decrease property value. 10. The big one for my wife and myself on a still night and morning, we can hear the waves breaking on the shore from our bedroom window, that will be gone if the servo get the go. <p>Am very very happy for the Lot 265 to be developed as in shops, gym etc. But Service Station a big no. Cheers.</p>
20. Mr Robert Wilson	54 Fleetway Street MORNINGSIDE WA 4170	Looks OK. Adds amenity to the local area but would like to see the service station have facilities for EV charging too.
21. Mrs Lesley McKay	1 Boolardy Road GOLDEN BAY WA 6174	<p>I strongly protest against the proposal for a petrol station on the grounds of increased traffic and proximity to the golden bay primary school. The traffic impact from this plus two childcare centres will be significant and an unacceptable risk to the safety of young children crossing roads in the vicinity.</p> <p><u>SAT Reconsideration Comments – Submission 2</u></p> <p>The proposed petrol station at Lot 265 Talisker Bend, Golden Bay, will not add value to the Golden Bay community. The community is growing fast and many families with young children are moving into this area looking for a safe, seaside location, to live and raise their family. They are already well served by shopping centres and multiple petrol stations within just a few kilometres.</p>

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No.21 - cont...		As has already been stated by others, there are the obvious safety concerns - both road safety and potential benzine emissions. My main worry is related to road safety as it is located very close to two childcare centres where small children and babies will be arriving and leaving and crossing the road at all times of the day. As an accountant, I cannot understand the business case for yet another petrol station so close to many others, relying on an ageing technology that will become obsolete in a decade due to the increasing use of EV's. Also of great concern is the "heat island" effect of reducing the old-tree population and increasing bricks, concrete and tarmac. A forward-looking Council should be looking at ways of increasing canopy cover to reduce warming of the suburb and making it an even greater place to live.
22. Miss Raewyn Kerr	6 Tamala Court GOLDEN BAY WA 6174	I say NO to the proposal. The proposed petrol station would be less than 100 metres from my home and the fumes and emissions have been proved to be carcinogenic at this distance. It would have a negative impact on my health. Petrol, diesel and gas fumes also smell bad. I also object to the proposed neon/ lit up signage. At the proposed height, this would shine light straight into my backyard and through my bedroom windows at night, all night. I wouldn't sleep with that light coming in which would negatively impact my health. I am also concerned about the effects of the emissions and fumes from the petrol station on the kids going to the daycare centres. Again, there is a proven health risk to these children. I don't see how thundelarra avenue could support the added volume of traffic at peak times, with residents going to work, vehicles going to 2 day care centres, the primary school AND a service station access. Have the road studies factored in the extra expected traffic from the daycare centres? The increased volume of vehicle traffic when kids/pedestrians are walking to and from school and daycare and needing to cross roads in the area would increase the likelihood of serious crash or injury. I also object to the service station proposal on the grounds that it would be noisy. Being so close to my home, I would hear the Delivery trucks coming and going at all hours of the day and night and the noise of the extra traffic at night and day, so close to my home would definitely impact me in a negative way. It would disrupt my sleep which long term would negatively impact my health. The noise levels of the trucks and cars at night and early hours of the morning surely wouldn't meet noise standards in a residential area? From my house I would constantly hear people closing their car doors at night and if they are yelling in the car park I would hear that and that would disturb my peace too. When I purchased my home in the stage one development, I did my due diligence and looked at the plans for that area. After stage one was completed the area for the daycare centres was rezoned. The area proposed for this service station was shown in the plans to be a village precinct centre... there was even illustrated pictures of what this area would look like – small shops! There was no mention of a big commercial service station. I would not have purchased my home if the plans showed a future petrol station. The plans were completely misleading in the fact that now everything is completely different to what I looked at during stage one. This isn't fair – to say and plan one thing then years later change the zoning and completely change the look and feel of the neighbourhood! This petrol station does not fit with the planning that was in place at the time I purchased my property. Its not right! Fair go guys – Look after your residents! So in summary, I strongly object to the proposed service station.

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No.22 – cont...		<p><u>SAT Reconsideration Comments – Submission 2</u></p> <p>I, Raewyn Kerr of 6 Tamala court Golden Bay, object to this proposal. It's way too close to a large number of our homes and is in fact less than the recommended 200 metres from my own home. I am not only concerned for my own health but especially the health effects on our children using the childcare centres and the school and surrounding areas that as proposed, still do not, in the revised proposal, have the recommended 200m buffer zone! This very serious concern has not been resolved in the revised proposal. The safe level for Benzene is ZERO. I do not believe an EIA or other changes in the new proposal can meet that safety level of zero. Again, this serious health concern has not been resolved in the revised proposal in order to meet that safe level of zero. An emissions impact statement and fuel vapour recovery system do NOT negate the two health concerns I mentioned above and do not resolve either of those concerns. Again, and I repeat again and again the proposal does not remedy, and is in fact in breach of the advice below and the very real concerns of residents on the health concerns stated directly below. These are real living breathing people and children! Would you want your kids or grandkids attending a childcare centre less than 200m from a servo? I think not. So I again refer to the below: "Environmental Protection Agency recommended a 200m buffer between all 24/7 service stations and sensitive land uses. Within 200m from the site there are two planned childcare centres, 130 homes, a primary school, an approved residential subdivision backing on to the service station and two family daycares operating from residential addresses" Does the traffic safety audit take into account the expected increase of volume of traffic, especially during before and after school pickup times, from the 2 new childcare centres when they are up and running? Shifting of the air/water bay further south to increase the size of the landscaping area puts those facilities even closer to my home. So that will move some of the emissions from those running vehicles and those vehicles stopping and starting even closer to my home. I am already concerned about the safety of the air I will breathe, I don't want those vehicle emissions even closer! I am also still concerned about the noise from the parking area, at all hours of the night. It is extremely close to my residence on Tamala court and there is just vacant land in between. Everything echoes and it will sound so loud in my backyard. So in summary, I strongly object to this proposal. The health concerns for our children and community in regards to benzene levels and the complete ignorance of the 200m buffer zone recommendations have not been remedied. I do not feel this proposal meets the best interests of our community and is highly likely to in actual fact, cause harm.</p>
23. Mr Aiden Slinger	MILEURA WA 6174	<p>In no way shape or form should this proposal for service/fuel station be approved for this site. My concerns with this proposal are that it is too close to the local school and the two child care centres that have been approved for building on the opposite corners to the west of this proposed fuel station development. I feel that in the mornings and afternoons at drop off times there is no where near enough space on our narrow local roads for all the traffic which will cause unavoidable delays for local residents. Being that there is a service station located approx 1km away to the north at the Secret Harbour shopping centre and also one only 1km away to the south on Mandurah road I feel that for there to be another built in Golden Bay risks it becoming a failure, just like the IGA which is still unfinished after 4 years of being abandoned mid build.</p>

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No.23 - cont...		I believe that to the majority of the local population, who are the ones it is targeted at, it is another unwanted and unrequired development being forced on the local people so a few greedy individuals, namely property developers, can make a few bucks and not be concerned by the issues their development causes. It is a definite NO from me.
24. Mr Keith Martin	8 Talisker Bend GOLDEN BAY WA 6174	Why do we need another service station in Golden Bay as there is one in Secret Harbour and one at the entrance to Golden Bay approx 5 kms apart. Not only that it will be diagonally opposite a Child Care Centre and 500 mtrs from the Primary School so I don't think we need any extra traffic in these areas that are congested already. Just one more thing that block has a nesting colony of Plovers in it every year so do you want to see them homeless like the Kangaroo's that were in Golden Bay.
25. Ms Lynne Martin	13 Noreena Avenue GOLDEN BAY WA 6174	I am writing to oppose a petrol station or fast food take away / restaurant being built on Lot 265 Warnbro Sound Avenue The kids use that route to walk to school, the additional traffic will be a hazard to them. Also directly over from school the smell will be awful. The noise too will disturb our once quiet little suburb. There is no lack of Service Stations in the area either. We want healthy kids here too not having the likes of KFC on our doorstep.
26. Ms Sharon Hansen	30 Erlistoun Street GOLDEN BAY WA 6174	I am writing to oppose the proposed construction of a petrol station on lot 265 Warnbro Sound Avenue, Golden Bay. This will be near to a new child care facility and I feel it's not warranted as there are already 3 petrol stations within a 5 km radius! I imagine that's just ridiculous planning as per usual by the Rockingham council. I would actually like to know the reasoning behind such absurdity. Regards <u>SAT Reconsideration Comment – Submission 2</u> I reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use. We already currently have 3 petrol stations within a 2km radius of each other. This is absolutely ridiculous! How about listening to your rate payers!
27. Mr David & Mrs Carlene Lee	42 Ellendale Street GOLDEN BAY WA 6174	As a resident of Golden Bay, I wish to express my objection to the proposed service station in Golden Bay. I do not object to the mixed commercial site including a gym, I or shopping precinct. The concerns I have on the proposed service station are as follows: * the environmental impact on the area on fuel and oil spillages * health concerns of a service station and storage of fuel in the area close to a primary school, child care centre and residential areas. * increased traffic in the area * there is already sufficient service stations in the area at BP Golden Bay, Secret Harbour, Singleton, lakelands just to name a few. This service station is not needed and should not proceed.
28. Mrs Anna Jackson	9 Yaringa Street GOLDEN BAY WA 6174	I am against the building of a Petrol Station. This will increase traffic congestion as it is close to proposed childcare centres and to the nearby school. The cumulative effect of all the different uses in this area need to be factored in to the traffic report. An independent traffic report should be commissioned. Do not rely on a traffic report paid for by the proponent. The noise of customer cars and delivery trucks at all hours is not conducive to residential living.

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No.28 - cont...		<p>The smell from petrol fumes is something nearby residents should not have to suffer. Refusing the petrol station on the grounds of traffic, noise and smell in this coastal residential area is a must. And there is no need to worry about the decision causing any lack of petrol stations. There is one at Secret Harbour and one at Golden Bay and electric cars are a reality NOW.</p> <p>SAT Reconsideration Comments – Submission 2</p> <p>We DO NOT want this petrol station at this location. It is against EPA guidelines, being within 200m of the primary school and two daycare centres. Proposed amendments such as the fume recovery systems will not reduce Benzene emissions to zero so the health risk to children is still a problem. Children and babies will be harmed by this development. It is a disgrace that the proponent pushes on with this. Go put the petrol station somewhere else far from children and babies in accordance with EPA guidelines. Children are depending on us to protect them. We must take this responsibility seriously.</p> <p>Traffic congestion is still a problem as cars come and go.</p>
29. Mrs Christina Clark	12 Menton Place SECRET HARBOUR WA 6173	<p>We in Secret Harbour and Golden Bay do not want or need another service station. As a rate payer of the City of Rockingham, we are very much against it.</p> <p>SAT Reconsideration Comments – Submission 2</p> <p>As a resident of Secret Harbour for twenty years. I feel we do not need another fuel station. It will be to near housing and schools.</p>
30. Mrs Judith Stone	64 Tangadee Road GOLDEN BAY WA 6171	<p>This will increase the vehicles on the road, resulting in an increase in noise pollution, as well as a hazard to the children and elderly in the area.</p>
31. Mrs Michelle Baldock	4 Breaksea Court GOLDEN BAY WA 6174	<p>I object to mixed commercial development, we have enough petrol stations, too close to residential buildings, too much smell.</p> <p>SAT Reconsideration Comments – Submission 2</p> <p>I object to the proposal because of health risks in the community!</p>
32. Mr Robert Trew	10 Kalli Street GOLDEN BAY WA 6174	<p>I am a resident at 10 Kalli Street Golden Bay.</p> <p>I am writing in regards to the mixed commercial development located at Lot 265 Warnbro Sound Avenue, Golden Bay.</p> <p>I am only against the proposed petrol station on the land.</p> <p>Why,</p> <ol style="list-style-type: none"> 1. The health effects of having a petrol station located so close to many houses have been documented for years and I am astounded one would be considered by the city within 100 metres of houses and future day care centres. I will attach articles to relevant research on this. 2. You plan to have a I and gym there as well. As someone who likes to keep fit and healthy the gym interests me, but if it's right next to a Petrol Station no chance I will be going to that gym. Laughable you claim it will have an outdoor gym area which no one will want to use breathing in fumes from the petrol station. 3. There is already an abundance of petrol stations in the area. Having a petrol station here does not reflect what the immediate community wants or needs on this land. <p>Here are many articles about petrol stations' health effects living so close to them. Especially to children and increased risk of cancer.</p> <p>https://www.dailymail.co.uk/health/article-1354430/Petrol-station-Living-100m-garage-bad-health.html</p>

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33. Ms Patricia Folan	22 Glenburgh Drive GOLDEN BAY WA 6174	<p>Regarding the petrol station and gym in golden bay. I would like to submit my comments against this development – no need for petrol station 24/7 in golden bay. There are nearby petrol stations at secret harbour shops and at the corner of Dampier drive and Mandurah road. This petrol station will be an eyesore and affect the nearby homes and is too close to a new childcare centres with the associated fumes and noise. – gym I have no problem with a gym though I attend the one in secret harbour and when a class is on, the class leader has a microphone and loud music to lead the class. This noise can be heard outside the gym. Some sessions start at 5:30am and on until 7:30pm. That is not appropriate – golden bay is a residential area. Shops and activities should be based on the community and developing that sense of coming together such as library, community centre, allotments or community gardens, cafes. We have shops nearby which have impacted on the development on the proposed iga site. And it will impact on shops/businesses in golden bay so as a result should offer something different so that they can succeed and have no impact on other local shops.</p> <p>SAT Reconsideration Comments – Submission 2</p> <p>I would like to formally object to the planned petrol station on thunderlarra drive and warnbro sound. I believe this is too close to two new childcare centres and to the primary school. Children will be at risk from the adverse side effects of the fumes in their formative years</p>

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34. Ms Rebecca Farlow	16 Ellendale Street GOLDEN BAY WA 6174	<p>I object to this development specifically because of the inclusion of a petrol station. I disagree with a petrol station being developed due to the smell, the noise, and because it is not in keeping with a residential area. Additionally, the increased traffic poses both a safety risk to the children as young as 3 years old attending Golden Bay Primary School, particularly when considering the large numbers of students who must cross Warnbro Sound Avenue to get to the primary school.</p> <p><u>SAT Reconsideration Comments – Submission 2</u></p> <p>I have previously written to advise I do not support proposed petrol station for Warnbro Sound ave in Golden Bay, and am concerned this proposal is being considered again. The developer's promise of an emissions impact statement and fuel vapour recovery system, effectively changes nothing for the surrounding residents and businesses who are at risk by being exposed to Benzene. The proposed development poses a public health risk of exposure to Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use and as such it should be rejected. There was never meant to be a petrol station in this location. We already have one on Mandurah Rd and one in Secret Harbour, both less than 2km from the proposed development. The surrounding residents purchased and rented their homes never expecting a petrol station to be erected metres away.</p>
35. Ms Lisa Fransplass	12 Gilroyd Way GOLDEN BAY WA 6174	I am completely against yet another servo in this area. The kids should not have to walk past this twice a day to go to school. There are more than enough in the area, give us something useful.
36. Mrs Janet Procter	(No address provided)	<p>We really do not need another petrol station. I would rather see the land remain vacant. The developers need to sort the eyesore sight on the opposite corner before grabbing more money from oil companies. This site is far to close to primary school, childcare centres, and the general public for it to become a noisy, smelly, highly toxic eyesore. PLEASE DO NOT ALLOW THIS TO PROCEED.</p>
37. Mrs Lowri Wythes	14 Tambrey Avenue GOLDEN BAY WA 6174	<p>We would hate to see a petrol station built in golden bay. So close to residents and the school. We do not need one!! The residents do not want this!!!</p> <p><u>SAT Reconsideration Comments - Submission 2</u></p> <p>I reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use.</p>
38. Ms Jennifer Stevens	42 Thundelarra Drive GOLDEN BAY WA 6174	Against the petrol station due to the smell and fumes which both exacerbate asthma symptoms and with an Australian average of approximately 50% of the population suffering from asthma in some form it is not fair to some of our younger members (the Primary school) having to deal with this daily through no choice of their own. Yes, I am also an asthma sufferer, and living only three doors down from this proposed development will have a direct impact on my health.
39. Ms Julia Masny	8 Yaringa Street GOLDEN BAY WA 6174	I am totally opposed to a service station being built on this site. It is well known that petrol fumes and emissions are dangerous for people's health, especially developing children, so there is no way one should be built so close to residences and definitely not near child care centres. Apart from which there are sufficient service stations nearby.

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No.39 - cont...		<p>SAT Reconsideration Comments – Submission 1</p> <p>To whom it may concern.</p> <p>I am dismayed about the propose development of a service station in Talisker Bend, near the Primary School and Child Care Centres.</p> <p>We should all be concerned about the toxic effects of benzene fumes on the developing brains and bodies of young children.</p> <p>It beggars belief that developers say that they can mitigate against the problems attached to such a development in this location.</p> <p>Developers are not known for their concerns for the health of the general population, given their propensity to want to build more and more fast food outlets as well as service stations, which seem to be popping up everywhere.</p> <p>My husband died at the age of 56 from Chronic Lymphocytic Leukaemia, after a number of years of ill health. As a student he worked in service stations. There is now known to be a link between benzene, which is a known carcinogen, and CLL.</p> <p>My point is that there are potential long term effects of exposure to the toxic fumes of petrol.</p> <p>The future health of our children should be paramount when such planning decisions are made.</p>
40. Ms Monique Lukatelich	(No address provided)	<p>I, Monique Lukatelich, vehemently reject the development of a fuel station within close proximity to a child care centre and school in Golden Bay. The child care centre and wellbeing of our community's children is paramount and of utmost concern. The severe health risks that these children will be exposed to is the responsibility of the City of Rockingham and the local government need to ensure a safe environment for our children.</p> <p>Be prepared for legal ramifications if this goes ahead as the risks are evident. My husband is in senior management for Woodside Energy and we have hundreds of documents on the risks of BTEX compounds in the environment and the effect this has particularly on children.</p> <p>For the Rockingham council to approve this would be to the detriment the health of our children in the community and the residents living within close proximity.</p> <p>We are requesting a follow up email response from the councillors so we have it in writing for future documentation.</p> <p>SAT Reconsideration Comments – Submission 2</p> <p>I, Monique Lukatelich, vehemently reject the ridiculous Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. I am happy to provide peer reviewed literature to the greedy corporations trying to make money at the expense of our residents. This development does not meet the EPA guidelines of 200m from sensitive land use.</p>
41. Ms Nikki Bombak	24 Kalli Street GOLDEN BAY WA 6174	<p>I would like to send it my opinions in relation to the notice to build a service station in Golden Bay as a City of Rockingham ratepayer living in close proximity to the proposed service station. My greatest concern is the high risk and link to cancer and living in closer proximity to service stations. From my research it is widely known that benzene in petrol is a known carcinogen and people who live in close proximity to service stations are at a greater risk of having a cancer diagnosis. My concern is further compounded knowing that directly across the road from the service station is two child care centres, a primary school and a high school.</p>

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No.41 - cont...		<p>I hold great fear for the health and wellbeing of the children growing up in Golden Bay and attending these service for their lifetime and the exposure they will have to a known carcinogen.</p> <p>Having reviewed the proposal and supporting documents for Lot 265, I hold the concern that this application does not sufficiently address the Environmental Protection Authority (EPA) Separation Distances as identified in Part 5 of the Development Application Report by Planning Solutions, specifically in relation to the planned Service Station use. The applicant has noted that 'EPA Guidance Statement No. 3' recommends a generic buffer zone of 200m between a Service Station operating 24 hours and any sensitive land uses. The definition of 'sensitive land uses' as identified in the EPA Guidance Statement No. 3 includes the use of premises for childcare.</p> <p>Whilst I acknowledge that the 'EPA Guidance Statement No. 3' is a guide only, we believe that the two childcare centres must be identified and addressed by a suitably qualified professional in the applicants submission, with evidence of any impacts or mitigation strategies provided. If the applicant is unable to demonstrate that the proposed development would not impact on the amenity of these two childcare facilities, we submit that this application should be refused.</p> <p>I would like to finally add that I requested of your officers if we can see the response from the departments that you are referring the application on to and if they would be available before the closing date.</p> <p>I quote</p> <p>'the City has referred the application to the following State Government agencies: - Department, Water Environment and Regulation; - Department of Health; and – Department of Mines, Industry Regulation and Safety. The application is also being assessed by the City's Health and Environmental Planning Services. This application will be determined by the Joint Development Assessment Panel with the City's Responsible Authority Report likely to be tabled before Council in April.'</p> <p>When will their finding be submitted to council and when can ratepayers view their reports into the development of Lot 265.</p> <p><u>SAT Reconsideration Comments - Submission 2</u></p> <p>I thought you might like to learn some more about Benzene. It looks to be a new hot topic of discussion and I hope this will assist you in some way.</p> <p>Did you know that Benzene has recently been found in hand sanitisers in the US and there are calls to ban these products?</p> <p>'NIOSH (National Institute of Occupational Safety and Health, USA) recommends as part of its carcinogen policy that the "most protective" respirators be worn for benzene at concentrations above 0.1 ppm.' A respirator for 0.1 parts per million, that's minuscule!</p> <p>To put that in perspective, 0.1ppm is equivalent to 0.01mg/L... At least, that's what my research suggests. A new study by Valisure showed that 44/169 hand sanitisers tested contained at least 0.1ppm of benzene due to added ethanol in its ingredients. 0.1mg/L in hand sanitiser, that's how small the quantity is that can cause lifelong adverse health effects.</p> <p>Imagine for a minute how much will be airborne or distributed into our community from any petrol spilled at the bowser and distributed via the tyres of vehicles, not only being inhaled but absorbed through our skin.</p>

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No.41 - cont...		<p>Have a wonderful Tuesday.</p> <p>Please note, this was not a petition, they are individually signed letters by each resident and should be classed as each individual objection.</p> <p>I can, of. Purse send them through one at a time... but I thought a PDF document with all of the mmmm attached would be more convenient.</p> <p>This was not a submission of a petition.</p> <p>Note: The 38 signed objections are added as individual submissions. Please refer to Submission No.148 to No.185.</p>
42. Mr Harry Reynoldson Grassroots Childcare	(No address provided)	<p>I am writing to the City of Rockingham as the Director of Grassroots Childcare, an established and highly regarded operator of childcare centres across Australia.</p> <p>Grassroots Childcare is the lease holder and future operator of the approved childcare centre located at Lot 716 Thundelarra Drive, Golden Bay, with a signed Agreement for Lease in place with the land owner and developer for the construction of this centre, and opening of this service expected by September 2021. Our site is located on the north-west corner of the intersection of Aurea Boulevard and Thundelarra Drive, diagonally across the intersection from the proposed development site at Lot 265 Talisker Bend, Golden Bay.</p> <p>Having reviewed the proposal and supporting documents for Lot 265, we hold the concern that this application does not sufficiently address the Environmental Protection Authority (EPA) Separation Distances as identified in Part 5 of the Development Application Report by Planning Solutions, specifically in relation to the planned Service Station use.</p> <p>The applicant has noted that 'EPA Guidance Statement No. 3' recommends a generic buffer zone of 200m between a Service Station operating 24 hours and any sensitive land uses. The definition of 'sensitive land uses' as identified in the EPA Guidance Statement No. 3 includes the use of premises for childcare.</p> <p>There are two development approved childcare facilities in the close vicinity of the proposed location of the Service Station:</p> <ol style="list-style-type: none"> 1. Lot 716 Aurea Boulevard, Golden Bay, DA approved 92 place childcare centre Located immediately north-west of the proposed development site, on the north-west corner of the intersection of Thundelarra Drive and Aurea Boulevard 2. Lot 263 Aurea Boulevard, Golden Bay – DA approved 100 place childcare centre Located immediately west of the proposed development site, on the south west corner of the intersection of Thundelarra Drive and Aurea Boulevard <p>Both approved childcare centres are located less than 100m from the proposed Service Station development site and have not been identified or addressed in the applicant's submission.</p> <p>Whilst we acknowledge that the 'EPA Guidance Statement No. 3' is a guide only, we believe that the two childcare centres must be identified and addressed by a suitably qualified professional in the applicants submission, with evidence of any impacts or mitigation strategies provided.</p> <p>If the applicant is unable to demonstrate that the proposed development would not impact on the amenity of these two childcare facilities, we submit that this application should be refused.</p> <p>We look forward to these matters being addressed in the City of Rockingham's planning assessment of this site.</p> <p>Should you require any further information regarding our submission, please contact the undersigned on the details as provided below.</p>

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No.42 – cont...		<p><u>SAT Reconsideration Comments – Submission 2</u></p> <p>I am writing to the City of Rockingham to provide additional commentary regarding the development at Lot 265 Talisker Bend, Golden Bay, which comes further to my letter dated 8 March 2021, in which I outlined my concerns on the applicant not sufficiently addressing the issue of Environmental Protection Authority Separation Distances from the two nearby childcare centres under construction at Lot 716 Aurea Boulevard and Lot 263 Aurea Boulevard.</p> <p>I understand that subsequently the applicant has commissioned an Emissions Impact Statement, with the objective of demonstrating that the proposed development at Lot 265 Talisker Bend will not adversely impact on any of the sensitive receivers in the area.</p> <p>I would like to express the following concerns about the Emissions Impact Statement:</p> <p>Item 1. Whilst the future residential site to immediately to the south of Lot 265 is the closest sensitive receiver, neither of the two childcare centres located within 200m have been assessed in the report.</p> <p>Item 2. Figure 1-2 of the report is described as “<i>Proposed site layout, note the fuel vents are to extreme east of the site</i>”. Text below the plan describes that “<i>the fuel vents (breather pipes) are located on the northern boundary of the Site</i>”. The conflicting statements makes it unclear where the fuel vents are proposed to be located on the site, which calls into question later assumptions of the report.</p> <p>Item 3. Figure 4-3 of the report identifies the wind rose average readings at 3pm between 1983-2018. This diagram identifies the South-Westerly wind direction as the prevailing wind direction, which forms the basis for modelling scenarios. It does not identify seasonal variations in wind direction, nor the 9am data in which the prevailing wind direction is easterly as per the figure below.</p> <p>Rose of Wind direction versus Wind speed in km/h (01 Apr 1983 to 12 Jan 2018) <small>Custom times selected, refer to attached note for details</small></p> <p>MEDINA RESEARCH CENTRE <small>Site No: 009194 • Opened Apr 1983 • Closed Apr 2018 • Latitude: -32.2208° • Longitude: 115.8075° • Elevation 14m</small></p> <p><small>An asterisk (*) indicates that calm is less than 0.5%. Other important info about this analysis is available in the accompanying notes.</small></p>

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No.42 – cont...		<div> <p>9 am 12127 Total Observations Calm 4%</p> </div> <p>Item 4. Section 5.5 Downwash Structures notes that “Based on a review of the plausible stack heights (4 m) and surrounding area (sensitive receptors), there are no buildings considered as a downwash structure”. Item 2 and Item 3 challenge this assumption.</p> <p>Item 5. In the report conclusion the following is noted: a. “Note that predominant wind direction is from the southwest which would infer flow of volatiles predominantly to the northeast away from the sensitive receptor” – as noted in item 3, this assumption is incorrect as evidenced by 9am wind data.</p> <p>a. “Note that predominant wind direction is from the southwest which would infer flow of volatiles predominantly to the northeast away from the sensitive receptor” – as noted in item 3, this assumption is incorrect as evidenced by 9am wind data.</p> <p>b. “The assessment would be sensitive to: Position / location and number of vents stacks – decreasing the distance to the receptor would increase concentration at the receptor.” As noted in item 2 it is not clear where the vent stacks are located.</p> <p>c. “The assessment would be sensitive to: Lower wind speeds than evident in the 1983 – 2018 MRS data” As noted in Item 3 the wind modelling assumptions are called into question.</p> <p>It should also be identified that an earlier report included in the development application has made similar assumptions about the wind direction, as noted in the Dangerous Goods Technical Note prepared by Cadre Engineering - “3.4 Vapour Dispersion -</p>

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No.42 – cont...		<p><i>The predominant wind directions (From S to N and SSW to NNE) significantly reduce the dispersion of vapours in other directions, such as the childcare centre to the west".</i></p> <p>Additionally in Planning Solutions "Presentation to the Metro Outer DAP dated 7/05/2021 Attachment 1: EPA Separation Assessment" there are 9 examples presented in which service stations have been approved within the generic EPA separation distance from a sensitive receiver. None of the 9 examples included have been located where a childcare centre is the sensitive receiver.</p> <p>Our concern as a childcare operator in Golden Bay in the near future is that the development proposal at Lot 265 Talisker Bend still has not sufficiently addressed EPA Separation Distances from Sensitive Receivers specifically in relation to the two childcare centres that are currently under construction. Assumptions made in the Emissions Impact Statement and the Dangerous Goods Technical Note have presented an incomplete assessment of the site under a single set of conditions only, with some details still unclear and inconsistent.</p> <p>Again we call that if the applicant is unable to demonstrate that the proposed development would not impact on the amenity of these two childcare facilities, we submit that this application should be refused. We look forward to these matters being addressed in the next Metro Outer Joint Development Assessment Panel (MOJDAP) meeting to review this application.</p>
43. Mrs Candice Mullins Late Submission received 26/04/2021	50 San Sebastian Boulevard PORT KENNEDY WA 6172	<p>Dear Councillor,</p> <p>I would like to express my concerns in relation to the health risks associated with living in such close proximity to a service station, specifically the risks associated with exposure to Benzene.</p> <p>I implore you to vote in favour of Cr Buchan's alternate motion and REJECT the proposal for a service station in Golden Bay.</p> <p>It is the only option that ensures ongoing consultation with the City of Rockingham in order for JDAP to rule that a complete health report and study is completed.</p> <p>We seek your help to ensure positive ongoing health outcomes for the children and residents of Golden Bay.</p> <p>SAT Reconsideration Comments – Submission 2</p> <p>'reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use'</p>
44. Ms Nikki Bombak Late Submission received 27/04/2021	24 Kalli Street GOLDEN BAY WA 6174	<p>Submission 4</p> <p>Dear Councilors,</p> <p>You hopefully have received a number of emails from many residents voicing their concern about a service station being built in Golden Bay. I moved into Golden Bay nine years ago and had I known then that a service station would be built within 100 meters of my home I would not have purchased in Golden Bay. Living near a service station has always been of great concern to me due to my personal experiences. 20 years ago my brother at the age of 20 was diagnosed with cancer. This cancer had been growing inside his body since his early teens and I remember conversations around the dinner table in the early stages of diagnosis where he and my parents completed a questionnaire in relation to his lifestyle during his lifetime. One of the questions inquired whether the family had lived within a specific range of a service station, which we had in 2 homes for approximately 6 years in total.</p>

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No.44 – cont...		<p>Benzene, which is found in petrol and natural gas is a known carcinogen. A quick google search will provide you with all the necessary information required by clicking here it will take you to a fact sheet prepared by the South Australian Government where it states; 'The International Agency for Research on Cancer (IARC) has established that benzene is a human carcinogen (can cause cancer in humans). The World Health Organisation (WHO) has an article 'Exposure to Benzene: A Major Public Health Concern' and states that levels are increased in homes close to petrol filling stations and this report states that no safe level of exposure can be recommended. Safe Work Australia (SWA) lists Benzene as a restricted carcinogen rated at a carcinogen category of 1A, the highest rating, 'may cause cancer'. Have a read of the attached 'Health Monitoring Guidance', prepared by SWA and attached for your convenience. This report details in length the acute and chronic effects of exposure to Benzene, albeit as a service station worker. Furthermore, SWA recommended that due to the exposure of benzene service station attendant shifts were to be no more than 8 hours long. Meanwhile, children who are attending the childcare centers nearby will be exposed for 8-12 hours while in care, 6 hours while in school, 1 hour whilst they play at local parks and reserves and if they live in the buffer zone an additional 12 -14 hours while at home.</p> <p>This report (PECA Report) by the Australian Government Department of Health has identified the need to reduce public exposure to air benzene levels as much as practicable. Until tonight, I could only speak about my own anecdotal effects of benzene on women's reproductive health as I hadn't yet found any research. The PECA Report above outlines the reproductive health risks on page 76. I have worked in many early learning centers with many women over the past 20 years of my career. Two services stand out in relation to exposure to service stations.</p> <p>One was within the Rockingham area and located a fair distance from a service station. In the space of 4 months, we had 5 women who became pregnant each resulting in 5 successful births from each of the women. There was 1 miscarriage likely due to IVF complications. In comparison, a child care center I worked at in Port Melbourne was directly next door to a service station where we had 5 women who became pregnant within a 5 month period each resulting in miscarriage. One of these women went on to have a successful birth after taking an extended leave of absence due to her miscarriage. I hold great concern not only for the children and families who attend the early learning centers or who live in the area but also for the people who will be employed caring for the children at the services in nearby locations (Long daycare, family daycare, primary and secondary schools). The report concluded that there are several reports of menstruation disturbances and one of reduced semen quality in male workers exposed to benzene. As the studies on women's reproductive health are few and far between there is inconclusive evidence of support, this is my own anecdotal experiences.</p> <p>There is a multitude of studies from around the world which detail the harmful effects of benzene and living in close proximity to service stations I have attached some journal articles and links to international studies are below;</p> <p>Switzerland – https://journals.lww.com/environepidem/fulltext/2019/10001/childhood_cancer_and_residential_proximity_to.808.aspx</p>

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No.44 – cont...		<p>France – https://pubmed.ncbi.nlm.nih.gov/19213757/</p> <p>Australian Government – https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3222489/</p> <p>Australia – http://www.aip.com.au/sites/default/files/download-files/2017-09/case_study_0.pdf</p> <p>Whilst a little closer to home, it is interesting to note that The Australian Bureau of Statistics rates Kwinana as one of the worst suburbs in WA for ill health. Whilst socioeconomics plays its part, I find it no coincidence that the oil refinery is in the same location. https://www.watoday.com.au/national/western-australia/dozens-of-cancer-cases-perth-community-renews-push-for-answers-over-pollution-20181023-p50bhp.html</p> <p>As I fall further and further down the rabbit hole in relation to researching the ill effects of benzene on human health I find more and more evidence that supports the hypothesis that benzene in any quantity poses a significant health risk to people who live and work near petrol stations. The purpose of my email is to share with each of you the research and anecdotal evidence that I have that supports the case that living in close proximity to service stations results in increased health risks to all residents.</p> <p>I implore you to vote in favour of Cr Buchan's alternate motion to REJECT the proposal to ensure ongoing community consultation in relation to the development at Golden Bay and to send a clear message to JDAP that a service station is not welcome at this location.</p>
45. Ms Lisa Critchley Late Submission received 27/04/2021	23 Kalli Street GOLDEN BAY WA 6174	<p>Dear Councillor,</p> <p>My name is Lisa Critchley and I live at 23 Kalli Street, Golden Bay; I am a home owner and resident in Golden Bay.</p> <p>I am writing to you with grave concerns regarding the proposed petrol station in Golden Bay.</p> <p>The proposed site is situated in very close proximity to a residential zone.</p> <p>I have serious concerns regarding the health impact this may have on the community. I implore you research the issues associated with living in close proximity to petrol stations and reject this proposal outright.</p> <p>SAT Reconsideration Comments - Submission 2</p> <p>I am writing to ask you to please reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use.</p> <p>I would like to draw your attention to a systematic review of health risks associated with the noxious poisons contained within petrol.</p> <p>Please, when making your decision - consider the health risks for the community living on the doorstep of the proposed site.</p> <p>SAT Reconsideration Comments - Submission 3</p> <p>Reject proposal to build a petrol station in a Golden Bay residential area My name is Lisa Critchley. I am a homeowner at 23 Kalli Street, Golden Bay. Western Australia. I am writing to ask you to please reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use. I would like to draw your attention to a systematic review of health risks associated with the noxious poisons contained within petrol. Please, when making your decision - consider the health risks for the community living on the doorstep of the proposed site.</p>

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Name	Address	Comment
46. Ms Jackie Mellor Late Submission received 27/04/2021	39 Impressions Way SINGLETON WA 6175	I am a local resident and I am OPPOSED to building a service station on Talisker Bend in Golden Bay. It will be too close to schools and childcare, which raises significant concerns for their health and safety. There are enough service stations in close proximity at Secret Harbour, and 2 on the main road that this one is not needed. Please consider the overall impact and support Councillor Buchan and vote no.
47. Ms Christine Nybo Late Submission received 27/04/2021	6 Landor Link GOLDEN BAY WA 6174	To all concerned, I have concerns about traffic management and the health risks associated with living in close proximity to a service station. I support CR Buchan's alternate motion to REJECT the proposal and request JDAP make arrangements for a complete health report be conducted and traffic management issues resolved! SAT Reconsideration Comments - Submission 2 I reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use.
48. Ms Kelsea Page Late Submission received 27/04/2021	13 Winderie Road GOLDEN BAY WA 6174	To all concerned, I have concerns about traffic management and the health risks associated with living in close proximity to a service station. I support CR Buchan's alternate motion to REJECT the proposal and request JDAP make arrangements for a complete health report be conducted and traffic management issues resolved!
49. Mrs Lynne Martin Late Submission received 27/04/2021	13 Noreena Avenue GOLDEN BAY WA 6174	To all concerned, I have concerns about traffic management and the health risks associated with living in close proximity to a service station. I support CR Buchan's alternate motion to REJECT the proposal and request JDAP make arrangements for a complete health report be conducted and traffic management issues resolved!
50. Mrs Tracey Locke Late Submission received 27/04/2021	5 Impressions Way SINGLETON WA 6175	Councillors I am writing to oppose the proposal as it stands for Talisker Bend, Golden Bay. My main objection is to the service station which is too close to residential properties. With so many other service stations in close proximity is another really necessary? Within 5 kms there are already service stations at: Secret Harbour (Warnbro Sound) Golden Bay (Ennis Ave) Singleton (Ennis Ave) Not to mention all the ones in Port Kennedy (x3 just on port Kennedy drive). I would also mention that none of these other stations are ever busy, you can always drive straight to a pump! In light of the number of existing service stations, is it really necessary to put residents at risk by building this one so close to their homes? I sincerely hope that, as our representatives, you reject this development.

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Proposed Mixed Commercial Development - Lot 265 Warnbro Sound Avenue, Golden Bay (20.2021.31.1)

* SAT Reconsideration Comments

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
51. Ms Michelle Ashfold Late Submission received 27/04/2021	No address provided	I have extreme concerns about traffic management and the health risks associated with living in close proximity to a service station. I support CR Buchan's alternate motion to REJECT the proposal and request JDAP make arrangements for a complete health report be conducted and traffic management issues resolved!
52. Ms Emma Okely Late Submission received 27/04/2021	31 Calooli Grove GOLDEN BAY WA 6174	I have concerns about traffic management and the health risks associated with living in close proximity to a service station. I support CR Buchan's alternate motion to REJECT the proposal and request JDAP make arrangements for a complete health report be conducted and traffic management issues resolved!
53. Ms Rebecca Wingate Late Submission received 28/04/2021	16 Ellendale Street GOLDEN BAY WA 6174	To all concerned, I have concerns about traffic management and the health risks associated with living in close proximity to a service station. I support CR Buchan's alternate motion to REJECT the proposal and request JDAP make arrangements for a complete health report be conducted and traffic management issues resolved!
54. Mr Anthony Oliveri Late Submission received 27/04/2021	12 Lyndon Road GOLDEN BAY WA 6174	To all councillor's, I wish to strongly oppose the idea for a fuel station and being close to our local primary school and potential a daycare centre. I strongly recommend you consider an alternate option for the current site. As elected members I'm sure everyone has completed Serving On Council training. And note This course has been specifically developed to address the unique needs of Elected Members in leading and supporting their communities whilst acting within the processes and procedures imposed on Local Government in general and, more specifically, at the governing body level and the necessity for them to perform their role in a due diligence environment. Yours sincerely Your local rate payer.
55. Ms Nicola Carroll	17 Cooralya Avenue GOLDEN BAY WA 6174	I am writing to you as a member of the Golden Bay community. I have lived at Cooralya Avenue in Golden Bay for 6 years and have two children who walk to Golden Bay Primary School each weekday. Firstly I feel that the location of this petrol station is a safety risk for the number of children who walk to school. My children currently have to cross 4 roundabouts and one major road, plus 2/3 smaller roads, this petrol station will add in another 2 dangerous areas for them to cross. Secondly, I reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use. I think this land could be developed into something much safer and better for our children. Cafes, delis, bakeries, a library, small local garden centre or fresh fruit and veg store, possibilities are endless. However a petrol station is definitely not appropriate. Thanks for your time.

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Name	Address	Comment
56. Mr Brayden Greig	(No address provided)	I'm writing this email as personal feedback in regards to the Mixed Use Development – Lot 265. While I personally don't live in Golden Bay, I still believe this service station should not be approved at its planned location. My suburb of Baldivis has a similar service station on the corner of Nairn Drive and Ridge Boulevard, and its location isn't exactly ideal. You can smell the gasoline at nearby units, it's honestly surprising that the people living there put up with it. The closest house to the Lot 265 plan is of similar distance and will no doubt be smelling fumes should the service station go ahead. I will say that the commercial and gymnasium buildings do look rather nice, and I don't object to those parts of the proposal, just the service station itself.
57. Mrs Samantha Jackman	259 Marillana Drive GOLDEN BAY WA 6174	We do not need another petrol station, especially not in Goldenbay, your destroying the area with that development.
58. Mr Timothy Trenfield	42 Alora Drive PORT KENNEDY WA 6172	I am strongly opposed to this development due to the excessive fuel vapour being so close to a residential area. This development does not promote the friendly environmental values of the community and is not needed due to the close vicinity of a similar service in secret harbour.
59. Mr Justin Gan	1 Messina View SECRET HARBOUR WA 6173	There's a BP and an Ampol/Caltex in very short distance from this site. There's no need to have the fuel near so many affected sites and children. Shops and services ok but fuel no need.
60. Mr Joel Knighton	17 Binthalya Street GOLDEN BAY WA 6174	I'm opposed to this proposal due to the nature of the proposed service station in close proximity to 2 daycare centres and high density housing. There are no positive effects on people's health provided by service stations in such close proximity to homes and businesses. Especially on young growing children inhaling carcinogenic fumes during outdoor play on windy days. This isn't about convince or a need for a service station in this area as there is one less than 1km up Warnbro sound avenue. This is clearly developers and operators trying to cash in on a opportunity in a high traffic area and having total disregard for the health and well-being of those closest to this proposed development.
61. Mrs Kirstee Birch	27 Binthalya Street GOLDEN BAY WA 6174	I am for this development as it would bring the much needed further development of the dilapidated shopping complex site. A service station/deli would be a beneficial amenity, as long as the developers do as much possible to mitigate health and well-being risks for the surrounding residents.
62. Mr Brad Smith	12 Minderoo Crescent GOLDEN BAY WA 6174	There is no way this development should be approved. I completely reject the Golden Bay Service Station proposal due to the public health risk of exposure to Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use, of which there are 2 child care centres being built within that distance from the fuel pumps. There is no safe limit for exposure to benzene and I find it disgusting that the developers are trying to have this service station approved again after this development has already been rejected.
63. Ms Lizanne Dymond	5 Warrie Street GOLDEN BAY WA 6174	I am disgusted that the people who run these companies think it is a great idea to go next to a school- oh wait- money. Friends bought a house very close to this intersection on the understanding of totally different shops going in- NOT a petrol station. I am totally against this.

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Name	Address	Comment
64. Mr Colin Freeman	23 Coolawanyah Street GOLDEN BAY WA 6174	I fully support the development of this area. As a resident who built a house in this area it has taken much longer than expected to have this area developed. I support this proposal and look forward to further proposals in this area.
65. Mr Anthony Murray	11 Majorca Green SECRET HARBOUR WA 6173	I wish to comment on the development...most specifically to the emissions report...it has some serious flaws.. the plume of toxic fumes has been modelled correctly imo using a derivative of AERMOD. However the data for the wind is taken from a now obsolete station at Medina some 20Km to the North...the wind rose used is from the remnant information on the internet...it is for wind speeds taken at 3PM in the afternoon...when the seabreeze is in from the SW...the windrose over the course of a year is quite different...The emissions from the \$500M WtE facilities have been modelled using windroses from the Alcoa mudlakes and Jandakot airport...their predominant winds are from the East and averages much lower . The afternoon winds as anyone in the area would know are much stronger...that is why it is cheaper to play golf in the afternoon at Secrets...So in basing the results on the highest winds. the dispersal is far better...but not all people buy fuel at 3PM in the afternoon.. however as high winds result in downdrafts from buildings this is a catch 22 situation.. but wake effects from buildings have not even been considered....Of course the siting of the Servo does not meet the 200m exclusion zone and this should reject the application on these principles...Other points are...1.The EIM emissions report is from a company called LWC land and Water Consulting. I can see no evidence of similar work on air pollution on their website...they make several comments on their report which are significant. UNCERTAINTY / SENSITIVITY is one section 5.9 in which they say "Other areas of uncertainty that are less easily controlled and which would impact the modelling are:" Number of vehicles refuelling (increase whoosh and spillage). Bulk fuel delivery parameters (volume, events, time). Lower wind speeds than evident in the 1983 – 2018 MRS data I can certainly say that we can not expect the wind at 3PM to be truly representative of the situation...and that the data from the Median site does not come with a clean bill of health...the site was chosen because of the Longevity of the site...one reason for not using it as weather patterns have changed due to climate and topographical changes... there is a disclaimer on the site that is not mentioned in the LWC report. Historical metadata for this site has not been quality controlled for accuracy and completeness. Data other than current station information, particularly earlier than 1998, should be considered accordingly. Information may not be complete, as backfilling of historical data is incomplete.
66. Ms Jessica Kingham	27 Kalli Street GOLDEN BAY WA 6174	I am writing to reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use.
67. Mr Haydn Mills	36 Calooli Grove GOLDEN BAY WA 6174	<u>Submission 1</u> Having a petrol so close to homes and soon to be completed child care I don't think a petrol station is the best choice. I do think golden bay does need some of the amenities proposed such as the gym, cafe etc. please do let the petrol station idea get closed. There is plenty near by so it's not needed

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No.67 - cont...		<p><u>Submission 2</u></p> <p>'reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use'</p> <p>I like the idea of golden bay getting a gym and a I but not the petrol station. I'm boys required there's already several stations near by. Please reject the petrol station proposal.</p>
68. Ms Jasmine Wake-Dyster	12 Loveday Way GOLDEN BAY WA 6174	Allowing a petrol station to be built so close to a childcare centre is dangerous and unsafe for their health. The petrol station is to close to the legal requirement in distance. As a mother I am very unhappy with this proposal. If this petrol station goes ahead in this area I will protest. Please just think about children's health and not money.
69. Mr Timothy Bratby	3 Fitch Street SINGLETON WA 6175	Plain and simple not needed THERE.
70. Mr Jamie Witham	35 Calooli Grove GOLDEN BAY WA 6174	<p>I reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use.</p> <p>My children go to school and after school clubs and activities less than 100M from this proposed site.</p> <p>Please act on behalf of the people and not the big multinationals to keep our community a safe environment.</p>
71. Ms Aleesha Brand	3 Tamala Court GOLDEN BAY WA 6174	To whom It may concern I reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use'
72. Ms Kerry-Anne Horrigan	19 Winning Approach GOLDEN BAY WA 6174	<p><u>Submission 1</u></p> <p>I am writing to express my concern for the proposal to build a 7/11 (or any) service station in Golden Bay on Aurea Blvd.</p> <p>It is quite concerning that the developer has resubmitted despite previous disapproval. It does not feel as though the developer has the health of the community as a top priority. Having two childcare centres, and other residential property, within less than 200 m of the proposed site, is encroaching on EPA guidelines of sensitive land use. The potential health effects of Benzene (carcinogen) are huge considering there is no safe limit of exposure. Please see this link for further information https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4360999/ Please take the time to listen to the people in the community when we say we are frightened for the wellbeing of our families.</p> <p>As a representative for the community, I trust you will make the best decision to keep our community safe; and not that of financial gain.</p> <p><u>Submission 2</u></p> <p>We do not wish for a service station to be included in the commercial development for Aurea Blvd Golden Bay. We are concerned of the health effects as well as potential traffic concerns.</p>
73. Ms Katie Hughes	66 Marillana Drive GOLDEN BAY WA 6174	Please please please don't put a petrol station here. We have more than enough in the area.

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74. Mr Justin Cooper	35 Numbat Approach BALDIVIS WA 6171	Firstly, I'd like to start by appreciating the chance to comment. With the news that this Mixed Commercial Development being revised I am delighted to say I am pleased with the proposal. As a resident living within close proximity to this development (Elvire Grove) I would be most appreciative of the Gym facility being proposed. Currently in Secret Harbour/Golden Bay there isn't much variety when it comes to gyms let alone refuelling facilities. We have AMPOL (formally Caltex) and BP Karnup (which has a one way entry/exit - not viable). Having another fuel station will provide competing fuel prices and more coverage as Golden Bay is expanding rapidly. Furthermore I do however have a suggestion. With the commercial space near the fuel station I think it would be an outstanding idea to have a clean and sustainable car wash facility. Currently the closest car wash facility is Port Kennedy / Baldivis. As a resident living close by I have no disagreements with the Revised Mixed Commercial Development.
75. Ms Chelsea Russell	5 Bralich Street WARNBRO WA 6169	I wish to oppose this submission due to the safety concerns of a petrol station being in such close proximity to homes, day cares and my children's school. I believe the site as a whole is inappropriate for a petrol station.
76. Mrs Zoszak	28 Carlindie Parkway GOLDEN BAY WA 6174	Residents oppose the development. The EPA separation guidelines states a 200m buffer zone to sensitive land use areas. The proposed development does not follow this guideline. Benzene is a known human carcinogen that poses a significant health risk to the children and residents who will be in close proximity to it. In addition, residents have concerns over the significant increase in traffic in quiet residential area. The proposed development is located near a primary school with current high traffic. Other new developments in the immediate vicinity will already increase traffic significantly. Local streets cannot handle this level of traffic without inconveniencing residents significantly.
77. Mrs Caitlin Magill	75 Dampier Drive GOLDEN BAY WA 6174	Definitely no service station its too close to homes daycares and schools! There are other service stations minutes away. Its unnecessary and not great for the health or traffic for the residents to have a service station that close and inside our suburb on quiet streets.
78. Ms Krystal Nesbit	61 Winderie Road GOLDEN BAY WA 6174	<p>I, Krystal Nesbit of 61 Winderie Rd Golden Bay, reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene due to the sites proximity to two child care centres, a family day care and the primary school in which my son attends. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use.</p> <p>I secondly reject the Golden Bay Service Station proposal based on the location being in such close proximity to the two child care centres, a family day care and a primary school with already heavy traffic congestion during peak times.</p> <p>I thirdly reject the Golden Bay Service Station based on the health concerns for children being enticed by fast food and convenience advertising within close proximity to the primary school where students are easily enticed and less inclined to make educated decisions regarding their nutritional intake.</p> <p>Thank you for reading my input.</p>
79. Ms Sara White	7 Nautical Lane SINGLETON WA 6175	Please reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use.

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Name	Address	Comment
80. Ms Rebecca Head	17 Maroonah Road GOLDEN BAY WA 6174	<p>Please reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use.</p> <p>As a parent of a child that attends Golden Bay Primary a service station right next to my sons school is not what the community or myself wants.</p> <p>There are plenty of service stations in very close proximity to Golden Bay we don't need another one.</p>
81. Mr Cameron Bailey	6 Tangadee Road GOLDEN BAY WA 6174	<p>I am totally opposed to this development taking place in our beautiful suburb so close to 2 new child cares and the homes of local residents. Firstly, the health implications of Benzene are extremely well published and noted world wide. Secondly, traffic left in left out around the round about directly adjacent to 2 child care centres is highly questionable? Really, this development is a big car park for filling cars with Benzene with a very small office space and a gym space that residents do not need with a perfectly adequate facility available right next door in Secret Harbour. But I guess it does try to camouflage a fact the money here is ; the petrol station selling Benzene and doughnuts. The last things any good planning really deserves. Where's the vegetable wholesaler with the solar powered electric car charge station? Bring that one to the table place. This petrol station is a planning dinosaur.</p>
82. Mrs Casey Hammer	2 Goodman Place GOLDEN BAY WA 6174	<p>As a parent with several children attending Golden Bay Primary School, I do not want a petrol station so close to the School. Also I feel it is just unnecessary as there is a BP on Mandurah Rd and an Ampol Foodary in Secret Harbour less than 4km apart. Another fuel station is not needed.</p>
83. Mrs Jodie Platt	6 Bundarra Way GOLDEN BAY WA 6175	<p><u>Submission 1</u></p> <p>I would like to formally oppose this proposal, please confirm receipt of my objection via email.</p> <p>I strongly 'reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene.</p> <p>There is NO safe level of Benzene.</p> <p>This development does not meet the EPA guidelines of 200m from sensitive land use'</p> <p>I would hope that future mixed uses of land that are to be neighbours to child care facilities and schools be more children friendly and safe. A community open space, for gardens, playgrounds, food truck spaces be given priority going forward.</p> <p><u>Submission 2</u></p> <p>I would like to formally oppose this proposal, please confirm receipt of my objection via email. I strongly 'reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use' I would hope that future mixed uses of land that are to be neighbours to child care facilities and schools be more children friendly and safe. A community open space, for gardens, playgrounds, food truck spaces be given priority going forward. Many thanks for your time.</p>

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84. Mrs Alisha Joynes	24 Swanson Way SECRET HARBOUR WA 6173	<p>I would like to submit a rejection to the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene, with the World Health Organisation (2010) highlighting that it is a "major public health concern" and stating that "Benzene is carcinogenic to humans, and no safe level of exposure can be recommended". This development does not meet the EPA guidelines of 200m from sensitive land use, and Council should stick with their original decision to reject this proposed based on the EPA guidelines. Defining decisions like these will have a long-term and lasting impact on the community and people within it, and priority should be to protect local residents, our current and future generations, from life-long adverse effects. As identified by Mazzei-Abba et al., "We found evidence of an increased risk of childhood cancer (all diagnosis combined) among children living in close vicinity of petrol stations." (Mazzei-Abba et al., 2019, p. 265). A paper presented at the International Conference on Urban Risks in C</p> <p>aixaGest, Lisboa stated that "in the first 50m of the vicinity of petrol station such rate can achieve average annual values very concerning ($T_{25m}=54/100,000$; $T_{50m}=20-37/100,000$; $T_{75m}=17-13/100,000$). Although the decrease is obvious until 250 m away from the local of residence to the emission source, significant differences were only found for both genders living up to 75 m ($p=0.026$), incidence ratio being high for male. Moreover the comparison of these results with the incidence rate for the general population allows concluding that for human health protection the buffer distance for to live or work in the vicinity of a petrol station must be at least of 150 m" (fontes, Barros & Manso, 2016 p.621).</p> <p>Additionally, I feel that with the number of services stations already located within close proximity to the development proposal, coupled with the decreasing demand for fossil fuels globally, that this is an unnecessary and unwanted addition to the local community.</p> <p>https://www.who.int/ipcs/features/benzene.pdf https://journals.lww.com/environepidem/fulltext/2019/10001/childhood_cancer_and_residential_proximity_to.808.aspx https://www.researchgate.net/publication/305721422_Human_health_risk_due_to_urban_petrol_stations</p>
85. Mr Caleb Sarich	2 Barnong Road GOLDEN BAY WA 6174	<p>Hi there I would like to reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use'</p>
86. Mr Luis Wythes	14 Tambrey Avenue GOLDEN BAY WA 6174	<p>Hi I reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use.</p>
87. Mrs Bonnie Wood	86 Marillana Drive GOLDEN BAY WA 6174	<p>Again...NO! NO! NO! to another petrol station. Benzene poisoning IS REAL.. we do not need or want this development with petrol station to proceed under any circumstance. Money hungry developers have made enough of a joke out of Golden Bay. Stay away - NO again NO! to petrol station please S.A.T this is children's lives we are playing with- go build your petrol station where it won't interfere with people's health...we're supposed to be cleaning up the planet not making it worse.</p> <p>Signed - "concerned for my grandchildren (and their children and their children's children!)" B.Wood -Golden Bay resident</p>

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Name	Address	Comment
88. Ms Sarah Higginson	33 Talisker Bend GOLDEN BAY WA 6174	<p>My name is sarah higginson and I'm emailing to reject this proposal! Despite amendments, Benzene pollution is still a health hazard for the two daycare centres, the school and all nearby houses, One of which being my house 3 doors down, I am concerned for my families health and safety as well as that of the community We don't want or need this petrol station.</p> <p>Second Submission</p> <p>I am emailing to reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use.</p> <p>I live 3 doors down from the proposed sight and my children go to school and will be making use of the childcare centres across the road currently being built.</p> <p>I am extremely concerned for my families health and do not support this proposed.</p>
89. Mrs Katey Putland	172 Dampier Drive GOLDEN BAY WA 6174	<p>I am emailing to note my feedback on the proposal for the service station in Golden Bay.</p> <p>I do not support the proposal, even with the noted amendments. The proposed site does not meet the EPA requirements of a 200m distance from sensitive land use, and the public health risk of exposure to benzene is not acceptable.</p>
90. Mr Robert Ganfield	29 Indiana Parade SINGLETON WA 6175	<p>I am writing to ask you to please reject the Golden Bay Service Station proposal based on Benzene's public health risk of exposure.</p> <p>There is no safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use.</p>
91. Mr Jorge Baeza	No address provided	<p>Hey I have bought land right next to where this petrol station is going and I had no idea . I think there is l of space in Golden baythere is no need to build a petrol station so close to the houses and child care. I do not want to be breathing the toxic fumes petrol stations let off and if the I plan to get rid of all petrol stations in the country what is the point in all of this. I love Golden Bay because of how private it is and how quiet. With a petrol station there its going to cause l of problems. There has been so shops that started getting built in that road that have been there for years. How bout you guys finish that first. Please think about the residents that love nearby and not about the investors greedy pockets</p>
92. Mr Yate Edwards	17 Thangoo Way GOLDEN BAY WA 6174	Build it.
93. Ms Erica Hardie	12 Winning Approach GOLDEN BAY WA 61747	<p>We I need another service station in the area, as it I benefit the community considering there is already 2 within close proximity that cater the lga with ease and we I want our area to be like Pinjarra on view (qty of service stations in lga) or unwanted vapours. Introducing an unnecessary hazard into the community such as an extra fuel station is counter productive and goes against the pollutant prevention statement of the WA Govt.</p>

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Name	Address	Comment
94. Mrs Sharon Spencer	12 Lookout Vista SINGLETON WA 6175	I understand the population is growing, and the need for infrastructure, however a service station so close to the school and houses. My objection is note pointed below: 1. The smell. When the sea breeze hits or the winter storms start, the smell of fuel will spread outside and into the restricted areas. 2. What happens if there is a fire or gas explosion? Will the school be in that radius? I would be concerned with this. 3. Ascetics. Smack bang in the middle of a housing estate. Its going to be an ugly edition. 4. Why? Do we need it? No! We have a huge amount in a small radius. 5. I beach side community. Small shops sure. A l or child care. Okay. But a service station. No thank you.
95. Mr Jake Howard	15 Arcoona Avenue GOLDEN BAY WA 6174	I'm writing as a close resident of the proposed development. I strongly object the approval of the location, and I will be planning a significant protest if required. The serious health concerns raised are very concerning and a precedent needs to be set. Common sense should indicate that the need for petrol stations in the coming years is going to be significantly reduced. No new health hazards should be approved and it's time to take a action to prevent the development being approved. Residents may also consider legal action if required due to the negative financial impacts on their assets, considering the heath evidence submitted. I understand the city support's the development not going ahead, what else can residents do to assist?
96. Mrs Kimberley-Anne Stephens	104 Tangadee Road GOLDEN BAY WA 6174	As a resident of golden bay for 10 years and now home owner in golden bay with three soon to be four children attending golden bay primary school I would like to oppose the development of a petrol station In the proposed position. I feel as though a petrol station is not required in that position as we already have one in secret harbour and one in Karnup. The area is for the school and does not need increased traffic to put our children at further risk. The area is surrounded by local homes who will be negatively impacted by a petrol station from fumes, litter and traffic that will also decrease there home value. Having a petrol station so close to a school emitting cancerous substances should not be allowed. This proposal is dangerous to our children and the quite coastal suburb that golden bay is known to be. As a ratepayer and long term resident of golden bay I believe the petrol station should not go ahead and replaced with a more suitable and relatable commercial space.
97. Ms Emily Brady	39 Kingscliff Drive GOLDEN BAY WA 6174	Absolutely not we don't want or need more petrol stations in the area. Petrol station that close to houses and daycare have proven health implications that are unacceptable.
98. Ms Nicole Hooton	18 Perrinvale Loop GOLDEN BAY WA 6174	We DO NOT want a petrol station near our homes, day care centres and schools. We also do not want anymore liquor stores in the area.
99. Mrs Ahsley Carter	29 Anscombe Loop LEEMING WA 6149	Reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use.
100. Mrs Vanessa Macrin	24 Sawley Close GOLDEN BAY WA 6174	I would like to voice my objection to the proposed gas station development in Golden Bay. It is concerning that this is being developed so close to childcare centres, schools and residences with benzene carcinogen emissions that could have adverse health effects impact on our community. In addition the proximity to residences and schools increasing traffic presents additional risks.

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Proposed Mixed Commercial Development - Lot 265 Warnbro Sound Avenue, Golden Bay (20.2021.31.1)

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Name	Address	Comment
No.100 cont...		<p>Why is this even being considered when you have a gas station just down the road? It seems totally unnecessary and a negative impact on the community.</p> <p>I am in no way affiliated with the existing service station, just believe this is an unnecessary risk for our community.</p>
101. Mrs Hayley Traves	58 Tangadee Road GOLDEN BAY WA 6174	'reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use'
102. Mr David Sturgeon	5 Bidgemia Road GOLDEN BAY WA 6174	<p>We have 2 Petrol stations within minutes of this site. There is absolutely no need for another one especially so close to Golden Bay Primary School.</p> <p>Stop putting cash ahead of our childrens health and do the right thing by your rate payers.</p>
103. Mr Nikolas Hidding	41 St James Drive BALDIVIS WA 6171	The proposed Mixed Use Commercial Development in Golden Bay is supported. I am aware the development was previously refused and I understand the JDAP has been invited to reconsider its decision through the SAT process. Overall, as a Mixed Use development, this project is one of the better ones in terms of its proposed mix of uses, design/layout of buildings, and street activation. Assessment against the principles of State Planning Policy 7 Design of the Built Environment should result in many ticks. The proposal has been comprehensively designed and refined, and involves buildings that activate the streetscape, set within landscaped surrounds. The proposed uses of a Gym, Service Station and the possibility for a local shop or other commercial uses is supported, and will provide the local community with a quality offering in this area. As a City of Rockingham resident and frequenter to Golden Bay (family living there), the proposed development is something that should be approved by the JDAP. Of particular note, the proposed pedestrian connectivity and accessibility through the site is excellent. Reading through the additional material, it is clear that the project has been thoroughly developed and reviewed to ensure that 'no stone has been left unturned'. In my mind, there is no cogent reason for this proposal to be refused again. I am looking forward to this development being approved and constructed.
104. Ms Rachael Fortune	1 Vert Lane KARNUP WA 6176	Reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use.
105. Mr Brenton Ruwaard	31 Wooleen Street GOLDEN BAY WA 6174	I oppose the proposed mixed use development as there is no safe level of Benzene and it is too close to schools, houses, daycares etc
106. Ms Rebecca Davies	4 Thundelarra Drive GOLDEN BAY WA 6174	<p>I strongly object to the 7-11 petrol station in Golden Bay.</p> <p>Please reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use.</p>
107. Miss Colleen Bishop	8 Landor Link GOLDEN BAY WA 6174	No to service station in Golden Bay.

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108. Mr Jorge Baeza Nunez	17 Yamarna Road GOLDEN BAY WA 6174	Hi, I am a resident in golden bay right by where the petrol station is getting built. We aren't happy with the idea of have a petrol station to close to the houses and 2 new childcare centres which are getting built.no one tell us about this when we buy the property and I was thinking of buying another house in the area but now that I know this is happening there is no way I will be doing this unless this does not happen. I know myself and a lot of the neighbours don't agree with this. We moved to golden bay because of how pure and clean and peaceful it is. With a petrol station it will bring a lot of unwanted dangerous fumes. Traffic and noise. Which we do not sign up for.. what I find outrageous is the lack of vision this council has. As per what the government plans are of getting rid of all petrol stations due to electronic cars in the next 20 years. I feel like we are drawing the short straw here. I'm also outraged that there is that structural steel in the road that has been there for a few years and nothing is getting built there. How bought you guys finish that before building something that's going to cause harm to the community. I really hope you think about the community and not greedy investors. Kind regard a very angry golden bay resident.
109. Ms Brandy Marino	49 Winderie Road GOLDEN BAY WA 6174	I, Brandy Marino of 49 Winderie Road Golden Bay, reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use. My home is literally across the road from the proposed site and I have 2 young children (aged 1 and 4) whom I do not wish to be exposed to any level of Benzene.
110. Mr Adam Bell	11 Karunjie Road GOLDEN BAY WA 6174	<u>Submission 1</u> It's a no from me. Where are your values? Money over health. Shame. <u>Submission 2</u> A big No to golden bay fast food and service stations.
111. Ms Chynna Davidson	(No address provided)	Hi, I'm Chynna and I work at a director at a daycare in Warnbro but live in Golden bay. I believe that having a petrol station near a daycare is not only hazardous to their health but will also effect childrens temperament and mood. Having an unnatural environment around children causes them to feel confined and unable to express imagination leading to behavioural issues. As a child walks in or out that daycare door or even from their outdoor area they will be viewing pollution and encouragement of fossil fuels. 'Hearts and minds' daycare values are all about expanding imagination through natural play, this targets parents that enjoy their child to discover nature. The petrol may cause the daycare to loose business due to this reason. Our community is not happy with the development and would not like it to be build here.
112. Mr Leigh Crawford	235 Secret Harbour Boulevard SECRET HARBOUR WA 6173	As the owner of 22 Kalli street. I have concerns with light pollution and an increase in constant noise levels within the residential area from the proposed development.

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113. Mrs Tabitha Bickley	26 Tillery Way SECRET HARBOUR WA 6173	There is a petrol station at Secret Harbour and another upon leaving golden bay, both within a 5km radius of the proposed site. We do NOT need another one. I am against this proposal on the basis of environmental factors, and spoiling the look of a lovely suburb.
114. Mrs Emily Sabin	12 Narloo Way GOLDEN BAY WA 6174	I believe this should Not go ahead, no matter how you try and make the emissions safer it's still not ever going to be safe enough for the children in the school or daycares that are a few minutes walking distance or the residents living in the area, as well as it's not necessary we have plenty of petrol stations in the area. We don't need more petrol station or bottle shops in the area.
115. Mrs Michaela O'Loughlin	10 Woodlands Road GOLDEN BAY WA 6174	As a Golden Bay resident I have serious concerns regarding the proposal for the Golden Bay Service Station based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use. The increased traffic so close to primary school, child care and high school is also of concern. There are enough nearby service stations to cater for the suburb. Please do take serious consideration of resident concerns.
116. Mr Nathan Thipthorp	52 Exhibition Way COOLOONGU P WA 6168	I would like to see this service station NOT go ahead. It is not needed will have negative impacts on the health of those around it, in more ways than one.
117. Ms Linda March	62 Arizona Parade GOLDEN BAY WA 6174	No to the petrol station in Golden Bay.
118. Ms Leanne Moreton	9 Bidgemia Road GOLDEN BAY WA 6171	I am writing to reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use.
119. Ms Starr Jamieson	60 Arizona Parade GOLDEN BAY WA 6174	I am writing to object to this proposal on the following grounds: this location will significantly increase traffic at this location and undoubtedly lead to child injuries and undoubtedly deaths. I live on Arizona Parade an witness tens of children from infants to teens crossing at the lights on their way to and from school, using it to directly access Golden Bay beach (and its new Ship Wreck Playground), as well as headed to our large sporting oval and well used skate park. This development in no way supports our city council's vision for the future of this unique and affordable coastal community. I urge you to please consider the future of children and families in the area. What we need are less traffic heaving mixed use developments, such as a smaller supermarket, newsagent and Cheesecake shop! Many thanks for you time.
120. Ms Dawn Jecks	17 Montego Close SAFETY BAY WA 6168	My submission is as follows I urge you to reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. The science shows that here is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. We need to draw a line in the sand and say NO, we do not want this happening in our City.

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Name	Address	Comment
121. Golden Bay Progress Association Ms Anna-Marie Jackson	4A Boolardy Road GOLDEN BAY WA 6174	<p>At the meeting of the Golden Bay Progress Association held 5 August 2021, it was unanimously decided the Association register its strong objection to the application for a petrol station at Lot 265 Warnbro Sound Avenue, Golden Bay. There are many serious concerns which are not solved by the revised report.</p> <p>EMISSIONS IMPACT ASSESSMENT</p> <p>We expect the Emissions Impact Report to be independently assessed to overcome any possible bias as the report was paid for by the proponent. On the surface we can see the following omissions which prove misleading:</p> <ol style="list-style-type: none"> 1. The report omits to mention the types of land-use which are sensitive and within 200 metres of the petrol station. Let us elaborate. To the south, within 20 metres, and considered the most sensitive by the report, is residential area. At our meeting one resident living just south of the proposed petrol station has serious health issues which will be worsened by the polluting fuel vapour. Such real-life effects need considering. To the west, within just 58 metres, two day-care centres are nearing completion. This means the lungs of babies and toddlers will be inhaling the polluting fumes. To the east, just 86 metres away is also residential. More people, more lungs. To the north-west approx. 180 metres away will be a four storey, 89 unit residential building mainly for seniors. To the south-west, less than 200 metres away is a primary school. Reference to these types of land-use is essential to any decision made regarding a petrol station. EPA guidelines state a petrol station should not be located within 200 of sensitive areas, yet this proposed petrol station is surrounded by sensitive areas! 2. The wind modelling is based on Medina Research Station and assumes the prevailing wind is from the southwest 36% of the time and relies on this to be 'safe'. However, this ignores the fact the wind does NOT blow from the south west for 64% of the time. Prevailing easterlies will blow poisonous fumes directly to the neighbouring day-care centres. Strong northerlies which occur before weather changes, will blow the poisonous fumes directly to the neighbouring residential area. Even when the wind blows from the southwest, the unfortunate residents living just over the other side of Warnbro Sound Ave (Proposed Commercial/Mixed Use Residential) are just 58 metres away and will be breathing in the poisonous fumes. 3. Despite fuel recovery systems being used, this does not stop all fumes escaping and affecting the health of people, particularly that of the children in the neighbouring day-care centres, just 58 metres away, and especially on those many days when the winds keep blowing from the east. Scenarios such as this need to be highlighted. <p>TRAFFIC AUDIT</p> <p>Finding 2.2 of the audit states "Areas to the north and west of the development site are currently under construction and appear to be commercial developments that are consistent with the 'Neighbourhood Centre Precinct', i.e., an 'Activity Centre', as described in the Golden Bay Structure Plan. It is not clear if traffic generation associated with these developments has been included in the forecast volumes and hence assessment of queueing on Aurea Blvd back to Warnbro Sound Ave."</p>

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No.121 – cont.		<p>If ever there was a major flaw in a traffic study, this is it. It would be useful to elaborate on the 'commercial developments'. Allow us to assist:</p> <ul style="list-style-type: none"> • Two day-care centres • A four storey residential building with 89 units and 119 parking bays at Lot 636 Thundelarra Drive. • A primary school • A proposed shopping centre. <p>Traffic congestion is already a problem at peak times, and this will be exacerbated and extended as all the additional commercial and residential land-uses are completed. We must not ignore the future uses.</p> <p>TREES</p> <p>Despite the amendments MATURE TREES will still be CUT DOWN! This is not acceptable and poor planning in our view.</p> <p>Golden Bay residents expect the proposed petrol station to be rejected and the health and safety of our children and vulnerable residents protected. Put in a stand-alone 7/11 store if you want, maybe even a few electric charging stations but keep the outdated petrol fumes away. Our community is already serviced by petrol stations in nearby Secret Harbour, Golden Bay and Singleton.</p>
122. Ms Jasmine Shearman	32 Larkfield Ridge BALDIVIS WA 6171	<p>I Jasmine Shearman a resident in Golden Bay reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use.</p> <p>We do not want a service station at the proposed site. There is no logical justification to put the petrol station here when there are so many so close to us already! The suburb would benefit far more with another business being there. This petrol station and its location is far too close to homes, families, young children.</p>
123. Mr Tyrone Carusi	(No address provided)	<p>My name is Tyrone Carusi I am a resident in Golden Bay and I would like to advise of my strong disapproval and rejection of the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use. There is a strong collective opinion amongst the local residence and our disapproval for this proposal. There is no reason for this to go ahead. We the locals do not want it!</p>
124. Ms Verena Smallman	15 Dampier Drive GOLDEN BAY WA 6174	<p>I am against the proposed development in Golden Bay, place a service station too close to housing. This is a health risk to families and children.</p>
125. Ms Stacey Dalton	6 Ginrock Way GOLDEN BAY WA 6174	<p>Hello</p> <p>'reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use'</p>
126. Ms Lucy-Claire McMinn	(No address provided)	<p>Please accept this document as my opposition to the proposed Golden Bay 7/11 construction project. The petrol station will be an unsafe development.</p> <p>Regarding the Development Application – Mixed Commercial – Lot 265 Talisker Bend, Golden Bay.</p>

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No.126 cont...		<p>I oppose the development of a 7-11 petrol station at this location due to the health risks that it presents to the community, including my mum who lives on Aurea Blvd.</p> <p>I also understand that there are 2 childcare centres located within 200m of the developed that will also be affected by the development. The public health risk of exposure to Benzene is too significant for these two centres that fall within the sensitive land use zone.</p> <p>There is no safe level of Benzene and the development does not meet the EPA guidelines of 200m from sensitive land use.</p> <p>I urge City of Rockingham to reject the revised proposal.</p>
127. Mrs Rachel Benjamins	15 turtles Bend SECRET HARBOUR WA 6173	Another service station is not required in secret harbour/ golden bay. The area is already adequately serviced by a service station at the secret harbour shopping centre and at Floopers on mandurah Rd.
128. Mr David Howard	23 Elwell Street SECRET HARBOUR WA 6173	I do not support the proposed fuel station at this location due to the close proximity to child care centres, residential dwellings and other nearby fuel outlets available on Warnbro Sound Avenue.
129. Ms Sharon Thompson	21 Kalli Street GOLDEN BAY WA 6174	I am very concerned about the health aspects of having this development so close to housing & child care centres. I am a local resident who would be affected by this.
130. Ms Tashlyn Carusi	(No address provided)	<p>I Tashlyn Carusi a resident in Golden Bay reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use.</p> <p>I don't approve having a service station in that spot. I would much rather something else that's less harmful to the community and future generations. Golden bay could definitely have other things convenient to the locals such as a local IGA.</p>
131. Mr Jack Crawshaw	26 Kali Street GOLDEN BAY WA 6174	<p>I'm a home owner on Kalli Street, Golden Bay and am very much opposed to this development including the proposed petrol station.</p> <p>The health risks associated with living near a petrol station for the nearby residents should far outweigh any positive business outcomes that could arise from this development.</p>
No.131 – cont.		<p>COR have also approved two childcare centres in the recent times and the direct health impacts on those who attend the centres should also be on great concern to COR and those businesses.</p> <p>Please add to the record my objection to the development along with the other residents who have also tabled their objections.</p>
132. Peter Mullins	(No address provided)	'reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use'
133. Mrs Helen Maxwell	67 Maroubra Parade SECRET HARBOUR WA 6173	<p>I am writing to advise that I would like the council to reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene.</p> <p>There is NO safe level of Benzene. This development does not meet the EPA guidelines of being 200m away from sensitive land use.</p>

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134. Ms Bayley Ryan	23 Bidgemia Road GOLDEN BAY WA 6174	Please, we do not need another petrol station. Especially so close to schools and daycares. With all the health risks that would come with adding another petrol station to our community I believe there are definitely better options that can add to our community growth.
135. Miss Kelly-Anne Rashleigh	26 Colville Street WAIKIKI WA 6169	Objection to Petrol station Golden Bay. This is too close to daycare centre & the area has ample petrol stations, we don't need more.
136. Mr Barrett Losco	73 Miltona Drive SECRET HARBOUR WA 6173	The proposed fuel station is too close to residential housing, schools and a child care centre. Therefore it would seem inappropriate to approve this development because of the health risk posed by fuel vapours and there is the additional traffic to this commercial premises which will operate 24 hours a day. This objection is despite the developers suggestion to consider a fuel vapor recovery system.
137. Miss Rachael Matkovich	23 Arcoona Avenue GOLDEN BAY WA 6174	I Rachael Matkovich, reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use.
138. Mr Ari Dewi	(No address provided)	As a resident of Golden Bay I am opposing the plan of the development of a Petrol Station on the corner of Warnbro Sound and Aurea Blvd. I reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use
139. Ms Melissa Merritt	(No address provided)	As a resident of golden bay I am in support of the proposed business development plan in golden bay including the seven eleven petrol station. I think this would be a great solution to rectify the structure that was started and unfortunately not completed.
140. Mr Nathan Wagland	7A Tamala Court GOLDEN BAY WA 6174	My name is Nathan Wagland my current address is 7a tamala crt golden bay , I have seen the new proposal site for a 7/11 service station basically right in front of my house this is a ridiculous idea and my feed back is that it should not go ahead the reasons are below . - There is already plans that are being built across the road for 2x daycares -The homes that have to put up with the smell fuel fumes 24-7 - the chemicals in the air from the fuel and the very harsh fumes that are dangerous to breath - the primary school 100 meters down the road - the lack of room and the build up this will cause for people living right behind the service station - the potential explosion of it were to ever happen The list goes on this is a very ridiculous and very dangerously wrong idea to do with the potential to harm as no one in the area wants it and we are the ones living there . We already have what we need in the area with secret harbour shops down the road which has a service station and what ever else you need there is going to be no good out of this for anyone but the greedy money hungry people . This proposal site is literally across the road from my house and I do not want it thanks for review and consideration

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141. Ms Georgina Towse	22 Reilly Street SINGLETON WA 6175	<p>I feel it is totally unnecessary to build yet another fuel station in the Golden bay and surrounds area, particularly So closed to children's amenities, apart from the health implications, traffic to the area will be particularly dangerous and a hazard to pedestrians especially children. There are four fuel stations within a couple kilometre radius, one at the entrance to golden bay already, how many fuel stations does a community need.</p> <p>There has been considerable amount of building of large shopping centres and fuel stations in our beautiful area over the last few years which has destroyed our little suburbs, all it has achieved is putting the original amenities out of business and the shops empty to start a new one somewhere else. Prime example Meadow Springs shopping centre. There is clearly no need for more.</p>
142. Mrs Nina Staniford	4 Bonito Place GOLDEN BAY WA 6174	<p>I would like to register my objection to the Revised Mixed Use Development - Golden Bay @ Lot 265 Talisker Bend being revised to include a petrol station.</p> <p>My objection is based on</p> <ol style="list-style-type: none"> 1. Health concerns for nearby residents 2. Health concerns for children at nearby school and child day care centre 3. Traffic concerns for children and families who live locally 4. Traffic concerns for children who travel by bike or on foot to the nearby schools at Golden Bay Primary and Comet Bay High School
143. Ms Sara Walmsley-Gardiner	12 Woolibar Road GOLDEN BAY WA 6174	<p>I absolutely object to this proposal. Not only is it an eye sore, but we do not need another fuel station, especially in this location. Utilise this space for other commercial businesses that will actually enrich the area. We do not need fuel stations 2 minute drives apart. Just look at what has happened to Pinjarra Road with all those fuel stations, spaced only a couple hundred metres apart and they are never busy at the best of times- because it is overkill. Its bloody ridiculous. Come on guys, we can do better than a fuel station.</p>
144. Ms Rebecca Burton	16 Kalli Street GOLDEN BAY WA 6174	<p>I object to this proposal based on the adverse health risk of benzene exposure and it being in close proximity to sensitive land use areas. The proposal does not follow the EPA guidelines of separation distances for sensitive land use.</p>
145. Ms Samantha Hinsbey	14 Kalli Street GOLDEN BAY WA 6174	<p>I object to this proposed development due to the close promity of a fuel station to childcare, schools and homes. It is simply too close for the danger of it to be mitigated by any design revisions or exhaust solutions.</p>
146. Ms Kirsty Preston	37 Health Street SINGLETON WA 6175	<p>reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene. This development does not meet the EPA guidelines of 200m from sensitive land use</p>
147. Mr Clinton Jahn & Mesdames Rachel & Emily Trehwitt	13 Tangadee Road GOLDEN BAY WA 6174	<p>I oppose and 100 percent do not want nor is there a need for another petrol station and one to be placed in Golden Bay.</p> <p>We have a BP station 2km away in Karnup. We have the new Ampol petrol station 2km away in Secret Harbour. We have a Shell petrol station 2.5km away. We have a Caltex Woolworths petrol station 5km away. We have a Shell Coles petrol station 4km away. We have a Ampol petrol station 5km away. We have a Vibe port kennedy petrol station 5.5km away. We have a Puma petrol station 7km away. And many many more petrol stations between 5-10km away-you just need to look them up on Google.</p>

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No.147 – cont.		<p>The community of golden bay have no need for another petrol station nor do we want one. Not to mention all the other petrol stations locally in Baldivis which is a 11km distance. We have enough to choose from from Baldivis to meadow springs & up until Mandurah inclusive.</p> <p>What we need as a community and as to protect the community from the hazards of petrol stations and to sustain sustainable development and growth is a farmers market. To be able to supply and the demand is there for The freshest produce & meats. Environmental & sustainability products would be greater beneficial for livelihood and economic growth and supporting local produce. A great community live local buy local produce. A great sense of community aspect & much needed.</p> <p>Therefore as a household of 3 adults we all say no to yet another petrol station being built in a residential area which is extreme close proximity to schools, houses inclusive of all various ages and child care centres. A much more greater approach is to look at the growth want and need of surrounding development areas to maximise the area creating more dollars locally. A gym would be a great idea - however the majority of the community would benefit from fresh produce - the closest one to us in golden bay is Gilbert's in Greenfields. This would bring great potential income and more better. If you don't like that idea maybe a yoga centre, a dental or medical centre as the growth want and need is there. Close to schools and proximity to residents.</p> <p>Not to mention if a petrol station was to be built in golden bay the extreme hazardous and potentially life threatening habits, climatic and wind direction from ALL hours of operation within a 24 hour period would and could cause extreme hazardous effects on children, their children and their children's children.</p> <p>You need to think of the community and their socio-economic growth rate, needs of the community and actually hear from the community. I know I for one as a lot within the area would be demanding a full response of health checks for all locally residents and 100 percent guarantee that there would be ZERO outcome of this generation and generations to follow of no harm and not to mention if there were any other health effects of unborn children to come and within the womb. We do not want a petrol station. We will not be using the petrol station. Why waste your economic ability and criteria and actually advise us and ask the community of what is needed.</p> <p>A petrol station is definitely not needed - there's enough competition with the many of 20 plus local service stations within and surrounding facilities readily available to the residents who live within golden bay.</p> <p>I stand by what I say. I will not use this petrol station and no one else will. The harmful known effects readily available online from the known and potentially dangerous substances of the petrol station is unwarranted and not needed nor is it required.</p> <p>SAY NO TO THE PETROL STATION.</p> <p>Answer this - what would you do if you were placed in our shoes and think about where you choose to buy a house & then a petrol station is being built at your doorstep - the known damage & potential is far weighted out and exceeds the desire for you to place one there.</p> <p>Put it to use and actually have a development there that the community can benefit from.</p> <p>I sign this from myself and two other adults living and residing in our own home within Golden Bay.</p>

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No.147 cont...		I know the community will not use this no matter what tactics you put in place. As a community we will boycott the petrol station no matter what. STOP the petrol station being built because we don't want it, there's no need for one, there's not enough traffic to warrant one and there's soooo many others to choose from - the variety of the local petrol stations is phenomenal and unwarranted, unnecessary and waste of space. Thankyou & I look forward to your response. I stand by all residents within golden bay and say NO to a petrol station in golden bay! Get something we need - a deli we have none within the area, a yoga studio we have none, a fitness gym we have none, a green grocer, a locally produce meat & fresh fruit and vegetable market like Gilbert's.
148. Name not legible	112 Dampier Drive GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.
149. Mr Anthony White	32 Kalli Street GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.
150. Name not legible	52 Aurea Boulevard GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.
151. S J Saayman	30 Thundelarra Drive GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.
152. Mr T Saayman	29 Kalli Street GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.
153. M De Jager	29 Kalli Street GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.

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Proposed Mixed Commercial Development - Lot 265 Warnbro Sound Avenue, Golden Bay (20.2021.31.1)

* SAT Reconsideration Comments

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
154. Mr Simon Taylor	34 Arizona Parade GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.
155. Ms Cheyenne Taylor	34 Arizona Parade GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.
156. Ms Sinead Hamill	26 Kalli Street GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.
157. Ms Jacqueline Spouse	22 Kalli Street GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.
158. Ms Jessica Boase	22 Kalli Street GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.
159. Ms Danielle Spouse	22 Kalli Street GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.
160. Ms Robyn Benton	16 Arizona Parade GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.
161. Ms H Triplett	35 Talisker Bend GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.

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PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
162. Name not legible	12 Arizona Parade GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.
163. Name not legible	12 Arizona Parade GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.
164. Ms Abigail Nataio	46 Arizona Parade GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.
165. Ms A Van Berkel	38 Arizona Parade GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.
166. Ms Maxine Briggs	No contact details provided	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.
167. Ms Lena Spee	33 Kalli Street GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.
168. Phatirat Robinson	44 Thundellara Drive GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.
169. Mr Ryan Veerhuis	38 Aurea Boulevard GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.

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PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
170. Ms Jade Brace	44 Aurea Boulevard GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.
171. Ms Trudie Trew	10 Kalli Street GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.
172. Ms Ashlyn Wright	20 Arizona Parade GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.
173. Mr Peter Powell	19 Kalli Street GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.
174. Ms Shirley Baker	13 Kalli Street GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.
175. Ms Gillian Davidson	20 Kalli Street GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.
176. Mr Jay Davidson	20 Kalli Street GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.
177. H Rowe	40 Arizona Parade GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.

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* SAT Reconsideration Comments

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
178. Mr Alex Palmer	46 Arizona Parade GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.
179. Ms Jess Sandells	48 Arizona Parade GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.
180. D Mellacio	36 Thundelarra Drive GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.
181. Mr Steve Starvaggi	26 Thundelarra Drive GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.
182. Ms Paige White	56 Arizona Parade GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.
183. Name not legible	44 Aurea Boulevard GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.
184. Ms Samone Hines	52 Arizona Parade GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.

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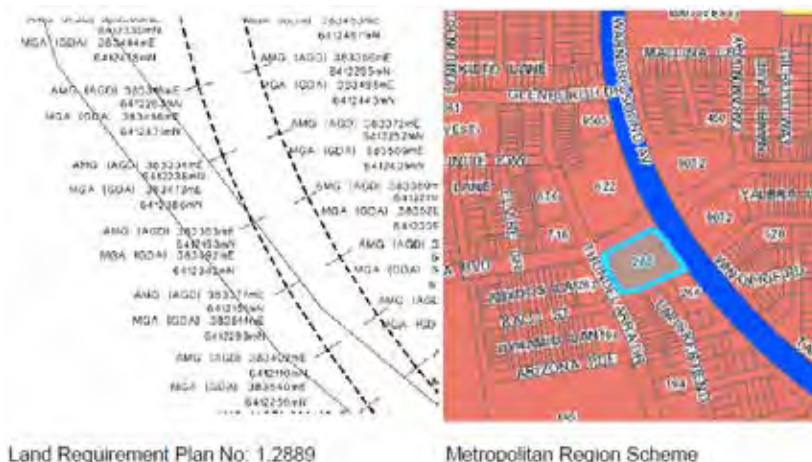

PUBLIC SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
185. Ms Karen King	32 Kalli Street GOLDEN BAY WA 6174	I am a resident who lives in close proximity to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. I ask that you reject the Golden Bay Service Station proposal based on the public health risk of exposure to Benzene. There is NO safe level of Benzene and this development does not meet the EPA guidelines of 200m from sensitive land use. Refer to Submission No.41.
186. Ms Gillian Turner Late Submission received 12/8/21	10 Karunjie Road GOLDEN BAY WA 6174	This email is to register my strong opposition to the proposed petrol station at Lot 265 Talisker Bend, Golden Bay. There are several petrol stations already in the vicinity and the petrol station's location adjacent to childcare centres, homes and a primary school is extremely undesirable. Surely there must be some town planning scheme that prevents this.

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Name	Address	Comment
<p>1. Mr Peter Adams</p> <p>Department of Planning, Lands and Heritage</p>	<p>Locked Bag 2506 PERTH WA 6001</p>	<p>I refer to your correspondence dated 23 February 2021. In accordance with the Western Australian Planning Commission's (WAPC) Notice of Delegation dated 30 May 2017, the following comments are provided. This proposal seeks approval for a mixed commercial development comprising service station, commercial tenancies and gymnasium.</p> <p>The site is subject to a subdivision determination for the creation of 2 lots, approved on 10 February 2021 (WAPC reference: 160177). Condition 5 precludes vehicular access to Warnbro Sound Avenue.</p> <p>Land Requirements</p> <p>Warnbro Sound Avenue is reserved as an Other Regional Road (ORR) in the Metropolitan Region Scheme and Category 1 per Plan No. SP 694/4. The subject land is not affected by the ORR reservation per Land Requirement Plan No. 1.2889.</p> <p>Access</p> <p>Two vehicle access points are proposed, comprising one left-in/left-out crossover to Thundelarra Drive and one left-in/left-out crossover to Aurea Boulevard with a 30 metre long left turn slip lane (including taper) proposed at the Aurea Boulevard crossover to improve traffic operations and safety. No access is proposed from Warnbro Sound 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.</p> <p>It is noted that access arrangements do not reflect the Golden Bay Neighbourhood Centre Detailed Area Plan (NCDAP) (March 2015), extract below. The indicative development plan designates the development site for higher-density residential development.</p> <p>Transport Statement</p> <p>The above supporting Traffic Statement, prepared by Transcore (January 2021)) states that the development will generate approximately 1376 vehicular trips per day (both inbound and outbound) with approximately 115 and 124 trips during the weekday AM and PM peak hours respectively.</p> <p>This is below the WAPC Transport Impact Assessment Guidelines for Developments (2016) threshold for further analysis. SIDRA analysis indicates a satisfactory level of service for both intersections to 2031.</p> <p>Signage</p> <p>The Department has no objection to the signage on condition that the advertisements do not interfere with sight lines, distract drivers, or have the potential to become confused with traffic signals or road signs. This position reflects the Commission's advertising on Reserved Land Policy D.C 5.4, paragraph 5.3.1.</p> <p>In view of the above, the Department raises no objections on regional transport grounds to the proposed advertising signage and advises only that the type of sign, size, content and location should comply with all relevant by-laws and planning schemes made by Council.</p> <p>Recommendation</p> <p>The Department of Planning, Lands and Heritage has no objection to the proposal on ORR planning grounds.</p> <p>Thank you for your correspondence. Should you have any queries regarding this matter, please contact Peter Adams on 6551 9641 or via email at peter.adams@dplh.wa.gov.au</p>

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Name	Address	Comment
1 - cont...		 <p>Land Requirement Plan No: 1.2889</p> <p>Metropolitan Region Scheme</p> 
2. Amy - Customer Service Officer Western Power		<p>Please check out the Planning your project section of our website – we don't actually process submissions: the information here (along with 'Dial Before You Dig') allows you to check that any work you need to do will not be impacted by proximity to our network.</p> <p>This section provides advice for Building near the electricity network and paths to take if you find that your project will encroach on electrical assets, such as booking to Speak to an engineering expert or applying for a Feasibility study.</p> <p>An Engineering Expert may also be able to assist with your enquiry: The City is general supportive of the development if it can be demonstrated that the development is fire rated and queries whether WP could potentially gate/fence this section off so transformers are not visible from the street.</p> <p>Local Government Authorities can review our Strategic planning information to determine if any electrical infrastructure is located.</p>
3. Ms Jane Sturgess Department of Water and Environmental Regulation		<p>Thank you for providing the development application received 23 February 2021 for the Department of Water and Environmental Regulation (Department) to consider.</p> <p>The Department has identified that the proposed mixed commercial development at Lot 265 Talisker Bend in Golden Bay has the potential for impact on water resource management. In principle the Department does not object to the proposal however key issues, recommendations and advice are provided below and these matters should be addressed.</p>

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Name	Address	Comment
3 - cont...		<p>Issue Drainage</p> <p>Recommendation A stormwater management plan is to be prepared for the site in accordance with the <i>Stormwater Management Manual for Western Australia</i> (DWER, 2004-2007) and <i>Decision process for the stormwater management in Western Australia</i> (DWER, 2017) that demonstrates the appropriate management of small, minor and major rainfall events.</p> <p>Issue Water quality protection measures</p> <p>Recommendation In accordance with <i>Water Quality Protection Note 49: Service Stations (WQPN 49)</i> (DWER, 2013) the following is required with regards to the service station:</p> <ul style="list-style-type: none"> • As described above, a Stormwater Management Plan is to be completed to the satisfaction of the Department. • A layout plan showing all key infrastructure including underground fuel storage and associated pipe-work; paved forecourts and fuel dispenser areas; tank fill point sites; car parks; wash down areas; unpaved areas; vehicle wash facilities; any waste treatment facilities; structural measures to protect the environment and any stormwater management systems. • Detailed description pertaining to infrastructure design including fuel tanks, pipe work, and any additional infrastructure ie service bays or wash facilities; details of any storage and or disposal of waste; and contingency plans for spills. • Further details in relation to design capacity requirements of the petrol and oil separators. <p>In the event there are modifications to the proposal that may have implications on aspects of environment and/or water management, the Department should be notified to enable the implications to be assessed.</p>
4. Mr Vic Andrich Department of Health	PO Box 8172 PERTH BC WA 6849	<p>Submission 1 Thank you for your letter of 4 March 2021 requesting comments from the Department of Health (DOH) on the above proposal. The DOH provides the following comment: The DOH has concerns about the distance between the proposed service station and approved nearby sensitive land-uses, specifically two child-care centres (Lot 263 Aurea Bvd, Lot 716 Thundelarra Dve) and the nearest proposed residential development. The DOH concern related to potential negative health impacts on the community in general, and young children in particular, from emissions related to fuel operations. The proponent refers to the EPA Environmental Assessment Guideline (EAG) GS3 '<i>Guidance for the Assessment of Environmental Factors No. 3 - Separation Distances between Industrial and Sensitive Land Uses</i>'. This document recommends at least 200m, from boundary to boundary, between a 24-hour service station and the sensitive land-use. In this instance, the EHD recommends 200m from the sources (fuel storage tanks and bowsers) to the boundary of the sensitive land uses. All sensitive land-uses mentioned above are well within 100m of both the emission sources. The fuel storage tanks are equipped with a Stage 1 Vapour Recovery System (VR1) but there are no vapour recovery systems (VR2) on the bowsers.</p>

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4 - cont...		<p>The DOH concern is with gaseous emissions, particularly benzene, a human carcinogen. Benzene can be elevated above background levels for some distance from service stations. The public health concern is not mitigated with a Dangerous Goods Licence, which is for the risk control of acute hazards (in this case explosive vapours).</p> <p>As outlined in the EPA document, where a separation under consideration is less than in the table, it is recommended that a new project does not proceed in the absence of site-specific investigations and a report demonstrating that the separation distance will meet acceptability criteria. There has been no assessment of gaseous emissions for this proposal.</p> <p><u>Submission 2</u></p> <p>Thank you for your providing us with the proponent's response to our recommendations for a site-specific assessment of gaseous emissions from the proposed service station. We note that the proponent has described some mitigating factors for the movement of air between the fuel bowzers and some of the nearby sensitive land-uses but these do not fully address whether the nearby land-uses could be impacted by increased vapour levels, particularly of benzene.</p> <p>The Department of Health (DOH) has considerable concern with regards to the proximity of child-care centres. As mentioned in our original letter, the concern with gaseous emissions of benzene is that it is a known human carcinogen with no known 'safe' threshold. About 3-4 studies (international) that we're aware of demonstrate a small increased risk of childhood leukaemia associated with residential proximity to service stations. There are also international data that benzene levels are significantly increased, above background, up to 150m from a service station (the emission source). However, there is no local data and asking that deviations from Environmental Protection Authority guidelines should be justified on site-specific assessments.</p> <p>With respect to the Technical Note, it misses the point about exposure to gaseous emissions and does not discuss the relevant exposure risk. The risk is not related to explosive gas atmospheres, it is due to public health implications of long-term exposures to benzene and other volatile organic compounds.</p> <p>It is also a concern of the DOH that the proponent argues there is no risk because there are examples of other approvals where sensitive land-uses are within the recommended separation distance. Falsely they argue that this demonstrates that '...fuel retailing convenience store and service station developments are capable of construction adjacent or in proximity to sensitive land uses'. If, in those cases, the risk was assessed and found to be acceptable, then that is fine. However, if the decision was not based on acceptable risk that does not make the decision correct. Nor does it make it a sufficient reason to not consider gaseous emissions in future applications.</p>
5. Mr Matthew Cosson Department of Education	151 Royal Street EAST PERTH WA 6004	<p>Thank you for your email 22 February 2021 providing the Department of Education (Department) with the opportunity to comment on the proposed Joint Development Assessment Panel Application on Lot 265 (40) Talisker Bend, Golden Bay. The Department has reviewed the information submitted in support of the application and wishes to provide the following comments in relation to the potential impact on the nearby Golden Bay Primary School site:</p>

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5 - cont...		<p>Land Use</p> <p>The Western Australian Planning Commission's Development Control Policy 2.4- School Sites (DC2.4) and draft Operational 2.4- Planning for School Sites (OP 2.4) requires careful consideration when planning for the consideration of certain land uses to ensure that school sites are compatible with their neighbours.</p> <p><u>Service Station</u></p> <p>In addition to the Requirements of DC2.4 and draft OP 2.4, due consideration is required to the requirements of the Environmental Protection Authority's (EPA) Guidance Statement No. 3 - Separation Distances between Industrial and Sensitive Land Uses (Guidance Statement No. 3). Guidance Statement No. 3 advises that a 200m buffer should be provided between a 24-hour service station and a sensitive land use. In this instance, the proposed service station element of the proposal is located approximately 150m from Golden Bay Primary School.</p> <p>Whilst the above presents some level of concern for the Department, it is acknowledged that if the service station were to operate from Monday-Saturday from 0700-1900 hours, the suggested buffer would be reduced to 50m. It is understood that the larger separation is imposed to ensure that the use does not compromise the amenity of sensitive uses which operate outside of standard operating hours (residential development, hospitals, hotels, motels, hostels, caravan parks etc.).</p> <p>The Department considers the proposed separation distance between the Service Station and Golden Bay Primary School to be acceptable in principle as the school generally operates within the hours of 0700-1900 hours, Monday to Friday. The Department also notes that the applicant intends to implement a number of mitigation methods to reduce the impact the use will have on the residential dwellings that are directly adjacent to the site. Such measures will assist in further reducing any adverse impacts that may be imposed upon the school site.</p> <p>General Commercial</p> <p>The Applicant's report has indicated that the proposed tenancy in the south-eastern corner of the site may be occupied by a 'Restaurant/Cafe' or a 'Shop' use. Both uses would be suitably compatible with the school site. As such, the Department would have no concerns with either of these uses occupying the site.</p> <p>Notwithstanding this, it is likely that other uses may be proposed in the future if a suitable Restaurant/Cafe/Shop tenant cannot be secured. If another use is proposed, due consideration should be given to the compatibility of any use with the school site in accordance with DC2.4 and draft OP2.4. Any future change of use applications should be referred to the Department to ensure there will be no adverse impacts on Golden Bay Primary School.</p> <p>Recreation - Private (Gymnasium)</p> <p>The proposed gymnasium use is also considered acceptable as it is suitably compatible with the school site. It will not result in any undue impacts on the health and amenity of the staff, students and parents of the school. Any future change of use applications should be referred to the Department to ensure there will be no adverse impacts on Golden Bay Primary School.</p> <p>Car Parking and Access</p> <p>The Department is satisfied that the information submitted by the Applicant adequately demonstrates that the proposal complies with the requirements of the City of Rockingham's Town Planning Scheme No. 2 in relation to car parking.</p>

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SERVICING AUTHORITY SCHEDULE OF SUBMISSIONS		
Name	Address	Comment
5 - cont...		<p>Furthermore, there is sufficient separation between the application site and Golden Bay Primary School to ensure that there will be no conflict between vehicles accessing the two sites.</p> <p>Any future change of use applications should be referred to the Department to ensure that alternative uses do not compromise the existing car parking and access arrangements for the school site, particularly within peak drop-off/pick-up times.</p> <p>Construction Management</p> <p>The Department notes that no information has been submitted in relation to construction management. To ensure that Golden Bay Primary School is not burdened by the impacts of construction works, the Department requests that a Construction Management Plan be required as a condition of approval. The Construction Management Plan should address the following matters:</p> <ul style="list-style-type: none"> • Management of car parking, delivery vehicles and traffic associated with the construction of the development. Construction and delivery vehicles should not utilise the bays surrounding the Golden Bay Primary School site during peak drop- off/pick-up times; and • How dust, odour and noise will be mitigated so that it does not materially affect the students and staff of Golden Bay Primary School. <p>Waste Management</p> <p>The Applicant's report indicates that refuse and recycling will be collected on site by a private contractor and that waste collection vehicles are expected to access the site during off peak periods. Notwithstanding this, no formal Waste Management Plan has been submitted as part of the application. It is important to ensure that vehicles associated with waste and recycling collection do not cause banking to occur on Thunderella Drive, particularly during the school's peak drop-off/pick-up periods.</p> <p>The Department requests that a condition of approval is imposed which would require a Waste Management Plan to be submitted to the City and approved prior to the initial occupation any of the tenancies. The Waste Management Plan should demonstrate that there would be no conflict with vehicles accessing the school site.</p> <p>Subject to the above matters being considered, the Department offers no in principle objections to the proposal.</p>
6. Mr Eric Gruber Department of Mines, Industry Regulation and Safety	Mineral House 100 Plain Street EAST PERTH WA 6004	<p>A request for comment was received from the City of Rockingham in relation to the above planning application and the proposal to develop a mixed commercial business, at the above address.</p> <p>Based on the provided information there is no issue identified at this stage with the proposal. Before the site is used to store Dangerous Goods above manifest quantity, it will require a Dangerous Goods Site licence.</p> <p>The storage of bulk fuel is governed by AS1940; and a Dangerous Goods Site Licence applications will be assessed against this and any other relevant Australian Standards during the application process for a Dangerous Goods Site licence.</p>



Your ref: 20.2021.31.1
Our ref: RF3754-02
Enquiries: Brett Dunn, Ph 9550 4202

City of Rockingham
PO Box 2142
ROCKINGHAM DC WA 6967

Attention: David Banovic

Dear David

DEVELOPMENT APPLICATION – LOT 265 TALISKER BEND, GOLDEN BAY

Thank you for the additional information pertaining to the abovementioned referral, received for your email of the 26 July 2021. The information provided by the proponent as part of a State Administration Tribunal mediation process have been reviewed by the Department, with feedback requested upon an Emissions Impact Assessment.

Consistent with previous advice to this process the Department would advise that it does not have a regulatory role, policy position or guidance statement for fuel stations.

Due to uncertainties within air dispersion modelling for this land use, resulting from an absence of standard methodology and validated data, adherence to separation distances within *Guidance Statement 3 Separation Distances between Industrial and Sensitive Land Uses* (GS 3) (EPA, 2005), is generally recommended to inform planning decisions.

The amended approach by the proponent to employ both stage 1 and stage 2 vapor recovery systems (VR1 and VR2) within their Emissions Impact Study is noted. Although it is estimated that these additional emission controls would reduce the emissions, owing to the uncertainties in emission estimations there is limited ability to determine if these additional emissions controls are required or, if installed, would result in acceptable impacts.

The management of the residual risk is an important consideration in planning decisions. The Department is unable to offer any further advice to this proposal due to aforementioned limitations.

Should you wish to discuss this matter further, please contact the undersigned on 9550 4202.

Yours sincerely

A handwritten signature in black ink, appearing to read 'B. Dunn', with a large, sweeping loop at the end.

Brett Dunn
Program Manager – Planning Advice
Kwinana Peel Region

16 / 08 / 2021



Your Ref: L265 Warnbro Sound Avenue, Golden Bay
Our Ref: F-AA-03231 D-AA-21/86394
Contact: Franziska Marian 9222 2000

Mr Michael Parker
Chief Executive Officer
City of Rockingham
PO Box 2124
ROCKINGHAM DC WA 6967

Attention: David Banovic, Senior Planner

Dear Mr Parker

**MIXED COMMERCIAL DEVELOPMENT (SERVICE STATION) – LOT 265
WARNBRO SOUND AVENUE, GOLDEN BAY: RESPONSE TO EMISSIONS
REPORT**

Thank you for providing us with the opportunity to review the emission report for the proposed service station on Aurea Boulevard, Golden Bay. The DOH has previously expressed concern about the proximity of the service station to two approved childcare centres. Both childcare centres are within 100m (58m and 68m) of the petrol bowzers. The emissions report does not refer to concentrations at the childcare centres but does estimate concentrations at the nearest sensitive receptor, a proposed residential development, 20m from the bowzers.

The emissions report was provided in response to our recommendations for a site-specific assessment of gaseous emissions from the proposed service station. The emissions report and modelling was provided to the Department of Water and Environmental Regulation (DWER) for comment. The DWER has stated that, in general, air quality dispersion modelling has several areas of uncertainty and that the assumptions could not be verified. They recommend the application of the Environmental Protection Agency's *Separation Distances between Industrial and Sensitive Land Uses (GS3)* as a precautionary principle, unless remediation action can be taken to lessen potential impacts, for example stage 2 vapour recovery (VR2) on petrol bowzers.

The DOH concurs with the DWER position. However, we are aware that the GS3 document is over 15 years old and may not reflect current fuel standards and emission controls. Therefore, we have provided an estimate of risk of leukaemia from benzene, the chemical of concern from petrol emissions, based on the estimated benzene

concentrations presented in the emissions report. Increased risk is estimated for both the nearest sensitive receptor (residential development) and the child-care centres. Benzene is a known human carcinogen with no known safe limit of exposure, although the risk of leukaemia from low exposures is extremely small. The increased lifetime risk for continuous exposure to $1\mu\text{g}/\text{m}^3$ is estimated to be about 6 cases/1,000,000¹.

1. Proposed residential development: the maximum predicted annual benzene concentrations from the modelling were $6.7\mu\text{g}/\text{m}^3$ with VR1 (required) and $3.1\mu\text{g}/\text{m}^3$ (with both VR1 and VR2). Both are below the National Environment Protection Measures monitoring investigation level. However, there will still be a risk. In the report, the background benzene concentration was assumed to be $2.9\mu\text{g}/\text{m}^3$. Therefore, with VR1 only, approximately $3.8\mu\text{g}/\text{m}^3$ benzene (annual average) could be attributed to the petrol station. The excess risk of leukaemia from continuous long-term exposure to this concentration of benzene will be about 2 cases/100,000. There will be negligible risk, above background, if VR2 is also installed

2. Child-care centres: There are no calculations for benzene at the child-care centres in the emissions report. The cancer risk for benzene used above is based on occupational exposures and there are limited data for children. However, a small number of epidemiological studies have investigated leukaemia risk for children living near service stations. The risk is based on proximity rather than measured concentrations. A few studies used neighbouring (i.e. adjoining) businesses to determine proximity and one study used a 100m buffer. A summary risk of all the studies combined showed at least a doubling risk of leukaemia for children living in close proximity to a petrol station². For DOH 'close proximity' will be defined as within 100m. The background incidence for childhood leukaemia in WA is 5 – 6/100,000. This suggests that there is a possible excess risk of 5 – 6/100,000 for children living within 100m of petrol stations. The target risk level for carcinogens is 1/100,000³. The risk is likely to be decreased for children in childcare as less time is spent in childcare than at home. The use of VR2 will decrease the risk but the DOH cannot estimate by how much.

DOH supports a precautionary approach to siting petrol stations proximal to residential areas and child care centres to positively benefit children health. Without VR2 the risk is not acceptable. Should the development proceed, to decrease risk, VR2 controls should be installed as a minimum along with robust inspection and maintenance to ensure the effectiveness of the controls.

¹ WHO (2000). Benzene. In: *Air quality guidelines for Europe*, 2nd ed. Copenhagen, World Health Organization Regional Office for Europe

² Steinmaus and Smith. Proximity to Gasoline Stations and Childhood Leukemia. *Am J Epidemiol.* 2016; 185: 5-7

³ enHealth (2012) Environmental Health Risk Assessment: Guidelines for assessing human health risk from environmental hazards, 2nd Ed. <https://www.eh.org.au/documents/item/916>

Should you have any queries or require further information please contact Franziska Marian on 9222 2000 or ehinfo@health.wa.gov.au

Yours sincerely



Dr Michael Lindsay
EXECUTIVE DIRECTOR
ENVIRONMENTAL HEALTH DIRECTORATE

12 August 2021

Attachment 6

7 May 2021 Meeting Agenda and Minutes

AGENDA - [MOJDAP/84 – Agenda – 7 May 2021](#)

MINUTES – [MOJDAP/84 – Minutes – 7 May 2021](#)