Metro Inner Development Assessment Panel Agenda

Meeting Date and Time: Tuesday, 31 March 2026; 1.00pm
Meeting Number: MIDAP/127
Meeting Venue: 140 William Street, Perth

A live stream will be available at the time of the meeting, via the following link:
MIDAP/127 - 31 March 2026 - City of Baywater

PART A – INTRODUCTION

1. Opening of Meeting, Welcome and Acknowledgement
2. Apologies
3. Noting of Minutes

PART B – CITY OF BAYSWATER

1. Declarations of Due Consideration
2. Disclosure of Interests
3. Form 1 DAP Applications
   - 3.1 Lots 130 – 131 (No 321) Guildford Road, Bayswater – Proposed service station, car wash and drive thru coffee (fast food) – DAP/23/02575
4. Form 2 DAP Applications
5. Section 31 SAT Reconsiderations

PART C – OTHER BUSINESS

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

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

DAP Members
Clayton Higham (Presiding Member)
Francesca Lefante (Deputy Presiding Member)
Andrew Howe
Cr Michelle Sutherland (Part B – City of Bayswater)
Cr Calla Loiacono (Part B – City of Bayswater)

DAP Secretariat
Kristen Parker
Ashlee Kelly

PART A – INTRODUCTION

1. Opening of Meeting, Welcome and Acknowledgement

2. Apologies

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PART B – CITY OF BAYSWATER

1. Declarations of Due Consideration

2. Disclosure of Interests

3. Form 1 DAP Applications

3.1 Lots 130 – 131 (No 321) Guildford Road, Bayswater – Proposed service station, car wash and drive thru coffee (fast food) – DAP/23/02575

4. Form 2 DAP Applications

Nil

5. Section 31 SAT Reconsiderations

Nil

PART B – ITEM 3.1 – LOTS 130 – 131 (NO 321) GUILDFORD ROAD BAYSWATER – PROPOSED SERVICE STATION, CAR WASH AND DRIVE THRU COFFEE (FAST FOOD)

Form 1 – Responsible Authority Report
(Regulation 12)

DAP Name:	Metro Inner Development Assessment Panel
Local Government Area:	City of Bayswater
Applicant:	Hidding Urban Planning
Owner:	OTR 337 Pty Ltd
Value of Development:	$2.5 million ☐ Mandatory (Regulation 5) ☒ Opt In (Regulation 6)
Responsible Authority:	City of Bayswater
Authorising Officer:	Director Community Services
LG Reference:	DA23-0365
DAP File No:	DAP/23/02575
Application Received Date:	23 October 2023
Report Due Date:	31 March 2026
Application Statutory Process Timeframe:	90 Days with an additional 800 days agreed (Extension of Time and Stop the Clock)
Attachment(s):	1. Applicant Planning Report on Original Application (23 October 2023) 2. Revised Development and Landscaping Plans (20 November 2025) 3. Revised Traffic Impact Assessment (4 December 2025) 4. Revised Waste Management Plan (16 December 2025) 5. Revised Acoustic Report (19 December 2025) 6. Operational Management Plan (16 December 2025) 7. Lighting Modelling Report (19 December 2025) 8. Signage Strategy (19 December 2025) 9. Environmental Impact Assessment (27 November 2025) 10. City of Bayswater Design Review Panel Minutes

Responsible Authority Recommendation

That the Metro Inner Development Assessment Panel resolves to:

Refuse DAP Application reference DAP/23/02575 and accompanying plans received in accordance with Clause 68 of Schedule 2 (Deemed Provisions) of the *Planning and*

Development (Local Planning Schemes) Regulations 2015, and the provisions of the City of Bayswater Town Planning Scheme No. 24, for the following reasons:

Reasons

1. Pursuant to Clauses 67(2) (q) and (t) of the *Planning and Development (Local Planning Schemes) Regulations 2015*, as the proposal fails to demonstrate safe and efficient vehicle access and egress, with unacceptable conflict at the Guildford Road full movement crossover, insufficient internal vehicle manoeuvring and unsafe turning movements.

2. Pursuant to Clauses 67(2) (r) of the *Planning and Development (Local Planning Schemes) Regulations 2015*, as the proposal fails to demonstrate that pedestrian movement can occur safely and efficiently due to the internal layout not being able to sufficiently accommodate design vehicles and tanker manoeuvres in a manner consistent with safe road design practice. The swept paths exhibit multiple sharp steering corrections and non-lane-correct movements, resulting in unacceptable risks to motorists and pedestrians.

3. Pursuant to Clauses 67(2) (r) of the *Planning and Development (Local Planning Schemes) Regulations 2015*, the proposal has not demonstrated that public health risks arising from a 24-hour facility immediately abutting residential properties can be acceptably mitigated.

4. Pursuant to Clauses 67(2) (m), (n) and (y) of the *Planning and Development (Local Planning Schemes) Regulations 2015*, the proposal does not provide adequate transition or buffering to the sensitive residential interface. The cumulative intensification of the site accommodating the service station, drive-through fast food and car wash, with proposed 24hour operations, results in unacceptable amenity impacts to adjoining residential lots.

5. Pursuant to Clauses 67(2) (n) of the *Planning and Development (Local Planning Schemes) Regulations 2015,* the proposed development results in unacceptable environmental impacts of the development associated with noise, light, and odour.

6. Pursuant to Clauses 67(2) (za) of the *Planning and Development (Local Planning Schemes) Regulations 2015,* due regard has been given to objections raising material planning issues consistent with the City's assessment, including concerns relating to traffic safety, access, amenity, health risk and design.

7. Pursuant to Clauses 67(2) (c) of the *Planning and Development (Local Planning Schemes) Regulations 2015,* the proposed development is inconsistent with the principles for good design as detailed in State Planning Policy 7.0 – Design of the Built Environment, as the built form and site planning does not respond to the character of the area, does not provide for activation and interaction with the public realm, and is an inappropriate built form for its setting, due to the height of fencing, and associated blank walls.

8. Pursuant to Clauses 67(2) (g) of the *Planning and Development (Local Planning Schemes) Regulations 2015,* the proposed development does not satisfy the requirements of the City of Bayswater Signage Policy and proposes

a proliferation of signage that will detract from the local character and amenity of the area.

Details: outline of development application

Region Scheme	Metropolitan Region Scheme
Region Scheme - Zone/Reserve	Urban, Primary Regional Roads
Local Planning Scheme	City of Bayswater Town Planning Scheme No. 24
Local Planning Scheme - Zone/Reserve	Service Station, Primary Regional Roads
Structure Plan/Precinct Plan	N/A
Structure Plan/Precinct Plan - Land Use Designation	N/A
Use Class and permissibility:	Service Station – "P: Convenience Store – "D" Fast Food Outlet – "D" Car Wash – "P"
Lot Size:	2805m^2
Existing Land Use:	Disused Service Station and Vacant Land
State Heritage Register	No
Local Heritage	☒ N/A ☐ Heritage List ☐ Heritage Area
Design Review	☐ N/A ☒ Local Design Review Panel ☐ State Design Review Panel ☐ Other
Bushfire Prone Area	No
Swan River Trust Area	No

Background:

Original Application

Following lodgement of the original application on 23 October 2023, the City undertook a full assessment and sought further technical information from the applicant and Main Roads WA (MRWA) throughout the process. Multiple requests for information (RFIs) from the City remained unanswered, resulting in the application remaining on hold for an extended period of time.

Due to ongoing delays and the absence of critical technical material necessary to complete the assessment, the City proceeded to finalise its Responsible Authority Report (RAR) based upon the information available at the time. It was noted in the original RAR that public advertising could not be undertaken, given the absence of key documents required to assess impacts on adjoining residential properties.

Previous DAP Decision

On 2 October 2025, the application was presented to the Metro Inner DAP, where the City recommended refusal. Seven key reasons for refusal were identified, primarily

relating to insufficient information to demonstrate the proposal's suitability, as summarised below:

- Insufficient information to assess noise, lighting, odour and broader environmental impacts on nearby residential properties;
- Non-compliant car parking provision and inadequate street setbacks affecting local character and visual amenity;
- Built form that does not respond to the surrounding context, including blank walls, high fencing, excessive signage, and limited public-realm activation;
- Poor interface with adjoining residential properties due to building bulk, orientation and
- Proliferation of signage throughout the development detracting from the local character and amenity of the area;
- The compatibility of the development with the desired future character of the area and relationship to adjoining residential lots;
- Environmental impacts of the development associated with noise, light and odour, in addition to the health implications associated with service station emissions; and
- Key technical information missing or incomplete, including the Road Safety Assessment, SIDRA files, updated TIA details for future Guildford Road design, and updated environmental assessments.

The Metro Inner DAP resolved to defer the application for a period of 180 days, in accordance with section 5.10.2a of the DAP Standing Orders 2025, for the following matters to be addressed:

1. *'To allow for further assessment of the late information received and for further information to be requested should there be a deficiency of information to allow the City to complete its assessment. That further information will include, but not limited to, the following:*
    a) *Information on the proposed land use for the proposed commercial building and associated car parking. Alternatively, if the commercial building does not form part of the application, the proposed building and associated parking should be removed from all development plans.*
    b) *Details of finished floor levels and building heights for all proposed buildings.*
    c) *An environmental report addressing noise, odour, dust issues and mitigation actions.*
    d) *Details of in-store service associated with the fast food outlet.*
    e) *Additional landscaping within the car parking area.*
    f) *In reference to the Traffic Report:*
        - *Justification on the use 16.9m tankers in lieu of the standard 19m tankers.*
        - *Sweep path diagrams (to scale).*
2. *To allow for the submitted plans to be assessed by the DRP and referred to MRWA and further amendments made should that be necessary.*
3. *To allow for the plans and information to be advertised for public comment in accordance with the City of Bayswater Local Planning Scheme.*
4. *To allow for the City to provide a revised RAR having regard to the information received from the applicant, the referral bodies, and the community.'*

Following the 2 October DAP meeting, the applicant submitted the required information to the City between the 20 November and 16 December 2025, to allow the City to

undertake an assessment of the application, commence referrals where appropriate, and prepare a revised Responsible Authority Report. The table below outlines each deferral item and the City's officer comments regarding the adequacy and implications of the information received.

Deferral Item No.	**Officer Comment**
1a. Information on the proposed land use for the proposed commercial building and associated car parking (or removal).	The revised plans dated 20 November 2025 show the removal of the 'future adjacent commercial building' and associated car park. The northern portion of the site remains vacant.
1b. Details of finished floor levels and building heights.	Revised architectural drawings now include finished floor levels (FFLs) and maximum wall and roof heights for all buildings. Elevations have been updated to show height relationships to boundaries.
1c. Environmental report addressing noise, odour, dust and mitigation.	The City received a revised Emissions Impact Assessment (EIA) prepared by Environmental and Air Quality Consulting Ptd Ltd (EAQ) on 27 November 2025 (refer **Attachment 9**). A revised Acoustic Report prepared by Reverberate was received on 19 December 2025 (refer **Attachment 5**) which assesses the noise impacts of the proposal. To note, the EIA does not address the management of dust emissions and no other technical documents regarding dust mitigation techniques have been provided.
1d. Details of in store service for fast food outlet.	The City received an Operational Management Plan (OMP, refer **Attachment 6**) on 16 December which provides details on the operations of the fast-food outlet
1e. Additional landscaping within the car parking area.	A revised landscaping plan was received on 20 November 2025 (refer **Attachment 2**) which shows one less tree. The tree previously located adjacent to proposed car bays No. 6 and 7 has been removed from the plans.
1f. Traffic Report clarification – tanker size and swept paths.	An updated Traffic Impact Assessment (TIA) prepared by i3 consultants WA was received on 12 December 2025 (refer **Attachment 3**). The TIA contains details regarding the 16.9m fuel tanker being applied with swept path diagrams included.
2. Plans to be assessed by DRP and referred to MRWA.	As detailed in the report. the proposal was not referred back to the City's Design Review Panel (DRP) as minimal changes to the plans were made with outstanding site configuration issues. The original minutes are included as **Attachment 10**. The revised plans and supporting information including the revised TIA was referred back to Main

	Roads WA (MRWA). Refer to the 'Consultation' section of the report for further details.
3. Plans and information to be advertised for public comment.	The City progressed the application to community consultation commencing 9 February 2026 and concluding 23 February 2026. A total of 113 objections were received. Refer to the 'Consultation' section of the report for further detail.
4. City to provide a revised RAR once all information is received.	Addressed via the preparation and resubmission of this Responsible Authority Report to the Metro Inner DAP.

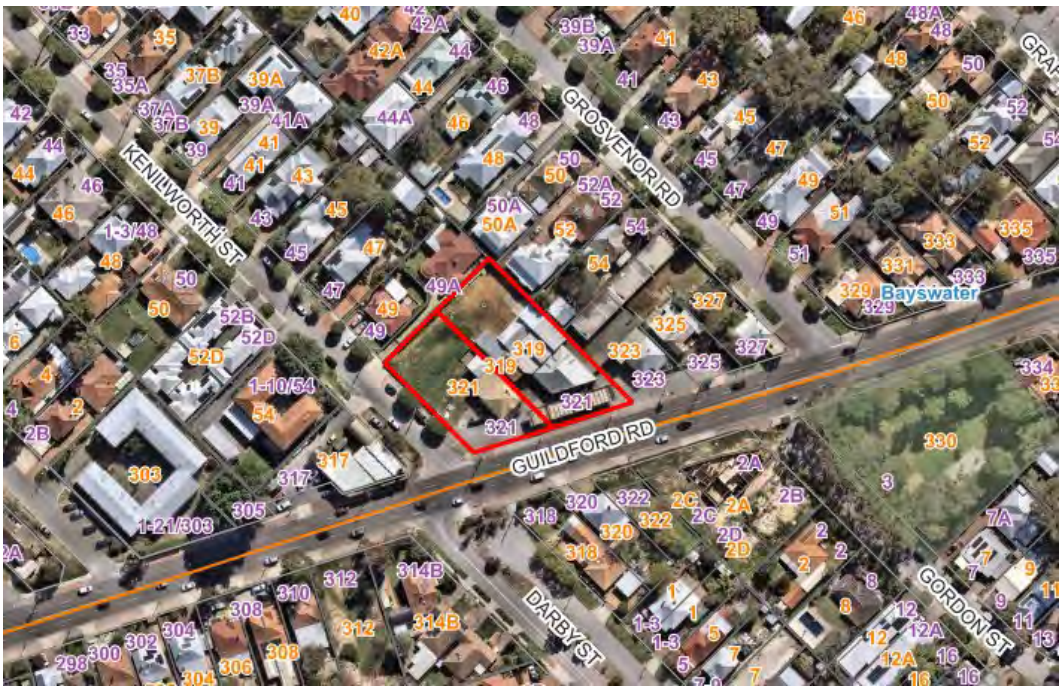
Proposal:

Proposed Land Use	Service Station Convenience Store Fast Food Outlet Car Wash
Proposed Net Lettable Area	668m^2
Proposed No. Storeys	One storey

The proposal is for the construction of a service station with an associated convenience store, a fast-food facility with a drive through coffee outlet and car wash facility. The specifics of the proposed development are detailed below:

- Service station with 3 fuel bowsers and six fuelling points and an associated canopy setback a minimum of 4m to Guildford Road.
- Control building with a floor area of 279m^2 containing a convenience store, store areas, and fast-food outlet; preparation and pick-up areas.
- An external drive thru fast-food outlet with an associated order and pick-up area with canopy coverings.
- An automated drive thru car wash facility with an area of 64m^2 and associated plant room.
- The provision of new crossover to Kenilworth Street and Guildford Road to service the development and removal of an existing crossover to Guildford Road.
- Modification of the existing crossover to Kenilworth Street to service a future commercial development.
- A total of nine car bays across the proposed development site.
- Associated signage and on-site landscaping.

The subject site is zoned 'Service Station' under the City's Town Planning Scheme No, 24 (TPS 24). Development in the surrounding area is characterised by a range of residential land uses and with some commercial developments facing Guildford Road including shops, offices, and restaurants. A small truncation portion, specifically within the southwestern corner of Lot 131 and southeastern corner of Lot 130 is reserved as Primary Regional Roads. The frontage of the lot to Guildford Road remains zoned as 'Service Station' and is not subject to a future road widening area.



Aerial Image of Subject Site

Legislation and Policy:

Legislation

- *Planning and Development Act 2005;*
- *Planning and Development (Local Planning Schemes) Regulations 2015;*
- *Metropolitan Region Scheme*
- *City of Bayswater Town Planning Scheme No. 24.*
- *Draft City of Bayswater Local Planning Scheme No. 25.*

State Government Policies

- State Planning Policy 2.9 – Water
- State Planning Policy 7.0 – Design of the Built Environment

Local Policies

- Car Parking Dispensation Policy
- Landscaping Policy
- Percent for Public Art Policy
- Signage Policy
- Sustainability in Design Policy
- Trees on private Land and Street Verges Policy

Consultation:

Public Consultation

It is noted that the original application was not advertised for public consultation due to insufficient documentation. At the time, the City did not have the necessary information required to undertake meaningful public consultation.

Following the deferral from the DAP, the City received the following information from the applicant between 20 November 2025 and 19 December 2025:

- Revised Development and Landscaping Plans (20 November 2025)
- Environmental Impact Assessment (27 November 2025)
- Revised Traffic Impact Assessment (4 December 2025)
- Revised Waste Management Plan (16 December 2025)
- Revised Acoustic Report (19 December 2025)
- Operational Management Plan (16 December 2025)
- Revised Acoustic Report (19 December 2025)
- Lighting Modelling Report (19 December 2025)
- Signage Strategy (19 December 2025)
- Environmental Impact Assessment (27 November 2025)

The application was advertised for a period of 14 days in accordance with Clause 64 of *Schedule 2 deemed provisions* of the *Planning and Development (Local Planning Schemes) Regulations 2025,* commencing on 9 February and concluding on 23 February 2026. Letters were sent to nearby landowners and occupiers along Kenilworth Street, Guildford Road and Grosvenor Road. Additionally, a notice including access to the abovementioned documents was published on the City's website via Engage Bayswater.

At the conclusion of the consultation period, a total of 109 written submissions were received, all of which objected to the proposal. A further four late submissions objecting to the proposal were received post-advertising, therefore bringing the total number of objections to 113. It is noted those submissions received by the City after 12 March 2026 were **not** included through the preparation of this Responsible Authority Report.

The concerns raised from submitters have been considered in the overall assessment of this application, and are summarised in the table below, with Officer comments provided:

Concern Raised	**Officer comments**
Traffic Safety, Pedestrian Safety and Vehicle Access • Concerns with the siting of the development located at a dangerous intersection, with blind crests and poor sightlines. • Noted frequent crashes and near misses with a documented black spot-history. • Turning movements (especially right turns) already being unsafe and predicted to worsen. • Concerns that fuel tankers, extra vehicles, and 24/7 movements will increase risk to safety and traffic. • Suggestions for traffic lights, realignment, or cul-de-sac arrangements.	A detailed response regarding the traffic safety, pedestrian safety and vehicle access impacts is detailed within the "Officer Assessment" section of this report.

• Children and families walking to nearby schools or playing at the oval/sports facilities. • Difficulty for pedestrians to cross Guildford Road safely. • Fear of increased pedestrian safety risk from higher traffic volumes and turning vehicles. • Recommended this could potentially be supported if traffic lights are installed and pedestrian crossings are upgraded. • Kenilworth Street being inappropriate to accommodate fuel tankers due to local road design and existing congestion issues.	
Health, Noise and Environmental Concerns • Concerns with exposure to Benzene/ Volatile Organic Compounds (VOC) exposure. • Reference to the Department of Health's Position statement: Service stations and sensitive land uses which has not been addressed with regards to the minimum 200 metre recommended distance. • Concerns that the proposed development will result in obtrusive light spill into adjoining homes. • Concerns from the projected noise emissions from the proposed development. • Traffic noise from Guildford Road will be exacerbated by the proposed development. • Concerns that a 24-hour facility will not comply with the *Environmental Protection (Noise) Regulations 1997.* • Fumes, groundwater contamination, underground storage tank risks. • Loss of trees, reduced canopy, and birdlife impacts. • Stormwater / run off pollution concerns, especially during flood events.	A detailed response regarding health, noise and environmental concerns is detailed within the "Officer Assessment" section of this report.
Land Use Compatibility, Operations and Amenity Impacts • Out of character for a residential and café oriented streetscape. • Concerns that the operations of a 24/7 facility cannot be co-located next to residential uses.	A detailed response regarding Land Use Compatibility, Operations and Amenity Impacts is detailed within the "Officer Assessment" section of this report.

• An inappropriate car centric land use that undermines amenity and walkability. • Contrary to long planned medium density / mixed use housing along the urban corridor. • Visually poor (e.g., large blank walls, industrial appearance). • Recommends the site is better used for housing, cafés, hospitality, or small business uses. • Fears of anti-social behaviour, crime, loitering, undesirable late night activities.	
Oversupply and Lack of Need • Numerous existing service stations within 2–4 km. • Nearby convenience stores and drive throughs already meeting demand. • Fuel demand declining with EV uptake, making a new station unnecessary.	These concerns regarding the number of existing service stations and declining fuel demand are acknowledged, however these matters are not relevant planning considerations under the planning framework.
Technical Reports / Documentation • Concerns the Acoustic Report has not accurately assessed the noise impacts on adjoining residences. • Concerns with the methodology used in the Traffic Impact Assessment (TIA) to determine the acceptability of traffic impacts. • Plans are inaccurate with incorrect floor and natural ground levels.	The City's Health Services and Engineering officers have reviewed the acoustic report and TIA respectively. The City is generally supportive of how the documents have been prepared for assessment of impacts however, there remains outstanding concerns which are detailed further in the "Officer Assessment" section of this report. It is acknowledged there are deficiencies with the plans, which is further explained within the 'Design and Built Form' section of this report.

Main Roads Western Australia

Main Roads WA (MRWA) were consulted as the subject site adjoins Guildford Road which is reserved as a Primary Regional Road. As documented in the previous RAR, MRWA advised the City on 6 December 2023 that the proposed development cannot be supported in its current form because the proposal results in undue traffic amenity impacts. Additionally, MRWA further advised that the proposal does not represent orderly and/or proper planning and conflicts with WAPC's *Development Control Policy 5.1 Regional Road (Vehicular access)*, with physical barriers and signage needed to restrict/limit vehicle movements.

MRWA's referral response dated 6 December 2023 requested additional information to address the following:

1. Amended Site Plan to reconfigure the proposed development to remove a proposed second access point onto Guildford Road and relocate the permitted one (1) point onto Guildford Road.
2. A Road Safety Assessment Report addressing the applicable criteria within Main Roads *Policy and Application Guidelines for Advertising Signs Within and Beyond State Road Reserves*.
3. Provide CAD drawings in a high-resolution format demonstrating the proposed vehicle types can enter and exit the site in a forward gear (swept path diagrams) and considers the future road planning design of Guildford Road.
4. A revised Transport Impact Assessment (TIA) prepared in accordance with WAPC *Transport Impact Assessment Guidelines* (August 2016) and electronic SIDRA Intersection files.

As documented in the previous RAR, the City met with MRWA officers and the applicant to discuss the above-mentioned items, as well as future planning for Guildford Road and Kenilworth Street. The applicant provided information to address all of the above-mentioned items with the exception of the requested SIDRA files. Accordingly, the application was not referred back to MRWA for further review.

As detailed earlier in the report, the applicant provided the required information to the City on 20 November and 4 December 2025 following the previous DAP meeting. Specifically, the City was able to refer the application back to MRWA including the development plans, revised TIA, revised WMP and revised Acoustic Report (**Attachments 2-5**) in addition to the SIDRA files.

On 2 February 2026, MRWA provided a response to the City advising that they do not support the proposal as presented due to the following issues:

- The proposed TIA does not adequately demonstrate safe access and efficient operation of the proposed development onto the Guildford Road network.
- The development proposes an unacceptable safety risk to drivers and pedestrians, including concerns with the internal layout of the development in proximity to the proposed full movement crossover onto Guildford Road.
- Concerns with the provided swept path drawings for 16.9m semi-trailer movements different to the standard Austroads 19m Prime Mover/Semi-Trailer, which contravenes the *Road Traffic Code 2000*, posing a safety risk to other road users. MRWA outlined further concerns with the swept paths, highlighting issues with figures 19, 22 and 23 within the TIA.
- Overall concerns that the proposed development is not acceptable having regard to the provisions of Clause 67 of the Deemed Provisions (Schedule 2 of the *Planning and Development (Local Planning Schemes) Regulations 2015 (WA)),* including concerns with the following:
    - *(r) the suitability of the land for the development taking into account the possible risk to human health or safety,*
    - (s) the adequacy of-
        - *i. the proposed means of access to and egress from the site; and*
        - *ii. arrangements for the loading, unloading, manoeuvring and parking of vehicles;*
    - *(za) the comments or submissions received from any authority consulted under clause 66.*

MRWA in its letter recommended that the proposal undergo a full redesign of the internal layout of the development, including a detailed signage and line marking plan

and/or further reduction of land use intensification is required. Any redesign of the proposal was requested by MRWA to be supplemented by revised technical documents.

Noting the concerns above, the City organised a meeting with the applicant and MRWA officers on 4 March 2026 to discuss the elements identified above. At the conclusion of the meeting, it was acknowledged by all parties that the proposal in its current form is not supported and that any recommendation for support from MRWA could not be provided for prior to the reconsideration of this item.

Department of Health

The application was previously referred to the Department of Health (DOH) due to the nature of the development. The DOH made the following comments in relation to the proposal:

- The site has been used as a service station and mechanical workshop from prior to 2000, which is a potential contaminating land use as set out in the Department of Water and Environmental Regulations' (DWER) "Assessment and management of contaminated sites" (DWER Nov 2021) Appendix B. DOH recommend that advice be obtained from DWER regarding the potential for these historical activities to have contaminated on-site and off-site soils and/or groundwater.
- Reference is made to the *Energy Policy Act (2005)* guideline about "Separation Distances between Industrial and Sensitive Land Uses", that recommend a default separation/buffer distance of 200m be established around service station land uses where there may be significant noise, dust and odour impacts and risks arising. DOH recommend that the impacts and health risks are assessed prior to determining the suitability of this current redevelopment. This is to minimise the impacts and public health risks arising from the encroachment of incompatible land uses, including recently built sensitive land uses such as childcare facilities or schools.
- In relation to the management of wastewater, DOH has no objection to the proposal, subject to all new development proposals being connected to reticulated sewerage in accordance with the DOH's water legislation. The proponent should contact the Water Corporation in relation to the car wash proposal and the management of industrial wastewater.

Following the deferral decision, the City received an Emissions Impact Assessment (EIA) prepared by Environmental and Air Quality Consulting Ptd Ltd (EAQ) on 27 November 2025 (refer **Attachment 7**), to address air emissions and mitigation actions. The City referred the EIA to the DOH on 2 February 2026 with comments received on 23 February 2026 citing the following:

- The DOH does not support the proposal in its current form and has requested additional information before any public health risks can be properly assessed.
- The DOH notes that its previous advice (November 2023) should have referenced the EPA (2005) guideline '*Separation Distances between Industrial and Sensitive Land Uses'*, which recommends a default 200-metre separation distance for 24-hour service stations due to potential noise, dust, odour and associated health risks.
- Since providing its earlier advice, the DOH has released a Position Statement: Service Stations and Sensitive Land Uses (Position Statement), which it

recommends the City apply when assessing this proposal. The Position Statement clearly prioritises precautionary separation distances over technical modelling, stating that vapour dispersion modelling should not be relied upon to justify reduced separation distances because modelled data carries significant uncertainty when compared to measured data.

- The DOH identified the following specific issues with the Environmental Report:
    - It relies heavily on-air dispersion modelling, an approach the Department does not support due to uncertainty and lack of reliability for assessing public-health risks.
    - The information provided suggests the proposed development will be located within 50 m of sensitive receptors, which is well below the recommended 200-metre buffer.
    - There is limited consideration of cumulative and long-term exposure, particularly in relation to carcinogenic pollutants such as benzene.
    - The modelling relies on assumptions rather than demonstrating robust, evidence-based protection of public health.
    - The report appears to treat compliance with guideline values as evidence of "no health impact", which the DOH emphasises is incorrect; guideline thresholds are screening tools, not assurances of zero risk.

The DOH concludes that best-practice planning is to separate sensitive receptors from emission sources, and therefore the recommended separation distances in the Position Statement should be applied.

On this basis, the Department does not support the proposal and has advised that additional information and revised assessment would be required to determine whether the development could comply with public-health requirements.

Department of Water and Environmental Regulation

Department of Water and Environmental Regulation (DWER) were consulted in the original application because of the previous use of the site for a service station. DWER assessed the proposal and advised that the Department had no objection or comments to provide on the proposal in relation to the contaminated sites referral trigger.

The application was not referred back to DWER following the previous DAP decision made on 2 October 2025.

City of Bayswater Design Review Panel

The proposal was originally considered at one Design Review Panel (DRP) meeting on 27 October 2023. The proposal was also recommended for a second DRP review to confirm the Panel's suggested changes. Minutes of the original DRP Review are contained in **Attachment 10.**

The Panel suggested that there is significant opportunity for improvement in this proposal including;

- *Revising the site planning layout including built form and scale to better respond to the context and character of the surrounding area, and the history of the site.*
- *Re-positioning the control building closer to the street to introduce a higher quality urban design outcome with improved street frontage and uplift in pedestrian and community amenity.*

- *Continuing to explore the use of contextual materials and arrange them in a way to respond and interpret in a contemporary manner the rhythm and form of traditional shop front typology.*
- *Reconsidering all of the designed elements on site to be unified through a more cohesive design aesthetic.*
- *Increasing landscaping and the planting of (large) trees, reducing the number of crossovers, and reducing the dominance of hardstand associated with circulation and parking areas generally.*
- *The introduction of a comprehensive sustainability strategy.*
- *The Panel does not support this proposal and recommends a second DRP meeting.*

Whilst it is acknowledged the applicant had provided updated technical drawings, the City has not elected to present this application to the DRP for a second review due to the following reasons:

- The amendments do not materially alter the fundamental site layout, built form positioning, or overall design response previously reviewed by the DRP, and therefore would not meaningfully change the panel's prior advice;
- Outstanding issues relate primarily to traffic engineering, access safety, and swept-paths conflict with the current plans which may ultimately require a full design of the proposal;
- The proposal's design interface, scale, and architectural presentation remain substantively consistent with the version already assessed, and further DRP input would not resolve the key constraints identified through the statutory assessment process.
- The City's Terms of Reference for design review has changed, with service stations no longer being required for consideration by DRP. Despite this, a proposal of this scale is considered to warrant design review, however this would not be appropriate given the fundamental site layout concerns.

As detailed in the previous RAR, the DRP noted the proposal did not align with the 10 design principles of State Planning Policy 7.0 – Design of the Built Environment (SPP 7.0). Given no substantial change has been made to the development plans, it is considered that this item has not been addressed.

Planning Assessment:

The City undertook a full assessment of the proposal against the relevant provisions of, TPS24, and various applicable local planning policies, including the Percent for Public Art Policy, Landscaping Policy, Trees on Private Land and Street Verges Policy, Signage Policy, Retaining Walls Policy and Sustainability in Design Policy.

The assessment found that it generally satisfied the development standards of TPS24 and the local planning policies, except the provisions relating to car parking, shade trees, building setbacks and signage.

In accordance with Clause 8.2 of TPS 24, if a development does not comply with a development standard prescribed by the Scheme, discretion to modify the development standard may be considered where Council is satisfied that:

a) *approval of the proposed development would be consistent with the orderly and proper planning of the locality and the preservation of the amenities of the locality; and*
b) *the non-compliance will not have any adverse effect upon the occupiers or users of the development or the inhabitants of the locality or upon the likely future development of the locality.*

Notwithstanding the minor discretions sought against the scheme and relevant policies, these matters have not been detailed further in this instance. The development presents significant and unresolved issues relating to traffic safety, access, parking, noise, and overall site functionality, as identified through community consultation and technical review. These substantive concerns are the matters that require detailed discussion, as they materially affect the planning assessment and the suitability of the proposal.

Traffic Safety, Pedestrian Safety and Vehicle Access

A significant number of submitters raised concerns with regards to the impacts this development would have on traffic and pedestrian safety. Furthermore, concerns were highlighted by community members regarding the challenges with the existing traffic network as well as the proposed full-movement vehicle access via Guildford Road and Kenilworth Street.

Pedestrian access was cited as a significant concern from community members. Concerns were raised about the increased turning movements, higher vehicle volumes, and existing blind crests and sightline limitations, which make crossing Guildford Road difficult and dangerous, particularly for children walking to nearby schools and sporting facilities.

Submitters also raised that the proposal would introduce multiple new turning movements at an already dangerous intersection, including heavy vehicle movements, and that the proposed internal design would increase queuing and vehicle-to-vehicle conflicts. These concerns are consistent with and supported by the findings of MRWA.

Overall, MRWA has expressly confirmed that the proposal, as designed, cannot be supported. Their review states that the TIA dated 4 December 2025 does not adequately demonstrate safe access or efficient operation of the development and that the internal layout presents an unacceptable safety risk to drivers and pedestrians.

The City's Engineering Officers have also reviewed the TIA and support the recommendation by MRWA, requesting that the applicant must address the concerns outlined by MRWA to ensure safe ingress/egress can be achieved.

The full movement crossover to Guildford Road sits in immediate proximity to multiple internal conflict points. MRWA identifies that the site contains numerous internal vehicle paths, parking movements, and pedestrian routes that converge near the Guildford Road access, creating a high risk environment for angle crashes and operational failure during peak hours. The risk is exacerbated by the location of the site on a stretch of road characterised by blind crests, poor sightlines, and a documented crash history, which was repeatedly highlighted by community submitters during the public advertising period.

The swept path analysis demonstrates further critical safety failings. It was determined by MRWA that vehicles exiting the drive through and turning left out onto Guildford

Road eastbound cannot turn lane-correct, instead requiring use of both eastbound lanes, which is noncompliant and unsafe on a Primary Regional Road. The analysis also shows that fuel tankers cannot safely complete a right turn into Kenilworth Street, with insufficient storage length to allow a truck to queue clear of the live traffic lanes on Guildford Road, thereby presenting an unacceptable crash risk. Additionally, left in movements into Kenilworth Street are also non-lane-correct, requiring drivers to rely on the absence of opposing traffic and on Guildford Road eastbound drivers, which may also conflict with the awning of the adjoining property at 317 Guildford Road, potentially resulting in property damage.

The use of 16.9m semi-trailers for vehicle movements were also discussed during the 4 March 2026 meeting held by City officers, MRWA and the applicant. It was concluded by MRWA that swept-path diagrams should be used based on the standard Austroads 19m Prime Mover/Semi-Trailer. The applicant contended that 16.9m semi-trailers have been utilised in other similar service station proposals operated by the proponents.

Further to the above, MRWA also notes that swept paths display multiple sharp steering corrections, which is inconsistent with safe design practice, and that the minimum 0.5 m clearance to kerbs is not consistently achieved. These deficiencies further demonstrate that the design cannot safely support the proposed tanker or customer vehicle movements and do not comply with the *Road Traffic Code 2000*.

In considering the concerns above, the City agrees with the assessment by MRWA officers and community submitters that the proposal fails to demonstrate safe vehicular access with the design presenting unacceptable risks to both the regional road network and local streets through unsafe turning movements, inadequate storage and sightlines, and insufficient internal circulation that cannot be supported in its current form. Consequently, the inadequate turning movements would have a direct impact on pedestrian safety, as displaced or misaligned vehicle movements increase the risk of vehicles crossing any pedestrian paths.

On this basis, the City considers that the proposal presents an unacceptable traffic safety and pedestrian safety risk, fails to demonstrate safe and efficient access arrangements, and would compromise the safe operation of the regional road network. Accordingly, the City recommends refusal of the application based on these grounds.

Health, Noise and Environmental Impacts

Submitters raised extensive and highly detailed concerns regarding the potential health, noise, light, environmental and amenity impacts arising from the proposed 24hour service station, fast food drive through and car wash. The following section consolidates and expands on the issues raised and provides the City's assessment of why these matters remain unresolved.

Benzene and Volatile Organic Compound (VOC) Exposure including Recommended Separation Distances

A significant number of submitters expressed concern regarding the exposure to benzene and other VOCs emitted from vehicle refuelling, tanker deliveries and underground storage tank breathing losses. Submitters also raised concerns that prolonged exposure, especially for children, could increase long term health risks. These concerns are heightened because:

- The development proposes 24-hour operation, meaning emissions are continuous throughout night-time hours when residents expect lower background exposure.
- The Department of Health's Position Statement emphasises that measured benzene exposure at service stations is not sufficiently predictable through dispersion modelling, and therefore precautionary separation distances should be applied, not modelling based justifications.
- Submitters specifically noted that the Position Statement* recommends a minimum 200metre separation for 24hour service stations. The proposal falls significantly short of this recommended threshold, with residential dwellings well within 50 metres of venting points, refuelling operations and bowser canopies.
- The proposal represents a significant intensification of the former service station use with the prior service station operated under standard trading hours, not a 24/7 model, thus generating substantially lower emissions, noise, lighting and traffic emissions.
- The new development includes multiple high intensity uses (fuel station, fast food drive through and car wash), resulting in a far greater cumulative impact.

While the applicant has submitted the EIA (**Attachment 9**), the document relies on modelled rather than measured data and does not address cumulative or long term exposure risks.

In light of the comments received from DOH and submitters, the City considers that the proposal has not demonstrated that VOC emissions can be managed to an appropriate standard for a 24-hour operation adjacent to residential dwellings.

Obtrusive Light Spill into Residential Properties

Submitters raised concerns that the proposed lighting, including canopy lighting, floodlighting and illuminated signage, would intrude significantly into residential properties, particularly:

- Bedroom windows located close to the eastern boundary;
- During curfew hours (11pm–6am), where 'AS4282:2023 control of the obtrusive effects of outdoor lighting' limits are stricter; and
- High vertical illuminance levels produced due to the intensity of 24hour fuel canopy lighting.

Submitters expressed concern that despite the modelling undertaken in the applicant's Lighting Modelling Report (**Attachment 7**), the proposed lighting layout would likely result in:

- Excessive light spill above fence lines and into private open space areas;
- Glare experienced by drivers and residents; and
- Sky glow and ambient light intrusion into dwellings during sleep hours.

The City considers that whilst these concerns regarding lighting impacts are acknowledged, it is considered that lighting impacts can be mitigated and controlled appropriately. The development faces substantial planning concerns regarding traffic safety, site layout and built form interface and these matters require resolution prior to consideration of lighting impacts.

Noise Emissions

Submitters cited concerns regarding noise generated across a wide range of site activities, including noise from road traffic, delivery vehicles and fuel tankers. Additional concerns were raised with regards to mechanical plant such as refrigeration units, compressors, vacuum systems and car-wash equipment, in addition to the use of amplified noise associated with the fast-food drive-through ordering system.

Submitters also referenced the *Environmental Protection (Noise) Regulations 1997*, expressing doubt that a 24-hour operation within such close proximity to residential properties would comply, particularly during night-time hours when allowable noise levels are lowest and background noise is minimal.

As detailed within the previous report to the DAP on 2 October 2025, the previous Acoustic Report was insufficient as noise modelling required the placement of the 'future adjacent commercial building' to mitigate noise impacts to adjoining properties.

The applicant has provided a revised Acoustic Report (**Attachment 5**) which has accounted for the removal of the 'future adjacent commercial building' and was supplemented with the following key recommendations in the report to satisfy the requirements of the *Environmental Protection (Noise) Regulations 1997*:

- Restrict delivery hours and refrigerated truck operation being restricted from 10pm and 7am (Monday to Saturday) or 10pm and 9am (Sunday / public holidays).
- Limit reversing movements and use low noise reversing alarms.
- Construct the carwash to a strict acoustic specification ('Rw' rated walls, acoustic doors, NRC 0.95 linings, sealed openings).
- Install 1.8–3.0m acoustic barriers in specified locations.
- Manage mechanical plant noise and locate equipment within an enclosed plant room.
- Restrict outdoor speaker use and minimise beeper impacts.
- Implement a fully detailed Noise Management Plan with patron management measures.
- Carry out a second noise review during detailed design once final equipment is selected.

The City's Health officers have reviewed the Acoustic Report from a noise perspective and are generally supportive of the report recommendations. Should the DAP be of mind to support the application, the City recommends a condition of approval for a Noise Management Plan to be provided as well as certification that the above-mentioned measures in the Acoustic Report have been implemented.

Groundwater Contamination, Stormwater and Run Off Pollution Concerns

Submitters raised concerns relating to potential groundwater contamination and stormwater run-off associated with the development. While the City acknowledges these concerns, the matter was referred to DWER, which confirmed it had no objection to the proposal with respect to contaminated sites, and did not identify any outstanding environmental contamination risks requiring further investigation.

Notwithstanding the report recommendation for refusal, the City is satisfied that contamination and groundwater management are matters that can be addressed through appropriate treatment systems, outside of the planning process.

Should the DAP be of a mind to support the application, the City recommends advice is provided to the applicant of their statutory obligations under relevant environmental legislation, including the need to ensure appropriate management of underground storage tanks, spill containment, and stormwater treatment systems to prevent any adverse impacts on groundwater or downstream drainage infrastructure.

Land Use Compatibility, Operations and Amenity Impacts

Concerns were raised from submitters regarding the compatibility of the land uses including the operation of a 24 hour service station adjacent to residential areas and resultant amenity impacts.

The subject site is zoned 'Service Station' under TPS24, which permits the use of Service Station and Car Wash ('P' uses) whilst 'Convenience Store' and 'Fast Food Outlet' are both discretionary uses ('D' uses).

Whilst it is acknowledged both the Service Station and Car Wash uses are permitted uses, the City considers the location and operation of these uses adjacent to residential properties to be inappropriate. The proposal represents a significant intensification of activity on the site. The introduction of a 24hour convenience store, fast food drive through outlet, car wash facility and continuous vehicle movements materially changes the function and impact of the site.

The cumulative and compounding nature of the proposed uses, particularly the service station, fast food drive through outlet and car wash, generate persistent vehicle movements, queuing, odours, and noise impacts. This results in an environment that is more akin to a high intensity commercial or mixed use highway precinct rather than a transitional urban corridor adjoining low scale residential streets.

The proposal offers no meaningful transition or buffer between the operational components and the sensitive residential interface. The level of activity generated from the proposed uses is inconsistent with the expectations for a residential interface, and community submissions identified that such a use would significantly impact on the surrounding neighbourhood character, and diminish residential amenity, particularly during night-time hours.

Community concerns also emphasised the proposal's incompatibility with the emerging planning intent for the Guildford Road corridor via the City's Local Planning Strategy (LPS). The LPS identifies urban corridors such as Guildford Road as being development opportunities for higher quality mixed use development, pedestrian amenity, and improved residential interfaces, rather than the reestablishment of car centric uses that reinforce heavy vehicle dependence.

It should be noted that at the Ordinary Council meeting held on 26 August 2026, Council resolved to adopt Draft Local Planning Scheme No. 25 (Draft LPS25), including seeking approval from the Western Australian Planning Commission (WAPC) for approval to advertise. Draft LPS25 is generally aligned with the Model Scheme Text as published within Schedule 1 of the *Planning and Development (Local Planning Schemes) Regulations 2015* including model zones and land uses.

This site has been identified for future rezoning to 'Local Centre'. Draft LPS25 outlines the proposed Local Centre zone objectives as follows:

- *'To provide for the local community's incidental and convenience needs of goods and services, consistent with this level of the activity centre hierarchy as outlined in the applicable State Planning Policy.*
- *To ensure that development is of a scale compatible with surrounding development and does not adversely impact adjoining residential areas.*
- *To provide for a pedestrian-dominant streetscape where the primary focus of activity is on the street, the public realm and public open spaces.*
- *To ensure the design and landscaping of development provides a high standard of safety, convenience and amenity, and contributes to a sense of place and community.*
- *To prioritise walking, cycling and public transport access to and within the centre.'*

The proposed current uses of service station, convenience store, fast food outlet and car wash under TPS24 are intended to be replaced with the model contemporary land uses, being 'service station', 'motor vehicle car wash' and 'food outlet with drive-through facility'. Notably draft LPS25 proposes to have these land uses in Local Centre zones as prohibited land uses ('X') or discretionary ('A') uses for sites which are located on Guildford Road, Morley Drive or Walter Road West. It is yet to be determined if the WAPC will adopt the City's approach to providing conditional permissibility in draft LPS25.
Nevertheless, the intent of conditional permissibility in draft LPS25 is to accommodate for existing uses on sites being rezoned to Local Centre and limit the application of non-conforming uses.

It should also be noted that the City's LPS does not identify this site as a future Local Centre, but rather the City envisions an opportunity for rezoning of the existing 'Service Station' zone to a contemporary model zone (Local Centre).

The current proposal fails to satisfy the draft Local Centre zone objectives, for the following reasons:

- The 24-hour operations of the service station and convenience store, significantly exceeds what is expected for a local-level activity centre. The proposal functions as a regional-level, high-intensity and introduce heavy-vehicle movements inappropriate for a centre intended to serve surrounding residents. As a result, the development does not align with the future development intent of the site as a local centre;
- The proposed design is vehicular-dominant, characterised by large expanses of hardstand, drive-through circulation, and an internal layout prioritising car movement over walkability. The proposal does not create any meaningful pedestrian-friendly frontage or public-realm improvement and instead introduces high levels of vehicle conflict and movement adjacent to the footpath. The development does not contribute to a pedestrian friendly streetscape and is fundamentally inconsistent with the objective of shifting activity towards the street and public realm.
- The internal design introduces unsafe traffic conflicts, as identified by MRWA and does not provide a high standard of safety, convenience or amenity for residents, detracting from a sense of place of community.

For these reasons, the proposal is not considered compatible with the future development intent of this site, or with the future character of the area. The significant intensification of use, combined with a 24hour operating profile and vehicle dominated site layout, results in unacceptable land use conflicts with adjoining residential

development. The City therefore considers the proposal unsuitable and inconsistent with the orderly and proper planning of the locality.

Design and Built Form

Submissions highlight the industrial appearance, blank walls, and poor interface to the public realm and adjacent dwellings. The development retains a fundamentally car dominated layout, extensive hardstand and multiple crossovers, with limited active frontage and weak pedestrian amenity. Despite updated drawings, the design response does not materially improve the streetscape interface, articulation, or architectural cohesion in line with previous recommendations from the DRP. Specifically, the built form quality, activation, and reduction of vehicle dominance issues have not been addressed.

Submitters also raised concerns with the siting of the convenience store control building and car wash facilities directly adjacent to residential properties. The convenience store building, proposed to be operating 24 hours a day is situated 5.4m from the eastern boundary of adjoining residential properties. Whilst the 24 hour operation of the facility was the primary concern, the City considers that the proximity, scale and placement of the built form itself presents a fundamental design issue. Regardless of operating hours, the massing, orientation, and interface of the structures with the residential boundary would continue to result in unreasonable impacts on neighbouring amenity.

The previous plans presented to the Metro Inner DAP on 2 October 2026 depicted a future commercial building on the northern section of the site. In response to deferral reason '1a', the revised plans dated 20 November 2025 resolved to remove this from the plans, and leave the area vacant (refer below):

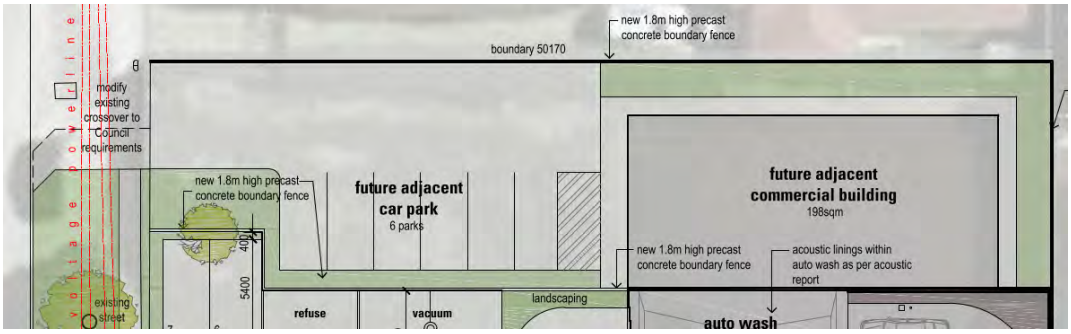


Image of previously proposed 'future adjacent commercial building'

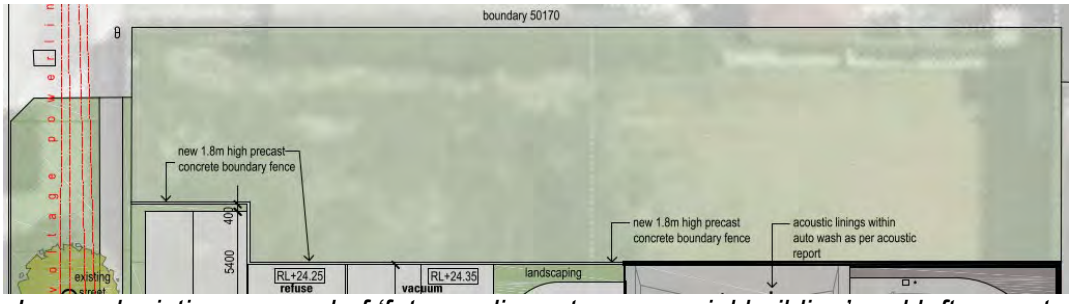


Image depicting removal of 'future adjacent commercial building' and left vacant.

The applicant advised the City on 12 March 2026 that they would be willing to reconsider the configuration of uses on site and potentially utilise this portion of land

to alleviate the significant traffic and access concerns. The City recognises that this approach may also address some potential design and built form concerns highlighted by the DRP.

However, the City remains concerned that the current site layout continues to present substantial design and built form issues. The revised plans still demonstrate an intent to isolate the upper portion of the site, which is reinforced by the proposed 1.8-metre precast concrete boundary fence. To meaningfully utilise this land and achieve an appropriate interface and functional arrangement, a fundamental reconfiguration of the overall site layout would be required. The immediate design response therefore remains inadequate and is not supported by the City.

Landscaping

Submitters raised concerns with the overall lack of landscaping provided for this development and the loss of existing mature vegetation on a site with already limited canopy cover.

The City's TPS24 requires the following elements of landscaping be provided:

- A minimum 10% of the lot area.
- A minimum 2.0 metre wide landscaping strip to street frontages.
- One shade tree for every four car parking bays.

The revised landscaping plan (**Attachment 2**) does not provide adequate canopy cover or diversity to address these concerns. The City agrees that insufficient landscaping contributes to environmental and amenity impacts.

It is acknowledged that more than 10% of the site area (not including the northern vacant portion of the site) will provide landscaping, however discretions are sought in response to the lesser landscaping street setback area widths and the absence of any shade trees for vehicle bays.

In line with the DRP comments, the overall landscaping quality remains poor, and whilst it is acknowledged that this is a vehicle dominated land use, the proposal still does not respond to the intent of the landscaping provisions. The minimal depth of planting zones, lack of shade tree provision and limited softening along street edges collectively result in a landscape outcome that provides limited amenity, shade, or visual relief. A more substantial and integrated landscape response is required to break up the hardstand areas and meaningfully contribute to the public realm and adjoining residential interfaces.

Conclusion:

Having had due regard to the matters in clause 67 of the Deemed Provisions, TPS24, SPP 7.0, the City's local planning framework, together with the referral advice of Main Roads WA and the Department of Health and 113 community objections, the proposal is fundamentally incompatible and cannot be supported.

Traffic and road safety concerns identified by MRWA reaffirm the proposal's inadequacies to provide sufficient vehicle ingress/egress. The proposed access arrangement creates unacceptable conflict, non-lane correct movements and inadequate area for internal vehicle manoeuvring, resulting in a significant safety risk to motorists and pedestrians.

Health and amenity risks arising from a 24-hour operation immediately abutting sensitive receivers remain unresolved, with concerns raised from the Department of Health that benzene/VOC exposure has not be appropriately managed.

The built form response entrenches extensive hardstand, blank edges and high fencing, with DRP concerns not having been addressed, resulting in an undesirable development for this site.

The City's emerging planning framework, specifically the Local Planning Strategy and draft Local Planning Scheme No. 25 identifies the subject site is to transition toward a Local Centre zone with the proposed uses likely prohibited through Draft Local Planning Scheme No. 25. This site is intended to accommodate small scale retail, commercial and community uses that serve the surrounding neighbourhood. Whilst the Scheme remains in draft, the current development proposal is incompatible with the future development intent and does not align with the desired pedestrian friendly character and mixed use potential envisaged by the City.

The scale and nature of the issues within this proposal are fundamental. Even if a complete redesign was undertaken to address the abovementioned concerns, the broader planning considerations, including safety and land use compatibility, demonstrate that this site is not appropriate for a service station, car wash and convenience store.

For reasons outlined above, the City recommends that the DAP refuse the application.

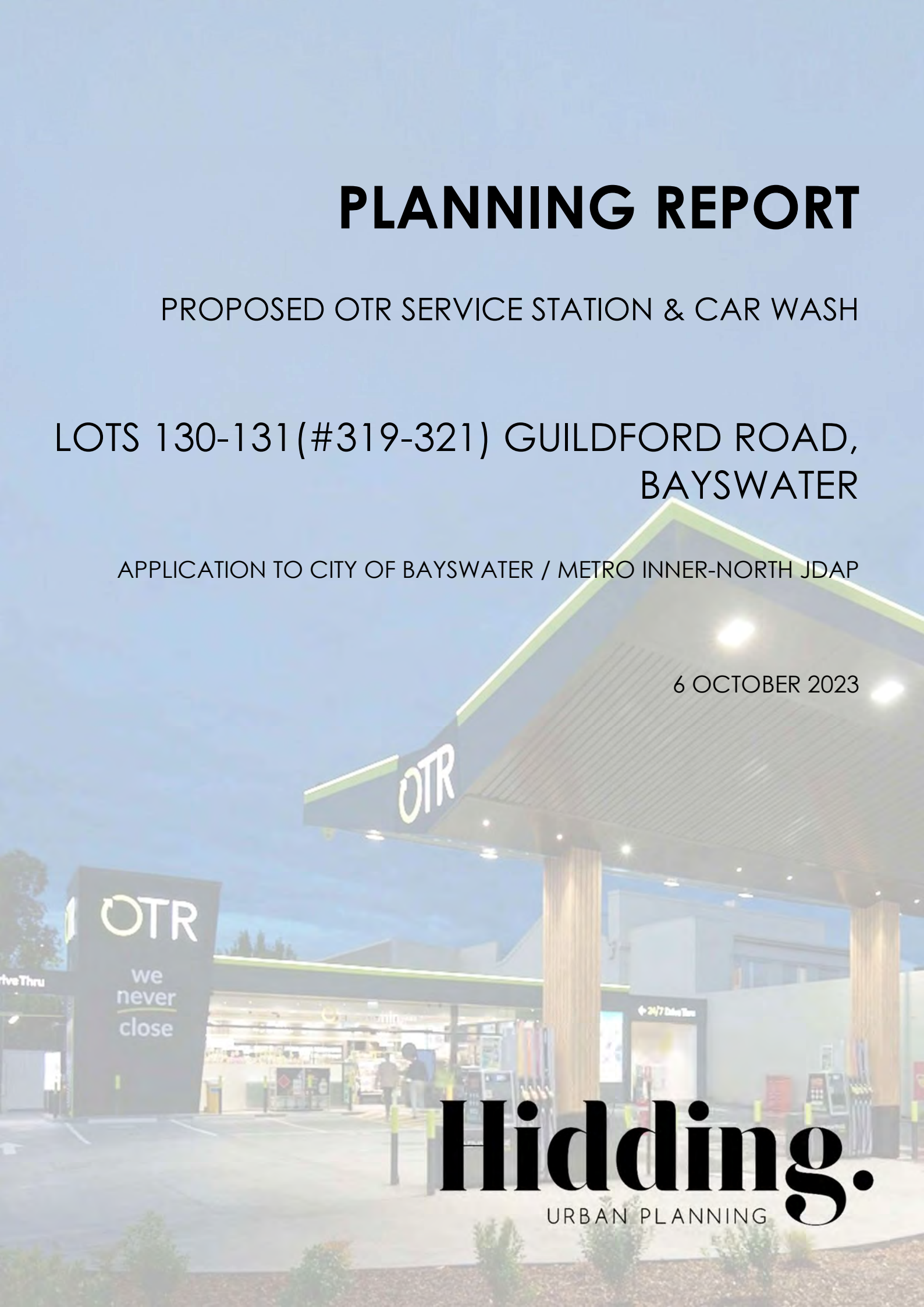
PLANNING REPORT

PROPOSED OTR SERVICE STATION & CAR WASH

LOTS 130-131(#319-321) GUILDFORD ROAD, BAYSWATER

APPLICATION TO CITY OF BAYSWATER / METRO INNER-NORTH JDAP

6 OCTOBER 2023



Hidding.
URBAN PLANNING

This Planning Report has been prepared by **Hidding Urban Planning** for the proposed OTR Service Station & Car Wash Development at Lot 130-131 (#319-321) Guildford Road, Bayswater

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TABLE OF CONTENTS

APPLICATION DETAILS

Table 1: Application Details

Property Location	Lot 130-131 (#319-321) Guildford Road, Bayswater
Applicant	Hidding Urban Planning
Landowner	OTR 337 Pty Ltd
Local Government	City of Bayswater
Determining Authority	Metro Inner-North Joint Development Assessment Panel (JDAP)
Metropolitan Region Scheme	Urban
City of Bayswater TPS24 Zoning	Service Station zone
Proposed Use Classes	Service Station ("P" use) Car Wash ("P" use)
Existing Use	Unused service station buildings and fuel canopy
Site Area (Lot 130 & Lot 131)	2805m^2
Estimated Construction Value	$2.5 million

1.0 INTRODUCTION

This Planning Report has been prepared by Hidding Urban Planning on behalf of PC Infrastructure Pty Ltd as part of an Application for Development Approval for the development and use of Lot 130-131 (#319-321) Guildford Road, Bayswater (**Subject Land**) for a proposed new Service Station and Car Wash development.

This report provides a detailed Town Planning assessment of the proposed development against the relevant State and local Planning framework. The information contained in this report confirms that the proposed development/use is appropriate for the site and reflects the applicable planning framework.

1.1 DEVELOPMENT ASSESSMENT PANEL (DAP) DETERMINATION

As the anticipated construction cost of the project is **$2.5 million**, the Applicant has "opted in" to the Development Assessment Panel (**DAP**) process and therefore, this Development Application will be required to be determined by the Metro Inner-North Joint Development Assessment Panel (**JDAP**).

A City of Bayswater Application for Development Approval Form, MRS Form 1 and DAP Form 1 are provided with the application, all signed by the authorised persons of OTR 337 Pty Ltd, the company which owns the subject land.

2.0 SITE OVERVIEW

2.1 LEGAL DESCRIPTION OF LAND

This development application refers to Lot 130-131 (#319-321) Guildford Road, Bayswater. The legal description of the land is provided in **Table 2** below.

Table 2: Legal Description of Land

Lot	Plan	Vol/Folio	Area	Address	Proprietor
130	1469	904/123	1568m^2	319 Guildford Road, Bayswater	OTR 337 Pty Ltd
131	1469	923/162	1237m^2	321 Guildford Road, Bayswater	OTR 337 Pty Ltd

The Certificate of Titles for both lots are attached at **Annexure 1**.

2.2 SITE DETAILS

Lot 130 has a land area of 1568m^2 and Lot 131 has a land area of 1237m^2 (total 2809m^2)

The subject land is located on the corner of Guildford Road and Kenilworth Street in Bayswater.

An existing house on Lot 130 and existing service station buildings and canopy on the adjacent Lot 131 will be demolished with both lots cleared to make way for the proposed development.

A 761m^2 portion of the subject land will be set aside for future development, and the proposed development as set out in this report will be developed on a development site of 2048m^2. Subdivision and amalgamation of the land will take place following development approval.

The development site is depicted in the Aerial Photo at **Figure 1**, below.

Figure 1: Aerial Photograph (PlanWA)

2.3 SITE PHOTOS

Photos of the development site are provided below.

Photo 1: Looking east at the development site, along Guildford Road, noting existing buildings and canopy**.**

Photo 2: Looking west from in front of the development site, along Guildford Road**.**

Photo 3: Looking south-east along Kenilworth Street toward Guildford Road, with development site on the left. Note verge parking by unknown persons.

Photo 4: Existing buildings and site conditions, taken from Kenilworth Street.

Photo 5: Existing buildings and site conditions, taken from Kenilworth Street.

Photo 6: Existing old buildings on site, taken from under the fuel canopy adjacent to Guildford Road.

3.0 THE PROPOSAL

Development approval is sought for a new OTR Service Station and Car Wash Development on the subject land.

The proposed development comprises a 4 bowser (8 fuelling point) service station with associated 282m^2 convenience store building, drive-thru coffee facility, 2 EV charging bays along with customer car parking. The proposed development also involves a drive thru automatic car wash.

Development Plans prepared by ADS Architects are included at **Annexure 2**.

The plans included at Annexure 2 include:

- Site Plan
- Elevations
- Signage Details

3.1 SUPPORTING PLANS & REPORTS

Consultant reports and other supporting information have been prepared to assist in the assessment of this application.

The reports and documentation which are provided in support of this application are detailed in **Table 3** below and are attached as **Annexures** to this Report.

Table 3: Supporting Plans & Reports

Consultant	Plan/Document	Annexure
ADS Architects	Development Plans	2
Oxigen	Landscaping Plan	3
i3 Consultants	Transport Impact Assessment	4
Reverberate Consulting	Environmental Noise Assessment	5
JCCE	Stormwater Drainage Plan	6

3.2 GENERAL DEVELOPMENT DETAILS

3.2.1 Landscaping & Fencing

The site has been proposed with a range of landscaping areas as shown on the plans, totalling an area of 160m^2 (or 7.81% of the development site area – which is 2048m^2).

A formal Landscaping Plan has been prepared by Oxigen in support of this application and is included at **Annexure 3**.

The rear (north-western) internal boundary to the future vacant site will include a 3.00m high precast concrete boundary wall to assist with noise mitigation to the future development site.

The side (north-eastern) boundary will also include a 3.00m high precast concrete boundary wall for noise mitigation purposes.

3.2.2 Access & Movement

The site is proposed to be serviced with a full movement vehicular crossover from both Guildford Road and Kenilworth Street as shown on the Site Plan.

The development proposal entails the closure of an existing crossover from Kenilworth Street to be replaced with a new 7.825m wide crossover from Kenilworth Street at a position further away from the intersection. The development also entails the closure of an existing crossover from Guildford Road to be replaced with a new 8.395m wide crossover to Guildford Road at a position further away from the intersection. An existing crossover from Guildford Road at the eastern-most location of the site will be retained and utilised for the exit movements of the drive thru facility.

A Transport Impact Assessment (**Annexure 4**) has been prepared by i3 Consultants to address traffic and safety aspects of the proposed development. The design has demonstrated that access and traffic movements for both cars and a 17m fuel tanker can be accommodated on the site. The TIA provides swept paths for the key design vehicles and demonstrates acceptable movements across the site.

3.2.3 Car Parking

The site has been provided with 10 marked car parking bays (including one (1) accessible parking bay and one (1) loading bay). In addition, there are 8 fuel bowser parking bays located under the fuel canopy, two (2) EV charging bays and two (2) vacuum bays.

The development also provides a drive-thru service which reduces demand for customer car parking for those that want to order and collect coffee and other pre-packaged goods from the convenience store building.

3.2.4 Signage

The main sign proposed is the 9.00m high Monolith Sign adjacent to Guildford Road for the purpose of advertisng the service station offerings, fuel pricing and the corporate signage for OTR.

The proposed development also includes signage on the building as described on the Elevation Plans and Signage Plan.

3.3 SERVICE STATION USE

3.3.1 Building & Design

The design of the Service Station facility is typically commercial in appearance and will adopt the corporate branding normally associated with OTR.

The building height is 7.05m to the top of the main building structure at the southern end of the building addressing Guildford Road, and for the balance of the building it is generally 4.95m in height.

The convenience store building is set back 1.35m from the Guildford Road boundary and 4.25m from the side boundary.

Extensive glazing is proposed along the main facade of the building, and feature brickwork and cladding panelling is also proposed as shown in the Elevations. A range of signage (some of which are illuminated) is proposed on the building. The shopfront of the building has a large awning extending out over the footpath area.

The facade fronting Guildford Road will have additional feature brickwork detail, cladding panelling, shopfront window and attractive signage.

The convenience store building will incorporate an internal sales area of 282m^2 GLA, which will include a point-of-sale and offer for sale of goods generally expected of an OTR facility, for the convenience of customers. The Service Station use will also offer a four-bowser fuel canopy with the capability to service eight (8) light vehicles simultaneously under the fuel canopy.

The Service Station is also supplemented with a drive-thru service for the purpose of buying coffee and pre-packaged goods.

The fuel canopy will also have the OTR branding and includes a butterfly design. The columns of the fuel canopy will be treated with a timber-look cladding.

The fuel canopy will be set back 4.84m from the Guildford Road street boundary and 3.18m from the Kenilworth Street boundary at its closest point.

3.3.2 Hours of Operation & Staff

The proposed Service Station is intended to be operated 24 hours a day, 7 days a week consistent with many service station and convenience store developments across Western Australia.

The proposed Service Station will normally have up to 3 staff on site at peak times; 1-2 at non-peak times; and 1 overnight. During the overnight hours, a single staff member will attend to all petrol and other internal sales.

3.3.3 Fuel Types, Dispensing & Fuel Delivery

The proposed Service Station will provide standard fuels (ULP, ULP95, ULP98, Diesel) under the fuel canopy. The dispensing arrangements are through standard bowsers drawing from underground storage tanks.

All fuel storage and delivery activities will be undertaken in a manner which complies with Australian Standard *1940 – The Storage and Handling of Combustible Liquids*.

The largest service vehicle which is expected to use the site is a 17m fuel tanker for fuel deliveries. Fuel delivery will occur at a rate of two to three deliveries per week, as required.

The fuel will be stored in underground horizontal cylindrical tanks positioned in proximity to the fill point.

i3 Consultants has undertaken a fuel tanker turn path assessment and the TIA includes the turn paths for a 17m fuel tanker. The fuel tanker will enter the site from Kenilworth Street and exit the site to Guildford Road.

3.3.4 Environmental Considerations

The risk of contamination and pollution of the local environment is considered minimal. Service Station uses are highly regulated, and designers use industry best practices to minimise any fuel or other contaminant access to stormwater drains. Design, operational and management measures will include:

- The use of double-contained fuel storage tank systems with a leak monitoring space;
- Fuel tanks will be established in stable compacted soils;
- On-site retention and treatment of all stormwater using a SPEL Puraceptor Stormwater Treatment and Hydrocarbon Capture system;
- Stage 1 Vapour Recovery Systems compliant with the *Protection of the Environment Operation (Clean Air) Regulation* 2002 (NSW Guidance Document);
- Fuel spill kit compliant with the latest Australian Standards and Federal National Occupational Health and Safety Council (NOHSC Codes) or Practice that pertains to the handling, storage, clean-up and disposal of Dangerous Goods and Hazardous Substances: NOHSC: 2007(1994), 1005(1994), & 1015(2001) and AS/NZS 3816:1998, AS1940-2004, AS3780-1994, & AS2507-1998;
- Fuel distribution and leak detection infrastructure compliant with all the relevant Australian Standards, Regulations and Industry Best Practices;
- Site operators will be trained personnel to effectively handle incidents such as fuel and oil spills; and
- Equipment will be installed on site to use in the clean up of any fuel, oil or chemical spills.

3.3.5 Noise Management

Reverberate Consulting was engaged to prepare an Environmental Noise Assessment to assess noise associated with the proposed development (see **Annexure 5**).

The site is proposed to have a 3.00m high precast concrete boundary wall along the rear (north-western) boundary and 3.00m high precast concrete boundary wall along the side (north-eastern) boundary to assist with noise management.

The mechanical plant area on the roof of the control building will also be appropriately screened with a 2.10m high screen barrier as shown on the plans (exceeding the recommendation of a 1.80m high screen barrier in the noise management plan).

The car wash and vacuum facilities also have roof coverage to limit noise travel.

From the analysis undertaken, noise emissions from the proposed development (with management measures set out in the noise management plan) has been assessed to comply with the requirements of the *Environmental Protection (Noise) Regulations 1997* and no other major noise mitigation is required.

3.3.6 Stormwater Management

This application is supported by a Stormwater Drainage Plan prepared by JCCE and is included at **Annexure 6**.

3.4 CAR WASH USE

3.4.1 Building & Design

The proposed Car Wash facility comprises an enclosed Auto Wash building with drive thru queuing area which is also covered with permanent roof cover.

As part of the Car Wash use, there will be two (2) vacuum bays on the along the north-western boundary of the facility. The vacuum bays are also located under the permanent roof structure to provide cover from sun and inclement weather and to assist with noise mitigation.

The design of the Auto Wash includes a 5.15high building and will have large, glazed areas on the south-western and south-eastern facades. The covered queuing area of the auto wash facility will be built to 3.60m height.

The roof structure over the vacuum bays will be 3.50m in height.

3.4.2 Hours of Operation & Staff

The Motor Vehicle Wash facility will operate 24/7, and involves no staff on-site other than occasional maintenance.

3.4.3 Noise Management

The Environmental Noise Assessment sets out a range of noise-management measures for the auto wash and vacuum bay facilities (refer to Appendix A of the Environmental Noise Assessment at **Annexure 5**).

4.0 PLANNING ASSESSMENT

4.1 METROPOLITAN REGION SCHEME

The subject land is zoned "Urban" under the Metropolitan Region Scheme (MRS) with two small truncation portions of the land being reserved for "Primary Regional Roads".

The subject land fronts Guildford Road which is a "Primary Regional Roads" reserve.

The zoning and extent of reservations are illustrated in MRS Map extract at **Figure 2** below.

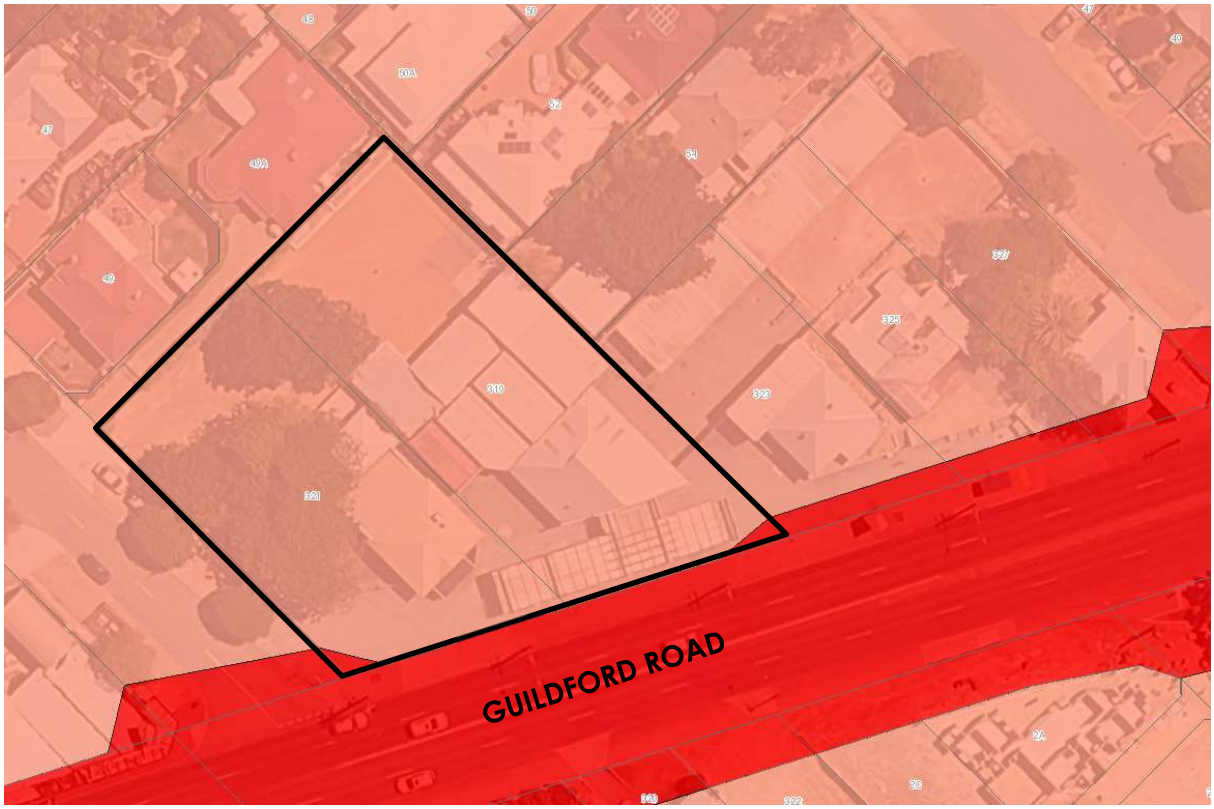

Figure 2: LPS24 Scheme Map Extract

No development occurs within the small, reserved portions of the land other than landscaping and the exit driveway associated with the drive thru facility of the Service Station. The small, reserved portions of the land are also illustrated on the Site Plan (**Annexure 2**).

4.2 CITY OF BAYSWATER LOCAL PLANNING SCHEME No. 24

4.2.1 Zoning & Land Use

The subject land is zoned "Service Station" under the City of Bayswater Local Planning Scheme No. 24 (**LPS24**) as shown in the Scheme Map extract at **Figure 3** below.

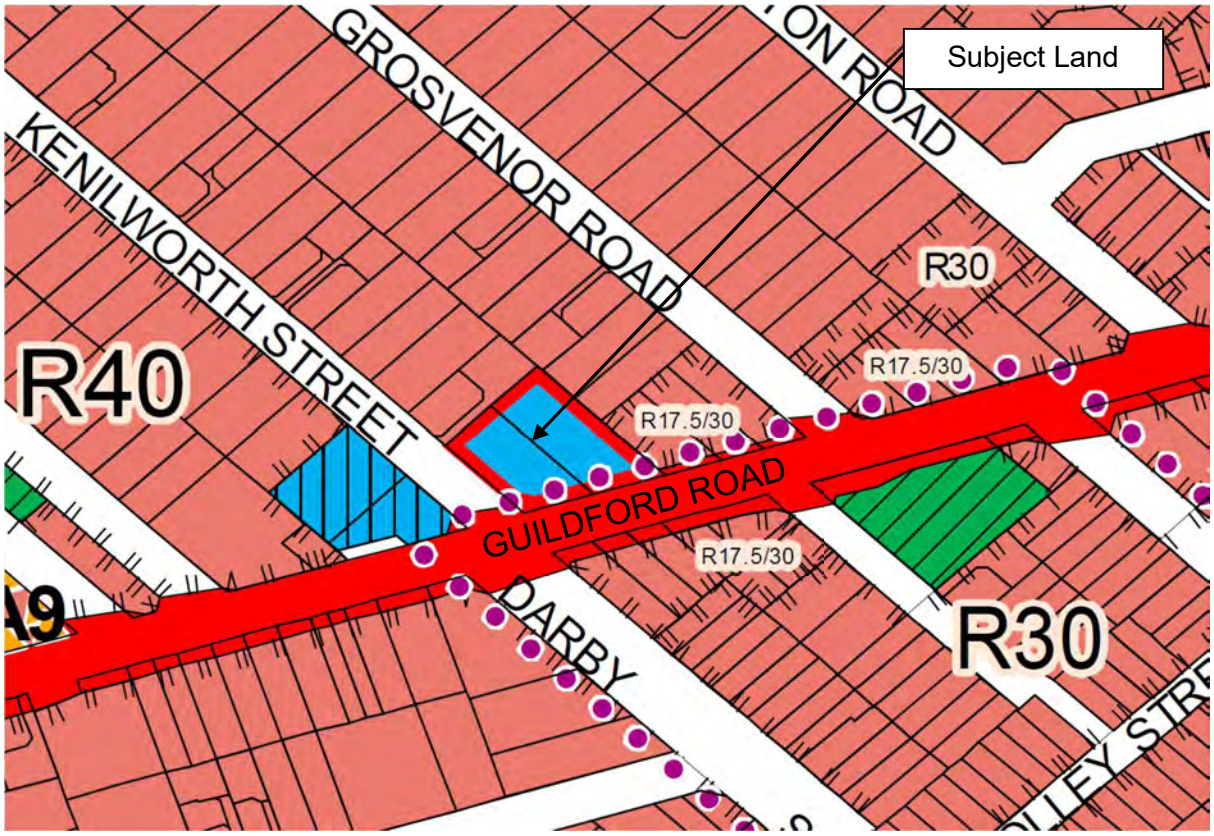

Figure 3: LPS24 Scheme Map Extract

The Interpretations set out in Appendix 1 of LPS24 sets out the following land use definitions:

Car Wash: *means the use of premises for the washing or cleaning of the external surfaces of motor vehicles by mechanical means.*

Service Station: *means any land or buildings used for the retail sale of petroleum products and motor vehicle accessories and for carrying out greasing, tyre repairs, minor mechanical repairs to motor vehicles but does not include a transport depot, panel beating, spray painting, major repairs or wrecking.*

Both the "Service Station" use and Car Wash use are "P" (Permitted) uses in the "Service Station" zone, and are therefore, capable of approval.

4.2.2 Development Standards of LPS24

The Development Standards Table contained in Table No. 2 of LPS24 identifies the development standards applicable to the various uses specified in the Table.

Clause 8.1.1 of LPS24 sets out that no person shall develop or use any land or building in any zone for any of the purposes in the Zoning Table unless such development is in conformity with the provisions of the Scheme and the standards set out in the Development Standards Table.

However, where a particular requirement is not readily determined from the Table, such requirement shall be determined by the decision-maker in accordance with Clause 8.2.1 of LPS24.

The relevant Development Standards of LPS24 are assessed in **Table 4** below.

It should be noted that there are no specific standards for a Car Wash use.

The only standards applicable to the proposed development are the Service Station standards.

Table 4: Development Standards of LPS24.

Development Standard	Comment	Complies?
8.3.1.2 For the purpose of development within an Industrial or Commercial zone, no person shall construct a building of more than two storeys being 9.0 metres in wall height and no more than 12.0 metres in height from the ground level to the roof pitch, within the Scheme Area unless the Council considers the building will not negatively affect the amenity of the surrounding area.	The proposed height of the building is 7.00m. The proposed pylon sign is 9.00m.	Yes
Table No. 2 Standards: *Service Station*		
Minimum Lot Area 1500m2	The area of the development site exceeds 1500m^2.	Yes
Minimum Street Frontage 30m	The street frontage of the development site is 56.56m and exceeds the minimum requirement.	Yes
Minimum Street Setback 9m to Canopy	The street setback to the canopy is 4.84m. The proposed setback is considered appropriate given the existing canopies on the land associated with the previous historic service station use was set back approximately 2.00m from the Guildford Road street boundary.	Variation
Minimum Side Setback 3m	The proposed side setback to the Service Station component of the development is 4.25m.	Yes
Minimum Rear Setback 3m	The development contains a vacant zone of land with a width of approximately 14m for future residential development, so it is considered that the rear setback is achieved.	Yes
Minimum Parking Requirement 8 bays	10 marked bays, plus two (2) EV charging bays, plus 8 bowser parking bays, plus reduction in demand for parking through the use of the drive thru.	Yes
Maximum Site Coverage 30%	The site coverage of the proposed structures on the development site amount to 20%.	Yes
Maximum Plot Ratio 0.3	The plot ratio is calculated to be 0.2.	Yes
Minimum Landscaping 2m wide strip along street frontage	The development site proposes a 2.68m wide landscaping zone along Guildford Road, widening out to approx 3.5m around the proposed pylon sign, and then	Yes

Development Standard	Comment	Complies?
	narrowing for the balance of Guildford Road near the convenience store building.	

The proposed development largely complies with the Development Standards of LPS24, save for the proposed setback to the fuel canopy which is 4.84m instead of the 9.00m required.

The decision-maker has discretion under Clause 8.2.1 to approve developments that depart from the Development Standards of LPS24. In this instance, it is considered appropriate to do so, given the existing development form on the land includes a canopy which has a setback of 2.00m to Guildford Road.

4.2.3 Matters to be Considered

Clause 67 - Part 2 - Schedule 2 (**Deemed Provisions**) of the *Planning and Development (Local Planning Schemes) Regulations 2015* (Regulations) outlines matters to be given due regard by local government when assessing development applications.

Table 5 below provides an assessment against matters relevant to this proposal.

Table 5: Matters to be Considered

Relevant Matters to be Considered	Comment
(a) The aims and provisions of this Scheme and any other local planning scheme operating within the Scheme area;	The proposed use and development is consistent with the aims and provisions of the City's LPS24 for the following reasons: • The land is specifically zoned for the type of land use/development proposed (zoned "Service Station" in LPS24). • The proposal seeks approval for a land uses which are "P" (Permitted) in the "Service Station" zone. • The proposed development is in general compliance with the development requirements of LPS24. • The proposed development will improve the amenity of the site which currently comprises old, derelict buildings which are not being used.
(b) The requirements of orderly and proper planning including any proposed local planning scheme or amendment to this Scheme that has been advertised under the Planning and Development (Local Planning Schemes) Regulations 2015 or any other proposed planning instrument that the local government is seriously considering adopting or approving;	This report demonstrates the proposed development is in general compliance with the local planning framework applicable to the subject site.
(c) Any approved State Planning Policy	This report demonstrates the proposed development is in compliance with the relevant State Planning Policies.

Relevant Matters to be Considered	Comment
(d) Any environmental protection policy approved under the Environmental Protection Act 1986 section 31 (d);	Section 4.6 of this report provides an assessment against the EPA's *Guidance for the Assessment of Environmental Factors – Separation Distances between Industrial and Sensitive Land Uses*. The assessment demonstrates all potential impacts are capable of being managed.
(e) Any policy of the Commission	This matter is not relevant to this proposal.
(f) Any policy of the State	This matter is not relevant to this proposal.
(fa) Any local planning strategy for this Scheme endorsed by the Commission.	This matter is not relevant to this proposal.
(g) Any local planning policy for the Scheme area;	This report demonstrates that the proposed development is in general compliance with the local planning policies applicable to the subject site.
(h) Any structure plan or local development plan that relates to the development.	There are no structure plans or local development plans that relate to the site.
(i) Any report of the review of the local planning scheme that has been published under the Planning and Development (Local Planning Schemes) Regulations 2015.	This matter is not relevant to this proposal.
(j) In the case of land reserved under this Scheme, the objectives for the reserve and the additional and permitted uses identified in this Scheme for the reserve.	Only two small portions of the land are set aside as reservations under the Metropolitan Region Scheme, however no major development occurs within this area. Only landscaping and driveways are proposed. If the reservation areas are resumed in future, it will have little consequence to the proposed development.
(k) The built heritage conservation of any place that is of cultural significance.	This matter is not relevant to this proposal as the site is not on the Local Heritage Survey.
(l) The effect of the proposal on the cultural heritage significance of the area in which the development is located.	This matter is not relevant to this proposal.
(m) The compatibility of the development with its setting, including - *(i) the compatibility of the development with the desired future character of its setting; and* *(ii) the relationship of the development to development on adjoining land or on other land in the locality including, but not limited to, the likely effect of the height, bulk, scale, orientation and appearance of the development;*	The proposed development is entirely compatible with its setting for the following reasons: • The proposed development is suitably located within a defined Service Station zone and will replace similar land uses that have operated on the site previously. • The proposal presents an attractive, high quality built form which enhances the appearance of the subject site. • The amenity of the subject site and surrounds will be improved through the redevelopment of the subject site. • The development is of a single storey nature that will not cause an impact on adjacent property in terms of height/scale/bulk. Having regard to the above, the nature of the proposed development is entirely compatible with its setting.

Relevant Matters to be Considered	Comment
(n) The amenity of the locality including the following – *(i) Environmental impacts of the development;* *(ii) The character of the locality;* *(iii) Social impact of the development;*	Environmental Impacts: The proposed development is not anticipated to result in any adverse environmental impacts. Character of the Locality: The proposed development is consistent with the character of the area which has a mix of commercial and residential uses. Social Impacts: The proposed development will not have any adverse social impacts on the surrounding locality, but will provide a positive social impact through the creation of jobs through construction and operation of the facility.
(o) The likely effect of the development on the natural environment or water resources and any means that are proposed to protect or to mitigate impacts on the natural environment or the water resource.	The development will contain and manage all stormwater.
(p) whether adequate provision has been made for the landscaping of the land to which the application relates and whether any trees or other vegetation on the land should be preserved.	An adequate area of the land has been proposed for landscaping and a landscape plan (**Annexure 3**) has been prepared demonstrating the planting of trees and plants around the site.
(q) the suitability of the land for the development taking into account the possible risk of flooding, tidal inundation, subsidence landslip, bush fire, soil erosion, land degradation or any other risk.	This application provides details pertaining to stormwater management and all other matters listed are not relevant to this proposal.
(r) The suitability of the land for the development taking into account the possible risk to human health or safety.	The land is suitable for a service station use given its zoning and previous use.
(s) The adequacy of – *(i) the proposed means of access to and egress from the site; and* *(ii) arrangements for the loading, unloading, manoeuvring and parking of vehicles;*	As outlined in this Report and the supporting Transport Impact Assessment (TIA) prepared by i3 Consultants **(Annexure 4)**, the proposed access arrangements to and from the site are satisfactory. The development has been appropriately designed, including appropriate arrangements for loading, unloading, manoeuvring and parking of vehicles.
(t) The amount of traffic likely to be generated by the development, particularly in relation to the capacity of the road system in the locality and the probable effect on traffic flow and safety;	The Transport Impact Assessment indicates that the proposed development will not have an unacceptable level of impact on the surrounding road network.
(u) the availability and adequacy for the development of the following — *(i) public transport services;* *(ii) public utility services;*	The Transport Impact Assessment addresses these matters.

Relevant Matters to be Considered	Comment
(iii) storage, management and collection of waste; *(iv) access for pedestrians and cyclists (including end of trip storage, toilet and shower facilities);* *(v) access by older people and people with disability;*	
(v) The potential loss of any community service or benefit resulting from the development other than potential loss that may result from economic competition between new and existing businesses.	No loss of any community service or benefit is expected to occur as a result of the proposed development.
(w) The history of the site where the development is to be located.	No significant historical matter is relevant to this proposal other than the fact that the site has been used previously as a service station.
(x) The impact of the development on the community as a whole notwithstanding the impact of the development on particular individuals.	The proposed development should not impact on the community as a whole.
(y) Any submissions received on the application.	The City is able to advertise the application if it considers that to be a necessary requirement, and to assess any relevant submission made. As a "P" Permitted use, it is not mandatory to advertise the application.
(za) The comments or submissions received from any authority consulted under clause 66.	The City can refer the application to any authority it considers appropriate, and to assess any relevant submissions/comments made.
(zb) Any other planning consideration the local government considers appropriate.	The City can determine whether there are any other planning considerations that are relevant.

Having regard to **Table 5** above, the proposal appropriately addresses the relevant matters to be given due regard as set out in the Deemed Provisions.

4.3 LOCAL PLANNING POLICIES

The City has a range of Local Planning Policies that apply to the proposed development. The various relevant provisions outlined in Local Planning Policies are considered in **Table 6** below.

Table 6: Local Planning Policy Requirements

Local Planning Policy	Provided	Complies?
Landscaping Policy		
All development applications shall include a landscaping plan on lodgement to the City.	A landscaping plan has been provided with this application.	✓

Local Planning Policy	Provided	Complies?
Landscaping plans for development applications with an estimated development value of $2 million or more shall be prepared by a suitably qualified landscape architect.	The landscaping plan has been prepared by Oxigen - landscape architects.	✓
Percent for Public Art Policy		
Public Art to be provided consistent with 1% of the development cost for development with a construction value of $1 million or greater.	A condition is to be applied to the development approval requiring the 1% public art contribution.	✓
Signage Policy		
A Monolith Sign is to be:		
Located on a site with a minimum area of 2000m^2 and a lot frontage greater than 40m	The area of the development site is 2809m^2 and has a frontage of 56m.	✓
Limited to one sign per lot frontage	Only one monolith sign is proposed adjacent to Guildford Road, even though it would be possible to have an additional monolith sign adjacent to Kenilworth Street.	✓
A maximum of 6m above ground level	The proposed monolith sign will be 9.00m high.	Variation However, given there is only one monolith sign proposed instead of two possible monolith signs, the additional height for the single monolith sign is considered appropriate for its position along Guildford Road.
A maximum of 2m in width	The proposed monolith sign will be 2.14m wide.	Variation The minor variation is considered acceptable.
A maximum of 0.5m in depth	The proposed monolith sign should comply with the 0.50m depth.	✓
Setback a minimum of 1m from the side and rear lot boundaries	The proposed monolith sign will be set back 1m from the Guildford Street property boundary.	✓
A maximum of 5m2 in area per sign for each tenancy on the lot	The proposed monolith sign is for the purpose of displaying fuel pricing, and relevant signage for the proposed OTR service station.	Variation The variation is considered acceptable given the type of monolith sign proposed.
Prohibited in the Residential zone	The proposed monolith sign is proposed in a Service Station zone.	✓
First party advertising	The proposed monolith sign is for first party advertising only.	✓

Local Planning Policy	Provided	Complies?
Prohibited where there is an existing hoarding sign or pylon sign on the same lot.	No other hoarding sign or pylon sign exists or is proposed on the same lot.	✓

4.6 STATE PLANNING POLICIES

4.6.1 WAPC SPP 7.0 – Design of the Built Environment

Table 7 below provides a response to the Design Principles of State Planning Policy 7.0 Design of the Built Environment (**SPP7.0**).

Table 7: Assessment of Design Principles of SPP7.0

SPP 7.0 Design Principles	Comment
1. Context and character *Good design responds to and enhances the distinctive characteristics of a local area, contributing to a sense of place.*	The site along Guildford Road is within an environment typical of a main road. There are a range of development forms and uses occurring along Guildford Road, including for example: - A small corner shop/café on the opposite corner of Guildford Road/Kenilworth Street which has development form up to the street boundary. - Opposite the site are some residential dwellings - To the east, on the opposite side of Guildford Road is Gordon Reserve. - Further to the west there is a two to three storey mixed use development at the corner of Charles Street There is not a distinct characteristic of the local area other than some original dwellings mixed in with new grouped dwelling development occurring, together with both old and new commercial development/uses.
2. Landscape quality *Good design recognises that together landscape and buildings operate as an integrated and sustainable system, within a broader ecological context.*	An appropriate area of the land is proposed for landscaping. The landscaping areas provides opportunity for planting of trees and shrubs which is considered to be a positive aspect of the proposed development. A Landscaping Plan has been prepared in support of the application– refer **Annexure 3**.
3. Built form and scale *Good design ensures that the massing and height of development is appropriate to its setting and successfully negotiates between existing built form and the intended future character of the local area.*	The built form, scale and height of the proposed development is appropriate to its setting and appropriate for the development type. The site is specifically zoned "Service Station" so the anticipated built form and scale is expected to be that of a service station and associated uses.
4. Functionality and build quality *Good design meets the needs of users efficiently and effectively, balancing functional requirements to perform well and deliver optimum benefit over the full life-cycle.*	The function of the development is aimed at providing user convenience and efficiency and is expected to deliver optimum benefit to the local community over the life-cycle of the development.

SPP 7.0 Design Principles	Comment
5. Sustainability *Good design optimises the sustainability of the built environment, delivering positive environmental, social and economic outcomes.*	The building has a large awning over the shopfront window area to assist with shielding sun during summer months. The proposed building and fuel canopy is designed to support PV (Solar) Panels. The proposed development involves EV charging stations.
6. Amenity *Good design provides successful places that offer a variety of uses and activities while optimising internal and external amenity for occupants, visitors and neighbours, providing environments that are comfortable, productive and healthy.*	The development will improve the amenity of the site and the locality, as currently, the site presents poorly with old unused buildings. Good quality landscaping areas (including planting of trees) is also proposed to provide a healthy environment and improved amenity. The convenience store building is considered to be well-designed and will provide a local amenity to the area. The convenience store can be accessed from the Guildford Road footpath making it easy for pedestrians to access. The convenience function of the facility is considered to provide a new amenity to the locality.
7. Legibility *Good design results in buildings and places that are legible, with clear connections and easily identifiable elements to help people find their way around.*	The design of the facility provides for good legibility, with areas of manoeuvring space for vehicles. Pedestrians can easily walk from the existing footpath in Guildford Road to the convenience store shopfront.
8. Safety *Good design optimises safety and security, minimising the risk of personal harm and supporting safe behaviour and use.*	The building design maximises opportunities for casual surveillance over the forecourt area through large windows and the main entrance to the building. The car park and forecourt is in full view of the adjacent road ways, which optimises the safety and security of the facility.
9. Community *Good design responds to local community needs as well as the wider social context, providing environments that support a diverse range of people and facilitate social interaction.*	The development is specifically designed for convenience of the local community, enabling a venue which provides goods 24/7. It is a well-placed addition which will add to the diversity and choice of convenience stores / service stations in the locality, and puts less pressure on other facilities in the area.
10. Aesthetics *Good design is the product of a skilled, judicious design process that results in attractive and inviting buildings and places that engage the senses.*	The proposed development will include interesting building forms and will provide quality building materials and features. The quality landscaping design of the site also results in an attractive setting for the development.

As a result, it is considered that the proposed development complies with the Design Principles of SPP7.0.

4.7 ENVIRONMENTAL PROTECTION AUTHORITY GUIDANCE STATEMENT NO. 3 – SEPARATION DISTANCES BETWEEN INDUSTRIAL & SENSITIVE LAND USES

The Environmental Protection Authority (**EPA**) Guidance Statement No. 3 – Separation Distances between Industrial and Sensitive Land Uses (**EPA Guidance Statement**) provides generic buffer distances intended to mitigate impacts of industrial developments on sensitive land uses.

With respect to fuel facilities that are intended for 24-hour operation, the EPA Guidance Statement identifies potential impacts as noise, odour/gaseous, risk and lighting and recommends a generic buffer distance of 200m. These recommended buffer distances are not absolute separation distances but are instead default provisions in the absence of site-specific technical assessment.

Table 8 below provides an assessment of the potential impacts from the operation of the proposed Service Station and provides justification to demonstrate the appropriateness of the development on the subject site.

Table 8: Mitigation of Potential Amenity or Environmental Impacts

Issue	Comment
Noise	It is common for Service Stations to be located either opposite or directly adjoining residential properties. In this case, the site is specifically zoned "Service Station". Noise generated from a fuel facility is generally consistent with other similar commercial uses and can be managed and mitigated. A comprehensive Environmental Noise Assessment has been prepared to address noise issues. It has been concluded that the site will comply with the Environmental Protection (Noise) Regulations (refer **Annexure 5**).
Risk	As the proposed Service Station will provide for the retail sale of fuel, the operator must obtain a Dangerous Goods Storage and Handling Licence to store and sell fuel on the site. The Licence application is made post planning approval. The licencing process will assess risk issues.
Odour / Gaseous	The underground fuel storage tanks will be equipped with a vapour recovery system which ensures that all petrol vapours from the underground tanks are drawn back into the fuel tanker at the time of fuel delivery. This enables the returned vapours to be recondensed into liquid. The Dangerous Goods Licencing process also assesses the likely impact of vapours/odours. Accordingly, the assessment of odour/gaseous issues is appropriately addressed and managed through the Dangerous Goods Licencing process.
Lighting	Potential sources of light spill from the proposed development are primarily from the lighting of the fuel canopy, the retail building, and any external lights in the forecourt or perimeter of the development site. Lighting proposed within the fuel canopy will be inset and orientated internally to ensure light spill is contained within the site. Further, it is a requirement to comply generally with Australian Standard AS4282 – Control of Obtrusive Effects of Outdoor Lighting, and the final design of lighting (and ultimate operation) will be regulated by AS4282.

As demonstrated, the proposed Service Station component of the development has been appropriately designed and sited to mitigate any potential amenity and environmental impacts on existing nearby sensitive (residential) land uses. Accordingly, a lesser separation distance has been demonstrated to be acceptable.

5.0 CONCLUSION

This application seeks Development Approval for a proposed new OTR Service Station and Car Wash Development at Lots 130-131 (#319-321) Guildford Road, Bayswater

In summary, the proposed development warrants approval for the following reasons:

- The proposed development is generally compliant with the development standards and requirements of the City of Bayswater Local Planning Scheme No. 24 (LPS24) and associated Local Planning Policies.
- The land is zoned “Service Station” in LPS24 and is therefore, identified as a service station site.
- The proposed land uses of “Service Station” and “Car Wash” are both “P” Permitted land uses in the “Service Station” zone in LPS24, and are capable of approval.
- The proposed development is an appropriate use and development form in its location.
- The historic use of the site was a service station and associated vehicle servicing uses.
- The proposed development is supported by a range of expert technical reports/plans, demonstrating that all relevant technical issues have been considered and addressed.

Having regard to the above, the proposed development should be supported and approved.

For these reasons, and considering the assessment contained within this report, we respectfully request that the City of Bayswater have regard to the merits and broader benefits of the proposal when undertaking its assessment of the application, and to recommend approval to the Metro Inner-North JDAP, subject to reasonable conditions.

Hidding.
URBAN PLANNING

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ANNEXURES

ANNEXURE 1

CERTIFICATES OF TITLE

WESTERN AUSTRALIA

TITLE NUMBER	
Volume	Folio
904	**123**

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

BGRoberts

REGISTRAR OF TITLES

REGISTRAR OF TITLES WESTERN AUSTRALIA

LAND DESCRIPTION:

LOT 130 ON PLAN 1469

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

OTR 337 PTY LTD OF 270 THE PARADE KENSINGTON SA 5068

(T P459192) REGISTERED 22/2/2023

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

1. P611958 MORTGAGE TO CBA CORPORATE SERVICES (NSW) PTY LIMITED OF DARLING PARK TOWER 1 LEVEL 21 201 SUSSEX STREET SYDNEY NSW 2000 REGISTERED 3/7/2023.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required. Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND:	904-123 (130/P1469)
PREVIOUS TITLE:	161-82
PROPERTY STREET ADDRESS:	319 GUILDFORD RD, BAYSWATER.
LOCAL GOVERNMENT AUTHORITY:	CITY OF BAYSWATER

WESTERN AUSTRALIA

TITLE NUMBER	
Volume	Folio
923	**162**

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

BGRoberts

REGISTRAR OF TITLES

REGISTRAR OF TITLES WESTERN AUSTRALIA

LAND DESCRIPTION:

LOT 131 ON PLAN 1469

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

OTR 337 PTY LTD OF 270 THE PARADE KENSINGTON SA 5068

(T P459192) REGISTERED 22/2/2023

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required. Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND:	923-162 (131/P1469)
PREVIOUS TITLE:	161-82
PROPERTY STREET ADDRESS:	321 GUILDFORD RD, BAYSWATER.
LOCAL GOVERNMENT AUTHORITY:	CITY OF BAYSWATER

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31489/55. 7214/37
108/57

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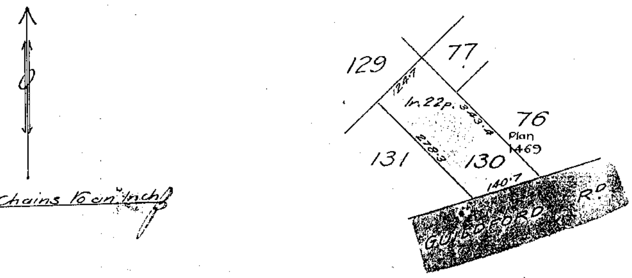
WESTERN AUSTRALIA.

Certificate of Title

under "The Transfer of Land Act, 1893" (Sch. 5, 56 Vic., 14.)

Michael Roy McEvoy of Kirkham Hill Terrace Maylands Cabinet Maker

is now the sole proprietor of an estate in fee simple in possession subject to the easements and encumbrances notified hereunder in ALL that piece of land delineated and coloured green on the map hereon, containing one rood and twenty two perches or thereabouts, being portion of Swan Location W and being Lot 130 on plan 1469



Scale 2 Chains to an inch

Dated the fourth day of November One thousand nine hundred and twenty five.

Acting Registrar of Titles.

Transfer 6313/1933 Transferred to Albert Ernest McDonough of Benara Road Caversham Bootmaker. Registered 7th November 1933 at 11.30 o'c

Transfer 3077/1937 Transferred to Godfrey Edward Stylen, Engineer, and Emma Caroline Louise Stylen Married Woman, both of 177 Guildford Road Bayswater, as joint tenants. Registered 27th April 1937 at 11.55 o'c.

TRANSFER 7128/1951 to Stanley George Elliott of 124 Ninth Avenue, Maylands, Motor Mechanic
Registered 8th May 1951 at 10.35 o'c.
Assistant Registrar of Titles.

Transfer A791728 to Pansy Rosemary Elliott of 108 The Strand Bedford, Widow. Registered 20th March, 1974 at 1.04 o'c

Transfer B386758 to L.C.L. Nominees Pty. Ltd. of 34 Rothbury Road, Embleton. Registered 15th August 1977 at 10.15 o'c.

Application A798533. The correct name of the registered proprietor is Stanley George White Nathaniel Elliott.
20th March 1974

The correct address of the registered proprietors is now: of 321 Guildford Road, Bayswater. By D380664. Dated 12th day of December, 1986.

Application A791727. On 31-12-1972 Stanley George White Nathaniel Elliott died and on 22-3-1973 Probate of his Will was granted to Pansy Rosemary Elliott of 108 The Strand, Bedford, Widow, the executrix therein named.
20th March, 1974

EASEMENTS AND ENCUMBRANCES REFERRED TO.

Caveat [illegible]: Lodged 13·12·1950 at 2·40 o'c

ASSISTANT REGISTRAR OF TITLES

Collateral to
Instrument stamped £1-10-
MORTGAGE 5573/1951. Stanley George Elliott to The English Scottish and Australian Bank Limited.
Registered 8th May 1951 at 10.35 o'c
Assistant Registrar of Titles.

Re Mortgage 10983/1955 FOURTEEN DAYS NOTICE SENT. on No Action taken 3/6/1958 Re. Caveat 811/1950. Lapsed 17/6/1955

DISCHARGE 7596/1955 of Mortgage 5573/1951
Registered 30th September 1955 at 12.20 o'c
Assistant Registrar of Titles.

Collateral to
Instrument stamped £1-10-0
DISCHARGED 10983/1955 Stanley George Elliott to The English Scottish and Australian Bank Limited
Registered 30th September 1955 at 12.20 o'c
Assistant Registrar of Titles.

Collateral to Mortgage stamped £1/10/- Instrument stamped £3/10/-
Mortgage 11144/1956 Stanley George Elliott to The English Scottish and Australian Bank Limited
DISCHARGED
Registered 30th November 1956 at 9.45 o'c
ASSISTANT REGISTRAR OF TITLES

Discharge A619385 of Mortgages 10983/1955 and 11144/1956. Registered 25th January 1973 at 9.08 o'c.

Mortgage A925292 to Australia and New Zealand Banking Group Limited. Registered 15th February 1973 at 9.00 o'c.

Discharge B347731 of Mortgage A925292 Registered 2nd June 1977 at 9.03 o'c

Mortgage B386759 to The National Bank of Australasia Limited. Registered 15th August 1977 at 10.15 o'c.

Discharge B608344 of Mortgage B386759 Registered 24th October 1978 at 9.41 o'c

Mortgage B608345 to Procon Pty Ltd. Registered 24th October 1978 at 9.41 o'c

Discharge C355659 of Mortgage B608345. Registered 12th May 1982 at 9.48 o'c.

Mortgage C747801 to Michael Edward Wright, Peter Gilbert Da Conceicao Foss and Alfred John Mellor, all of care of Stone James Stephen Jaques, Solicitors, Barrack Chambers, Cathedral Square, Solicitors. Registered 10th April 1984 at 10.25 o'c.

Discharge D369869 of Mortgage C747801. Registered 27th November, 1986 at 1.19 o'c.

Mortgage D380664 to Perth Building [illegible] Registered 12th December 1986 at 3.47 o'c

Discharge E979522 of Mortgage D380664. Registered 3rd September 1992 at 10.54 hrs.

Mortgage E604481 to National Australia Bank Ltd. Registered 10th May, 1991 at 9.29 hrs.

CT 0904 0123 B

Caveat E995615. Lodged 23.9.1992 at 11.46 hrs. WITHDRAWN
As to portion only.

As to portion only.
Caveat F155197. Lodged 5.4.93 at 10.38 hrs.

Withdrawal G68482 of Caveat E995615. Lodged 2.1.96 at 16.13 hrs.

As to portion only
Caveat G68483. Lodged 2.1.96 at 16.13 hrs.

As to portion only:
Caveat G663887 Lodged 15.12.1997 at 14.32 hrs.

CERTIFICATE OF TITLE.

Registered Vol.....Fol.....

11406 No.

TRANSFER 3992/1926 VOL. 161, FOL. 82.

ORIGINAL.

INDEXED.

REGISTER BOOK.

Vol. 923 Fol. 162.

D. 78001

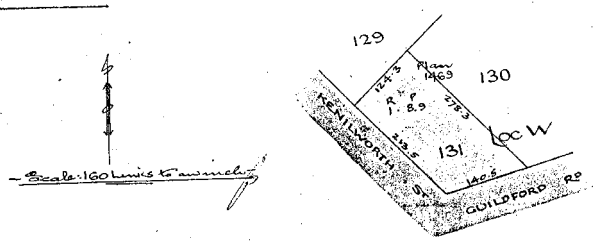
WESTERN AUSTRALIA.

Certificate of Title

under "The Transfer of Land Act, 1893" (Sch. 5, 56 Vic., 14.)

CT 0923 0162 F

The War Service Homes Commissioner a body corporate by No. 43, "The War Service Homes Act, 1918-~~1919~~ 1925," of the Commonwealth of Australia, whose principal office is situated at 54 Market Street, Melbourne, in the State of Victoria, is now the sole proprietor of an estate in fee simple in possession subject to the easements and encumbrances notified hereunder in ALL that piece of land delineated and coloured green on the map hereon, containing one rood eight and a nine tenths perches or thereabouts, being portion of Swan Location W and being Lot 131 on plan 1469



Dated the twelfth day of May One thousand nine hundred and twenty-six.

Acting Registrar of Titles.

Transfer 16205/1959 to Harry Clifford Head of 184 Guildford Road Bayswater Machine Assembler. Registered 23rd October 1959 at 9.22 o'c

ASSISTANT REGISTRAR OF TITLES

Transfer 16206/1959 to Stanley George Elliott of 108 The Strand Bedford Park Service Station Proprietor. Registered 23rd October 1959 at 9.22o'c.

ASSISTANT REGISTRAR OF TITLES

Application A798533. The correct name of the registered proprietor is Stanley George White Nathaniel Elliott.

20th March, 1974

Application A 791727. On 31-12-1972 Stanley George White Nathaniel Elliott died and on 22-3-1973 Probate of his Will was granted to Pansy Rosemary Elliott of 108 The Strand Bedford, Widow, the executrix therein named

20th March, 1974

Transfer A 791728 to Pansy Rosemary Elliott of 108 The Strand Bedford, Widow Registered 20th March, 1974 at 1-04 o'c

Transfer B386758 to L.C.L. Nominees Pty. Ltd. of 34 Rathbury Road, Embleton. Registered 15TH August 1977 at 10.15 o'c.

The correct address of the registered proprietors is now: of 421 Guildford Road, Bayswater. By D380664. Dated 12th day of December, 1986.

For encumbrances and other matters affecting the land see back.

EASEMENTS AND ENCUMBRANCES REFERRED TO.

Instrument stamped £3-17-6
Mortgage 12505/1959. Stanley George Elliott to Vacuum Oil Company Proprietary Limited
Registered 23rd October 1959 at 9.22 o/c.

DISCHARGED

ASSISTANT REGISTRAR OF TITLES.

APPLICATION A437008 The correct name of the above mortgagee is now Mobil Oil Australia Limited.
6th September 1971.

Discharge A437009 of Mortgage 12505/1959.
Registered 6th September 1971 at 2.55 o/c.

Mortgage B386759 to The National Bank of Australasia Limited. Registered 15th August 1977 at 10.15 o/c.

DISCHARGED

Discharge B608244 of Mortgage B386759. Registered 24th October 1978 at 9.41 a/c

Mortgage B608245 to Procon Pty Ltd. Registered 24th October 1978 at 9.41 a/c

DISCHARGED N

Discharge C355659 of Mortgage B608245. Registered 12th May 1982 at 9.18 o'c.

Mortgage C747801 to Michael Edward Wright, Peter Gilbert De Conceicao Foss and Alfred John Mellor, all of care of Stone James Stephen Jaques, Solicitors, Law Chambers, Colonial Square, Perth, Solicitors. Registered 10th April 1984 at 10.25 o'c.

DISCHARGED

Discharge D369869 of Mortgage C747801. Registered 27th November, 1986 at 1.19 o'c.

Mortgage D380664 to Perth Building Society.
Registered 12th December 1986 at 3.47 o'c DISCHARGED

Mortgage E604481 to National Australia Bank Ltd. Registered 10th May, 1991 at 9.29 hrs.

Discharge E979522 of Mortgage D380664. Registered 3rd September 1992 at 10.54 hrs.

Caveat E995615. Lodged 23.9.1992 at 11.46 hrs.
As to portion only.

WITHDRAWN

Withdrawal G68482 of Caveat E995615. Lodged 2.1.96 at 16.13 hrs.

Caveat G68483. Lodged 2.1.96 at 16.13 hrs.

As to portion only:
Caveat G663887 Lodged 15.12.1997 at 14.32 hrs.

CT 0923 0162 B

CERTIFICATE OF TITLE.
Registered Vol.....Fol.....

ANNEXURE 2
DEVELOPMENT PLANS

ANNEXURE 3

LANDSCAPING PLAN

ANNEXURE 4

TRANSPORT IMPACT ASSESSMENT

ANNEXURE 5

ENVIRONMENTAL NOISE ASSESSMENT

ANNEXURE 6

STORMWATER DRAINAGE PLAN

areas

service station complex

site	2138sqm
control building	272sqm
canopy	196qm
auto wash	64sqm
plant	18sqm
wash entry	120sqm
vacuum	41sqm
landscaping	308sqm - 14% of site area
pavement	1119sqm

all new roof deck to have solar absorbency not greater than 0.45

SITE PLAN

1:200 AT A1

NEW SERVICE STATION COMPLEX

CORNER KENILWORTH STREET AND GUILDFORD, BAYSWATER, WA

0 1 2 5 10 15m

Scale 1:200 at A1

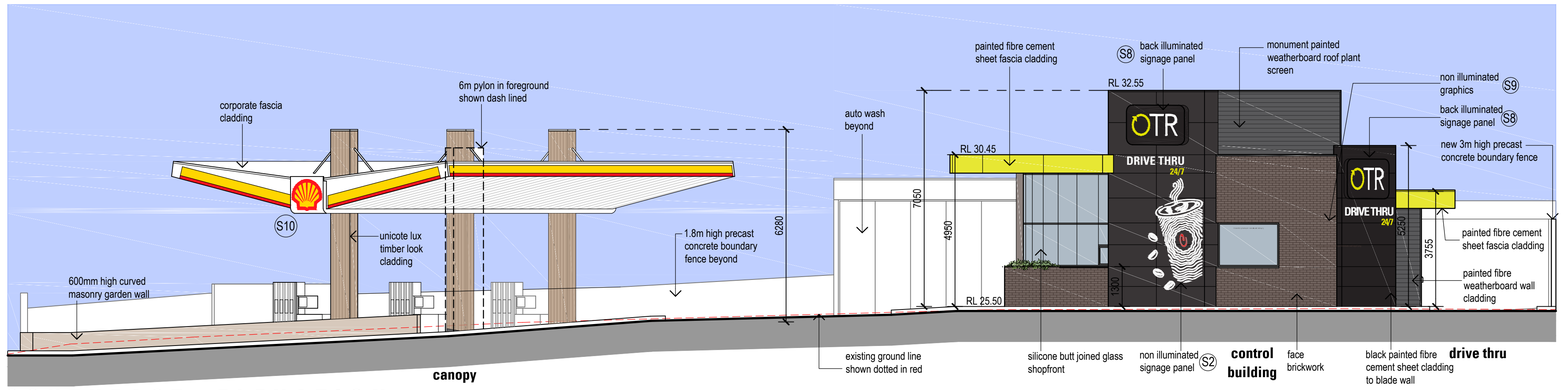
06.11.25

22JN1500 sk01u

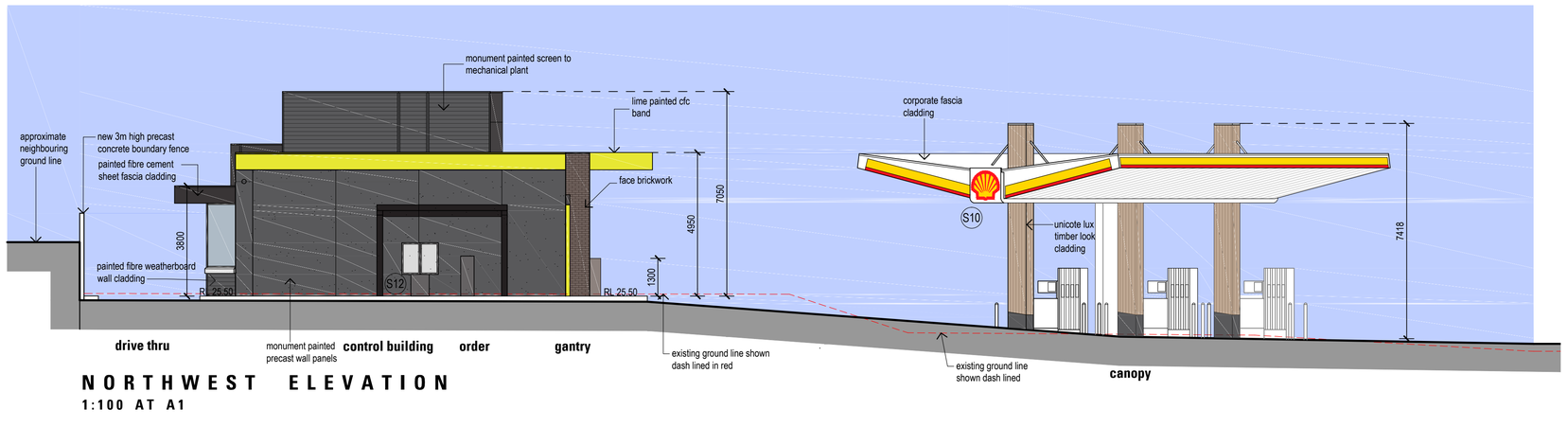
PLANNING

ADS Architects

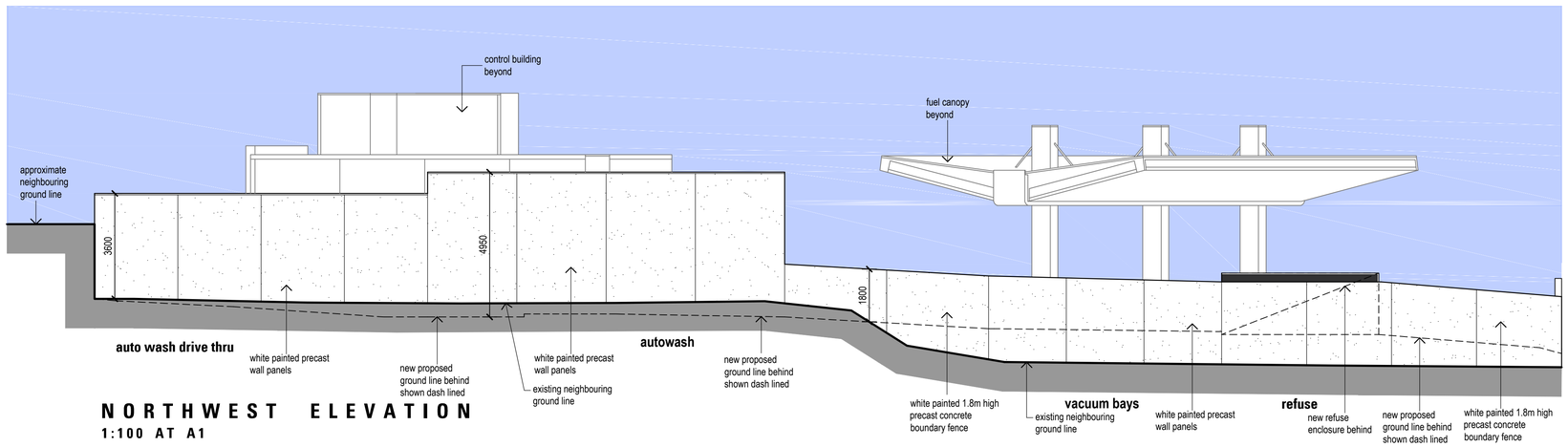
93 Gilles Street Adelaide 5000 T:82232244



SOUTHEAST ELEVATION
1:100 AT A1



NORTHWEST ELEVATION
1:100 AT A1



NORTHWEST ELEVATION
1:100 AT A1

NEW SERVICE STATION COMPLEX

CORNER KENILWORTH STREET AND GUILDFORD, BAYSWATER, WA

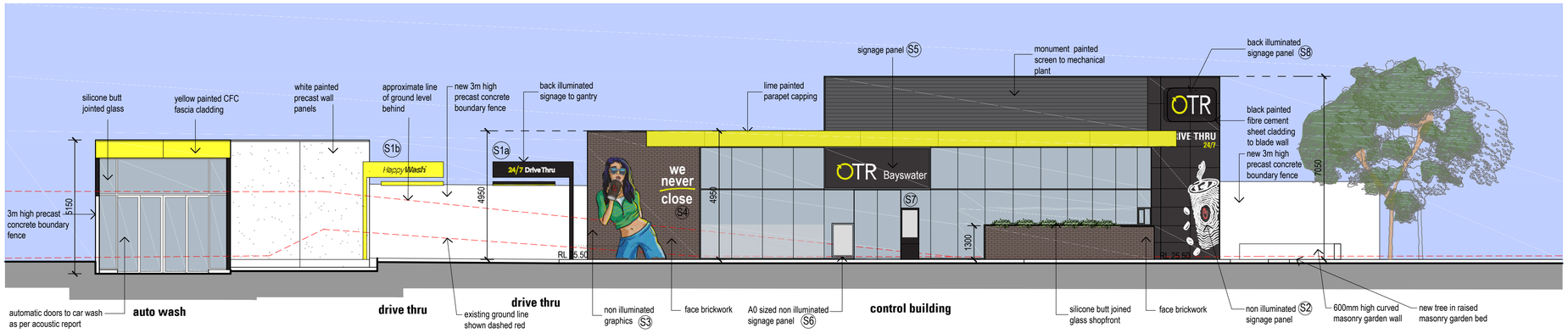
0 1 2 5 10m

Scale 1:100 at A1

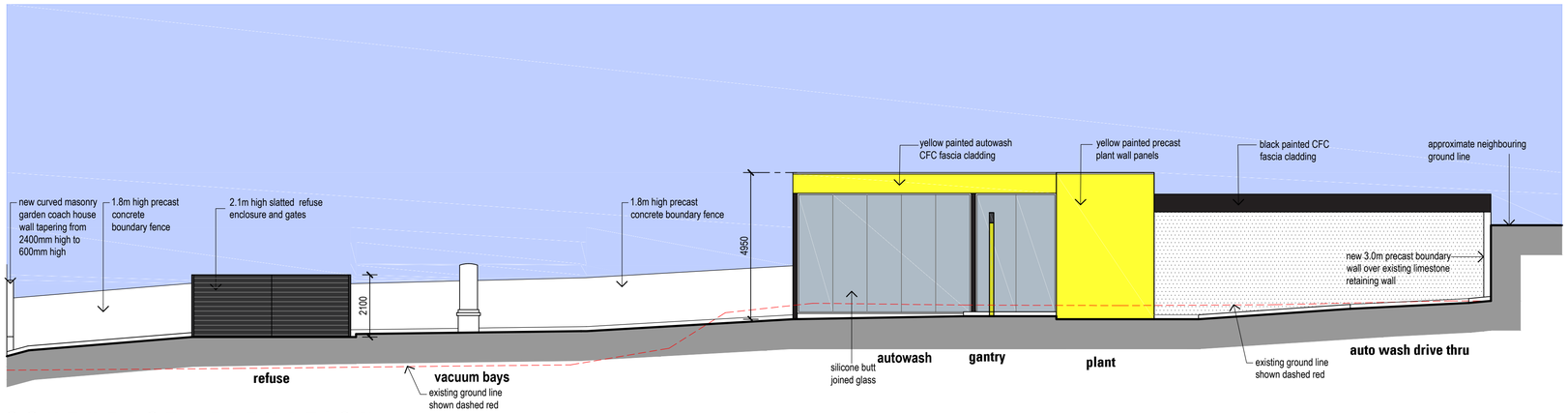
PLANNING

06.11.25
22JN1500 sk02j

ADS Architects
93 Gilles Street Adelaide 5000 T:82232244



SOUTHWEST ELEVATION
1:100 AT A1



SOUTHEAST ELEVATION
1:100 AT A1

NEW SERVICE STATION COMPLEX

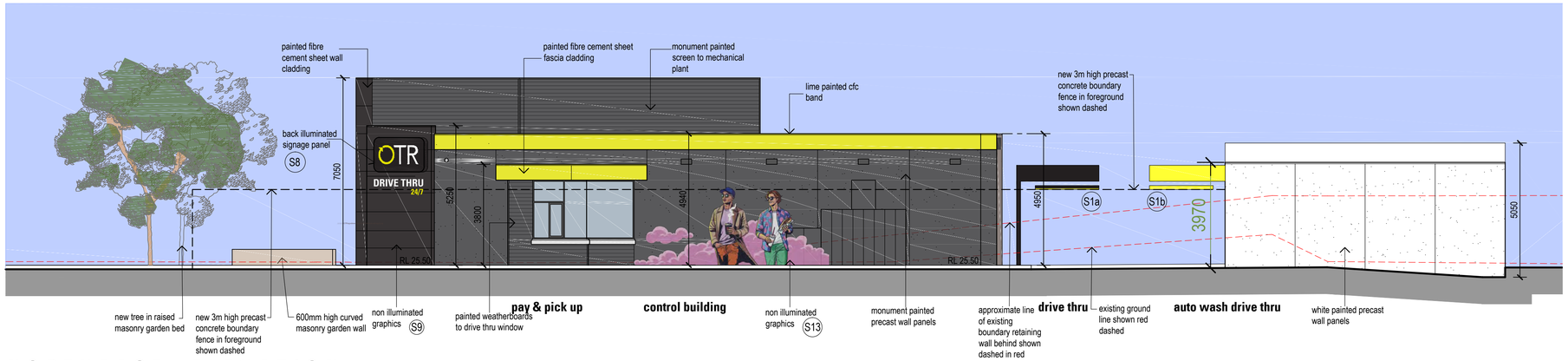
CORNER KENILWORTH STREET AND GUILDFORD, BAYSWATER, WA

0 1 2 5 10m
Scale 1:100 at A1

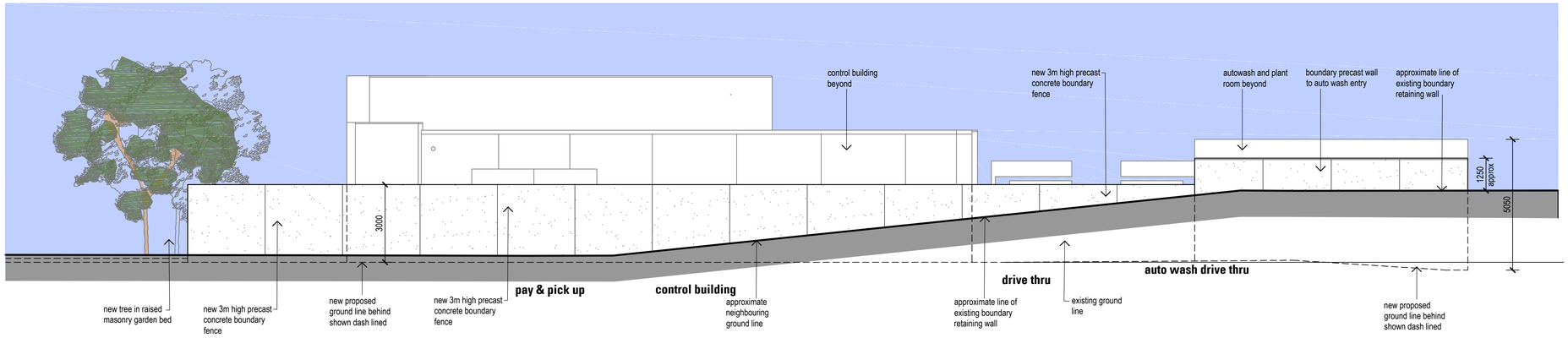
06.11.25
22JN1500 sk03j

PLANNING

ADS Architects
93 Gilles Street Adelaide 5000 T:82232244



NORTHEAST ELEVATION
1:100 AT A1



NORTHEAST ELEVATION
1:100 AT A1

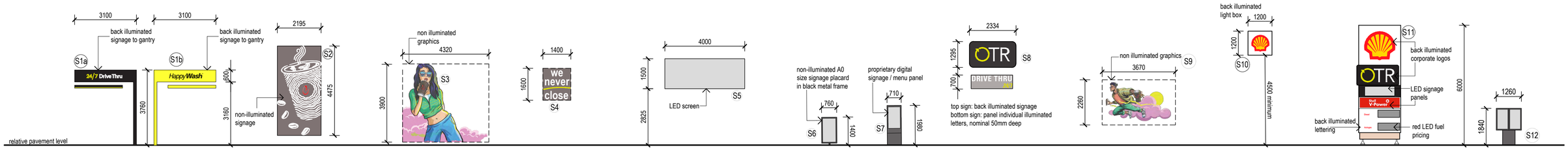
NEW SERVICE STATION COMPLEX
CORNER KENILWORTH STREET AND GUILDFORD, BAYSWATER, WA

0 1 2 5 10m
Scale 1:100 at A1

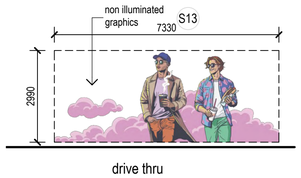
06.11.25
22JN1500 sk04j

PLANNING

ADS Architects
93 Gilles Street Adelaide 5000 T:82232244



SIGNAGE ELEVATIONS *1:100 AT A1*



drive thru

NEW SERVICE STATION COMPLEX

CORNER KENILWORTH STREET AND GUILDFORD, BAYSWATER, WA

PLANNING

16.06.25

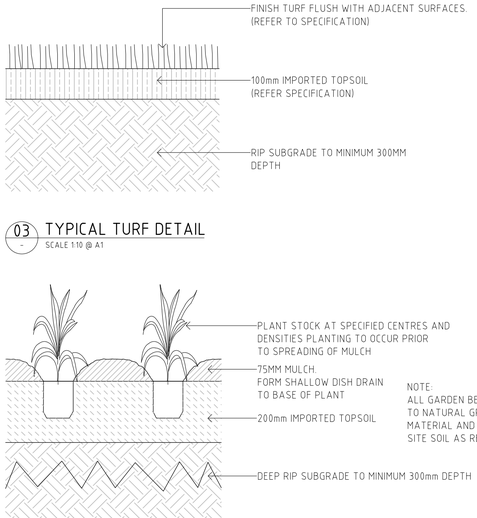
22JN1500 sk05a

0 1 2 5 10m

Scale 1:100 at A1

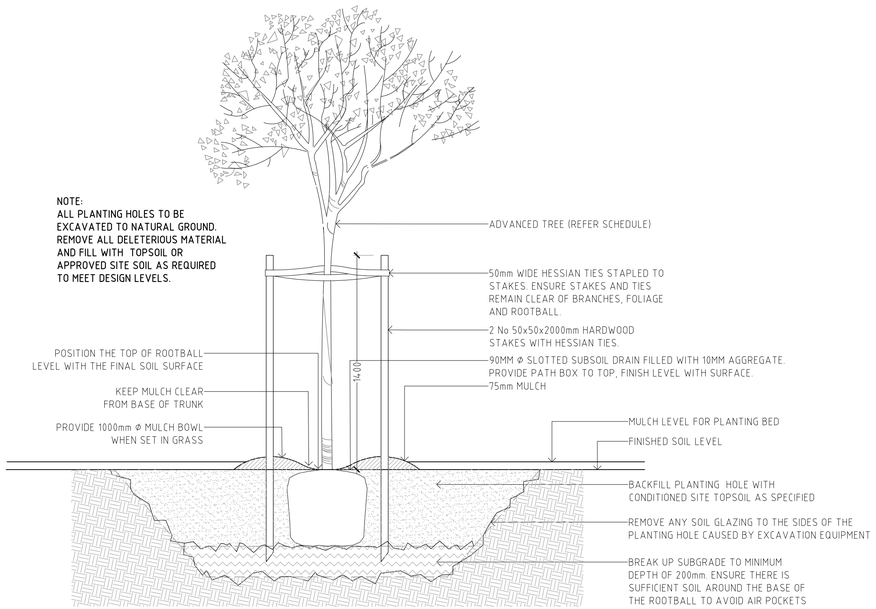
ADS Architects

93 Gilles Street Adelaide 5000 T:82232244

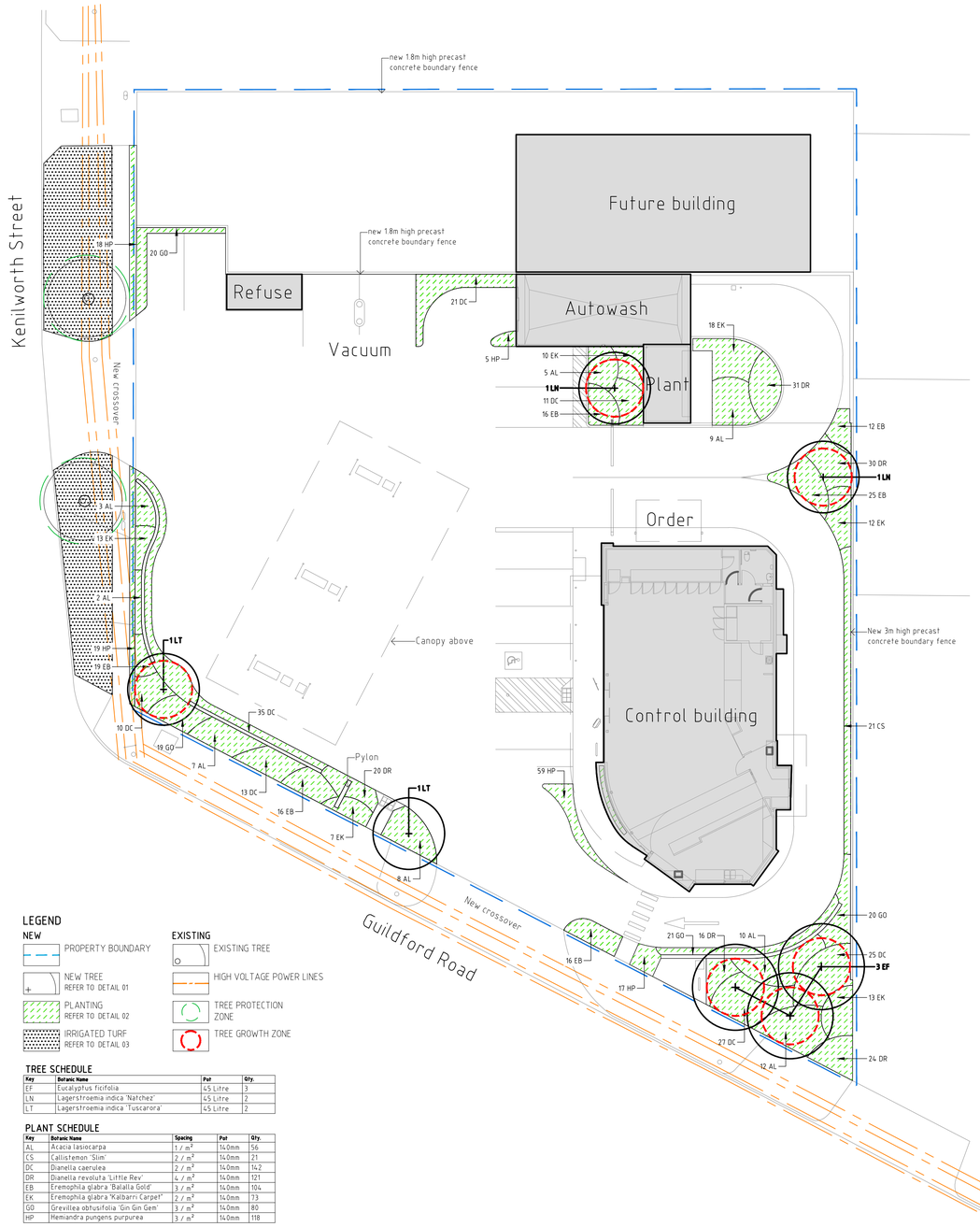


03 TYPICAL TURF DETAIL
SCALE 1:10 @ A1

02 TYPICAL SHRUB PLANTING DETAIL
SCALE 1:10 @ A1



01 TYPICAL TREE IN MULCH DETAIL
SCALE 1:20 @ A1



LEGEND

NEW
- PROPERTY BOUNDARY
- NEW TREE REFER TO DETAIL 01
- PLANTING REFER TO DETAIL 02
- IRRIGATED TURF REFER TO DETAIL 03

EXISTING
- EXISTING TREE
- HIGH VOLTAGE POWER LINES
- TREE PROTECTION ZONE
- TREE GROWTH ZONE

TREE SCHEDULE

Key	Botanic Name	Pot	Qty.
EF	Eucalyptus ficifolia	45 Litre	3
LN	Lagerstroemia indica 'Natchez'	45 Litre	2
LT	Lagerstroemia indica 'Tuscarora'	45 Litre	2

PLANT SCHEDULE

Key	Botanic Name	Spacing	Pot	Qty.
AL	Acacia lasiocarpa	1 / m²	140mm	56
CS	Callistemon 'Slim'	2 / m²	140mm	21
DC	Dianella caerulea	2 / m²	140mm	142
DR	Dianella revoluta 'Little Rev'	4 / m²	140mm	121
EB	Eremophila glabra 'Balalla Gold'	3 / m²	140mm	104
EK	Eremophila glabra 'Kalbarri Carpet'	2 / m²	140mm	73
GO	Grevillea obtusifolia 'Gin Gin Gem'	3 / m²	140mm	80
HP	Hemiandra pungens purpurea	3 / m²	140mm	118

SCALE
1:200 (A1), 1:400 (A3)
0 2 4 6 8 10m

NOTES

EXISTING SERVICES
THE CONTRACTOR MUST LOCATE AND MARK ALL UNDERGROUND SERVICES BEFORE COMMENCING WORK ON SITE.

TREE PLANTING
PREPARE TREE HOLES TO A MINIMUM SIZE OF THE DEPTH OF THE ROOTBALL x 1m WIDE AND BREAK THE SUBGRADE TO A MINIMUM DEPTH OF 200MM BELOW.

TAKE PARTICULAR CARE TO BREAK UP ANY GLAZING TO SIDES OF TREE HOLE.

FINISH THE ROOTBALL LEVEL WITH THE FINAL SURROUNDING SOIL LEVEL AND BACKFILL THE PLANTING HOLE WITH IMPORTED SANDY-LOAM TOPSOIL (80%-20% SANDY-LOAM) MIXED THOROUGHLY PRIOR TO PLACING WITH 20% ORGANIC COMPOST).

PROVIDE A 1m DIAMETER MULCHED WATERING BOWL TO THE BASE OF THE TREE.

STAKE TREES WITH 2No. 2500x50x50 HARDWOOD STAKES AND TIE WITH 50mm HESSIAN TIES SECURELY STAPLED TO THE STAKES. ENSURE STAKES AND TIES REMAIN CLEAR OF BRANCHES, FOLIAGE AND ROOTBALL.

PLANTING BEDS
CULTIVATE EXISTING GROUND TO A MINIMUM DEPTH OF 300 MM AND PLACE 300MM IMPORTED SANDY-LOAM TOPSOIL (80%-20% SANDY-LOAM) MIXED THOROUGHLY PRIOR TO PLACING WITH 20% ORGANIC COMPOST).

PLACE PLANTS IN THE CENTRE OF THE PLANTING HOLE AND FINISH THE TOP OF THE ROOT BALL LEVEL WITH THE FINISHED SURFACE OF THE SURROUNDING SOIL.

APPLY TERRACOTTEM FERTILISER TO MANUFACTURERS RATES AT TIME OF PLANTING AND AFTER PLANTING.

PLACE A 100MM MINIMUM DEPTH OF FINE GREEN WASTE MULCH. THOROUGHLY WATER PLANTS BEFORE AND IMMEDIATELY AFTER PLANTING, AND AS REQUIRED TO MAINTAIN HEALTH AND VIGOUR.

IRRIGATION
PROVIDE AN AUTOMATIC IN-LINE DRIP IRRIGATION SYSTEM TO ALL PLANTING BEDS AND TREES.

DRIP IRRIGATION SPECIFIED AS NETAFIM TECHLINE 16 POLY TUBE 1.6Lph @ 0.5M SPACINGS.

FOR ALL TREE PLANTING INSTALL AT BASE OF TREE. 4No 4Lph PC DRIP EMITTERS ON 13MM POLY LOOP (OR INLINE EQUIVALENT).

ALL POLY TUBING TO BE LAID ON SURFACE AND COVERED WITH MULCH.

PROVIDE BACKFLOW PREVENTION, AUTOMATIC CONTROLLER AND OTHER DEVICES AS REQUIRED.

NOTE
NEW TREE PLANTING COMPLIES WITH THE REQUIREMENTS OF COUNCIL'S "TREES ON PRIVATE LAND AND STREETS VERGES POLICY".
TREE GROWTH ZONES INDICATED AT 2.0m RADIUS FOR 6 NO. STANDARD TREES.
DESIGNED BY JAMES HAYTER, REGISTERED LANDSCAPE ARCHITECT (AILA MEMBER NO. 65)

oxigen
Oxigen Pty Ltd
98-100 Halifax Street
Adelaide SA 5000
T +61 (08) 7324 9600
design@oxigen.net.au
oxigen.net.au

CLIENT
PEREGRINE CORPORATION

ARCHITECTS
ADS ARCHITECTS

PROJECT
BAYSWATER OTR

drawing title
LANDSCAPE PLAN

15.047.106

issue
DRAFT 2

ISSUE	DATE	ISSUE	DWN	CHK	APP
1	23.09.25	FINAL FOR DA	YL	JH	JH
2	13.11.25	FINAL FOR DA	EH	JH	JH

perspective view

NEW SERVICE STATION COMPLEX

CORNER KENILWORTH STREET AND GUILDFORD, BAYSWATER, WA

0 1 2 5 10m

Scale 1:100 at A1

06.06.25

22JN1500 sk07

PLANNING

ADS Architects

93 Gilles Street Adelaide 5000 T:82232244

perspective view

NEW SERVICE STATION COMPLEX

CORNER KENILWORTH STREET AND GUILDFORD, BAYSWATER, WA

0 1 2 5 10m

Scale 1:100 at A1

PLANNING

06.06.25

22JN1500 sk08

ADS Architects

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garden wall

refuse enclosure

garden wall

NEW SERVICE STATION COMPLEX

CORNER KENILWORTH STREET AND GUILDFORD, BAYSWATER, WA

0 1 2 5 10m

Scale 1:100 at A1

06.06.25

22JN1500 sk09

PLANNING

ADS Architects

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PROPOSED OTR (SERVICE STATION, CAR WASH & DRIVE THRU RETAIL)

LOTS 130 & 131 (321) GUILDFORD ROAD, BAYSWATER

TRANSPORT IMPACT ASSESSMENT

Final 5

Prepared by i3 consultants WA for

PC Infrastructure Pty Ltd

Proposed OTR (Service Station, Car Wash & Drive Thru Retail) | Lots 130 & 131 (321) Guildford Road, Bayswater | Transport Impact Assessment

Prepared by

David Wilkins | Senior Traffic & Road Safety Engineer

Contact

M 0407 440 327
dwilkins@i3consultants.com

Published by

i3 consultants WA
PO Box 1638
SUBIACO WA 6904 Australia
T +61 8 9467 7478
www.i3consultants.com

Description

A Traffic Impact Assessment report for a proposed On The Run (OTR) Service Station development on Lots 130 & 131 on the northeast corner of Guildford Rd and Kenilworth St in the City of Bayswater suburb of Bayswater.

It is proposed to develop a 3 bowser (6 fueling point) service station with a drive-thru coffee & groceries facility, drive-thru automatic car wash, 9 onsite parking bays, 2 vacuum cleaning bays, a loading bay and a 272 m2 control building on the development site.

Client

PC Infrastructure Pty Ltd

Project ID 31807

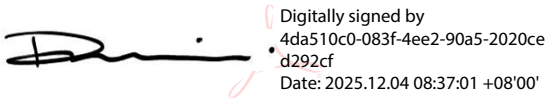
Version Final 5

Publication Date 4 December 2025

Pages 54

File Name 31807-TIA-F5

This is not an approved document unless certified below.



About the Author

David Wilkins is an RTA NSW Certified Level 3 Lead Auditor (RSA-08-0178) and Main Roads Western Australia (MRWA) accredited Senior Road Safety Auditor (SRSA 0101). In addition to this, David is an MRWA accredited Crash Investigation Team Leader and Roadworks Traffic Manager (MRWA-RTM-10-RTM20). David has undertaken over 645 road safety audits in Australia since 2001 across the full range of stages from feasibility through to pre-opening, including roadworks, existing roads, schools, events & mine sites.

David specialises in undertaking and preparing traffic impact assessments in accordance with either the WAPC *Transport Impact Assessment Guidelines* or Austroads *Guide to Traffic Management Part 12: Integrated Transport Assessments for Developments* (1). David has authored over 250 of these since 2001.

David is a past member of Engineers Australia and past committee member of Transport Australia society and is guided by its Charter and Code of Ethics which states that its members act in the interest of the community, ahead of sectional or personal interests towards a sustainable future.

CONTENTS

1 SUMMARY

The key components of a Transport Impact Assessment (*TIA)* for a development proposal are to:

- assess the proposed internal transport networks with respect to accessibility, circulation, and safety for all modes, that is, vehicles, public transport, pedestrians, and cyclists,
- assess the level of transport integration between the development proposal and the surrounding land uses,
- determine the impacts of the traffic generated by the development proposal on the surrounding land uses, and
- determine the impacts of the traffic generated by the development proposal on the surrounding transport networks.

This *TIA* has determined that the redeveloped site is forecast to generate up to an **additional** 35 trips during the morning peak hour and up to an **additional** 26 trips during the afternoon peak hour. This is based on pass-by trips of 70%. The forecast volumes of trips into and out of the site in the morning and afternoon peak hours are 116 and 87 respectively.

This *TIA* has identified that the proposed development will not result in an adverse impact on the road network. This is based on detailed modelling within SIDRA Intersection 10 as well as video surveys of the site and the Darby St/ Guildford Rd/ Kenilworth St intersection.

There will be a need to restrict the size of the fuel tanker to a 16.9 m semi-trailer, or smaller, as well as the directions this can service the site to and from, dependent on future road plans for Guildford Rd, but the site remains accessible for this vehicle.

2 INTRODUCTION

This Transport Impact Assessment (*TIA*) report has been prepared in accordance with the WAPC publication *Transport Impact Assessment Guidelines* (2). These guidelines indicate that a *TIS* is required for a Service Station with 6 fuelling positions, as shown in Table 1 below.

LAND USE	MODERATE IMPACT	HIGH IMPACT
	Transport Impact Statement required	Transport Impact Assessment required
	10 – 100 vehicle trips in the peak hour	> 100 vehicle trips in the peak hour
Residential	10–100 dwellings	>100 dwellings
Schools	10–100 students	>100 students
Entertainment venues, restaurants, etc.	100–1000 persons (seats) OR 200–2000 m² gross floor area	>1000 persons (seats) OR >2000 m² gross floor area
Fast food restaurants	50–500 m² gross floor area	>500 m² gross floor area
Food retail /Shopping centres with a significant food retail content	100–1000 m² gross floor area	>1000 m² gross floor area
Non-food retail	250–2500 m² gross floor area	>2500 m² gross floor area
Offices	500–5000 m² gross floor area	>5000 m² gross floor area
Service Station	1–7 refuelling positions	>7 refuelling positions
Industrial/Warehouse	1000–10,000 m² gross floor area	>10,000 m² gross floor area
Other Uses	Discuss with approving authority	Discuss with approving authority

Table 1 – Level of assessment required (Source Table 1: WAPC Guidelines Vol 4)

The proposal is for a 3 bowser (6 fuelling point) service station with a drive-thru coffee & groceries facility, drive-thru automatic car wash, 9 onsite parking bays (including an accessible bay), a loading bay, 2 motorcycle bays, 2 vacuum cleaning bays and a 272 m^2 control building on the development site. An existing house on Lot 131 and existing service station buildings on the adjacent Lot 132 will be demolished, with both lots cleared for the redevelopment. A vacant 613.8 m^2 lot will remain at the rear.

Despite the WAPC guidelines indicating that only a *TIS* is required, a higher level *TIA* has been prepared to reflect the additional level of details requested by Main Roads WA due to a longer term proposal to upgrade Guildford Rd with modifications to the Kenilworth Intersection that will restrict this to left-in only as well as physically prevent right turns into the development site (refer **Section 6**).

An extract from the Design Drawing for the proposed development, showing the proposed development and existing layout of the roads, is provided as Figure 1 on the following page.

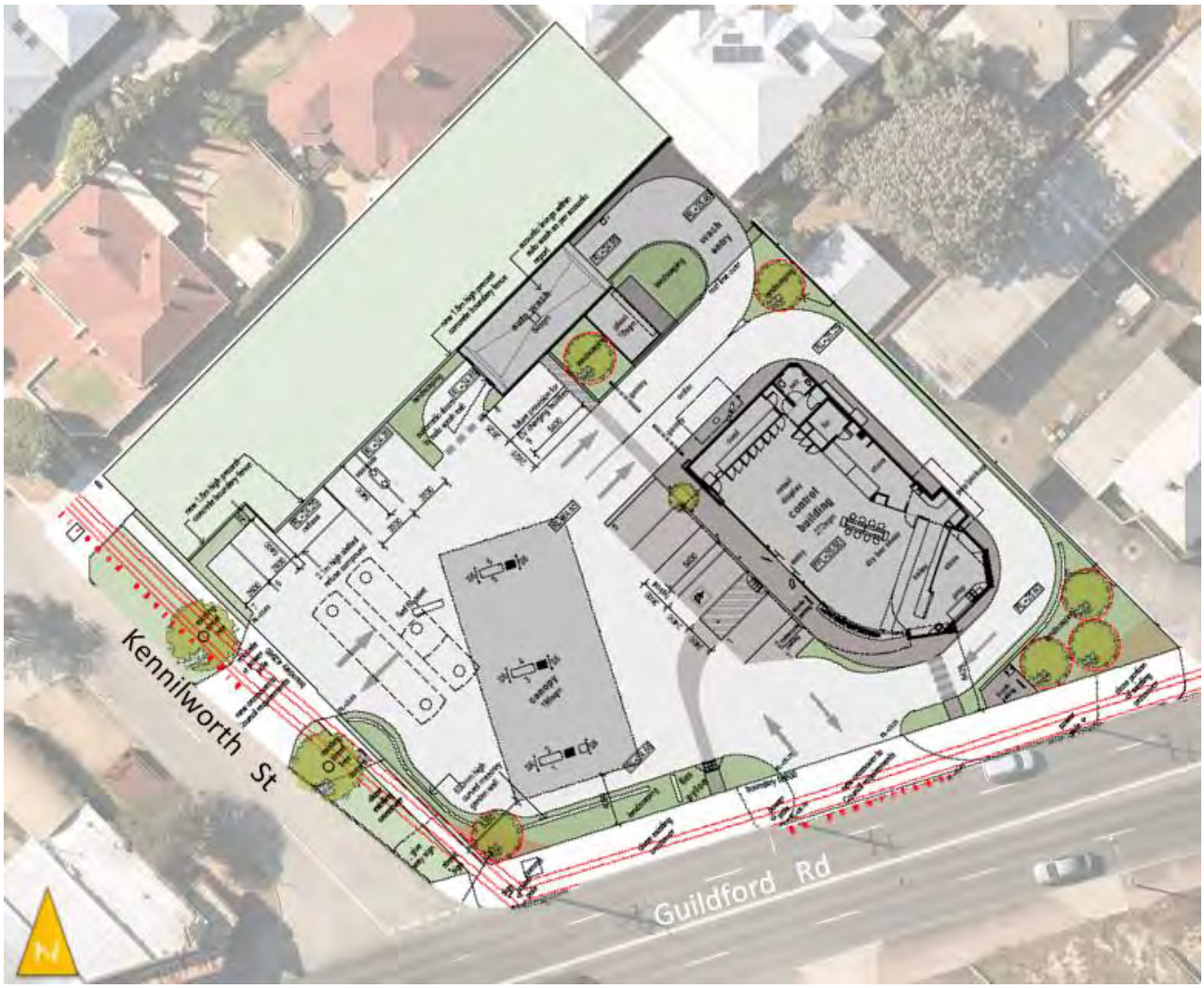


Figure 1 – Extract from Design Drawing the proposed layout with the existing road layout

The preparation of a *TIA* in accordance with the WAPC Guidelines is consistent with, and ensures compliance with, Clause 67(t) of the *Planning and Development (Local Planning Schemes) Regulations 2015* (3) which state "*due regard should be given to the amount of traffic likely to be generated by the development, particularly in relation to the capacity of the road system in the locality and the probable effect on traffic flow and safety*".

The following sections have been prepared in a format that clearly identifies the items that are required to be assessed in a *TIA* and the responses and/ or assessments relative to these items.

Name of applicant and consultant.

PC Infrastructure Pty Ltd (**applicant**) and i3 consultants WA (**consultant**).

Development location and context.

Lots 130 & 131 (321) Guildford Road, Bayswater.

Located within a 'Service Station' zone on the northeast corner of Guildford Rd, a Primary Distributor (State) road and Kenilworth St, an Access (Local) road. The development site is opposite The Garden Café on the northwest corner, as shown in Photograph 1 below.

Photograph 1 – Looking west at subject site from the south side of Guildford Rd east of Kenilworth St*

The site is an 11-minute walk from Meltham train station at the northern end of Kenilworth St.

*Orange vehicle is the author's vehicle during the site visit and is not representative of on-site parking.

Brief description of development proposal.

The proposal is for a 3 bowser (6 fuelling point) service station with a drive-thru coffee & groceries facility, drive-thru automatic car wash, 9 onsite parking bays (including an accessible bay), a loading bay, 2 motorcycle bays, 2 vacuum cleaning bays and a 272 m2 control building on the development site. An existing house on Lot 131 and existing service station buildings on the adjacent Lot 132 will be demolished, with both lots cleared for the redevelopment. A vacant 613.8 m2 lot will remain at the rear.

An extract from the Design Drawing for the proposed development showing the layout is provided as Figure 1 on page 6.

Key issues

The identified transport issues are:

- the access off Kenilworth St has been located as far away from the Guildford Rd intersection as possible,
- Guildford Road is a State Road that comes under the care and control of Main Roads WA. It is a Category 3* 'Primary regional road' in the Metropolitan Region Scheme. (Category 3 road means that the subject regional road reservation is not accurately defined or is subject to review by the agency that is responsible for planning of the regional road). Main Roads WA has advised of a long term proposal to upgrade Guildford Rd with modifications to the Kenilworth Intersection that will restrict this to left-in only as well as physically prevent right turns into the development site – other than with a 'PCI Right-turn IN option'.
- The City of Bayswater has advised of a proposal to install a road hump in Kenilworth St just north of Guildford Rd.
- WAPC Development Control Policy 5.1 (1998) addresses matters relating to the control of development adjacent to regional roads. A draft version of the above Policy has been published as *DRAFT DC Policy 5.1: Regional roads (vehicular access)* (4).

Both lots are zoned 'Service Station' within the City of Bayswater's Town Planning Scheme 24.

Background information

The **applicant** is very experienced with developing these types of service stations in South Australia, Northern Territory and Western Australia. The **consultant** has prepared TIA's for 10 similar types of developments in both WA and the NT and has undertaken video surveys of service stations with drive-thru retail facilities, as well as drive-thru coffee operations to inform decisions regarding the selection of appropriate trip generation rates and hourly profiles. The **consultant** undertook a video survey of the existing site and the Guildford Rd/ Kenilworth Ave intersection between 6.30 AM and 7.00 PM on 1st November 2022 to assist with determining existing traffic volumes, movements, and behaviours. A further site inspection was undertaken on 26 March 2025 to update this.

* Government Gazette No 27 Wednesday 18 March 1987.

Figure 2 – Development location and context

The three (3) external road layout scenarios, Existing, Main Roads WA widening and Main Roads WA widening with PCI Right-turn IN option, along with the associated access and egress routes for cars and the petrol tanker delivery vehicle are shown in Figure 3, Figure 4 and Figure 5 respectively on the following pages.

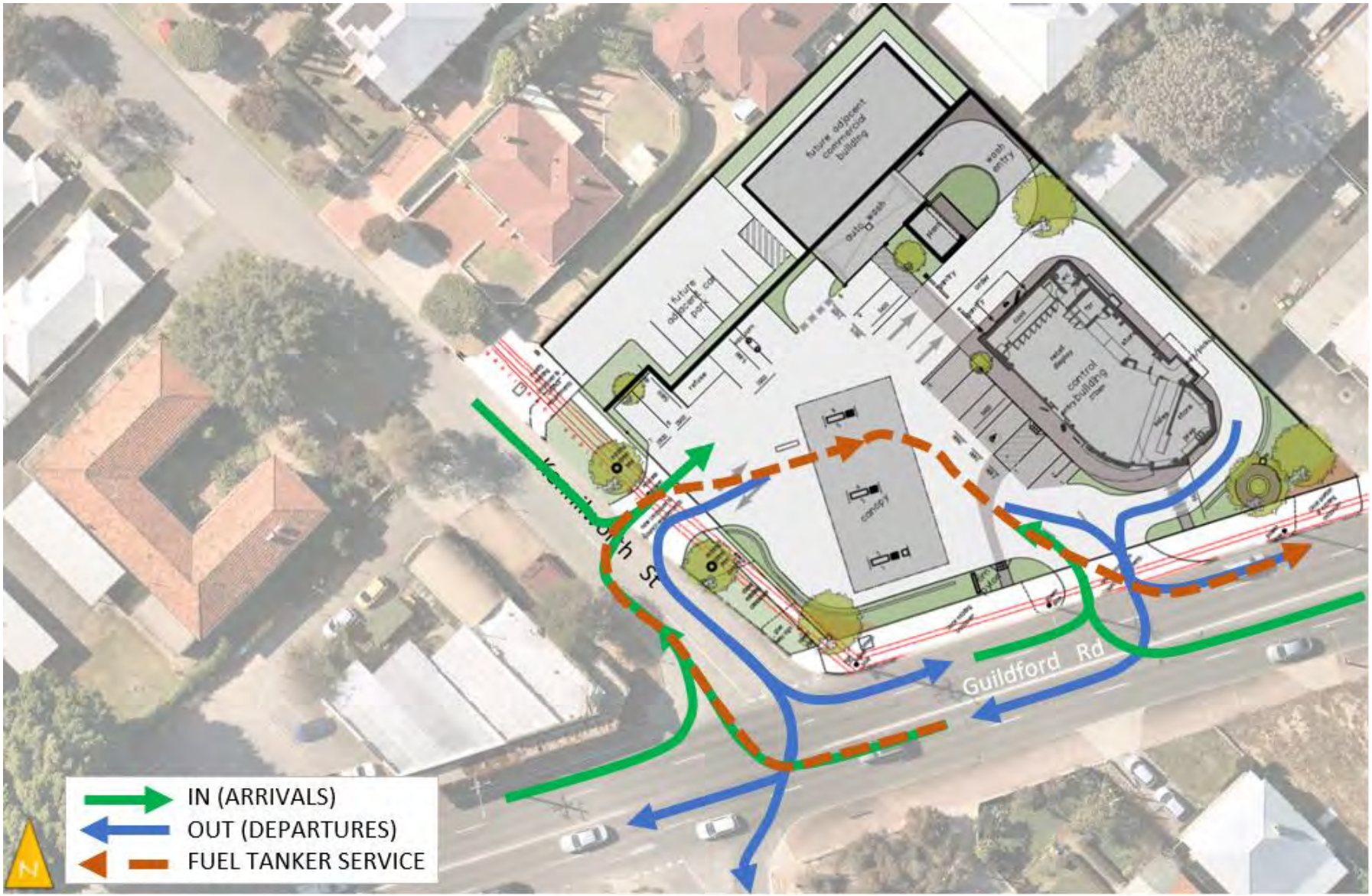


Figure 3 – Arrival & Departure Routes dictated by the proposed access driveways and restrictions with existing layout

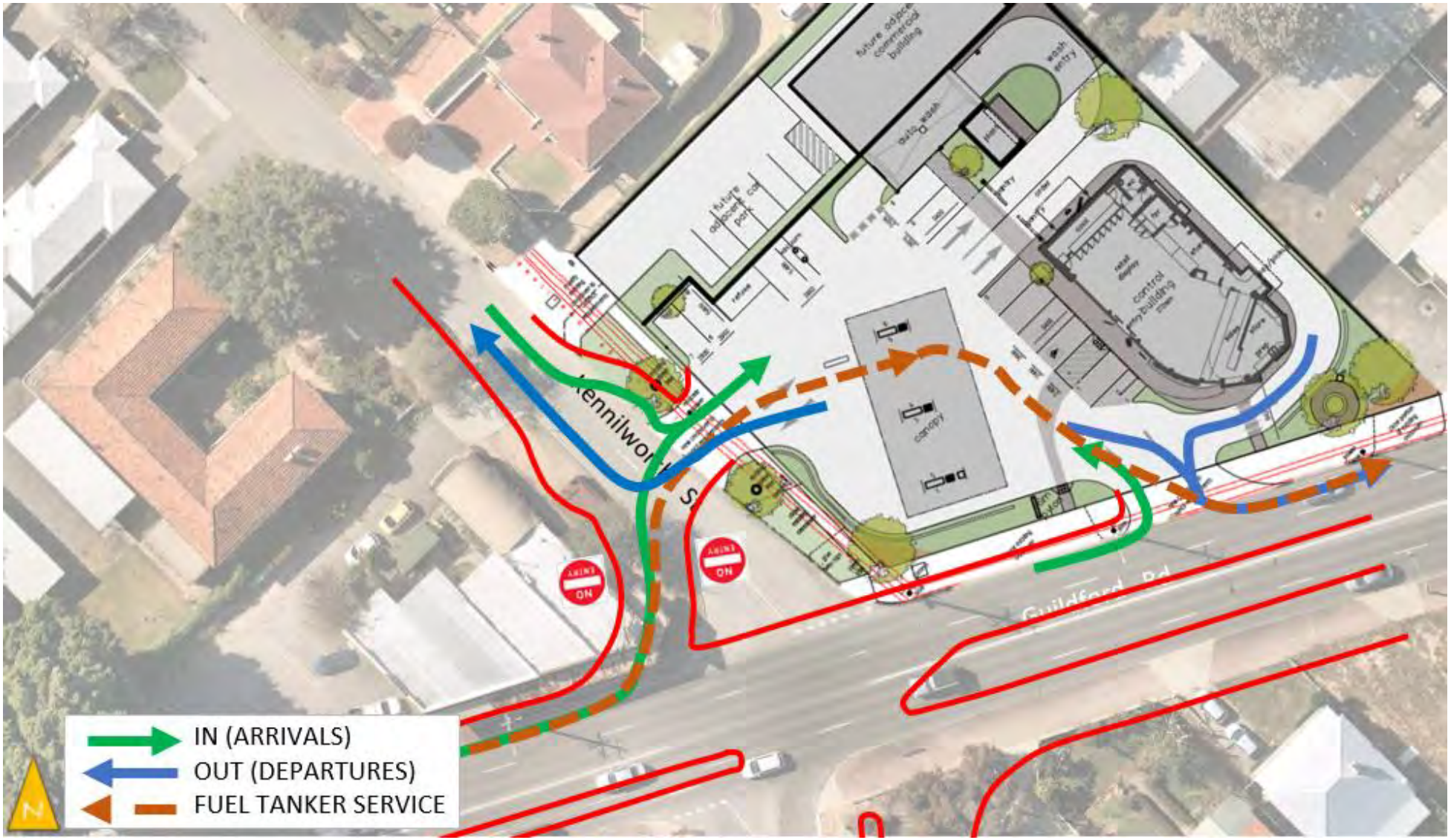


Figure 4 – Arrival & Departure Routes dictated by the proposed access driveways and restrictions with proposed Main Roads WA layout

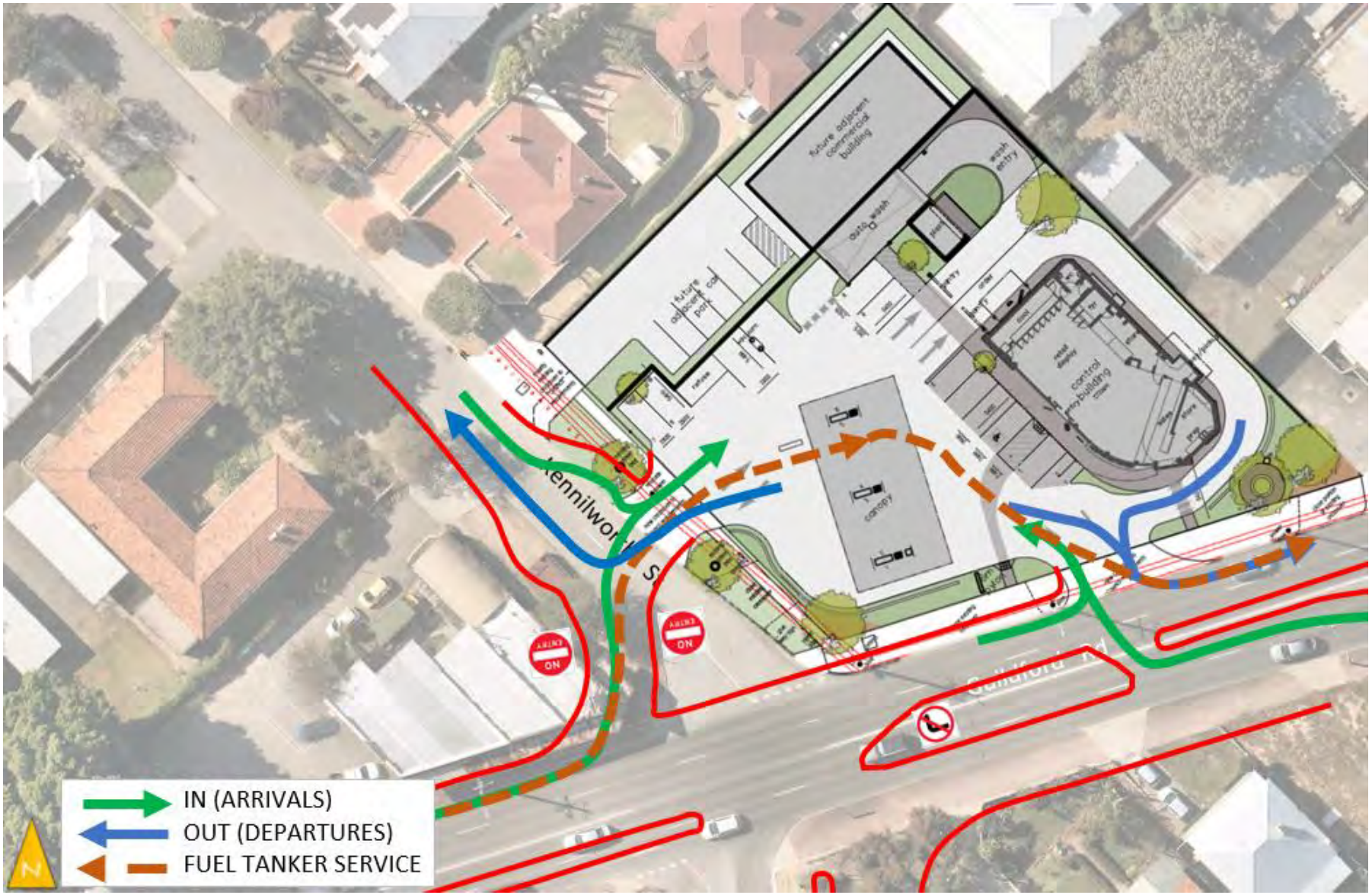


Figure 5 – Arrival & Departure Routes dictated by the proposed access driveways and restrictions with proposed Main Roads WA and PCI right turn in option

3 EXISTING SITUATION

Existing site uses.	Land area of approximately 2,810 m^2 (Lot 321: 1,239 m^2 | Lot 130: 1,571 m^2) with an old dwelling on Lot 131 and a disused Service Station building, sheds, and storage area on Lot 130.
Existing parking and demand.	The dwelling appears to be occupied. Parking of a single car was observed to occur on the verge. The remaining buildings appeared to be vacant with no observed parking on the hardstand area between these and Guildford Rd.
Existing access arrangements	6 m wide two-way access driveway off Kenilworth St approximately 7 m north of Guildford Rd, 14 m wide access driveway off Guildford Rd approximately 9 m east of Kenilworth St and a 16 m wide access driveway off Guildford Rd centred on the eastern lot boundary to provide shared access with the adjacent Lot 3 (single dwelling).
Existing site traffic.	Observed to be limited to the dwelling. Assumed to generate 0-2 trips during the morning and afternoon peak hours.
Surrounding land uses.	Surrounding land use is predominantly residential with a Café on the southwest corner of Kenilworth St/ Guildford Rd.
Surrounding road network.	The closest roads to the site are Guildford Road (State Road: Primary Distributor), Kenilworth St (Local Road: Access Street) and Darby St (Local Road: Access Street). The road hierarchy in the vicinity of the development site is shown in Figure 7 on page 16.
Traffic management on frontage roads.	Guildford Road is a 4-lane kerbed and sealed single carriageway with 2 lanes in each direction. It has a posted speed limit of 60 km/h. Kenilworth St is a 2-lane kerbed and sealed single carriageway with 1 lane in each direction and a Give Way sign and holding line at its intersection with Guildford Road. It is subject to the default urban speed limit of 50 km/h. There are 'No Stopping Road or Verge' signs on the south side for the length of the subject site.
Traffic flows on surrounding roads.	Existing peak hour traffic volumes are shown in Figure 13 on page 28 (AM) and Figure 15 on page 29 (PM). This data is derived from video surveys undertaken by Main Roads WA in April 2023 and the author in November 2022.
Traffic flows at major and/ or impacted intersections.	Shown in the analysis of transport networks in **Section 6** of this report.

Operation of surrounding intersections.

The existing (Apr 2023) operation of the Darby St/ Guildford Rd/ Kenilworth St intersection during the AM and PM peak hours is shown in the Level of Service Lane Diagrams from the SIDRA Intersection 10 traffic model prepared by the author, in Figure 6 below.

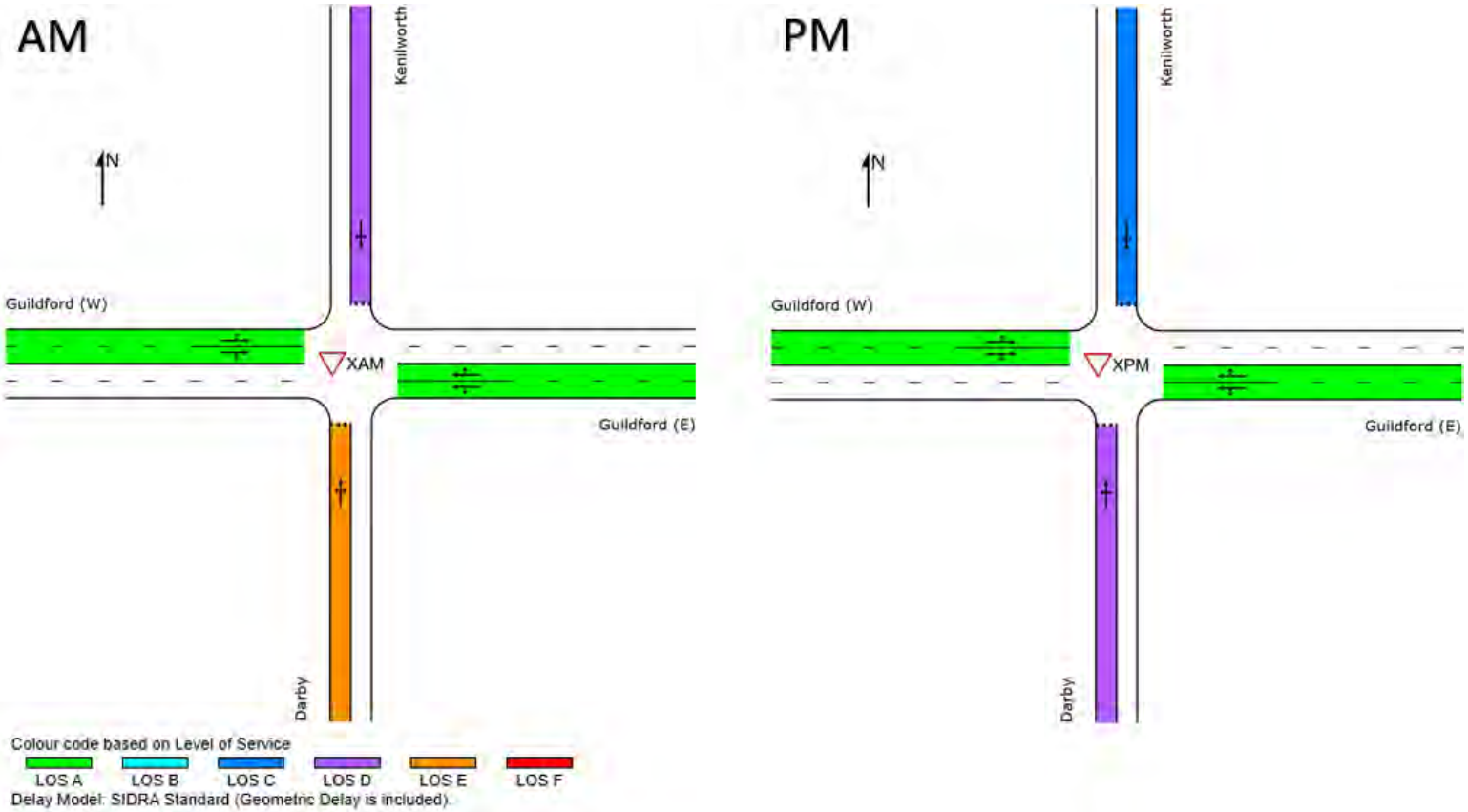


Figure 6 – Assessed existing Level of Service: Guildford Rd/ Kenilworth St (Apr 2023)

Peak hour traffic volumes into and out of Kenilworth St are relatively low, i.e., 29 vehicles, with most turning left into Guildford Rd. Volumes into and out of Darby St are much higher, i.e., 125 with approximately 50% turning right and 50% turning left. This results in up to 30 drivers turning right out of Darby St waiting approximately 2 minutes for a gap in traffic blocking drivers wishing to turn left, resulting in the LOS D performance shown in Figure 6 above.

Other performance criteria are shown in the analysis of transport networks in **Section 6** of this report.

Existing pedestrian/ cycle networks.

Existing bicycle networks are shown in Figure 8 on page 17. There are paths on both sides of Guildford Rd and Kenilworth St with an informal pedestrian crossing on Guildford Rd 76 m east of Kenilworth St (Median island with gap and grab rails and ramps on both sides).

Crash data.

There have not been any reported injury crashes at the Darby St/ Guildford Rd/ Kenilworth St intersection or any reported crashes at the existing access driveways to the subject site in the five-year period ending 31st December 2024.

There were two (2) property damage only crashes at the Guildford Rd/ Kenilworth intersection, 1 right angle and 1 rear-end crashes.

Two (2) injury (hospital) and six (6) property damage only crashes were reported at the Darby St/ Guildford Rd intersection.

A plot of all crashes in the vicinity of the subject site, is provided as Figure 9 on page 18.

Figure 7 – Surrounding road network, hierarchy, and nearest available traffic data (Average Monday to Friday Daily Volumes and % Heavy Vehicles)

Figure 8 – Path, cycle path, cycle routes and bus routes map in vicinity of the subject site

Figure 9 – All reported crashes in vicinity of the development site in the five-year period ending 31 December 2024

4 DEVELOPMENT PROPOSAL

Regional context.

Bayswater is located on the north-eastern side of the Swan River and is approximately seven kilometres from the Perth CBD. It is close to Maylands, Morley, and Embleton. Bayswater is a suburb in the City of Bayswater, which is colloquially known as the 'Garden City'. The inner metro suburb, which has a total land area of 10 square kilometres, began its major suburban development in the late 1880s.

Bayswater is a classic suburban environment close to urban conveniences. The Bayswater Train Station is a major feature of the suburb, which makes commuting around the Perth metro area very easy for locals. There are also plenty of schools within the area, and it is close to parks and other desirable amenities. The Morley Galleria, which is a major shopping centre, is a short drive away.

Guildford Road is a Primary Distributor road linking the inner-city suburb of Mount Lawley with Guildford in the north-east. The ten-kilometre-long road runs mostly parallel to the Swan River, on its northern side, and is part of State Route 51, which runs between Perth's CBD and Midvale. A plan to widen Guildford Road and its road reserve between East Pde and Tonkin Hwy through a planning scheme amendment were abandoned by the State Government in 2017 following opposition from local communities and a recommendation from the WAPC to peruse more modest improvements.

Proposed land uses.

The proposal is for a 3 bowser/ 6 fuelling point 'On the Run' (OTR) Service Station with an automatic drive-thru car wash, vacuum bays and a drive-thru food, drinks, grocery facility and 272 m^2 convenience store/ control building.

Table of land uses and quantities.

Land Use	Unit
Fuel Bowsers	3 bowsers
	6 filling points
Vacuum Cleaning	2 bays
Auto Wash	5 cars (1 wash, 4 queued)
Drive-Thru Retail	6 cars (1 service, 5 queued)
Control & Retail	1 272 m^2
Vacant Land	1 761 m^2
Parking	9 bays including 1 'disabled' and 2 EV + 2 M/C
Loading & Waste Collection	1 loading area

Table 2 – Proposed Land Uses

Access arrangements.	7.8 m wide two-way full access off Kenilworth St and an 9.6 m wide two-way access off Guildford Rd with an internal path to link the path and bus stops on Guildford Rd with the control building. Refer Figure 3, Figure 4 and Figure 5 on pages 10 to 12.
Parking provision.	9 parking bays, including 1 'disabled' plus 2 motorcycle bays, as shown in the Development Plan provided as Figure 1 on page 6. In addition to this, the site can accommodate 4 queued vehicles to the car wash and 5 queued vehicles to the drive-thru retail without impacting on internal movements and servicing.
End of trip facilities.	A bicycle parking rail is provided on right side of Control Building entrance next to the motorcycle bays.
Any specific issues.	Guildford Road is a State Road that comes under the care and control of Main Roads WA. It is a Category 3 'Primary regional road' in the Metropolitan Region Scheme. (Category 3 road means that the subject regional road reservation is not accurately defined or is subject to review by the agency that is responsible for planning of the regional road). Main Roads WA has advised of a long term proposal to upgrade Guildford Rd with modifications to the Kenilworth Intersection that will restrict this to left-in only as well as physically prevent right turns into the development site – other than with a 'PCI Right-turn IN option'. The City of Bayswater has advised of a proposal to install a road hump in Kenilworth St just north of Guildford Rd. WAPC Development Control Policy 5.1 (1998) addresses matters relating to the control of development adjacent to regional roads. A draft version of the above Policy has been published as *DRAFT DC Policy 5.1: Regional roads (vehicular access)*. (4)
Road network.	The road network, including classifications (hierarchy) and daily traffic volumes, is shown in Figure 7 on page 16.
Intersection layout and controls.	The layout of the Give-way controlled Darby St/ Guildford Rd/ Kenilworth St intersection is shown in photographs throughout this report.
Pedestrian/ cycle networks and crossing facilities.	There are no proposals or warrants to improve the existing pedestrian/ cycle networks or crossing facilities in the vicinity of the subject site, other than the wide median in Guildford Rd provided as part of the long term Main Roads WA project. The development includes an internal path linking the control building to the existing path and bus stops on Guildford Rd.
Public transport services.	There are bus stops on both sides of Guildford Rd within a 1-minute walk of the subject site. These two bus stops are served by Transperth High Frequency Buses 998 and 999 and regular Transperth Buses 48 and 55, with services throughout the day. (Refer Figure 8 on page 17). The nature of the proposed development, i.e., a Service Station, Car Wash and Drive-thru, suggests that public transport is only likely to be utilised by employees, not patrons.

5 INTEGRATION WITH SURROUNDING AREA

Surrounding major attractors/ generators.	Guildford Road, as a Primary Distributor road linking Perth CBD to Guildford, is the major attractor and generator of traffic past the site.
Committed developments and transport proposals.	Main Roads WA has advised of a long term proposal to upgrade Guildford Rd with modifications to the Kenilworth Intersection that will restrict this to left-in only as well as physically prevent right turns into the development site – other than with a 'PCI Right-turn IN option'. The City of Bayswater has advised of a proposal to install a road hump in Kenilworth St just north of Guildford Rd.
Proposed changes to land uses within 1.2 kms.	None identified.
Travel desire lines from development to these attractors/ generators.	Shown in Figure 3, Figure 4 and Figure 5 on pages 10 to 12.
Adequacy of existing transport networks.	The forecast increased volumes on the Give-way controlled Darby St/ Guildford Rd/ Kenilworth St intersection are minimal, i.e., between 0.3% and 0.5% of existing volumes. Refer **Section 6** for more details.
Deficiencies in existing transport networks.	The existing layout of Guildford Rd, with minimal lane widths of 3 m, lack of turning lanes at intersections with direct access to adjoining properties was identified as a 'deficiency' for this Primary Distributor Road prior to 2017, resulting in a proposal to widen the road reserve and undertake 'improvements' to the layout and intersections as a scheme amendment.
Remedial measures to address deficiencies.	Main Roads WA 'Guildford Road M42 Carriageway Pattern Darby St to Leake St 3.25 SLK to 4.85 SLK Drawing 9321-118'. This drawing has been provided to the author and applicant in good faith to guide development and aid discussions and understanding by interested parties. It is not for general publication and hence has not been reproduced in this TIA report. City of Baywater 'Low Cost Urban Road Safety Program, Maylands Central Precinct, Site 17 – Kenilworth St & Guildford Rd Drawing Q27052022-4-017' shows a proposal for a road hump in Kenilworth St located 14.10 m north of the Give Way holding line at Guildford Rd. This TIA assesses the proposed development with both of these remedial measures in place and has determined that it is compatible with these.

6 ANALYSIS OF TRANSPORT NETWORKS

Assessment years.

An assessment year has not been selected as there is no known date for the Main Roads WA widening project and no known modelling data for this. It is also noted that the widening project removes right turns into and out of the development site, hence the impact of increased traffic volumes on Guildford Rd will be less than that associated with right turn movements int and out of the site with existing volumes. The 'PCI Right-turn IN' option can be modelled and assessed when the likely date and traffic volumes for Guildford Rd widening project are known.

Time periods.

Peak traffic volumes are expected at the same time as the road network peak hours although there is also a mid-day peak associated with service stations (refer Figure 11 on page 27). A Main Roads WA video survey of the Caledonian Ave/ Guildford Rd STOP controlled T intersection indicates that the peak hours are 7.30 – 8.30 AM and 5.00 – 6.00 PM.

Development generated traffic.

An estimate of the hourly volumes of traffic by type, day and time of day has been undertaken using a combination of data from traffic surveys of similar land uses (i.e., the drive-thru retail facility on the corner of Great Eastern Hwy and Fauntleroy Ave) and published and accepted trip generation databases, as shown in Figure 11 on page 27. In summary this indicates forecast trips of up to 116 in the morning peak hour and up to 87 in the afternoon peak hour. It is estimated that up to 70% of these trips will be from pass-by traffic on Guildford Road and therefore the forecast additional trips are 35 in the morning peak hour and 26 in the afternoon peak hour.

Distribution & assignment of generated traffic.

The distribution (Arrival/ Departure volumes) and assignment of traffic to the road network has been undertaken by allocating 90% of generated traffic to the eastbound route on Guildford Rd and 10% to the westbound route, on the basis that the vast majority of drivers on main roads tend to use service stations on the left side of the road they are travelling on.

The existing observed delays for drivers turning right into or out of Kenilworth St and Darby St suggests that this would also discourage, but not prevent, use of the service station by westbound drivers on Guildford Rd, hence the 10% allocation for this.

The adopted Distribution (Arrival/ Departure split of 50%/ 50%) and Trip Assignment to the external road network, along with existing volumes, is shown in Figure 13 to Figure 16 on pages 28 to 29 for the mid-week AM and PM peak hours.

Parking supply and demand.

9 parking bays, including 1 bay designated for use by a person with a disability with an adjacent shared space, 2 motorcycle parking bays and a rail for the secure parking of up to 2 bicycles next to the Control Building entrance.

The indicated minimum parking bay requirement in the City of Bayswater Local Planning Scheme No 24 (6) is 8 bays for a service station and 6 bays per 100 m^2 for a Convenience Store. In this instance the demand for parking for the convenience store is less due to the provision of a drive-thru facility. The GFA of the control building is 272 m^2, suggesting a requirement for 16 bays. Assuming 20% of parking demand (based on the drive-thru facility) this results in a demand for 4 bays. On this basis, it has been assessed that parking provision of 9 bays for the site, as well as queueing space for 6 vehicles at the drive-thru retail and 5 vehicles at the drive thru car wash, clear of internal movement areas, is adequate for the demand, i.e., 9 + 6 + 5 = parking space for 20 cars provided.

Base and 'with development' traffic flows.

The assessed Base (2023) volumes and forecast OTR volumes through each intersection are shown in Figure 13 and Figure 14 on page 28 and Figure 15 and Figure 16 on page 29 for the mid-week AM and PM peak hours respectively.

Analysis of development accesses.

An assessment of the arrival and departure routes as well as the swept paths of the B99 Design Vehicle (largest car) and 16.9 m Semi-trailer Design Vehicle (Fuel Delivery Tanker) has been undertaken and are shown in Figure 21 to Figure 25 in **Appendix A**.

Main Roads WA has indicated that the swept path assessments should include a 19 m Semi Trailer servicing the site, with all vehicles assessed with 500 mm clearance to kerbs.

The proponent has indicated that it is intended to use a 16.9 m semi railer for fuel deliveries as this vehicle has a similar fuel loading capacity as a 19 m semi-trailer but has greater manoeuvrability when servicing a number of sites across the metropolitan area due to some of these sites having already been approved and developed that are difficult to access with a 19 m semi-trailer. An example of this is the small BP Service Station on West Coast Drive that was designed and approved for servicing by a 15 m Toll Tanker Refuelling Vehicle with a 300 mm clearance envelope (6), as shown in Figure 10 on the following page. The use of smaller vehicles with similar capacity should be encouraged to reduce the impacts of large vehicles in urban areas as these larger vehicles often perform non-lane compliant turns and overrun corners, causing damage to kerbs and paths that consequently present a hazard to other road users.

The proponent has also stated that they are willing to agree to a development condition limiting deliveries to vehicles no bigger than a 16.9 meter semi-trailer.

Whilst it is acknowledged that Austroads uses a 500 mm clearance to kerbs in their guides and turning templates (7), these documents also acknowledge that this offset is "*desirable but need not be provided for local streets in urban areas where space is restricted*". It is also noted that although vague at this stage, the Main Roads WA road widening proposals do not appear accommodate the swept path of a 19 m semi-trailer turning left out of Guildford Rd into Kenilworth St, further supporting the desire to use a smaller 16.9 m fuel tanker to service the site.

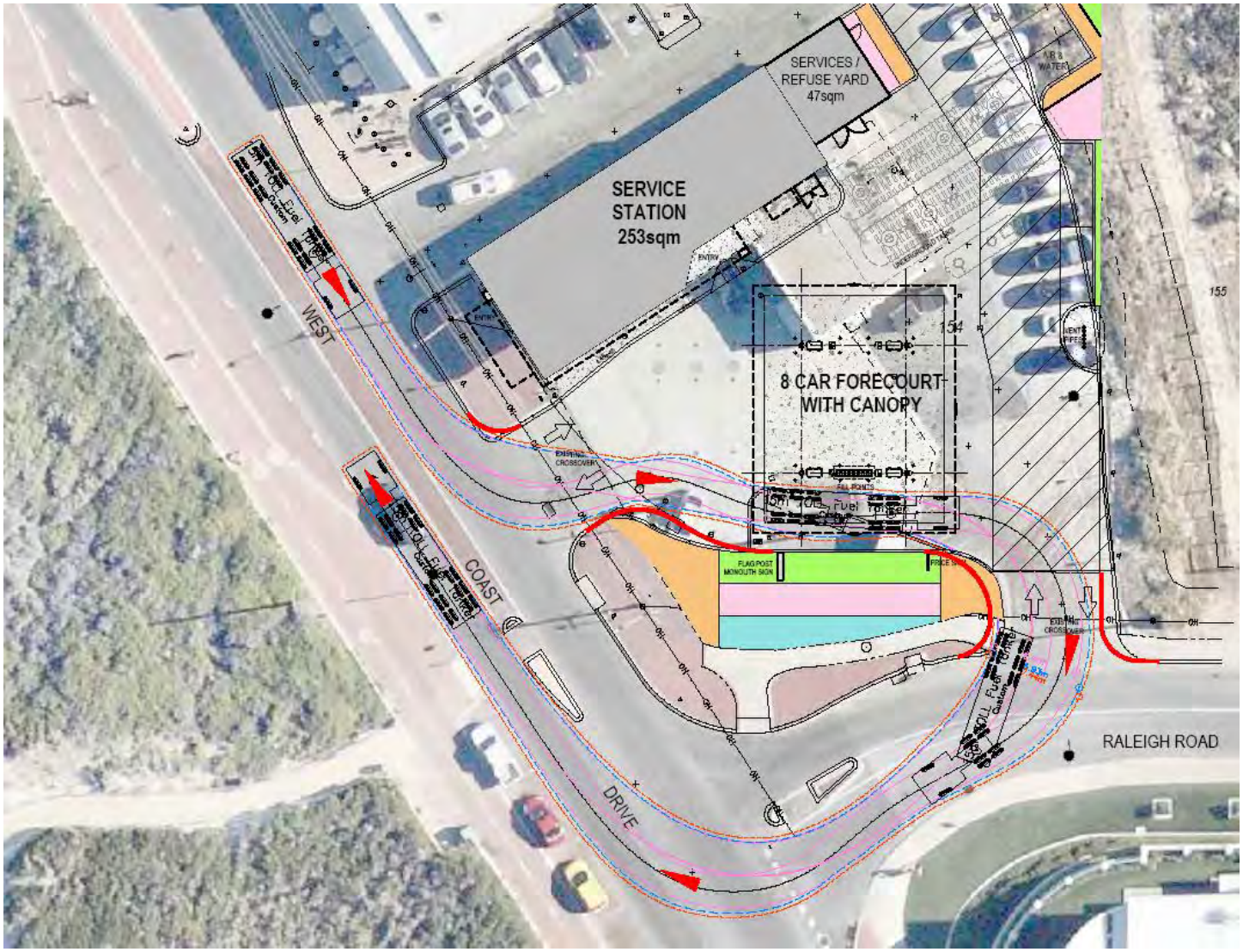


Figure 10 – Example of BP Sorrento Service Station approved for servicing by a 15 m semi-trailer based on swept path templates with a 300 mm clearance envelope.

Impact on surrounding roads.

The *WAPC Guidelines* indicate that an intersection is generally considered to be materially affected if flows on any leg increase by more than 10% or any individual movement by more than 20%. Analysis of the forecast flow and movement increases has revealed that whilst the forecast increase for any one movement out of Kenilworth St at Guildford Rd is low, i.e., 0-1 vehicles, the existing low volumes results in a technical increase of 20% for the right turn movement out, as shown in Figure 14 on page 28 and Figure 16 on page 29.

Based on the above, the existing and forecast traffic volumes at the Guildford Rd/ Kenilworth/ Darby St intersection have been assessed in a SIDRA Intersection 10 traffic model. This has revealed that the forecast volumes will not have a noticeable impact on the performance of the intersection as the largest impact is an increase of 4.8 seconds in average delay, as shown in Table 3 on the following page.

It is noted that the Darby St approach to Guildford Rd currently performs with a Level of Service of F during the morning peak hour in the SIDRA Summary Reports. A review of the data indicates that this will continue to operate at this level with the proposed development, with the average delay increasing from 56.5 seconds for the right turn movement to 61.3 seconds. This will reduce to less than LoS F when Kenilworth St is cul-de-saced as part of the Main Roads WA widening project.

	Right out of Kenilworth St into Guildford Rd AM Peak Hour			
	Deg. Satn (v/c)	Aver. Delay (s)	LoS	95% BoQ (m)
Without Development	0.092	46.4	E	2.4
With Development	0.173	49.4	E	4.9
Change	**0.081**	**3.0**	**Same**	**2.5**

	Right out of Darby St into Guildford Rd AM Peak Hour			
	Deg. Satn (v/c)	Aver. Delay (s)	LoS	Ave BoQ (m)
Without Development	0.410	56.5	F	11.0
With Development	0.436	61.3	F	11.7
Change	**0.026**	**4.8**	**Same**	**0.7**

	Right out of Kenilworth St into Guildford Rd PM Peak Hour			
	Deg. Satn (v/c)	Aver. Delay (s)	LoS	Ave BoQ (m)
Without Development	0.064	35.3	E	1.7
With Development	0.112	36.1	E	3.3
Change	**0.048**	**0.8**	**Same**	**1.6**

	Right out of Darby St into Guildford Rd PM Peak Hour			
	Deg. Satn (v/c)	Aver. Delay (s)	LoS	Ave BoQ (m)
Without Development	0.311	39.5	E	9.1
With Development	0.339	40.9	E	10.0
Change	**0.028**	**1.4**	**Same**	**0.9**

Table 3 – Darby St/ Guildford Rd/ Kenilworth St intersection performance criteria assessment

Refer Table 4 on page 30 for Intersection Performance Criteria descriptions used in the SIDRA Intersection 10 modelling software.

Refer **Appendix B** for SIDRA Intersection 10 figures and data.

Impact on intersections.

Refer previous comment (the Darby St/ Guildford Rd/ Kenilworth St intersection is the only impacted intersection).

Impact on neighbouring areas.

The two lots are already zoned 'Service Station' and there was a service station previously located on one of the two lots. The traffic impacts on Guildford Rd is moderate due to 70% pass-by patronage, i.e., 35 additional trips in the morning peak hour and 26 in the afternoon peak hour. This is around 1 trip per 2 minutes and is defined as a 'moderate impact' by the WAPC.

Road Safety.	Refer **Section 7**.
Public transport access.	Refer **Section 4**.
Pedestrian & Cycle access/ amenity.	There are paths on both sides of Guildford Rd and Kenilworth St with an informal pedestrian crossing of Guildford Rd 76 m east of Kenilworth St (Median island with gap and grab rails and ramps on both sides).
Traffic Management Plan.	Not applicable.
Site specific issues.	Guildford Road is a Category 3 'Primary regional road' in the Metropolitan Region Scheme. WAPC Development Control Policy 5.1 (1998) addresses matters relating to the control of development adjacent to regional roads. A draft version of the above Policy has been published as *DRAFT DC Policy 5.1: Regional roads (vehicular access).* (4) Section 3.3.1 of the above DRAFT Policy states "*On regional roads not constructed or planned to freeway standards, there is a general presumption on traffic and safety grounds against the creation of new driveways or increased use of existing accesses to these roads. Where alternative access is or could be made available from side or rear streets or from rights-of-way or laneways, no access shall be permitted to the regional road unless special circumstances apply.*" Section 3.3.4 states "*The types of development that would be allowed access to a regional road include large traffic generators such as major shopping, recreation or community centres*." The proposed development currently has two access driveways off Guildford Rd for traffic entering and leaving in all directions. The proposed development reduces this to one access driveway. Assessment of the performance of the single access driveway off Guildford Rd with the forecast traffic volumes has been undertaken within the SIDRA 10 model. This indicates that it, and Guildford Rd, are expected to perform at a good level with spare capacity, as shown in Figure 18 and Figure 19 on pages 32 to 33.

Source	Adopted Trip Generation Rate	Units	Land Use's Peak	AM Distribution IN	AM Distribution OUT	PM Distribution IN	PM Distribution OUT	Pass-By
ITE	13.86 per 1 Fuel Point	6	83	50%	50%	51%	49%	70%
i3 surveys	54 per 1 Drive-thru facility	1	54	50%	50%	50%	50%	70%
			137					

Midweek Hourly Profile (%)															
6-7	7-8	8-9	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
84%	74%	80%	87%	90%	98%	100%	84%	79%	85%	91%	88%	75%	50%	55%	58%
80%	100%	80%	66%	60%	50%	50%	50%	25%	20%	20%	25%	20%	10%	10%	10%

Midweek Hourly Profile (Trips)															
Time of Day	6-7	7-8	8-9	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
SS+ Car Wash + Store	70	62	67	73	74	81	83	70	66	71	76	73	62	42	45	48
Proposed Drive-thru	43	54	43	36	32	27	27	27	14	11	11	14	11	5	5	5
TOTAL	113	116	110	108	107	108	110	97	79	82	86	87	73	47	51	54
		AM					Dev					PM				

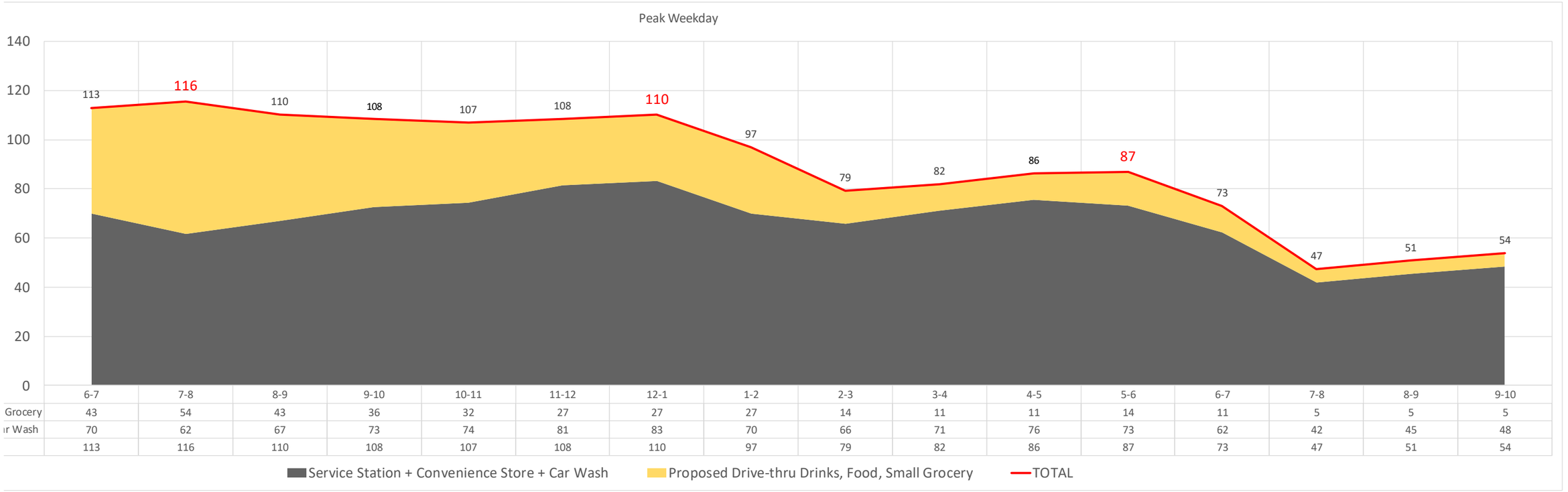


Figure 11 – Assessed trip generation by land use – including hourly profiles and assessed development peak volumes of 116 in the morning and 87 in the afternoon

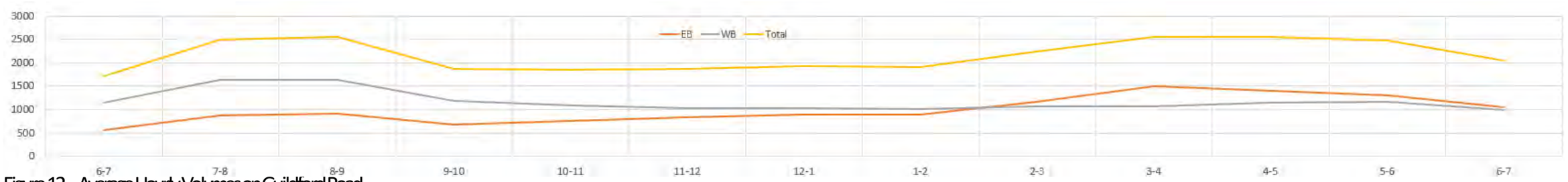


Figure 12 – Average Hourly Volumes on Guildford Road

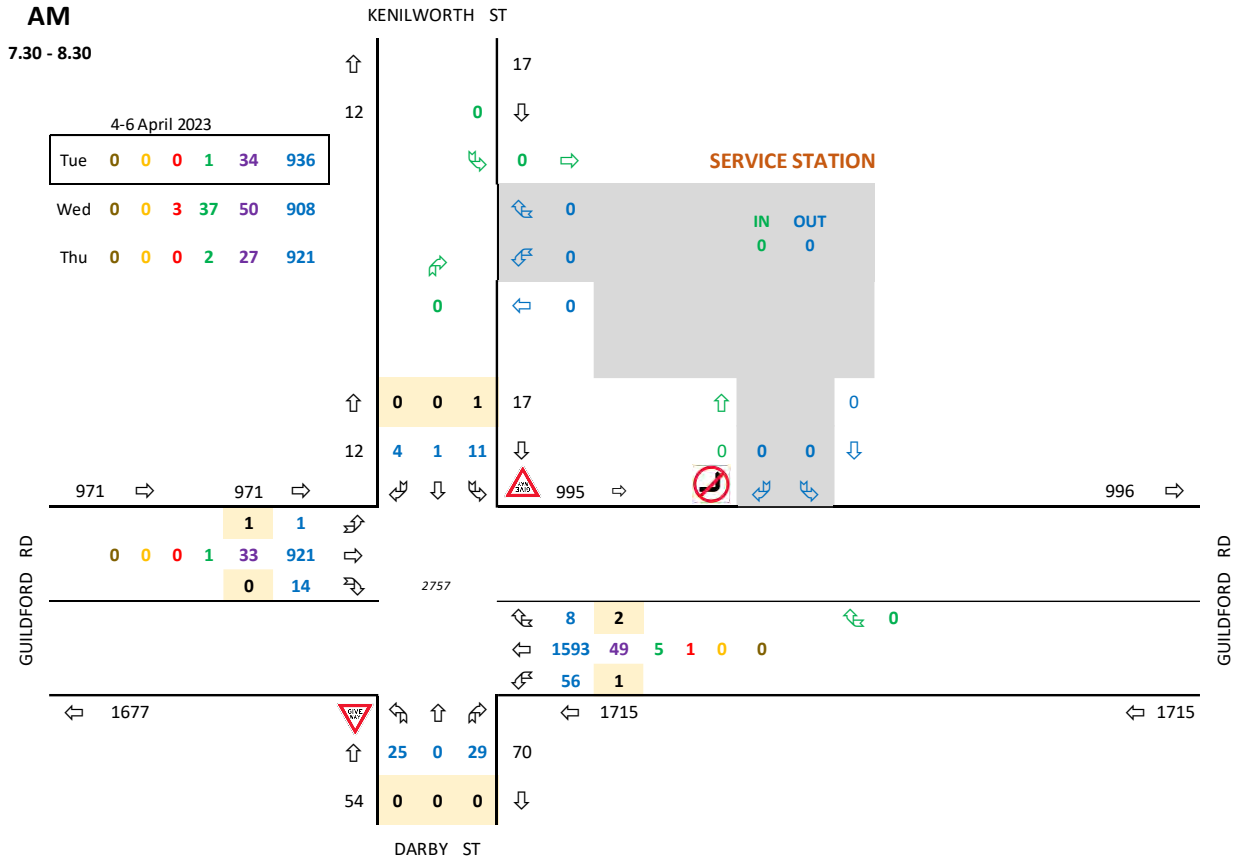


Figure 13 – Existing Volumes: AM Peak Hour (0730-0830)

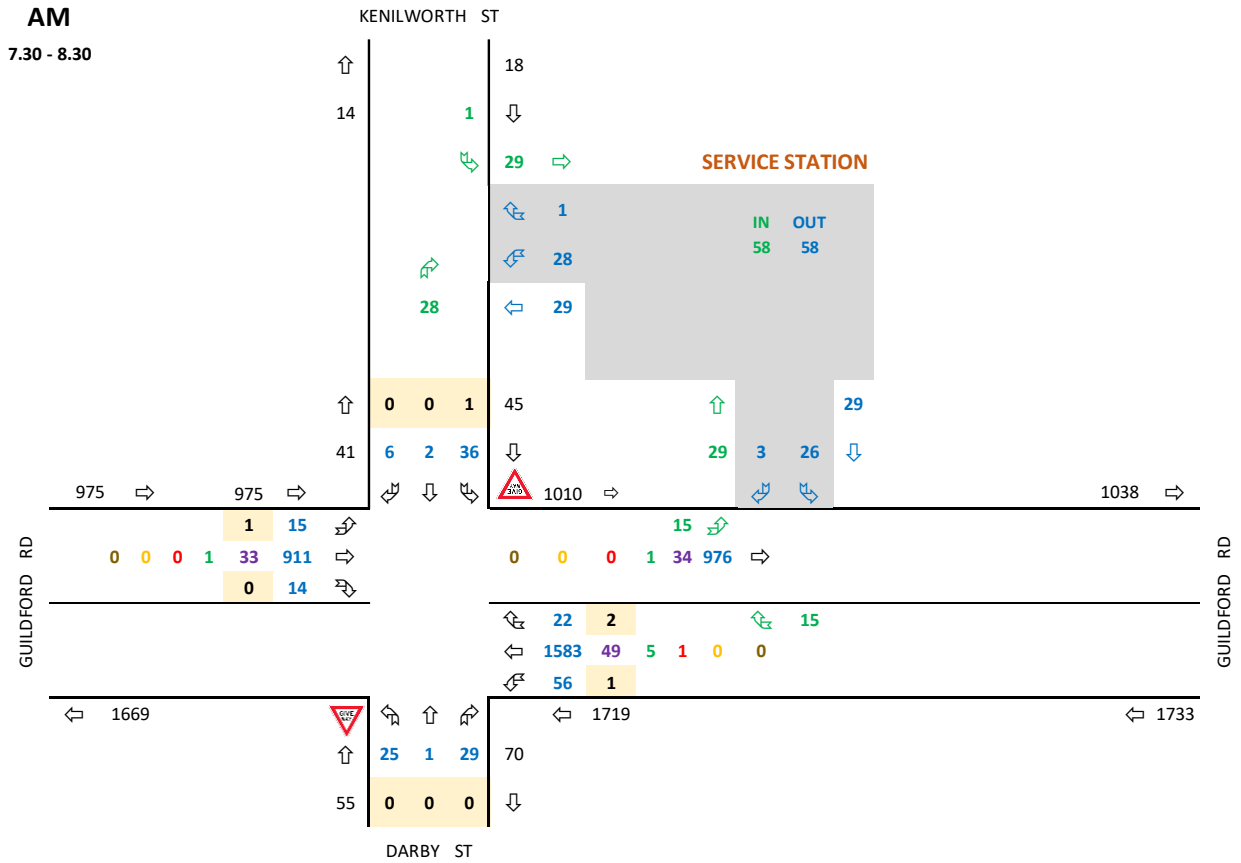


Figure 14 – Forecast trip generation, distribution, and assignment: AM Peak Hour (0730-0830)

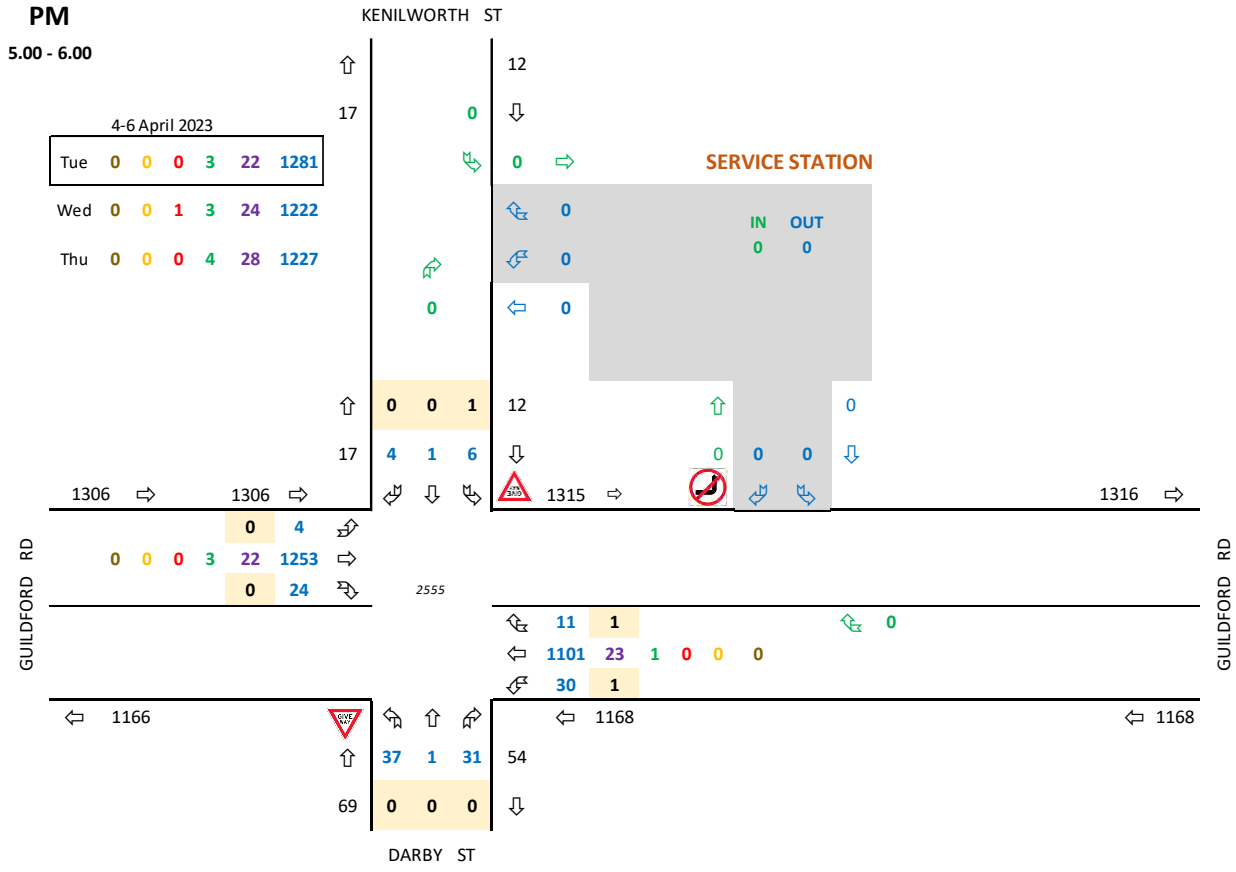


Figure 15 – Existing Volumes: PM Peak Hour (1700-1800)

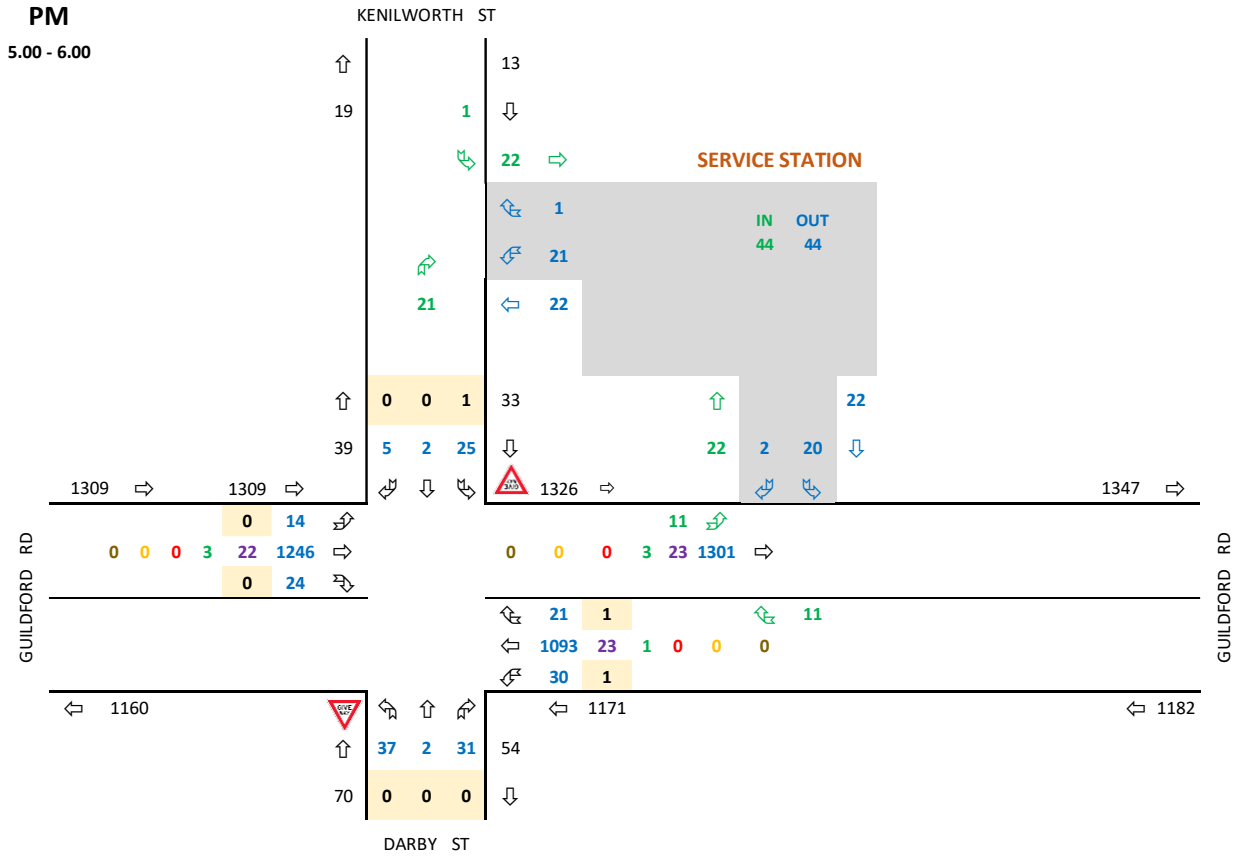


Figure 16 – Forecast trip generation, distribution, and assignment: PM Peak Hour (1700-1800)

Degree of Saturation (DoS) Volume/ Capacity Ration (v/c)		LoS	Average Delay per vehicle (d) in seconds				v/c Range	Performance Comments
			Unsignalised intersections	Roundabouts	Signalised intersections	All (RTA)		
< 0.6	⇨	A	d ≤ 10	d ≤ 10	d ≤ 10	d ≤ 14.5	≤ 0.44	**Good operation and plenty of spare capacity** *Stable free flow conditions where drivers are able to select desired speeds and to easily manoeuvre within the traffic stream.*
		B	10 < d ≤ 15	10 < d ≤ 20	10 < d ≤ 20	14.5 < d ≤ 28.5		
		C	15 < d ≤ 25	20 < d ≤ 35	20 < d ≤ 35	28.5 < d ≤ 42.5	0.45 - 0.64	**Acceptable delays and spare capacity** *Stable flow but most drivers are restricted to some extent in their ability to select their desired speed and to manoeuvre within the traffic stream.*
0.6 - 0.7	⇨							
0.7 - 0.8	⇨	D	25 < d ≤ 35	35 < d ≤ 50	35 < d ≤ 55	42.5 < d ≤ 56.5	0.65 - 0.84	**Acceptable delays** (Expected typical peak hour conditions) *Close to the limit of stable flow. All drivers are restricted in their ability to select their desired speed and to manoeuvre within the traffic stream. Small increases in traffic flow may cause operational problems.*
0.8 - 0.9	⇨							
0.9 - 1.0	⇨	E	35 < d ≤ 50	50 < d ≤ 70	55 < d ≤ 80	56.5 < d ≤ 70.5	0.85 - 1.04	**Near capacity and senstive to disturbances in flows** *Traffic volumes are close to capacity and there is virtually no freedom to select desired speeds. Flow is unstable and minor disturbances within the traffic stream will cause breakdown leading to long queues and delays.*
> 1.0	⇨	F	50 < d	70 < d	80 < d	70.5 < d	> 1.25	**At Capacity** - Requires other control mode and/ or additional lanes *In the zone of forced flow where the amount of traffic approaching the point under consideration exceeds that which can pass. Flow breakdown occurs and extensive queues and delays result.*

Table 4 – SIDRA 9.1 Intersection performance criteria and descriptions

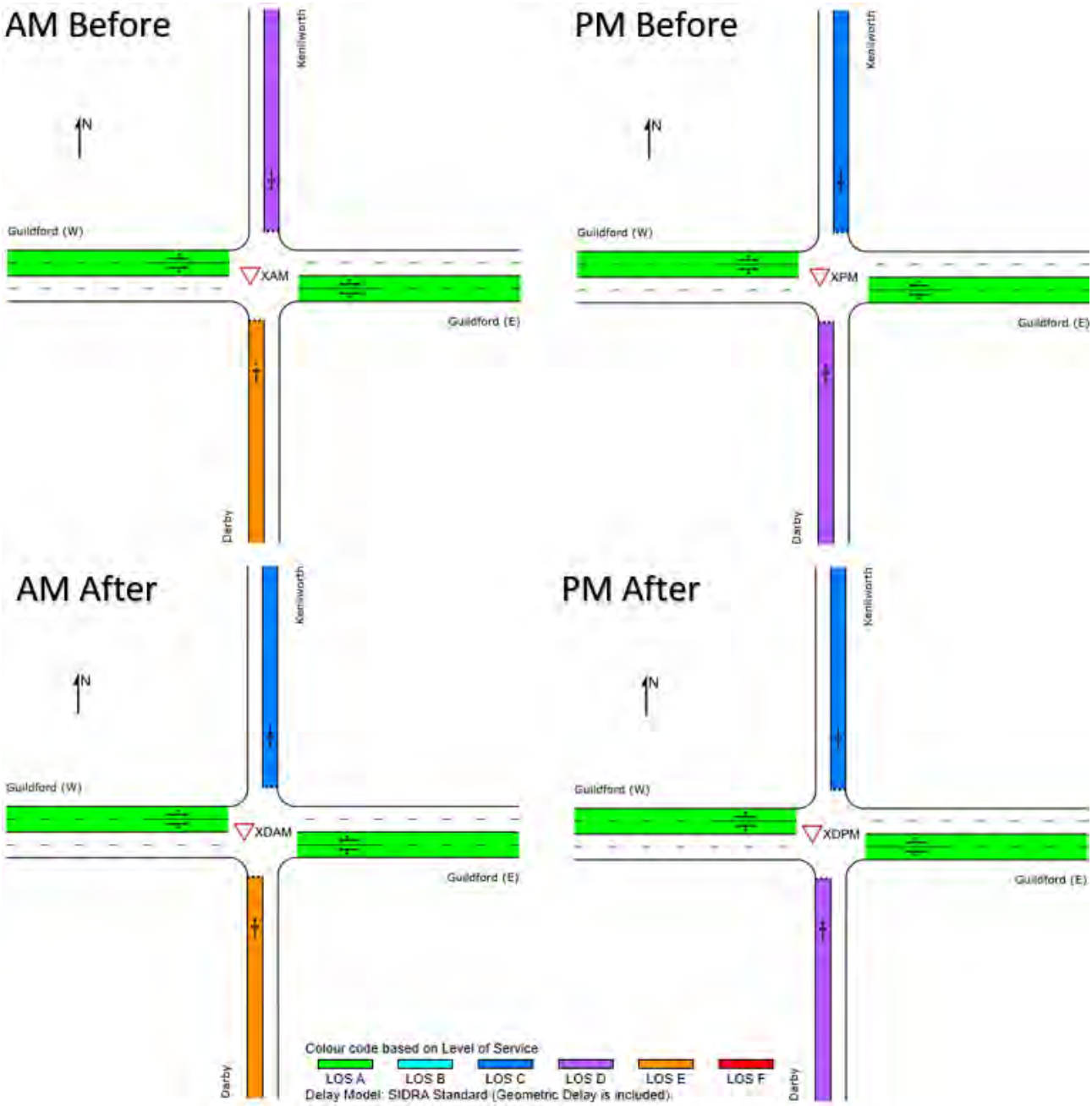


Figure 17 – Forecast LoS Performance Darby St/ Guildford Rd/ Kenilworth St during the road network AM and PM Peak Hours before and after development

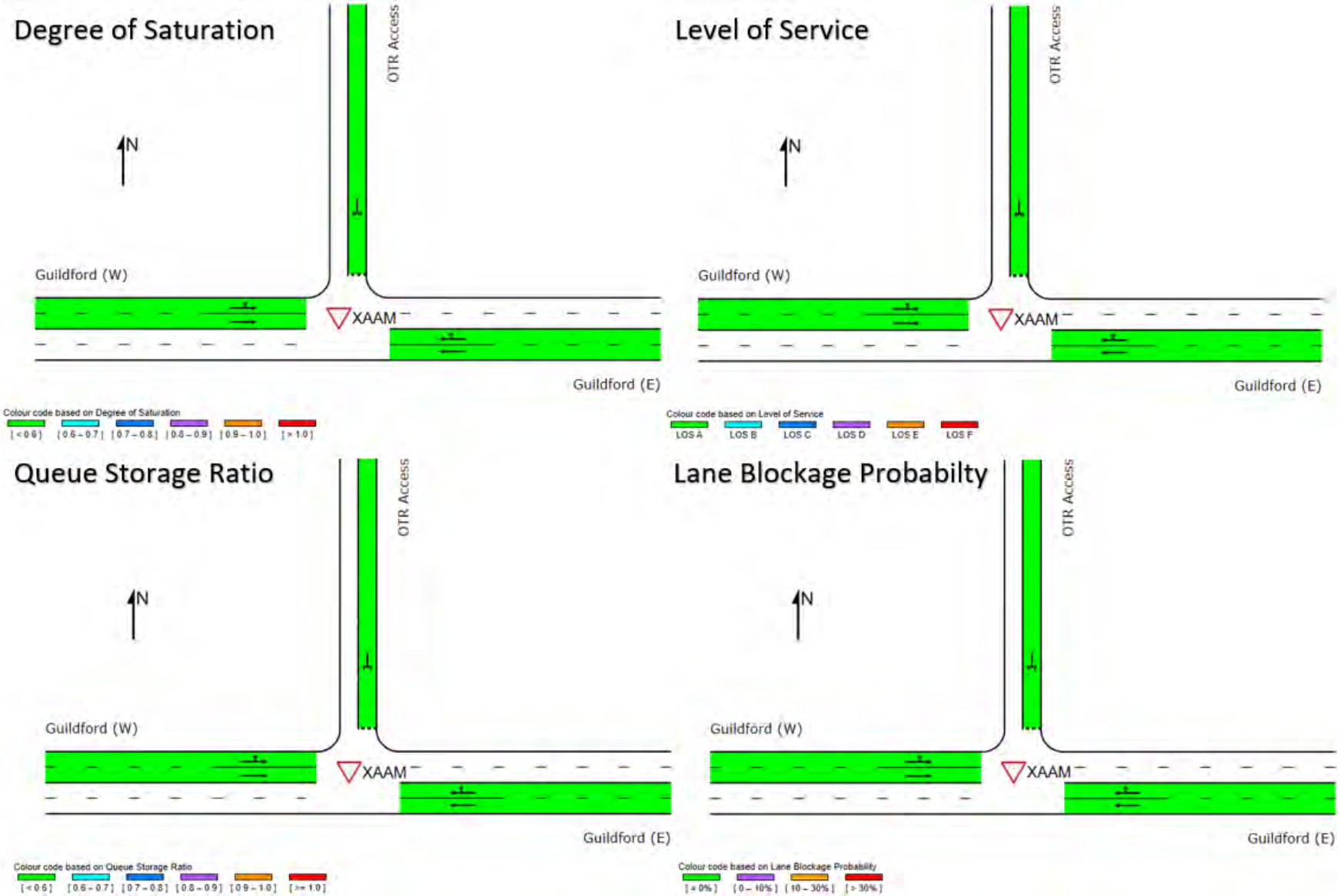


Figure 18 – Forecast Performance of OTR Access off Guildford Road during the road network AM Peak Hour

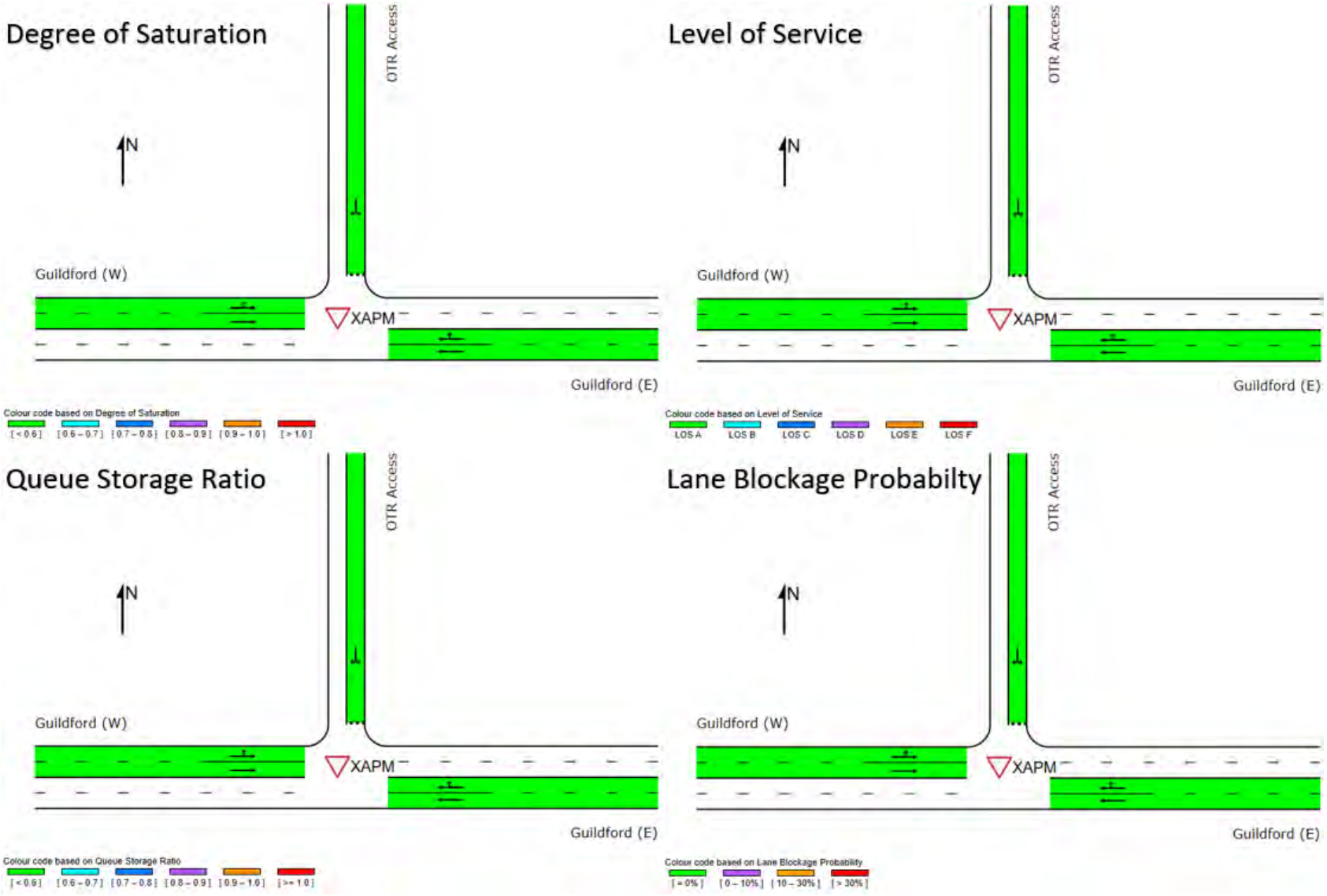


Figure 19 – Forecast Performance of OTR Access off Guildford Road during the road network PM Peak Hour

7 SAFETY

As indicated in **Section 3**, there have not been any reported injury crashes at the Darby St/ Guildford Rd/ Kenilworth St intersection or any reported crashes at the existing access driveways to the subject site in the five-year period ending 31st December 2024.

The required sight distance at the access driveway on Guildford Road is a minimum of 83 m, based on its 60 km/h speed limit and Figure 3.3 (Sight Distance Requirements at Access Driveway Exits) of *AS 2890.2* (7).

Main Roads WA has requested that the sight distance assessment should be undertaken in accordance with Safe Intersection Sight Distance (SISD) of Main Roads Supplement to Austroads Guide to Road Design Part 4A (9) rather than Figure 3.3 of *AS 2890.2*, i.e. assessed as an intersection instead of an access driveway.

This results in an SISD requirement of 140 m, measured a minimum distance of 3 m from the projected kerb line of Guildford Rd at this access driveway, as shown in

$$SISD = \frac{D_T \times V}{3.6} + \frac{V^2}{254 \times (d + [0.01 \times a])}$$

$SISD$	=	Safe Intersection Sight Distance	
D_T	=	Decision Time (s) = observation time (3s) + reaction time (1.5 alert, 2.0-2.5 other)	= 5.0
V	=	Vehicle operating (85%ile) speed (km/h)	= 70
d	=	coefficient of deceleration (night car: 0.46)	= 0.46
a	=	longitudinal grade (%: +uphill, -downhill)	= 0

$$SISD = \frac{5.00 \times 70}{3.6} + \frac{4900}{254 \times (0.46 + [0.01 \times 0.00])}$$

$$\mathbf{SISD = 140\ m}$$

Calculation 1 – SISD at full movement crossover off Guildford Rd based on Equation 2 of AGRD04A-23 (10)

An assessment of the available sight lines at the proposed access driveway locations on Guildford Road on site has indicated that they exceed 300 m in each direction, as shown in Photograph 2 and Photograph 3 on the following page and Figure 20 on page 36.

Photograph 2 – Looking right from OTR Access location at a height of 1.15 m 3 m back from the kerb

Photograph 3 – Looking left from OTR Access location at a height of 1.15 m

Figure 20 – Overlay of requested SISD of 140 m measured 3 m back from the kerb extension of Guildford Rd

8 CONCLUSIONS

Key component	Assessment
The proposed internal transport networks with respect to accessibility, circulation, and safety for all modes, i.e., vehicles, public transport, pedestrians, and cyclists,	All assessed as suitable.
The level of transport integration between the development proposal and the surrounding land uses,	Assessed as appropriate.
The impacts of the traffic generated by the development proposal on the surrounding land uses, and	The vast majority of generated trips will be to and from Guildford Rd, a Primary Distributor Rd with negligible additional trips on neighbouring local roads.
The impacts of the traffic generated by the development proposal on the surrounding transport networks.	Assessed as 'Moderate', i.e., forecast additional trips are 35 in the morning peak hour and 26 in the afternoon peak hour, i.e., less than 1 trip per minute.

References

1. **Austroads.** *Guide to Traffic Management Part 12: Integrated Transport Assessments for Developments.* Austroads. Sydney, NSW : Austroads Ltd, April 2020. p. 113, Guide to Traffic Management. ISBN 978-1-925854-86-2.

2. **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.

3. **Government of Western Australia.** *Planning and Development (Local Planning Schemes) Regulations 2015.* Perth : Government of Western Australia, As at 01 Jul 2016. p. 205. Version 00-d0-02.

4. **Western Australian Planning Commission.** *Development Control Policy 5.1 | Regional Roads (Vehicular Access).* Perth WA : Western Australian Planning Commission, June 1998. WAPC DC 5.1.

5. **City of Bayswater.** *Local Planning Scheme No 24.* Bayswater : City of Bayswater, May 2022. p. 188. Updated to include AMD 88 GG 20/05/2022.

6. **Porter Consulting Engineers.** *Trafic Impact Assessment | BP Sorrento Service Station Redevelopment.* Perth : Porter Consulting Engineers, 10 June 2019. p. 20, TIA. PCE 19-03-034.

7. **Austroads.** *Austroads Design Vehicles and Turning Path Templates Guide.* Sydney : Austroads Ltd, 2023. p. 23, May 2023 Edition. ISBN 978-1-922700-89-6 .

8. **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.

9. **Government of Western Australia.** *Main Roads Supplement to the Austroads Guide to Road Design | Part 4A: Unsignalised and Signalised Intersections.* Main Roads WA. Perth : Main Roads WA, July 2025. p. 24. D24#859875.

10. **Austroads.** *Guide to Road Design Part 4A: Unsignalised and Signalised Intersections.* Sydney NSW : Austroads Ltd, 2023. p. 193, Guide to Road Design. ISBN 978-1-925451-73-3.

APPENDIX A SWEPT PATH ASSESSMENTS

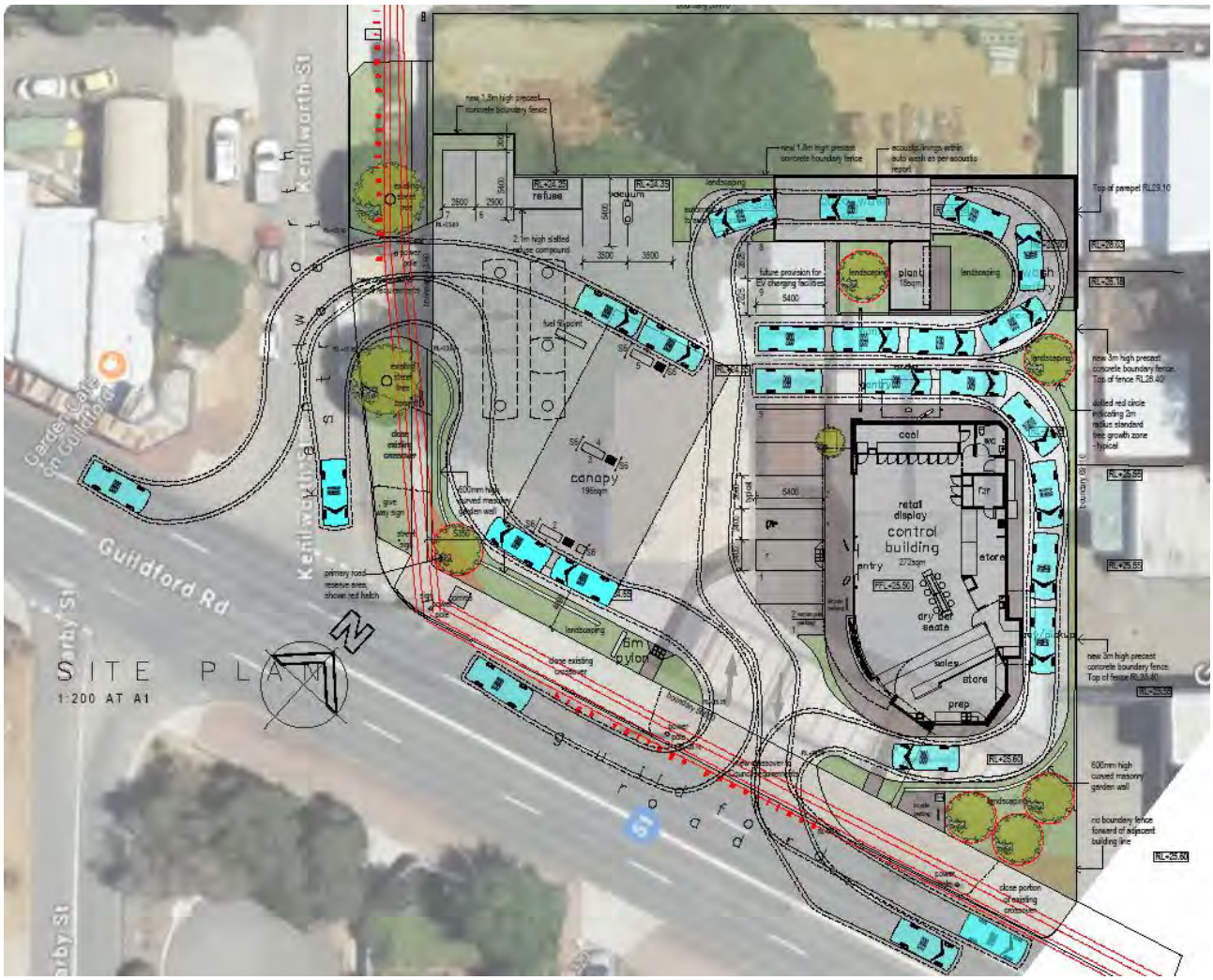
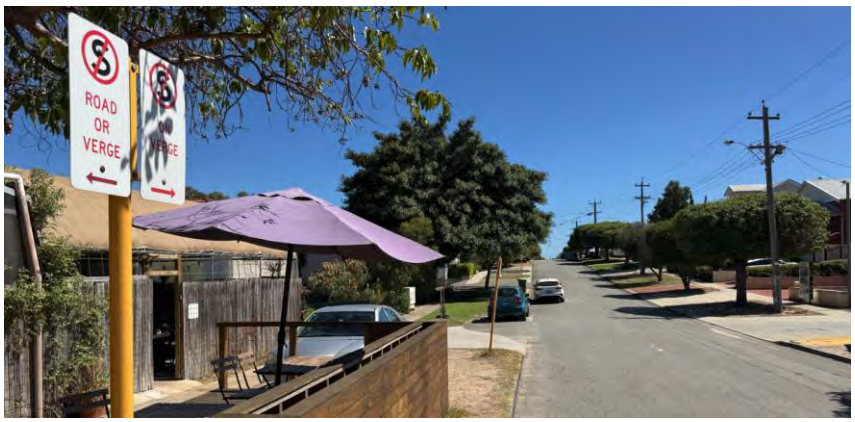


Figure 21 – Swept path assessment of B99 Design Car with existing layout

Note: background aerial shows parked cars on the left (west) side of Kenilworth Rd that would restrict the assessed movement. The latest site inspection on 26 March 2025 revealed that [No Stopping] ROAD OR VERGE signs have been installed at this location to keep this area of the road clear of parked vehicles, as shown in Photograph 4 below.



Photograph 4– Parking prohibitions on Kenilworth St north of Guildford Rd

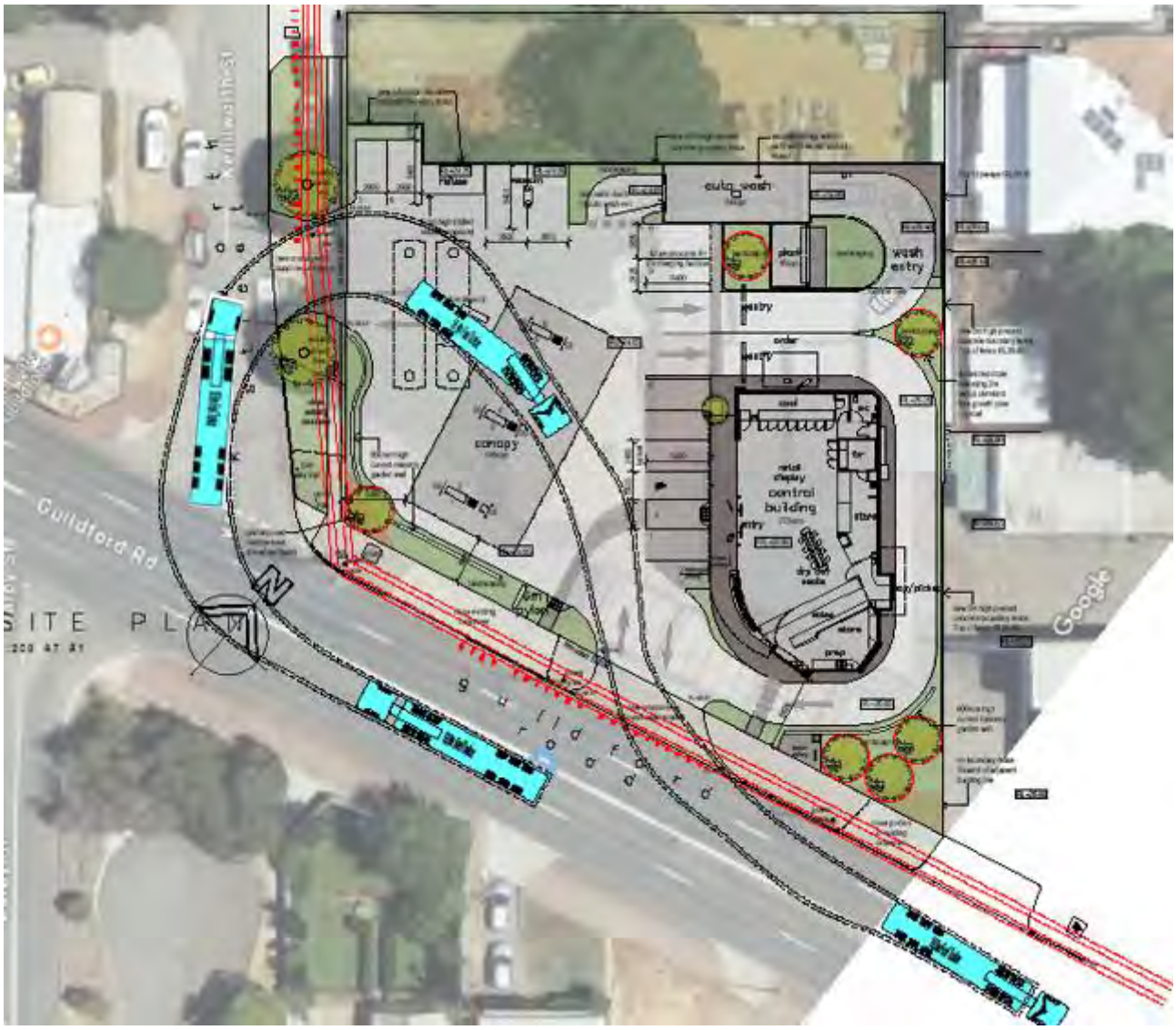


Figure 22 – Swept path assessment 16.9 m Fuel Tanker with existing layout: right turn IN from Guildford Rd

Note: background aerial shows parked cars on the left (west) side of Kenilworth Rd that would restrict the assessed movement. The latest site inspection on 26 March 2025 revealed that [No Stopping] ROAD OR VERGE signs have been installed at this location to keep this area of the road clear of parked vehicles. Refer Photograph 4 on page 39.

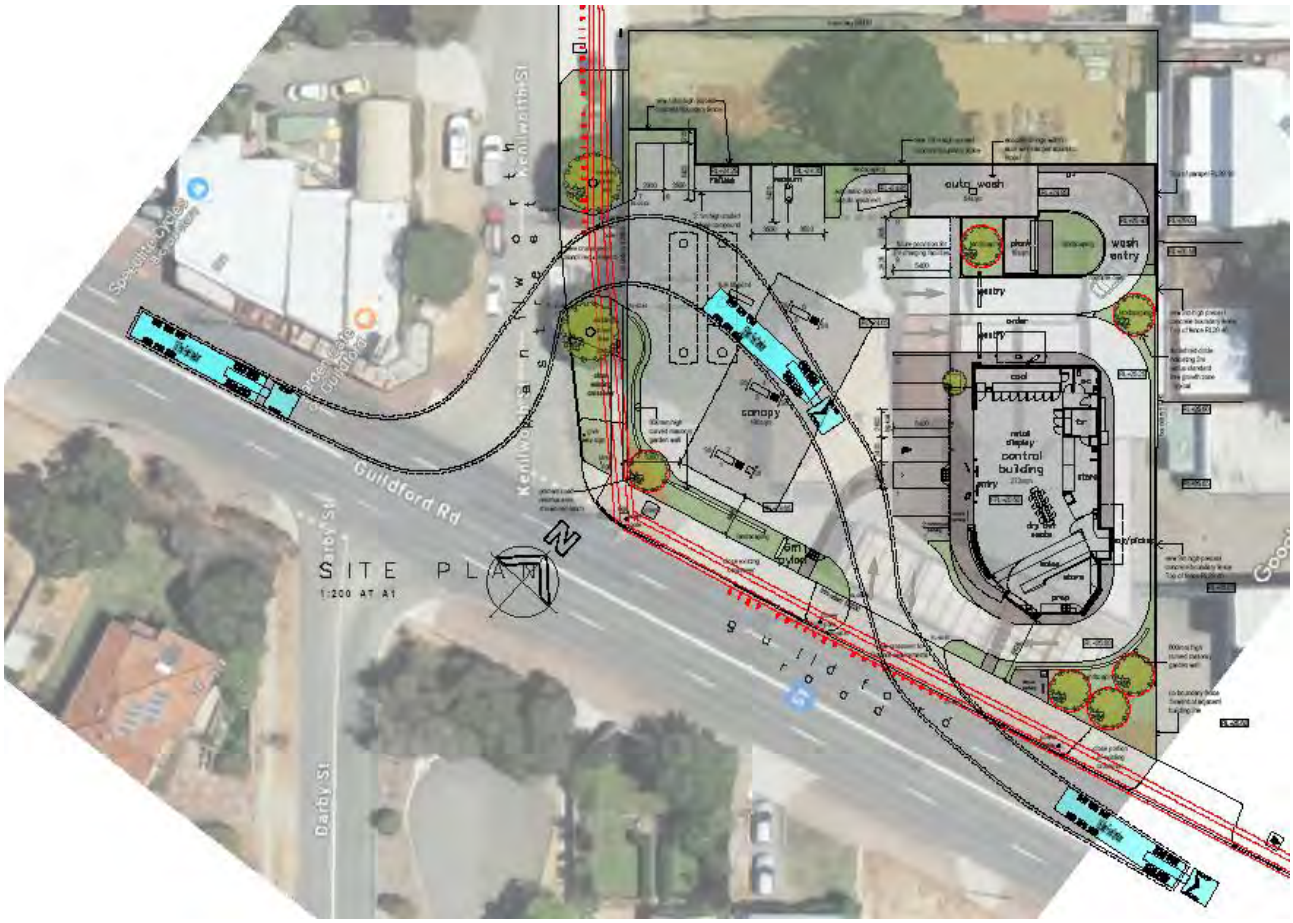


Figure 23 – Swept path assessment 16.9 m Fuel Tanker with existing layout: Left turn IN from Guildford Rd

Note: The existing left turn from Guildford Road into Kenilworth St cannot accommodate a lane compliant swept path of a 19 m semi-trailer with 500 mm clearance to kerbs. It is for this reason that the site is intended to be service by westbound tankers on Guildford Rd. This swept path assessment has been included in this report at the request of Main Roads WA.

Background aerial shows parked cars on the left (west) side of Kenilworth Rd that would restrict the assessed movement. The latest site inspection on 26 March 2025 revealed that [No Stopping] ROAD OR VERGE signs have been installed at this location to keep this area of the road clear of parked vehicles. Refer Photograph 4 on page 39.

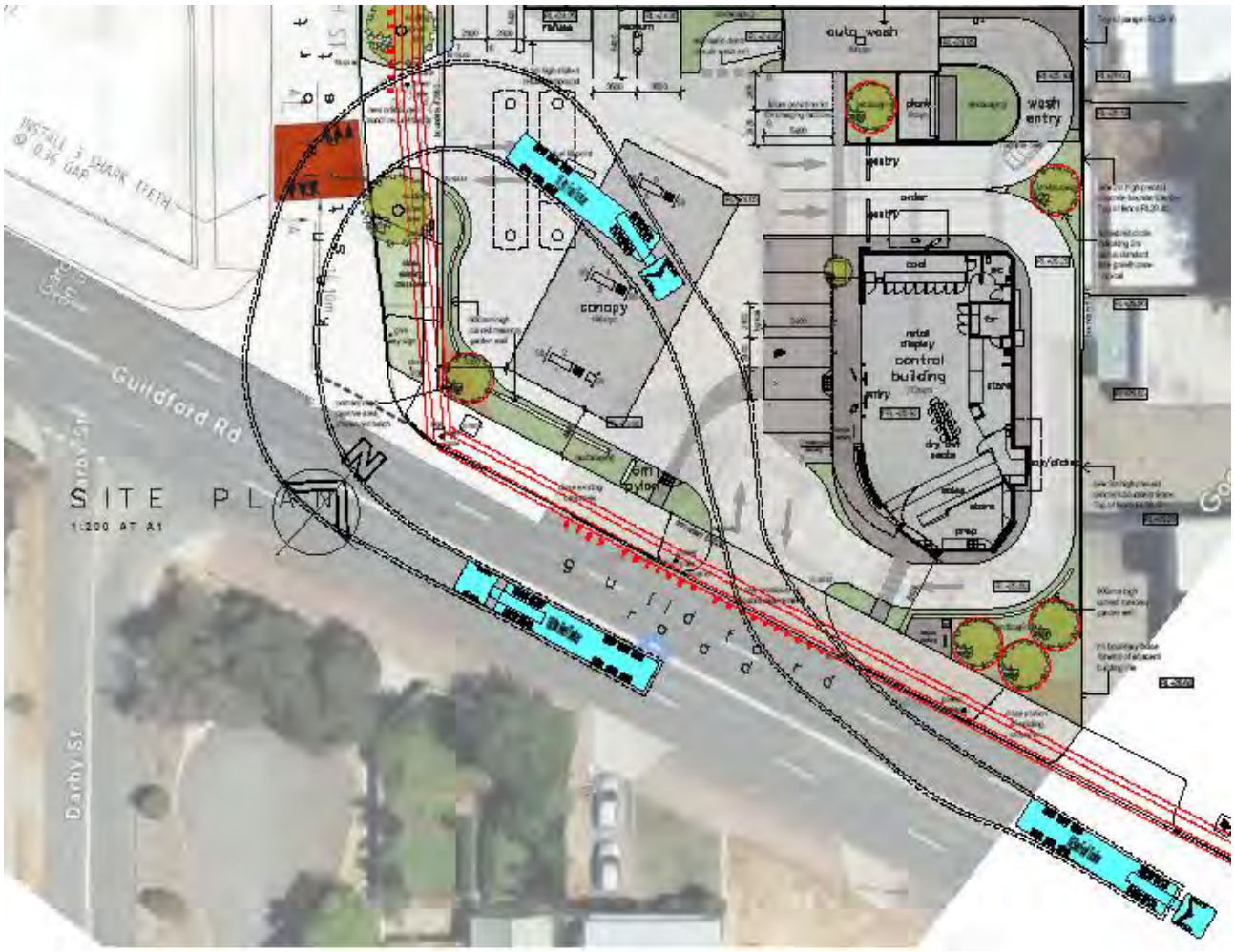


Figure 24 – Swept path assessment 16.9 m Fuel Tanker with existing layout plus hump in Kenilworth St

Note: background aerial shows parked cars on the left (west) side of Kenilworth Rd that would restrict the assessed movement. The latest site inspection on 26 March 2025 revealed that [No Stopping] ROAD OR VERGE signs have been installed at this location to keep this area of the road clear of parked vehicles. Refer Photograph 4 on page 39.

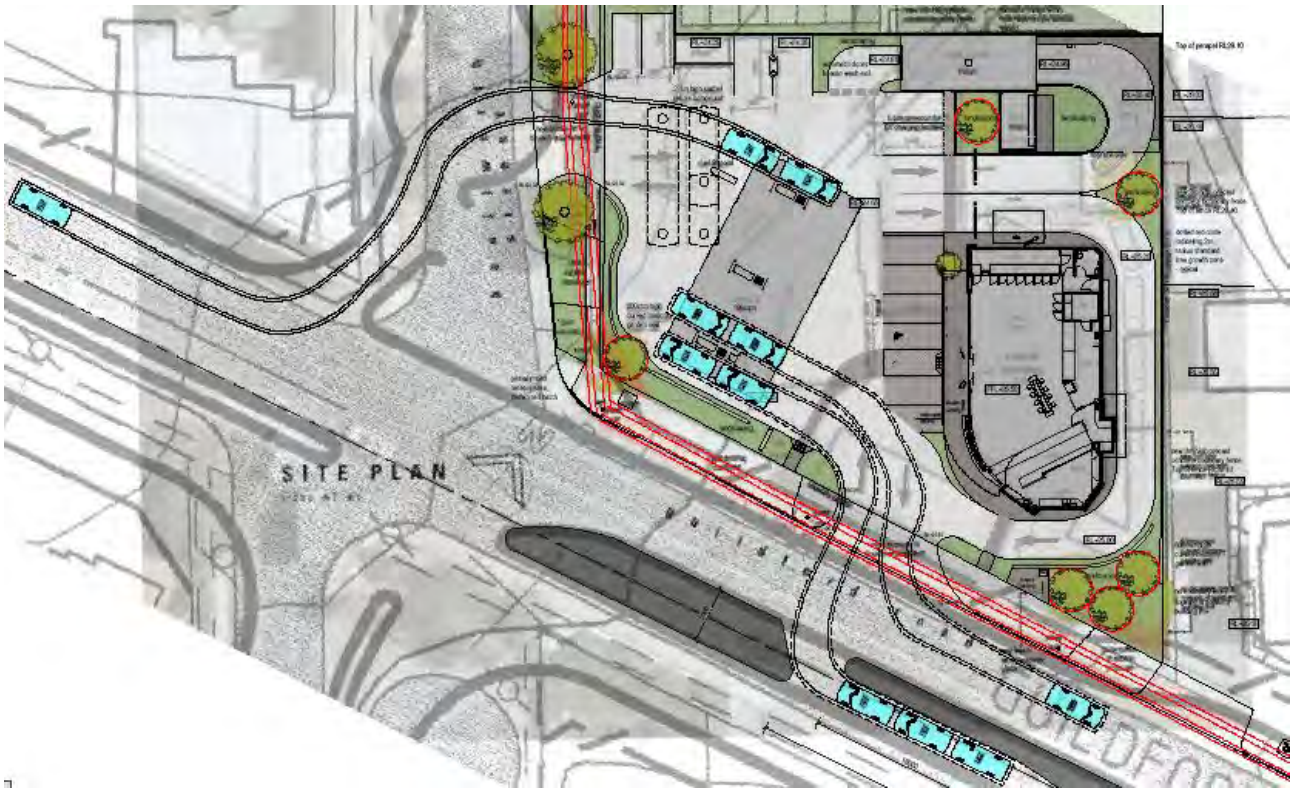


Figure 25 – Swept path assessment of B99 Design Cars with 'PCI Right turn IN' option accessing site via proposed Kenilworth cul-de-sac as part of the Main Roads WA widening project

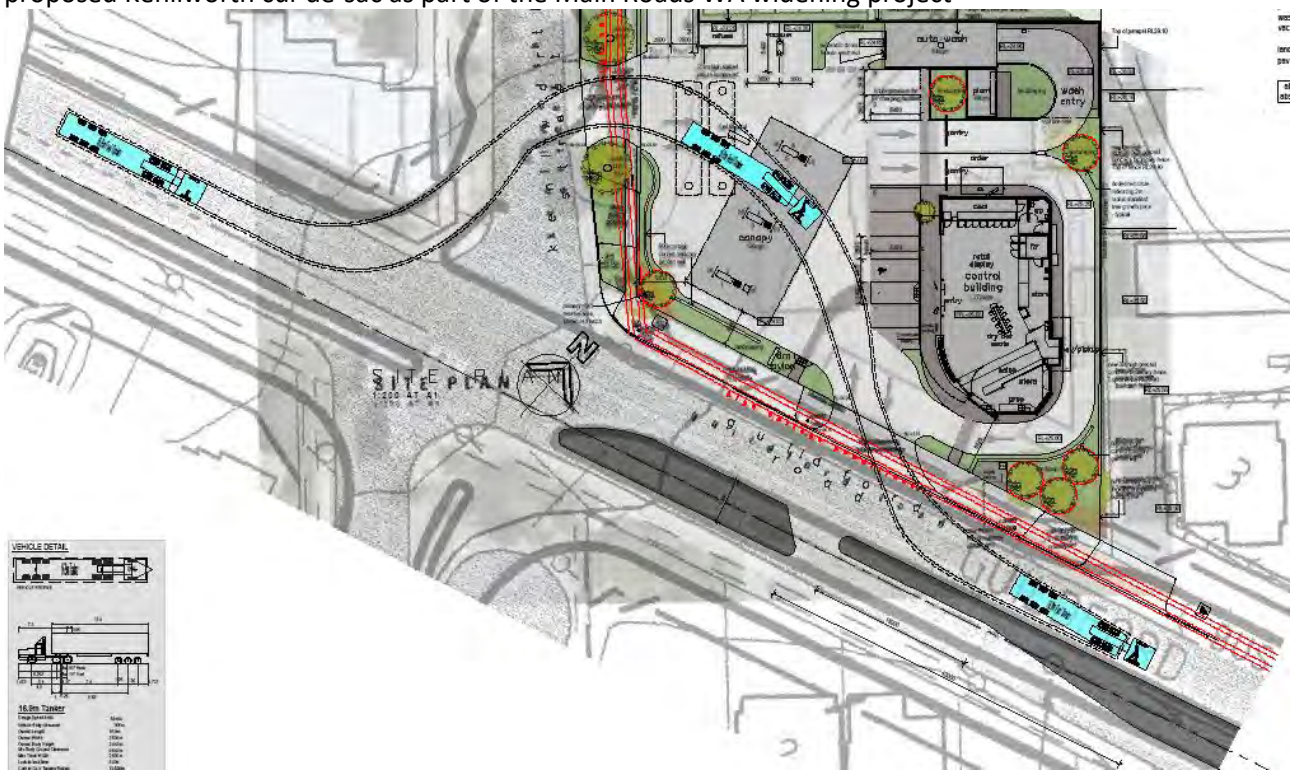


Figure 26 – Swept path assessment of 16.9 m Fuel Tanker with 'PCI Right turn IN' option accessing site via proposed Kenilworth cul-de-sac as part of the Main Roads WA widening project

Note that the PCI design does not appear to have been designed to accommodate the swept path of a 19 m semi-trailer with 500 mm clearance to kerbs. This forces the left turn to be made from the outside lane, which is not desirable and hence requires a re-design of the PCI layout.

APPENDIX B SIDRA INTERSECTION 10 DATA

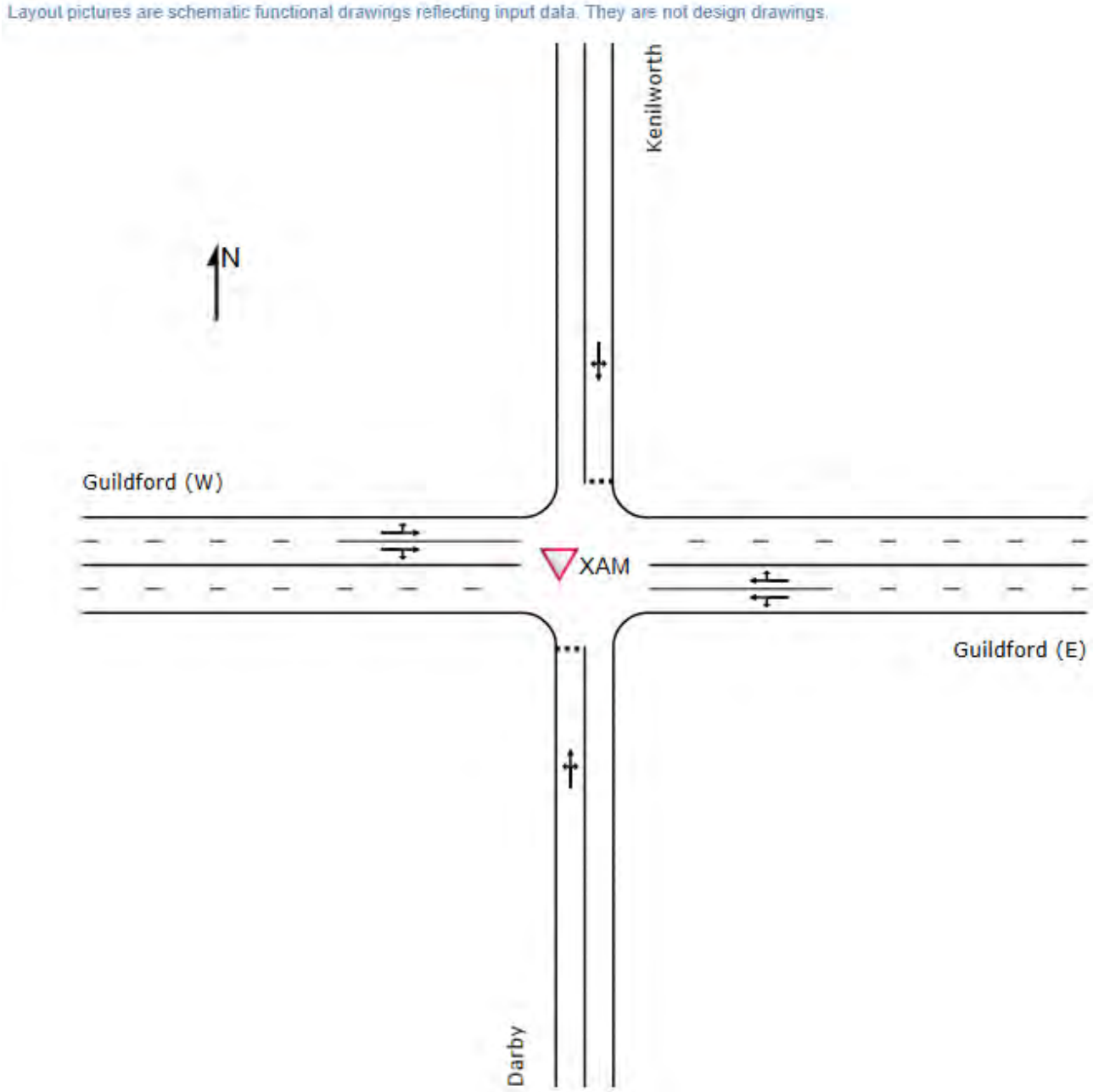


Figure 27 – SIDRA Intersection 10 model layout: Darby St/ Guildford Rd/ Kenilworth St

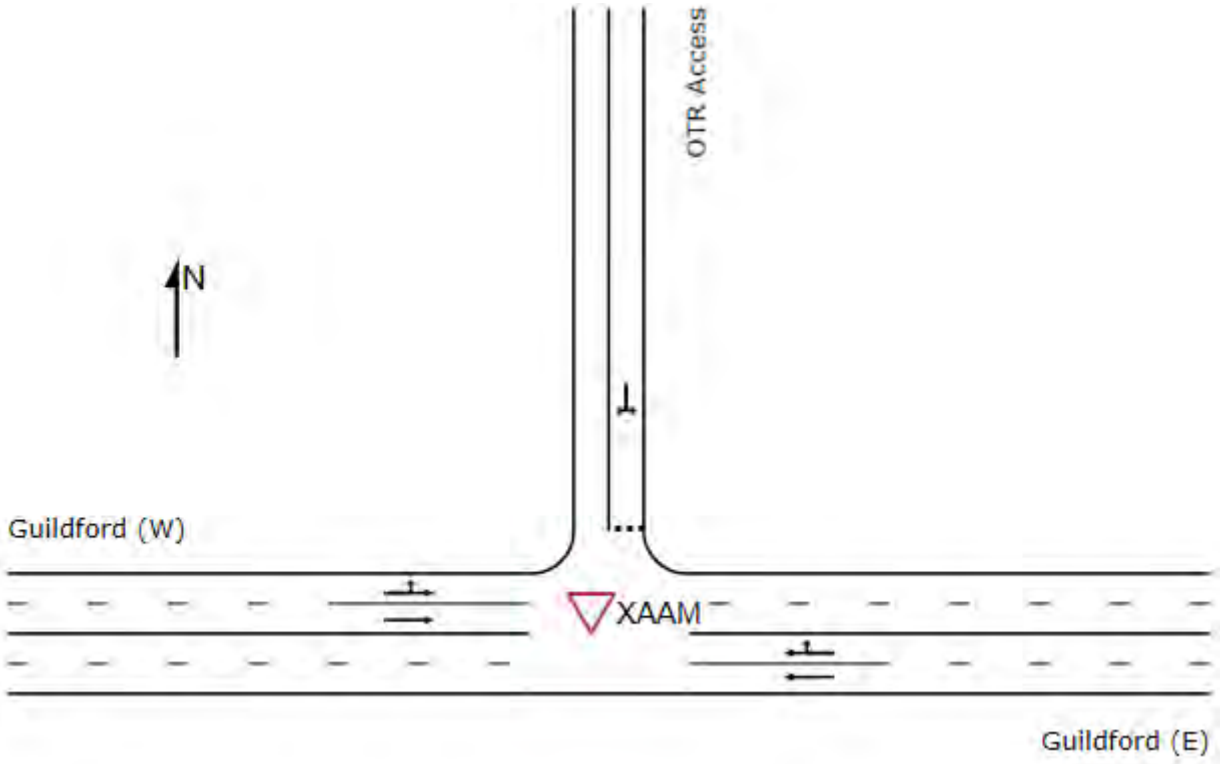


Figure 28 – SIDRA Intersection 10 model layout: Access 1/ Guildford Rd

EXISTING PEAK HOURS WITHOUT DEVELOPMENT

MOVEMENT SUMMARY

Site: [XAM] Guildford Rd/ Kenilworth St Existing AM (Existing (2023))
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

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Site Category: Existing Design
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Darby															
SL	L2	All MCs	26	0.0	26	0.0	0.410	18.6	LOS C	1.6	11.0	0.92	1.04	1.16	30.9
ST	T1	All MCs	1	0.0	1	0.0	0.410	140.6	LOS F	1.6	11.0	0.92	1.04	1.16	22.5
SR	R2	All MCs	31	0.0	31	0.0	0.410	56.5	LOS F	1.6	11.0	0.92	1.04	1.16	30.8
Approach			58	0.0	58	0.0	0.410	40.8	LOS E	1.6	11.0	0.92	1.04	1.16	30.7
East: Guildford (E)															
EL	L2	All MCs	60	1.8	60	1.8	0.495	6.5	LOS A	0.0	0.0	0.00	0.05	0.00	62.5
WT	T1	All MCs	1735	3.3	1735	3.3	0.495	0.4	LOS A	0.6	4.3	0.02	0.05	0.03	68.4
ER	R2	All MCs	11	20.0	11	20.0	0.495	18.0	LOS C	0.6	4.3	0.04	0.06	0.05	48.2
Approach			1805	3.4	1805	3.4	0.495	0.7	NA	0.6	4.3	0.02	0.05	0.02	68.2
North: Kenilworth															
NL	L2	All MCs	13	8.3	13	8.3	0.092	8.9	LOS A	0.3	2.4	0.94	0.78	0.94	40.3
NT	T1	All MCs	1	0.0	1	0.0	0.092	132.9	LOS F	0.3	2.4	0.94	0.78	0.94	29.3
NR	R2	All MCs	4	0.0	4	0.0	0.092	46.4	LOS E	0.3	2.4	0.94	0.78	0.94	40.4
Approach			18	5.9	18	5.9	0.092	25.0	LOS D	0.3	2.4	0.94	0.78	0.94	39.9
West: Guildford (W)															
WL	L2	All MCs	2	50.0	2	50.0	0.314	6.2	LOS A	0.0	0.0	0.00	0.00	0.00	49.4
WT	T1	All MCs	1006	3.7	1006	3.7	0.314	2.3	LOS A	1.7	12.5	0.09	0.10	0.09	58.0
WR	R2	All MCs	15	0.0	15	0.0	0.314	31.2	LOS D	1.7	12.5	0.21	0.23	0.21	50.2
Approach			1023	3.7	1023	3.7	0.314	2.7	NA	1.7	12.5	0.09	0.10	0.09	57.9
All Vehicles			2904	3.4	2904	3.4	0.495	2.4	NA	1.7	12.5	0.07	0.09	0.08	63.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

MOVEMENT SUMMARY

Site: [XPM] Guildford Rd/ Kenilworth St Existing PM (Existing (2023))
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

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Site Category: Existing Design
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Darby															
SL	L2	All MCs	39	0.0	39	0.0	0.311	11.3	LOS B	1.3	9.1	0.90	0.93	1.08	37.4
ST	T1	All MCs	1	0.0	1	0.0	0.311	94.5	LOS F	1.3	9.1	0.90	0.93	1.08	29.1
SR	R2	All MCs	33	0.0	33	0.0	0.311	39.5	LOS E	1.3	9.1	0.90	0.93	1.08	37.3
Approach			73	0.0	73	0.0	0.311	25.2	LOS D	1.3	9.1	0.90	0.93	1.08	37.3
East: Guildford (E)															
EL	L2	All MCs	33	3.2	33	3.2	0.346	6.5	LOS A	0.0	0.0	0.00	0.04	0.00	62.9
WT	T1	All MCs	1184	2.1	1184	2.1	0.346	0.8	LOS A	0.7	5.1	0.04	0.07	0.04	68.3
ER	R2	All MCs	13	8.3	13	8.3	0.346	21.6	LOS C	0.7	5.1	0.09	0.11	0.09	47.6
Approach			1229	2.2	1229	2.2	0.346	1.1	NA	0.7	5.1	0.04	0.07	0.04	67.9
North: Kenilworth															
NL	L2	All MCs	7	14.3	7	14.3	0.064	10.6	LOS B	0.2	1.7	0.87	0.84	0.87	40.2
NT	T1	All MCs	1	0.0	1	0.0	0.064	84.6	LOS F	0.2	1.7	0.87	0.84	0.87	29.3
NR	R2	All MCs	4	0.0	4	0.0	0.064	35.3	LOS E	0.2	1.7	0.87	0.84	0.87	40.4
Approach			13	8.3	13	8.3	0.064	25.0	LOS C	0.2	1.7	0.87	0.84	0.87	39.7
West: Guildford (W)															
WL	L2	All MCs	5	20.0	5	20.0	0.392	5.9	LOS A	0.0	0.0	0.00	0.00	0.00	53.5
WT	T1	All MCs	1345	2.0	1345	2.0	0.392	0.8	LOS A	1.0	6.9	0.06	0.07	0.06	59.1
WR	R2	All MCs	25	0.0	25	0.0	0.392	16.2	LOS C	1.0	6.9	0.13	0.15	0.13	54.3
Approach			1376	2.0	1376	2.0	0.392	1.1	NA	1.0	6.9	0.06	0.07	0.06	59.1
All Vehicles			2691	2.1	2691	2.1	0.392	1.9	NA	1.3	9.1	0.08	0.10	0.08	62.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

EXISTING PEAK HOURS WITH DEVELOPMENT

MOVEMENT SUMMARY

Site: [XDAM] Guildford Rd/ Kenilworth St Exist+Dev AM (2023 +Development)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

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Site Category: Proposed Design 1
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Darby															
SL	L2	All MCs	26	0.0	26	0.0	0.436	20.7	LOS C	1.7	11.7	0.93	1.05	1.19	29.7
ST	T1	All MCs	1	0.0	1	0.0	0.436	146.7	LOS F	1.7	11.7	0.93	1.05	1.19	21.3
SR	R2	All MCs	31	0.0	31	0.0	0.436	61.3	LOS F	1.7	11.7	0.93	1.05	1.19	9.9
Approach			58	0.0	58	0.0	0.436	44.4	LOS E	1.7	11.7	0.93	1.05	1.19	21.6
East: Guildford (E)															
EL	L2	All MCs	60	1.8	60	1.8	0.520	2.9	LOS A	0.0	0.0	0.00	0.04	0.00	47.1
WT	T1	All MCs	1724	3.4	1724	3.4	0.520	0.6	LOS A	1.4	10.2	0.04	0.07	0.06	67.3
ER	R2	All MCs	25	8.3	25	8.3	0.520	13.5	LOS B	1.4	10.2	0.08	0.10	0.13	30.2
Approach			1809	3.4	1809	3.4	0.520	0.9	NA	1.4	10.2	0.04	0.07	0.06	66.5
North: Kenilworth															
NL	L2	All MCs	39	2.7	39	2.7	0.173	8.7	LOS A	0.7	4.9	0.95	0.75	0.95	27.8
NT	T1	All MCs	2	0.0	2	0.0	0.173	143.9	LOS F	0.7	4.9	0.95	0.75	0.95	32.2
NR	R2	All MCs	6	0.0	6	0.0	0.173	49.4	LOS E	0.7	4.9	0.95	0.75	0.95	42.8
Approach			47	2.2	47	2.2	0.173	20.1	LOS C	0.7	4.9	0.95	0.75	0.95	31.3
West: Guildford (W)															
WL	L2	All MCs	17	6.2	17	6.2	0.316	5.7	LOS A	0.0	0.0	0.00	0.02	0.00	55.9
WT	T1	All MCs	995	3.6	995	3.6	0.316	2.4	LOS A	1.8	13.1	0.09	0.11	0.09	56.0
WR	R2	All MCs	15	0.0	15	0.0	0.316	31.9	LOS D	1.8	13.1	0.21	0.23	0.21	49.9
Approach			1026	3.6	1026	3.6	0.316	2.9	NA	1.8	13.1	0.09	0.11	0.09	55.9
All Vehicles			2941	3.4	2941	3.4	0.520	2.8	NA	1.8	13.1	0.09	0.11	0.11	60.0

MOVEMENT SUMMARY

Site: [XDPM] Guildford Rd/ Kenilworth St Exist+Dev PM (2023 +Development)

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Site Category: Proposed Design 1
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Darby															
SL	L2	All MCs	39	0.0	39	0.0	0.339	12.6	LOS B	1.4	10.0	0.91	0.96	1.11	36.3
ST	T1	All MCs	2	0.0	2	0.0	0.339	95.3	LOS F	1.4	10.0	0.91	0.96	1.11	27.9
SR	R2	All MCs	33	0.0	33	0.0	0.339	40.9	LOS E	1.4	10.0	0.91	0.96	1.11	14.3
Approach			74	0.0	74	0.0	0.339	27.5	LOS D	1.4	10.0	0.91	0.96	1.11	29.7
East: Guildford (E)															
EL	L2	All MCs	33	3.2	33	3.2	0.374	2.9	LOS A	0.0	0.0	0.00	0.03	0.00	47.0
WT	T1	All MCs	1176	2.1	1176	2.1	0.374	1.0	LOS A	1.1	7.7	0.07	0.10	0.07	66.6
ER	R2	All MCs	23	4.5	23	4.5	0.374	17.5	LOS C	1.1	7.7	0.16	0.18	0.16	29.2
Approach			1232	2.2	1232	2.2	0.374	1.4	NA	1.1	7.7	0.07	0.10	0.07	65.6
North: Kenilworth															
NL	L2	All MCs	27	3.8	27	3.8	0.112	10.0	LOS B	0.5	3.3	0.88	0.80	0.88	28.8
NT	T1	All MCs	2	0.0	2	0.0	0.112	87.2	LOS F	0.5	3.3	0.88	0.80	0.88	33.3
NR	R2	All MCs	5	0.0	5	0.0	0.112	36.1	LOS E	0.5	3.3	0.88	0.80	0.88	43.7
Approach			35	3.0	35	3.0	0.112	18.7	LOS C	0.5	3.3	0.88	0.80	0.88	32.7
West: Guildford (W)															
WL	L2	All MCs	15	0.0	15	0.0	0.392	5.7	LOS A	0.0	0.0	0.00	0.01	0.00	57.0
WT	T1	All MCs	1338	2.0	1338	2.0	0.392	0.8	LOS A	1.0	7.1	0.06	0.08	0.06	58.4
WR	R2	All MCs	25	0.0	25	0.0	0.392	16.5	LOS C	1.0	7.1	0.14	0.16	0.14	54.2
Approach			1378	1.9	1378	1.9	0.392	1.1	NA	1.0	7.1	0.06	0.08	0.06	58.3
All Vehicles			2718	2.0	2718	2.0	0.392	2.2	NA	1.4	10.0	0.10	0.12	0.10	59.7

MOVEMENT SUMMARY

Site: [XAAM] OTR-Access Exist+Dev AM (2023+Development)
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Site Category: Proposed Design 1
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
East: Guildford (E)															
WT	T1	All MCs	1813	3.4	1813	3.4	0.502	0.4	LOS A	0.8	5.8	0.03	0.04	0.04	64.6
ER	R2	All MCs	16	0.0	16	0.0	0.502	14.4	LOS B	0.8	5.8	0.05	0.07	0.07	48.8
Approach			1828	3.3	1828	3.3	0.502	0.5	NA	0.8	5.8	0.03	0.04	0.04	64.4
North: OTR Access															
NL	L2	All MCs	27	0.0	27	0.0	0.044	5.1	LOS A	0.2	1.6	0.72	0.59	0.72	24.2
NR	R2	All MCs	3	0.0	3	0.0	0.044	29.8	LOS D	0.2	1.6	0.72	0.59	0.72	15.6
Approach			31	0.0	31	0.0	0.044	7.6	LOS A	0.2	1.6	0.72	0.59	0.72	23.5
West: Guildford (W)															
WL	L2	All MCs	16	0.0	16	0.0	0.289	2.9	LOS A	0.0	0.0	0.00	0.02	0.00	19.2
WT	T1	All MCs	1065	3.6	1065	3.6	0.289	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.5
Approach			1081	3.5	1081	3.5	0.289	0.0	NA	0.0	0.0	0.00	0.01	0.00	58.7
All Vehicles			2940	3.4	2940	3.4	0.502	0.4	NA	0.8	5.8	0.02	0.03	0.03	61.2

MOVEMENT SUMMARY

Site: [XAPM] OTR-Access Exist+Dev PM (2023+Development)
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Site Category: Proposed Design 1
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
East: Guildford (E)															
WT	T1	All MCs	1235	2.2	1235	2.2	0.346	0.5	LOS A	0.6	4.3	0.04	0.05	0.04	62.7
ER	R2	All MCs	12	0.0	12	0.0	0.346	18.7	LOS C	0.6	4.3	0.08	0.09	0.08	46.0
Approach			1246	2.2	1246	2.2	0.346	0.7	NA	0.6	4.3	0.04	0.05	0.04	62.5
North: OTR Access															
NL	L2	All MCs	21	0.0	21	0.0	0.031	6.3	LOS A	0.2	1.2	0.73	0.63	0.73	24.3
NR	R2	All MCs	2	0.0	2	0.0	0.031	20.0	LOS C	0.2	1.2	0.73	0.63	0.73	15.7
Approach			23	0.0	23	0.0	0.031	7.5	LOS A	0.2	1.2	0.73	0.63	0.73	23.7
West: Guildford (W)															
WL	L2	All MCs	12	0.0	12	0.0	0.373	2.9	LOS A	0.0	0.0	0.00	0.01	0.00	19.3
WT	T1	All MCs	1398	2.0	1398	2.0	0.373	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.6
Approach			1409	2.0	1409	2.0	0.373	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.1
All Vehicles			2679	2.1	2679	2.1	0.373	0.4	NA	0.6	4.3	0.02	0.03	0.02	59.9

APPENDIX C WAPC TRANSPORT IMPACT ASSESSMENT CHECKLIST

(Checklist for a transport impact assessment of a planning scheme, structure plan or activity centre plan)

- Tick the 'provided' column for items for which information is provided.
- Enter N/A in the 'provided' column if the item is not appropriate and enter the reason in the Comments/ Proposals column.
- Provide brief comments on any relevant issues.
- Provide brief description of any proposed transport improvements, for example, new bus routes or new traffic signals or extending existing footpath to the site.

ITEM	PROVIDED	COMMENTS/ PROPOSALS
Summary	✓	**Section 1: Page 4.**
Introduction/Background	✓	**Section 2: Page 5.**
name of applicant and consultant	✓	Page 7.
development location and context	✓	Page 7.
brief description of development proposal	✓	Page 8.
key issues	✓	Page 8.
background information	✓	Page 8.
Existing situation	✓	**Section 3: Page 13.**
existing site uses (if any)	✓	Page 13.
existing parking and demand (if appropriate)	✓	Page 13.
existing access arrangements	✓	Page 13.
existing site traffic	✓	Page 13.
surrounding land uses	✓	Page 13.
surrounding road network	✓	Page 13 and Figure 7 on page 16.
traffic management on frontage roads	✓	Page 13.
traffic flows on surrounding roads (usually AM and PM peak hours)	✓	Page 13, Figure 13 on page 28 (AM) and Figure 15 on Page 29 (PM).
traffic flows at major intersections (usually AM and PM peak hours)	✓	As per above and in Section 6.
operation of surrounding intersections	✓	Page 14 and Figure 6 on page 14.
existing pedestrian/cycle networks	✓	Page 15 and Figure 8 on page 17.
existing public transport services surrounding the development	✓	Page 20 and Figure 8 on page 17.
crash data	✓	Page 15 and Figure 9 on page 18.

ITEM	PROVIDED	COMMENTS/ PROPOSALS
Development proposal	✓	**Section 4: Page 19.**
regional context	✓	Page 19.
proposed land uses	✓	Page 19.
table of land uses and quantities	✓	Table 2, page 19.
access arrangements	✓	Page 20 and Figure 3, Figure 4 and Figure 5 on pages 10 to 12.
parking provision	✓	Page 20.
end of trip facilities	✓	Page 20.
any specific issues	✓	Page 20.
road network	✓	Page 20 and Figure 7 on page 16.
intersection layouts and controls	✓	Page 20.
pedestrian/cycle networks and crossing facilities	✓	Page 20 and Figure 8 on page 17.
public transport services	✓	Page 20 and Figure 8 on page 17.
Integration with surrounding area	✓	**Section 5: Page 21.**
surrounding major attractors/ generators	✓	Page 21.
committed developments and transport proposals	✓	Page 21.
proposed changes to land uses within 1200 metres	✓	NA (Page 21).
travel desire lines from development to these attractors/ generators	✓	Figure 3, Figure 4 and Figure 5 on pages 10 to 12.
adequacy of existing transport networks	✓	Page 21 and **Section 6**.
deficiencies in existing transport networks	✓	Page 21.
remedial measures to address deficiencies	✓	Page 21 (Main Roads WA and City of Bayswater proposals).
Analysis of transport networks	✓	**Section 6: Page 22.**
assessment years	✓	Page 22.
time periods	✓	Page 22.
development generated traffic	✓	Page 22.
distribution of generated traffic	✓	Page 22 and Figure 13 to Figure 16 on pages 28 to 29.
parking supply and demand	✓	Page 23.
base and 'with development' traffic flows	✓	Page 23, Figure 13 and Figure 14 on page 28 and Figure 15 and Figure 16 on page 29.
analysis of development accesses	✓	Page 23 and Figure 21 to Figure 25 in **Appendix A.**

ITEM	PROVIDED	COMMENTS/ PROPOSALS
impact on surrounding roads	✓	Page 23, Figure 14 on page 28, Figure 16 on page 29 and Table 3 on page 19.
impact on intersections	✓	Pages 23 to 24, Figure 14 on page 28, Figure 16 on page 29, Table 3 on page 19 and Table 3 on page 25.
impact on neighbouring areas	✓	Page 24.
road safety	✓	Refer **Section 7.**
public transport access	✓	Refer **Section 4.**
pedestrian access/amenity	✓	Page 24.
cycle access/amenity	✓	Page 24.
analysis of pedestrian/cycle networks	✓	Pages 15, 20 and 24 and Figure 8 on page 17.
safe walk/cycle to school (for residential and school site developments only)	×	Not applicable.
traffic management plan (where appropriate)	×	Not applicable.
Conclusions	✓	**Section 8: Page 37.**

Proponent's name

Company PC Infrastructure Pty Ltd **Date**

Transport assessor's name David Wilkins

Company i3 consultants WA **Date** 6 May 2025

EXISTING ARRANGEMENTS

B99 SWEPT PATHS

SITE PLAN

1:200 AT A1

VEHICLE DETAIL

B99 Vehicle (Realistic min radius) (2004)

Design Speed km/h	5km/h
Vehicle Body clearance	300m
Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.878m
Min Body Ground Clearance	0.272m
Track Width	1.840m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	6.250m

NEW SERVICE STATION COMPLEX

CORNER KENILWORTH STREET AND GUILDFORD, BAYSWATER, WA

0 1 2 5 10 15m

Scale 1:200 at A1

PLANNING

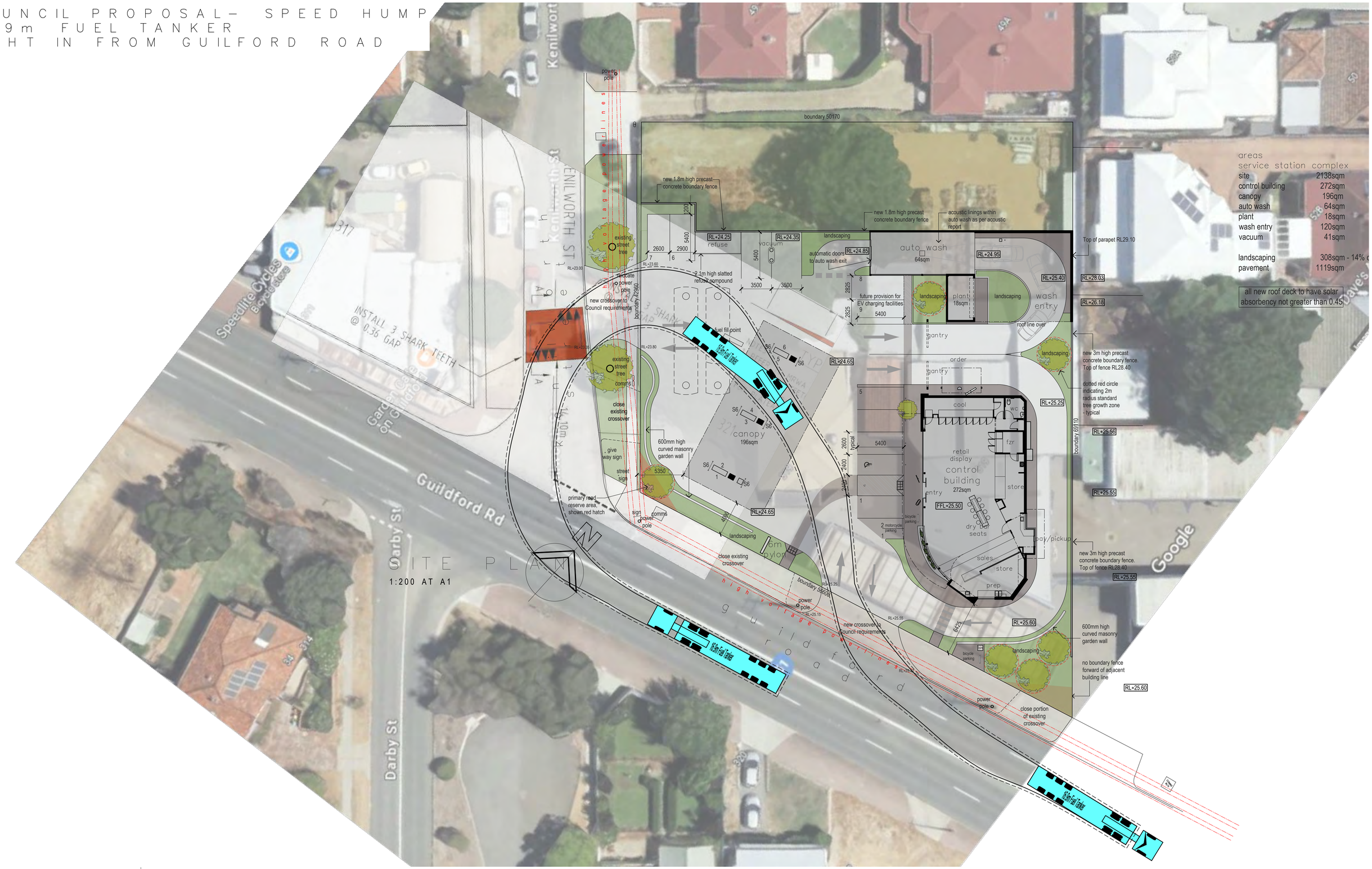
26.11.25

22JN1500 sk01v

ADS Architects

93 Gilles Street Adelaide 5000 T:82232244

COUNCIL PROPOSAL– SPEED HUMP
16.9m FUEL TANKER
RIGHT IN FROM GUILFORD ROAD



SITE PLAN
1:200 AT A1

NEW SERVICE STATION COMPLEX

CORNER KENILWORTH STREET AND GUILDFORD, BAYSWATER, WA

Scale 1:200 at A1

PLANNING

26.11.25
22JN1500 sk01v

ADS Architects
93 Gilles Street Adelaide 5000 T:82232244

EXISTING ARRANGEMENTS

16.9m FUEL TANKER SWEPT PATH

SITE PLAN

1:200 AT A1

VEHICLE DETAIL

16.9m Tanker

Design Speed km/h	5km/h
Vehicle Body clearance	300m
Overall Length	16.9m
Overall Width	2.500m
Overall Body Height	3.940m
Min Body Ground Clearance	0.540m
Max Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m

NEW SERVICE STATION COMPLEX

CORNER KENILWORTH STREET AND GUILDFORD, BAYSWATER, WA

Scale 1:200 at A1

PLANNING

26.11.25

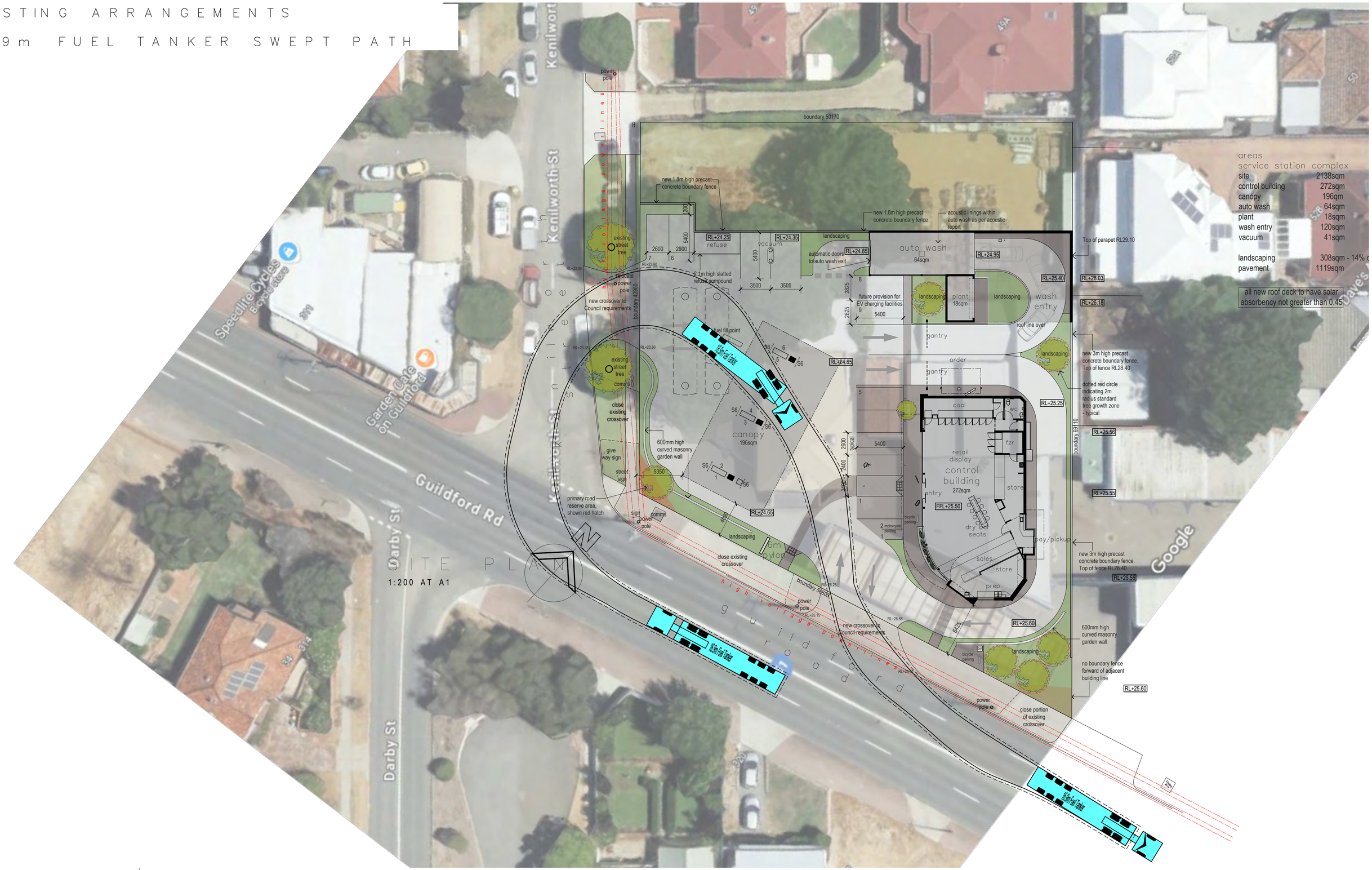
22JN1500 sk01v

ADS Architects

93 Gilles Street Adelaide 5000 T:82232244

EXISTING ARRANGEMENTS

16.9m FUEL TANKER SWEPT PATH



SITE PLAN

1:200 AT A1

NEW SERVICE STATION COMPLEX

CORNER KENILWORTH STREET AND GUILDFORD, BAYSWATER, WA

0 1 2 5 10 15m

Scale 1:200 at A1

PLANNING

26.11.25

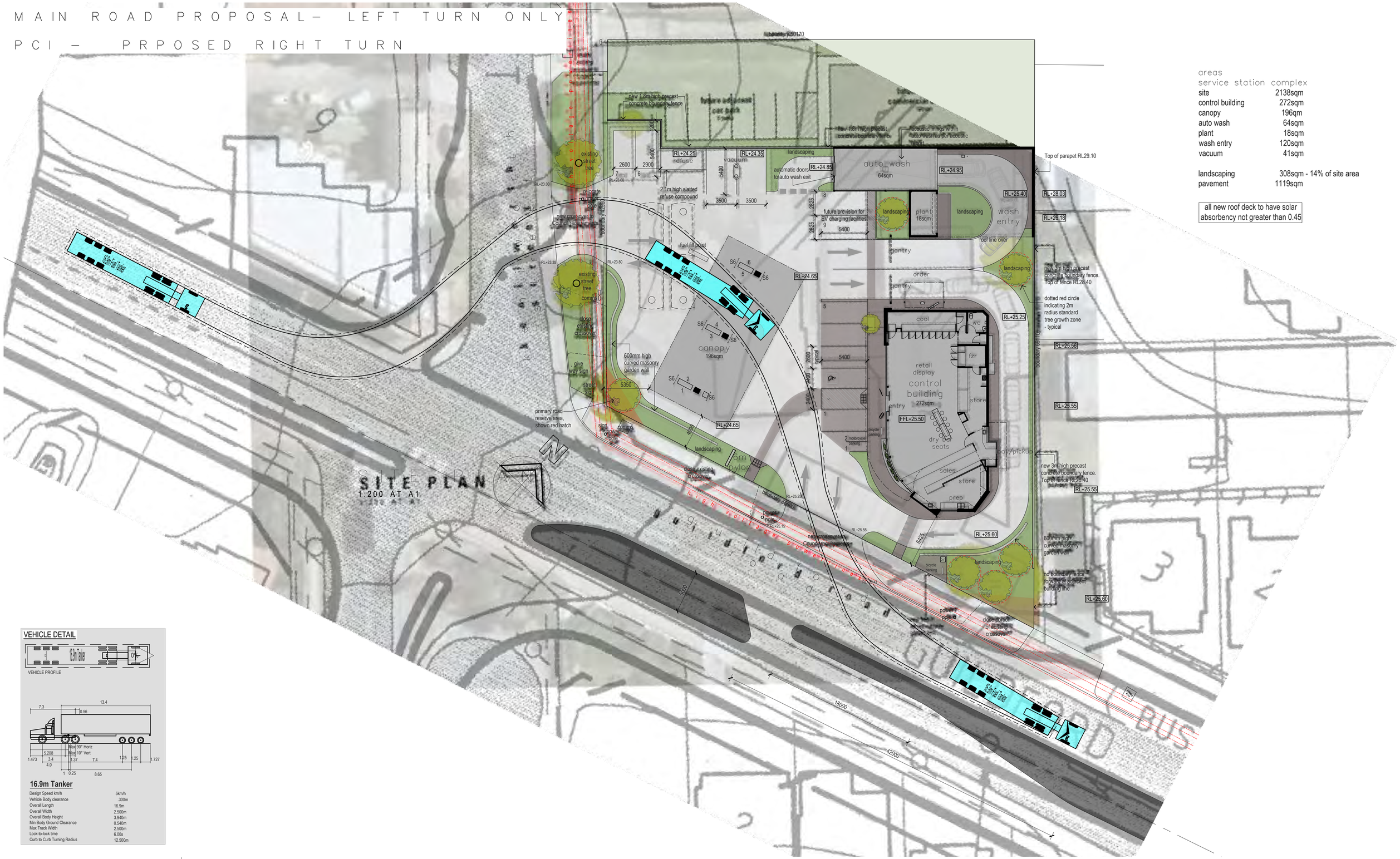
22JN1500 sk01v

ADS Architects

93 Gilles Street Adelaide 5000 T:82232244

MAIN ROAD PROPOSAL – LEFT TURN ONLY

PCI – PRPOSED RIGHT TURN



areas

service station complex

site	2138sqm
control building	272sqm
canopy	196qm
auto wash	64sqm
plant	18sqm
wash entry	120sqm
vacuum	41sqm
landscaping	308sqm - 14% of site area
pavement	1119sqm

all new roof deck to have solar absorbency not greater than 0.45

SITE PLAN

1:200 AT A1

N

VEHICLE DETAIL

16.9m Tanker

Design Speed km/h	5km/h
Vehicle Body clearance	.300m
Overall Length	16.9m
Overall Width	2.500m
Overall Body Height	3.940m
Min Body Ground Clearance	0.540m
Max Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m

NEW SERVICE STATION COMPLEX

CORNER KENILWORTH STREET AND GUILDFORD, BAYSWATER, WA

0 1 2 5 10 15m

Scale 1:200 at A1

PLANNING

26.11.25

22JN1500 sk01v

ADS Architects

93 Gilles Street Adelaide 5000 T:82232244

MAIN ROAD PROPOSAL– LEFT TURN ONLY

PCI – PRPOSED RIGHT TURN

B99 SWEPT PATHS

SITE PLAN
new 1.8m high precast concrete boundary fence
future adjacent car park
new 1.8m high precast concrete boundary fence
RL+24.25
RL+24.35
landscaping
RL+24.85
automatic doors to auto wash exit
64sqm
RL+24.95
Top of parapet RL29.10
RL+25.40
RL+28.03
2.1m high slatted refuse compound
future provision for EV charging facilities
landscaping
18sqm
landscaping
RL+26.18
roof line over
fuel fill point
RL+24.65
landscaping
new 3m high precast concrete boundary fence. Top of fence RL28.40
dotted red circle indicating 2m radius standard tree growth zone - typical
RL+25.25
RL+25.56
600mm high curved masonry garden wall
196sqm
FFL+25.50
RL+25.55
primary road reserve area, shown red hatch
landscaping
new 3m high precast concrete boundary fence. Top of fence RL28.40
RL+25.55
RL+25.60
600mm high curved masonry garden wall
landscaping
RL+25.60
B99
5000
18000
42000
GUILDFORD
BUS

VEHICLE DETAIL

B99 Vehicle (Realistic min radius) (2004)

Design Speed km/h	5km/h
Vehicle Body clearance	.300m
Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.878m
Min Body Ground Clearance	0.272m
Track Width	1.840m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	6.250m

NEW SERVICE STATION COMPLEX

CORNER KENILWORTH STREET AND GUILDFORD, BAYSWATER, WA

0 1 2 5 10 15m
Scale 1:200 at A1

26.11.25

22JN1500 sk01v

PLANNING

ADS Architects

93 Gilles Street Adelaide 5000 T:82232244

Waste Management Plan

321 Guildford Road, Bayswater

Prepared for PC Infrastructure Pty Ltd

16 December 2025

Project Number: WMP24133

DOCUMENT CONTROL

Version	Description	Date	Author	Reviewer	Approver
1.0	First Approved Release	4/12/2024	SC	DP	DP
2.0	Second Approved Release	16/12/2025	AB	DP	AB

Approval for Release

Name	Position	File Reference
Ann Brouwer	Project Manager – Waste Management Plan Lead	WMP24133-01_Waste Management Plan_2.0
Signature	Ann Brouwer Digitally signed by Ann Brouwer Date: 2025.12.16 10:33:56 +08'00'	

Executive Summary

PC Infrastructure Pty Ltd is seeking development approval for the proposed new service station complex located at 321 (Lot 130) Guildford Road, Bayswater (the Proposal).

To satisfy the conditions of the development application the City of Bayswater (the City) requires the submission of a Waste Management Plan (WMP) that will identify how waste is to be stored and collected from the Proposal. Talis Consultants has been engaged to prepare this WMP to satisfy the City's requirements.

A summary of the bin size, numbers, collection frequency and collection method is provided in the below table.

Proposed Waste Collection Summary

Waste Type	Generation (L/week)	Bin Size (L)	Number of Bins	Collection Frequency	Collection
Refuse	5,712	1,100L	2	Three times each week	Private Contractor
Recycling	2,856	1,100L	1	Three times each week	Private Contractor

A private contractor will service the Proposal onsite, directly from the Bin Storage Area. The private contractor's waste collection vehicle will enter and exit the Proposal in forward gear via Kenilworth Street or Guildford Road.

The site operator will oversee the relevant aspects of waste management at the Proposal.

Table of Contents

Tables

Diagrams

Figures

1 Introduction

PC Infrastructure Pty Ltd is seeking development approval for the proposed new service station complex located at 321 (Lot 130) Guildford Road, Bayswater (the Proposal).

To satisfy the conditions of the development application the City of Bayswater (the City) requires the submission of a Waste Management Plan (WMP) that will identify how waste is to be stored and collected from the Proposal. Talis Consultants has been engaged to prepare this WMP to satisfy the City's requirements.

The Proposal is bordered by residential developments to the north and to the east, Guildford Road to the south and Kenilworth Street to the west, as shown in Figure 1.

1.1 Objectives and Scope

The objective of this WMP is to outline the equipment and procedures that will be adopted to manage waste (refuse and recyclables) at the Proposal. Specifically, the WMP demonstrates that the Proposal is designed to:

- Adequately cater for the anticipated volume of waste to be generated;
- Provide an adequately sized Bin Storage Area, including appropriate bins; and
- Allow for efficient collection of bins by appropriate waste collection vehicles.

To achieve the objective, the scope of the WMP comprises:

- Section 2: Waste Generation;
- Section 3: Waste Storage;
- Section 4: Waste Collection;
- Section 5: Waste Management; and
- Section 6: Conclusion.

2 Waste Generation

The following section shows the waste generation rates used and the estimated waste volumes to be generated at the Proposal.

2.1 Proposed Tenancies

The anticipated volume of refuse and recyclables is based on the floor area (m^2) of the control building at the Proposal – **272m²**.

2.2 Waste Generation Rates

In order to achieve an accurate projection of waste volumes for the Proposal, consideration was given to City of Melbourne's *Guidelines for Waste Management Plans* (2021).

Table 2-1 shows the waste generation rates which have been applied to the Proposal.

Table 2-1: Waste Generation Rates

Tenancy Use Type	City of Melbourne Guideline Reference	Refuse Generation Rate	Recycling Generation Rate
Control Building	Convenience Store	300L/100m²/day	150L/100m²/day

2.3 Waste Generation Volumes

Waste generation is estimated by volume in litres (L) as this is generally the influencing factor when considering bin size, numbers and storage space required.

Waste generation volumes in litres per week (L/week) adopted for this waste assessment are shown in Table 2-2. It is estimated that the Proposal will generate 5,712L of refuse and 2,856L of recyclables each week.

Table 2-2: Estimated Waste Generation

Control Building	Area (m²)	Waste Generation Rate (L/100m²/day)	Waste Generation (L/week)
Refuse	272	300	**5,712**
Recycling	272	150	**2,856**
		Total	**8,568**

3 Waste Storage

Waste materials generated within the Proposal will be collected in the bins located in the Bin Storage Area, as shown in Diagram 1 and Figure 2, and discussed in the following sub-sections.

3.1 Internal Transfer of Waste

To promote positive recycling behaviour and maximise diversion from landfill, internal bins will be available throughout the control building for the source separation of refuse and recycling. Refuse bins will also be located at each of the fuel pumps and adjacent to the vacuum bays.

These internal bins will be collected by the staff/cleaners and transferred to the Bin Storage Area for consolidation into the appropriate bins, as required. This internal servicing method may be conducted at less busy trading times to mitigate disturbances to staff/cleaners/visitors.

All bins will be colour coded and labelled in accordance with Australian Standards (AS 4123.7) to assist visitors, staff and cleaners to dispose of their separate waste materials in the correct bins.

3.2 Bin Sizes

Table 3-1 gives the typical dimensions of standard bins sizes that may be utilised at the Proposal. It should be noted that these bin dimensions are approximate and can vary slightly between suppliers.

Table 3-1: Typical Bin Dimensions

Dimensions (m)	Bin Sizes		
	240L	660L	1,100L
Depth	0.730	0.780	1.070
Width	0.585	1.260	1.240
Height	1.060	1.200	1.330

Reference: SULO Bin Specification Data Sheets

3.3 Bin Storage Area Size

To ensure sufficient area is available for storage of the bins, the amount of bins required for the Bin Storage Area was modelled utilising the estimated waste generation in Table 2-2 bin sizes in Table 3-1 and based on collection of refuse and recyclables three times each week.

Based on the results shown in Table 3-2 the Bin Storage Area has been sized to accommodate:

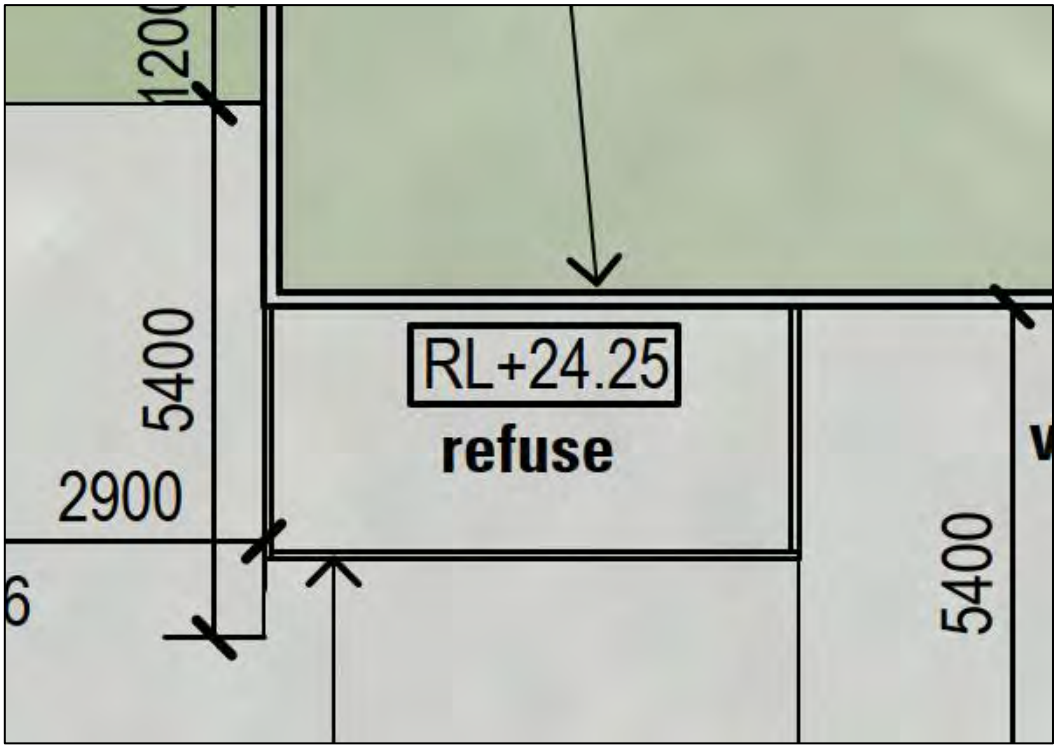
- Two 1,100L refuse bins; and
- One 1,100L recycling bin.

Table 3-2: Bin Requirements for Bin Storage Area

Waste Stream	Waste Generation (L/week)	Number of Bins Required		
		240L	660L	1,100L
Refuse	5,712	8	3	2
Recycling	2,856	4	2	1

The size and location of the Bin Storage Area is shown in Diagram 1 below and Figure 2.

Diagram 1: Bin Storage Area



3.4 Bin Storage Area Design

The design of the Bin Storage Area will take into consideration:

- Smooth impervious floor sloped to a drain connected to the sewer system;
- Taps for washing of bins and Bin Storage Area;
- Adequate aisle width for easy manoeuvring of bins;
- No double stacking of bins;
- Doors to the Bin Storage Area self-closing and vermin proof;
- Doors to the Bin Storage Area wide enough to fit bins through;
- Ventilated to a suitable standard;
- Appropriate signage;
- Undercover where possible and be designed to not permit stormwater to enter into the drain;
- Located behind the building setback line;
- Bins not to be visible from the property boundary or areas trafficable by the public; and
- Bins are reasonably secured from theft and vandalism.

Bin numbers and storage space within the Bin Storage Area will be monitored by the site operator during the operation of the Proposal to ensure that the number of bins and collection frequency is sufficient.

3.5 Litter Management

The Proposal will also implement the following measures to minimise litter generation and ensure prompt removal:

- All bins within the Bin Storage Area will be fitted with lids to prevent windblown litter;
- Doors to the Bin Storage Area will also prevent windblown litter;
- Smaller refuse bins will be located at each of the fuel pumps and adjacent to the vacuum bays to allow responsible disposal of waste;
- Signage encouraging responsible disposal of waste and correct bin usage; and
- Engage with staff/cleaners on litter monitoring and clean up procedures.

4 Waste Collection

A private waste collection contractor will service the Proposal and provide two 1,100L bins for refuse and one 1,100L bin for recyclables.

The private contractor will collect refuse and recyclables three times each week utilising a rear loader waste collection vehicle.

Bins will be serviced directly from the Bin Storage Area. The private contractor's waste collection vehicle will enter the Proposal in forward gear via Kenilworth Street or Guildford Road and pull up adjacent to the Bin Storage Area, refer Figure 2.

Private contractor's staff will ferry bins to and from the rear loader waste collection vehicle and the Bin Storage Area during servicing. The private contractor will be provided with key/PIN code access to the Bin Storage Area and security access gates to facilitate servicing, if required.

Once servicing is complete the private contractor's rear loader waste collection vehicle will exit in a forward motion, turning onto Kenilworth Street or Guildford Road moving with traffic flow, refer Figure 2.

The above servicing method will preserve the amenity of the area by removing the requirement for bins to be presented to the street on collection days. In addition, servicing of bins onsite will reduce the noise generated in the area during collection. Noise from waste vehicles must comply with the Environmental Protection (Noise) Regulations and such vehicles should not service the site before 7.00am or after 7.00pm Monday to Saturday, or before 9.00am or after 7.00pm on Sundays and Public Holidays.

4.1 Bulk and Speciality Waste

Bulk and speciality waste materials will be removed from the Proposal as they are generated on an 'as required' basis, through the assistance of the site operator, who will liaise with staff and cleaners to assist with the removal of these wastes, as required.

5 Waste Management

The site operator will be engaged to complete the following tasks:

- Monitoring and maintenance of bins and the Bin Storage Area;
- Cleaning of bins and the Bin Storage Area, when required;
- Ferrying of bins to and from each of the fuel pumps and adjacent to the vacuum bay and the Bin Storage Area, as required;
- Ensure all staff/cleaners at the Proposal are made aware of this WMP and their responsibilities thereunder;
- Monitor staff/cleaner behaviour and identify requirements for further education and/or signage;
- Monitor bulk and speciality waste accumulation and assist with its removal, as required;
- Regularly engage with staff/cleaners to develop opportunities to reduce waste volumes and increase resource recovery; and
- Regularly engage with the private contractors to ensure efficient and effective waste service is maintained.

6 Conclusion

As demonstrated within this WMP, the Proposal provides a sufficiently sized Bin Storage Area for storage of refuse and recyclables, based on the estimated waste generation volumes and suitable configuration of bins. This indicates that an adequately designed Bin Storage Area has been provided, and collection of refuse and recyclables can be completed from the Proposal.

The above is achieved using:

- Two 1,100L refuse bins, collected three times each week; and
- One 1,100L recycling bin, collected three times each week.

A private contractor will service the Proposal onsite, directly from the Bin Storage Area. The private contractor's waste collection vehicle will enter and exit the Proposal in forward gear via Kenilworth Street or Guildford Road.

The site operator will oversee the relevant aspects of waste management at the Proposal.

Figures

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396,300
396,330
396,360
396,390
6,467,130
6,467,100
6,467,070
Kenilworth St
Guildford Rd
Darby St

Data source: Roads, Cadastre - Landgate, 2024. Imagery: Nearmap, 2024.

LEGEND

Site Boundary

Cadastre

Freehold
Road
Strata Plan or Lot
Easement

LOCALITY

0 5 10 15 20 km

LOCALITY

321 Guildford Road
Bayswater WA 6053

PC Infrastructure Pty Ltd

N
0 5 10 15 m

Coordinate System: GDA2020 MGA Zone 50
Scale @ A3: 1:400

Prepared:	E Jackson	Date:	27/11/2024
Reviewed:	S Crowley	Revision:	A
Project:	WMP24133		

talis consultants

Figure 01

Document Path: \\server\talis\SECTIONS\Waste\PROJECTS\WMP2024\WMP24133 - 321 Guildford Road, Bayswater\GIS\Maps\WMP24133 - 321 Guildford Road, Bayswater\WMP24133 - 321 Guildford Road, Bayswater.aprx

SITE PLAN

1:200 AT A1

areas

service station complex

site	2138sqm
control building	272sqm
canopy	196qm
auto wash	64sqm
plant	18sqm
wash entry	120sqm
vacuum	41sqm
landscaping	308sqm - 14% of site area
pavement	1119sqm

all new roof deck to have solar absorbency not greater than 0.45

NEW SERVICE STATION COMPLEX

CORNER KENILWORTH STREET AND GUILDFORD, BAYSWATER, WA

0 1 2 5 10 15m

Scale 1:200 at A1

PLANNING

26.11.25

22JN1500 sk01v

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Assets | Engineering | Environment | Noise | Spatial | Waste

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REVERBERATE
CONSULTING

Proposed OTR Service Station
319 Guildford Rd, Bayswater
Environmental Noise Impact

Reference: P191189RP1

REVERBERATE CONSULTING

Document Information

Project	Proposed Service Station – 319 Guildford Road, Bayswater	
Client	OTR	
Report title	Environmental Noise Impact	
Project Number	P191189	
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Revision Table

Report revision	Date	Comments
0	31 May 2023	Draft for client review
1	7 August 2023	Updated layout
2	4 October 2024	Revised Layout
3	18 December 2024	Updated neighbour classification
4	20 June 2025	Updated layout
5	24 September 2025	Updated layout
6	18 December 2025	Updated layout

Glossary

A-weighting	A spectrum adaption that is applied to measured noise levels to represent human hearing. A-weighted levels are used as human hearing does not respond equally at all frequencies.
dB	Decibel—a unit of measurement used to express sound level. It is based on a logarithmic scale which means a sound that is 3 dB higher has twice as much energy. We typically perceive a 10 dB increase in sound as a doubling of the loudness of that sound.
Frequency (Hz)	The number of times a vibrating object oscillates (moves back and forth) in one second. Fast movements produce high frequency sound (high pitch/tone), but slow movements mean the frequency (pitch/tone) is low. 1 Hz is equal to 1 cycle per second.
L_{10}	Noise level exceeded for 10 % of the measurement time. The L_{10} level represents the typical upper noise level and is often used to represent traffic or industrial noise emission.
L_{A10}	A-weighted L_{10}
$L_{A10,adj}$	Adjusted L_{A10}. Adjustment based on obvious tonality, impulsive or Modulation characteristics in the audible noise at a receiver point. Based on the adjustment methodology in Environmental Protection (Noise) Regulations 1997 Regulation 9
$L_{A1,adj}$	Adjusted, A-weighted noise level exceeded for 1 % of the measurement time. The $L_{A1, adj}$ level represents mostly short duration, high level sound events.
$L_{Amax,adj}$	Adjusted, A-weighted maximum instantaneous noise level.

REVERBERATE CONSULTING

Table of Contents

1. Introduction

Reverberate Consulting has been engaged by PCI Infrastructure Pty Ltd to prepare a planning stage environmental noise impact assessment for the proposed Service Station development at 319 Guildford Road, Bayswater. This development is described in the architectural drawings by ADS Architects, dated 26.11.25

This report covers the main types of environmental noise emission from the site as part of the study:

- car park and customer vehicle activity
- delivery and supply trucks
- mechanical plant and equipment at the site
- vehicle wash and vacuum areas

The purpose of this report is to present the findings of potential noise emissions from the site.

2. Site and Surrounds

The proposed Service Station is located on a parcel of land on the corner of Guildford Road and Kenilworth St, Bayswater, refer to the Site Plan Figure 1. The site is to have a convenience store building on the eastern end of the site, the associated fuel/bowser operations being under a central fuel canopy. Additionally, an automated carwash is to be located on the northern corner of the site, with a vacuum bay adjacent on the north western boundary. The remainder of the subject site is to be partitioned, with the northern portion (Northern Res A) to be developed as a commercial premises.

The activities at the site are proposed to operate during the hours shown in Table 1 below:

Table 1 – Proposed Operating Hours of Activities

Operation	Time of Day		
	Mon to Fri	Saturday	Sunday & Public Holiday
Convenience Store	24h	24h	24h
Automated carwash, Manual Carwash, & Vacuum bay	7 am – 10 pm	7 am – 10 pm	9 am – 10 pm
Fuel Deliveries	7 am – 7 pm	7 am – 7 pm	-
Other Deliveries	24h	24h	24h

The dominant noisy activity for the Convenience store is caused by truck and car movements. The principal sources generally are patron vehicles as well as the following truck movements:

- Fuel tanker deliveries. Maximum of 1 tanker per 24 hours, typically 2 to 3 tankers per week.
- Other truck deliveries of up to 3 deliveries per 24 hours. May include refrigerated truck delivery
- Garbage collection – a maximum of 1 per day, between 7am and 6pm

Other noise sources include the carwash operations and vacuum bays.

Guildford Road has been measured by the DMR (2018/2019) to have a total of 33,681 vehicles per day (Average Mon – Fri). On this basis it has been classified as a major road for this assessment.

The nearest noise-sensitive site are the surrounding neighbours as shown in the Site Plan in Figure 1 below. Of these residences 50A Grosvenor Rd, 52A Grosvenor Rd, and 54 Kenilworth St are all two storey. The other most-affected residences are single storey.

Figure 1 – Site Plan

3. Noise Assessment Criteria

3.1 Environmental Protection Act

The Environmental Protection Act (1986) provides for the prevention, control and abatement of pollution and environmental harm. This Act limits environmental noise in Section 3 (3) as follows:

For the purposes of this Act, noise is taken to be unreasonable if –

> *(a) it is emitted, or the equipment emitting it is used, in contravention of —*
> *(i) this Act; or*
> *(ii) any subsidiary legislation made under this Act; or*
> *(iii) any requirement or permission (by whatever name called) made or given by or under this Act;*
> *or*
>
> *(b) having regard to the nature and duration of the noise emissions, the frequency of similar noise emissions from the same source (or a source under the control of the same person or persons) and the time of day at which the noise is emitted, the noise unreasonably interferes with the health, welfare, convenience, comfort or amenity of any person; or*
>
> *(c) it is prescribed to be unreasonable for the purposes of this Act.*

Reverberate has used the above legislation to assess the noise impact from the site. More particularly, noises which have a distinct character, and are different to the ambient noise environment are assessed under the subsidiary legislation; the Environmental Protection (Noise) Regulations 1997. Such an assessment has been undertaken for noise sources such as vehicle starting, tanker exhaust brakes, vehicle door closing, mechanical plant / air conditioning, reversing beepers, as well as carwash activities and plant.

Other types of noises from the site, such as that generated by vehicles driving, or manoeuvring in the carpark and drive way on site, have not been assessed under the Regulation. Reference is drawn to Section 3 (3) (b) of the Act which requires the assessment to have regard to the nature, duration and time of day of such noise emissions and the frequency of similar noise emissions from the same source. It is noted that the adjoining road, Guildford Road already has 30,000+ vehicles per day, so the movement of vehicles on site, per se is not considered characteristically different to that already in the area.

3.2 Environmental Protection (Noise) Regulations 1997

The Environmental Protection (Noise) Regulations 1997 (EPR) provide limits for acceptable noise from operations and activities. The Regulations specify the maximum permissible noise levels (termed Assigned Levels) at noise sensitive premises, caused by excessive nearby noise, during various times of the day.

The Assigned Levels have been calculated for all properties using the method shown in Appendix B. The resultant Assigned Levels are presented for a representative premises below in Table 2.

Due to the proposed hours of operation, the night-time period is the critical assessment period with the most stringent noise criteria to meet.

Table 2 – Assigned Levels

Receiving Premises	Time of Day	Assigned Level (dB)		
		L_{A10}	L_{A1}	L_{Amax}
Noise Sensitive Premises - Highly Sensitive	0700 to 1900 hours Monday to Saturday	52	62	72
	0900 to 1900 hours Sunday and public holidays	47	57	72
	1900 to 2200 hours all days	47	57	62
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays	42	52	62

The Assigned Levels above have been applied against the environmental noise emission from the sources outlined in Table 3 below.

4.Noise Assessment

4.1 Noise Sources

Noise emission sources, buildings and ground contours were used to develop a 3-D SoundPLAN noise model as shown below in Figure 2. This figure has general site details including the locations of modelled noise sources, noise barriers, and site & surrounding buildings.

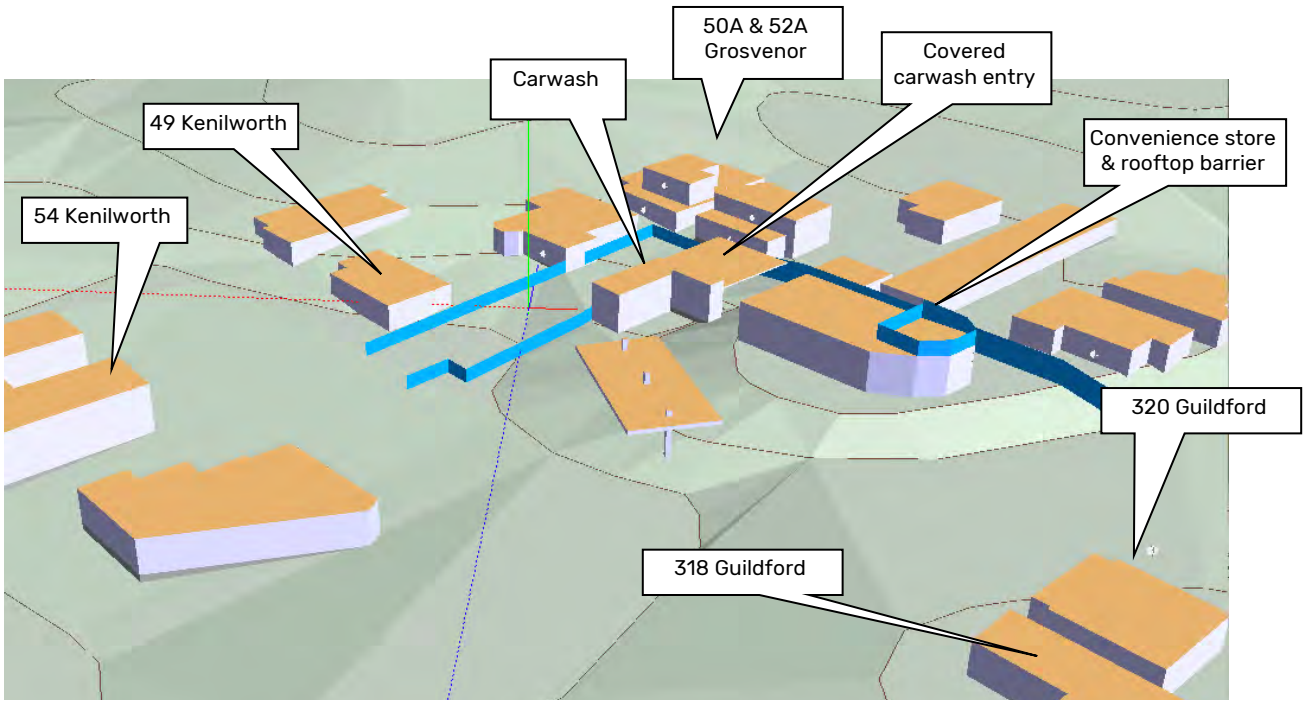


Figure 2 – 3-D SoundPLAN model of Convenience Store Site with Noise Sources

The noise emission levels for the project noise sources are summarised below in Table 3.

Table 3 Summary of Sound Power Levels

Summary of Sound Power Levels (dB)			
Noise Source	L_{A10}	L_{A1}	L_{Amax}
Delivery Truck: refrigeration plant	-	95	96
Delivery Truck: park brake	-	-	74
Delivery Truck: reversing beeper	-	-	95
Passenger Car: engine start	-	-	85
Passenger car: door close	-	-	84
Rooftop AC outdoor units* (each of two)	79	-	-
Rooftop Refrigeration outdoor unit x 1	80	-	-
Tyre Refill Beeper	-	-	88
Rooftop Exhaust fans (each of two)	66	-	-
Person Talking	-	72	74
Engine Idling (Drive thru)	-	83	84
Talking - amplified (Drive Thru)	-	72	74
Tyre air compressor (silenced)	-	71	72
Vacuum cleaner (each of two)	81	-	-
Auto Carwash - Blower	94	97	97
Car idling waiting for carwash	83	-	-

Note * night-mode is to be a minimum 5 dB quieter

4.2 Noise Forecast and Impact

Computer noise modelling was used to forecast the noise impacts to locations around the site. The software used was SoundPLAN Version 8.2, with the ISO9613 algorithms selected. These algorithms have been used as they allow for the influence of wind, atmospheric stability, barriers, building shielding and ground absorption. It is appropriate for the current configuration of noise sources and for the nearest receiver locations.

The Input data used in modelling includes

- Meteorological Information;
- Topographical data;
- Buildings, barriers, fences, and other features which may shield noise
- Ground Absorption; and
- Source sound levels.

The following parameters were used as required in modelling for night-time operations i.e. between 10pm and 7am.

- Pasquil Stability Factor F
- Temperature 15 ^{O}C
- Wind Speed 3 m/s
- Wind Direction Worst case – i.e. all directions
- Relative Humidity 50%
- Ground Absorption 0.65 in grassed areas
- 0.10 for paved areas such as roads and carparks

Adjustments were applied for the forecast noise reaching receptor locations. Where evident at the receiving locations, the following adjustments were applied:

- +10 dB where the received noise was determined to have impulsive characteristics
- +5 dB where the received noise was determined to have tonal characteristics

The forecast noise levels at sensitive receivers are summarised in Table 4 to Table 7 below. These forecasts are based on the maximum Sound Power Levels in Table 3 and the successful implementation of the Noise Management Plan in Appendix A.

The forecast noise levels at sensitive receivers are also shown in the noise contour plots in Figure 3 to Figure 6.

The tables show that the following emitted noises are the highest noise levels compared to their respective assigned level criteria:

- the delivery truck door
  L_{Amax} emission = 61 - 62dB @ 318 & 320 Guildford Rd respectively, assigned level = 62 dB,Table 7.
- the total L_{A10} evening noise emission
  L_{A10} noise emission = 44 dB @ 314 & 323 Guildford Rd, assigned level = 47 dB, Table 5.
- the total L_{A10} night-time noise emission
  L_{A10} noise emission = 39 dB @ 323 Guildford Rd, assigned level = 42 dB, Table 4

These levels, as well as the other emissions of all tabulated sources comply with the Noise Regulations and are therefore considered acceptable.

Table 4 Forecast Night-time $L_{A10,adj}$ noise emission (dB)

	Receiver								
Noise Source	50A Grosvenor 1st Fl	52A Grosvenor 1st Fl	314 Guildford Grnd Fl	318 Guildford Grnd Fl	320 Guildford Grnd Fl	322 Guildford Grnd Fl	323 Guildford Grnd Fl	49A Kenilworth Grnd Fl	54 Kenilworth 1st Fl
rooftop fans*	21	23	16	21	23	24	27	17	19
Rooftop AC*	31	33	28	32	33	33	35	25	25
Rooftop refrig *	34	37	31	35	34	36	39	29	30
Overall*	34	37	31	35	34	36	39	29	30
Assigned Level	42	42	42	42	42	42	42	42	42
Compliance	**Achieved**	**Achieved**	**Achieved**	**Achieved**	**Achieved**	**Achieved**	**Achieved**	**Achieved**	**Achieved**

Note * Tonality adjustment applied

Table 5 Forecast Evening $L_{A10,adj}$ noise emission (dB)

	Receiver								
Noise Source	50A Grosvenor 1st Fl	52A Grosvenor 1st Fl	314 Guildford Grnd Fl	318 Guildford Grnd Fl	320 Guildford Grnd Fl	322 Guildford Grnd Fl	323 Guildford Grnd Fl	49A Kenilworth Grnd Fl	54 Kenilworth 1st Fl
Car A idling @ carwash	28	31	27	20	15	19	25	22	26
Car B idling @ car wash	24	32	29	16	16	15	29	24	24
Car wash*	30	32	33	33	31	29	24	41	36
Vacuum bay E*	35	33	41	37	36	31	22	33	36
Vacuum bay W*	34	34	41	37	36	31	23	33	36
Mechanical Plant*	37	39	36	40	40	42	44	32	34
Overall*	**37**	**39**	**44**	**40**	**40**	**42**	**44**	**41**	**39**
Assigned Level	47	47	47	47	47	47	47	47	47
Compliance	**Achieved**	**Achieved**	**Achieved**	**Achieved**	**Achieved**	**Achieved**	**Achieved**	**Achieved**	**Achieved**

Note * Tonality adjustment applied

Table 6 Forecast Night-time $L_{A1,adj}$ noise emission (dB)

	Receiver								
Noise Source	50A Grosvenor 1st Fl	52A Grosvenor 1st Fl	314 Guildford Grnd Fl	318 Guildford Grnd Fl	320 Guildford Grnd Fl	322 Guildford Grnd Fl	323 Guildford Grnd Fl	49A Kenilworth Grnd Fl	54 Kenilworth 1st Fl
Car idling order point	40	45	40	36	34	25	35	38	44
Car idling pickup point	37	40	16	37	39	43	41	24	16
Talking order point	25	30	15	21	18	8	16	23	28
Talking pickup point	27	31	3	27	28	29	31	14	6
Tyre air compressor*	19	23	18	10	7	9	18	14	17
Assigned Level	**52**	**52**	**52**	**52**	**52**	**52**	**52**	**52**	**52**
Compliance	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved

Note * Tonality adjustment applied

Table 7 Forecast Night-time $L_{Amax,adj}$ noise emission (dB)

	Receiver								
Noise Source	50A Grosvenor 1st Fl	52A Grosvenor 1st Fl	314 Guildford Grnd Fl	318 Guildford Grnd Fl	320 Guildford Grnd Fl	322 Guildford Grnd Fl	323 Guildford Grnd Fl	49A Kenilworth Grnd Fl	54 Kenilworth 1st Fl
Car 1 door**	30	34	49	54	53	52	33	43	48
Car 5 door**	41	48	49	46	49	48	32	48	49
Car 7 door**	45	46	49	49	48	44	27	46	55
Car 9 door**	46	45	47	45	41	42	34	37	48
Car 10 door**	43	44	50	45	45	42	32	42	44
Car bowser 1 door**	40	43	50	52	51	48	30	44	49
Delivery Truck door close N**	53	46	57	61	62	60	43	55	58
Delivery truck Engine	31	34	45	51	50	48	32	43	48
Delivery vehicle refrig*	51	51	54	58	60	57	45	49	55
Delivery vehicle reversing beeper*	47	49	54	56	56	52	37	51	54
Tyre refill beeper*	35	36	47	50	51	49	30	43	50
Assigned Level	62	62	62	62	62	62	62	62	62
Compliance	**Achieved**	**Achieved**	**Achieved**	**Achieved**	**Achieved**	**Achieved**	**Achieved**	**Achieved**	**Achieved**

Note * Tonality adjustment applied

** Impulsive adjustment applied

Figure 3 – Forecast L_{A10} night-time noise contours (Grnd floor)
(Assigned Level 42 dB)

Figure 4 – Forecast L_{A10} evening noise contours (Grnd floor)
(Assigned Level 47 dB)

Figure 5 – Forecast L_{A1} night-time noise contours (Grnd floor)
(Assigned Level 52 dB)

Figure 6 – Forecast L_{Amax} night-time noise contours (Grnd floor)
(Assigned Level 62 dB)

5. Conclusions

An assessment of environmental noise emission from the proposed service station and Carwash facilities has been undertaken.

The forecast noise emission levels have been presented. The recommended treatments to control noise emissions are outlined in the Noise Management Plan (Appendix A) and in the site plan, Appendix C. These treatments have been shown to control environmental noise emission from the site so that compliance is achieved with the Environmental Protection Act (1986) and Environmental Protection (Noise) Regulations 1997.

On this basis the noise emissions from the site are considered acceptable and Unreasonable Noise, as defined in the Act is not expected from site.

Appendix A: Noise Management Plan

The elements outlined below are recommended as part of a comprehensive Noise Management Plan. They are recommended for compliance with the Environmental Protection Act 1986 and its subsidiary legislation; the Environmental Protection (Noise) Regulations 1997.

Noise Source or Activity	Requirement
General Deliveries	• General Deliveries and operation permitted during the operational hours shown in Table 1 • Reversing of trucks to be minimised to avoid the unnecessary activation of the reversing beeper. • "Broad band", or "white noise" reversing beepers while not essential, are preferable for all Delivery trucks at the site • Night-time deliveries with trucks fitted with refrigeration units are limited. Any deliveries between 10pm and 7am (Mon-Sat) or between 10pm and 9am (Sun & public holidays) require the refrigeration units to be switched off on arrival and only switched on after leaving the site • Evening deliveries with trucks fitted with refrigeration units are limited to a lesser extent. Any deliveries between 7pm and 10pm (Mon-Sat) or between 9am -10pm (Sundays & public holidays) are limited to a maximum of 18min of operation of the refrigeration unit during the evening period, or a maximum of 23 min during any 4 hour period on Sundays/Public holidays
Refuse Collection	• Refuse collection is to be carried out in the quietest reasonable and practicable manner; • Equipment used for refuse collection is the quietest reasonably available • Collection to occur between 7 am and 7 pm Mon-Saturday, unless the contractor has a Noise Management Plan approved by Council.
Fuel Tanker Deliveries	• Deliveries permitted during the hours outlined in Table 1 • Vehicle manoeuvring on site to be at a maximum of 5-8 km/h, and with low engine revs. • "Broad band", or "white noise" reversing beepers while not essential, are recommended for all tanker trucks • Reversing of trucks to be discouraged to avoid the unnecessary activation of the reversing beeper.
Barriers	• Recommended barriers are shown in Appendix C • Barriers up to 1.8m high can be colourbond or other suitable material. • Taller barriers are to be masonry, concrete or another acoustic material with a performance not less than Rw 28
Grilles, Storm water grates & other metal covers	• To be installed so as to be tight fitting. Where this cannot be achieved, hard rubber or other durable materials are to be used for cushioning metal grates & covers
Signage	• To be installed in the carpark to remind patrons to keep noise to a minimum due to the proximity of neighbouring areas
Outdoor Building Services plant	Air compressors to be co-located with other plant within a plantroom

Noise Source or Activity	Requirement
Other Noisy Plant	• Beepers (for tyre air refill) and other alert devices on site shall be selected to minimise their noise emission and to orient away from the nearest neighbours. Noise emissions not to exceed the values outlined in Table 3
Outdoor Speakers	• No music to be played through any speaker on site. The use of the speaker is to be limited to emergency messaging and patron management only
Carwash	• A water resistant acoustic lining, minimum NRC 0.95 is required on the ceiling and walls of the carwash bay, exposed to the carwash environment, minimum area 78m2. • Proposed acoustic lining material to be a 50mm thick 32kg/m3 glass wool with 15 micron Mylar facing. Water & corrosion resistant perf metal facing, minimum 0.42mm thick, and with a minimum 11% open area. Perf metal facing to sit a minimum 50mm clear gap to insulation • Maximum opening to the South of the carwash to be 2.7m wide and 2.7m high. The opening to the North to be 2.7m wide and 3.0m high. • Openings to be sealed during carwash with a minimum 10.38mm sliding glass door. Door to seal gap-free when closed using brush seals in contact around the full perimeter of the sliding doors • NE, NW and SW walls of the carwash to be masonry with a minimum rating of Rw 55. No additional glazing, apart from the sliding access doors permitted on these walls. • The wall to the SE can be Rw 45. Glazing in this wall to double glazed, with a minimum 10mm and 6mm thickness glass and a minimum 100mm cavity • Roof ceiling construction: 0.42mm colourbond roof, 9mm FC or 16mm fire-rated moisture resistant ceiling with NRC 1.0, 100mm thick glasswool insulation in ceiling cavity. Ceiling cavity to be a minimum of 400mm • A covered entry area is required (Appendix C) to prevent excess car noise while vehicles are idling and waiting for carwash. • Roof covering to be acoustically equivalent to 9mm CFC, with acoustic lining NRC 0.95 underneath, No gaps permitted between covering and boundary walls
Overall	• Noise Emission from all sources not to exceed the levels in Table 3 of this report, for the treatments outlined in this Section to be sufficient • Noise Emission from all sources to meet the time limits outlined in Table 1 • In the event that quieter, or louder equipment is proposed for the site, a review of overall noise emission is required to determine the finalised noise control measures. For example, where equipment is provided which is a minimum of 3 dB quieter than that outlined in Table 3, revised noise controls and/or extended operation hours can be contemplated. • Noise control for building services plant to be reviewed at the detailed design stage, after the selection of final mechanical plant, to ensure compliance with the acoustic requirements in this report
Loading Bay	• Evening & night-time unloading permitted at the location shown in Appendix C • Refrigerated deliveries are limited as outlined above in General Deliveries

Appendix B: Determination of Assigned Level

The Environmental Protection (Noise) Regulations 1997 (EPR) provide limits for acceptable noise from operations generating excessive noise. The Regulations specify the maximum permissible noise levels (termed assigned levels) at noise sensitive premises, caused by surrounding noises, during various times of the day. Time of day affects the assigned levels for noise-sensitive premises, as follows –

- Lowest levels at night (10 pm to 7 am any day, or to 9 am Sundays and Public Holidays);
- Higher levels during the evenings (7 pm to 10 pm) and on Sundays and Public Holidays (9 am to 10 pm); and
- Highest levels during the day (7 am to 7 pm Monday to Saturday).

The baseline assigned levels from the Regulations are shown below in Table 8.

Table 8 – Baseline Assigned Levels

Receiving Premises	Time of Day	Assigned Level (dB)		
		L_{A10}	L_{A1}	L_{Amax}
Noise Sensitive Premises - Highly Sensitive	0700 to 1900 hours Monday to Saturday	45+IF	55+IF	65+IF
	0900 to 1900 hours Sunday and public holidays	40+IF	50+IF	65+IF
	1900 to 2200 hours all days	40+IF	50+IF	55+IF
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays	35+IF	45+IF	55+IF
Noise Sensitive Premises – any area other than highly sensitive area	All hours	60	75	80
Commercial	All hours	60	75	80
Industrial	All hours	65	80	90

The Assigned Levels above are then increased using an Influencing Factor (IF) as defined in the Regulations. The Influencing Factor is greater than zero where there are significant areas of land uses, within 100 m and 450 m radii of the receptor, including:

- industrial land use zonings;
- commercial zonings; and
- the presence of roads carrying significant traffic.

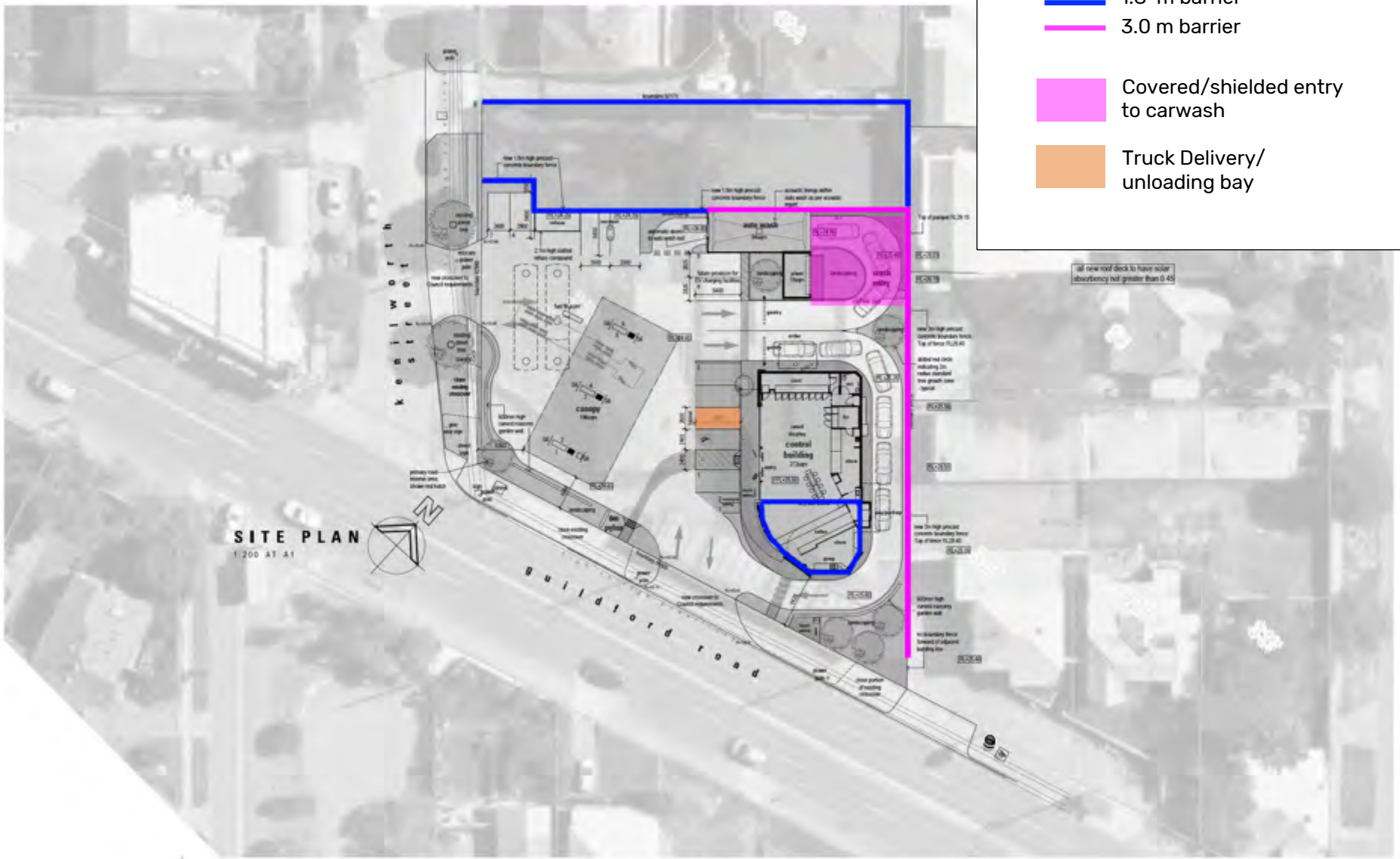
The Influencing Factor IF has been calculated for the applicable noise sensitive receptors in the current study. The percentage of industrial and commercial land within the prescribed circles centred on the noise sensitive premises, and the presence of roads with more than 6000 vehicles per day have been assessed for the properties.

Example Influencing Factor calculations are shown below. These factors have been added to the baseline Assigned Levels to produce the Assigned Levels in Section 3.2 in the body of this report.

Property = #49 Kenilworth St

Type of Land	450m Radius	100m radius	Total	
Industrial Land	0%	0%	0.0	dB
Commercial Land	1.5%	15.5%	0.9	dB
Transportation Factor			6	dB
TOTAL Influencing Factor			**7**	**dB**

Appendix C: Site layout and recommended treatments



PEREGRINE
CORPORATION

OTR Bayswater

Operational Management Plan

December 2025

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OTR Bayswater

Operational Management Plan

December 2025

This Operational Management Plan (**OMP**) relates to the proposed service station (including convenience store, drive-through ordering and pick up facility and car wash) at 321 Guildford Road, Bayswater in the City of Bayswater (**subject land**).

This OMP accompanies a planning application submitted to the City for consideration by the City and determination by the Metro Inner DAP.

Implementation of the OMP will ensure that the proposed development is a safe, efficient and pleasant environment in which to work and visit, and that the amenity of neighbouring properties and the locality generally is preserved and maintained.

1. Subject land and context

The proposed service station (including convenience store, drive-through ordering and pick-up facility and car wash) will develop land that is currently unimproved and unused to provide a modern, contemporary commercial and retail facility that will enhance the built form character of the locality.

The proposed development will serve residents of the locality and users of the nearby recreational and commercial facilities through the provision of day-to-day needs including groceries and convenience retail items, food and beverages, vehicle washing facilities and fuel.

2. Operational hours

(a) The convenience store (including fuel and retail sales and the drive-through ordering and pick up facility) will operate on a 24 hour per day, 7 day per week basis.

(b) The automated car wash facility and associated vacuum bay will operate between 7:00am and 10:00pm, Monday to Friday and Saturday, and 9:00am to 10:00pm, Sundays and public holidays.

(c) Fuel deliveries will be received between 7:00am and 7:00pm, Monday to Friday and Saturday, with no fuel deliveries on Sundays and public holidays.

(d) Deliveries other than fuel will be received at any time

(e) Rubbish collection will a maximum of once per day, and only between 7:00am and 7:00pm, with no collections on Sundays or public holidays.

3. Staffing

(a) The Convenience Store (including the drive-through ordering and pick up facility) and Car Wash (including the vacuum equipment) will be operated as a single integrated facility. Each element will be under the same ownership and operation; staff members will be trained and have responsibility for assisting customers in the use of all on-site facilities; and customer payments for all facilities will be accepted through any of the on-site payment points.

(b) During daytime hours between 2 and 4 members of staff will be on duty at any time, based on expected or actual customer and transaction numbers. During overnight

hours when a lower number of customers and transactions occurs, the site may be attended by a single staff member.

4. Management of car wash and vacuum equipment

(a) Customers who wish to use the car wash have the following options:

(1) Purchase an activation code for the equipment at the sales counter in the control building.

(2) Purchase car wash services using the OTR app. to obtain an activation code without staff assistance.

(b) In either case, car wash equipment will be activated and used by customers without the need for staff intervention, through entry of the purchased activation code at a key pad in the car wash entry lane. Vacuum equipment will be activated by customers inserting cash or using an EFT or credit card at the console on the vacuum equipment.

(c) Customers' use of the drive-through car wash and the vacuum equipment will be guided by signs and instructions posted at visible and convenient places, assisting them in paying for the required service, securing items on the vehicle to prevent damage, activating the equipment and safely proceeding into and through the car wash.

(d) In accordance with the separate Noise Management Plan prepared in relation to the development, the drive-through car wash will be fitted with automatic sliding glass doors both to entry and exit. The doors will close and seal gap-free automatically after a vehicle enters the drive-through and before the chosen cycle begins; the doors will open only after all car wash and drying operations have concluded.

(e) In the case of an event requiring customer assistance (for example malfunction of equipment, damage to customer property) the staff member or members on duty in the control building will be responsible for logging the incident and reporting to the site operator's responsible staff member for further action and follow-up.

(f) If an event or incident requires the drive-through car wash and/or the vacuum equipment to be shut down, customer access to the equipment will be de-activated by the responsible staff member on duty in the control building.

(g) During times when the drive-through car wash and/or the vacuum equipment is not in use (as specified in item 2(b) of this OMP) or when for any other reason any item of equipment is unavailable for customer use, the equipment will not allow customers use, access or activate the affected equipment.

5. Management of drive-through

(a) Customers who wish to use the drive-through ordering and pick up facility have the following options:

(1) Using the OTR app before arriving at the site to order and pay for items from the in-store range of food, beverages and grocery items.

(2) Driving to the order point at the drive-through entry and choosing items from the displayed menu screens to place an order through the order intercom

equipment. In addition to items displayed on the menu screens, customers may request any item in the in-store food, beverage and grocery range.

(b) In all cases customers who have placed a drive-through order will proceed to the pay and pick-up point to pay (if not already paid using the app) and pick up the goods ordered.

(c) If there is any delay in delivering a customer's order at the pick-up point, staff may direct the drive-through customer to proceed to a vacant parking bay so that customers further back in the drive-through queue can be served.

(d) The drive-through facility, including taking orders and payment, preparing orders and handing to customers at the pay and pick-up point will be operated by the staff member or members on duty in the control building from time to time. At times when a single staff member is on duty in the control building, use of a headset will allow orders to be taken from drive-through customers while the staff member also attends customers at the sales counter within the control building.

(e) If at any time (for example during a period of repairs and maintenance) the drive-through facility is not operational, the menu screens will advise customers to continue through the drive-through to a vacant parking space, and to place or pick up orders by walking into the control building.

6. Deliveries

(a) Fuel deliveries will be made using a fuel tanker of no more than 16.9 metres in length which will enter by approaching along Guildford Road from the west and turning left into Kenilworth Street and then right into the subject land.

Alternatively, the fuel tanker may approach along Guildford Road from the east and turn right into Kenilworth Street and then right into the subject land.

While delivering fuel to the subject land, the fuel tanker will stand adjacent to fuel fill points within the Kenilworth Street boundary of the subject land. On completion of fuel discharge, the fuel tanker will move in a forward direction and exit the site by turning left and moving eastwards along Guildford Road.

(b) Other deliveries, and waste collection, will be made by a service truck of no more than 8.8 metres in length, entering the site by turning right into Kenilworth Road. The truck will position itself adjacent to the refuse storage enclosure (for collection of waste) or adjacent to the control building (for non-fuel deliveries). On the completion of delivery or waste collection, the vehicle will move in a forward direction and exit the site to Guildford Road.

7. Waste management and collection

Waste generated during the operation of the proposed development will be dealt with in accordance with the separate Waste Management Plan prepared in relation to the site.

8. Management of traffic flow during deliveries and waste collection

During deliveries or waste collection, the operator of the proposed development and the operator of the delivery or collection vehicle will put up barriers or will otherwise take such measures as are necessary to minimise conflict between customer vehicles and the delivery or collection operations.

9. Noise management

Noise arising from the site will be dealt with in accordance with the separate Noise Management Plan prepared in relation to the site.

10. Security and safety

(a) Surveillance

Closed-circuit surveillance cameras will be placed in and around the premises at strategic locations, including within the building and refuelling areas. All cameras will be operated 24 hours a day and maintained in good working condition.

A sign will be placed at a prominent location advising that the premises are under 24-hour CCTV surveillance and that any anti-social behaviour will be reported to police.

Staff will undertake passive surveillance of all parts of the site while carrying out their duties.

External lighting will be provided around the site including building entrances, the fuel court and vehicle parking areas.

(b) Access control

The service station will include an intruder alarm and access control.

(c) Space/activity management

Clear and legible directional signage will be provided throughout the development to assist in “way finding” onto, over and off the site.

Landscaped areas, walls, parking areas and fencing will be maintained in good repair and condition.

TMK Consulting Engineers
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Hydraulics • Forensic • Construction Assist
Riverland Office: 25 Vaughan Terrace, Berri SA 5343

PROJECT MEMORANDUM
Number: 001

Date: 18.12.2025 **Job Number:** 2511124

To: Peregrine Corporation **Attention:** Andrew Caspar **Email:** A.Caspar@peregrine.com.au

From: Ashraful Aziz Abir

Project: OTR Bayswater WA
321 GUILDFORD ROAD BAYSWATER WA

Subject: Outdoor Lighting Assessment

Dear Andrew,

1.0 INTRODUCTION

TMK Consulting Engineers were engaged to provide an outdoor lighting assessment report to address the following:

- *An Obtrusive Light – Compliance Report prepared by a qualified and experienced Electrical Engineer in accordance with Australian Standard 4282 – 2023 'Control of the obtrusive effects of outdoor lighting' shall be provided to Council for Approval.*

External lighting requirements for the proposed development, including light spill across to adjacent properties must be compliant to the current Australian Standards, and the relevant guidelines listed above.

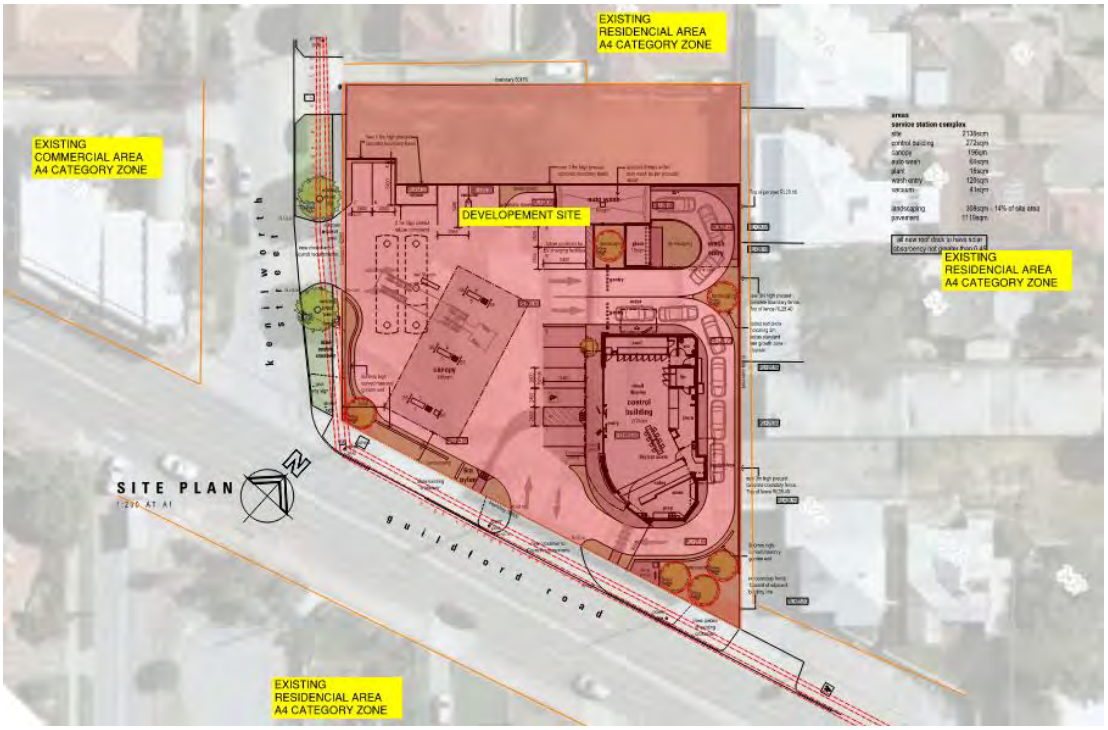


Figure 1: Aerial view and Obtrusive Lighting Calculation Boundary of proposed development Drawing No. 22JN1500 sk01v, dated 26.11.2025

The objective of this report is to:

a) Provide certification/commentary on the light spill across the boundary lines to adjoining properties boundaries during both curfew & non-curfew hours when the site is in operation, compliant to AS4282-2023 Table 3.1 and Table 3.2 criteria (extract copied below) for Environmental Zone A4 – High District Brightness.

Table 3.1 — Environmental zones

Environmental zones	Ambient light conditions	Descriptions/ Examples
A0	Intrinsically dark	UNESCO Starlight Reserve. IDA: Dark Sky Parks, Reserves or Sanctuaries Major optical observatories Other accreditations for dark sky places for example astrotourism, heritage value, astronomical importance, wildlife/ecosystem protection Lighting for safe access may be required
A1	Dark	Relatively uninhabited rural areas (including terrestrial, marine, aquatic and coastal areas) Generally roadways without streetlighting through rural areas
A2	Low district brightness	Sparsely inhabited rural and semi-rural areas Generally roadways without streetlighting through suburban, rural or semi-rural areas other than intersections
A3	Medium district brightness	Suburban areas in towns and cities Generally roadways with streetlighting through suburban, rural or semi-rural areas
A4	High district brightness	Town and city centres and other commercial areas Residential areas abutting commercial areas Industrial and Port areas Transport Interchanges
TV	High district brightness	Vicinity of major sport and event stadiums during TV broadcasts
NOTE Zones A0 and A1 would normally have a minimum area of 50 ha.(0.5 km^2). There may be smaller environmentally sensitive areas.		

Figure 2 – Table 3.1 of AS4282

Table 3.2 — Light technical parameter limits

Zones	Maximum vertical illuminance ($E_{v)}$ lux		Threshold increment (TI)		Upward Light Ratio
	Non-curfew	Curfew	Maximum TI %	Default Adaptation level (L_{ad}) cd/m^2	Maximum ULR_S or ULR_L
A0	0[a]	0.0	N/A	N/A	0.00
A1	2	0.1	20	0.1	0.00
A2	5	1	20	0.2[b]	0.01
A3	10	2	20	1	0.02
A4	25	5	20	5	0.03
TV	N/A	N/A	20	10	0.08

[a] For A0, E_v shall be as close to zero as practicable without impacting safety considerations.

[b] For an internally illuminated sign in a A2 zone, $L_{ad} \leq 0.25$ cd/m^2

Figure 3 Table 3.2 AS4282

b) Targeted illumination level on the car park areas and driveways, compliant to AS1158.3.1 -2020 for below usage areas indicated below and shown in Figure 4;
   - Lighting calculations are according to AS1158.3.1, sub-category:
   - PC1 for carpark areas
   - PCD for disabled car park space
   - Average horizontal illuminance of 14 lux for general circulation space

   Obtrusive lighting calculations are within the limit permitted within AS4282:2023

Figure 4: Site Plan, Drawing No. 22JN1500 sk01u, dated 06.01.2025

The various steps undertaken in the investigation were:

a) Computer modeling using readily available software & luminaire photometric (.IES) files received from lighting supplier.
b) Cross-reference & examination of all relevant standards to assess whether all the requirements are achieved.

The following was excluded from the assessment:

- Site survey visual walk through to examine the condition around the site.

2.0 PROPOSED LIGHTING LAYOUT

The lighting layout proposed is based on the use of:

- 12x 60W, LED luminaires, ceiling recessed square under canopy (ELWA-BR-GS60W-01-G1)
- 20x 60W, LED luminaires, ceiling recessed downlight under canopy (ELWA-BR-WP30W-01-G1)
- 8x 60W, LED luminaires, Surface mounted floodlight (ELWA – ERS-F60W-SP)
- 5x30W, LED luminaires, Wall Lights (BR-WP30W-01-G4-C4)
- 5x22W, LED luminaires, Bollard lights (ELWA 22W 4K Round Bollard)

Figure 5 provides an indication of the proposed lighting layout.

Figure 6 shows an example 3D perspective of the proposed building.

Figure 7 shows the lighting schedule & symbols, and installation arrangement:

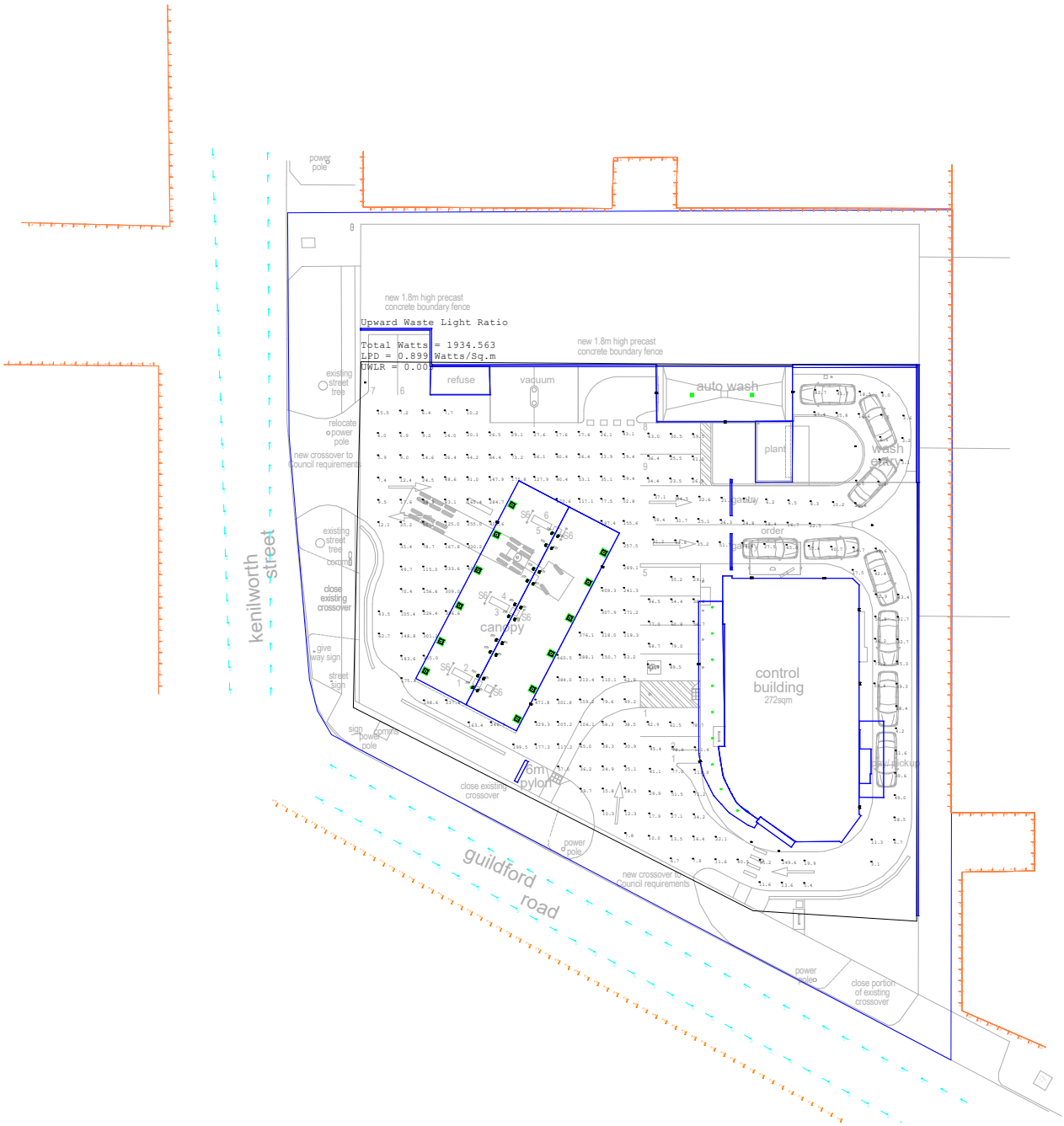


Figure 5 – Proposed Lighting Layout

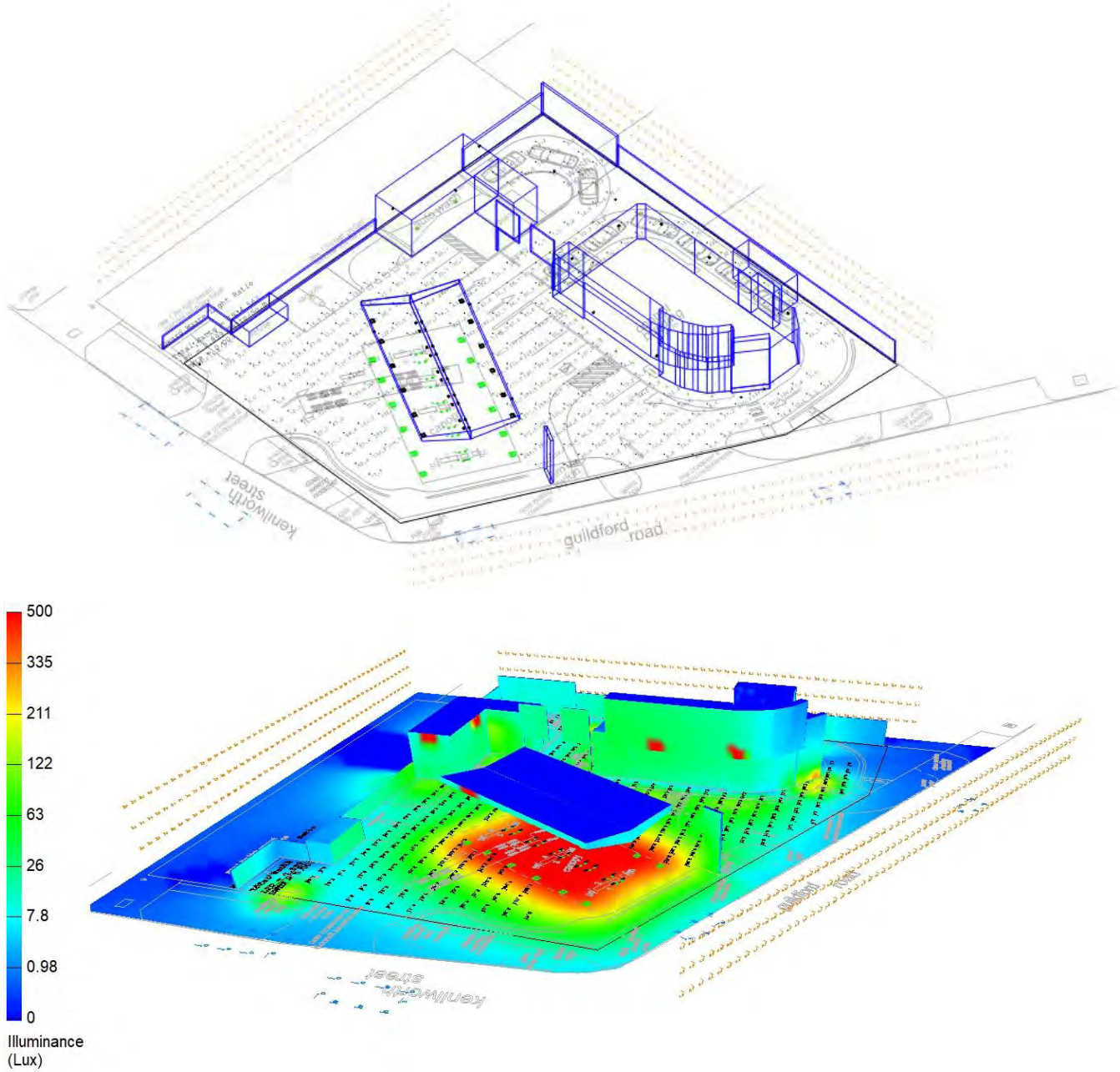


Figure 6 – Proposed 3D Perspective Model

Luminaire Schedule						
Symbol	Qty	Label	Description	LLF	Luminaire Lumens	Mounting Height
	5	ELWA 22W 5K Round bollard_IES	Bollard	0.800	2892	1
	5	ELWA BR-WP30W-01-G4_1	Wall light	0.800	4124	3.7
	8	ELWA ERS-F60W-SP	Flood Light	0.800	9486	4.95, 5.05, 6.04
	20	ELWA BR-WP30W-01-G4	001-Canopy Downlight	0.800	4124	4.5
	12	ELWA BR-GS60W-01-G1	BR-GS60W-01-G1-Canopy light	0.800	9112	5.5

Luminaire Location Summary				
LumNo	Label	Orient	Tilt	Mounting Height
1	ELWA BR-GS60W-01-G1	332.581	0	5.5
2	ELWA BR-GS60W-01-G1	330.858	0	5.5
3	ELWA BR-GS60W-01-G1	333.879	0	5.5
4	ELWA BR-GS60W-01-G1	333.05	0	5.5
5	ELWA BR-GS60W-01-G1	332.969	0	5.5
6	ELWA BR-GS60W-01-G1	333.399	0	5.5
7	ELWA BR-GS60W-01-G1	153.329	0	5.5
8	ELWA BR-GS60W-01-G1	154.815	0	5.5
9	ELWA BR-GS60W-01-G1	154.91	0	5.5
10	ELWA BR-GS60W-01-G1	153.43	0	5.5
11	ELWA BR-GS60W-01-G1	157.632	0	5.5
12	ELWA BR-GS60W-01-G1	152.036	0	5.5
13	ELWA BR-WP30W-01-G4	316.647	0	4.5
14	ELWA BR-WP30W-01-G4	136.642	0	4.5
15	ELWA BR-WP30W-01-G4	333.075	0	4.5
16	ELWA BR-WP30W-01-G4	149.105	0	4.5
17	ELWA BR-WP30W-01-G4	331.908	0	4.5
18	ELWA BR-WP30W-01-G4	155.079	0	4.5
19	ELWA BR-WP30W-01-G4	326.926	0	4.5
20	ELWA BR-WP30W-01-G4	145.853	0	4.5
21	ELWA BR-WP30W-01-G4	329.589	0	4.5
22	ELWA BR-WP30W-01-G4	160.407	0	4.5
23	ELWA BR-WP30W-01-G4	331.377	0	4.5
24	ELWA BR-WP30W-01-G4	152.862	0	4.5
25	ELWA BR-WP30W-01-G4	345.056	0	4.5
26	ELWA BR-WP30W-01-G4	151.038	0	4.5
27	ELWA BR-WP30W-01-G4	334.058	0	4.5
28	ELWA BR-WP30W-01-G4	151.388	0	4.5
29	ELWA BR-WP30W-01-G4	332.484	0	4.5
30	ELWA BR-WP30W-01-G4	160.402	0	4.5
31	ELWA BR-WP30W-01-G4	153.782	0	4.5
32	ELWA BR-WP30W-01-G4	332.484	0	4.5
33	ELWA ERS-F60W-SP	339.498	0	6.04
34	ELWA ERS-F60W-SP	180.617	0	4.95
35	ELWA ERS-F60W-SP	332.484	0	6.04
36	ELWA ERS-F60W-SP	201.259	0	4.95
37	ELWA ERS-F60W-SP	162.006	0	6.04
38	ELWA ERS-F60W-SP	180.54	0	5.05
39	ELWA ERS-F60W-SP	270.642	0	5.05
40	ELWA BR-WP30W-01-G4_1	358.669	0	3.7
41	ELWA BR-WP30W-01-G4_1	359.03	0	3.7
42	ELWA BR-WP30W-01-G4_1	358.94	0	3.7
43	ELWA BR-WP30W-01-G4_1	88.883	0	3.7
44	ELWA BR-WP30W-01-G4_1	90.516	0	3.7
45	ELWA 22W 5K Round bollard_IES	259.965	0	1
46	ELWA 22W 5K Round bollard_IES	238.445	0	1
47	ELWA 22W 5K Round bollard_IES	91.165	0	1
48	ELWA 22W 5K Round bollard_IES	134.026	0	1
49	ELWA ERS-F60W-SP	357.071	0	5.05
50	ELWA 22W 5K Round bollard_IES	358.932	0	1

Figure 7 – Proposed Lighting Schedule

3.0 LIGHT SPILL ASSESSMENT

The criteria for vertical light spills outline in AS 4282-2023 - Control of the obtrusive effects of outdoor lighting, Table 3.2 are the following:

- Threshold Increment on Guildford Road be less than 20% based on adaptation luminance of 5 cd/m^2, with cut-off angle of 20^o above horizontal.
- Threshold Increment on Kenilworth Street be less than 20% based on adaptation luminance of 5 cd/m^2, with cut-off angle of 20^o above horizontal.
- Non-Curfew hour (between 6am– 11pm) – maximum of 25 lux across the 'Existing Residential line A4 – High District Brightness under AS4282:2023 Tables 3.1 and 3.2, and.
- Curfew hour (between 11pm– 6am) – maximum of 5 lux across the 'Existing Residential line A4 – High District Brightness under AS4282:2023 Tables 3.1 and 3.2, and.

Assessment had been conducted based on 7.5-metre-high working planes on all boundaries, measuring from the highest point of impacted observation points on adjoining properties in the direct sight of line with height point of luminaries.

Boundary vertical spill had been measured at 1.5m off ground level, and at the face of the adjoining property or at 10m into the adjoining property, whichever is closer.

Figure 8 shows the calculated Threshold Increment on Kennilworth Street and Guildford Road, and upwards light waste ratio for the proposed development.

Figure 9 shows the calculated Curfew Hours light spill across the adjoining boundary.

Threshold Increment (TI)
Maximum Allowable Value: 20 %

Calculations Tested (4):

Calculation Label	Adaptation Luminance	Test Results
Kennilworth Street	5	PASS
Kennilworth Street_1	5	PASS
Guildford road_1	5	PASS
Guildford road_2	5	PASS

Upward Waste Light Ratio (UWLR)
Maximum Allowable Value: 3.0 %

Calculated UWLR: 0.3 %
Test Results: **PASS**

Figure 8 – Threshold Increment and Upward Waste Light Ratio for A4 zones

Obtrusive Light - Compliance Report
AS/NZS 4282:2019, A4 - High District Brightness, Curfew
Filename: OTR Bayswater Lighting Spill
3/12/2025 5:06:16 PM

Illuminance
Maximum Allowable Value: 5 Lux

Calculations Tested (3):

Calculation Label	Test Results	Max. Illum.
ObtrusiveLight_1_Ill_Seg1	PASS	1.8
ObtrusiveLight_2_Ill_Seg1	PASS	0.3
ObtrusiveLight_3_Ill_Seg1	PASS	0.6

Luminous Intensity (Cd) At Vertical Planes
Maximum Allowable Value: 2500 Cd

Calculations Tested (3):

Calculation Label	Test Results
ObtrusiveLight_1_Cd_Seg1	PASS
ObtrusiveLight_2_Cd_Seg1	PASS
ObtrusiveLight_3_Cd_Seg1	PASS

Figure 9 – Curfew Obtrusive Light Compliance Report for A4 zones

4.0 SITE LIGHTING ASSESSMENT

The criteria for site lighting are based on AS1158.3.1 - 2020, Table 3.7:

- PC1 for carpark areas
- PCD for disabled car park area
- Average horizontal illuminance of 14 lux for general circulation space

TABLE 3.7

VALUES OF LIGHT TECHNICAL PARAMETERS FOR OUTDOOR CAR PARKS (INCLUDING ROOF-TOP CAR PARKS)

1	2	3	4	5
	Light technical parameters (LTP)			
Lighting subcategory	Average horizontal illuminance[a,b] ($\bar{E}_h$) lx	Point horizontal illuminance[a,b] (E_{Ph}) lx	Illuminance (horizontal) uniformity[c] Cat. P (U_{E2})	Point vertical illuminance[a,b] (E_{Pv}) lx
PC1	14	3	8	3
PC2	7	1.5	8	1
PC3	3.5	0.7	8	—
PCD[d]	—	≥14 and ≥ ($\bar{E}_h$) [d]	—	—
PCX[e]	21	5	8	—

Figure 10 Table 3.7 of AS1158.3.1

Calculation Summary						
Label	CalcType	Units	Avg	Max	Min	Max/Avg
Carpark Space_1	Illuminance	Lux	61.36	96.5	29.1	1.57
Carpark Space_2	Illuminance	Lux	61.03	78.7	42.9	1.29
Carpark Space_3	Illuminance	Lux	37.86	63.0	23.5	1.66
Circulating Space_1	Illuminance	Lux	121.35	471.8	5.9	3.89
Circulating Space_2	Illuminance	Lux	28.15	91.2	3.1	3.24
Circulating Space_3	Illuminance	Lux	41.61	249.6	3.1	6.00
Disabled Carpark (PCD)	Illuminance	Lux	76.40	89.5	63.3	1.17

Figure 11 Calculation Summary

Results Achieved – Pass (as indicated in Figure 11 – Calculation Summary).

- For PC1 carpark :
  - The average horizontal illuminance level calculated is greater than the 14 lux, which is required under AS1158.3.1 Table 3.7 column 2. Therefore, satisfy the standard.
  - The minimum illuminance level calculated is greater than 3 lux, which is required under AS1158.3.1 Table 3.7 column 3. Therefore, satisfy the standard.
  - The illuminance uniformity UE2 (ratio of Max to Avg illuminance) calculated is less than 8 required under AS1158.3.1 Table 3.7 column 4, therefore satisfy the standard.
  - The minimum point vertical illuminance level is not required to be calculated for the car park spaces in this instance, due to the size of the car parking area.

- For PCD disabled car park:
  - The minimum point illuminance level calculated at the PCD disabled carpark is higher than 14 lux and higher than the average illuminance level calculated at the PC1 carpark spaces, which is required under AS1158.3.1 Table 3.7 column 3. Therefore, satisfy the standard.

5.0 SIGNAGE ILLUMINANCE LEVEL ASSESSMENT

The criteria for signage lighting are based on AS4282 - 2023, Table 3.2 (indicated in Figure 3) and Table 3.5 (Figure 12):

Table 3.4 — Maximum average luminance of surfaces (cd/m²)

Application conditions	Environmental zones				
	A0	A1	A2	A3	A4
See Clause 3.3.3	0.1	50	150	250	350

Figure 12 Table 3.5 of AS4282

We note that the signage contractor is unable to provide the photometric data for the advertising signs at this stage.

To comply with AS4282 requirements, the brand light box and signage shall be completed with a LED dimmable driver (Mean Well HLG -150H or similar approved), to ensure the *advertising signs does not give a veiling luminance to the driver of greater than exceeding 0.25 cd/m²* throughout the driver's approach to the advertising sign, and maintain a maximum average luminance of surface in accordance with table 3.4 during night time.

Signages shall also be dimmed on site to limit light spill across neighbouring property during pre-curfew hours and the curfew hour limited to Table 3.2 requirement, the upward light ratio of less than 0.5 and to ensure the threshold increment along Kennilworth Street and Guildford Road is limited to 20%.

Figure 13 Typical Mean Well HLG dimmable driver

3.0 DIGITAL SCREEN ASSESSMENT

The requirement for the proposed LED digital screen is based on AS4282 - 2023, Clause 3.3.3, Table 3.2 (indicated in Figure 3), Table 3.4 (Figure 12) and the Western Australia "Policy and Assessment Guidelines for Digital Advertising Signs" (Figure 14).

We note that the LED digital screen supplier is unable to provide the photometric data for the digital LED panel at this stage.

Table 7: Maximum allowable luminance in various road environments based on AS-NZS 4282

Environmental zone*	Description	Day cd/m²	Dawn/ dusk cd/m²	Night cd/m²
A4	Town and city centres and other commercial areas with generally high off-street ambient lighting e.g., major shopping/commercial centres	6,000	600	350
A3	Suburban areas in towns and cities with generally medium off-street ambient lighting e.g., shopping/café strips	6,000	600	250
A2	Sparsely inhabited rural and semi-rural areas with occasional off-street ambient lighting	6,000	600	150
A1	Relatively uninhabited rural areas with no off-road lighting	6,000	600	zero
A0	Intrinsically dark	6,000	600	zero

** Environmental zone as defined in AS-NZS 4282 Table 3.1*

Figure 14 – Table 7 of WA Policy and Assessment Guidelines for Digital Advertising Signs

The LED display screen is based on a Dicolor Australia MA series panel (as nominated by the developer). The product specification is indicated in the Figure 15.

Product specifications

Product	MA–290	MA–390	MA–480
Pixel Pitch (mm)	2.976	3.91	4.81
Cabinet size (WxHxD/mm)	500x500x80	500x1000x80 500x500x80	500x1000x80 500x500x80
Cabinet Resolution	168x168	128x256 128x128	104x208 104x104
Cabinet Weight (Kg)	8	13.5 / 8	13.5 / 8
Brightness (Nits)	4500	4500	5000
Refresh Rate (Hz)	⩾3840	⩾3840	⩾3840
Gray Scale (Bit)	14	14	14
IP Rating (Front/Rear)	IP65/IP54	IP65/IP54	IP65/IP54
Max./Avg Power Consumption(W/m²)	773/258	626/209	760/253
Curve	N/A	±5°、0°	±10°、±5°、0°

Figure 15 – DiColour MA Series LED outdoor display panel.

Luminance assessment:

Based on discussion with the installer, we understood to be a screen with brightness of 5000 cd/m^2, provided with a multi-media player and ambient light sensor, with the following control methodology in place:

- 100% brightness during full sun
- A 10-step automatic brightness table to adjust the brightness from 100% to 5% as the ambient light reduces.
- 5% brightness during nighttime, to ensure the *maximum luminance level from the LED screen at nighttime does not exceeding 350 cd/m^2*.

Illumination assessment:

LED display screens are positioned in two locations.

1) Above the entry door to the service station control building, under a covered canopy.
2) At 25m high on both side of the pylon sign

Due to the location of the installation, the LED screen at the control building entry will:

- Contribute no UWLR to the existing night sky.
- Have negligible light spill across to the adjoining property, and
- Have negligible contribution to the thresholds increment at adjoining streets

Digital screen on pylon sign shall also be further dimmed on site as required to limit the upward light ratio of less than 0.5 and to ensure the threshold increment along Kenilworth Street and Guildford Road is limited to 20%.

Nighttime on site luminance measurements of the proposed LED screen shall be conducted during the commissioning of the site, to confirm that the control system for the digital screen is preset to meet the requirements stipulated above.

Figure 16 & 17 shows the elevations, which includes illuminated signage.

Figure 18 shows the signage details.

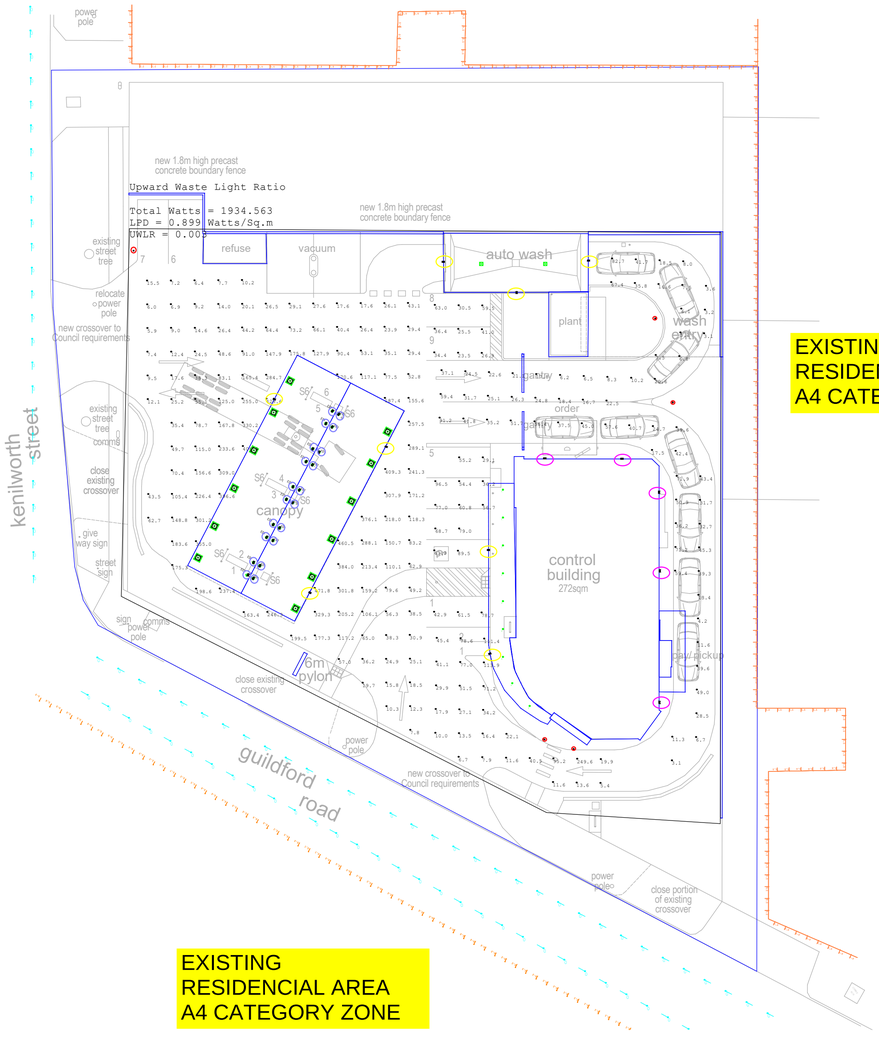
Figure 16 – South-West Elevation and North-East, Drawing No. 22JN15200 sk04j, dated 06.11.2025.

EXISTING
RESIDENCIAL AREA
A4 CATEGORY ZONE

EXISTING
RESIDENCIAL AREA
A4 CATEGORY ZONE

EXISTING
COMMERCIAL AREA
A4 CATEGORY ZONE

EXISTING
RESIDENCIAL AREA
A4 CATEGORY ZONE



EXISTING
RESIDENCIAL AREA
A4 CATEGORY ZONE

Luminaire Schedule						
Symbol	Qty	Label	Description	LLF	Luminaire Lumens	Mounting Height
	5	ELWA 22W 5K Round bollard_IES	Bollard	0.800	2892	1
	5	ELWA BR-WP30W-01-G4_1	Wall light	0.800	4124	3.7
	8	ELWA ERS-F60W-SP	Flood Light	0.800	9486	4.95, 5.05, 6.04
	20	ELWA BR-WP30W-01-G4	001-Canopy Downlight	0.800	4124	4.5
	12	ELWA BR-GS60W-01-G1	BR-GS60W-01-G1-Canopy light	0.800	9112	5.5

Calculation Summary						
Label	CalcType	Units	Avg	Max	Min	Max/Avg
Carpark Space_1	Illuminance	Lux	61.36	96.5	29.1	1.57
Carpark Space_2	Illuminance	Lux	61.03	78.7	42.9	1.29
Carpark Space_3	Illuminance	Lux	37.86	63.0	23.5	1.66
Circulating Space_1	Illuminance	Lux	121.35	471.8	5.9	3.89
Circulating Space_2	Illuminance	Lux	28.15	91.2	3.1	3.24
Circulating Space_3	Illuminance	Lux	41.61	249.6	3.1	6.00
Disabled Carpark (PCD)	Illuminance	Lux	76.40	89.5	63.3	1.17

Luminaire Location Summary				
LumNo	Label	Orient	Tilt	Mounting Height
1	ELWA BR-GS60W-01-G1	332.581	0	5.5
2	ELWA BR-GS60W-01-G1	330.858	0	5.5
3	ELWA BR-GS60W-01-G1	333.879	0	5.5
4	ELWA BR-GS60W-01-G1	333.05	0	5.5
5	ELWA BR-GS60W-01-G1	332.969	0	5.5
6	ELWA BR-GS60W-01-G1	333.399	0	5.5
7	ELWA BR-GS60W-01-G1	153.329	0	5.5
8	ELWA BR-GS60W-01-G1	154.815	0	5.5
9	ELWA BR-GS60W-01-G1	154.91	0	5.5
10	ELWA BR-GS60W-01-G1	153.43	0	5.5
11	ELWA BR-GS60W-01-G1	157.632	0	5.5
12	ELWA BR-GS60W-01-G1	152.036	0	5.5
13	ELWA BR-WP30W-01-G4	316.647	0	4.5
14	ELWA BR-WP30W-01-G4	136.642	0	4.5
15	ELWA BR-WP30W-01-G4	333.075	0	4.5
16	ELWA BR-WP30W-01-G4	149.105	0	4.5
17	ELWA BR-WP30W-01-G4	331.908	0	4.5
18	ELWA BR-WP30W-01-G4	155.079	0	4.5
19	ELWA BR-WP30W-01-G4	326.926	0	4.5
20	ELWA BR-WP30W-01-G4	145.853	0	4.5
21	ELWA BR-WP30W-01-G4	329.589	0	4.5
22	ELWA BR-WP30W-01-G4	160.407	0	4.5
23	ELWA BR-WP30W-01-G4	331.377	0	4.5
24	ELWA BR-WP30W-01-G4	152.862	0	4.5
25	ELWA BR-WP30W-01-G4	345.056	0	4.5
26	ELWA BR-WP30W-01-G4	151.038	0	4.5
27	ELWA BR-WP30W-01-G4	334.058	0	4.5
28	ELWA BR-WP30W-01-G4	151.388	0	4.5
29	ELWA BR-WP30W-01-G4	332.484	0	4.5
30	ELWA BR-WP30W-01-G4	160.402	0	4.5
31	ELWA BR-WP30W-01-G4	153.782	0	4.5
32	ELWA BR-WP30W-01-G4	332.484	0	4.5
33	ELWA ERS-F60W-SP	339.498	0	6.04
34	ELWA ERS-F60W-SP	180.617	0	4.95
35	ELWA ERS-F60W-SP	332.484	0	6.04
36	ELWA ERS-F60W-SP	201.259	0	4.95
37	ELWA ERS-F60W-SP	162.006	0	6.04
38	ELWA ERS-F60W-SP	180.54	0	5.05
39	ELWA ERS-F60W-SP	270.642	0	5.05
40	ELWA BR-WP30W-01-G4_1	358.669	0	3.7
41	ELWA BR-WP30W-01-G4_1	359.03	0	3.7
42	ELWA BR-WP30W-01-G4_1	358.94	0	3.7
43	ELWA BR-WP30W-01-G4_1	88.883	0	3.7
44	ELWA BR-WP30W-01-G4_1	90.516	0	3.7
45	ELWA 22W 5K Round bollard_IES	259.965	0	1
46	ELWA 22W 5K Round bollard_IES	238.445	0	1
47	ELWA 22W 5K Round bollard_IES	91.165	0	1
48	ELWA 22W 5K Round bollard_IES	134.026	0	1
49	ELWA ERS-F60W-SP	357.071	0	5.05
50	ELWA 22W 5K Round bollard_IES	358.932	0	1

ELECTRICAL SERVICES - LIGHTING CALCULATION PLOT

SCALE: 1:200 @ A1

The lighting layout proposed is based on the use of:

- 12x 60W, LED luminaires, ceiling recessed square under canopy (ELWA-BR-GS60W-01-G1)
- 20x 60W, LED luminaires, ceiling recessed downlight under canopy (ELWA-BR-WP30W-01-G1)
- 8x 60W, LED luminaires, Surface mounted floodlight (ELWA – ERS-F60W-SP)
- 5x30W, LED luminaires, Wall Lights (BR-WP30W-01-G4-C4)
- 5x22W, LED luminaires, Bollard lights (ELWA 22W 4K Round Bollard)

When sheet printed full size, the scale bar is 100mm.
0 10 20 30 40 50 100mm

No	REVISION	DRAWN	CHE'KD	DATE

PROJECT
OTR BAYSWATER
LIGHTING ASSESSMENT PLOT
AT: CNR KENILWORTH ST &
GUILDFORD RD,BAYSWATER, WA
FOR: PEREGRINE CORP

DRAWING TITLE
ELECTRICAL SERVICES - LUX PLOT

Civil, Geotechnical, Environmental, Structural, Mechanical, Electrical
Fire, Hydraulics, Forensic, Construction Assist, Vertical Transport
Adelaide Office: 08 8238 4100
Melbourne Office: 08 8238 4115
Riverland Office: 08 8582 3970
www.tmkeng.com.au

SCALES AS SHOWN
DRAWN AAA
DATE DEC'2025
ENGINEER ZYL
CHECKED

DRAWING No.
2408282-E1

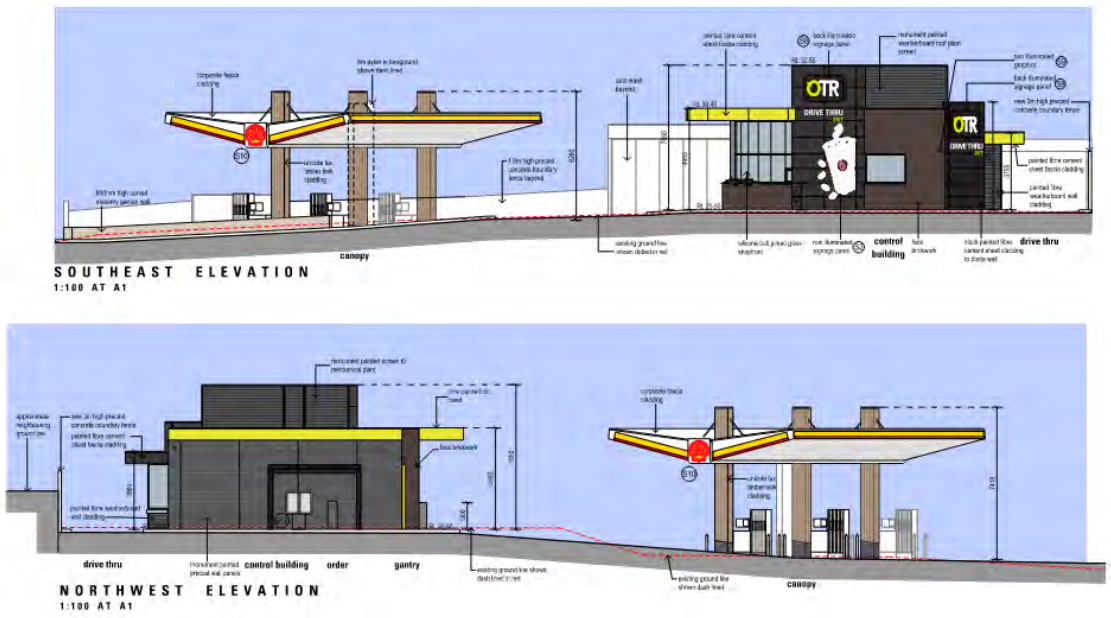


Figure 17 – South-East & North-West Elevations, Drawing No. 22JN1500 sk02j, dated 06.11.2025.

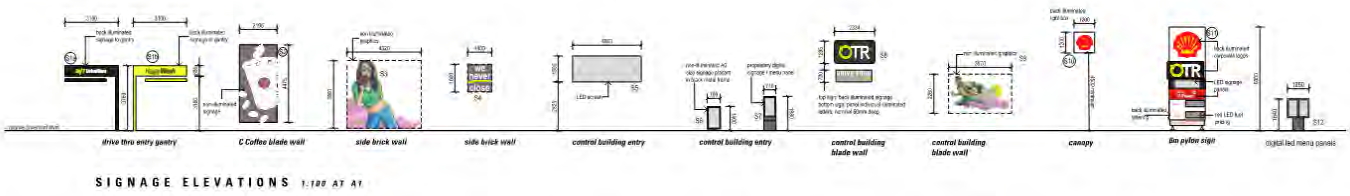


Figure 18 – Signage Elevations, Drawing No. 22JN1500 sk05a dated 16.06.25.

6.0 CONCLUSION

The modelled maximum spill on all boundaries for external lighting based on the above lighting layout and type complies with the criteria outlined in AS4282:2023.

The modelled illumination level on ground plane on the proposed carpark and circulating space based on the above lighting layout and type complies with the criteria outlined in AS1158.3.1.

The illuminated signs will be installed with a dimmable driver, ensuring a maximum luminance level of 350 cd/m^2 is achieved during nighttime.

The LED display screen shall be installed with an ambient light sensors and multi-media player, preprogrammed to dim the LED panel down with the change of ambient lights, ensuring a maximum luminance level of 350 cd/m^2 is maintained during nighttime.

Nighttime measurements on site shall be conducted during the commissioning of the installation, to ensure that the surface luminance of the signage and digital screen complies with Table 3.4, the maximum vertical illumination on adjoining property and the threshold increment along Guildford Road and Kenilworth Street complies with Table 3.2.

We trust the above is satisfactory. However, should there be any further clarifications/assistance please do not hesitate to contact the undersigned.

For and on behalf of
TMK Consulting Engineers

Ashraful Aziz Abir
Electrical Engineer

PEREGRINE
CORPORATION

OTR Bayswater

Signage Strategy

December 2025

270 The Parade, Kensington Park, South Australia 5068 P.O. Box 322, Kensington Park, South Australia 5068
Tel: 08 8333 9777 Fax: 08 8333 9788 E: email@perecorp.com.au

OTR Bayswater Signage Strategy

December 2025

This Signage Strategy relates to the proposed service station (including convenience store, drive-through ordering and pick up facility and car wash) at 321 Guildford Road, Bayswater in the City of Bayswater (**subject land**).

This Signage Strategy accompanies a planning application submitted to the City for consideration by the City and determination by the Metro Inner DAP.

Implementation of the Signage Strategy will ensure that signage on the site assists customers and potential customers to recognise the brand and offers available on the site, and to safely enter, move around on and exit the site. It will contribute to the establishment of a distinctive brand and visual character for the site which complements its locality and which and which does not have any detrimental effect on the amenity of neighbouring properties or the locality in general.

1. Subject land and context

The proposed service station (including convenience store, drive-through ordering and pick-up facility and car wash) will develop land that is currently unimproved and unused to provide a modern, contemporary commercial and retail facility that will enhance the built form character of the locality.

The proposed development will serve residents of the locality and users of the nearby recreational and commercial facilities through the provision of day-to-day needs including groceries and convenience retail items, food and beverages, vehicle washing facilities and fuel.

2. Signage objectives

In preparing the drawings, and in particular the signage elements of the proposed development, the following objectives have been identified and implemented:

(a) Business identification – signs that enable customers to recognise the operator and brand of the business being carried on at the site, including signs that allow drivers to identify the business in sufficient time to safely exit the road network and enter the site.

(b) Directional/safety – signs that assist customers to move safely and efficiently around within the site.

(c) Informative – signs that advise customers of the products and services available on the site and how best to access them.

(d) Brand character – signs that establish a strong brand message with distinctive and vibrant messages and images that contribute to a shared customer experience across different OTR sites.

(e) Amenity – signs that are consistent with, and do not materially detract from the established character and amenity of areas surrounding the site, including the public road network and private land that adjoins or has sight lines onto the site.

Table 1 specifies how the signage objectives are satisfied by each signage element of the proposed development.

3. Signage elements

The application drawings submitted in respect of the proposed development include individual signage elements as specified in Table 1.

4. Signage strategies

Table 1 identifies how each individual signage element contributes to the signage objectives identified in section 2 of this document.

.

Table 1 – OTR Bayswater signage strategies and elements

Sign element (refer application drawing sk05)	**Description**	**Location**	**Dimensions**	**Lighting**	**Purpose**	**Contribution to signage objectives**
S1a	Gantry sign	Drive through entry	3.1m (w) x 0.6m (h)	Back illuminated	Directional/safety	• Directs customers to drive-through entry and indicates maximum height limit. • Limited or incidental visibility from adjoining public and private land.
S1b	Gantry sign	Car wash entry	3.1m (w) x 0.6m (h)	Back illuminated	Directional/safety	• Directs customers to car wash entry and indicates maximum height limit. • Limited or incidental visibility from adjoining public and private land.
S2	Coffee cup sign	Blade wall of control building	2.195m (w) x 4.475m (h)	Non-illuminated	Brand character	• Communicates to customers that like other OTR sites, the site offers a quick, convenient and fun option for coffee and other beverages. • Non illuminated, so will not contribute to lightspill impacts for adjoining roads or premises.
S3	Mural	Side brick wall of control building.	4.32m (w) x 3.9m (h)	Non-illuminated	Brand character	• Communicates to customers that like other OTR sites, the site offers a quick, convenient and fun option for coffee and other beverages. • Limited or incidental visibility from adjoining public and private land. • Non illuminated, so will not contribute to lightspill impacts for adjoining roads or premises.
S4	"We never close" sign	Side brick wall of control building	1.4m (w) x 1.6m (h)	Non-illuminated	Informative	• Communicates to customers that like other OTR sites, the site offers basic needs and essentials on a 24/7 basis. • Limited or incidental visibility from adjoining public and private land. • Non illuminated, so will not contribute to lightspill impacts for adjoining roads or premises.

Sign element (refer application drawing sk05)	Description	Location	Dimensions	Lighting	Purpose	Contribution to signage objectives
S5	Control building entry	Above main entry	4.0m (w) x 1.5m (h)	Illuminated (LED)	Business identification Directional/safety	• Directs customers pedestrian entry of control building and identifies brand and location. • Limited or incidental visibility from adjoining public and private land.
S6	Signage placard	Control building entry	0.76m (w) x 1.4m (h)	Non-illuminated	Informative	• Provides information to customers about products and offers available within control building. • Limited or incidental visibility from adjoining public and private land.
S7	Signage/menu panel	Control building entry	0.71m (w) x 1.4m (h)	Illuminated (LED)	Informative	• Provides information to customers about products and offers available within control building. • Limited or incidental visibility from adjoining public and private land.
S8	OTR/Drive-through	Blade wall of control building	2.334m (w) x 1.295 (h) 2.334m (w) x 0.7m (h)	Back illuminated	Business identification Informative	• Communicates to customers the brand identity of the site and that the site offers a 24/7 drive-through. • Enables customers to make a quick decision about whether to turn off road and access site. • Consistent with scale and type of signage expected on arterial road frontage for the contemplated land use.
S9	Mural	Blade wall of control building	3.67m (w) x 2.26m (h)	Non-illuminated	Brand character	• Communicates to customers that like other OTR sites, the site offers a quick, convenient and fun option for coffee and other beverages. • Non illuminated, so will not contribute to lightspill impacts for adjoining roads or premises.
S10	Shell logo	Canopy	1.2m (w) x 1.2m (h)	Back illuminated	Business identification	• Enables quick recognition of fuel brand sold at site. • Minimal visual impact of a kind appropriate for main road and surrounding context.

Sign element (refer application drawing sk05)	Description	Location	Dimensions	Lighting	Purpose	Contribution to signage objectives
S11	Main pylon sign	Adjacent Guildford Road to site	2.0m (w) x 6.0m (h)	Back illuminated; LED	Business identification Informative Directional/safety	• Enables quick recognition of fuel brand and pricing and other offers at site. • Enables customers to make a quick decision about whether to turn off road and access site. • Consistent with scale and type of signage expected on arterial road frontage for the contemplated land use.
S12	LED menu panels	Within drive-through ordering area	1.26m (w) x 1.84m (h)	Illuminated (LED)	Informative	• Provides information to customers about products and offers available from drive-through ordering and pick up facility. • No visibility from adjoining public and private land.
S13	Mural	Within drive-through pick-up area	7.33m (w) x 2.99m (h)	Non-illuminated	Brand character	• Contributes to creation of distinctive brand character • No visibility from adjoining public or private land.

EAQ Consulting

EMISSIONS IMPACT ASSESSMENT OF PROPOSED OTR SERVICE STATION

321 GUILDFORD ROAD, BAYSWATER
WESTERN AUSTRALIA

Emissions Impact Assessment of Proposed OTR Service Station

321 Guildford Road, Bayswater Western Australia

Prepared for: Hidding Urban Planning

Project Ref: EAQ-25031

November 2025

EAQ Consulting

Environment | Air Quality

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Report Revision(s)				
Version(s)	**Description**	**Date**	**Author(s)**	**Reviewer(s)**
Draft_0.1	Internal Review	25.11.2025	J. Hurley	DSB
Draft_1.0	Draft Report	25.11.2025	J. Hurley	Hidding
Final				

Approved for Release		
Name	**Position**	**File Reference**
John Hurley	Principal Consultant	EAQ25031-Peregrine(OTR)-Bayswater+VapourEmissionsImpactAssessment-Draft_v1.0

Signature

This document presents the outcomes of a Desktop Emissions Modelling Assessment. All emissions inputs into the model were sourced from industry specific emissions' factor publications, previous site-specific measurements, and/or from peer reviewed public domain data except where detailed otherwise herein. EAQ has not attempted to verify externally sourced data beyond its use herein. The modelling assessment has been prepared using the best available information provided by the Client and in conjunction with regulatory guidance from the appropriate regulatory jurisdiction(s). EAQ has exercised its diligence and due-care in delivering the outcomes of the assessment according to accepted assessment practices and techniques. EAQ disclaims any and all liability and responsibilities for damages of any nature, to any party, which may be caused from misapplication or misinterpretation by third parties of this assessment

Contents

Figures

Tables

Executive Summary

Environmental and Air Quality Consulting Pty Ltd undertook an Air Emissions Impact Assessment of a proposed Fuel Service Station to be located at Lot 130, 321 Guildford Road, Bayswater Western Australia.

The scientific study addressed the short-term exposure and long-term health risks associated with vapour emissions from the Fuel Service Station.

The Assessment utilised industry accepted standards for estimating pollutant emission rates of primary airborne pollutants from fuel storage and refuelling activities at the Fuel Service Station and assessed these pollutant emission rates utilising conventional dispersion modelling methods to predict the concentration of primary pollutants at the nearest sensitive receiver within the locality.

The outcomes of the Assessment found that the primary pollutants of Benzene, Toluene, Ethyl benzene, Xylenes, Cyclohexane, *n*-Hexane and Styrene were predicted to have ground level concentrations lower than acceptable exposure limits set by the WA Department of Water and Environmental Regulation, National Environment Protection (Air Toxics) Measure and other relevant jurisdictional recommendations when utilising only Vapour Recovery Phase 1 (mandatory).

That is, the pollutant emissions at the nearest existing or future urban sensitive receptors are less than the exposure limits in ambient air when employing either VR1, and/or VR2 vapour recovery.

Based on the predicted ground level concentrations using VR1 alone, vapours from the Station are predicted to not negatively impact the health of the nearest existing, or future urban sensitive receptors, nor future sensitive land uses within the locality.

However, when considering model uncertainty, should the model be an underprediction, the revised compliance factors may exceed the Limit criterion at single receptor locations near to the boundaries of the Site.

Notwithstanding, the conservatism within the assumptions and vapour emissions' calculations for the Assessment accounts for any uncertainty in the modelling predictions, where:

- The Assessment assumes a peak hour scenario that derives fuel sales based on that peak hour,
- The Assessment assumes that peak hour sales (i.e., maximum refuelling occupancy/capacity) occur every day, which is largely improbable, and
- The Assessment assumes a subsequent peak refuelling occupancy/capacity of vehicles every day, which is also improbable.

Vapour Recovery Phase 2 is not required based on the conservative predictions within the Assessment demonstrating that pollutant emissions at the nearest existing or future urban sensitive receptors are less than the pollutant exposure limits in ambient air employing only mandatory Vapour Recovery Phase 1.

1 Background & Scope

Environmental & Air Quality Consulting Pty Ltd (EAQ) was engaged by Hidding Urban Planning (Hidding) to undertake an Air Emissions Impact Assessment (the Assessment) of a proposed Service Station (the Station).

The Station is to be located at Lot 130, 321 Guildford Road, Bayswater Western Australia.

The Station will comprise of 3 individual refueling bowsers under the main refuelling canopy, giving a total of 6 refilling positions.

This Assessment addresses the Stations' toxic principal chemical compounds in petrols (i.e., unleaded fuels) by undertaking a desktop scientific Assessment of the short and long-term health risks associated with vapour emissions from the Station.

1.1 Station Assessment Scope

The Assessment of the Station was undertaken to determine the extent of offsite pollutant impacts beyond the boundary of the Station and subsequently determining the risk of health and amenity impacts for existing and future sensitive receivers and/or sensitive land uses (receptors).

The Assessment predicted ground level concentrations (GLCs) of various pollutants from vapour losses using regulatory standard dispersion modelling techniques.

The predicted GLCs were compared to the regulatory criteria for each pollutant assessed to determine if those GLCs would cause a health or amenity impact at the nearest receptor.

The model of choice was Aermod and its supporting pre- and post- processors.

Chemical vapour emission rates from the Station were developed from:

- NPI Emission Estimation Technique Manual (NPI, 1999) for Aggregated Emissions from Service Stations (Environment Australia),
- Air Toxics "Hot Spots" Program: Gasoline Service Stations Industry wide Assessment Guidelines – Toxics Committee of the California Air Pollution Control Officers Association (CAPCOA, 1997), and
- Brisbane City Council methodology for service stations (BCC, 2017).

The BCC, 2017 methodology was utilised to represent hourly throughput rates for service stations based on normal and peak traffic flows within a metropolitan area.

1.1.1 Assessment Conservatism

The Assessment focused on peak emissions during peak-hour traffic refueling activities, which was then applied across the daily 24-Hour period based on traffic flows either side of that peak-hour traffic flow.

However, a peak hour approach applied across every daily peak period assumes that vehicles volumes exhibit the same trends daily, whereas it's well understood that peak refuelling periods generally follow

weekly fuel price cycles and peak on singular days, and that peak flows typically do not occur across weekends.

1.1.2 Station Legislative Context

The proposed Station will not be a Prescribed Premise with regard to the WA Department of Water and Environmental Regulation (DWER).

The Western Australia (WA) Environmental Protection Authority (EPA) 2005 Guidance for the Assessment of Environmental Factors document, *Separation Distances between Industrial and Sensitive Land Uses* recommends a buffer separation distance for Service Stations / Convenience Store Fuel Facilities and the nearest sensitive receptor as follows:

Table 1-1: WA EPA Guidance for Separation Distances – Service Station

50 m	Operating during normal business hours of Monday – Saturday from 0700 – 1900 hours
100 m	Freeway service stations
200 m	Service stations in operations for 24 hours daily

The EPA recommended buffers imply that where the separation distance is not met, a further scientific assessment of applicable emissions should be undertaken to support the application and thus inform the risk of health and amenity impacts at the nearest receptor.

"Sensitive land uses include residential development, hospitals, hotels, motels, hostels, caravan parks, schools, nursing homes, childcare facilities, shopping centres, playgrounds and some public buildings. Some commercial, institutional and industrial land uses which require high levels of amenity or are sensitive to particular emissions may also be considered "sensitive land uses". Examples include some retail outlets, offices and training centres, and some types of storage and manufacturing."

Importantly, there have been sweeping changes to the operational hours of service stations and retail businesses in Western Australia i.e., deregulation of hours.

1.1.3 Department of Health Consideration

The WA Department of Health (DoH) 2024 Position Statement recommends:

- 100 m separation distance in the absence of complete vapour recovery technology (VR1 + VR21) for all 24-Hour service stations, and
- According to the DoH, *"At this time there is insufficient evidence to support the 200m distance for non-Freeway 24-hour service stations".*

Where complete vapour recovery is employed, DoH's position is that:

- *".....if applied might be considered a mitigating feature in relation to any application for a reduced separation distance of 100m to 50m for 24 hour service stations".*

Interestingly, other Australian jurisdictions take a differing view on the separation distances for service stations. For example, the South Australian Government EPA states that:

- *"recommended evaluation distance (i.e. buffer distance) for unleaded petrol dispensing (e.g. from the bowsers) is 50 metres to the nearest sensitive receiver", and*
- *"If sensitive receivers are located closer than 50 metres to the fuel bowsers and the proposal is for a new petrol station, increasing the number of fuel bowsers, or moving bowser closer to sensitive receivers at an existing petrol station which dispenses unleaded fuel, it must be demonstrated that the reduction of the 50-m evaluation distance does not pose an unacceptable risk to human health or amenity (i.e. odour nuisance). This can be demonstrated by confirming the installation of VR2 (except bowsers dispensing diesel or LPG), air quality modelling, or the provision and explanation of other potential mitigating factors (e.g. operational limitations such as reduction in maximum petrol delivery rates at the bowsers, etc)".*

1.1.4 Station Assessment Substances

The emission sources at the Station comprise the ventilation of the sub-terrain fuel storage tanks, and the petrol refuelling bowsers (3 bowsers, i.e., 6 dispensers). Incidental spills can also be a source of vapour release, albeit minor. Emission sources are primarily headspace purging vapour losses from refilling (storage tanks) and bowser refuelling processes.

Principal chemical compounds (pollutants) typically emitted from service station activities are listed in Table 1-2. These compounds are part of the Total Volatile Organic Compounds (VOCs) emitted, and those individual pollutant contributions are then derived based on the percentage contribution of those pollutants within the Total VOC emissions.

Table 1-2: Assessment Substances (Pollutants)

Benzene	Cyclohexane	Ethyl benzene	Styrene
Toluene	*n*-Hexane	Xylenes	

The proposed Station will comprise the following main features:

- 3 bowser ranks comprising a maximum of 6 refuelling outlets at any one time under the main refueling canopy for retail sales,
- The types of fuel and/or additives proposed are;
  - Diesel (60 kL),
  - ULP 91 (40 kL),
  - PULP 95 (40 kL), and
  - AdBlue (80 kL).
- Bulk refuelling events will take place up to 2-times (x2) per week based on a single B-Double Tanker with a total volume of 55,000 L,
- Tanker deliveries are typically 1,000 Litres per minute,
- The peak flow of vehicles during daily peak hour is conservatively estimated at 72 based on a 3-Bowser configuration (i.e., 6 per refilling nozzle, per 5-minutes, per hour), and
- Average peak hour petrol refuelling volume daily 2,880 Litres.

The above refuelling details represent a peak hour approach which is applied across every daily peak period and assumes that vehicles volumes exhibit the same trends daily, whereas it's well understood

that peak refuelling periods generally follow weekly fuel price cycles, and that peak flows typically do not occur across weekends.

Additionally, the use of the peak hour refueling scenario assumes that every day has a peak hour period, which again is understood not to occur. On this basis, the Assessment of peak hour trends is highly conservative.

1.1.5 Guidance for Assessing Station Impacts

The DWER prescribes maximum ambient concentrations of an array of pollutants and toxic substances. In prescribing these maximum concentrations, the DWER has referred to (among others); The National Environment Protection (Air Toxics) Measure (NEPM). These DWER, NEPM, and other jurisdictional recommendations have been adopted for this Assessment.

Importantly, the benzene exposure guidelines have been more rigorously reviewed by the Victorian (VIC) EPA and are considered more applicable to Australia-wide service station emissions.

The VIC EPA guidelines for benzene are based on an acute minimal risk level to toxic substances and have provided exposure limit recommendations for health effects from short-term exposure based on the Texas Commission on Environmental Quality (TCEQ) Air Monitoring Comparison Values, where; *"If predicted or measured airborne levels of a constituent do not exceed the comparison level, adverse health or welfare effects would not be expected to result. If ambient levels of constituents in air exceed the comparison levels, it does not necessarily indicate a problem, but rather, triggers a more in-depth review."*

These maximum ambient concentration exposure limits are listed in Table 1-3.

Table 1-3: Assessment Criteria for Toxic Substances

Substance	Averaging Period	Criteria Source	Maximum (ambient) concentration	
			ppm	µg/m³ at 25°C
Benzene	1 hour	EPA VIC, 2022	0.18	580
	24 hours		0.009	29
	Annual	NEPM 2011	0.003	9.6
Toluene	24 hours	NEPM 2011	1	3,770
	Annual		0.1	377
Ethyl benzene	1 hour	EPA NSW 2016	1.8	8,000
	Annual	Toxikos 2011		270
Xylenes	24 hours	NEPM 2011	0.25	1,080
	Annual		0.2	870
Cyclohexane	1 hour	EPA NSW 2016	5	190
***n*-Hexane**			0.9	3,200
Styrene	1 hour	Dept. of Health WA	70	64

1.2 The Station

The Station is proposed to be located at Lot 130, 321 Guildford Road, Bayswater Western Australia. The Locality of the Station, modelling configuration of vapour sources and buildings, and assessed sensitive receptors are illustrated in Figure 1-1, Figure 1-2, and Figure 1-3 respectively.

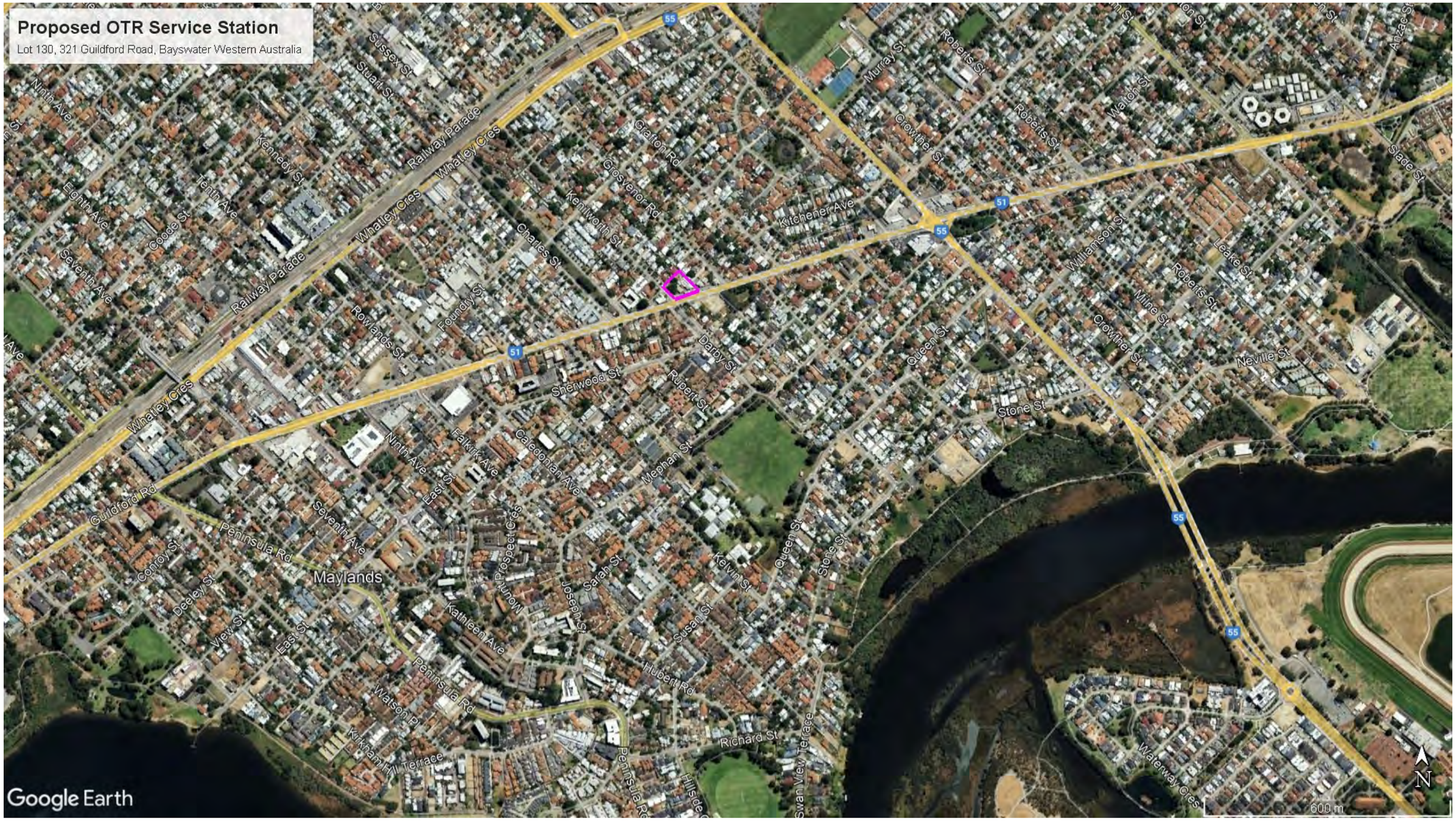

Figure 1-1: Guildford Road, Bayswater – Proposed OTR Service Station (Locality)

Figure 1-2: Modelling Depiction of Proposed Service Station – Blue (Station POS Building & Site Perimeter Brick Walls), Red (Bulk Tank Vents), Yellow (Refuelling Bowsers)

Figure 1-3: Proposed Service Station & Assessed Sensitive Receptors (Green Circles)

2 Service Station Emissions Assessment

2.1 Station Emissions Estimation

Activities at the Station that will produce emissions are related to losses of fuels through vapourisation or spillage and subsequent vapourisation of the spill(s). These specific activities comprise:

- Submerged filling of underground storage tanks;
- Underground tank breathing losses;
- Vehicle refuelling;
- 'Whoosh' emissions from removal of vehicle fuel cap; and
- Fuel spills, typically at the bowser.

There is a dearth of information within other Australian jurisdictions for estimating hourly throughputs based on typical traffic flows at metropolitan service stations, as a result the widely referenced 2017 Brisbane City Council (BCC) methodology for service stations has been used to estimate hourly emissions at the Station. The BCC methodology has derived traffic flows per hour for a metropolitan service station.

Emission estimates based on specific emission compounds (Table 1-2) were derived using the NPI, 1999 and CAPCOA, 1997 guidelines for emission estimation factors.

2.1.1 Vehicle Refuelling Movements

Based on the peak hour flow, EAQ assessed the hourly vapour emissions per bowser, during peak hour, for a maximal 72 cars per hour.

2.2 Vapour Recovery

Vapour recovery (VR) at the Station will be in place for submerged underground storage tank(s) referred to as VR1 (mandatory).

VR2 (optional), which is vapour recovery at the bowser nozzle, can provide typically 85% vapour recovery (or more) when refuelling vehicles, where:

- Those bowsers, and/or bowser positions with multiple refueling nozzles that occupy unleaded fuels are those locations where VR2 is installed, and
- Diesel nozzles are not required to have VR2 controls.

2.3 Bulk Deliveries and Emissions

- The estimated peak volume of petrol fuels dispensed, based on the peak hour traffic flow of 72 cars at peak hour, is 2,880 Litres,
- Daily, this peak volume is estimated at 46,829 Litres for a total conservative traffic flow estimate of 1,182 cars per day, and
- On this basis, the Station will receive up to 2x bulk delivery of fuels per 7 days, between the daily hours of 0700 hrs – 2200hrs to replenish all fuels as required.

This delivery schedule is based on the Stations total fuel consumption weekly, and assuming a single B-Double Tanker is used for every delivery with a total volume of 55,000 L.

The total fuel volume per week is based on a peak hourly value of cars refuelling. The volumes of fuel dispensed for all other hours outside of the peak hour are therefore derived based on the peak hourly volume, which where peak daily volumes are not met, the Assessment nonetheless assumes traffic flows and subsequent peak volume emissions based on peak volumes for each day.

The maximum volume of the bulk fuel delivery that can be dispensed into the storage tanks at the Station is approximately 55,000 L based on a B-Double total volume.

With the estimated maximal delivery of 2 x bulk fuel event per week, the schedule will nonetheless shift based on retail fuel volumes dispensed. As such, the delivery of bulk fuels can be modelled 1-hourly, for each day and successive hour during those delivery times. Table 2-1 lists an example of the delivery schedule.

Table 2-1: Example of Bulk Fuel Delivery Schedule (L/hr)

Time (24 hrs)	Monday	Tuesday	Wednesday	Thursday	Friday
0700	55,000				
0800		55,000			
0900			55,000		
1000				55,000	
1100					55,000
1200	55,000				
1300….2200	55,000	55,000	55,000	55,000	55,000

2.4 VOC Emissions

Of the fuel types proposed ULP contains the higher volatile fraction compared to diesel, as such all emissions in this Assessment have been assumed as ULP. This approach is conservative. The vapour composition of VOCs in petroleum fuel (NPI, 1999), are listed in Table 2-2. The vapour composition of benzene has been revised in accordance with the Australian Government's Federal Register of Legislation, specifically the current Fuel Quality Standards (Petrol) Determination 2019, which limits the volume of Benzene in petrol to 1% v/v maximum. Assuming a Benzene density value of 0.8765, the Benzene vapour composition (% weight) is listed in Table 2-3.

Table 2-2: Composition of Petrol (NPI, 1999)

Species	Petrol Liquid (% weight)	Petrol Vapour (% weight)
Cyclohexane	0.2	0.06370
Ethylbenzene	2.0	0.07910
n-Hexane	3.5	1.730
Styrene	0.1	0.00282
Toluene	10.4	1.080
Xylenes	12.2	0.433

Table 2-3: Composition of Petrol (Fuel Standards, 2019)

Species	Petrol Liquid (% weight)	Petrol Vapour (% weight)
Benzene	1.0	0.374

The composition percentages of the compounds listed in Table 2-2 and Table 2-3 were applied to the modelling outcomes of the final time-averaged emission rate GLC estimates (vapour and spill vapour losses) to derive individual pollutant contributions to airborne vapour impacts at the nearest receptor.

2.5 Station Operational Data

Table 2-4: Proposed Station Operating Detail

Parameter	Operational Data
Operating hours	24 hours / 7 days per week
Single Tanker delivery	55,000 L (B-Double Tanker) **(VR1)**
Storage Tanks' Vent stacks	4 of, within and above Bowser Canopies
Filling Stations/Bowsers	3 x Bowsers / 6 x Grade filling points (located below full canopy)
Peak-Hour Daily Refueling Volume	2,880 L
Peak-Hour Traffic Flow	**72**
Estimated refuelling events Daily	**1,182 Vehicles**
Fuel Storage Types	Diesel, ULP 91, PULP 95, PULP 98

2.6 Derived Emission Factors

Emissions generated from activities at the Station have been derived based on those vapour losses published by the NPI and CAPCOA guidance. Table 2-5 lists those emission factors that apply to those processes where vapour losses occur.

Table 2-5: Emissions Factors for Service Stations

Emission Source	NPI, 1999 mg / L throughput	CAPCOA, 1997 Lbs / 1000 Gallons throughput
Underground Tank Filling	-	-
Submerged Filling	880	8.4
Splash Filling	1380	-
Submerged filling with vapour balance (**VR1**)	40	**0.42 (50 mg/L)**
Underground tank breathing losses	**120 (1.00 Lbs)**	0.84
Vehicle Refuelling	-	-
Displacement Losses (uncontrolled)	**1320 (11.02 Lbs)**	8.4 (1007 mg/L)
Displacement Losses (controlled i.e., **VR 2**)	**132 (1.10 Lbs)**	0.74
Spillages	-	-
Uncontrolled	**80 (0.67 Lbs)**	0.61
Controlled	-	0.41
"Whoosh" Emissions (fuel cap removal)	-	0.26 - **0.66**

The refuelling activities and bulk vent emissions are characterised as volume and point emission sources respectively. These have been assessed utilising a combination of the NPI, 1999 and CAPCOA, 1997 emission factors.

2.6.1 Fuel Throughput Trends

To determine the hourly throughputs of fuel dispensing for service stations in accordance with the BCC, 2017 recommendations, the hourly profile of fuel sales daily is derived using the BCC, 2017 published profiles as listed in Table 2-6.

Table 2-6: Representative Fuel Throughputs (BCC, 2017)

Hour	Hourly Profile (%)
1	1.2
2	0.8
3	0.6
4	0.8
5	1.9
6	4.6
7	5.5
8	5.7
9	5.5
10	5.7
11	6.0
12	6.0
13	5.7
14	5.6
15	5.9
16	**6.2**
17	**6.2**
18	5.8
19	5.1
20	4.0
21	3.5
22	3.4
23	2.6
24	1.8

In Table 2-6 the peak throughput hour begins at 4-5pm (1600 - 1700 hrs).

Applying the Average Daily Refuelling Volume of 2,880 L, the emission factors in Table 2-5, and deriving hourly volumes based on Table 2-6, the hourly Total VOC mass emission rates in grams per second (g/s) are developed.

These mass emission rates represent the combined (ALL) number of filling points at any one time, and single bowser (SINGLE) operations, and are listed in Table 2-7.

Table 2-7: Factored Total VOC Emission Rates per Hour (VR1 and/or VR1 & VR2)

Hour	Throughput % daily volume/hr	% to Peak Daily Hour	ALL Bowsers Mass Emission Rate (VR1 only) (g/s)	SINGLE Bowser Mass Emission Rate (VR1 only) (g/s)	ALL Bowsers Mass Emission Rate (VR1 & VR2) (g/s)	SINGLE Bowser Mass Emission Rate (VR1 & VR2) (g/s)
1	1.2	19.5%	1.386	0.462	0.273	0.091
2	0.8	13.0%	0.924	0.308	0.182	0.061
3	0.6	9.8%	0.693	0.231	0.136	0.045
4	0.8	13.0%	0.924	0.308	0.182	0.061
5	1.9	30.9%	2.195	0.732	0.432	0.144
6	4.6	74.8%	5.313	1.771	1.046	0.349
7	5.5	89.4%	6.353	2.118	1.251	0.417
8	5.7	92.7%	6.584	2.195	1.296	0.432
9	5.5	89.4%	6.353	2.118	1.251	0.417
10	5.7	92.7%	6.584	2.195	1.296	0.432
11	6.0	97.6%	6.930	2.310	1.364	0.455
12	6.0	97.6%	6.930	2.310	1.364	0.455
13	5.7	92.7%	6.584	2.195	1.296	0.432
14	5.6	91.1%	6.468	2.156	1.273	0.424
15	5.9	95.9%	6.815	2.272	1.342	0.447
16	**6.2**	**100.0%**	**7.103**	**2.368**	**1.399**	**0.466**
17	**6.2**	**100.0%**	**7.103**	**2.368**	**1.399**	**0.466**
18	5.8	94.3%	6.699	2.233	1.319	0.440
19	5.1	82.9%	5.891	1.964	1.160	0.387
20	4.0	65.0%	4.620	1.540	0.910	0.303
21	3.5	56.9%	4.043	1.348	0.796	0.265
22	3.4	55.3%	3.927	1.309	0.773	0.258
23	2.6	42.3%	3.003	1.001	0.591	0.197
24	1.8	29.3%	2.079	0.693	0.409	0.136

Table 2-8 lists the emission rate for the proposed Station during bulk refuelling activities (VR1) where a single B-Double can deliver 55,000 L per hour.

Table 2-8: Proposed Station Bulk Storage Emissions during Bulk Refuelling (VR1)

Emission Source	Emission Type	Peak VOC Mass Emission Rate (g/s)	Stack Diameter (m)	Emission Velocity (m/s)
Vent Stack	Bulk Filling (Vapour Balance and Breathing Losses)	2.602	0.1	0.1

Appendix A presents the summary calculations for the derived mass emission rates.

3 Aermod Dispersion Modelling Methods

3.1 Meteorology

The nearest BoM AWS's to the Locality is the Perth Metro AWS. The past 5 years (calendar) of surface observation data was purchased and sorted to account for any erroneous data. Gap filling was undertaken for small gaps in the 5 year data.

The data was then analysed to derive a single representative annual period to be used for the pollutant dispersion modelling component of the Assessment.

To *complement* the surface data, CSIRO's TAPM data was used to supplement the final met dataset for upper air characteristics only, and the final dataset fed into Airmet for merging and processing.

This final met dataset represents the representative year of meteorology for the location.

The representative year was found to be 2023. A full analysis description of the derivation of this representative year is provided in Appendix B.

The TAPM (v4.0.5) model produces a 3D data tile representative of surface and upper air met characteristics with the following setup:

- 41 grid points (nx, ny);
- Four nests with the outer grid spacing (dx1, dy1) of 30 kms and subsequent nests approximately 1/3rd of the preceding nest (30, 10, 3, and 1 km); and
- 25 vertical grid levels.

The 1.0 km spacing nest was extracted as a 3D tile for the annual met period.

Extracted from the TAPM 2023 dataset were data parameters of Insolation (Watts/m^2), Net Radiation (Watts/m^2), Mixing Height (metres), U Star surface friction velocity (m/s), and delta T (Temperature).

Profile layers 1 and 2 were extracted to derive the delta Temperature (DT01) values to be used for the Airmet calculations. The change in vertical temperature profile allows the model to derive upper air characteristics accordingly.

The final 2023 representative year windrose of WS and WD, used in the modelling Assessment, is illustrated in Figure 3-1.

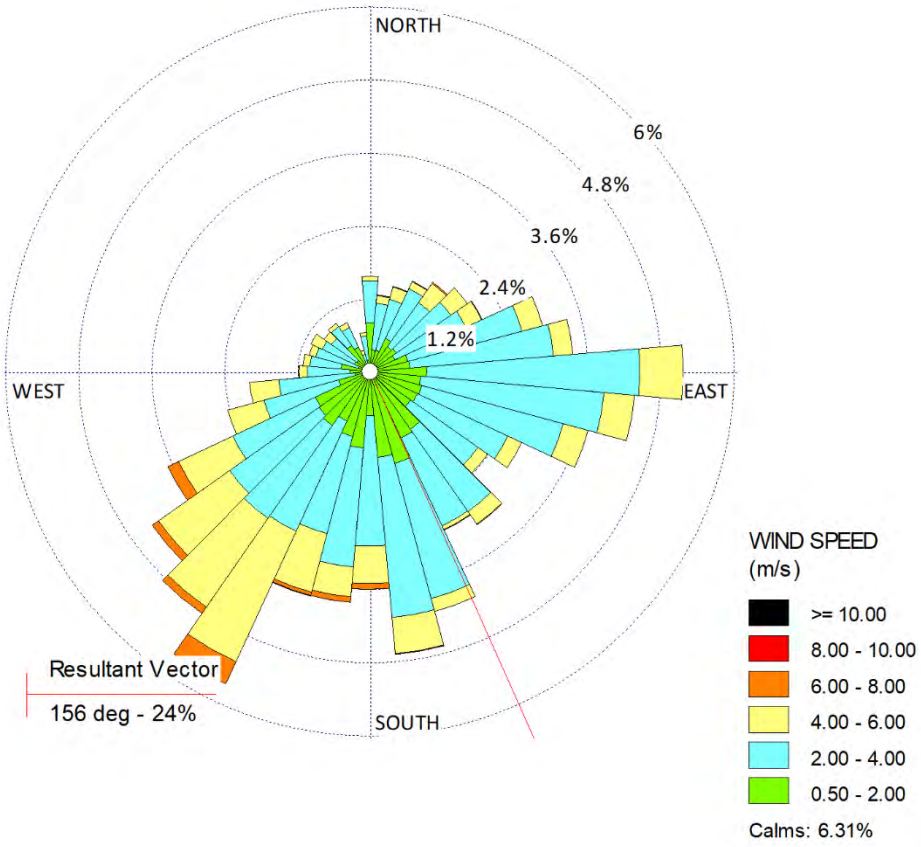

Figure 3-1: Annual Wind Characteristics (Speed & Direction) for Locality.

3.1.1 Sensitive Receptors

Discrete sensitive receptors were placed at locations representative of the Station's boundaries, and at key offsite sensitive locations (refer Figure 1-3). These receptors were assessed against the vapour emissions and compared against regulatory guidelines.

3.1.2 Building Profile Input Program (BPIP)

Building wake effects occur for those vertical stack emissions, in this case passive ventilation of the storage tank vent. An example of the Aermod Input File is presented in Appendix C.

3.1.3 Dispersion Modelling Limitations

By definition, air quality models can only approximate atmospheric processes. Many assumptions and simplifications are required to describe real phenomena in mathematical equations. Model uncertainties can result from:

- Simplifications and accuracy limitations related to source data;
- Extrapolation of meteorological data from selected locations to a larger region; and
- Simplifications to model physics to replicate the random nature of atmospheric dispersion processes.

Models are reasonable and reliable in estimating the maximum concentrations occurring on an average basis. That is, the maximum concentration that may occur at a given time somewhere within the model

domain, as opposed to the exact concentration at a point at a given time will usually be within the ±10% to +/- 40% range (US EPA, 2003).

Typically, a model is viewed as replicating dispersion processes if it can predict within a factor of two, and if it can replicate the temporal and meteorological variations associated with monitoring data. Model predictions at a specific site and for a specific hour, however, may correlate poorly with the associated observations due to the above-indicated uncertainties. For example, an uncertainty of 5° to 10° in the measured wind direction can result in concentration errors of 20% to 70% for an individual event (US EPA, 2003).

3.2 Station Assessment Results & Discussion

The Assessment of the Proposed Lot 130, 321 Guildford Road, Bayswater Western Australia. has projected ground level concentrations (GLCs) at the nearest sensitive receptors (refer Figure 1-3) for assessed pollutants of BTEX (Benzene, Toluene, Ethyl benzene, Xylenes), Cyclohexane, *n*-Hexane and Styrene that are below the guideline exposure standards when employing either VR1 and/or VR1 and VR2.

These pollutants were assessed by firstly modelling Total VOCs as a function of emission factors for fuel storage and vehicle dispensing volumes according to those methods in Section 2.

Those Total VOC GLCs projected were then revised to determine the percentage mass emission rate contributions for these pollutants (refer Table 2-2 and Table 2-3).

Table 3-1 and Table 3-2 lists each predicted pollutant concentration for each averaging period at those assessed sensitive receptors. These pollutant concentrations are revised based on each compound's vapour contribution to petrol VOC emissions. Additionally, these predicted pollutant concentrations reflect both VR1 and VR2 vapour recovery.

Within Table 3-1 and Table 3-2 is each pollutant's respective assessment criteria, the projected GLCs from the modelling Assessment and the revised projected GLCs at the nearest sensitive receptor (refer Figure 1-3) with a Percentage of Exposure Limit Value (%). This value represents the percentage ratio of projected GLCs compared to the assessment criteria for each pollutant.

A % < 100 % shows that the projected concentration at the sensitive receptor location achieves less than the assessment criteria i.e., PASS, whereas % ≥ 100 % shows non-compliance against the assessment criteria i.e., FAIL.

The magnitude of the compliance PASS/FAIL can be readily gauged by the size of the compliance against the Exposure Limit Value; i.e., a compliance factor (%).

- All GLC values reported for each sensitive receptor are the maximum, Rank 1 values for all averaging periods; and
- All units of concentration are in µg/m^3 unless stated otherwise.

In reviewing the predicted GLCs for vapours from toxic chemical pollutants in Table 3-1 and Table 3-2, the pollutant emissions at the nearest existing or future urban sensitive receptors are less than the exposure limits in ambient air when employing either VR1, and/or VR2 vapour recovery.

Based on the predicted ground level concentrations using VR1 alone, vapours from the Station are predicted to not negatively impact the health of the nearest existing, or future urban sensitive receptors, nor future sensitive land uses within the locality.

However, when considering model uncertainty, should the model be an underprediction, the revised compliance factors may exceed the Limit criterion at single receptor locations near to the boundaries of the Site.

Notwithstanding, the conservatism within the assumptions and vapour emissions' calculations for the Assessment accounts for any uncertainty in the modelling predictions, where:

- The Assessment assumes a peak hour scenario that derives fuel sales based on that peak hour,
- The Assessment assumes that peak hour sales (i.e., maximum refuelling occupancy/capacity) occur every day, which is largely improbable, and
- The Assessment assumes a subsequent peak refuelling occupancy/capacity of vehicles every day, which is also improbable.

Vapour Recovery Phase 2 is not required based on the conservative predictions within the Assessment demonstrating that pollutant emissions at the nearest existing or future urban sensitive receptors are less than the pollutant exposure limits in ambient air employing only mandatory Vapour Recovery Phase 1.

Figure 3-2 illustrates the ground level concentrations (GLCs) predicted for the maximum hour daily (24 hour averaging period) for Benzene using VR1 controls only. The inner "red" contour reflects the Limit of Exposure for Benzene at 29 ug/m^3. It can be seen from this figure that the Limit of Exposure is confined at the Site boundaries. Further dispersion of the Benzene plume shows that the Benzene GLC diminishes to acceptable levels at the nearest sensitive receptor.

Figure 3-3 illustrates the ground level concentrations (GLCs) predicted for the maximum hour daily (24 hour averaging period) for Benzene using both VR1 & VR2 controls. Given the use of VR2, there is no predicted Limit of Exposure for Benzene within the Site boundaries, with the maximum predicted GLC within the Site being 17 ug/m^3.

Table 3-1: Proposed Service Station - GLC's of Pollutants (VR1) @ Assessed Receptors

Receptor Location		Pollutant	Averaging Period	Limit (µg/m3)	Predicted (µg/m³)	% of CF	Pass/Fail	Pollutant	Averaging Period	Limit (µg/m3)	Predicted (µg/m³)	% of CF	Pass/Fail
1	W Boundary	Benzene	1-hour	580	287.06	49.49%	Pass	Benzene	24-hour	29	22.34	77.04%	Pass
2	NW Houses				145.27	25.05%	Pass				23.24	80.13%	Pass
3	N Corner				293.49	50.60%	Pass				16.58	57.18%	Pass
4	E House				97.90	16.88%	Pass				12.52	43.19%	Pass
5	SE Verge				72.44	12.49%	Pass				9.76	33.64%	Pass
6	SSE Verge				213.94	36.89%	Pass				19.72	68.00%	Pass
7	S of Bowsers				175.34	30.23%	Pass				27.55	94.99%	Pass
8	SW Verge				255.46	44.04%	Pass				17.32	59.74%	Pass
9	N 100m				101.81	17.55%	Pass				5.15	17.77%	Pass
10	W 100m				122.57	21.13%	Pass				6.85	23.61%	Pass
11	E 100m				35.01	6.04%	Pass				3.81	13.15%	Pass
12	S 100m				40.62	7.00%	Pass				4.29	14.80%	Pass
1	W Boundary	Benzene	Annual	9.6	7.45	77.59%	Pass	Toluene	24-hour	3770	64.56	1.71%	Pass
2	NW Houses				6.89	71.81%	Pass				67.15	1.78%	Pass
3	N Corner				4.82	50.26%	Pass				47.92	1.27%	Pass
4	E House				3.42	35.67%	Pass				36.19	0.96%	Pass
5	SE Verge				2.64	27.50%	Pass				28.19	0.75%	Pass
6	SSE Verge				6.32	65.82%	Pass				56.99	1.51%	Pass
7	S of Bowsers				9.09	94.73%	Pass				79.60	2.11%	Pass
8	SW Verge				5.09	52.99%	Pass				50.06	1.33%	Pass
9	N 100m				0.98	10.24%	Pass				14.89	0.39%	Pass
10	W 100m				1.19	12.35%	Pass				19.79	0.52%	Pass
11	E 100m				0.95	9.89%	Pass				11.02	0.29%	Pass
12	S 100m				1.02	10.66%	Pass				12.40	0.33%	Pass
1	W Boundary	Toluene	Annual	377	21.52	5.71%	Pass	Ethyl benzene	1-hour	8000	60.75	0.76%	Pass
2	NW Houses				19.92	5.28%	Pass				30.75	0.38%	Pass
3	N Corner				13.94	3.70%	Pass				62.11	0.78%	Pass
4	E House				9.90	2.63%	Pass				20.72	0.26%	Pass
5	SE Verge				7.63	2.02%	Pass				15.33	0.19%	Pass
6	SSE Verge				18.26	4.84%	Pass				45.28	0.57%	Pass
7	S of Bowsers				26.28	6.97%	Pass				37.11	0.46%	Pass
8	SW Verge				14.70	3.90%	Pass				54.07	0.68%	Pass
9	N 100m				2.84	0.75%	Pass				21.55	0.27%	Pass
10	W 100m				3.43	0.91%	Pass				25.94	0.32%	Pass
11	E 100m				2.74	0.73%	Pass				7.41	0.09%	Pass
12	S 100m				2.96	0.78%	Pass				8.60	0.11%	Pass
1	W Boundary	Ethyl benzene	Annual	270	1.58	0.58%	Pass	Xylenes	24-hour	1080	25.88	2.40%	Pass
2	NW Houses				1.46	0.54%	Pass				26.92	2.49%	Pass
3	N Corner				1.02	0.38%	Pass				19.21	1.78%	Pass
4	E House				0.72	0.27%	Pass				14.51	1.34%	Pass
5	SE Verge				0.56	0.21%	Pass				11.30	1.05%	Pass
6	SSE Verge				1.34	0.50%	Pass				22.85	2.12%	Pass
7	S of Bowsers				1.92	0.71%	Pass				31.91	2.96%	Pass
8	SW Verge				1.08	0.40%	Pass				20.07	1.86%	Pass
9	N 100m				0.21	0.08%	Pass				5.97	0.55%	Pass
10	W 100m				0.25	0.09%	Pass				7.93	0.73%	Pass
11	E 100m				0.20	0.07%	Pass				4.42	0.41%	Pass
12	S 100m				0.22	0.08%	Pass				4.97	0.46%	Pass
1	W Boundary	Xylenes	Annual	870	8.63	0.99%	Pass	Cyclohexane	1-hour	190	48.93	25.75%	Pass
2	NW Houses				7.99	0.92%	Pass				24.76	13.03%	Pass
3	N Corner				5.59	0.64%	Pass				50.02	26.33%	Pass
4	E House				3.97	0.46%	Pass				16.69	8.78%	Pass
5	SE Verge				3.06	0.35%	Pass				12.35	6.50%	Pass
6	SSE Verge				7.32	0.84%	Pass				36.46	19.19%	Pass
7	S of Bowsers				10.54	1.21%	Pass				29.88	15.73%	Pass
8	SW Verge				5.89	0.68%	Pass				43.54	22.92%	Pass
9	N 100m				1.14	0.13%	Pass				17.35	9.13%	Pass
10	W 100m				1.37	0.16%	Pass				20.89	10.99%	Pass
11	E 100m				1.10	0.13%	Pass				5.97	3.14%	Pass
12	S 100m				1.19	0.14%	Pass				6.92	3.64%	Pass
1	W Boundary	n-Hexane	1-hour	3200	1328.74	41.52%	Pass	Styrene	1-hour	64	2.17	3.38%	Pass
2	NW Houses				672.45	21.01%	Pass				1.10	1.71%	Pass
3	N Corner				1358.51	42.45%	Pass				2.21	3.46%	Pass
4	E House				453.17	14.16%	Pass				0.74	1.15%	Pass
5	SE Verge				335.32	10.48%	Pass				0.55	0.85%	Pass
6	SSE Verge				990.30	30.95%	Pass				1.61	2.52%	Pass
7	S of Bowsers				811.62	25.36%	Pass				1.32	2.07%	Pass
8	SW Verge				1182.46	36.95%	Pass				1.93	3.01%	Pass
9	N 100m				471.28	14.73%	Pass				0.77	1.20%	Pass
10	W 100m				567.34	17.73%	Pass				0.92	1.44%	Pass
11	E 100m				162.08	5.06%	Pass				0.26	0.41%	Pass
12	S 100m				188.00	5.88%	Pass				0.31	0.48%	Pass

Table 3-2: Proposed Service Station - GLC's of Pollutants (VR1 & VR2) @ Assessed Receptors

Receptor Location		Pollutant	Averaging Period	Limit (µg/m3)	Predicted (µg/m³)	% of CF	Pass/Fail	Pollutant	Averaging Period	Limit (µg/m3)	Predicted (µg/m³)	% of CF	Pass/Fail
1	W Boundary	Benzene	1-hour	580	70.63	12.18%	Pass	Benzene	24-hour	29	7.22	24.91%	Pass
2	NW Houses				121.75	20.99%	Pass				6.70	23.12%	Pass
3	N Corner				153.73	26.50%	Pass				7.16	24.69%	Pass
4	E House				47.13	8.13%	Pass				4.14	14.27%	Pass
5	SE Verge				45.76	7.89%	Pass				3.58	12.36%	Pass
6	SSE Verge				106.10	18.29%	Pass				7.24	24.95%	Pass
7	S of Bowsers				149.84	25.84%	Pass				12.06	41.57%	Pass
8	SW Verge				224.31	38.67%	Pass				11.45	39.47%	Pass
9	N 100m				70.81	12.21%	Pass				3.26	11.24%	Pass
10	W 100m				84.95	14.65%	Pass				4.30	14.82%	Pass
11	E 100m				23.26	4.01%	Pass				1.58	5.43%	Pass
12	S 100m				28.21	4.86%	Pass				1.91	6.58%	Pass
1	W Boundary	Benzene	Annual	9.6	2.24	23.34%	Pass	Toluene	24-hour	3770	20.87	0.55%	Pass
2	NW Houses				1.86	19.42%	Pass				19.38	0.51%	Pass
3	N Corner				1.33	13.81%	Pass				20.69	0.55%	Pass
4	E House				0.97	10.06%	Pass				11.96	0.32%	Pass
5	SE Verge				0.78	8.13%	Pass				10.35	0.27%	Pass
6	SSE Verge				1.90	19.80%	Pass				20.91	0.55%	Pass
7	S of Bowsers				3.07	32.02%	Pass				34.84	0.92%	Pass
8	SW Verge				1.87	19.51%	Pass				33.07	0.88%	Pass
9	N 100m				0.30	3.13%	Pass				9.42	0.25%	Pass
10	W 100m				0.38	3.94%	Pass				12.42	0.33%	Pass
11	E 100m				0.28	2.97%	Pass				4.55	0.12%	Pass
12	S 100m				0.33	3.45%	Pass				5.51	0.15%	Pass
1	W Boundary	Toluene	Annual	377	6.47	1.72%	Pass	Ethyl benzene	1-hour	8000	14.95	0.19%	Pass
2	NW Houses				5.39	1.43%	Pass				25.77	0.32%	Pass
3	N Corner				3.83	1.02%	Pass				32.54	0.41%	Pass
4	E House				2.79	0.74%	Pass				9.97	0.12%	Pass
5	SE Verge				2.25	0.60%	Pass				9.68	0.12%	Pass
6	SSE Verge				5.49	1.46%	Pass				22.45	0.28%	Pass
7	S of Bowsers				8.88	2.36%	Pass				31.71	0.40%	Pass
8	SW Verge				5.41	1.44%	Pass				47.47	0.59%	Pass
9	N 100m				0.87	0.23%	Pass				14.99	0.19%	Pass
10	W 100m				1.09	0.29%	Pass				17.98	0.22%	Pass
11	E 100m				0.82	0.22%	Pass				4.92	0.06%	Pass
12	S 100m				0.96	0.25%	Pass				5.97	0.07%	Pass
1	W Boundary	Ethyl benzene	Annual	270	0.47	0.18%	Pass	Xylenes	24-hour	1080	8.37	0.77%	Pass
2	NW Houses				0.39	0.15%	Pass				7.77	0.72%	Pass
3	N Corner				0.28	0.10%	Pass				8.30	0.77%	Pass
4	E House				0.20	0.08%	Pass				4.80	0.44%	Pass
5	SE Verge				0.17	0.06%	Pass				4.15	0.38%	Pass
6	SSE Verge				0.40	0.15%	Pass				8.38	0.78%	Pass
7	S of Bowsers				0.65	0.24%	Pass				13.97	1.29%	Pass
8	SW Verge				0.40	0.15%	Pass				13.26	1.23%	Pass
9	N 100m				0.06	0.02%	Pass				3.78	0.35%	Pass
10	W 100m				0.08	0.03%	Pass				4.98	0.46%	Pass
11	E 100m				0.06	0.02%	Pass				1.82	0.17%	Pass
12	S 100m				0.07	0.03%	Pass				2.21	0.20%	Pass
1	W Boundary	Xylenes	Annual	870	2.60	0.30%	Pass	Cyclohexane	1-hour	190	12.04	6.34%	Pass
2	NW Houses				2.16	0.25%	Pass				20.75	10.92%	Pass
3	N Corner				1.54	0.18%	Pass				26.20	13.79%	Pass
4	E House				1.12	0.13%	Pass				8.03	4.23%	Pass
5	SE Verge				0.90	0.10%	Pass				7.80	4.10%	Pass
6	SSE Verge				2.20	0.25%	Pass				18.08	9.52%	Pass
7	S of Bowsers				3.56	0.41%	Pass				25.54	13.44%	Pass
8	SW Verge				2.17	0.25%	Pass				38.23	20.12%	Pass
9	N 100m				0.35	0.04%	Pass				12.07	6.35%	Pass
10	W 100m				0.44	0.05%	Pass				14.48	7.62%	Pass
11	E 100m				0.33	0.04%	Pass				3.96	2.09%	Pass
12	S 100m				0.38	0.04%	Pass				4.81	2.53%	Pass
1	W Boundary	n-Hexane	1-hour	3200	326.94	10.22%	Pass	Styrene	1-hour	64	0.53	0.83%	Pass
2	NW Houses				563.57	17.61%	Pass				0.92	1.44%	Pass
3	N Corner				711.58	22.24%	Pass				1.16	1.81%	Pass
4	E House				218.15	6.82%	Pass				0.36	0.56%	Pass
5	SE Verge				211.80	6.62%	Pass				0.35	0.54%	Pass
6	SSE Verge				491.11	15.35%	Pass				0.80	1.25%	Pass
7	S of Bowsers				693.60	21.68%	Pass				1.13	1.77%	Pass
8	SW Verge				1038.29	32.45%	Pass				1.69	2.64%	Pass
9	N 100m				327.77	10.24%	Pass				0.53	0.83%	Pass
10	W 100m				393.21	12.29%	Pass				0.64	1.00%	Pass
11	E 100m				107.68	3.36%	Pass				0.18	0.27%	Pass
12	S 100m				130.58	4.08%	Pass				0.21	0.33%	Pass

Figure 3-2: 24 Hour Benzene Predicted Ground Level Concentrations (VR1 only)

Figure 3-3: 24 Hour Benzene Predicted Ground Level Concentrations (VR1 & VR2)

Appendix A: Vapour Emissions Calculations

Bowser	Number of Dispensing Nozzles	**6**	
-VR2	Peak Hourly Volume at Bowsers (transactions x Litres per car)	**2,880**	
	CAPCOA (Lbs/1000gallons to mg/L)	8,879	mg/L
	CAPCOA (Lbs/1000gallons to g/L)	8.879	g/L
	Losses (g/L)	8.879	g/L/hr
	VR2 (10-15% Losses) (g/L)	**8.879**	g/L/hr
	ESTIMATED TOTAL DAILY (24hr) VOLUME (L)	**46,829**	
	E10 Volatilisation	1.5	
	E10 % of T-Volumes	**0%**	
	E10 Fuel Ratio Factor	0	
	% of Other Fuels	100%	
	Fuel Ratio Factor	**1.000**	
Storage Tanks	Total PETROL Storage Tank Volumes	220,000	L
+VR 1	NPI 1999 + CAPCOA	**170**	mg/L
	Based on an All-IN Refill of Total Bulk Storage per Hour	9,367,981	mg/L/hr
	Based on an All-IN Refill of Total Bulk Storage per Hour	9,368	g/L/hr
	Based on an All-IN Refill of Total Bulk Storage per Second	2.602	g/L/s
	Vent Rate	0.00393	m3/s
	VR1 10% losses	2.602	g/s
	Final VR1 Value (per Vent)	**2.602**	**g/s**
	Annually	82,073,919	grams
		82,074	kgs
		225	kgs/day
	Deliveries weekly	14.0	kgs
	Per delivery	9.4	kg/hr
	Max Cars per Peak Hour	**72**	
	L per car on average	**40**	
	Peak Volume Dispensed	2,880	
	Average # Cars/hour Daily (7 days)	**50**	
	Cars Daily	1,182	
	Maximum Tanker Delivery Volume (L)	55,000	
	No Fuel Storage Vents	4	4
	Types of Fuel - Fuel Storage (kL)	Diesel	60
		ULP 91	40
		ULP 95	40
		ULP 98	80
	Bulk (Single) Tanker Deliveries per Week	1.49	**2**
	Annual Sales	17,092,683	

hour	% daily sales	% to peak hr	# cars/peak hour	Petrol Throughput (L/hr)	L/s	g/s	**Final g/s**	**FINAL Per Bowser**
1	1.2%	19.5%	15	562	0.156	1.386	1.386	0.462
2	0.8%	13.0%	10	375	0.104	0.924	0.924	0.308
3	0.6%	9.8%	8	281	0.078	0.693	0.693	0.231
4	0.8%	13.0%	10	375	0.104	0.924	0.924	0.308
5	1.9%	30.9%	23	890	0.247	2.195	2.195	0.732
6	4.6%	74.8%	54	2,154	0.598	5.313	5.313	1.771
7	5.5%	89.4%	65	2,576	0.715	6.353	6.353	2.118
8	5.7%	92.7%	67	2,669	0.741	6.584	6.584	2.195
9	5.5%	89.4%	65	2,576	0.715	6.353	6.353	2.118
10	5.7%	92.7%	67	2,669	0.741	6.584	6.584	2.195
11	6.0%	97.6%	71	2,810	0.780	6.930	6.930	2.310
12	6.0%	97.6%	71	2,810	0.780	6.930	6.930	2.310
13	5.7%	92.7%	67	2,669	0.741	6.584	6.584	2.195
14	5.6%	91.1%	66	2,622	0.728	6.468	6.468	2.156
15	5.9%	95.9%	70	2,763	0.767	6.815	6.815	2.272
16	**6.2%**	**100.0%**	**72**	2,880	0.800	7.103	**7.103**	**2.368**
17	**6.2%**	**100.0%**	**72**	2,880	0.800	7.103	**7.103**	**2.368**
18	5.8%	94.3%	68	2,716	0.754	6.699	6.699	2.233
19	5.1%	82.9%	60	2,388	0.663	5.891	5.891	1.964
20	4.0%	65.0%	47	1,873	0.520	4.620	4.620	1.540
21	3.5%	56.9%	41	1,639	0.455	4.043	4.043	1.348
22	3.4%	55.3%	40	1,592	0.442	3.927	3.927	1.309
23	2.6%	42.3%	31	1,218	0.338	3.003	3.003	1.001
24	1.8%	29.3%	22	843	0.234	2.079	2.079	0.693
	100.0%		1,182	**46,829**			**Max** **7.103**	**2.368**

Emission Source	NPI 1999 mg/L	NPI 1999 Lbs/1000 Gallons	CAPCOA Lbs/1000 Gallons	CAPCOA mg/L
Underground Tank Filling				
Submerged Filling	880		8.4	1007
Splash Filling	1380			
Submerged filling with vapour balance	40	0.33	0.42	**50**
Underground tank breathing losses	**120**	1.00	0.84	101
Vehicle Refuelling				
Displacement Losses (uncontrolled)	1320	**11.02**	8.4	1007
Displacement Losses (90% controlled e.g VRU 2)	132	1.10	0.74	89
Spillages				
Uncontrolled	80	**0.67**	0.61	73
Controlled			0.41	49
"Whoosh" Emissions			0.26 - **0.66**	79
"Whoosh" Emissions (averaged)			0.46	79

Bowser	Number of Dispensing Nozzles	**6**	
+VR2	Peak Hourly Volume at Bowsers (transactions x Litres per car)	**2,880**	
	CAPCOA (Lbs/1000gallons to mg/L)	1,748	mg/L
	CAPCOA (Lbs/1000gallons to g/L)	1.748	g/L
	Losses (g/L)	1.748	g/L/hr
	VR2 (10-15% Losses) (g/L)	**1.748**	g/L/hr
	ESTIMATED TOTAL DAILY (24hr) VOLUME (L)	**46,829**	
	E10 Volatilisation	1.5	
	E10 % of T-Volumes	**0%**	
	E10 Fuel Ratio Factor	0	
	% of Other Fuels	100%	
	Fuel Ratio Factor	**1.000**	
Storage Tanks	Total Storage Tank Volumes	220,000	L
+VR 1	NPI 1999	**170**	mg/L
	Based on an All-IN Refill of Total Bulk Storage per Hour	9,367,981	mg/L/hr
	Based on an All-IN Refill of Total Bulk Storage per Hour	9,368	g/L/hr
	Based on an All-IN Refill of Total Bulk Storage per Second	2.602	g/L/s
	Vent Rate	0.00393	m3/s
	VR1 10% losses	2.602	g/s
	Final VR1 Value (per Vent)	**2.602**	**g/s**
	Annually	82,073,919	grams
		82,074	kgs
		225	kgs/day
	Deliveries weekly	14.0	kgs
	Per delivery	9.4	kg/hr
	Max Cars per Peak Hour	**72**	
	L per car on average	**40**	
	Peak Volume Dispensed	2,880	
	Average # Cars/hour Daily (7 days)	**50**	
	Cars Daily	1,182	
	Maximum Tanker Delivery Volume (L)	55,000	
	No Fuel Storage Vents	3	4
	Types of Fuel - Fuel Storage (kL)	Diesel	60
		ULP 91	40
		PULP 95	40
		AdBlue	80
	Bulk (Single) Tanker Deliveries per Week	1.49	**2**
	Annual Sales	17,092,683	

hour	% daily sales	% to peak hr	# cars/peak hour	Petrol Throughput (L/hr)	L/s	g/s	**Final g/s**	**FINAL Per Bowser**
1	1.2%	19.5%	15	562	0.156	0.273	0.273	0.091
2	0.8%	13.0%	10	375	0.104	0.182	0.182	0.061
3	0.6%	9.8%	8	281	0.078	0.136	0.136	0.045
4	0.8%	13.0%	10	375	0.104	0.182	0.182	0.061
5	1.9%	30.9%	23	890	0.247	0.432	0.432	0.144
6	4.6%	74.8%	54	2,154	0.598	1.046	1.046	0.349
7	5.5%	89.4%	65	2,576	0.715	1.251	1.251	0.417
8	5.7%	92.7%	67	2,669	0.741	1.296	1.296	0.432
9	5.5%	89.4%	65	2,576	0.715	1.251	1.251	0.417
10	5.7%	92.7%	67	2,669	0.741	1.296	1.296	0.432
11	6.0%	97.6%	71	2,810	0.780	1.364	1.364	0.455
12	6.0%	97.6%	71	2,810	0.780	1.364	1.364	0.455
13	5.7%	92.7%	67	2,669	0.741	1.296	1.296	0.432
14	5.6%	91.1%	66	2,622	0.728	1.273	1.273	0.424
15	5.9%	95.9%	70	2,763	0.767	1.342	1.342	0.447
16	**6.2%**	**100.0%**	**72**	**2,880**	0.800	1.399	**1.399**	**0.466**
17	**6.2%**	**100.0%**	**72**	**2,880**	0.800	1.399	**1.399**	**0.466**
18	5.8%	94.3%	68	2,716	0.754	1.319	1.319	0.440
19	5.1%	82.9%	60	2,388	0.663	1.160	1.160	0.387
20	4.0%	65.0%	47	1,873	0.520	0.910	0.910	0.303
21	3.5%	56.9%	41	1,639	0.455	0.796	0.796	0.265
22	3.4%	55.3%	40	1,592	0.442	0.773	0.773	0.258
23	2.6%	42.3%	31	1,218	0.338	0.591	0.591	0.197
24	1.8%	29.3%	22	843	0.234	0.409	0.409	0.136
	100.0%		1,182	**46,829**		**Max**	1.399	**0.466**

Emission Source	NPI 1999 mg/L	NPI 1999 Lbs/1000 Gallons	CAPCOA Lbs/1000 Gallons	CAPCOA mg/L
Underground Tank Filling				
Submerged Filling	880		8.4	1007
Splash Filling	1380			
Submerged filling with vapour balance	40	0.33	0.42	**50**
Underground tank breathing losses	**120**	1.00	0.84	101
Vehicle Refuelling				
Displacement Losses (uncontrolled)	1320	11.02	8.4	1007
Displacement Losses (90% controlled e.g VRU 2)	132	**1.10**	0.74	89
Spillages				
Uncontrolled	80	**0.67**	0.61	73
Controlled			0.41	49
"Whoosh" Emissions			0.26 - **0.66**	79
"Whoosh" Emissions (averaged)			0.46	79

Appendix B: Meteorology & Representative Year

Contents

Figures

Tables

1 Meteorology

When undertaking dispersion modelling of air pollutants, the wind speed and direction (U and V components of wind) is critical in determining the magnitude of the ground level impacts downwind of an emission source(s).

Temperature is also important within dispersion modelling for understanding vertical mixing and inversion layers within the domain assessed by the dispersion model, whilst rainfall has importance with regard to dust deposition rates, and empirically when determining odour impacts at ground level.

The nearest BoM AWS's to the Site is Perth Metro (Station 009225), which is approximately 3 kms east, south-east from the Site.

To determine which annual meteorological (met) period was the most representative of the Site's locality, the Perth Metro AWS was reviewed for its most recent 5-year met trends (2020-2024) for key meteorological parameters of Temperature (^{0}C), Relative Humidity (%), Wind Speed and Wind Direction, and Rainfall (mm).

1.1 Perth Metro AWS Data Recovery

Year	Hours	RH%	Temp (^{0}C)	WS (km/h)	WD (deg)	Rain (mm)	SLP (hPa)
2020	8784	99.9%	99.9%	92.9%	92.9%	99.9%	99.9%
2021	8760	99.6%	99.7%	85.9%	85.9%	99.6%	99.7%
2022	8760	99.8%	99.9%	85.6%	85.6%	99.8%	99.9%
2023	8760	99.8%	99.9%	92.3%	92.3%	99.7%	99.9%
2024	8784	99.9%	99.9%	90.9%	90.9%	99.9%	99.9%

1.2 Representative Meteorological Analysis Methods

When evaluating meteorological datasets to identify a representative year, several statistical approaches can be applied. Each method has a different definition of similarity, which can lead to diverging results. Below is a comparison of the three principal methods used in this analysis: Pearson correlation, Chi-square (χ^2) goodness-of-fit, and Kolmogorov–Smirnov (KS) tests.

1.1.1 Pearson Correlation

- Derives the correlation between the *shapes* of histograms (e.g., wind speed, wind direction × speed, temperature) for each candidate year versus the pooled multi-year baseline, and
- Values close to 1.0 indicate a strong match in relative structure.

Strengths:

- Captures overall similarity in the *pattern* of distributions,
- Tolerant of small systematic offsets (e.g., slightly higher or lower mean wind speeds) so long as the relative proportions are preserved, and
- Produces a smooth, stable ranking across years.

Limitations:

- Insensitive to localised differences in rare categories (e.g., extreme winds or unusual stability events), and
- A year can appear highly correlated even if it has persistent biases, provided the shape is similar.

Best used when:

- The goal is to identify a year that "looks like" the multi-year climate in overall structure, and
- Smoothing out rare events is acceptable.

1.1.2 Chi-square (χ^2) Goodness of Fit

Method:

- Compares observed versus expected frequencies in histogram bins, and
- This statistic increases sharply when counts differ in low-frequency bins.

Strengths:

- Sensitive to exact differences in bin counts,
- Highlights years with unusual events or anomalous distributions, and
- Provides a formal hypothesis test of "indistinguishability."

Limitations:

- Can overweight small deviations in sparse categories,
- Harsh on years with a few rare events, even if the overall pattern is typical, and
- Sensitive to binning choice.

Best used when:

- Rare events and extremes must be faithfully represented, and
- Regulatory or risk contexts emphasise exact frequency matching.

1.1.3 Kolmogorov–Smirnov (KS) Test

Method:

- Compares *cumulative distributions* (CDFs) between candidate and baseline datasets, and
- Focuses on the maximum vertical distance between the two CDFs.

Strengths:

- Non-parametric and bin-free; independent of binning choices,
- Very sensitive to differences in central tendency (medians, quartiles), and
- Highlights years that best capture the bulk of the distribution.

Limitations:

- Ignores finer structure of distributions (e.g., wind sectoral detail),
- Sensitive to outliers because it focuses on the single worst discrepancy, and

- May downplay systematic directional or sectoral features.

Best used when:

- Median and quartile behaviour (the "bulk climate") is most important, and
- Distribution tails are less critical.

Pearson tends to prefer years with smooth patterns that mimic the long-term average, χ^2 penalises years that include rare or extreme conditions, even if the bulk is typical, and KS focuses on cumulative similarity and is driven by central tendency rather than distributional detail.

There is no single "correct" representative year. Each method encodes a different philosophy of similarity:

- Pearson → Structural resemblance,
- χ^2 → Exact frequency matching, and
- KS → Median/central behaviour

The choice of method should therefore reflect the purpose of the modelling study. For regulatory dispersion modelling, a combination approach — such as Pearson for broad representativeness with χ^2 or KS as supporting evidence — provides the most robust justification.

1.1.4 ENSO/SOI

As part of the representative year derivation, the analysis has been combined with the consideration of ENSO and SOI parameters, where each method may elevate different candidate (representative) years into the "top 2" set, leading to divergent final outcomes.

ENSO and SOI are fundamental to seasonal forecasting, climate diagnostics, and the interpretation of multi-year meteorological datasets. ENSO/SOI filtering can be applied to avoid:

- Strong El Niño drought years that skew temperature and wind anomalies,
- Extreme La Niña years with atypical rainfall and suppressed mixing, and
- Neutral-ENSO years typically provide the most climatologically balanced baseline.

ENSO/SOI context helps ensure that the selected meteorological dataset reflects "typical" regional conditions rather than ENSO-driven extremes.

1.1.4.1 El Niño–Southern Oscillation (ENSO)

ENSO is a coupled ocean–atmosphere climate phenomenon centred in the tropical Pacific. It operates as a quasi-periodic oscillation between three phases:

1. **El Niño (warm phase):**
   a) Sea-surface temperatures (SSTs) in the central and eastern tropical Pacific become warmer than average,
   b) Trade winds weaken or reverse, and
   c) Global weather patterns shift, typically producing drier conditions in parts of Australia.
2. **La Niña (cool phase):**
   a) SSTs in the central and eastern tropical Pacific are cooler than average,

b) Strengthened trade winds enhance upwelling and atmospheric convection, and
c) Often associated with wetter conditions over Australia.

3. **ENSO-Neutral:**
   a) SSTs and atmospheric circulation remain near long-term averages, and
   b) Neither El Niño nor La Niña exerts a strong influence on global climate.

ENSO has a cycle of roughly 2–7 years, though its intensity, duration, and onset vary considerably.

1.1.4.2 Southern Oscillation Index (SOI)

The SOI is a standardised index that measures the atmospheric component of ENSO. It is calculated from the mean sea level pressure (MSLP) difference between Tahiti and Darwin.

Where:

- Positive SOI values indicate higher pressure in Tahiti and lower pressure in Darwin, consistent with La Niña, and
- Negative SOI values indicate lower pressure in Tahiti and higher pressure in Darwin, consistent with El Niño.

Monthly SOI values typically fluctuate between –20 and +20, but extreme events can push beyond this range.

2 Representative Year Results 2023

The representative year was found to be 2023.

Table 2-1 below lists the individual statistical analyses values for each annual period. Those cells highlighted in yellow represent statistical coefficient values > 0.99.

The higher the number (#) of neutral months for SOI represents those annual periods where there were less El Niño or La Niña events. A higher SOI value indicating greater neutrality is preferred.

Where:

- 2022 had the highest Pearson coefficient, but only 2 neutral SOI months,
- 2024 had the highest number of neutral SOI months, but lower correlation coefficients than the other years,
- 2023 had the highest correlation coefficients for U and V wind components, and also had 6 neutral SOI months annually, and
- 2020, followed by 2021 ranked 2nd and 3rd, below 2023.

Table 2-1: Representative Year Analysis Summary

Parameter	2020	2021	2022	2023	2024
Temperature	**0.995**	**0.9928**	**0.99**	**0.9926**	0.9867
Relative Humidity	0.9659	0.9825	**0.9938**	**0.9936**	0.9897
Wind Speed	**0.9937**	**0.9935**	**0.9927**	**0.9937**	**0.9945**
U-component	0.9813	0.9864	0.9831	**0.9907**	0.978
V-component	**0.9932**	**0.9904**	**0.9932**	**0.9957**	0.9768
Average (excl_RH)	**0.9908**	**0.9908**	0.9897	**0.9932**	0.984
#Neutral Months (SOI)	7	6	2	6	9
Statistical Method	**2020**	**2021**	**2022**	**2023**	**2024**
Pearson (Primary Method)	0.9908	0.9908	0.9897	0.9932	0.984
Chi2 (WD)	137.6	120.3	150.8	154.7	272.4
Chi2 (WS)	14.4	35.6	19.4	31.4	39.7
Chi2 (WD x WS)	438.8	559.4	405.1	323.1	765.1
KS (Temperature)	0.0157	0.0365	0.0409	0.0160	0.0632
Final (with SOI tiebreak)				✓	

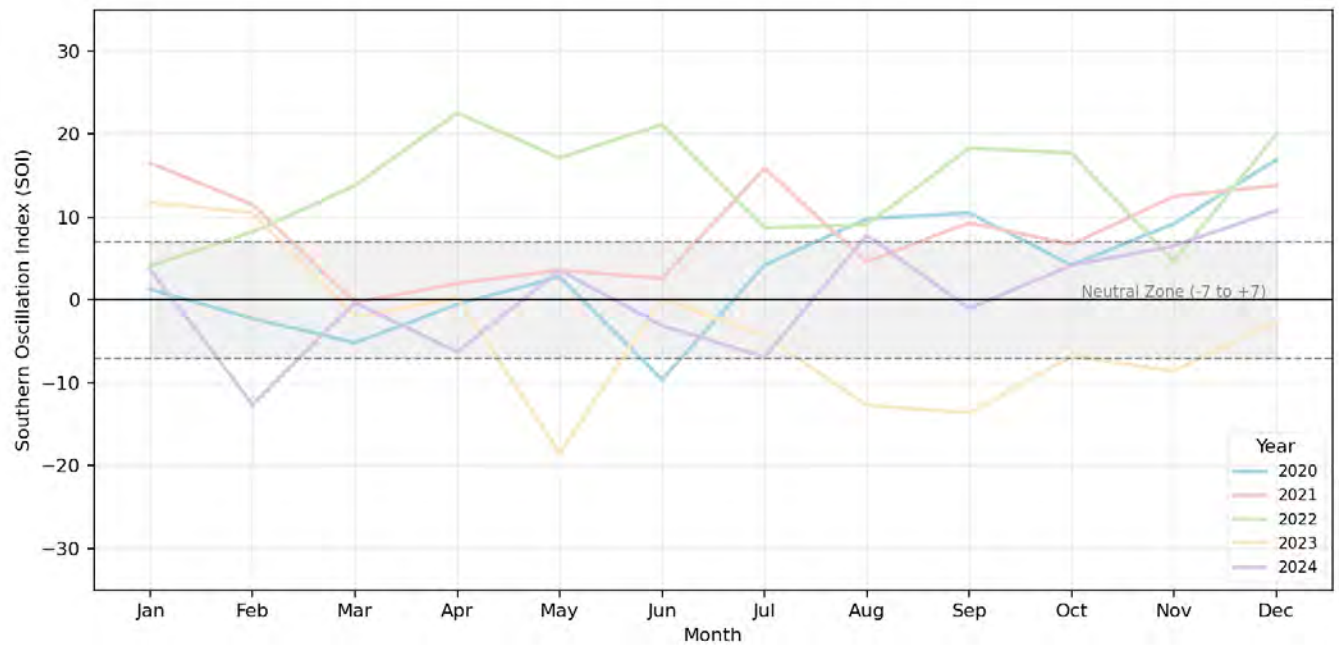

Figure 2-1: Southern Oscillation Index (SOI) from 2020 – 2024

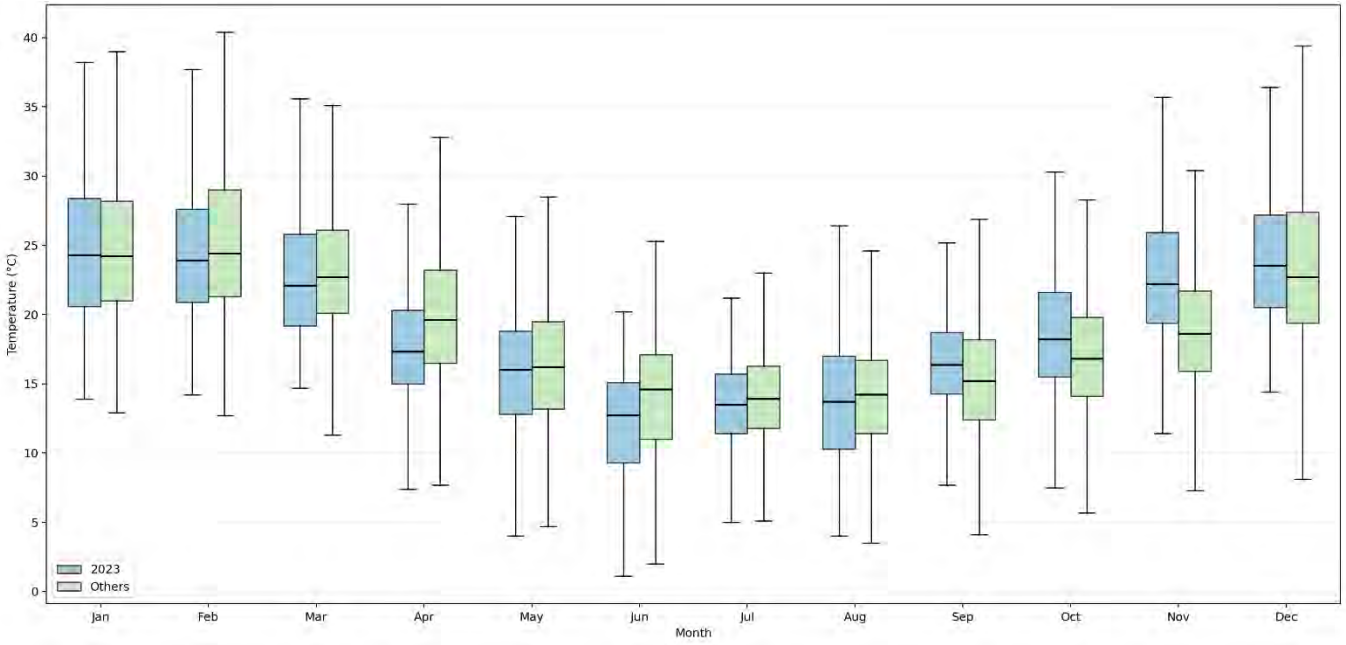

Figure 2-2: Temperature Box-Plot Characteristics (2023 = blue)

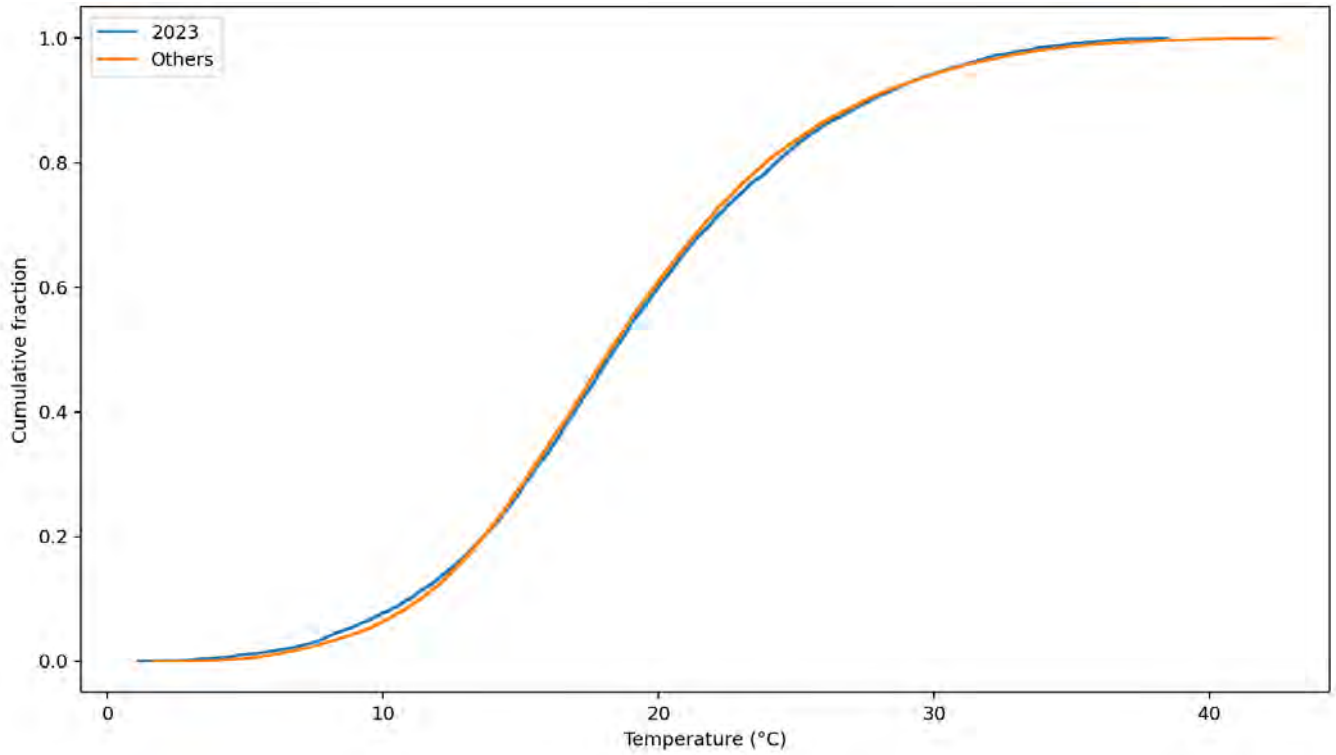

Figure 2-3: Empirical Cumulative Distribution Function (ECDF) Temperature Characteristics

Figure 2-4: Simplified Heuristic Estimated Atmospheric Stability Trends for 2023

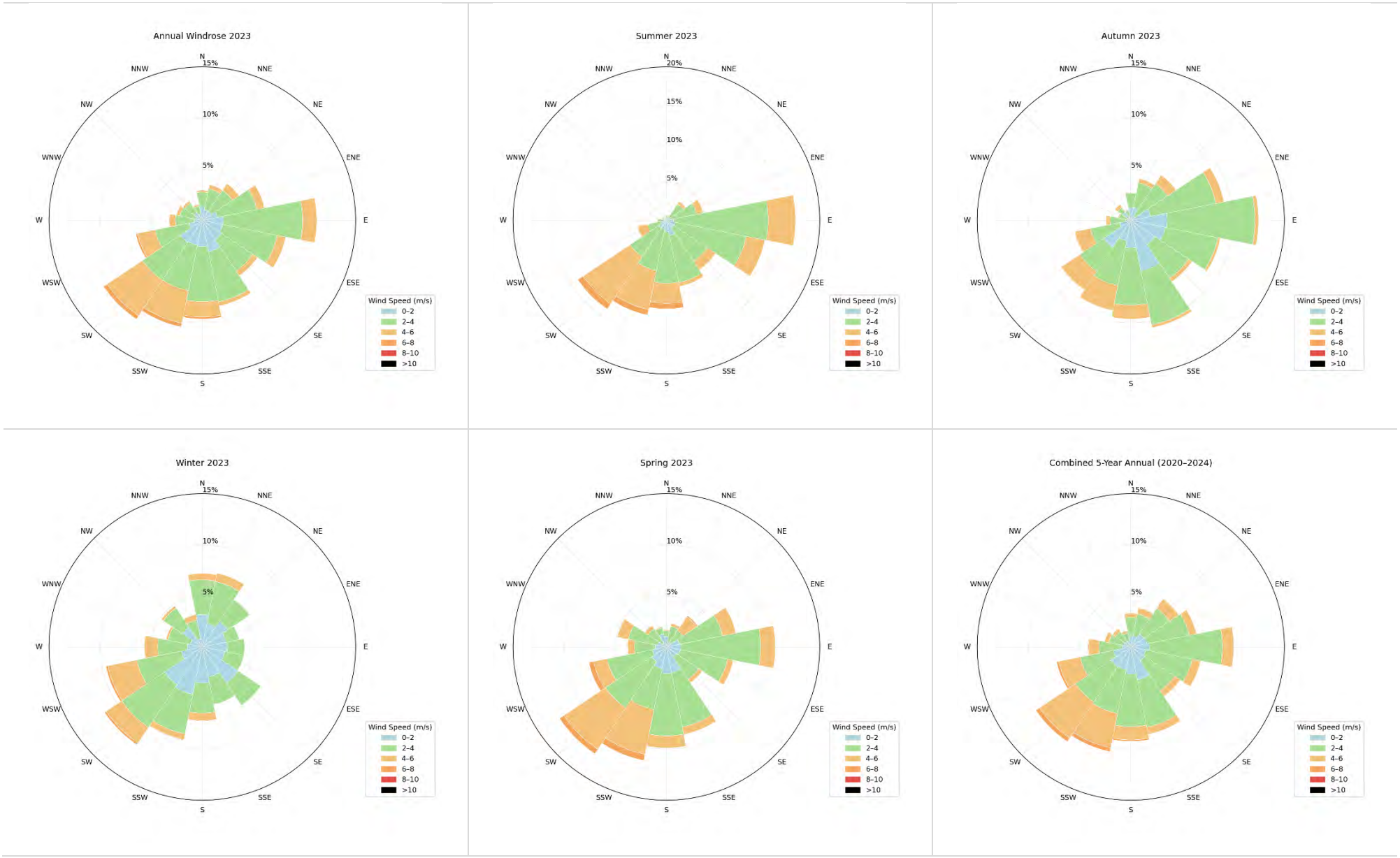

Figure 2-5: Windrose Trends for 2023 & Five-Year Combined (bottom RHS)

Appendix C: AERMOD Input

```
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**************************************
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** AERMOD Input Produced by:
** AERMOD View Ver. 13.0.0
** Lakes Environmental Software Inc.
** Date: 25-Nov-25
** File: \\data\eaqconsulting\EAQ Consulting\PROJECTS\PROJECTS 2025\25031_Peregrine
(OTR)\Reports\25031.inp
**
**************************************
**
**
**************************************
** AERMOD Control Pathway
**************************************
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**
CO STARTING
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   TITLETWO Peregrine (OTR SS) - Cnr Kenilworth St & Guilford Rd, Bayswater
   MODELOPT DFAULT CONC
   AVERTIME 1 24 ANNUAL
   POLLUTID VOC
   RUNORNOT RUN
   ERRORFIL 25031.err
CO FINISHED
**
**************************************
** AERMOD Source Pathway
**************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
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** DESCRSRC Bowser 1
   LOCATION BOWS2        VOLUME     396335.431  6467083.851       29.520
** DESCRSRC Bowser 2
   LOCATION BOWS3        VOLUME     396332.138  6467090.185       28.450
** DESCRSRC Bowser 3
   LOCATION STCK1        POINTCAP   396328.203  6467073.798       30.080
** DESCRSRC Tank Breather
   LOCATION STCK2        POINTCAP   396328.198  6467073.897       30.060
** DESCRSRC Tank Breather
   LOCATION STCK3        POINTCAP   396328.202  6467073.998       30.050
** DESCRSRC Tank Breather
   LOCATION STCK4        POINTCAP   396328.201  6467074.098       30.040
** DESCRSRC Tank Breather
** Source Parameters **
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   SRCPARAM BOWS2             1.0     1.000     1.395     2.233
   SRCPARAM BOWS3             1.0     1.000     1.395     2.233
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   SRCPARAM STCK3             1.0     4.500     0.000       0.5       0.1
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   BUILDHGT STCK1          0.00     0.00     0.00     0.00     0.00     0.00
   BUILDHGT STCK1          0.00     0.00     0.00     0.00     0.00     0.00
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   BUILDHGT STCK2          0.00     0.00     0.00     0.00     0.00     0.00
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     YBADJ    STCK1            0.00     0.00     0.00     0.00     0.00     0.00
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     YBADJ    STCK1            0.00     0.00     0.00     0.00     0.00     0.00
     YBADJ    STCK1            0.00     0.00    16.82    10.40     3.66    -3.19
     YBADJ    STCK1           -9.95   -16.40     0.00     0.00     0.00     0.00
     YBADJ    STCK1            0.00     0.00     0.00     0.00     0.00     0.00

     YBADJ    STCK2            0.00     0.00     0.00     0.00     0.00     0.00
     YBADJ    STCK2            0.00     0.00     0.00     0.00     0.00     0.00
     YBADJ    STCK2            0.00     0.00     0.00     0.00     0.00     0.00
     YBADJ    STCK2            0.00     0.00    16.87    10.46     3.73    -3.11
     YBADJ    STCK2           -9.85   -16.30     0.00     0.00     0.00     0.00
     YBADJ    STCK2            0.00     0.00     0.00     0.00     0.00     0.00

     YBADJ    STCK3            0.00     0.00     0.00     0.00     0.00     0.00
     YBADJ    STCK3            0.00     0.00     0.00     0.00     0.00     0.00
     YBADJ    STCK3            0.00     0.00     0.00     0.00     0.00     0.00
     YBADJ    STCK3            0.00     0.00    16.92    10.52     3.81    -3.02
     YBADJ    STCK3           -9.76   -16.20     0.00     0.00     0.00     0.00
     YBADJ    STCK3            0.00     0.00     0.00     0.00     0.00     0.00

     YBADJ    STCK4            0.00     0.00     0.00     0.00     0.00     0.00
     YBADJ    STCK4            0.00     0.00     0.00     0.00     0.00     0.00
     YBADJ    STCK4            0.00     0.00     0.00     0.00     0.00     0.00
     YBADJ    STCK4            0.00     0.00    16.97    10.59     3.89    -2.93
     YBADJ    STCK4           -9.66   -16.10     0.00     0.00     0.00     0.00
     YBADJ    STCK4            0.00     0.00     0.00     0.00     0.00     0.00


** Variable Emissions Type: "By Hour / Seven Days (HRDOW7)"
** Variable Emission Scenario: "Vent (1)"
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** Variable Emissions Type: "By Hour-of-Day (HROFDY)"
** Variable Emission Scenario: "Scenario 1 (4)"
   EMISFACT BOWS1        HROFDY 0.462 0.308 0.231 0.308 0.732 1.771
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   EMISFACT BOWS1        HROFDY 2.195 2.156 2.272 2.368 2.368 2.233
   EMISFACT BOWS1        HROFDY 1.964 1.54 1.348 1.309 1.001 0.693
   EMISFACT BOWS2        HROFDY 0.462 0.308 0.231 0.308 0.732 1.771
   EMISFACT BOWS2        HROFDY 2.118 2.195 2.118 2.195 2.31 2.31
   EMISFACT BOWS2        HROFDY 2.195 2.156 2.272 2.368 2.368 2.233
   EMISFACT BOWS2        HROFDY 1.964 1.54 1.348 1.309 1.001 0.693
   EMISFACT BOWS3        HROFDY 0.462 0.308 0.231 0.308 0.732 1.771
   EMISFACT BOWS3        HROFDY 2.118 2.195 2.118 2.195 2.31 2.31
   EMISFACT BOWS3        HROFDY 2.195 2.156 2.272 2.368 2.368 2.233
   EMISFACT BOWS3        HROFDY 1.964 1.54 1.348 1.309 1.001 0.693
   SRCGROUP bowsers  BOWS1 BOWS2 BOWS3
   SRCGROUP vents    STCK1 STCK2 STCK3 STCK4
   SRCGROUP ALL
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** AERMOD Receptor Pathway
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** AERMOD Meteorology Pathway
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**
ME STARTING
** Surface File Path: D:\MyAERMOD\25031\
   SURFFILE 25031.SFC
** Profile File Path: D:\MyAERMOD\25031\
   PROFFILE 25031.PFL
   SURFDATA 0 2023
   UAIRDATA 0 2023
   SITEDATA 0 2023
   PROFBASE 34.98 METERS
ME FINISHED
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** AERMOD Output Pathway
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OU STARTING
   RECTABLE ALLAVE 1ST
   RECTABLE 1 1ST
   RECTABLE 24 1ST
   MAXTABLE 1 100
** Auto-Generated Plotfiles
   PLOTFILE 1 ALL 1ST D:\MyAERMOD\25031\25031.AD\01H1GALL.PLT 31
   PLOTFILE 24 ALL 1ST D:\MyAERMOD\25031\25031.AD\24H1GALL.PLT 32
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    PLOTFILE 1 bowsers 1ST D:\MyAERMOD\25031\25031.AD\01H1G001.PLT 33
    PLOTFILE 24 bowsers 1ST D:\MyAERMOD\25031\25031.AD\24H1G001.PLT 34
    PLOTFILE 1 vents 1ST D:\MyAERMOD\25031\25031.AD\01H1G002.PLT 35
    PLOTFILE 24 vents 1ST D:\MyAERMOD\25031\25031.AD\24H1G002.PLT 36
    PLOTFILE ANNUAL ALL D:\MyAERMOD\25031\25031.AD\AN00GALL.PLT 37
    PLOTFILE ANNUAL bowsers D:\MyAERMOD\25031\25031.AD\AN00G001.PLT 38
    PLOTFILE ANNUAL vents D:\MyAERMOD\25031\25031.AD\AN00G002.PLT 39
    SUMMFILE D:\MyAERMOD\25031\25031.sum
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** Project Parameters
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** PROJCTN  CoordinateSystemUTM
** DESCPTN  UTM: Universal Transverse Mercator
** DATUM    World Geodetic System 1984
** DTMRGN   Global Definition
** UNITS    m
** ZONE     -50
** ZONEINX  0
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DR1 – Design review report and recommendations (Part 2/3)

This report is prepared by the panel coordinator and checked by the design review Chair. To maintain the integrity and independence of the design review process this report should be attached, unedited to Council reports and (if applicable) the Development Assessment Panel Responsible Authority Report.

Local government	City of Bayswater	
Item	Proposed Service Station, Convenience Store, Car Wash and Drive-Through Coffee Facility – 321 Guildford Road, Bayswater (corner of Kenilworth Street)	
Date	27 October 2023	
Time	2.00 pm	
Location	City of Bayswater	
Panel members	Philip Gresley Brett Wood-Gush Simon Venturi Patrick Miller	Chair
Local government officers	Bianca Sandri Helen Smith Courtney Wynn Gemma Basley Bianca Sandri	Director Community Services Manager Development & Place Coordinator Statutory Planning Statutory Planner
Proponent/s	Nik Hidding Andrew Casper Robert King	Hidding Urban Planning Peregrine Corporation ADS Architects
Observer/s	Nil	
Conflicts of Interest	Nil	
Briefings		
Development assessment overview	Gemma Basley	Statutory Planner
Technical issues	Gemma Basley	Statutory Planner
Design review		
Proposed development	Proposed Service Station, Convenience Store, Car Wash and Drive-Through Coffee Facility – 321 Guildford Road, Bayswater (corner of Kenilworth Street). The development involves the demolition of an existing service station building and canopy and proposes a redevelopment of portion of the site with a new service station canopy, control building (convenience store and drive through coffee) and a stand-alone car wash and vacuum bays. The development proposes the removal of one verge tree to Kenilworth Street in order to reposition a crossover to Kenilworth and proposes two modified crossovers to Guildford Road. The development is proposed to be serviced by a total of 19 car bays (including parking, bowser, EV and vacuum bays) and proposes small car bays to accommodate truck manoeuvring and the placement of parking bays adjacent to the entrance. The development is proposing a reduced landscaping provision and is proposing setback variations to Kenilworth and to Guildford Road.	
Property address	Lots 130-131, 321 Guildford Road, Bayswater	
Background	The site is zoned for Service Station and has historically been utilised for a Service Station, which ceased operations some years ago.	
Proposal	The proposed development will be located on the existing service station site and will	

	entail a full redevelopment of the site and excision of a portion of land for a future freehold lot (butting 49-49A Kenilworth Street).	
Applicant/representative address to the design review panel	Nik Hidding Andrew Casper Robert King	Hidding Urban Planning Peregrine Corporation ADS Architects
Key issues/recommendations	This is the first DRP review of this proposal. The Panel suggests that there is significant opportunity for improvement in this proposal including; • Revising the site planning layout including built form and scale to better respond to the context and character of the surrounding area, and the history of the site. • Re-positioning the control building closer to the street to introduce a higher quality urban design outcome with improved street frontage and uplift in pedestrian and community amenity. • Continuing to explore the use of contextual materials and arrange them in a way to respond and interpret in a contemporary manner the rhythm and form of traditional shop front typology. • Reconsidering all of the designed elements on site to be unified through a more cohesive design aesthetic. • Increasing landscaping and the planting of (large) trees, reducing the number of crossovers, and reducing the dominance of hardstand associated with circulation and parking areas generally. • The introduction of a comprehensive sustainability strategy. The Panel **does not support this proposal** and recommends a second DRP meeting.	
Chair signature		

DR1 – Design review report and recommendations (Part 2/3)

Design quality evaluation		
		Supported
		Pending further attention
		Not supported
		Yet to be addressed
Principle 1 - **Context and character**		*Good design responds to and enhances the distinctive characteristics of a local area, contributing to a sense of place.*
		• A limited amount of site and context analysis has been provided to the Panel. The proponent should undertake a more detailed study. • Notwithstanding the proposed use, the development layout is not ideal for this location and results in impacted footpaths, reduced pedestrian amenity and a vehicular dominated site with poor streetscape outcomes. • The Panel recognises the opportunity to use historical elements from the existing historic service station to assist in capturing the existing context. • An improved development of the materiality is recommended to respond to the local sense of place. The panel recommends referring to the character of Maylands, which does exist and which is important to the local community and which could be reflected with increased use of brick or timber and increased landscaping. The Panel noted the importance of brick and the history of Maylands, which is home to the former Maylands brick works. • The proposed three-metre-high blank walls on the rear and eastern boundary are concerning and are not considered to tie in with the local context. • The walls will also impact the streetscape rhythm as viewed along Kenilworth Street and will introduce a 3m high intrusion into a well-established residential street and its associated setback. • The proponent should consider how the now vacant land to the north will best respond to the proposal if an alternate use is proposed.
Principle 2 - **Landscape quality**		*Good design recognises that together landscape and buildings operate as an integrated and sustainable system, within a broader ecological context.*
		• Landscaping is considered to be insufficient in terms of its contribution to the development and the streetscape.. • The Panel recommends consolidating vehicular movements, conducting a hardscape usage survey (including a swept path analysis) to increase the amount of landscaping to the site which will soften the development and introduce landscaping in the street setback areas, commensurate with the local context. • The Panel does not support the removal of the verge tree, as proposed. • The Panel encourages an increased variety of trees and trees that will grow to larger heights. The minimum number of trees required under the City's policy should be the minimum, including the requirements for 1 tree per 4 car parking bays. The recent removal of all of the existing trees off the site is unfortunate and has reduced the canopy cover over the site significantly. Large trees should be proposed throughout the site to rebuild tree canopy coverage wherever possible and to mitigate the heat island effect which will be a significant problem on this site with the excessive paved areas with no shading. • These types of uses are harsh environment for landscaping, so species selection and bed widths are critical for plant survival. Species need to be robust. • Details of deep soil areas and stormwater management / treatment strategies will assist the Panel and the City. • The panel refers to the service station development on Guildford Road and/ First Avenue and provides the landscaping area and pedestrian footpath as a good example the applicants could refer to.
Principle 3 - **Built form and scale**		*Good design ensures that the massing and height of development is appropriate to its setting and successfully negotiates between existing built form and the intended future character of the local area.*
		• The position of the canopy and setback to the street is not ideal and appears to be causing the

		increased areas of hardstand for circulation and access points. • The positioning of the Control building close to the street is a favoured outcome and brings the development to the street, appropriate to its setting on Guildford Road and for a convenience store / corner store use. The Panel suggests this could be further enhanced by referencing the typical shopfront typology along Guildford Road and extending the canopy along Guildford road, rethinking the relationship of patron access, visibility form the street and generally providing a better experience for non-vehicle vehicle-based patrons. • There was a suggestion from the Panel around exploring locating the control building to the intersection corner of the site to enhance the urban frame and to increase pedestrian amenity generally. • The Panel wonders if there is opportunity to better connect the canopy with the control building. • Large blank expanses of walls are is not a good design outcome. Use section drawings in the development of revised neighbouring walls to help design and describe their impact to the immediate context. • The large size of the pylon size is considered to be out of scale with the development itself and the setting.
Principle 4 - **Functionality and build quality**		*Good design meets the needs of users efficiently and effectively, balancing functional requirements to perform well and deliver optimum benefit over the full life-cycle.*
		• The three crossovers proposed are problematic and impact the functioning of the site by increasing traffic circulation around the site. The design of the crossovers is also a concern to the Panel functionally and from a safety perspective, especially accessing in and out onto Guildford Road. • The Panel asked whether there is specific provision for service vehicle standing (eg: deliveries to the kiosk). • Further consideration to be given to how pedestrians and other uses move around the site successfully. • The wide footpath around the control building is supported and will contribute to the development, especially with the connection to the footpath on Guildford Road, however there is some concern about the location and size of retail display items and these should be shown on the plans. • Noise and light spill issues to neighbours should be further explored. • There is a lack of clarity with pedestrian connections within the site. These should be enhanced and perhaps shown to increase functionality and safety. *Two queries considered after the DRP meeting for consideration:* • *There is limited toilet provision, and it is queried whether there is a NCC requirement for a separate staff toilet.* • *It was queried whether the refuse area was large enough.*
Principle 5 - **Sustainability**		*Good design optimises the sustainability of the built environment, delivering positive environmental, social and economic outcomes.*
		• A detailed sustainability strategy should be developed with commitments made for the full range of energy and water saving opportunities and designing for wellbeing. • Consider no gas / all (renewable) electric energy strategy for the site. • It is likely that this development will have a limited lifespan with the future reduction in fossil fuel usage and advent of electric car usage. A longer-term masterplan including a plan for adaptive reuse (charging station?) or plan for disassembly should be developed. This should positively impact the design outcomes. • The use of black colours is not generally considered a positive ESD outcome and any initiatives that are proposed to offset the colours or introduce ESD would be helpful. • If PV's are proposed, details and commitments on size and capacity of would be helpful. • There are opportunities to demonstrate leadership with more water sensitive urban design, stormwater treatment through landscape, and treatment / recycling of water from the carwash outlet to be explored. • Recycling should be incorporated into the refuse area. • Consider 'green' concrete/asphalt for what is a large hardstand area, along with other ESD appropriate materials. • Reduce the level of unshaded hardstand to reduce heat island effect. • Shade direct western sun with appropriate external shading devices.

Principle 6 - **Amenity**		*Good design optimises internal and external amenity for occupants, visitors and neighbours, providing environments that are comfortable, productive and healthy.*
		• The wide footpath around the control building is supported and will contribute to the development, especially with the connection to the footpath on Guildford Road, however there is some concern about the location and size of retail display items and these should be shown on the plans. • The proposed number of crossovers is not considered to be contributing to the amenity of the development or the locality. The Panel suggests reducing to 2 crossovers may assist in obtaining support. • Potential noise issues and the proposed 3-metre-high wall is could result in poor outcomes for the neighbouring residential properties and have an adverse amenity impact on the neighbours and the locality. • Concerns about the potential for light spill and associated amenity impacts to neighbouring residential properties. • Consider the provision of an appealing external rest area.
Principle 7 - **Legibility**		*Good design results in buildings and places that are legible, with clear connections and easily identifiable elements to help people find their way around.*
		• The number of crossovers detracts from the site's legibility. • The consideration of signage within the design at this stage is recognised and appreciated. There is however opportunity to enhance the consolidated design approach, and reduce the amount of signage whilst retaining the level of brand awareness. • Footpath treatments should continue across the cross over to enhance pedestrian legibility. • The pedestrian pathway from the control building to the canopy could be improved for legibility and safety.
Principle 8 – **Safety**		*Good design optimises safety and security, minimising the risk of personal harm and supporting safe behaviour and use.*
		• Consideration of safety appears to be aimed towards vehicles more than people. Pedestrians are an essential consideration noting that drivers and passengers who leave their vehicles become pedestrians. • Concerns about safety within the parking circulation areas die to the number of access points and number of different users. Consider marking 'keep-clear' zones to ensure waiting vehicles don't block movement on site. • The crossover that is angled to Guildford Road seems dangerous and is a safety concern • The design and size of some parking bays seem to be unsafe, in particular the most southern car bay adjacent the angled canopy.
Principle 9 - **Community**		*Good design responds to local community needs as well as the wider social context, providing environments that support a diverse range of people and facilitate social interaction.*
		• The convenience store use is appropriate to the site and brings this use / "corner shop" back into the local community and provides a community service in doing so. • The 3m high blank boundary walls are not a good design outcome and consideration to be given to how these walls van be designed to be acoustic and aesthetic and appropriate for the context. • The proposed signage is considered too large and no appropriate to the site, development or locality because if its size. • The Panel encourages consideration to public art and how this could contribute to the community and creating a sense of place.
Principle 10 **Aesthetics**		*Good design is the product of a skilled, judicious design process that results in attractive and inviting buildings and places that engage the senses.*
		• The Panel suggests that a more cohesive and unified design approach be sought across all elements on the site. This includes the consolidation of a material palette driven by a local contextual analysis. The provisional of a design rationale would be appropriate. • The detailed design of the control building should be further enhanced to respond and interpret, in a contemporary manner, the rhythm and form of the traditional shop front typology. • Consider textured treatments to blank concrete walls.

		• Increase and improve landscaping to play a larger role in the appearance of the proposal. • The panel encourages the design to continue to integrate the signage into the architectural design.

DR1- Design review report summary Part 3/3

Design Review Progress

	Supported
	Pending further attention
	Not supported
	Yet to be addressed

	DR1 *(27 October 23)*	***DR2 (insert date)***	***DR3 (insert date)***
Principle 1 - **Context and character**			
Principle 2 - **Landscape quality**			
Principle 3 - **Built form and scale**			
Principle 4 - **Functionality and build quality**			
Principle 5 - **Sustainability**			
Principle 6 - **Amenity**			
Principle 7 - **Legibility**			
Principle 8 - **Safety**			
Principle 9 - **Community**			
Principle 10 - **Aesthetics**			

PART C – OTHER BUSINESS

1. State Administrative Tribunal Applications and Supreme Court Appeals

2. Meeting Closure