Metro Outer Development Assessment Panel Agenda

Meeting Date and Time: Wednesday, 17 April 2024; 9:30am
Meeting Number: MODAP/9
Meeting Venue: 140 William Street, Perth
Public Observing: Online

A live stream will be available at the time of the meeting, via the following link:
MODAP/9 – 17 Apr 2024 – City of Wanneroo

This DAP meeting will be live streamed open to the public rather than requiring attendance in person.

PART A – INTRODUCTION

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

PART B – CITY OF WANNEROO

1. Declarations of Due Consideration
2. Disclosure of Interests
3. Form 1 DAP Applications
   - 3.1 No.11 Greenwich Parade, Neerabup – Service Station, Motor Vehicle Wash, Fast Food Outlet – DAP/23/2451
4. Form 2 DAP Applications
5. Section 31 SAT Reconsiderations

PART C – OTHER BUSINESS

1. State Administrative Tribunal Applications and Supreme Court Appeals
2. General Business
3. 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 additional information documentation.

ATTENDANCE

DAP Members

Eugene Koltasz (Presiding Member)
Jacky Jurmann (Deputy Presiding Member)
Jason Hick (Specialist Member)
Cr Bronwyn Smith (Local Government Member, City of Wanneroo)
Cr Jacqui Huntley (Local Government Member, City of Wanneroo)

Minute Secretary

Claire Ortlepp (DAP Secretariat)

Officers in Attendance

Zoe Hendry (DAP Secretariat)

PART A – INTRODUCTION

1. Opening of Meeting, Welcome and Acknowledgement

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

This meeting is being recorded and livestreamed on the DAP website in accordance with regulation 40(2A) of the *Planning and Development (Development Assessment Panels) Regulations 2011*. Members are reminded to announce their name and title prior to speaking.

2. Apologies

Nil.

3. Members on Leave of Absence

Nil.

4. Noting of Minutes

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

PART B – CITY OF WANNEROO

1. Declarations of Due Consideration

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

2. Disclosure of Interests

Nil.

3. Form 1 DAP Applications

3.1 No.11 Greenwich Parade, Neerabup – Service Station, Motor Vehicle Wash, Fast Food Outlet – DAP/23/2451

4. Form 2 DAP Applications

Nil.

5. Section 31 SAT Reconsiderations

Nil.

Form 1: Responsible Authority Report
(Regulation 12)

11 Greenwich Parade, Neerabup – Service Station, Motor Vehicle Wash, Fast Food Outlet

Form 1 – Responsible Authority Report
(Regulation 12)

DAP Name:	Metro Outer DAP	
Local Government Area:	City of Wanneroo	
Applicant:	Hidding Planning	
Owner:	OTR 374 Pty Ltd	
Value of Development:	$3.5 million Opt In (Regulation 6)	
Responsible Authority:	City of Wanneroo	
Authorising Officer:	Gregory Bowering – Manager Approval Services	
LG Reference:	DA2023/158	
DAP File No:	DAP/23/02451	
Application Received Date:	1 March 2023	
Report Due Date:	9 April 2024	
Application Statutory Process Timeframe:	90 Days (Additional 315 day for Request for Further Information Extension)	
Attachment(s):	1. Development Plans 2. Location Plans 3. WAPC subdivision approval 134299 4. Schedule of Submissions 5. Bushfire Management Plan 6. Detailed Area Plan No. 3 – Lot 1001 & 1021 Greenwich Parade, Meridian Park 7. Transport Impact Assessment 8. Landscaping Plan 9. Environmental Acoustic Assessment 10. Planning Report 11. Meridian Park Endorsement Letter 12. Energy Efficiency Report 13. Stormwater Plans	
Is the Responsible Authority Recommendation the same as the Officer Recommendation?	☒ Yes ☐ N/A	Complete Responsible Authority Recommendation section
	☐ No	Complete Responsible Authority and Officer Recommendation sections

Responsible Authority Recommendation

That the Metro Outer DAP resolves to:

1. **Approve** DAP Application reference DAP/23/02451 and accompanying plans in accordance with Clause 68 of Schedule 2 (Deemed Provisions) of the *Planning and Development (Local Planning Schemes) Regulations 2015*, and the provisions of the City of Wanneroo's District Planning Scheme No. 2, subject to the following conditions:

Conditions

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

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

3. This approval only relates to the proposed **Service Station**, **Motor Vehicle Wash** & **Fast Food Outlet** as indicated on the approved plans. It does not relate to any other development on the lot.

4. The uses of the approved **Service Station**, **Motor Vehicle Wash** & **Fast Food Outlet** must conform to the District Planning Scheme No. 2 definitions, which state:

   *"**Service Station:** means premises other than premises used for a transport depot, panel beating, spray painting, major repair or wrecking, that are used for –*

   a) The retail sale of petroleum products, motor vehicle accessories and goods of an incidental or convenience nature;
   and/or
   b) The carrying gout of greasing, tyre repairs and minor mechanical repairs to motor vehicles."

   *"**Motor Vehicle Wash:** means premises primarily used to wash motor vehicles."*

   *"**Fast Food Outlet:** means premises, including premises with a facility for drive-through service, used for preparation, sale and serving of food to customers in a form ready to be eaten –*

   a) Without further preparation; and
   b) Primarily off the premises."

   A change of use from that outlined above may require further development approval of the City.

5. Detailed civil engineering drawings and specifications for works within the verge and road reserve for the modification to the footpath and median, must be lodged for approval to the City prior to commencement of construction works. Construction works are to be undertaken in accordance with the approved

development application, engineering drawings and specifications to the satisfaction of the City.

6. The road design must include a left arrow and median sign on the exit on Greenwich Parade, which indicates exit from the development will be left-out only. The median island is to be constructed to deter 'right-out' movement.

7. All proposed pylon signs are to be reduced to a maximum of eight metres in height.

8. All signage is to be contained entirely within the lot.

9. Parking areas, driveways and points of ingress and egress must be designed and constructed in accordance with the Australian Standard for Off-street Carparking (AS 2890) and must be drained, sealed, marked and maintained to the satisfaction of the City prior to occupation of the development.

10. Wheel stops must be provided in accordance with AS 2890 where the parking bays abut a concrete path.

10. The parking areas and associated access indicated on the approved plans must not be used for the purpose of storage or obstructed in any way at any time, without the prior approval of the City.

11. Planting and landscaping must be carried out in accordance with the plans, as submitted, prior to occupation of the building and thereafter maintained

12. Stormwater and any other water run-off from buildings and/or paved areas must be collected and retained on site.

13. A Construction Management Plan must be submitted for approval when an application is made for a building permit. This plan is to detail how construction will be managed to minimise disruption in the area and to adjoining landowners. The plan must address the following:

    a) The delivery of and delivery times for materials and equipment to the site;
    b) Storage of materials and the location and types of equipment on site;
    c) Parking arrangements for contractors and sub-contractors;
    d) The impact on traffic movement;
    e) Construction times;
    f) The relocation of public footpaths;
    g) Measures to minimise impacts of noise and sand drift and dust from the site;
    h) Tree protection zones to be established for trees identified to be retained in the approved landscaping plan (including any verge trees) where applicable;
    i) The relocation/disruption of any public transport infrastructure; and
    j) Any other matter required by the City.

    The construction management plan is to be approved by the City prior to the commencement of any development and implemented during construction.

14. All storage areas, external fixtures and building plant, including air conditioning units and water tanks must be located so as to minimise any visual and noise

impact on surrounding landowners and screened from view from streets, public places and adjacent properties to the satisfaction of the City.

15. All waste must be stored within the designated bin enclosure and collected from the site by a private contractor at the cost of the owner/occupier. Bin servicing must occur between 7.00am and 7.00pm Monday to Saturday only.

16. The movement of any trucks for delivery purposes must occur between 7am and 7pm, Monday to Saturday only.

17. Any graffiti applied to the external surfaces of the building must be removed within seven (7) days of it being applied to the satisfaction of the City of Wanneroo.

18. Lighting shall be installed to pathways and car parking areas, be designed in accordance with Australian Standards for the Control of Obtrusive Effects of Outdoor Lighting (AS4282) and shall be internally directed to not overspill into nearby lots. All floodlights must be oriented and hooded to eliminate disturbance to occupants on surrounding properties.

19. The development is to comply with the recommendations and assumptions of the Acoustic Report prepared by Herring Storer Acoustics dated November 2022 (Ref: 30334-3-18107-02). Recommended works must be completed prior to the commencement of the use.

20. The development is to comply with the recommendations and assumptions of the Bushfire Management Plan prepared by Bushfire Prone Planning dated 04 December 2023 (Ref: 180353). Recommended works must be completed prior to the commencement of the use.

Advice Notes

1. In regard to managing dust and sand drift in accordance with the Construction Management Plan condition, adequate measures to minimise any impacts of dust and sand drift from the site include all requirements as stipulated within the Department of Water and Environmental Regulations *'A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities.'*

2. The owner/applicant is to submit the 'Certification of Compliance with Development Approval Conditions' form certifying that all of the conditions specified in the approval by the Council for the development of the land have been completed in accordance with the approved plans, and the certification is to be lodged with the Council within 14 days from the date of practical completion, and applies to all of the conditions, except for those conditions relating to on-going compliance.

Details:

Region Scheme	Metropolitan Region Scheme (MRS)
Region Scheme - Zone/Reserve	Industrial
Local Planning Scheme	City of Wanneroo District Planning Scheme No.2 (DPS 2)
Local Planning Scheme - Zone/Reserve	Industrial Development
Structure Plan/Precinct Plan	Neerabup Industrial Area – Agreed Structure Plan No. 17 (ASP 17)
Structure Plan/Precinct Plan - Land Use Designation	Light Industrial
Use Class and permissibility:	Service Station – D Use Motor Vehicle Wash – P Use Fast Food Outlet – D Use
Lot Size:	9,811m^2
Existing Land Use:	Vacant Land
State Heritage Register	No
Local Heritage	☒ N/A
Design Review	☒ N/A
Bushfire Prone Area	Yes
Swan River Trust Area	No

Proposal:

The application is proposing a 24-hour Service Station, Motor Vehicle Wash and Fast Food Outlet that is comprised of the following:

- 8 fuel bowser parking positions located under the light vehicle fuel canopy;
- 3 diesel bowser parking positions located under the diesel canopy;
- 2 EV charging stations;
- Convenience store/control building with a gross floor area of 232m^2;
- Fast Food Outlet with 50m^2 of gross floor area and a drive through queue lane which can accommodate 7 vehicles;
- 4 car wash bays;
- An auto wash bay;
- 4 vacuum bays;
- 2 drying bays;
- An additional 17 vehicle parking bays;
- Associated signage, including pylon signs and wall signs; and
- An area of 2,147m^2 in the northwestern portion of the lot, which is outlined as a 'site for future development'. This area does not form a part of this application.

A development plan is included as **Attachment 1**.

Background:

Zoning

The subject site is zoned 'Light Industry' under DPS 2, and 'Industrial' under the Metropolitan Region Scheme (MRS). The *Agreed Structure Plan No. 17 – Neerabup*

Industrial Estate (ASP 17) and *Detailed Area Plan No. 3 – Neerabup Industrial Area* (DAP 3) have been adopted over the subject lot.

The subject site is currently vacant and bound by Greenwich Parade to the east, Flynn Drive (Other Regional Road) to the south, Global Road to the west and Hemisphere Street to the north.

A location plan is included as **Attachment 2**.

Subdivision

Western Australian Planning Commission (WAPC) subdivision 134299 (**Attachment 3**) was approved by the WAPC on 3 September 2007. The subdivision facilitated the excision of the development lot from the parent lot, Lot 22 Flynn Drive, Neerabup.

Legislation and Policy:

Legislation

Metropolitan Region Scheme
District Planning Scheme No. 2

State Government Policies

Development Control Policy 5.1 - Regional Road (Vehicular Access) (DC 5.1)
State Planning Policy 3.7 – Planning in Bushfire Prone Areas (SPP 3.7)

Structure Plans/Activity Centre Plans

Agreed Structure Plan 17 – Neerabup Industrial Area

Detailed Area Plans/ Local Development Plans

Detailed Area Plan No. 3 – Neerabup Industrial Area

Local Policies

Local Planning Policy 2.9 – Service Station and Roadhouses (LPP 2.9)
Local Planning Policy 4.6 – Signs (LPP 4.6)

Relevant Guidelines

Meridian Park Design Requirements and Guidelines

Consultation:

Public Consultation

The application was advertised for a total period of 14 days, plus an additional 7 days, in accordance with Clause 64(4) of DPS 2 and the Deemed Provisions. The advertising commenced 23 March 2023 and concluded 07 April 2023. The consultation period included the identified 'holiday period' as required by Part 1, Clause 3A of the *Planning and Development (Local Planning Scheme) Regulations 2015.*

Advertising was undertaken by way of notice in the local newspaper and in writing to 104 nearby landowners/occupiers within 200 metres of the proposed development. The development plans and all supporting documentation were also published on the City's website and a sign was installed on site.

A total of 16 submissions were received. Of the submissions received 2 were in support and 14 objected to the proposal. Additional comments were also received from external referral agencies which are outlined below.

The main issues raised within the objections were:

- Increased traffic flow on Flynn Drive and the adjoining Rural Residential zone to the south of Flynn Drive;
- Access on to the subject lot via Flynn Drive (Other Regional Road);
- Impacts on the amenity of the Rural Residential lots to the south of Flynn Drive;
- Location of the proposed uses being inappropriate due to proximity to the Rural Residential zone; and
- The number of existing similar uses in the surrounding area and nearby localities, and the associated commercial viability of the proposal.

A summary of the submissions received, and a response provided by the City is included as **Attachment 4**. The main issues raised, along with those identified by the City during the assessment process will be discussed in further detail in the 'Planning Assessment' section below.

Referrals/consultation with Government/Service Agencies

Department of Planning, Lands and Heritage

The subject site abuts Flynn Drive which is a Category 3 Other Regional Road. As per the WAPC's Notice of Delegation DEL 2017/02, all development applications (except where the local government first decides to refuse the application) require a referral to the respective referral agency, being Department of Planning, Lands and Heritage (DPLH).

DPLH has no objection to the proposal on Other Regional Roads planning grounds and provides the following recommendations:

- Page 27 of the supporting Traffic Impact Assessment (TIA) states that the proposed access point from Flynn Drive will be located within the existing left turning lane into Greenwich Parade. This is not in accordance with Main Roads' Driveways policy which states that driveways shall not be located within deceleration/auxiliary lanes. This is also not in accordance with the WAPC's Regional Roads (Vehicular Access) Policy D.C 5.1 which seeks to minimise the number of crossovers onto regional roads; and
- It is unclear if the proposed access point to Greenwich Parade is adequately separated from Flynn Drive which should be assessed under the relevant Austroads standards.

The applicant has since provided amended plans which removes access to Flynn Drive. The proposed crossover location to Greenwich Parade is discussed in the Planning Assessment section below.

Main Roads WA

Whilst it is noted that Flynn Drive is currently identified as an 'Other Regional Road' under the MRS, it is acknowledged that the road is indicated to potentially become a Primary Regional Road in the future. As such, the proposal was also referred to Main Roads WA (MRWA) for comment. MRWA provided the following recommended amendments:

- Revised development plans are to be provided to show access and egress from Greenwich Parade only; and
- A revised TIA that addresses the following:
    - Access and egress only from Greenwich Parade and traffic distribution to be updated accordingly;
    - Provide a queuing analysis ensuring there is no spillage of vehicles onto the road network that impacts on the operation of the intersection of Flynn Drive and Greenwich Parade;
    - Justification of stated 70% passer-by traffic for development generated traffic; and
    - Calibration data in the Vehicle Movement Data section of the SIDRA Model to be amended to be as per the Operational Modelling Guidelines.

The applicant has since provided amended plans which removes access to/from Flynn Drive to address some of the above concerns. Further discussion on the proposed crossover location and TIA are included in the Planning Assessment section below.

Department of Fire and Emergency Services

The subject site is located within a bushfire prone area and the proposed Service Station is classified as a High-Risk land use, given the potential for the use to lead to the potential ignition, prolonged duration or increased intensity of a bushfire. As such, under *State Planning Policy 3.7 – Planning in Bushfire Prone Areas,* the applicant is required to provide a Bushfire Management Plan (BMP) **(Attachment 5)** in support of the proposal. The submitted BMP determined the site to have a Bushfire Attack Level (BAL) rating of BAL-19 and includes measures to achieve compliance with the bushfire protection criteria. The BMP was referred to the Department of Fire and Emergency Services (DFES) for comment.

DFES recommended the following amendments be made to the BMP:

- The applicant to provide evidence to support the exclusion of Plot 8;
- The inputs (actual separation distances for each plot) to be demonstrated on the BAL Contour Map; and
- To demonstrate compliance with A3.2a - Multiple Access Routes within SPP 3.7, which requires public road access to be provided in two different directions from the site.

The applicant has since provided an updated BMP which has appropriately responded to DFES's requirements. As such, the City considers the BMP to be compliant with SPP 3.7.

Planning Assessment:

The proposal has been assessed against the relevant requirements of the Scheme, State and Local Planning Policies, *The Neerabup Industrial Area Agreed Structure*

Plan No. 17 and the *Neerabup Industrial Area Detailed Area Plan No. 3* as outlined in the Legislation and Policy section of this report. The following matters have been identified as key considerations for the determination of this application:

- Zoning and Land Use Permissibility;
- Detailed Area Plan No. 3;
- Traffic;
- Access;
- Landscaping;
- Signage; and
- Amenity impacts.

Zoning and Land Use Permissibility

The subject site is zoned 'Light Industry' under DPS 2. Under DPS 2, the proposed use permissibility's for the proposed development are as follows:
Service Station – Discretionary use
Motor Vehicle Wash – Permitted use
Fast Food Outlet – Not permitted use

However, within ASP 17 there are a range of additional uses outlined for the subject lot (Lot 1001) and the adjacent Lot 1021 Greenwich Parade, including Take Away Food Outlet which is indicated as a Discretionary use.

'Take Away Food Outlet' is not a use currently defined within DPS 2; however, it can be considered that the definition of this use is appropriately mirrored in the existing definition for 'Fast Food Outlet' which is defined within DPS 2 as follows:

> *"**Fast Food Outlet** means premises, including premises with a facility for drive-through service, used for the preparation, sale and serving of food to customers in a form ready to be eaten –*
> *a) Without further preparation; and*
> *b) Primarily off premises."*

As such, administration has determined that it is appropriate to consider the proposed Fast Food Outlet as a discretionary use.

Within the above noted ASP 17 provisions, the following development standards apply to take away food outlets:

> *"Limited to a combined total of 1,000m^2 net lettable area (NLA) across both Lots 1001 and 1021 Greenwich Parade. Individual premises are not to exceed 500m^2 gross floor area per lot."*

Lot 1021 has an existing approval for two Warehouse Units with an Office, approved by the City on 11 August 2022. There are currently no approved Fast Food Outlets/Restaurants/Cafes on the abovementioned lots, therefore 1,000m^2 of NLA remains. 50.5m^2 of the indicated NLA is to be utilized for the purposes of the proposed Fast-Food Outlet. Given this is below the allowed NLA, it does not impede the ability for Lot 1021 to utilise the undeveloped portion of the lot for the abovementioned uses in the future.

ASP 17 further notes that where practical, co-locating complimentary business services through horizontal and vertical integration is encouraged. Whilst it would be

considered impractical to have the proposed uses integrated on multiple levels, the Service Station, Motor Vehicle Wash and Fast Food Outlet land uses are compatible in nature and are routinely located in close proximity.

The proposed land uses are therefore considered to be capable of approval.

Lot 1001 & 1021 Greenwich Parade Detailed Area Plan No. 3

The subject lot is located within the *Lot 1001 & 1021 Greenwich Parade Detailed Area Plan No. 3* (**Attachment 6**). The intent of DAP 3 is to provide lot specific guidelines to guide the built form outcome given the lots are landmark sites at the entry of Meridian Park.

The City has assessed the proposal against all relevant requirement of DAP 3. While the proposal is generally consistent with DAP 3, some variations to the relevant provisions are proposed, which have been discussed below.

Design Requirements	Comments
All construction (excluding minor elements and third floor structures) must be located within the building envelope depicted on the Detailed Area Plan.	All construction, aside from signage and screening, is located within the building envelope. The mentioned elements of signage and screening are considered to be minor elements and are typically located in close proximity to the lot boundary. As such the location of the built form complies with the DAP 3 requirement.
Building development on the site shall be initially located within the Priority Building Zone, following full development of this zone, expansion can progress in those zones as nominated on the DAP.	All significant built form, aside from the vacuum area of the Motor Vehicle Wash, is located within the priority building zone. On this basis, support for the built form outside of the priority building area is recommended given the variation is minor in nature.
Buildings with frontage to Flynn Drive to be a minimum of 2 storeys and incorporate a third-floor signage element as nominated within the DAP.	Based on the proposed uses, it is understood that multiple storeys would not be functional. The overall height of the built form is 7.05 metres, which can be considered consistent with the scale of a two-storey building. On this basis support for the scale of the built form is recommended.

The proposed built form is generally consistent with the requirements of DAP 3.

Local Planning Policy 2.9 – Service Stations and Roadhouses

A number of submitters raised concerns regarding the appropriateness of a Service Station in the area as the subject site is located to the north of a Rural Residential zone. The proposed Service Station is a Discretionary land use within the 'Light Industry' zone of DPS 2, being a use that is capable of approval in the zone subject to Council assessing against the relevant policies and provisions. *Local Planning Policy 2.9 – Service Station and Roadhouses* sets out objectives to guide development of Service Stations.

LPP 2.9 – Objectives

Objectives	Comment
Ensure that service stations and roadhouses are developed to a high standard of architectural design that complements the expected standard of design in the locality.	The proposed Service Station has an appropriate standard of architectural design that complements the expected development outcome in a 'Light Industry' zone.
Ensure that service stations and roadhouses are located and designed such that traffic volumes and flow generated does not unduly impact the amenity of the locality.	As outlined within the traffic section below, the proposal is not considered to have a significant impact on the local road network by way of traffic generated from this use.
Ensure that traffic generated does not adversely impact on road safety and efficiency of the road network.	The City has reviewed the Traffic Impact Assessment (**Attachment 7**) and no concerns have been raised regarding any impacts on the safety or capacity of the existing road network.
Ensure a safe interface between vehicle and pedestrian movements on and off site.	
Ensure that service stations and roadhouses make a positive contribution to the streetscape.	As noted above, the proposal is appropriately designed to allow for a positive contribution to the surrounding streetscape, whilst managing any external amenity impacts.
Protect the amenity of sensitive land uses by ensuring they are located and designed in a way that reduces the impact of noise, light, odour and other emissions.	The proposal is not considered to have any impacts on the amenity of sensitive uses.

The development has been designed to a suitable standard, employing a range of detailing and materials. The overall design and orientation of the structures on site is acceptable and will not unduly impact on the amenity of the surrounding area.

It is considered that the proposal is appropriately designed as per the objectives and standards set out in LPP 2.9.

Traffic and Access

Traffic

A number of submissions were received which state that the development would cause congestion of the local road network.

A TIA, prepared by i3 Consultants WA, was submitted in support of the application which outlines the current and future traffic volumes on the surrounding road network. The estimated generation of the proposed development is 179 vehicles in the peak hour, with the TIA outlining that the vast majority of trips (approximately 70%) are expected to be pass-by trips, and therefore already utilising the road network. The TIA has been reviewed by the City's Traffic Services, who indicated that the TIA is acceptable and determined that the proposal would have no operating impact on the road network.

The proposal has appropriately considered traffic impacts and no issues are identified.

Access

Submissions raised concerns about vehicles gaining access to the subject lot via Flynn Drive, which is a Category 3 Other Regional Road. The applicant has deleted the access to Flynn Drive with access to the site to be via Greenwich Parade only.

The application proposes a left-in/left-out crossover to Greenwich Parade, with a break in the median, which is located approximately 50 metres north of the intersection with Flynn Drive. The proposed access location provides an acceptable separation from the intersection in accordance with the relevant Austroads standards.

MRWA raised additional concerns regarding the potential for queuing vehicle spillage onto the road network which could impact the operation of the intersection of Flynn Drive and Greenwich Parade. The TIA indicates that the width of the circulating aisle will allow following vehicles to pass any queued vehicles without obstructing or interfering with traffic in the opposite direction. This method acceptably mitigates any potential queueing, alleviating concerns that there may be impacts on the road network.

The proposal has appropriately responded to the issues raised by MRWA.

Local Planning Policy 4.6 – Advertising Signs

The proposal has been considered against the provisions set out within the City's *Local Planning Policy 4.6 – Advertising Signs* as the proposal includes three pylon signs and eight wall signs. The intent of the Local Planning Policy is to ensure the promote a high standard of design in outdoor advertising, whilst reducing and minimising potential clutter, as to preserve visual quality and character of localities and transport corridors.

All signs are considered appropriate in their distribution in the context of the site, with all content relating to the operation and branding of the proposal. However, the proposed height of the three pylon signs at 9-metres is not justified. LPP 4.6 permits pylon signs to be a maximum of 6-metres or up to 8-metres where they are proposing a multi-tenancy sign. The proposed height of 9-metres is not supported for the following reasons:

- The proposed pylon signs will be clearly visible from the street and passing vehicles. As such, the proposed 9-metres is considered to be over development and likely to negatively impact on the amenity of the area by way of height and visual prominence. The signs are inconsistent with the streetscape outcome within the surrounding area; and
- There will be signage and corporate branding on the buildings and the applicant is proposing three pylon signs for the site. It is considered that the collective number of signs will contribute towards the advertising and visibility on site and as such there is no nexus to vary the height as per LPP 4.6.

In light of the above, it is recommended that a condition be imposed to reduce the height of all proposed pylon signs to 8-metres.

Landscaping

The applicant has provided a Landscaping Plan to assist with the assessment of the application, which is included in **Attachment 8**. Landscaping requirements are considered in accordance with Schedule 6, cl.19 of DPS 2. Given that the subject lot is also located within the Meridian Park Design Guideline area, there are additional landscaping requirements, as outlined below.

Within DPS 2 there is a requirement for a minimum of 8% landscaping of the lot, a 3-metre-wide landscaping strip adjacent to the street frontages and one tree per four parking bays to be planted in car parking areas. In addition, the Meridian Park Guidelines outline that both soft and hard landscaping is to be a minimum of 8% and a maximum of 10% of the site area. The applicant is proposing 9.5% of the site (923m^2) to comprise of soft landscaping, with a total of 18.05% (1,771m^2) being both hard and soft landscaping combined. The applicant is providing in excess of the minimum landscaping within the Meridian Park area. The increased landscaping, specifically soft landscaping, will improve the visual quality of the design and soften the interface with the Rural Residential zone to the south.

The landscaping plan does not indicate landscaping of the verge. However, the developer of Meridian Park has yet to install verge landscaping. As such, it is deemed appropriate for this to be omitted from the provided landscaping plan as this will be addressed separately.

The proposal meets the requirements for landscaping on the site, with suitable provisions being made. The landscaping plan is supported, subject to a condition being applied for implementation of the proposed landscaping in accordance with the provided plan prior to the commencement of the use.

Amenity

Several submissions raised concerns regarding the impact of the operation of the uses on the lots to the south of Flynn Drive within the Rural Residential zone. Impacts from light, noise and anti-social behaviour are cited.

Lighting

Submitters raised concerns regarding lighting given the 24-hour nature of the development, specifically in relation to the Rural Residential zone to the south of Flynn Drive. Currently there are few existing streetlights within this zone and little associated light pollution. However, Flynn Drive is currently being upgraded to a four lane Other Regional Road with streetlights.

The development will be required to comply with the relevant Environmental Health Regulations and Australian Standards for the *Control of Obstructive Effects of Outdoor Lighting* (AS4282) relating to outdoor lighting.

Concerns relating to lighting are sufficiently managed through the requirement to comply with the relevant Environmental Health Regulations. The 24-hour operation of site is acceptable within an Industrial Area.

Odour/Gas

Submitters raised concerns regarding the proximity of the Service Station to residential land uses, regarding odour and gaseous emissions. The proponent will be required to obtain a Dangerous Goods Site Licence from the Department of Mines, Industry Regulations and Safety (DMIRS) to store and sell fuel from the subject site. The following considerations are assessed as part of issuing the licence:

- Spill or leak containment;
- Segregation of dangerous goods;
- Control of ignition sources in hazardous areas;
- Control of hazardous substances that include any gas, vapour, mist, fume or dust;
- Design, construction, maintenance, and location of storage or handling systems, including location and separation distances so that as far as reasonably practicable they can be operated with minimal risk to people, property and the environment; and
- Underground storage or handling systems for petroleum products designed, installed, operated and maintained so that they do not leak.

The applicant has advised that the proposal will include a 'Stage 1' Vapour Recovery System (VR1), which captures vapours during the refuelling of underground fuel storage tanks by fuel tankers, which draws vapours directly into the tanker for offsite removal will be utilised to control any odour and/or vapours from the site.

The City considers that all risks associated with the proximity of the Service Station to the residential properties will be sufficiently managed through the relevant legalisation.

Noise

Submissions were received relating to noise impacts associated with the proposal, specifically given the 24-hour operation. The applicant has provided an Environmental Acoustic Assessment prepared by Herring Storer Acoustics (**Attachment 9**) which outlines that the noise received at the neighbouring residences will comply with the requirements of the *Environmental Protection (Noise) Regulations 1997*, which the applicant/owner is required to comply with at all times.

The City has reviewed the Environmental Acoustic Report and subject to the report's recommendations being actioned, there are unlikely to be any adverse impacts on surrounding land uses.

Anti-social behaviour

While this matter was raised there is no evidence to demonstrate that the proposal will increase crime in the area.

<u>Environmental Impacts</u>

Submissions were received in regard to the potential loss of fauna, specifically the Carnaby Cockatoo. At present, the subject lot and the surrounding lots within the ASP 17 area have been cleared of flora at the time of subdivision approval or have since been developed in accordance with ASP 17.

The impacts to flora and fauna within the area were specifically considered within the *Environmental Flora, Vegetation and Vertebrate Fauna Assessment of the Neerabup Industrial Area* prior to the endorsement of the structure plan. The proposed development is in accordance with ASP 17 and there is no removal of vegetation associated with the application. As such, the concerns relating to any fauna and flora impacts are not substantiated.

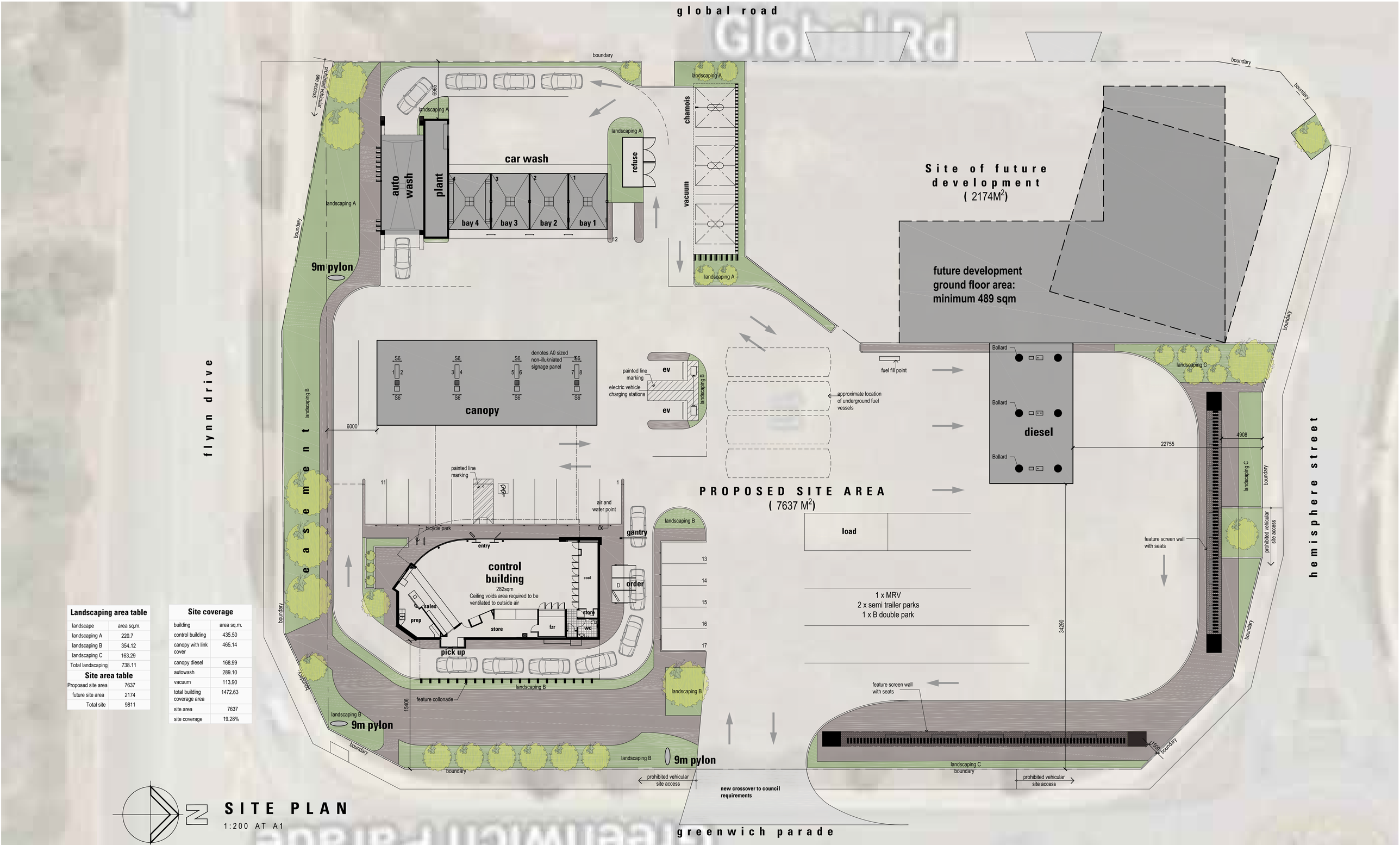
Conclusion:

The development application for the Service Station, Motor Vehicle Wash and Fast Food Outlet on Lot 1001 (No. 11) Greenwich Parade, Neerabup has been assessed against the relevant legislation and planning requirements. The proposed land uses are permitted or discretionary on the subject lot in accordance with the requirements of DPS 2 and ASP 17 and has subsequently been advertised in accordance with the Deemed Provisions.

The proposal is consistent with the objectives and compliant with the requirements of DPS 2, ASP 17, DAP 3 and relevant state and local planning polices, as addressed in this report.

Moreover, the proposal has demonstrated an acceptable level of operation that would not impact on the surrounding road network or result in any obtrusive amenity impacts.

It is therefore recommended that the application be approved, subject to conditions addressing the issues raised in this report.



Landscaping area table	
landscape	area sq.m.
landscaping A	220.7
landscaping B	354.12
landscaping C	163.29
Total landscaping	738.11
Site area table	
Proposed site area	7637
future site area	2174
Total site	9811

Site coverage	
building	area sq.m.
control building	435.50
canopy with link cover	465.14
canopy diesel	168.99
autowash	289.10
vacuum	113.90
total building coverage area	1472.63
site area	7637
site coverage	19.28%

N

SITE PLAN

1:200 AT A1

Scale 1:200 at A1

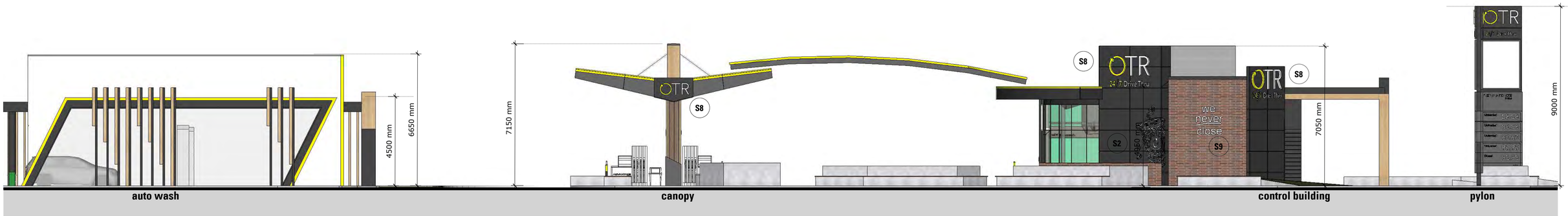
NEW SERVICE STATION COMPLEX

11 GREENWICH PARADE, NEERABUP WA

23.08.23

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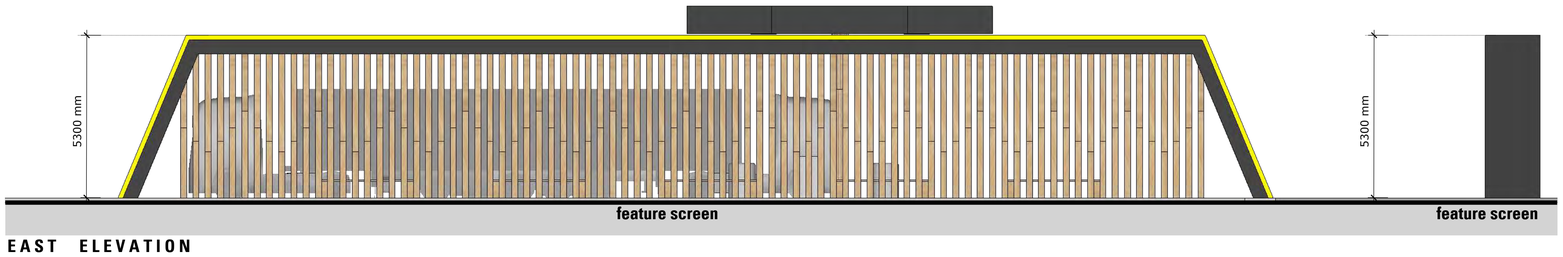
planning



SOUTH ELEVATION
1:100 AT A1



EAST ELEVATION
1:100 AT A1



EAST ELEVATION
1:100 AT A1

NEW SERVICE STATION COMPLEX

11 GREENWICH PARADE, NEERABUP WA

DESIGN

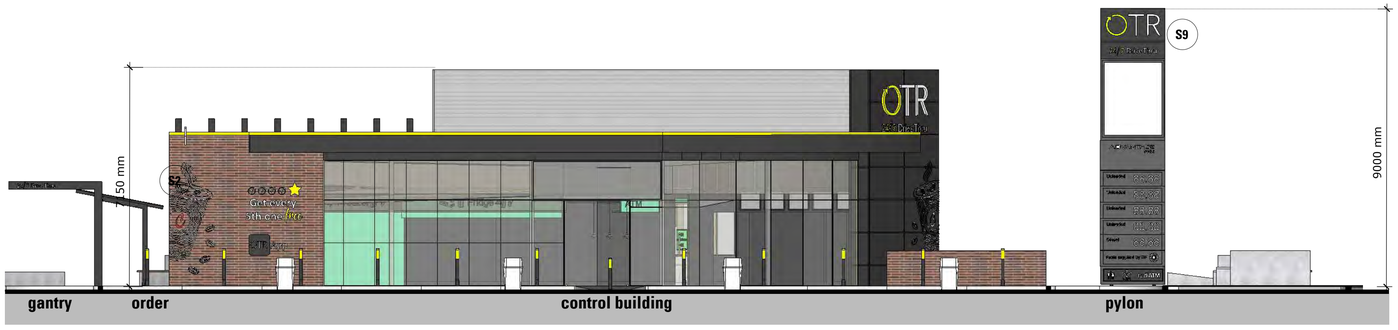
06.09.22
Neerabup sk 02c

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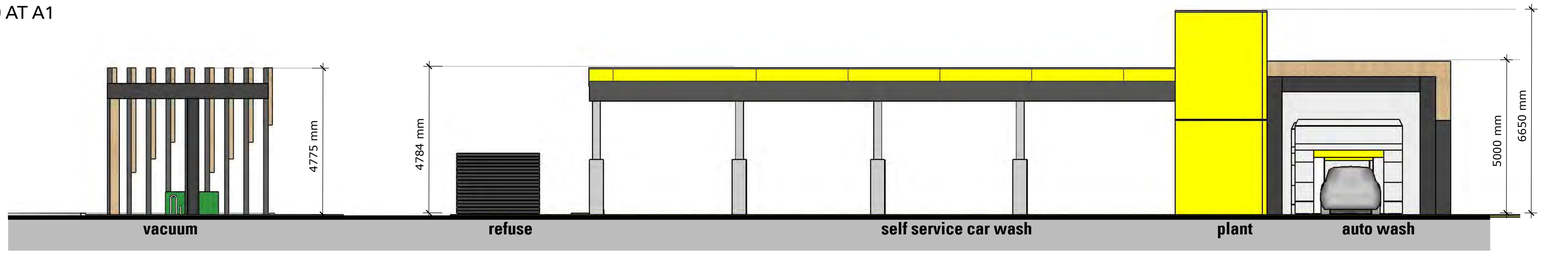
ADS Architects
93 Gilles street Adelaide 5000 T:82232244



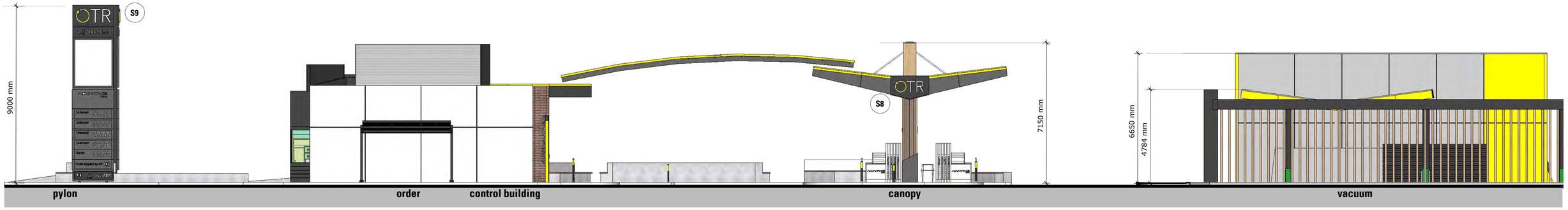
WEST ELEVATION
1:100 AT A1



WEST ELEVATION
1:100 AT A1



WEST ELEVATION
1:100 AT A1



NORTH ELEVATION
1:100 AT A1

NEW SERVICE STATION COMPLEX

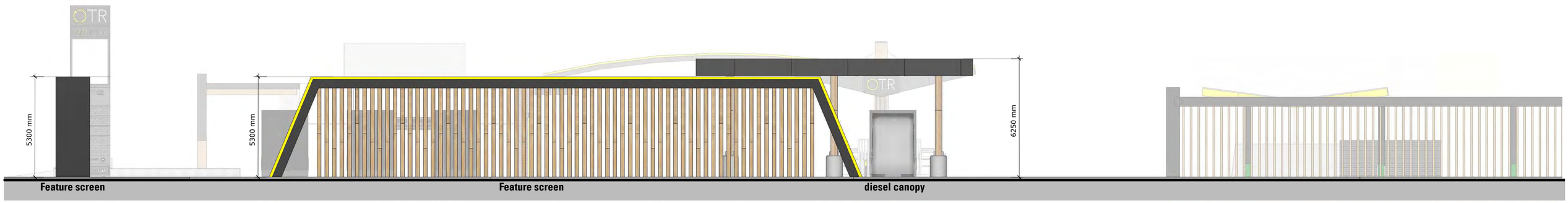
11 GREENWICH PARADE, NEERABUP WA

DESIGN

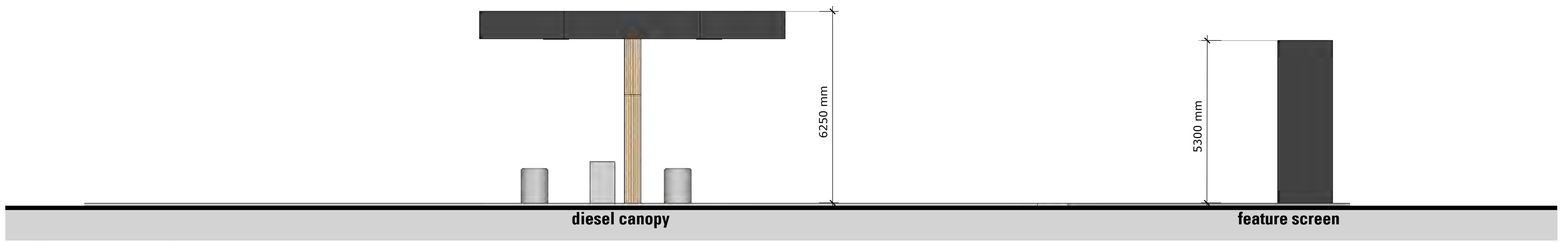
06.09.22
Neerabup sk 03c

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Scale 1:200 at A1

ADS Architects
93 Gilles street Adelaide 5000 T:82232244



NORTH ELEVATION
1:100 AT A1



EAST ELEVATION
1:100 AT A1

NEW SERVICE STATION COMPLEX

11 GREENWICH PARADE, NEERABUP WA

06.09.22
Neerabup sk 04c

DESIGN

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Scale 1:200 at A1

ADS Architects
93 Gilles street Adelaide 5000 T:82232244



NEW SERVICE STATION COMPLEX

11 GREENWICH PARADE, NEERABUP WA

06.09.22
Neerabup sk06c

DESIGN

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

ADS Architects
93 Gilles street Adelaide 5000 T:82232244



	Attachment 2 - Location Plan	Date: 6/03/2024	
		Printed by McQuillan, Rhiannon	
	© Landgate WA, Nearmaps, OpenStreetMaps contributors. While every care is taken to ensure the accuracy of this product, City of Wanneroo and the Local/State/Federal Government departments and Non-Government organisations whom supply datasets, make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damage (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or incomplete in any way and for any reason. www.openstreetmap.org/copyright	Scale = 1:5000	

Western Australian Planning Commission

RECEIVED
23 SEP 2010
City of Wanneroo Records
Rec'd by

Our Ref: 134299
Your Ref:
Enquiries: Dougal McMullan (9264 7664)

Taylor Burrell Barnett
187 Roberts Road
SUBIACO WA 6008

Dear Sir/Madam

REVISED PLAN OF SUBDIVISION – LOT 22 FLYNN DRIVE, NEERABUP (WAPC REF: 134299)

I refer to the above matter. In this regard, the Western Australian Planning Commission has resolved to accept the Revised Plan dated 26 July 2010 (attached) in substitution for the Plan dated 3 September 2007, subject to the applicant complying with the same terms and conditions as per the Commission's letter dated 14 November 2007.

Yours faithfully

For Tony Evans
Secretary
Western Australian Planning Commission

16 September 2010

cc. City of Wanneroo
Referral Agencies

Albert Facey House, 469 Wellington Street (cnr Forrest Place), Perth, Western Australia 6000
Tel: (08) 9264 7777; Fax: (08) 9264 7566; TTY: (08) 9264 7535; Infoline: 1800 626 477
e-mail: corporate@wapc.wa.gov.au; web address: http://www. planning.wa.gov.au
ABN 35 482 341 493

wa.gov.au

LOT YIELD			LOT AREA		
Size	No. Lots	% Total Lots	Average Size	% of Total Area	Area
2000m² - 2999m²	20	29.85%	2635m²	16.37%	52705m²
3000m² - 3999m²	15	22.39%	3436m²	16.01%	51553m²
4000m² - 4999m²	16	23.88%	4461m²	22.17%	71383m²
5000m² - 5999m²	4	5.97%	5584m²	6.94%	22339m²
6000m² - 6999m²	7	10.45%	6452m²	14.03%	45169m²
7000m²+	5	7.46%	15778m²	24.50%	78893m²
Total Number of Lots	67				

Minimum Lot Size 2112m²
Maximum Lot Size 27529m²
Average Lot Size 4806m²
Total Lot Area 322042m²

AVERY STREET 20m ROAD RESERVE
ORBIT STREET (20m ROAD RES.)
HORIZON TCE (20m ROAD RESERVE)
(25m ROAD RESERVE)
AXIS PARADE (20m ROAD RESERVE)
20m ROAD RESERVE
GREENWICH PARADE (25m ROAD RESERVE)
LONGITUDE AVENUE (20m ROAD RESERVE)
PINNACLE DRIVE (35m ROAD RESERVE)
HEMISPHERE STREET (20m ROAD RESERVE)
GLOBAL ROAD (20m RR)
RING STREET (20m ROAD RES.)
(18m ROAD RESERVE)
DRAINAGE 1.4374ha
TURNBULL ROAD
WARMAN STREET
FLYNN DRIVE

REVISED PLAN
supersedes whole/portion of plan date stamped
- 3 SEP 2007

DEPARTMENT OF PLANNING
26 JUL 2010
FILE 134299

LEGEND
- POWER POLES
- POWER LINES
- REVISED PLAN OF SUBDIVISION
- APPROVED PLAN OF SUBDIVISION
- FLYNN DRIVE - OTHER REGIONAL ROAD RESERVATION

Revised Plan of Subdivision (WAPC REF: 134299)

Lot 22 Flynn Drive, Meridian Park
A LandCorp Project

plan: 00/047/0190
date: 13/07/2010
projection: PCG94
designed: KN
checked: PLANNER
drawn: TB
scale: 1:2000@A1
0 40 80m

Taylor Burrell Barnett Town Planning & Design
167 Roberts Road Subiaco Western Australia 6008
p: (08) 9382 2911 f: (08) 9382 4586 e: admin@tbbplanning.com.au

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Attachment 4

Schedule of Submissions - 11 Greenwich Parade, Neerabup – Service Station, Motor Vehicle Wash and Fast Food Outlet

Submission Type	Total Number
Support	2
Object	14
Comment	0
Total	**16**

Sub No	Position	Ref	Summary of Submission	Administration Comments	Recommendation
1	Object	1.1	This is an industrial zone area and bringing residential residents into the area as well as allowing food services 24/7 which is clearly a retail business creates a risk to customers as well as local businesses.	Under the Service Industrial (to be Light Industry under Amendment 172) a Service Station is a Discretionary Use and Motor Vehicle Wash is a Permitted use therefore they can be considered consistent with the zoning intent. In addition, Fast Food Outlet is a Discretionary use for the lot under the ASP. This is given that Lots 1001 and 1021 are considered landmark sites at the entry to Meridian Park. Recognizing the sites prominence, there is capacity to support a range of complementary businesses use, which are conducive to servicing the Structure Plan area.	No modification required
		1.2	The area and businesses around create smells and air contaminants that are put these businesses at risk (Fibre Glass business, Crematorium, Cement Factory etc). The City will likely receive complaints from residentials coming into the area about the existing businesses.	Existing businesses are to comply requirements and legislation for the management of smells and air contaminants. Further, as per 1.1 the uses are considered appropriate alongside any existing or future Industrial uses.	No modification required
		1.3	This is a bad move and puts other industrial businesses at risk of the prospect of rezoning this section to allow commercial business in.	As per 1.1, the use is consistent with the existing zoning. This would have no impact on any potential future rezoning.	No modification required
2	Object	2.1	As you can see I am directly opposite the site for this proposal it would severely impact any quality of rural life that I have been left with due to your developments. There needs to be a serious buffer between the industrial zone and the Carramar estate.	Buffer zone considered as part of the Neerabup Industrial Area Structure Plan. Flynn Drive acts as a buffer with zoning of ‘Service Industrial’ and open space, moving into ‘General Industrial'.	No modification required

				The proposed uses are consistent with the relevant zoning and the structure plan.	
3	Object	3.1	I wish to object to the proposed Service Station. It is far too close to our lovely rural area. The City of Wanneroo have made the Industrial area an eyesore. So many beautiful trees were destroyed in the making of the area. Now a huge Service Station is planned. Please NO!!	This formed part of the Structure Plan, as noted in item 1.1. No vegetation removal is proposed given the lot was previously cleared.	No modification required
4	Object	4.1	The City of Wanneroo cannot be trusted into looking after the best interests of the Rural Residences of Carramar if this proposal goes ahead. The corner of Tranquil Drive and Flynn Drive needs to remain an EXIT ONLY to the west for the residence of the park.	The proposed development has no proposed changes to the intersection to the corner of Tranquil Drive and Flynn Drive.	No modification required
		4.2	Opening this to all traffic will take us back to the old days of RAT RUNNERS and s*** heads travelling at high speeds through the park which will not be tolerated!!	The applicant has provided a Traffic Impact Assessment to demonstrate the estimated increase in traffic and traffic flows. In addition, there is no proven correlation between the development of land uses within an Industrial zone and users driving dangerously. Nor could this perception form part of the planning assessment.	No modification required
5	Object	5.1	An additional fuel station is unnecessary and there an adequate supply and will be taking business from other people.	Not a valid planning consideration. The quantity, location and operation of the proposed uses is driven by market demand and there are no provisions within DPS 2 or the Agreed Structure Plan No. 17 – Neerabup Industrial Area which limited the number or proximity of these particular land uses.	No modification required
		5.2	An environmental hazard is not required	Environmental assessments were carried out as part of the Structure Plan application, which confirm that the area is suitable for such Industrial development. In addition, all waste will be required to be sufficiently disposed of. The proposal will include a Stage 1 Vapour Recovery System (VR 1) which captures vapours during the refuelling of underground fuel storage tank by fuel tankers. Further, the proponent will be required to obtain a Dangerous Goods Site License from the Department of	No modification required

				Mines, Industry Regulation and Safety in order to store and sell fuel from the subject site.	
		5.3	It is not a residential area	Refer to item 1.1 above.	No modification required
		5.4	It will bring light pollution bordering a rural dark area, as Council would be aware Carramar Rural area has no street lighting by intention. Any lighting will only create nuisance additional background light. The ambient light already from development is unacceptable.	The development will be required to comply with the relevant Environmental Health Regulations and Australian Standards for the Control of Obstructive Effects of Outdoor Lighting (AS4282) relating to outdoor lighting.	No modification required
		5.5	It should not be left up to the residents to raise these obvious objection. Under any test, an internal review of Council planning department would also conclude that 24 hour at this location is unnecessary	Refer to item 5.1 above.	No modification required
6	Object	6.1	An additional fuel station is unnecessary and there an adequate supply and will be taking business from other people.	Refer to item 5.1 above.	No modification required
		6.2	An environmental hazard is not required	Refer to item 5.2 above.	No modification required
		6.3	It is not a residential area	Refer to item 1.1 above.	No modification required
		6.4	It will bring light pollution bordering a rural dark area, as Council would be aware Carramar Rural area has no street lighting by intention. Any lighting will only create nuisance additional background light. The ambient light already from development is unacceptable.	Refer to item 5.4 above.	No modification required
		6.5	It should not be left up to the residents to raise these obvious objection. Under any test, an internal review of Council planning department would also conclude that 24 hour at this location is unnecessary	Refer to item 5.1 above.	No modification required
7	Object	7.1	My family are concerned about this development that seems to come out of the blue with little to no time for residents to take onboard and comment. I am also away until 25th April.	The application was advertised for a total period of 14 days, plus an additional 7 days, in accordance with Clause 64(4) of DPS 2 and the Deemed Provisions. The advertising commenced 23 March 2023 and concluded 07 April 2023. The consultation period included the identified 'holiday period' as required by Part 1, Clause 3A of the *Planning and Development (Local Planning Scheme) Regulations 2015.*	No modification required

		7.2	Some years ago a 24 hour service station was proposed to be the far south eastern end of the new industrial area off Flynn Drive. The last I was informed by the shire, as I pop in often to ask about lot of matters, was that this was on hold – all of a sudden it pops up further to the west?	Refer to item 5.1 above.	No modification required
		7.3	For many years we have objected to any extra lighting in our lovely area and the shire have, to their credit, listened and acted accordingly. This makes a mockery of our wishes – sure the development comes with lighting, we are trying not to be a nuisance, but this will be 24 hours of light and noise across from several houses.	Refer to item 5.4 above.	No modification required
		7.4	Is it needed as there are many pumps nearby and I would suggest it is premature.	Refer to item 5.1 above.	No modification required
8	Support	8.1	Would be convenient for existing business in Meridian estate.	Noted	No modification required
		8.2	Only downside is making it more difficult to turn right from Greenwich onto Flynn Drive, which is an existing issue but not related to the plan.	Noted	No modification required
9	Support	9.1	Is the facility going to have Ad-Blue pumps installed?	Unknown, dependent on the Service Station company requirements. Not a planning consideration.	No modification required.
10	Object	10.1	The proposed is no more than a drive thru fast food outlet.	The proposed development if for the noted Service Station, Drive Through Fast Food Outlet & Motor Vehicle Wash.	No modification required
		10.2	Was a similar proposed service station on Pinnacle Drive, less than 1km east of the proposal recently rejected? If so, why?	The noted application was approved by JDAP on 14 July 2021.	No modification required
		10.3	Tranquil Drive has been, for years now, a restricted intersection with Flynn Drive allowing only a one way, exit only, left turn only from Tranquil Drive onto Flynn Drive, due to the high volume of trucks on Flynn Drive and the risk of accidents given that it is hilly and bendy. So access to this site should not be allowed off Flynn Drive but restricted to Global or Greenwich. The proposed access and exit from Flynn onto the site, right next to the intersection, trucks coming in and out there can turn either way? They closed Tranquil Drive years ago to stop traffic accident, now this.	The applicant has removed all access to/from Flynn Drive.	No modification required

		10.4	Have the Shire worked out what to do with Flynn Drive upgrade to dual carriageway in this area?	At this stage there are no current upgrades, however an area has been reserved to allow for any future upgrades. Does not form a part of this application.	No modification required
		10.5	The 9m high lighted sign, street lights are bad enough for stargazers now it looks like the golden arches instead.	Refer to item 5.4 above. City is proposing a condition for the signs to be in accordance with the height requirement of the City's Local Planning Policy 4.6 – Signage.	Indicated as a condition of approval.
		10.6	I mentioned 20,000m^2 of natural bushland required periodic burning off to rejuvenate. Attached to other blocks, right next to the proposed service station. Consider fire risk both ways.	The applicant has provided a bushfire assessment and accordingly provided a bushfire management plan to indicate how the lot will be compliant.	No modification required
		10.7	It is inaccessible to local residents or walk across the road from our place.	Noted	No modification required
		10.8	The entire northwest quarter of the proposal seems to be set aside for a future development. Bit of a sub-lease for later on. What is that going to be? Whatever they like then?	The current application does not propose any development to the northwest portion of the lot. it is noted that at such a time when there is proposed development, this will be required to be assessed accordingly by the City in regards to the relevant schemes, policies, and structure plans.	No modification required
		10.9	After the trucks stop and work traffic finishes, shop shut, around 9pm it is pretty quiet here until 4/5am. I fail to see how that is going to change much with Banksia Grove now full so where are the customers coming from? They drive past 5 servos and a few McDonalds to get out here.	Refer to item 5.1 above.	No modification required
		10.10	Couldn't sell the main feature block, now its becoming obvious that it will not remain as a main industrial area entry but a skirt road to a Flynn Pederick link, through the industrial area.	The uses proposed are consistent with the Structure Plan, as noted specifically for these lots. It is noted that Greenwich Parade is to act as one of the main linkages through the Neerabup Industrial Estate.	No modification required
		10.11	Leas lunch bar waiting years for workers to come to Neerabup now a fast food chain is here now.	Refer to item 5.1 above.	No modification required
		10.12	9metre high light signage for kfc or maccas or seven 11.	Refer to item 10.5 above.	Indicated as a condition of approval.
11	Object	11.1	I am formally registering my objection to an additional fuel station. It is unnecessary and a potential environmental hazard that is not required	Refer to item 5.1 above regarding being unnecessary. Refer to item 5.2 above regarding environmental hazards.	No modification required.

		11.2	It is not a residential area and all approaches have adequate fuel stations. It will only be taking business from others.	Refer to item 5.1 above.	No modification required
		11.3	It is bringing light pollution into an area which borders a rural dark area. As Council would be aware Carramar rural area has no street lighting by intention. Any advertising signs and premises lighting will only create nuisance additional background light. The ambient light already from development is unacceptable.	Refer to item 5.4 above	No modification required
		11.4	It is development for the sake of development. Under any test, an internal review by Council planning department would also conclude that a 24 hour fuel station at this location is unnecessary.	Refer to item 5.1 above.	No modification required
12	Object	12.1	The Carramar rural residents are a local community who have chosen to live here to the bush lifestyle. Many of the residents have lived here for many years and care about preserving the rural lifestyle and many of natures benefits found in this area.	Noted, however the subject lot is not located within a Rural zone, rather within the 'Service Industrial' zone.	No modification required
		12.2	Whilst the report proposes noise and light mitigation strategies, the electric charging stations, eight fossil fuel bowsers and two tall signs are being proposed which alters highly valued visual amenity. How will the light and noise mitigation be enforced by the City of Wanneroo.	With regards to lighting - Refer to item 5.4 above An Environmental Acoustic Assessment has been carried out with regards to potential noise and has outlined that the development will comply with the *Environmental Protection (Noise) Regulations 1997*. The applicant would be required to comply with the provided Acoustic Assessment.	No modification required
		12.3	With two service stations down by side of Wanneroo Road, near Drovers, two in Banksia Grove and two on Wanneroo Road, near Hester Avenue, an additional service station is not needed on Flynn Drive. It is also our understanding that there are plans to build a petrol station on the corner of Neerabup Road and the Mitchell Freeway.	Refer to item 5.1 above.	No modification required
		12.4	To service the Industrial area, an alternative location should be considered when the structure plan is finalised and new business started being planned.	It is not in the planning framework to consider alternative locations for proposals. The City is required to assess all proposals on their relevant subject lot to their merits.	No modification required
		12.4	It is difficult to see how considering a proposal for a fuel station and amenities links into the City's strategies on	Whilst it is noted that the City have a Climate Change Adaptation and Mitigation Strategy 2021/21 – 2025/26,	No modification required

			Climate Change. With an 4% increase in emissions in Western Australia above 2005 levels due to strong growth in mining and fossil fuels, transitioning away from fossil fuels should be the highest priority for the City of Wanneroo. Given the recent release of the Intergovernmental Panel on Climate Change Sixth Assessment Report (2023) on the damage that climate change is already causing and will continue to cause, approving another service station is unnecessary.	the subject land is privately owned, and the City is required to assess all proposed application based on the relevant policies and the District Planning Scheme No. 2.	
		12.5	Can the City of Wanneroo explain how the proposed service station will support a balanced lifestyle and high quality of living for Carramar residents and minimise the environmental impacts? How are impacts on the current residents in the adjoining Semi Rural areas being considered. The mental health and psychosocial consequences of environmental change is contributing to emotional distress and mental health problems (Australian Psychological Society, 2017 Clayton et al, 2017) across many communities, which is widely publicised. All these changes are having a significant impact on human physical and mental health (The Australian Psychological Society, 2020).	Refer to item 5.2 above regarding environmental hazards. Additionally, it is noted that the proposed development is in accordance with the approved Structure Plan.	No modifications required
		12.6	We are also concerned about the proposed landscaping plan which includes few local native species and includes species that can invade native bushland such as Eucalyptus platypus or the gazanias. These species should not be allowed to be used anywhere near local bushland. The use of Banksia littorales is also questioned as this species as it naturally grows in low laying, seasonally inundated areas and it is grouped with plants that considered wetland plants, so the long-term viability of the Banksia is questioned.	The landscaping plan has been referred to both the City's internal Land Development Landscaping team and the State DnA Architects for the Meridian Park Design Guidelines who have both confirmed that the proposed plant species are acceptable.	No modification required
13	Object	13.1	How does the Viva Peregrine buy out affect this proposal? It must surely be scrapped.	An independent company purchasing a fuel business has no impacts on the proposed development or the ability for the City to finalise an assessment and for the JDAP to determine the proposal.	No modification required

		13.2	I am affected by the invasive lighting, traffic to and from our property and increased noise 24 hours a day.	With regards to lighting - Refer to item 5.4 above With regards to traffic, the application was subject to a Traffic Impact Assessment which has assessed that the internal transport network is sufficient to not cause traffic build up on the associated roads. In addition, it is noted that typically 70% of generated trips are expected to be passer-by trips, as such not increasing the impacts to Flynn Drive or Greenwich Parade. Further, within ASP 17 it is noted within the Flynn Drive Traffic Assessment that the daily traffic flow on Flynn Drive is expected to significantly increase, as such the traffic associated with the proposal is consistent with the expected growth of traffic flow the structure plan area. With regards to noise, an Environmental Acoustic Assessment has been carried out with regards to potential noise and has outlined that the development will comply with the *Environmental Protection (Noise) Regulations 1997*. The applicant would be required to comply with the provided Acoustic Assessment.	No modification required
		13.3	Most probably a massive litter increase to my verge.	The proposed development is required to have sufficient bin stores, which is to be enclosed and all waste is to be collected from the subject lot.	No modification required
		13.4	Not to mention offensive fumes and odours.	Refer to item 5.2 above.	No modification required
		13.5	The site traffic flow proposal will encourage entry and exit on to Flynn Drive. There is no access to Flynn Drive available to or from properties that adjoin it. Left hand access to the site would be much better suited to the other side of a T-section.	Refer to item 10.3 above.	No modification required.
		13.6	There is already approval for the same service station, drive through set up on the next corner.	Refer to item 5.1 above.	No modification required
		13.7	Try harder attracting high employing business or government offices or service. When is your meeting? I wish to attend	All submitted development proposals are to be assessed against their merits by the City.	No modification required

14	Object	14.1	I have witnessed over the past few years the devastation that has occurred. When I first purchased the property, I was surrounded by bush and now have two monstrous shed at the back of my property.	The noted outbuildings do not form part of this application, nor is it located within the subject lot.	No modification required
		14.2	I have seen a massive decline in wildlife, especially the black cockatoos. The nocturnal animals are no longer with lights broadcasting way further than they should.	It is noted that an Environmental Flora, Vegetation and Vertebrate Fauna Assessment of the Neerabup Industrial Area was carried out prior to endorsement of the Structure Plan. The assessment referenced Carnaby Cockatoos and other animals within the local area. Given that the application is in accordance with the ASP, it can be considered that the concerns were successfully considered at the time of the Structure Plan being endorsed.	No modification required
		14.3	I oppose a 24 hour service station that is going to cause more blearing lights into a suburb that is darkened with no street lights.	Refer to item 5.4 above	No modification required
		14.4	The sound of more traffic on a 24 hour basis is not what our area needs.	With regards to traffic, the application was subject to a Traffic Impact Assessment which has assessed that the internal transport network is sufficient to not cause traffic build up on the associated roads. In addition, it is noted that typically 70% of generated trips are expected to be passer-by trips, as such not increasing the impacts to Flynn Drive or Greenwich Parade. Further, within ASP 17 it is noted within the Flynn Drive Traffic Assessment that the daily traffic flow on Flynn Drive is expected to significantly increase, as such the traffic associated with the proposal is consistent with the expected growth of traffic flow the structure plan area.	No modification required
15	Object	15.1	The location is unsuitable for a 24 hour service station and car wash.	Refer to item 1.1 above.	No modification required
		15.2	EPA indicates that a 24 hour service station should have a buffer zone of 200m from sensitive use land areas. There is a special rural zone directly across Flynn Drive less than 200m away from the site.	The EPA's guidance statement for 'separation distances between industrial and sensitive land uses' was introduced in 2005 and provides guidance on the use of generic separation distances (buffers) between certain developments and sensitive land uses.	No modification required

			I note that the EPA Guidance No. 3 states that 'where the separation is less than the generic distance, a scientific study based on site and industry specific information must be presented to demonstrate that a lesser distance will not result in unacceptable impacts.' The proposal does not provide sufficient mitigation to allow a deviation from the EPA Guidelines or demonstrate that the impacts would be acceptable to nearby residents.	The separation distances set out by EPA Guidance Statement No.3 are no absolute, and lesser distances are commonly accepted where it is demonstrated through justification that the potential impact associated with the proposed development can be suitably managed. The proponent will be required to obtain a Dangerous Goods Site Licence from the Department of Mines, Industry Regulation and Safety (DMIRS) in order to store and sell fuel from the subject site. Accordingly, whilst the proposal is located nearby to existing 'sensitive land uses' the variation to these criteria will be considered at the licencing stage outlined above. Notwithstanding, modern day service stations are designed to a high quality and standard to manage any such risks which is why it is common to see such uses nearby to residential areas.	
		15.2	The tuart trees directly across Flynn drive from the site are a regular roosting site of endangered Carnarby cockatoos. The light interference and noise from a service station and car wash operating 24 hours a day will disturb these birds, and further reduce the habitat in which they can safely roost. The proposal has made no mention or assessment of this.	Refer to item 14.2 above	No modification required
		15.3	While the environmental noise assessment assesses noise levels at nearby residences, including mine, it ignores the ancillary accommodation which is also within the area and occupied. No assessment of the noise levels at these sites has been undertaken. As such there are more residents who would be affected by noise than is acknowledged or addressed by the proponent.	Whilst it is noted that some ancillary dwellings may not have been included, given that the ancillary dwellings are not in closer proximity and a range of dwellings surrounding the ancillary dwellings have been assessed, it can be considered that the area has been appropriately assessed.	No modification required
		15.4	I note that the environmental acoustic assessment recommends that the car wash noise levels at night would require mitigation to be acceptable. The proponent does not address this, and in fact says that no major mitigation is required.	The Acoustic report sets out the required noise mitigation methods. The acoustic report will be conditioned to be complied with. The use is also required to comply with the Noise Regulations.	A condition is to be applied for the proposal to carry out recommendations of the acoustic report.

		15.5	While I accept that our proximity to Flynn Drive and the Neerabup industrial area means that we are exposed to associated noise, the area is still quiet at night. The placement of a 24/7 service station so close to us is entirely unsuitable and unnecessary given ample space elsewhere. Please do not approve this development.	Refer to item 15.2 above	No modification required
16	Object	16.1	The Neerabup Industrial Area Structure Plan identifies that the Flynn Drive should have no direct access to individual lots for traffic safety and efficiency purposes. The structure plan also notes that Flynn Drive is expected to have high traffic volumes in excess of 24,000 vehicles per day and will be required to be widened to accommodate the necessary construction of dual carriageway. The expected traffic volumes, restrictive covenant, Structure Plan access controls and road safety implications that arise from this expected increase have not been considered by the traffic engineering report submitted. No cogent reasons to depart from the Structure Plan have been provided.	Refer to item 10.3 above.	No modification required
		16.2	Detailed Area Plan. The Lot 1001 & 1021 Greenwich Parade, Meridian Park Detailed Area Plan No. 3 also identifies that there should be no vehicular access from Flynn Drive to the subject land and that development should be setback from both the Flynn Drive and Greenwich Parade boundaries. The proposed development is inconsistent with the DAP as it contemplates access from Flynn Drive, contemplates an access driveway to Greenwich Parade which is in excess of the width contemplated by the DAP.	Refer to item 10.3 above. Width of the access via Greenwich Parade has been assessed as appropriate by the Citys internal traffic team.	No modification required
		16.3	The application contemplates 3 x 9m tall pylons, all of which are located within the required setback/ no incursion zone.	Refer to item 10.5 above.	Administration is proposing a condition to amend signage.

		16.4	State Planning Policy 3.7 – Planning in Bushfire Prone Areas The BMP submitted with the proposed development nots that the subject land is subject to a BAL 12.5 to 29 rating. The proposed development comprises a high risk land use, as defined in SPP 3.7. Clause 6.61 of SPP 3.7 clearly states that development of high-risk land uses will not be supported in such areas unless they are jointly endorsed by the relevant local government and the State authority for emergency services. The BMP submitted has not been endorsed by either.	The BMP has been provided to the City's internal Land Development team for endorsement and has been referred to the Department of Fire and Emergency Services (DFES) as part of the application process.	No modification required.
		16.5	The BMP submitted with the proposed development is considered to be deficient because it refers to and relies upon compliance with AS3959, however none of the buildings proposed as part of the proposed development fall within the fall within the class of buildings which AS3959 applies.	The application was referred to DFES as part of this application and no concerns were noted regarding the building classification.	No modifications required.
		16.6	The recommendations referred to in the BMP are not reflected in the plans for the proposed development, and if implemented as a conditions, would impermissibly constitute a major departure to what has been proposed and put forward for approval.	The application was referred to DFES as part of this application and no concerns were noted regarding the intended recommendations.	No modifications required.
		16.7	The TIA SIDRA analysis only adds the expected movements from development to the existing low volumes.	Main Roads WA and the City's Traffic team have assessed the SIDRA files accordingly and have no raised concerns with regards to the expected movement volumes provided.	No modification required
		16.8	The TIA attempts to downplay the total expected vehicles entering and exiting the proposed crossovers, by apply nil traffic generation to the undeveloped north-western portion of the subject lot, even though it is planned to future construction.	Given that there is currently no indication of what the portion of the lot is to be utilised for, it can be considered appropriate to not include this as part of the TIA. At such a time that a development application is submitted for this area, an updated TIA will be provided.	No modification required.
			The TIA does not deal with all required vehicles swept paths, lengths of vehicles and likely obstructions:	The TIA has been amended and reviewed by the City's Traffic team, who have advised that TIA is sufficient.	No modification required.

			a) The 25m indicative RAV vehicle used for swept paths depicted in the reports is not based on any recognised Western Australian Prime Mover – Trailer combination. b) The part of Flynn Drive which abuts th subject land is an approved 27.5m oversized B-Double Network Road, and modelling should be undertaken based on the largest vehicles able to operate on the abutting road network. c) The swept path modelling indicates heavy vehicles exiting Greenwich Road. However, this appears to be an impermissible vehicle movement, as neither Greenwich Road or the roundabout are approved for use such as heavy vehicles. d) The level of service analysis does not appear to take into account the likely impact of heavy vehicle length and time required to safely accelerate and cross what will become an extremely busy intersection between Greenwich Road and Flynn Drive.	SIDRA Modelling considering commercial vehicles proportion and or number based on present and predicted traffic data will suffice. SIDRA Modelling considering commercial vehicles proportion and or number based on present and predicted traffic data would generally suffice. Greenwich Parade and Hemisphere Street and Global Road are approved up to Rav 4 categories under Main Roads RAV network. Whilst heavy vehicle delivery can be scheduled during off peak period, it is recommended to give due consideration of presence of vehicles queuing for refuelling on few of the pumps if not all. The City's Traffic Services have confirmed they are satisfied with the amended TIA, and it meets the relevant requirements.	
		16.9	It does not deal with the fact that while Flynn Drive is not yet under the care, control and management of Main Roads WA (MRWA). MRWA are nevertheless responsible for sign, line and are the peak road safety in Western Australia. The TIA does not provide any cogent reason to depart from MRWAs policy positions as to vehicular access from regional road networks. In particular: a) The MRWA driveway policy provides that while petrol stations may have up to two driveways up to 11m wide, those on corner lots shall have all driveways on the minor road. b) MRWA policy also refers to the Austroads Guide to Road Design Part 4 (Austroads GRD) in respect to auxiliary turn lanes, and driveway access within such lanes. c) Austroads GRD indicates that driveways should not be provided within auxiliary left lanes unless unavoidable. The driveway location in this case is avoidable, and should not be supported for a road safety perspective.	Flynn Drive is categorised as Other Regional Road under MRS. All access from Flynn Drive has to be compliant to DPLH requirements. Above all, the subject lot has access restriction in place via Flynn Drive. The City's Traffic Services is supportive of this. MRWA policy section 2.4.6 refers to Austroads Guide part 4 in reference to whether Auxiliary Turn lanes are warranted at driveway. This is irrelevant to whether driveway is permissible within auxiliary lane. Noting that Flynn Drive access has been removed. The City's Traffic Services have confirmed they are satisfied with the amended TIA, and it meets the relevant requirements.	No modification required.

			d) The TIA at page 27 and 28 appears to downplay the risk and non-compliance with the relevant safety standards of having a driveway within the aux turn lane by referring to two examples elsewhere in the metropolitan region to support its approval in this instance. Relevantly, deficient safety outcomes in other locations should not be used as justification to provide unacceptable and deficient safety outcomes in this matter. Further, those two identified locations can be easily distinguished as having exceptional circumstances as: a. The driveway on Wanneroo Road north of Clarkson Avenue was a temporary driveway provided as the sole means of lawful access to the property until such time as surrounding lot were developed with reciprocal access easements. Those easements have now been established and the crossover is now fenced off and no longer in use, with all access provided via the adjoining lots; and b. The driveway on Wanneroo Road south of Victoria Road was constructed in the mid-1970s and significantly predates the creation of the intersection and auxiliary turn lanes in the early 1990's. Further, the intersection and auxiliary turn lane were constructed prior to the first published version of Austroads GRD Part 4 in August 2009, which is considered to be the pinnacle standard for objectively 'safe' road design.		

Bushfire management plan/Statement addressing the Bushfire Protection Criteria coversheet

Site address: OTR Neerabup - Lot 1001 (11) Greenwich Parade, Neerabup

Site visit: Yes ☑ No ☐

Date of site visit (if applicable): Day 25 Month November Year 2021

Report author or reviewer: Kathy Nastov

WA BPAD accreditation level (please circle):

Not accredited ☐ Level 1 BAL assessor ☐ Level 2 practitioner ☐ Level 3 practitioner ☑

If accredited please provide the following.

BPAD accreditation number: 42204 Accreditation expiry: Month August Year 2024

Bushfire management plan version number: v1.2

Bushfire management plan date: Day 4 Month December Year 2023

Client/business name: Peter Webb & Associates - Nik Hidding

	Yes	No
Has the BAL been calculated by a method other than method 1 as outlined in AS3959 (tick no if AS3959 method 1 has been used to calculate the BAL)?		✔
Have any of the bushfire protection criteria elements been addressed through the use of a performance principle (tick no if only acceptable solutions have been used to address all of the bushfire protection criteria elements)?		✔

Is the proposal any of the following (see SPP 3.7 for definitions)?	Yes	No
Unavoidable development (in BAL-40 or BAL-FZ)		✔
Strategic planning proposal (including rezoning applications)		✔
High risk land-use	✔	
Vulnerable land-use		✔

None of the above ☑

Note: Only if one (or more) of the above answers in the tables is yes should the decision maker (e.g. local government or the WAPC) refer the proposal to DFES for comment.

Why has it been given one of the above listed classifications (E.g. Considered vulnerable land-use as the development is for accommodation of the elderly, etc.)?

High-Risk Land Use - Service Station

The information provided within this bushfire management plan to the best of my knowledge is true and correct:

Signature of report author or reviewer 

Date 12 December 2023

BUSHFIRE PRONE PLANNING

OTR Neerabup

Bushfire Management Plan (BMP)



Produced to meet the relevant requirements of STATE PLANNING POLICY 3.7 Planning in Bushfire Prone Areas & Guidelines

Address / Location:
Lot 1001 (11) Greenwich Parade, Neerabup

City of Wanneroo

Development Application - High Risk Land Use

4 December 2023

Job Reference No: 180353

BPP GROUP PTY LTD T/A BUSHFIRE PRONE PLANNING

ACN: 39 166 551 784 | ABN: 39 166 551 784

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DOCUMENT CONTROL

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Reviewed:	Kathy Nastov (BPAD Level 3 No. 27794)	

VERSION HISTORY		
Version	Details	Date
1.0	Original	25 October 2022
1.1	Updates following Bushfire Risk Assessment	14 November 2022
1.2	Updates following council and DFES comments	4 December 2023

DISTRIBUTION					
Destination		Version	No. Copies	Hard Copy	Electronic Copy
Person	Email				
Nik Hidding – Peter Webb & Associates	nik@webbplan.com.au	1.1		☐	☒
		-		☐	☐

Limitations: The protection measures that will be implemented based on information presented in this Bushfire Management Plan are minimum requirements and they do not guarantee that buildings or infrastructure will not be damaged in a bushfire, persons injured, or fatalities occur either on the subject site or off the site while evacuating.

This is substantially due to the unpredictable nature and behaviour of fire and fire weather conditions. Additionally, the correct implementation of the required protection measures (including bushfire resistant construction) and any other required or recommended measures, will depend upon, among other things, the ongoing actions of the landowners and/or operators over which Bushfire Prone Planning has no control.

All surveys, forecasts, projections and recommendations made in this report associated with the proposed development are made in good faith based on information available to Bushfire Prone Planning at the time. All maps included herein are indicative in nature and are not to be used for accurate calculations.

Notwithstanding anything contained therein, Bushfire Prone Planning will not, except as the law may require, be liable for any loss or other consequences whether or not due to the negligence of their consultants, their servants or agents, arising out of the services provided by their consultants.

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SUMMARY STATEMENTS

THIS DOCUMENT – STATEMENT OF PURPOSE

The Bushfire Management Plan (BMP)

The BMP sets out the required package of bushfire protection measures to lessen the risks associated with a bushfire event. It establishes the responsibilities to implement and maintain these measures.

The BMP also identifies the potential for any negative impact on any environmental, biodiversity and conservation values that may result from the application of bushfire protection measures or that may limit their implementation.

Risks Associated with Bushfire Events

The relevant risks are the potential for loss of life, injury, or destroyed or damaged assets which results in personal loss and economic loss. For a given site, the level of that risk to persons and assets (the exposed elements) is a function of the potential threat levels generated by the bushfire hazard, and the level of exposure and vulnerability of the at risk elements to the threats.

Bushfire Protection Measures

The required package of protection measures is established by *State Planning Policy 3.7 Planning in Bushfire Prone Areas (SPP 3.7),* its associated *Guidelines* and any other relevant guidelines or position statements published by the Department of Planning, Lands and Heritage. These measures are limited to those considered by the WA planning authorities as necessary to be addressed for the purpose of land use planning. They do not encompass all available bushfire protection measures as many are not directly relevant to the planning approval stage. For example:

- Protection measures to reduce the vulnerability of buildings to bushfire threats is primarily dealt with at the building application stage. They are implemented through the process of applying the Building Code of Australia (Volumes 1 and 2 of the national Construction Code) in accordance with WA building legislation and the application of construction requirements based on a building's level of exposure - determined as a Bushfire Attack Level (BAL) rating); or
- Protection measures to reduce the threat levels of consequential fire (ignited by bushfire and involving combustible materials surrounding and within buildings) and measures to reduce the exposure and vulnerability of elements at risk exposed to consequential fire, are not specifically considered.

The package of required bushfire protection measures established by the Guidelines includes:

- The requirements of the bushfire protection criteria which consist of:
  - Element 1: Location (addresses threat levels).
  - Element 2: Siting and Design of Development (addresses exposure levels of buildings).
  - Element 3: Vehicular Access (addresses exposure and vulnerability levels of persons).
  - Element 4: Water (addresses vulnerability levels of buildings).
  - Element 5: Vulnerable Tourism Land Uses (addresses exposure and vulnerability as per Elements 1-4 but in use specific ways and with additional considerations of persons exposure and vulnerability).
- The requirement to develop Bushfire Emergency Plans / Information for 'vulnerable' land uses for persons to prepare, respond and recover from a bushfire event (this addresses vulnerability levels).
- The requirement to assess bushfire risk and incorporate relevant protection measures into the site emergency plans for 'high risk' land uses (this addresses threat, exposure and vulnerability levels).

Compliance of the Proposed Development or Use with SPP 3.7 Requirements

The BMP assesses the capacity of the proposed development or use to implement and maintain the required 'acceptable' solutions and any additionally recommended bushfire protection measures - or its capacity to satisfy the policy intent through the justified application of additional bushfire protection measures as supportable 'alternative' solutions.

THE PROPOSED DEVELOPMENT/USE – BUSHFIRE PLANNING COMPLIANCE SUMMARY		
Environmental Considerations		**Assessment Outcome**
Will identified environmental, biodiversity and conservation values limit the full application of the required bushfire protection measures?		No
Will identified environmental, biodiversity and conservation values need to be managed in the implementation and maintenance of the bushfire protection measures - but not limit their application?		No
Required Bushfire Protection Measures The Acceptable Solutions of the Bushfire Protection Criteria (Guidelines)		**Assessment Outcome**
Element	The Acceptable Solutions	
1: Location	A1.1 Development location	Fully Compliant
2: Siting and Design of Development	A2.1 Asset Protection Zone (APZ)	Fully Compliant
3: Vehicular Access	A3.1 Public roads	Fully Compliant
	A3.2a Multiple access routes	Fully Compliant
	A3.2b Emergency access way	N/A
	A3.3 Through-roads	N/A
	A3.4a Perimeter roads	N/A
	A3.4b Fire service access route	N/A
	A3.5 Battle-axe legs	N/A
	A3.6 Private driveways	N/A
4: Water	A4.1 Identification of future water supply	N/A
	A4.2 Provision of water for firefighting purposes	Fully Compliant
Other 'Bushfire Planning' Documents to Be Produced This necessity for additional documents is determined by the proposed development/use type and the requirements established by SPP 3.7 and the associated Guidelines (as amended). As necessary, relevant outcomes are also captured as responsibilities in this BMP.		**Required**
Bushfire Risk Assessment and Management Report		Yes

Summary Statement: The proposed development is considered a 'high-risk' land use as defined by SPP 3.7 and its associated Guidelines.

This triggers the requirement, through the development of a Risk Assessment and Management Report to:

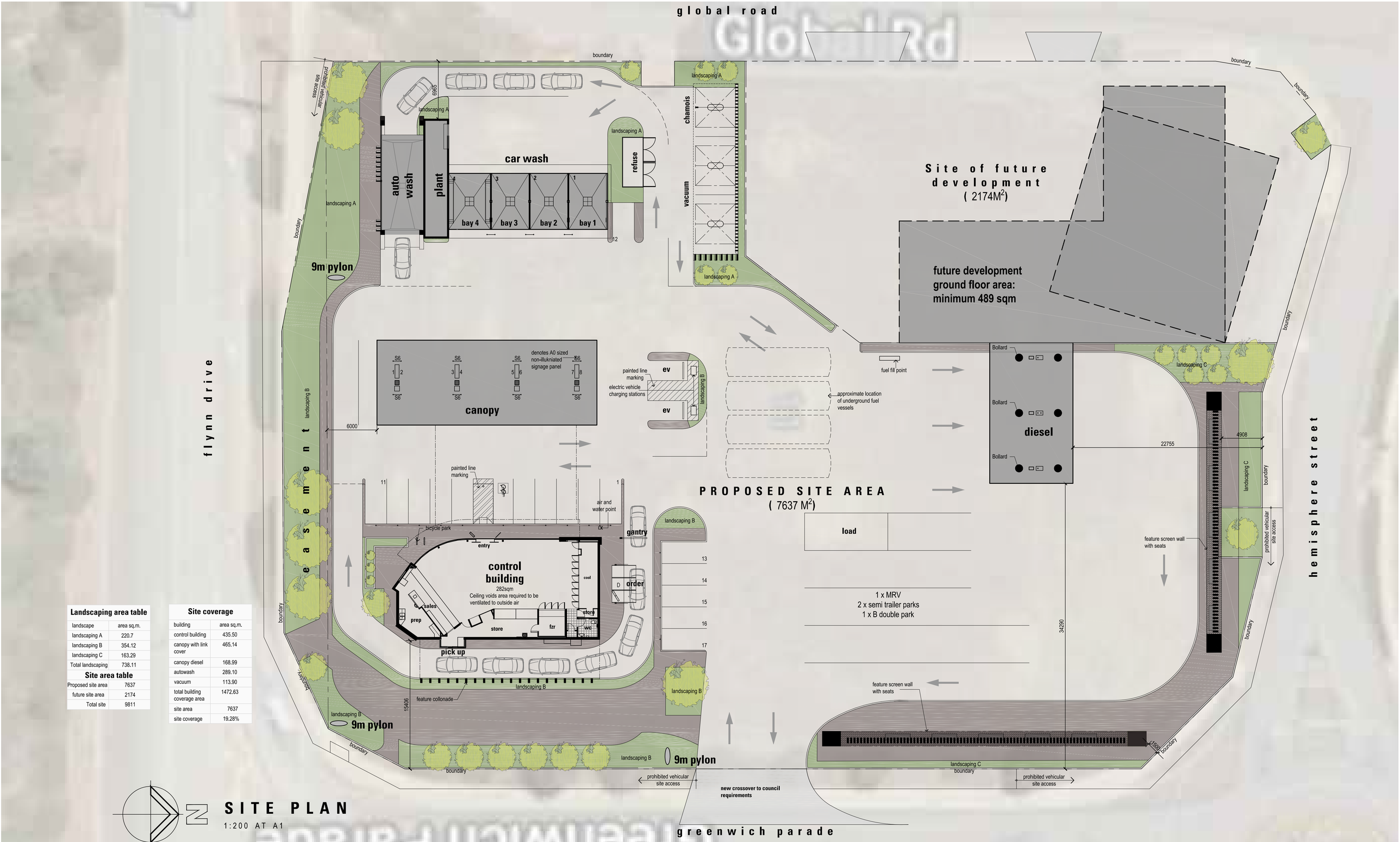
- Identify the level of exposure and vulnerability of any onsite stored materials and liquids to bushfire attack mechanisms (threats);
- Identify any potential source of ignition threat the use may present to adjoining and/or adjacent bushfire prone vegetation; and
- Recommend protection measures that can be incorporated into the site operations emergency plan as necessary.

The requirement for this report to be developed can be decided by the planning approval decision maker (e.g., the local government). Otherwise, SPP 3.7 states it 'should' be produced.

1 PROPOSAL DETAILS AND THE BUSHFIRE MANAGEMENT PLAN

1.1 The Proposed Development/Use Details, Plans and Maps

The Proposal's Planning Stage For which certain bushfire planning documents are required to accompany the planning application.		Development Application
Total Area of Subject Lot/Site		9811m^2
Number of Additional Lots Created		N/A
Primary Proposed Construction	**Type(s)**	New Building(s)
	NCC Classification	Class 6 (building for sale of retail goods or supply of services)
Specific 'Bushfire Planning' Land Use Type When applicable, this classification establishes a requirement to conduct assessments and develop documents that are additional to this Bushfire Management Plan.		High Risk Land Use
Factors Determining the 'Bushfire Planning' Land Use Type		The land use will store combustible materials and/or flammable hazardous materials onsite that may be exposed and vulnerable to ignition from the direct attack mechanisms of bushfire (flame contact, radiant heat and embers). Business operations/activities may include those that are a potential source of ignition for onsite or offsite combustible/flammable materials, including bushfire prone vegetation.
Description of the Proposed Development/Use		
Construction and operation of a service station complex. Key components include: • Fuel dispensing forecourt, tanks, pumps and canopy; • Control building; and • Car cleaning/wash bays.		
Description of Planned Staged Development and the Management of Potential Bushfire Planning Issues		
Not Applicable.		



Landscaping area table	
landscape	area sq.m.
landscaping A	220.7
landscaping B	354.12
landscaping C	163.29
Total landscaping	738.11
Site area table	
Proposed site area	7637
future site area	2174
Total site	9811

Site coverage	
building	area sq.m.
control building	435.50
canopy with link cover	465.14
canopy diesel	168.99
autowash	289.10
vacuum	113.90
total building coverage area	1472.63
site area	7637
site coverage	19.28%

N

SITE PLAN

1:200 AT A1

NEW SERVICE STATION COMPLEX

11 GREENWICH PARADE, NEERABUP WA

0 1 2 5 10 15m

Scale 1:200 at A1

23.08.23

23JN1510sk00h

planning

Figure 1.2

Proposed Development Map

Lot 1001 on Plan P061212. Area: 9,811 sq m
11 Greenwich Parade
NEERABUP
CITY OF WANNEROO

HEMISPHERE ST
GLOBAL RD
GREENWICH PDE
FLYNN DR

------ LEGEND ------

- Cadastre
- Subject Site
- Hydrants

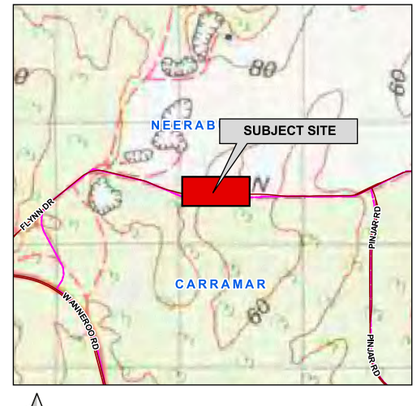
Proposal

- Control Building
- Fuel Bowser Canopy 1
- Fuel Bowser Canopy 2
- Under Ground Fuel Vessels
- Vacuum Bays
- Car Wash
- Entry Way

0 10 20 30 40 50

Metres

------ LOCALITY ------



AERIAL IMAGERY: Landgate/SLIP

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Merctaor Units: Metre
Map updated by: Selina Hutcheon 04-12-2023
SCALE (A3): 1 : 800

BUSHFIRE PRONE PLANNING

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Figure 1.3

Location Map

Lot 1001 on Plan P061212. Area: 9,811 sq m
11 Greenwich Parade
NEERABUP
CITY OF WANNEROO

------ LEGEND ------

- Cadastre
- Subject Site
- Clearing Regulations
- Bush Forever Sites
- Reserves

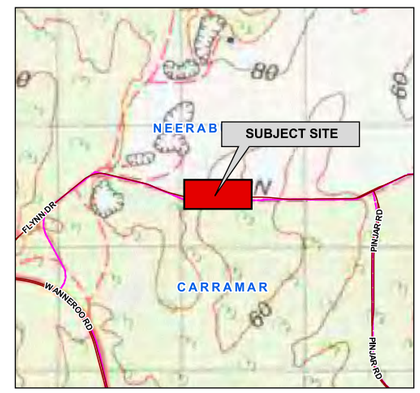
DFES Stations

- Bush Fire Brigade
- Career Fire Rescue Service

0 500 1,000 1,500

Metres

------ LOCALITY ------



AERIAL IMAGERY: Landgate/SLIP

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Merctaor Units: Metre
Map updated by: Selina Hutcheon 04-12-2023
SCALE (A3): 1 : 30000

BUSHFIRE PRONE PLANNING

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WHERE SPP 3.7 AND THE GUIDELINES ARE TO APPLY – DESIGNATED BUSHFIRE PRONE AREAS

All higher order strategic planning documents, strategic planning proposals, subdivisions and development applications located in designated bushfire prone areas need to address SPP 3.7 and its supporting Guidelines. This also applies where an area is not yet designated as bushfire prone but is proposed to be developed in a way that introduces a bushfire hazard.

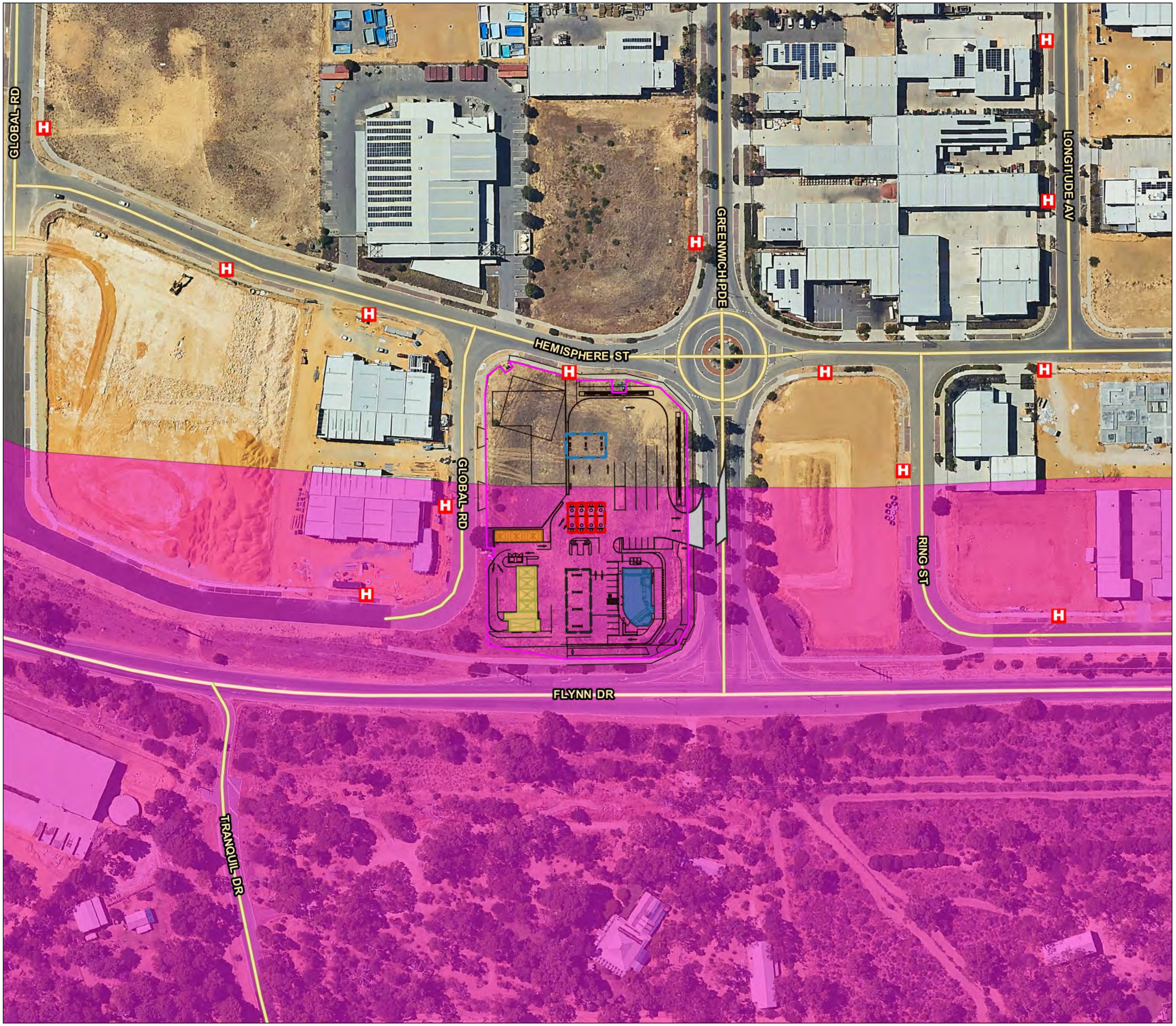
For development applications where only part of a lot is designated as bushfire prone and the proposed development footprint is wholly outside of the designated area, the development application will not need to address SPP 3.7 or the Guidelines. (Guidelines DPLH 2021 v1.4, s1.2).

For subdivision applications, if all the proposed lots have a BAL-LOW indicated, a BMP is not required. (Guidelines DPLH 2021 v1.4, s5.3.1).

Figure 1.4

Bushfire Prone Areas Map

Lot 1001 on Plan P061212. Area: 9,811 sq m
11 Greenwich Parade
NEERABUP
CITY OF WANNEROO



------ LEGEND ------

- Cadastre
- Subject Site
- Hydrants
- Bushfire Prone Areas

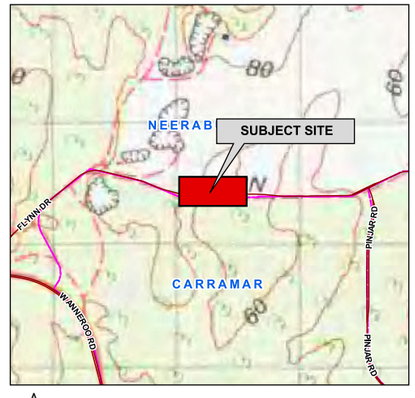
Proposal

- Control Building
- Fuel Bowser Canopy 1
- Fuel Bowser Canopy 2
- Under Ground Fuel Vessels
- Vacuum Bays
- Car Wash
- Entry Way

0 20 40 60 80 100

Metres

------ LOCALITY ------



AERIAL IMAGERY: Landgate/SLIP

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Merctaor Units: Metre
Map updated by: Selina Hutcheon 04-12-2023
SCALE (A3): 1 : 1500

BUSHFIRE PRONE PLANNING

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1.2 The Bushfire Management Plan (BMP)

1.2.1 Commissioning and Purpose

Landowner / proponent:	Peregrine Corporation
Bushfire Prone Planning commissioned to produce the BMP by:	Peter Webb & Associates
Purpose of the BMP:	To apply the requirements established by State Planning Policy 3.7: Planning in Bushfire Prone Areas (SPP 3.7) and accompany the development application.
BMP to be submitted to:	City of Wanneroo

1.2.2 Existing Documents with Implications for Development of this BMP

This section identifies any known assessments, reports or plans that have been conducted and prepared previously, or are being prepared concurrently, and are relevant to the subject site and the proposal/application. They potentially have implications for the assessment of bushfire threats and the implementation of the protection measures that are dealt with in the Bushfire Management Plan.

Table 1.4: Existing documents that may impact threat assessments and protection measure development.

EXISTING RELEVANT DOCUMENTS			
Existing Document	Relevant to the Proposal and the BMP	Copy Provided by Proponent / Developer	Title
Structure Plan	No	N/A	
Bushfire Management Plan	Yes	No	Bushfire Management Plan (Development Application) v1.0 – Prepared by Bushfire Prone Planning - (Dated 25 June 2018)
Implications for the BMP: Previous Bushfire Management Plan no longer valid – Revised Bushfire Management Plan required to account for changes in Standards, State Planning Policies and associated Guidelines.			
Bushfire Emergency Plan or Information	No	No	
Bushfire Risk – Assessment and Management Report	Yes	No	Risk Management Plan for Bushfire Risk v1.0 – Prepared by Bushfire Prone Planning (Dated 25 June 2018
Implications for the BMP: Previous Risk Management Plan no longer valid – Revised Bushfire Management Plan required to account for changes in Standards, State Planning Policies and associated Guidelines.			
Environmental Asset or Vegetation Survey	No	No	
Landscaping (Revegetation) Plan	No	No	

2 ENVIRONMENTAL CONSERVATION (DESKTOP ASSESSMENT)

Important: This 'desktop' assessment must not be considered as a replacement for a full Environmental Impact Assessment. It is a summary of potential environmental values at the subject site, inferred from information contained in listed datasets and/or reports, which are only current to the date of last modification.

These data sources must be considered indicative where the subject site has not previously received a site-specific environmental assessment by an appropriate professional.

Many bushfire prone areas also have high biodiversity values. Consideration of environmental priorities within the boundaries of the land being developed can avoid excessive or unnecessary modification or clearing of vegetation. Approval processes (and exemptions) apply at both Commonwealth and State levels.

Any 'modification' or 'clearing' of vegetation to reduce bushfire risk is considered 'clearing' under the *Environmental Protection Act 1986* (EP Act) and requires a clearing permit under the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (Clearing Regulations) – unless for an exempt purpose.

Clearing native vegetation is an offence, unless done under a clearing permit or the clearing is for an exempt purpose. Exemptions are contained in the EP Act or are prescribed in the Clearing Regulations (note: these do not apply in environmentally sensitive areas).

The *Department of Water and Environmental Regulation* (DWER) is responsible for issuing 'clearing' permits and the framework for the regulation of clearing. Approvals under other legislation, from other agencies, may also be required, dependent on the type of flora or fauna present.

Local Planning Policy or Local Biodiversity Strategy: Natural areas that are not protected by the above Act and Regulation (or any other National or State Acts) may be protected by a local planning policy or local biodiversity strategy. Permission from the local government will be required for any modification or removal of native vegetation in these Local Natural Areas (LNA's). Refer to the relevant local government for detail.

For further Information refer to Guidelines v1.4, the Bushfire and Vegetation Factsheet - WAPC, Dec 2021 and https://www.der.wa.gov.au/our-work/clearing-permits

2.1 Existing Vegetation on Private Land

2.1.1 Declared Environmentally Sensitive Areas (ESA)

Table 2.1: Identification of relevant ESA.

IDENTIFICATION OF ESA							
ESA Class	Relevant to Proposal	Influence on Bushfire Threat Levels and / or Application of Bushfire Protection Measures	Relevant Dataset	Information Source(s) Applied to Identification of Relevant Vegetation			Further Action Required
				Dataset	Landowner or Developer	Environmental Asset or Vegetation Survey	
Wetlands and their 50m Buffer (Ramsar, conservation category and nationally important)	No	N/A	DBCA-010 and 011, 019, 040, 043, 044	☒	☐	☐	None
Bush Forever	No	N/A	DPLH-022, SPP 2.8	☒	☐	☐	None
Threatened and Priority Flora + 50m Continuous Buffer	No	N/A	DBCA-036	Restricted Scale of	☐	☐	None

Threatened Ecological Community	No	N/A	DBCA-038	Data Available (security)	☐	☐	None
Heritage Areas National / World	No	N/A	Relevant register or mapping	☒	☐	☐	None

2.2 Existing Vegetation on Public Land

Table 2.2: Identification of vegetation on public land with environmental, biodiversity and conservation values.

IDENTIFICATION OF PROTECTED VEGETATION ON PUBLIC LAND							
Land with Environmental, Biodiversity, Conservation and Social Values	Relevant to Proposal	Influence on Bushfire Threat Levels and / or Application of Bushfire Protection Measures	Relevant Dataset	Information Source(s) Applied to Identification of Relevant Vegetation			Further Action Required
				Dataset	Landowner or Developer	Environmental Asset or Vegetation Survey	
Legislated Lands (tenure includes national park/reserve, conservation park, crown reserve and state forest)	No	N/A	DBCA-011	☒	☐	☐	None
Conservation Covenants	Unlikely	Unlikely	DPIRD-023	Only Available to Govt.	☐	☐	Data not available - confirm with relevant agency

2.3 Planned Landscaping and/or Re-vegetation

Table 2.3: Identification of land subject to planned vegetation modification.

AREAS OF LAND PLANNED FOR RE-VEGETATION OR LANDSCAPING			
Land with Environmental, Biodiversity, Conservation and Social Values	Relevant to Proposal	Planned Vegetation Modification	Description
Riparian Zones	No	N/A	
Foreshore Areas	No	N/A	
Wetland Buffers	No	N/A	
Legislated Lands	No	N/A	
Public Open Space	No	N/A	
Road Verges	No	N/A	

2.4 Identified Requirement for Onsite Vegetation Modification or Removal

IDENTIFICATION OF POTENTIAL NATIVE VEGETATION MODIFICATION OR REMOVAL	
Has a requirement to modify or remove native vegetation to establish the required bushfire protection measures on the subject site been identified?	No
Comments: Not Applicable	
Is evidence provided (from relevant agencies, the environmental or planning consultant and/or the local government), that the required modification or removal of the vegetation can be achieved?	No
Comments: Not Applicable	

2.5 Implications for the Proposed Development and the BMP

Table 2.5: Consideration of the implications that identified protected areas of vegetation (i.e., those with environmental and subject to conservation) have for the development proposal and the BMP.

THE IMPLICATIONS FOR THE PROPOSED DEVELOPMENT (AND BMP) FROM THE IDENTIFIED 'PROTECTED' VEGETATION	
The Determination of Bushfire Threat Levels and the Exposure of at Risk Elements	**Relevant to the BMP**
The ability to reduce the potential bushfire impact on the development through modification or removal of vegetation is limited due to the existence of 'protected' areas of vegetation.	No
Comments: Not Applicable	
The planned development will result in additional areas of bushfire prone vegetation (due to re-vegetation and/or landscaping) that will support fire and that may impact the development. This vegetation has been accounted for within the BMP.	No
Comments: Not Applicable	
The Application of Design and/or Construction Responses to Limit Vegetation Modification or Removal	**Relevant to the BMP**
Modify the development location to reduce exposure by increasing separation distance.	N/A
Comments: Not Applicable	
Redesign development, structure plan or subdivision.	N/A
Comments: Not Applicable	
Reduction of lot yield where this can increase available separation distances.	N/A
Comments: Not Applicable	
Cluster development to limit modification or removal of vegetation.	N/A
Comments: Not Applicable	
Construct building(s) to the requirements corresponding to higher BAL ratings to reduce required separation distances.	N/A
Comments: Not Applicable	

Figure 2.1

Environmental Considerations

Lot 1001 on Plan P061212. Area: 9,811 sq m
11 Greenwich Parade
NEERABUP
CITY OF WANNEROO

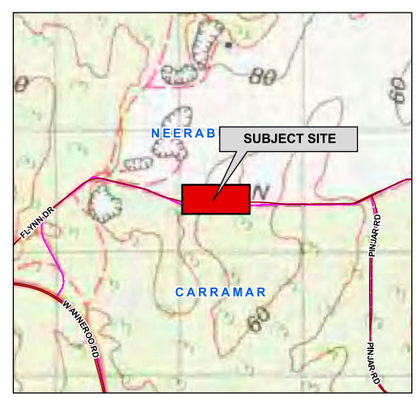
------ LEGEND ------

- Cadastre
- Subject Site
- Hydrants
- Clearing Regulations
- Threatened Ecological Community
- Reserves

0 50 100 150 200 250

Metres

------ LOCALITY ------



AERIAL IMAGERY: Landgate/SLIP

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Merctaor Units: Metre
Map updated by: Selina Hutcheon 04-12-2023
SCALE (A3): 1 : 5000

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3 BUSHFIRE ATTACK LEVEL (BAL) ASSESSMENT

BUSHFIRE ATTACK LEVELS (BAL) - UNDERSTANDING THE RESULTS

The transfer (flux/flow) of radiant heat from the bushfire to a receiving object is measured in kW/m^2. The AS 3959:2018 BAL determination methodology establishes the ranges of radiant heat flux that correspond to each bushfire attack level. These are identified as BAL-LOW, BAL-12.5, BAL-19, BAL-29, BAL-40 and BAL-FZ.

The bushfire performance requirements for certain classes of buildings are established by the Building Code of Australia (Vol. 1 & 2 of the NCC). The BAL will establish the bushfire resistant construction requirements that are to apply in accordance with AS 3959:2018 - Construction *of buildings in bushfire prone areas* and the NASH Standard – *Steel framed construction in bushfire areas (NS 300 2021),* whose solutions are deemed to satisfy the NCC bushfire performance requirements.

DETERMINED BAL RATINGS

A BAL Certificate can be issued for a determined BAL. A BAL can only be classed as 'determined' for an existing or future building/structure when:

1. It's final design and position on the lot are known and the stated separation distance from classified bushfire prone vegetation exists and can justifiably be expected to remain in perpetuity; or

2. It will always remain subject to the same BAL regardless of its design or position on the lot after accounting for any regulatory or enforceable building setbacks from lot boundaries as relevant and necessary (e.g., R-codes, restrictive covenants, defined building envelopes) or the retention of any existing classified vegetation either onsite or offsite.

If the BMP derives determined BAL(s), the BAL Certificate(s) required for submission with building applications can be provided, using the BMP as the assessment evidence.

INDICATIVE BAL RATINGS

A BAL Certificate cannot be issued for an indicative BAL. A BAL will be classed as 'indicative' for an existing or future building/structure when the required conditions to derive a determined BAL are not met.

This class of BAL rating indicates what BAL(s) could be achieved and the conditions that need to be met are stated.

Converting the indicative BAL into a determined BAL is conditional upon the currently unconfirmed variable(s) being confirmed by a subsequent assessment and evidential documentation. These variables will include the future building(s) location(s) being established (or changed) and/or classified vegetation being modified or removed to establish the necessary vegetation separation distance. This may also be dependent on receiving approval from the relevant authority for that modification/removal.

BAL RATING APPLICATION – PLANNING APPROVAL VERSUS BUILDING APPROVAL

1. **Planning Approval**: SPP.3.7 establishes that where BAL- LOW to BAL-29 will apply to relevant future construction (or existing structures for proposed uses), the proposed development may be considered for approval (dependent on the other requirements of the relevant policy measures being met). That is, BAL40 or BAL-FZ are not acceptable on planning grounds (except for certain limited exceptions).

   Because planning is looking forward at what can be achieved, as well as looking at what may currently exist, both determined and indicative BAL ratings are acceptable assessment outcomes on which planning decisions can be made (including conditional approvals).

2. **Building Approval:** The Building Code of Australia (Vol. 1 & 2 of the NCC) establishes that relevant buildings in bushfire prone areas must be constructed to the bushfire resistant requirements corresponding to the BAL rating that is to apply to that building. Consequently, a determined BAL rating and the BAL Certificate is required for a building permit to be issued - an indicative BAL rating is not acceptable.

3.1 BAL Assessment Summary - Contour Map Format

INTERPRETATION OF THE BAL CONTOUR MAP

The BAL contour map is a diagrammatic representation of the results of the bushfire attack level assessment.

The map presents different coloured contours extending out from the areas of classified vegetation. Each contour represents a set range of radiant heat flux that potentially will transfer to an exposed element (building, person or other defined element), when it is located within that contour.

Each of the set ranges of radiant heat flux corresponds to a different BAL rating as defined by the AS 3959:2018 BAL determination methodology.

The width of each shaded BAL contour will vary dependant on both the BAL rating and the relevant parameters (calculation inputs) for the subject site. Their width represents the minimum and maximum vegetation separation distances that correspond to each BAL rating (refer to the relevant table below for these distances).

The areas of classified vegetation to be considered in developing the BAL contours, are those that will remain at the intended end state of the subject development once earthworks, clearing and/or landscaping and re-vegetation have been completed. Variations to this statement that may apply include:

- Both pre and post development BAL contour maps are produced; and/or
- Each stage of a development is assessed independently.

3.1.1 The BAL Determination Method(s) Applied and the Location of Data and Results

Procedure Method (AS 3959:2018)	Applied to the BAL Assessment	Location of the Site Assessment Data			Location of the Results
		Classified Vegetation and Topography Map(s)	Calculation Input Variables		Assessed Bushfire Attack Levels and/or Radiant Heat Levels
			Summary Data	Detailed Data with Explanatory and Supporting Information	
Method 1 (Simplified)	Yes	Figures 3.1 and 3.1.1	Table 3.1	Appendix A1	Table 3.3 BAL Contour Map
Method 2 (Detailed)	No	N/A	N/A	N/A	N/A

Figure 3.1

Classified Vegetation and Topography Map (Existing)

Lot 1001 on Plan P061212. Area: 9,811 sq m
11 Greenwich Parade
NEERABUP
CITY OF WANNEROO

GLOBAL RD
GREENWICH PDE
LONGITUDE AV
HEMISPHERE ST
RING ST
FLYNN DR
TRANQUIL DR

AREA 1
Class (G) Grassland
Effective Slope 0°

AREA 2
Class (G) Grassland
Effective Slope 0°

AREA 8
Excluded
2.2.3.2 (e & f)

AREA 7
Class (G) Grassland
Effective Slope 0°

AREA 1
Class (G) Grassland
Effective Slope 0°

AREA 2
Class (G) Grassland
Effective Slope 0°

AREA 4
Class (A) Forest
Effective Slope 0°

AREA 5
Class (A) Forest
Effective Slope >0-5°

AREA 6
Class (D) Scrub
Effective Slope >0-5°

AREA 3
Class (D) Scrub
Effective Slope 0°

AREA 5
Class (A) Forest
Effective Slope >0-5°

AREA 4
Class (A) Forest
Effective Slope 0°

------ LEGEND ------

- Photo and Direction
- Cadastre
- Subject Site
- Hydrants
- 100m Distance
- 150m Distance
- Elevation (2m)

Proposal

- Control Building
- Fuel Bowser Canopy 1
- Fuel Bowser Canopy 2
- Under Ground Fuel Vessels
- Vacuum Bays
- Car Wash
- Entry Way

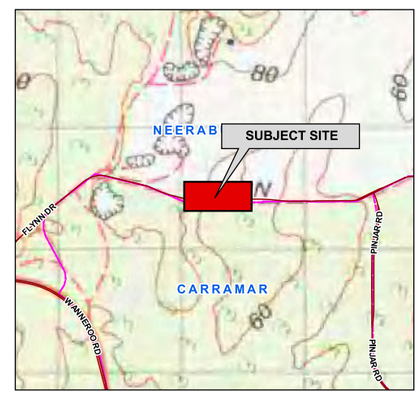
Classified Vegetation

- Class A - Forest
- Class D - Scrub
- Class G - Grassland
- Exclusion 2.2.3.2

0 20 40 60 80 100

Metres

------ LOCALITY ------



AERIAL IMAGERY: Landgate/SLIP

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Merctaor Units: Metre
Map updated by: Selina Hutcheon 04-12-2023
SCALE (A3): 1 : 1500

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Figure 3.1.1

Classified Vegetation and Topography Map (Post Development)

Lot 1001 on Plan P061212. Area: 9,811 sq m
11 Greenwich Parade
NEERABUP
CITY OF WANNEROO

GLOBAL RD
GREENWICH PDE
LONGITUDE AV
HEMISPHERE ST
RING ST
FLYNN DR
TRANQUIL DR

AREA 1
Class (G) Grassland
Effective Slope 0°

AREA 2
Class (G) Grassland
Effective Slope 0°

AREA 8
Excluded
2.2.3.2 (e & f)

AREA 7
Excluded
2.2.3.2 (f)

AREA 1
Class (G) Grassland
Effective Slope 0°

AREA 2
Class (G) Grassland
Effective Slope 0°

AREA 4
Class (A) Forest
Effective Slope 0°

AREA 5
Class (A) Forest
Effective Slope >0-5°

AREA 6
Class (D) Scrub
Effective Slope >0-5°

AREA 3
Class (D) Scrub
Effective Slope 0°

AREA 5
Class (A) Forest
Effective Slope >0-5°

AREA 4
Class (A) Forest
Effective Slope 0°

------ LEGEND ------

- Cadastre
- Subject Site
- Hydrants
- 100m Distance
- 150m Distance
- Elevation (2m)

Proposal

- Control Building
- Fuel Bowser Canopy 1
- Fuel Bowser Canopy 2
- Under Ground Fuel Vessels
- Vacuum Bays
- Car Wash
- Entry Way

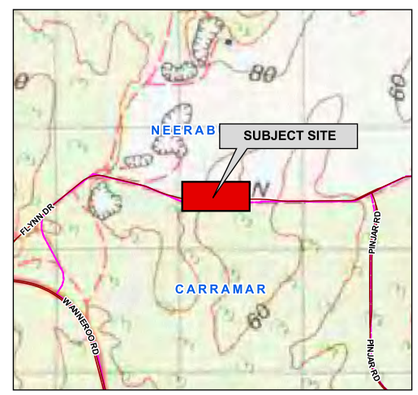
Classified Vegetation

- Class A - Forest
- Class D - Scrub
- Class G - Grassland
- Exclusion 2.2.3.2

0 20 40 60 80 100

Metres

------ LOCALITY ------



AERIAL IMAGERY: Landgate/SLIP

Coordinate System: GDA 1994 MGA Zone 50
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Map updated by: Selina Hutcheon 04-12-2023
SCALE (A3): 1 : 1500

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CONSTRUCTION OF THE BAL CONTOUR MAP(S) – RELEVANT CLASSIFIED VEGETATION	
Identification of Classified Vegetation that is Relevant to the Production of the BAL Contour Map(s)	Relevant Map
All identified areas of classified vegetation that exist at the time of the site assessment – both within the subject site (onsite) and external to the subject site (offsite) will be the relevant vegetation.	Figure 3.1
All identified classified vegetation areas, or portions of areas, within the subject lot are excluded. It is the classified vegetation external to the lot boundaries that is the relevant vegetation. This approach is applied to indicate the achievable bushfire attack levels within the specified lot and the resultant area of developable land where buildings will be subject to BAL-29 or less. It is based on the following assumptions: 1. Any classified vegetation within a lot can potentially be managed or removed by the landowner to meet asset protection zone standards; and 2. Future development and consequent removal/management of vegetation that may take place on any adjoining lot cannot be part of considerations for the subject lot.	Figure 3.1.1
The areas of classified vegetation that will remain at the intended end state of the subject development once earthworks, any clearing and/or landscaping and re-vegetation have been completed, will be the relevant vegetation for the post-development BAL contour map.	Figure 3.2
Supporting Assessment Details: Separation distances are shown in Table 3.1.	

3.1.3 Summary Site Data Applied to Construction of the BAL Contour Map(s)

Table 3.1 Summary of applied calculation input variables applied in deriving the BAL rating for the identified exposed element (the relevant building/structure).

DATA APPLIED TO THE DERIVATION OF RADIANT HEAT FLUX LEVELS [1]															
Applied BAL Determination Method	METHOD 1 - SIMPLIFIED PROCEDURE (AS 3959:2018 CLAUSE 2.2)														
The Receiver of Radiant Heat Relevant Building(s) / Structure(s) and Their Location	Calculation Variables Corresponding to the BAL Determination Method														
	Methods 1 and 2		Method 1	Method 2			Method 1 and 2	Method 2						Radiant Heat Flux Stated as Bushfire Attack Level (BAL)
	Vegetation Classification		FDI	Effective Slope		Site Slope	FFDI or GFDI	Separation Distance	Flame Temp.	Elevation of Receiver	Flame Width	Fireline Intensity	Flame Length	Modified View Factor	
				Applied Range	Determined			Total							
	Area	Class		degree range	degrees	degrees		metres	K	metres	metres	kW/m	metres	% Reduction	
Car Wash	1	(G) Grassland	80	Upslope or flat 0	flat 0			32							BAL-12.5
	2	(G) Grassland	80	Upslope or flat 0	flat 0			93							BAL-LOW
	3	(D) Scrub	80	Upslope or flat 0	flat 0			126							BAL-LOW
	4	(A) Forest	80	Upslope or flat 0	flat 0			35							BAL-19
	5	(A) Forest	80	Downslope >0-5	d/slope 3.8			102							BAL-LOW
	6	(D) Scrub	80	Downslope >0-5	d/slope 3.2			47							BAL-12.5
	7	Excluded cl 2.2.3.2(f)	80	Upslope or flat 0	flat 0			-							BAL-LOW
	8	Excluded cl 2.2.3.2(e & f)	80	N/A	N/A			-							BAL-LOW
	Determined Bushfire Attack Level														BAL-19
Vacuum Bays	1	(G) Grassland	80	Upslope or flat 0	flat 0			23							BAL-12.5
	2	(G) Grassland	80	Upslope or flat 0	flat 0			91							BAL-LOW
	3	(D) Scrub	80	Upslope or flat 0	flat 0			144							BAL-LOW
	4	(A) Forest	80	Upslope or flat 0	flat 0			73							BAL-12.5
	5	(A) Forest	80	Downslope >0-5	d/slope 3.8			142							BAL-LOW
	6	(D) Scrub	80	Downslope >0-5	d/slope 3.2			79							BAL-12.5
	7	Excluded cl 2.2.3.2(f)	80	Upslope or flat 0	flat 0			-							BAL-LOW
	8	Excluded cl 2.2.3.2(e & f)	80	N/A	N/A			-							BAL-LOW
	Determined Bushfire Attack Level														BAL-12.5

Control Building	1	(G) Grassland	80	Upslope or flat 0	flat 0			77							BAL-LOW
	2	(G) Grassland	80	Upslope or flat 0	flat 0			44							BAL-12.5
	3	(D) Scrub	80	Upslope or flat 0	flat 0			88							BAL-12.5
	4	(A) Forest	80	Upslope or flat 0	flat 0			40							BAL-19
	5	(A) Forest	80	Downslope >0-5	d/slope 3.8			135							BAL-LOW
	6	(D) Scrub	80	Downslope >0-5	d/slope 3.2			91							BAL-12.5
	7	Excluded cl 2.2.3.2(f)	80	Upslope or flat 0	flat 0			-							BAL-LOW
	8	Excluded cl 2.2.3.2(e & f)	80	N/A	N/A			-							BAL-LOW
														Determined Bushfire Attack Level	BAL-19
Fuel Bowser Canopy 1	1	(G) Grassland	80	Upslope or flat 0	flat 0			53							BAL-LOW
	2	(G) Grassland	80	Upslope or flat 0	flat 0			71							BAL-LOW
	3	(D) Scrub	80	Upslope or flat 0	flat 0			108							BAL-LOW
	4	(A) Forest	80	Upslope or flat 0	flat 0			35							BAL-19
	5	(A) Forest	80	Downslope >0-5	d/slope 3.8			115							BAL-LOW
	6	(D) Scrub	80	Downslope >0-5	d/slope 3.2			66							BAL-12.5
	7	Excluded cl 2.2.3.2(f)	80	Upslope or flat 0	flat 0			-							BAL-LOW
	8	Excluded cl 2.2.3.2(e & f)	80	N/A	N/A			-							BAL-LOW
														Determined Bushfire Attack Level	BAL-19
Fuel Bowser Canopy 2	1	(G) Grassland	80	Upslope or flat 0	flat 0			53							BAL-LOW
	2	(G) Grassland	80	Upslope or flat 0	flat 0			41							BAL-12.5
	3	(D) Scrub	80	Upslope or flat 0	flat 0			147							BAL-LOW
	4	(A) Forest	80	Upslope or flat 0	flat 0			109							BAL-LOW
	5	(A) Forest	80	Downslope >0-5	d/slope 3.8			177							BAL-LOW
	6	(D) Scrub	80	Downslope >0-5	d/slope 3.2			124							BAL-LOW
	7	Excluded cl 2.2.3.2(f)	80	Upslope or flat 0	flat 0			-							BAL-LOW
	8	Excluded cl 2.2.3.2(e & f)	80	N/A	N/A			-							BAL-LOW
														Determined Bushfire Attack Level	BAL-12.5

[1] All data and information supporting the determination of the classifications and values stated in this table and any associated justification, is presented in Appendix A. Where the values are stated as 'default' these are either the values stated in AS 3959:2018, Table B1 or the values calculated as intermediate or final outputs through application of the equations of the AS 3959:2018 BAL determination methodology. They are not values derived by the assessor.

Table 3.2: Vegetation separation distances corresponding to radiant heat levels and illustrated as BAL contours in Figure 3.2.

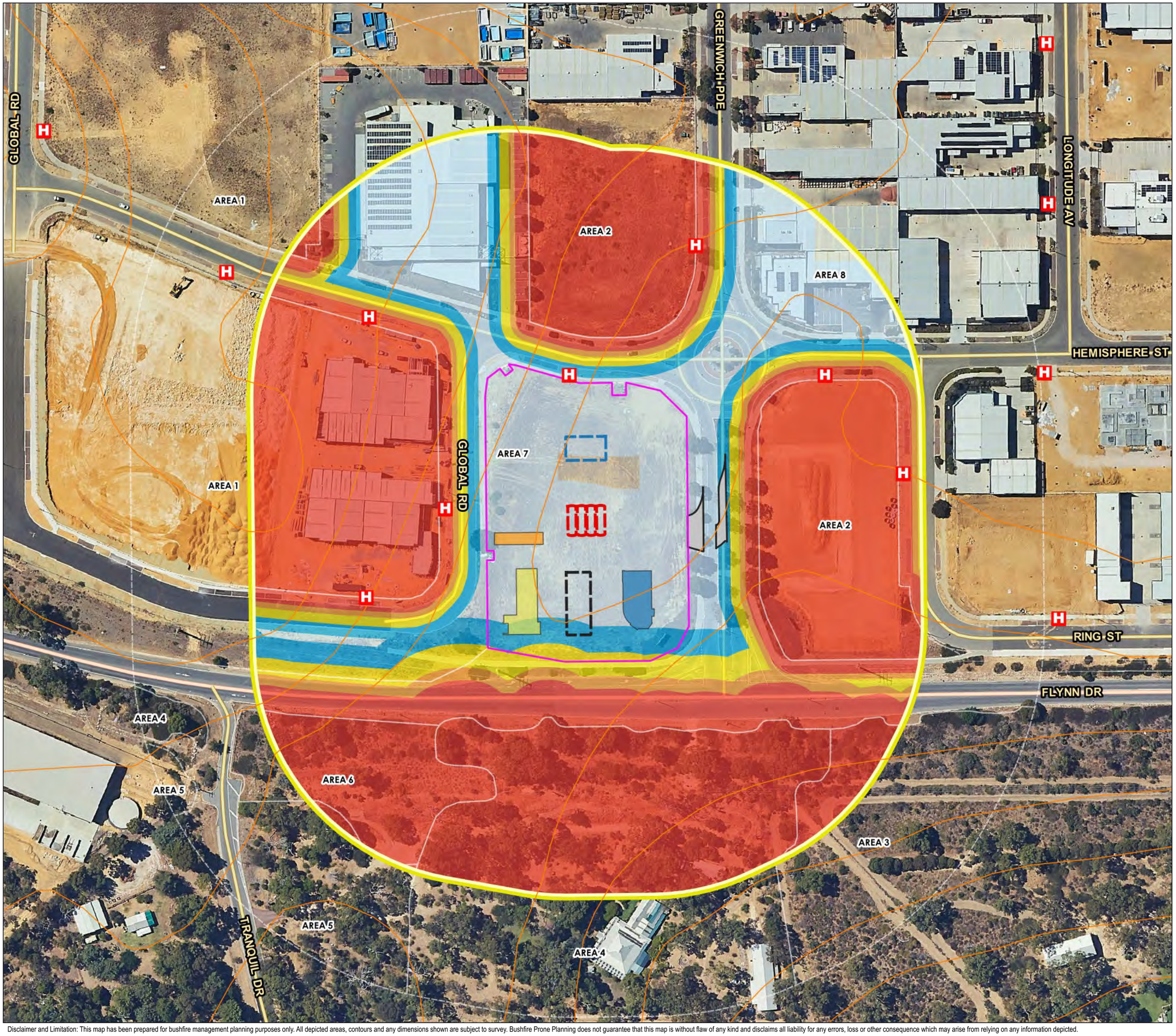
THE CALCULATED VEGETATION SEPARATION DISTANCES CORRESPONDING TO THE STATED LEVEL OF RADIANT HEAT [1]									
Vegetation Classification		Separation Distances Corresponding to Stated Level of Radiant Heat (metres)							
		Bushfire Attack Level						Maximum Radiant Heat Flux	
Area	Class	BAL-FZ	BAL-40	BAL-29	BAL-19	BAL12.5	BAL-LOW	10 kW/m^2	2 kW/m^2
1	(G) Grassland	<6	6-<8	8-<12	12-<17	17-<50	>50		
2	(G) Grassland	<6	6-<8	8-<12	12-<17	17-<50	>50		
3	(D) Scrub	<10	10-<13	13-<19	19-<27	27-<100	>100		
4	(A) Forest	<16	16-<21	21-<31	31-<42	42-<100	>100		
5	(A) Forest	<20	20-<27	27-<37	37-<50	50-<100	>100		
6	(D) Scrub	<11	11-<15	15-<22	22-<31	31-<100	>100		
7	(G) Grassland	<6	6-<8	8-<12	12-<17	17-<50	>50		
8	Excluded cl 2.2.3.2(e & f)	N/A	N/A	N/A	N/A	N/A	N/A		

[1] All calculation input variables are presented in Table 3.1. The summary 'printouts' of calculation input and output values for each area of classified vegetation are presented in Appendix A.

Figure 3.2

BAL Contour Map

Lot 1001 on Plan P061212. Area: 9,811 sq m
11 Greenwich Parade
NEERABUP
CITY OF WANNEROO



------ LEGEND ------

- Cadastre
- Subject Site
- Hydrants
- 100m Distance
- Elevation (2m)

Proposal

- Control Building
- Fuel Bowser Canopy 1
- Fuel Bowser Canopy 2
- Under Ground Fuel Vessels
- Vacuum Bays
- Car Wash
- Entry Way

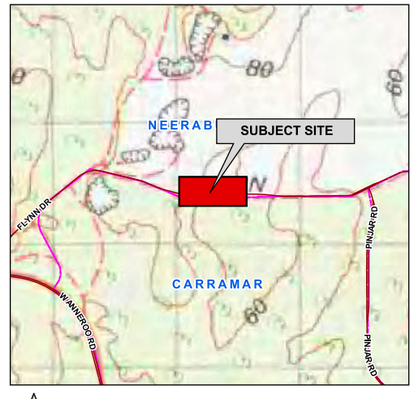
Bushfire Attack Levels

- BAL-FZ
- BAL-40
- BAL-29
- BAL-19
- BAL-12.5
- BAL-LOW

0 20 40 60 80 100

Metres

------ LOCALITY ------



AERIAL IMAGERY: Landgate/SLIP

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Merctaor Units: Metre
Map updated by: Selina Hutcheon 04-12-2023
SCALE (A3): 1 : 1500

BUSHFIRE PRONE PLANNING

Disclaimer and Limitation: This map has been prepared for bushfire management planning purposes only. All depicted areas, contours and any dimensions shown are subject to survey. Bushfire Prone Planning does not guarantee that this map is without flaw of any kind and disclaims all liability for any errors, loss or other consequence which may arise from relying on any information depicted.

3.1.5 BAL Ratings Derived from the Contour Map

Table 3.3: Indicative and determined BAL(s) for existing and/or proposed building works.

BUSHFIRE ATTACK LEVEL FOR EXISTING/PLANNED BUILDINGS/STRUCTURE [1]		
Building/Structure Description	Indicative BAL [2]	Determined BAL [2]
Control Building – (the sole habitable building on the lot)	BAL-19	Not Determined
Fuel Bowser Canopy 1	BAL-19	Not Determined
Fuel Bowser Canopy 2	BAL-12.5	Not Determined
Car Wash	BAL-19	Not Determined
Vacuum Bays	BAL-12.5	Not Determined

[1] The assessment data used to derive the BAL ratings is sourced from Table 3.1 and Figure 3.2.

[2] Refer to the start of Section 3 for an explanation of indicative versus determined BAL ratings.

4 IDENTIFICATION OF BUSHFIRE HAZARD ISSUES

The Guidelines for Planning in Bushfire Prone Areas (WAPC 2021 v1.4), Appendix 5, establish that the application of this section of the BMP is intended to support *strategic planning* proposals. At the strategic planning stage there will typically be insufficient proposed development detail to enable all required assessments, including the assessment against the bushfire protection criteria.

Strategic Planning Proposals

For strategic planning proposals this section of the BMP will identify:

- Issues associated with the level of the threats presented by any identified bushfire hazard;
- Issues associated with the ability to implement sufficient and effective bushfire protection measures to reduce the exposure and vulnerability levels (of elements exposed to the hazard threats), to a tolerable or acceptable level; and
- Issues that will need to be considered at subsequent planning stages.

All Other Planning Proposals

For all other planning stages, this BMP will address what are effectively the same relevant issues but do it within the following sections:

- Section 2 – Environmental Conservation: Assess environmental, biodiversity and conservation values);
- Section 3 – Potential Bushfire Impact: Assess the bushfire threats with the focus on flame contact and radiant heat; and
- Section 5 – Assessment Against the Bushfire Protection Criteria (including the guidance provided by the *Position Statement: 'Planning in bushfire prone areas – Demonstrating Element 1: Location and Element 2'):* Assess the ability of the proposed development to apply the required bushfire protection measures thereby enabling it to be considered for planning approval for these factors.

Is the proposed development a strategic planning proposal?	No

5 ASSESSMENT AGAINST THE BUSHFIRE PROTECTION CRITERIA (GUIDELINES V1.4)

5.1 Bushfire Protection Criteria Elements Applicable to the Proposed Development/Use

APPLICATION OF THE CRITERIA, ACCEPTABLE SOLUTIONS AND PERFORMANCE ASSESSMENT

The criteria are divided into five elements – location, siting and design, vehicular access, water and vulnerable tourism land uses. Each element has an intent outlining the desired outcome for the element and reflects identified planning and policy requirements in respect of each issue.

The example acceptable solutions (bushfire protection measures) provide one way of meeting the element's intent. Compliance with these automatically achieves the element's intent and provides a straightforward pathway for assessment and approval.

Where the acceptable solutions cannot be met, the ability to develop design responses (as alternative solutions that meet bushfire performance requirements) is an alternative pathway that is provided by addressing the applicable performance principles (as general statements of how best to achieve the intent of the element).

A merit based assessment is established by the SPP 3.7 and the Guidelines as an additional alternative pathway along with the ability of using discretion in making approval decisions (sections 2.5, 2.6 and 2.7). This is formally applied to certain development (minor and unavoidable – sections 5.4.1 and 5.7). Relevant decisions by the State Administrative Tribunal have also supported this approach more generally.

Elements 1 – 4 should be applied for all strategic planning proposals, subdivision or development applications, except for vulnerable tourism land uses which should refer to Element 5. Element 5 incorporates the bushfire protection criteria in Elements 1 – 4 but caters them specifically to tourism land uses. (Guidelines DPLH 2021v1.4)

The Bushfire Protection Criteria	Applicable to the Proposed Development/Use
Element 1: Location	Yes
Element 2: Siting and Design	Yes
Element 3: Vehicular Access	Yes
Element 4: Water	Yes
Element 5: Vulnerable Tourism Land Uses	No

5.2 Local Government Variations to Apply

Local governments may add to or modify the acceptable solutions to recognise special local or regional circumstances (e.g., topography / vegetation / climate). These are to be endorsed by both the WAPC and DFES before they can be considered in planning assessments. (Guidelines DPLH 2021v1.4).	
Do endorsed regional or local variations to the acceptable solutions apply to the assessments against the Bushfire Protection Criteria for the proposed development /use?	None known or identified

5.3 Assessment Statements for Element 1: Location

LOCATION					
Element Intent	To ensure that strategic planning proposals, subdivision and development applications are located in areas with the least possible risk of bushfire to facilitate the protection of people, property and infrastructure.				
Proposed Development/Use – Relevant Planning Stage	(Do) Development application other than for a single dwelling, ancillary dwelling or minor development				
Element Compliance Statement	The proposed development/use achieves the intent of the element by being fully compliant with all applicable acceptable solutions.				
Pathway Applied to Provide an Alternative Solution	N/A				
Acceptable Solutions - Assessment Statements *All details of acceptable solution requirements are established in the Guidelines for Planning in Bushfire Prone Areas, DPLH v1.4 (Guidelines) and apply the guidance established by the Position Statement: 'Planning in bushfire prone areas – Demonstrating Element 1: Location and Element 2: Siting and design' (WAPC Nov 2019) and the 'Bushfire Management Plan Guidance for the Dampier Peninsula' (WA Department of Planning, Lands and Heritage, 2021 Rev B) as relevant. These documents are available at https://www.wa.gov.au/government/document-collections/state-planning-policy-37-planning-bushfire-prone-areas.*					
Solution Component Check Box Legend	☑ Relevant & met	☒ Relevant & not met	⃠ Not relevant		
A1.1 Development location	**Applicable:**	Yes	**Compliant:**	Yes	
ASSESSMENT AGAINST THE REQUIREMENTS ESTABLISHED BY THE GUIDELINES					
☑ ☐ ☐ The development application is located in an area that is or will, on completion, be subject to either a moderate or low bushfire hazard level, or BAL-29 or below.					
Supporting Assessment Details: The future development of the subject land will provide an area of land within the allotment that can be considered suitable for development, as BAL-40 or BAL-FZ construction standards will not be required to be applied. This meets the requirements established by Acceptable Solution A1.1 and its associated explanatory note.					
ASSESSMENTS APPLYING THE GUIDANCE ESTABLISHED BY THE WAPC ELEMENT 1 & 2 POSITION STATEMENT (2019)					
"Consideration should be given to the site context where 'area' is the land both within and adjoining the subject site. The hazards remaining within the site should not be considered in isolation of the hazards adjoining the site, as the potential impact of a bushfire will be dependent on the wider risk context, including how a bushfire could affect the site and the conditions for a bushfire to occur within the site." **Strategic Planning Proposals:** Consider the threat levels from any vegetation adjoining and within the subject site for which the potential intensity of a bushfire in that vegetation would result in it being classified as an Extreme Bushfire Hazard Level (BHL). Identify any proposed design strategies to reduce these threats. **Structure Plans (lot layout known) and Subdivision Applications:** As for strategic planning proposals but within the subject site the relevant threat levels to consider are the radiant heat levels represented by BAL-FZ and BAL-40 ratings.					
The planning proposal is a development application, consequently the referred to position statement is not applicable to the Element 1 assessment.					

5.4 Assessment Statements for Element 2: Siting and Design

SITING AND DESIGN OF DEVELOPMENT					
Element Intent	To ensure that the siting and design of development minimises the level of bushfire impact. (BPP Note: not building/construction design)				
Proposed Development/Use – Relevant Planning Stage	(Do) Development application other than for a single dwelling, ancillary dwelling or minor development				
Element Compliance Statement	The proposed development/use achieves the intent of the element by being fully compliant with all applicable acceptable solutions.				
Pathway Applied to Provide an Alternative Solution	N/A				
Acceptable Solutions - Assessment Statements *All details of acceptable solution requirements are established in the Guidelines for Planning in Bushfire Prone Areas, DPLH v1.4 (Guidelines) and apply the guidance established by the Position Statement: 'Planning in bushfire prone areas – Demonstrating Element 1: Location and Element 2: Siting and design' (WAPC Nov 2019) and the 'Bushfire Management Plan Guidance for the Dampier Peninsula' (WA Department of Planning, Lands and Heritage, 2021 Rev B) as relevant. These documents are available at https://www.wa.gov.au/government/document-collections/state-planning-policy-37-planning-bushfire-prone-areas.*					
Solution Component Check Box Legend	☑ Relevant & met	☒ Relevant & not met	⃠ Not relevant		
A2.1 Asset Protection Zone (APZ)	**Applicable**: Yes		**Compliant**: Yes		

UNDERSTANDING THE APZ PLANNING ASSESSMENT VERSUS APZ IMPLEMENTATION REQUIREMENTS

Note: Appendix B: 'Onsite Vegetation Management' provides further information regarding the different APZ dimensions that can be referenced, their purpose and the specifications of the APZ that is to be established and maintained.

To reduce risk to buildings (and indirectly to persons) from a bushfire event, a key bushfire protection measure required to be implemented is reducing the exposure of building elements to the direct bushfire threats of flame contact, radiant heat and embers and the indirect threat of consequential fires that result from the subsequent ignition of other combustible materials that may be constructed, stored or accumulate in the area surrounding buildings.

This is achieved by separating existing and/or proposed buildings from areas of classified bushfire prone vegetation. The total area of separation is identified as the Asset Protection Zone (APZ), which exists as an area of minimal fire fuels (or no fuel) and is considered able and likely to remain a low threat and/or be maintained to a low threat state in perpetuity. The required separation distances will vary according to the site specific conditions.

THE APZ PLANNING ASSESSMENT: To achieve planning approval for this factor it must be demonstrated that separation distances that correspond to a maximum level of radiant transfer to a building (29 kW/m^2), either exist or can be established (with certain exceptions). These separation distances are the dimensions of the **'Planning BAL-29' APZ**.

The purpose of this planning assessment is to identify and justify how this low threat area (the Planning BAL-29' APZ) can exist – or not.

THE DIMENSIONS OF THE 'PLANNING BAL-29' APZ MAY EXTEND OUTSIDE SUBJECT LOT BOUNDARIES. THE APZ MAY NOT BE EQUIDISTANT AROUND A BUILDING AS THE REQUIRED SEPARATION DISTANCES DEPEND ON THE TYPE OF VEGETATION PRESENT IN EACH DIRECTION ALONG WITH OTHER SITE VARIABLES.

IT IS IMPORTANT TO UNDERSTAND THAT THE 'PLANNING BAL-29' APZ IS NOT NECESSARILY THE SIZE OF THE APZ THAT MUST BE PHYSICALLY ESTABLISHED AND MAINTAINED BY A LANDOWNER. IT IS A SCREENING TOOL FOR MAKING PLANNING APPROVAL DECISIONS.

THE APZ TO BE IMPLEMENTED: The required dimensions to be established and maintained by the landowner will be those that correspond to the determined BAL rating of a relevant building but limited to the land of the subject lot (with limited exceptions). The requirement for a greater dimension within a lot will only exist if it is required by the relevant local government's annual firebreak / hazard reduction notice or the APZ size is increased as an additional bushfire protection measure as a recommendation of this BMP.

Within this BMP it is the 'Planning BAL-29' APZ that will be identified on maps, diagrams and in tables as necessary.

The exceptions are the data provided in Appendix B part B1 and when a Property Bushfire Management Statement is required to be produced for a development application, in which case the '**Landowner' APZ** dimensions will be shown on the site map (refer to s6.3.1 when relevant).

ASSESSMENT AGAINST THE REQUIREMENTS ESTABLISHED BY THE GUIDELINES

☑ ☐ ☐	**APZ Width:** The proposed (or a future) habitable building(s) on the lot(s) of the proposed development - or an existing building for a proposed change of use – can be (or is) located within the developable portion of the lot and be surrounded by a 'Planning BAL-29' APZ of the required dimensions (measured from any external wall or supporting post or column to the edge of the classified vegetation), that will ensure their exposure to the potential radiant heat impact of a bushfire does not exceed 29 kW/m^2.
☐ ☐ ⊘	**Restriction on Building Location:** It has been identified that the current developable portion of a lot(s) provides for the proposed future (or a future) building/structure location that will result in that building/structure being subject to a BA-40 or BAL-FZ rating. Consequently, it may be considered necessary to impose the condition that a restrictive covenant to the benefit of the local government pursuant to section 129BA of the Transfer of Land Act 1893, is to be placed on the certificate(s) of title of the proposed lot(s) advising of the existence of a restriction on the use of that portion of land (refer to Code F3 of Model Subdivision Conditions Schedule, WAPC June 2021 and Guidelines s5.3.2).
☐ ☐ ⊘	**APZ Location:** The required dimensions for a 'Planning BAL-29' APZ can be contained solely within the boundaries of the lot(s) on which the proposed (or a future) habitable building(s) - or an existing building(s) for a proposed change of use – is situated.
☑ ☐ ☐	**APZ Location:** The required dimensions for a 'Planning BAL-29' APZ can be partly established within the boundaries of the lot(s) on which the proposed (or a future) habitable building(s) - or an existing building(s) for a proposed change of use – is situated. The balance of the APZ would exist on adjoining land that satisfies the exclusion requirements of AS 3959:2018 cl 2.2.3.2 for low threat vegetation and non-vegetated areas.
☑ ☐ ☐	**APZ Location:** It can be justified that any adjoining (offsite) land forming part of a 'Planning BAL-29' APZ will: • If non-vegetated, remain in this condition in perpetuity; and/or • If vegetated, be low threat vegetation managed in a minimal fuel condition in perpetuity.
☑ ☐ ☐	**APZ Management:** The area of land (within each lot boundary), that is to make up the required 'Landowner' APZ dimensions (refer to Appendix B, Part B1), can and will be managed in accordance with the requirements of the Guidelines Schedule 1 'Standards for Asset Protection Zones' (refer to Appendix B).
☐ ☐ ⊘	**Subdivision Staging:** There are undeveloped future stages of subdivision, containing bushfire prone vegetation, that have been taken into consideration for their potentially 'temporary' impact on the ability to establish a 'Planning BAL-29' APZ on adjoining developed lots. A staging plan is developed to manage this.

☑ ☐ ☐ **Firebreak/Hazard Reduction Notice:** Any additional requirements established by the relevant local government's annual notice to install firebreaks and manage fuel loads (issued under s33 of the Bushfires Act 1954), can and will be complied with.

Supporting Assessment Details: Asset protection zones can be contained both within and external of the boundaries of the subject land. It can be justified that adjoining land can form part of an APZ, meeting s2.2.3.2 exclusion requirements of AS3959-2018.

The APZ that will exist, will consist of the following:

- Existing Roads/Hardstand areas
- Footpaths
- Any applicable landscaping

APZ Management Within the Subject Land:

Refer to Figures 3.1.1 and 3.2 - The exclusion requirements of s2.2.3.2 of AS3959 demonstrates that vegetation that is onsite is within the control of the subject site's landowner and therefore can potentially be removed or modified to mitigate the bushfire risk.

Current APZ Management Outside the Lot:

The exclusion requirements of s2.2.3.2 of AS3959 is demonstrated by both the aerial imagery and the photographic evidence contained below and within Appendix A of this report. The subject lot is surrounded by sealed footpath/hardstand areas or other all-weather surfaces (compacted gravel) in conjunction with existing landscaping in the area which appear to be regularly maintained by the Local Government Authority.

a.



b.



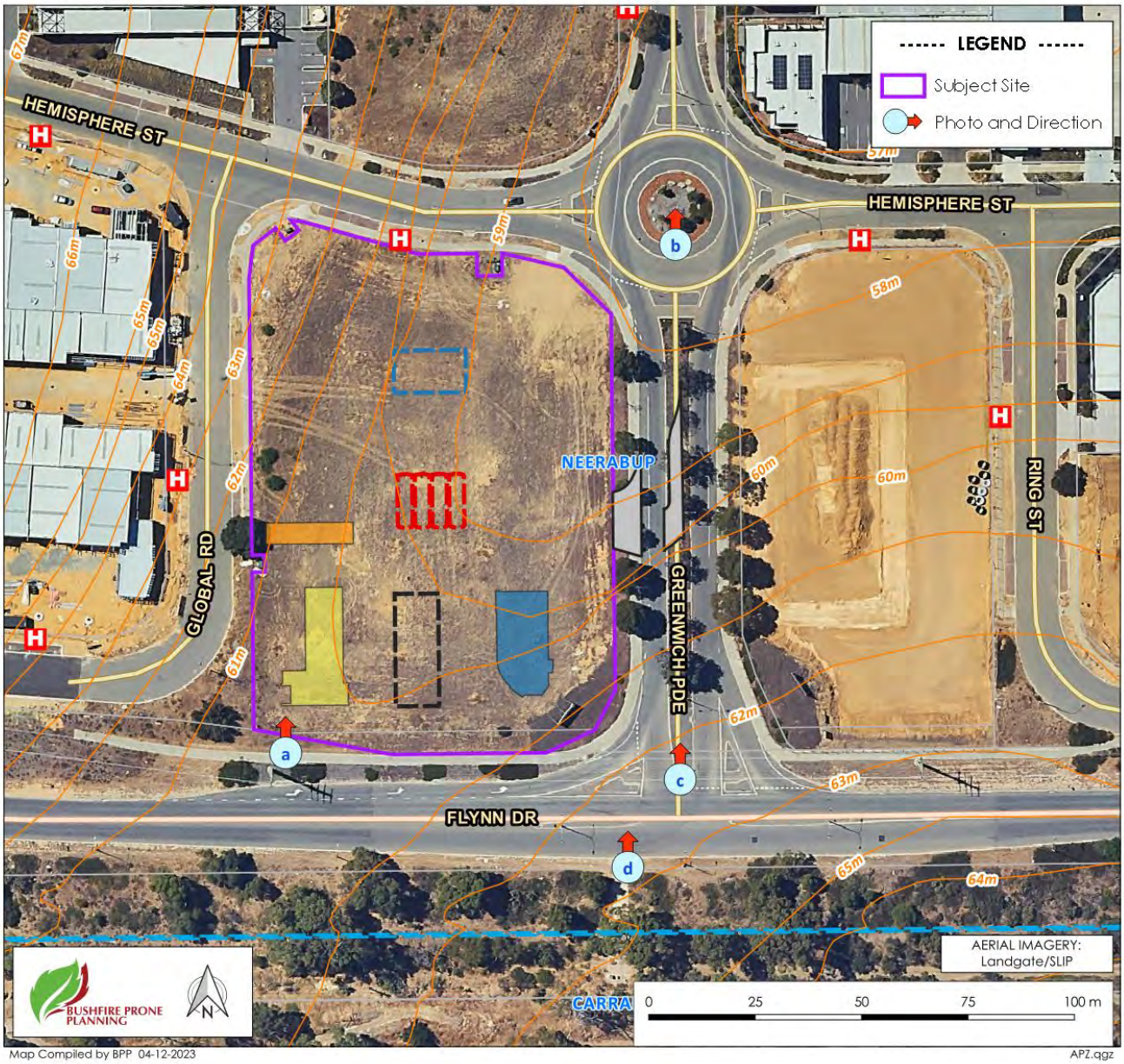
c.



d.



The photo locations and directions are provided in the following map.



- **APZ Management - General:** Where any part of the required APZ dimension is vegetated for the purposes of landscaping, it will be managed in accordance with the technical requirements established by the Schedule 1: 'Standards for Asset Protection Zones (Guidelines). The APZ specifications are also detailed in Appendix 1 and the City of Wanneroo.

ASSESSMENTS APPLYING THE GUIDANCE ESTABLISHED BY THE WAPC ELEMENT 1 & 2 POSITION STATEMENT (2019)

Strategic Planning Proposals: "At this planning level there may not be enough detail to demonstrate compliance with this element. The decision-maker may consider this element is satisfied where A1.1 is met."

Structure Plans (lot layout known) and Subdivision Applications: "Provided that Element 1 is satisfied, the decision-maker may consider approving lot(s) containing BAL-40 or BAL-FZ under the following scenarios.

The planning proposal is a development application, consequently the position statement is not applicable to the proposed development.

5.5 Assessment Statements for Element 3: Vehicular Access

VEHICULAR ACCESS	
Element Intent	To ensure that the vehicular access serving a subdivision/development is available and safe during a bushfire event.
Proposed Development/Use – Relevant Planning Stage	(Do) Development application other than for a single dwelling, ancillary dwelling or minor development
Element Compliance Statement	The proposed development/use achieves the intent of the element by being fully compliant with all applicable acceptable solutions.
Pathway Applied to Provide an Alternative Solution	N/A

Acceptable Solutions - Assessment Statements

All details of acceptable solution requirements are established in the Guidelines for Planning in Bushfire Prone Areas, DPLH v1.4 (Guidelines) and apply the guidance established by the Position Statement: 'Planning in bushfire prone areas – Demonstrating Element 1: Location and Element 2: Siting and design' (WAPC Nov 2019) and the 'Bushfire Management Plan Guidance for the Dampier Peninsula' (WA Department of Planning, Lands and Heritage, 2021 Rev B) as relevant. These documents are available at https://www.wa.gov.au/government/document-collections/state-planning-policy-37-planning-bushfire-prone-areas.

The technical construction requirements for access types and components, and for each firefighting water supply component, are also presented in Appendices 2 and 3. The local government will advise the proponent where different requirements are to apply and when any additional specifications such as those for signage and gates are to apply (these are included in the relevant appendix if requested by the local government).

Solution Component Check Box Legend ☑ Relevant & met ☒ Relevant & not met ⊘ Not relevant

A3.1 Public roads	**Applicable**: Yes	**Compliant**: Yes

☑ ☐ ☐	The technical construction requirements of vertical clearance and weight capacity (Guidelines, Table 6) can and will be complied with (Refer also to Appendix C in this BMP).
☑ ☐ ☐	All other applicable technical requirements of trafficable width, gradients and curves, are required to be in "accordance with the class of road as specified in the IPWEA Subdivision Guidelines, Liveable Neighbourhoods, Ausroad Standards and/or any applicable standard in the local government area" (Guidelines, Table 6 and E3.1. Refer also to Appendix C in this BMP). The assessment conducted for the bushfire management plan indicates that it is likely that the proposed development can and will comply with the requirements. However, the applicable class of road, the associated technical requirements and subsequent proposal compliance, will need to be confirmed with the relevant local government and/or Main Roads WA. or The applicable class(s) of road and technical requirements have been confirmed with the relevant local government/Main Roads WA. These can and will be complied with.
☑ ☐ ☐	A traversable verge is available adjacent to classified vegetation (Guidelines, E3.1), as recommended.

Supporting Assessment Details: None Required.

A3.2a Multiple access routes	Applicable:	Yes	Compliant:	Yes

☑ ☐ ☐ For the lot, two-way public road access is provided in two different directions to at least two different suitable destinations with an all-weather surface.

☑ ☐ ☐ The two-way access is available at an intersection no greater than 200m from the relevant boundary of each lot, via a no-through road.

☐ ☐ ⊘ The two-way access is not available at an intersection within 200m from the relevant boundary of each lot. However, the available no-through road satisfies the established exemption for the length limitation in every case. These requirements are:

- Demonstration of no alternative access (refer to A3.3 below);
- The no-through road travels towards a suitable destination; and
- The balance of the no-through road that is greater than 200m from the relevant lot boundary is within a residential built-out area or is potentially subject to radiant heat levels from adjacent bushfire prone vegetation that correspond to the BAL-LOW rating (<12.5 kW/m^2).

Supporting Assessment Details: The lot will be accessible in two directions from Greenwich parade by travelling north and turning left into the lot, or travelling south and turning right into the lot via a proposed turning lane. This is shown in Figure 1.2.

Egress from the lot will require turning left onto Greenwich parade and driving approximately 50m to the roundabout at the intersection between Greenwich Parade and Hemisphere Street. Egress can then be achieved to the east along Hemisphere St and travelling to Old Yanchep Rd via Pinnacle Dr, Warman St, Mather Dr, then Pederick Rd. Egress is also provided to the south by taking a U-turn at the roundabout and travelling to Flynn Drive where egress is provided to the east towards Banksia Grove or to the west towards Clarkson.

There are also multiple proposed roads to the north which will provide additional access/egress.



The current Google maps/ Landgate imagery shows Warman St. as a proposed road. Using the most recent imagery from Nearmaps it is determined to be an all-weather surface which is suitable for access/egress.

A3.2b Emergency access way	Applicable:	No	Compliant:	N/A

☐ ☐ ⊘ The proposed or existing EAW provides a through connection to a public road.

☐ ☐ ⊘ The proposed or existing EAW is less than 500m in length and will be signposted and gated (remaining unlocked) to the specifications stated in the Guidelines and/or required by the relevant local government.

☐ ☐ ⊘ The technical construction requirements for widths, clearances, capacity, gradients and curves (Guidelines, Table 6 and E3.2b. Refer also to Appendix C in this BMP), can and will be complied with.

Supporting Assessment Details: None Required.				
A3.3 Through-roads	**Applicable**:	No	**Compliant**:	N/A
☐ ☐ ⊘	A no-through public road is necessary as no alternative road layout exists due to site constraints.			
☐ ☐ ⊘	The no-through public road length does not exceed the established maximum of 200m to an intersection providing two-way access (Guidelines, E3.3).			
☐ ☐ ⊘	The no-through public road exceeds 200m but satisfies the exemption provisions of A3.2a as demonstrated in A3.2a above.			
☐ ☐ ⊘	The public road technical construction requirements (Guidelines, Table 6 and E3.1. Refer also to Appendix C in this BMP), can and will be complied with as established in A3.1 above.			
☐ ☐ ⊘	The turnaround area requirements (Guidelines, Figure 24) can and will be complied with.			
Supporting Assessment Details: None Required.				
A3.4a Perimeter roads	**Applicable**:	No	**Compliant**:	N/A
☐ ☐ ⊘	The proposed greenfield or infill development consists of 10 or more lots (including those that are part of a staged subdivision) and therefore should have a perimeter road. This is planned to be installed.			
☐ ☐ ⊘	The proposed greenfield or infill development consists of 10 or more lots (including those that are part of a staged subdivision). However, it is not required on the established basis of: • The vegetation adjoining the proposed lots is classified Class G Grassland; • Lots are zoned rural living or equivalent; • It is demonstrated that it cannot be provided due to site constraints; or • All lots have existing frontage to a public road.			
☐ ☐ ⊘	The technical construction requirements of widths, clearances, capacity, gradients and curves (Guidelines, Table 6 and E3.4a) can and will be complied with.			
Supporting Assessment Details: None Required.				
A3.4b Fire service access route	**Applicable**:	No	**Compliant**:	N/A
☐ ☐ ⊘	The FSAR can be installed as a through-route with no dead ends, linked to the internal road system every 500m and is no further than 500m from a public road.			
☐ ☐ ⊘	The technical construction requirements of widths, clearances, capacity, gradients and curves (Guidelines, Table 6 and E3.4b. Refer also to Appendix C in this BMP), can and will be complied with.			
☐ ☐ ⊘	The FSAR can and will be signposted. Where gates are required by the relevant local government, the specifications can be complied with.			

☐ ☐ ⊘	Turnaround areas (to accommodate type 3.4 fire appliances) can and will be installed every 500m on the FSAR.
Supporting Assessment Details: None Required.	

A3.5 Battle-axe access legs	**Applicable**:	No	**Compliant**:	N/A

☐ ☐ ⊘	A battle-axe leg cannot be avoided due to site constraints.
☐ ☐ ⊘	The proposed development is in a reticulated area and the battle-axe access leg length from a public road is no greater than 50m. No technical requirements need to be met.
☐ ☐ ⊘	The technical construction requirements for widths, clearances, capacity, gradients and curves (Guidelines, Table 6 and E3.5. Refer also to Appendix C in this BMP), can and will be complied with.
☐ ☐ ⊘	Passing bays can and will be installed every 200m with a minimum length of 20m and a minimum additional trafficable width of 2m.
Supporting Assessment Details: None Required.	

A3.6 Private driveways	**Applicable**:	No	**Compliant**:	N/A

☑ ☐ ☐	The private driveway to the most distant external part of the development site is within a lot serviced by reticulated water, is accessed via a public road with a speed limit of 70 km/hr or less and has a length is no greater than 70m (measured as a hose lay). No technical requirements need to be met.
☐ ☐ ⊘	The technical construction requirements for widths, clearances, capacity, gradients and curves (Guidelines, Table 6 and E3.6. Refer also to Appendix C in this BMP), can and will be complied with.
☐ ☐ ⊘	Passing bays can and will be installed every 200m with a minimum length of 20m and a minimum additional trafficable width of 2m.
☐ ☐ ⊘	The turnaround area requirements (Guidelines, Figure 28, and within 30m of the habitable building) can and will be complied with.
Supporting Assessment Details: None Required.	

5.6 Assessment Statements for Element 4: Water

FIREFIGHTING WATER	
Element Intent	To ensure water is available to enable people, property and infrastructure to be defended from bushfire.
Proposed Development/Use – Relevant Planning Stage	(Do) Development application other than for a single dwelling, ancillary dwelling or minor development
Element Compliance Statement	The proposed development/use achieves the intent of the element by being fully compliant with all applicable acceptable solutions.
Pathway Applied to Provide an Alternative Solution	N/A

Acceptable Solutions - Assessment Statements

All details of acceptable solution requirements are established in the Guidelines for Planning in Bushfire Prone Areas, DPLH v1.4 (Guidelines) and apply the guidance established by the Position Statement: 'Planning in bushfire prone areas – Demonstrating Element 1: Location and Element 2: Siting and design' (WAPC Nov 2019) and the 'Bushfire Management Plan Guidance for the Dampier Peninsula' (WA Department of Planning, Lands and Heritage, 2021 Rev B) as relevant. These documents are available at https://www.wa.gov.au/government/document-collections/state-planning-policy-37-planning-bushfire-prone-areas.

The technical construction requirements for access types and components, and for each firefighting water supply component, are also presented in Appendices 2 and 3. The local government will advise the proponent where different requirements are to apply and when any additional specifications such as those for signage and gates are to apply (these are included in the relevant appendix if requested by the local government).

Solution Component Check Box Legend ☑ Relevant & met ☒ Relevant & not met ⃠ Not relevant

A4.1 Identification of future firefighting water supply	**Applicable**: No	**Compliant**: N/A

☐ ☐ ⃠	It can be demonstrated that reticulated or sufficient non-reticulated water for firefighting can be provided at the subdivision and/or development application stage in accordance with the specifications of the relevant water supply authority or the requirements of Schedule 2.

Supporting Assessment Details: None Required.

A4.2 Provision of water for firefighting purposes	**Applicable**: Yes	**Compliant**: Yes

☑ ☐ ☐	A reticulated water supply is available to the proposed development. The existing hydrant connection(s) are provided in accordance with the specifications of the relevant water supply authority.
☑ ☐ ☐	A reticulated water supply will be available to the proposed development. Hydrant connection(s) can and will be provided in accordance with the specifications of the relevant water supply authority.
☐ ☐ ⃠	A static water supply (tank) for firefighting purposes will be installed on the lot that is additional to any water supply that is required for drinking and other domestic purposes.
☐ ☐ ⃠	A strategic water supply (tank or tanks) for firefighting purposes will be installed within or adjacent to the proposed development that is additional to any water supply that is required for drinking and other domestic purposes. The required land will be ceded free of cost to the local government and the lot or road reserve where the tank is to be located will be identified on the plan of subdivision.

☐ ☐ ⊘	The strategic static water supply (tank or tanks) will be located no more than 10 minutes travel time from a subject site (at legal road speeds).
☐ ☐ ⊘	The technical requirements (location, number of tanks, volumes, design, construction materials, pipes and fittings), as established by the Guidelines (A4.2, E4 and Schedule 2) and/or the relevant local government, can and will be complied with.
Supporting Assessment Details: Existing hydrants are located immediately adjacent to the subject site. Refer to Figure 1.2. All existing external hydrants are located at regular intervals along the existing public road network. Refer to information contained in Appendix D for the firefighting water supply specifications and technical requirements.	

5.7 Additional Bushfire Protection Measures to be Implemented

The following bushfire protection measures are recommended to be implemented and maintained. They are additional to, or a variation of, those established by the relevant acceptable solutions applied to the proposed development/use within Sections 5 of this BMP (as applicable to the proposed development).

The intent of their application is to improve the bushfire performance of the proposed development/use and reduce residual risk levels to persons and property from a bushfire event.

The development of these additional and/or varied protection measures originates from five potential sources:

1. Out of the relevant merit based assessment when the Section titled 'Non-compliance – Additional Assessments' has been used in this BMP;
2. Out of the relevant performance based assessment when Section titled 'Non-compliance – Additional Assessments' has been used in this BMP;
3. Out of the development of any other required bushfire planning documents. These include a Bushfire Emergency Plan and the Bushfire Risk Assessment and Management Report;
4. Out of any additional bushfire planning guidance documents or position statements issued by the WA Department of Planning, Lands and Heritage; or
5. As a recommendation from the bushfire consultant.

When necessary, the implementation responsibility for these additional protection measures will be stated in Section 6 of this BMP and included in other operational documents as relevant.

5.7.1 Additional Protection Measures to Improve Bushfire Performance

The detail of the protection measures is either provided within the relevant Section titled 'Non-compliance – Additional Assessments' or is established on the following pages. The table summarises the additional bushfire protection measures that are required and/or recommended to be implemented and the protection principles being employed.

Additional Protection Measure No. 1:

The proposed buildings and structures are not required to comply with the bushfire performance requirements established by the Building Code of Australia (Vol. 1 & 2 of the National Construction Code) that are referenced by the Building Regulations 2012 (WA Building Act 2011).

However, it is recommended (by the bushfire consultant) that these building works be constructed to the requirements corresponding to their indicative BAL rating to the greatest extent practical. Consideration may need to be given to the protection principles established by these requirements, rather than specific construction detail, when it does not directly apply to the proposed type of construction – and adjust construction requirements accordingly.

The bushfire construction requirements corresponding to BAL ratings are established by AS 3959:2018 – Construction of buildings in bushfire prone areas and/or the NASH Standard (NS 300 2021) – Steel framed construction in bushfire areas (for Class 1 buildings).

SUMMARY OF ADDITIONAL BUSHFIRE PROTECTION MEASURES						
No.	Description of the Protection Measure to Apply to the Proposed Development	The Protection Principle Being Applied		The Assessment or Document Establishing the Application of the Protection Measure	The Element and Associated Acceptable Solution(s) the Measure will Address	Application Status
		Type	Relevant Mode of Action			
1	For the proposed development, building works are recommended to be constructed to the bushfire construction requirements corresponding to a BAL-29 rating, to the greatest extent practical – even though the Building Code of Australia (NCC) does not require the proposed classes of the buildings to apply these requirements. These requirements are established by AS 3959:2018 and/or the NASH Standard (NS 300 2021) – Steel framed construction in bushfire areas (for Class 1 buildings). Consideration may need to be given to the protection principles established by these requirements, rather than specific construction detail, when it does not directly apply to the proposed type of construction – and adjust construction requirements accordingly.	Threat Reduction	N/A	Bushfire Risk – Assessment and Management Report	N/A	Recommended only. Future inclusion in responsibilities (Section 6) will be dependent on the planning decision maker establishing a condition.
		Exposure Reduction	N/A			
		Vulnerability Reduction - Persons	N/A			
		Vulnerability Reduction – Buildings/Structures	Apply Bushfire Resistant Design and Construction (Materials)			
2	The site layout must include positioning any installed/stored gas cylinders >6m from stored combustible liquids, bowsers, or other flammable material (such as the Refuse Enclosure) and comply with AS1596. Ember screening is recommended to be applied to any penetrations within the bowser canopy (where practical).	Threat Reduction	Prevent bushfire ignition by controlling heat energy source and fuel interactions	Bushfire Risk – Assessment and Management Report	Element 2 A2.1	Required and will be established in the responsibilities (Section 6).
		Exposure Reduction	Separation from All Bushfire Threats			
		Vulnerability Reduction - Persons	N/A			

		Vulnerability Reduction – Buildings/Structures	N/A			
3	At the detailed design stage, it is recommended that designs are investigated for: • Roof/building complexities which may trap debris or collect embers • Cabling/piping contacting the ground or any arrangement of associated structures creating a 'pocket' for accumulation of debris. These complexities are recommended to be removed, enclosed, or filled with non-combustible material where practical. Consideration should be given to making the arrangement self-cleaning through wind action to the greatest extent possible. Functionally this means preventing details which may accumulate leaf litter which will not naturally be cleared by wind.	Threat Reduction	N/A	Bushfire Risk – Assessment and Management Report	N/A	Recommended only. Future inclusion in responsibilities (Section 6) will be dependent on the planning decision maker establishing a condition.
		Exposure Reduction	N/A			
		Vulnerability Reduction - Persons	N/A			
		Vulnerability Reduction – Buildings/Structures	Apply Bushfire Resistant Design and Construction (Materials)			
4	It is recommended that the City of Wanneroo enforce the Firebreak Notice on neighbouring properties, to reduce the bushfire hazard to developed lots within local cleared (grassed) area.	Threat Reduction	Prevent bushfire ignition and/or severity by controlling the fuel.	Bushfire Risk – Assessment and Management Report	Element 2 A2.1	Recommended only. Future inclusion in responsibilities (Section 6) will be dependent on the planning decision maker establishing a condition.
		Exposure Reduction	Separation from All Bushfire Threats			
		Vulnerability Reduction - Persons	N/A			
		Vulnerability Reduction – Buildings/Structures	N/A			
5	It is recommended that any fencing or other potential fuel loads be constructed using non-	Threat Reduction	N/A		Element 2 A2.1	Recommended only. Future

	combustible material. Landscaping (gardens) which may be included within the APZ should avoid use of constructed heavy fuels (e.g. timber sleepers as garden edges, plastic or timber lattice). Feature columns may be composed of timbers with a density >750kg/m3 at 12% moisture content (see AS3959 Table E1).	Exposure Reduction	Separation from All Bushfire Threats	Bushfire Risk – Assessment and Management Report		inclusion in responsibilities (Section 6) will be dependent on the planning decision maker establishing a condition.
		Vulnerability Reduction - Persons	N/A			
		Vulnerability Reduction – Buildings/Structures	N/A			
6	Measures including preparation, responses, and training (including designation of roles) for bushfire events are required to be included in the future site Emergency Management Plan (document title pending).	Threat Reduction	N/A	Bushfire Risk – Assessment and Management Report	N/A	Required and will be established in the responsibilities (Section 6).
		Exposure Reduction	N/A			
		Vulnerability Reduction - Persons	Provision of Bushfire Emergency Information and Education			
		Vulnerability Reduction – Buildings/Structures	N/A			
7	Staff induction and training are recommended to include basic bushfire awareness training and review of the site Emergency Management Plan (document title pending).	Threat Reduction	N/A	Bushfire Risk – Assessment and Management Report	N/A	Recommended only. Future inclusion in responsibilities (Section 6) will be dependent on the planning decision maker establishing a condition.
		Exposure Reduction	N/A			
		Vulnerability Reduction - Persons	Provision of Bushfire Emergency Information and Education			
		Vulnerability Reduction – Buildings/Structures	Ensure Effectiveness Of Applied Protection Measures is Maintained			

8	Operating and maintenance procedures are to be developed to ensure regular maintenance of firefighting equipment and clearing of accumulated debris and other consequential fire hazards.	Threat Reduction	Prevent bushfire ignition and/or severity by controlling the fuel.	Bushfire Risk – Assessment and Management Report	Element 2 A2.1	Required and will be established in the responsibilities (Section 6).
		Exposure Reduction	Separation from All Bushfire Threats			
		Vulnerability Reduction - Persons	N/A			
		Vulnerability Reduction – Buildings/Structures	Apply Bushfire Resistant Design and Construction (Materials)			
9	Operating procedures and/or the site Emergency Management Plan (document title pending) are required to include a trigger for site evacuation due to bushfire.	Threat Reduction	N/A	Bushfire Risk – Assessment and Management Report	N/A	Required and will be established in the responsibilities (Section 6).
		Exposure Reduction	Separation from All Bushfire Threats			
		Vulnerability Reduction - Persons	Transport and Multiple Evacuation Destinations and Routes Available			
		Vulnerability Reduction – Buildings/Structures	N/A			
10	It is recommended that any stored combustible items are removed from the profile of buildings. This may be ongoing or be actioned as a response to a bushfire event (e.g. moving furniture away from a building).	Threat Reduction	Prevent bushfire ignition and/or severity by controlling the fuel.	Bushfire Risk – Assessment and Management Report	Element 2 A2.1	Recommended only. Future inclusion in responsibilities (Section 6) will be dependent on the planning decision maker
		Exposure Reduction	Separation from All Bushfire Threats			
		Vulnerability Reduction - Persons	N/A			

		Vulnerability Reduction – Buildings/Structures	N/A			establishing a condition.

6 RESPONSIBILITIES FOR IMPLEMENTATION AND MANAGEMENT OF THE BUSHFIRE PROTECTION MEASURES

6.1 Developer / Landowner Responsibilities – Prior to Sale or Occupancy/Operation

DEVELOPER/LANDOWNER RESPONSIBILITIES – PRIOR TO SALE OR OCCUPANCY/OPERATION	
No.	Implementation Actions
1	The local government may condition a development application approval with a requirement for the landowner/proponent to register a notification onto the certificate of title and deposited plan. This will be done pursuant to Section 70A *Transfer of Land Act 1893* as amended ('Factors affecting use and enjoyment of land, notification on title'). This is to give notice of the bushfire hazard and any restrictions and/or protective measures required to be maintained at the owner's cost. This condition ensures that: 1. Landowners/proponents are aware their lot is in a designated bushfire prone area and of their obligations to apply the stated bushfire risk management measures; and 2. Potential purchasers are alerted to the Bushfire Management Plan so that future landowners/proponents can continue to apply the bushfire risk management measures that have been established in the Plan.
2	Establish the 'Landowner' Asset Protection Zone (APZ) around habitable buildings (and other structures as required) to satisfy: • The minimum required dimensions. These are to be the greatest measurements derived from either the separation distances corresponding to the determined BAL rating for the subject building/structure, or the local government's annual firebreak / hazard reduction notice (issued under s33 of the Bushfires Act 1954), or a combination of these requirements [refer to Appendix B]; and • The standards established by the Guidelines DPLH, 2021 v1.4, Schedule 1, or as varied by the local government through their annually issued firebreak / hazard reduction notice when the variations have been endorsed by the WAPC and DFES as per s4.5.3 of the Guidelines. If native vegetation is required to be modified or removed, ensure that approval has been received from the relevant authority (refer to the applicable local government for advice). This is the responsibility of the landowner.
3	Prior to occupancy, the lot is to be compliant with current version of the City of Wanneroo Firebreak Notice issued under s33 of the Bushfires Act 1954. This may include standards for asset protection zones that differ from Schedule 1 in the Guidelines DPLH, 2021 v1.4, with the intent to better satisfy local conditions. [Refer to the 'Siting and Design' assessments against the Bushfire Protection Criteria and the information presented in Appendix B].
4	For the 'high risk land use' there is an outstanding obligation, created by Guidelines and consequently this Bushfire Management Plan, for a 'Bushfire Risk Assessment and Management Report' to be produced. Additional protection measures that have been identified in the Report, are to be incorporated into the operation's site emergency plan (produced by the operator to address all potential emergencies).
5	Prior to relevant building work, inform the builder of the existence of this approved Bushfire Management Plan (BMP). The plan identifies that the development site is within a designated bushfire prone area and states the

	indicative (or determined) BAL rating(s) that may (or will) be applied to buildings/structures. A BAL assessment report may be required to confirm determined ratings and will be required when ratings are indicative. BAL certificates will need to be issued to accompany building applications. The BMP may also establish, as an additional bushfire protection measure, that construction requirements to be applied will be those corresponding to a specified higher BAL rating. Compliance with the Building Code of Australia (Volumes 1 and 2 of the National Construction Code), will require certain bushfire resistant construction requirements be applied to residential buildings in bushfire prone areas (i.e., Class 1, 2 and 3 and associated Class 10a buildings and decks). Other classes of buildings may also be required to comply with these construction when established by the relevant authority or if identified as an additional bushfire protection measure within the BMP. The deemed to satisfy solutions that will meet the relevant bushfire performance requirements are found in AS 3959 – Construction of Building in Bushfire Prone Areas (as amended) and the NASH Standard - Steel Framed Construction in Bushfire Areas (as amended).
6	Implement the bushfire protection measures that have been established within Section 5.7.1 of this BMP as measures additional to those established by the acceptable solutions.
7	Prior to operation, construct the turning lane proposed to be built on Greenwich Parade.

6.2 Landowner / Occupier Responsibilities – Ongoing Management

LANDOWNER/OCCUPIER – ONGOING MANAGEMENT	
No.	Management Actions
1	Maintain the 'Landowner' Asset Protection Zone (APZ) around habitable buildings (and other structures as required) to satisfy: • The minimum required dimensions. These are to be the greatest measurements derived from either the separation distances corresponding to the determined BAL rating for the subject building/structure, or the local government's annual firebreak / hazard reduction notice (issued under s33 of the Bushfires Act 1954), or a combination of these requirements [refer to Appendix B]; and • The standards established by the Guidelines DPLH, 2021 v1.4, Schedule 1, or as varied by the local government through their annually issued firebreak / hazard reduction notice when the variations have been endorsed by the WAPC and DFES as per s4.5.3 of the Guidelines.
2	Comply with the City of Wanneroo Firebreak Notice issued under s33 of the Bush Fires Act 1954. Check the notice annually for any changes.
3	Ensure that builders engaged to construct dwellings/additions and/or other relevant structures on the lot, are aware of the existence of this approved Bushfire Management Plan (BMP). The plan identifies that the development site is within a designated bushfire prone area and states the indicative (or determined) BAL rating(s) that may (or will) be applied to buildings/structures. A BAL assessment report may be required to confirm determined ratings and will be required when ratings are indicative. BAL certificates will need to be issued to accompany building applications. The BMP may also establish, as an additional bushfire protection measure, that construction requirements to be applied will be those corresponding to a specified higher BAL rating. Compliance with the Building Code of Australia (Volumes 1 and 2 of the National Construction Code), will require certain bushfire resistant construction requirements be applied to residential buildings in bushfire prone areas (i.e., Class 1, 2 and 3 and associated Class 10a buildings and decks). Other classes of buildings may also be required to comply with these construction when established by the relevant authority or if identified as an additional bushfire protection measure within the BMP. The deemed to satisfy solutions that will meet the relevant bushfire performance requirements are found in AS 3959 – Construction of Building in Bushfire Prone Areas (as amended) and the NASH Standard - Steel Framed Construction in Bushfire Areas (as amended).
4	Ensure all future buildings the landowner has responsibility for, are designed and constructed in full compliance with: • The bushfire resistant construction requirements of the Building Code of Australia (Volumes 1 and 2 of the National Construction Code), as established by the Building Regulations 2012 (WA Building Act 2011); and • Any additional bushfire protection measures this Bushfire Management Plan has established are to be implemented.
5	Maintain the bushfire protection measures that have been established within Section 5.7.1 of this BMP as measures additional to those established by the acceptable solutions.

6.3 Local Government Responsibilities – Ongoing Management

LOCAL GOVERNMENT – ONGOING MANAGEMENT	
No.	Management Actions
1	Monitor landowner compliance with the annual Firebreak Notice and with any bushfire protection measures that are: • Established by this BMP; • Are required to be maintained by the landowner/occupier; and • Are relevant to local government operations.

APPENDIX A: DETAILED BAL ASSESSMENT DATA AND SUPPORTING INFORMATION

A1: BAL Assessment Inputs Common to the Method 1 and Method 2 Procedures

A1.1: FIRE DANGER INDICES (FDI/FDI/GFDI)

When using Method 1 the relevant FDI value required to be applied for each state and region is established by AS 3959:2018, Table 2.1. Each FDI value applied in Tables 2.4 – 2.7 represents both the Forest Fire Danger Index (FFDI) and a deemed equivalent for the Grassland Fire Danger Index (GFDI), as per Table B2 in Appendix B. When using Method 2, the relevant FFDI and GFDI are applied.

The values may be able to be refined within a jurisdiction, where sufficient climatological data is available and in consultation with the relevant authority.

Relevant Jurisdiction:	WA	Region:	Whole State	Method 1	Applied FDI:	80
				Method 2	Applied FFDI:	N/A
					Applied GFDI:	N/A

A1.2: VEGETATION ASSESSMENT AND CLASSIFICATION

Vegetation Types and Classification

In accordance with AS 3959:2018 clauses 2.2.3 and C2.2.3.1, all vegetation types within 100 metres of the 'site' (defined as "the part of the allotment of land on which a building stands or is to be erected"), are identified and classified. Any vegetation more than 100 metres from the site that has influenced the classification of vegetation within 100 metres of the site, is identified and noted. The maximum excess distance is established by AS 3959: 2018 cl 2.2.3.2 and is an additional 100 metres.

Classification is also guided by the Visual Guide for Bushfire Risk Assessment in WA (WA Department of Planning February 2016) and any relevant FPA Australia practice notes.

Modified Vegetation

The vegetation types have been assessed as they will be in their natural mature states, rather than what might be observed on the day. Vegetation destroyed or damaged by a bushfire or other natural disaster has been assessed on its expected re-generated mature state. Modified areas of vegetation can be excluded from classification if they consist of low threat vegetation managed in a minimal fuel condition, satisfying AS 3959:2018 s2.2.3.2(f), and there is sufficient justification to reasonable expect that this modified state will exist in perpetuity.

The Influence of Ground Slope

Where significant variation in effective slope exists under a consistent vegetation type, these will be delineated as separate vegetation areas to account for the difference in potential bushfire behaviour, in accordance with AS 3959:2018 clauses 2.2.5 and C2.2.5.

THE INFLUENCE OF VEGETATION GREATER THAN 100 METRES FROM THE SUBJECT SITE	
Vegetation area(s) within 100m of the site whose classification has been influenced by the existence of bushfire prone vegetation from 100m – 200m from the site:	None
Assessment Statement:	No vegetation types exist close enough, or to a sufficient extent, within the relevant area to influence classification of vegetation within 100 metres of the subject site.

VEGETATION AREA 1				
Classification	**G. GRASSLAND**			
Types Identified	Open tussock G-23	Dense sown pasture G-25		
Exclusion Clause	N/A			
Effective Slope	Measured	flat 0 degrees	Applied Range (Method 1)	Upslope or flat 0 degrees
Description/Justification:	Assessed as Grassland due to areas of grasses present in paddock/open areas. Currently in an unmanaged state and required to be classified in accordance with AS3959-2018. Foliage cover less than 10%.			
Post Development Assumptions:	Not Applicable			



PHOTO ID: 1



PHOTO ID: 2



PHOTO ID: 3

VEGETATION AREA 2				
Classification	**G. GRASSLAND**			
Types Identified	Open tussock G-23	Dense sown pasture G-25		
Exclusion Clause	N/A			
Effective Slope	Measured	flat 0 degrees	Applied Range (Method 1)	Upslope or flat 0 degrees
Description/Justification:	Assessed as Grassland due to areas of grasses present in paddock/open areas. Currently in an unmanaged state and required to be classified in accordance with AS3959-2018. Foliage cover less than 10%.			
Post Development Assumptions:	Not Applicable			



PHOTO ID: 4



PHOTO ID: 5



PHOTO ID: 6



PHOTO ID: 7

VEGETATION AREA 3				
Classification	**D. SCRUB**			
Types Identified	Closed scrub D-13			
Exclusion Clause	N/A			
Effective Slope	Measured	flat 0 degrees	Applied Range (Method 1)	Upslope or flat 0 degrees
Description/Justification:	Unmanaged shrub averaging greater than 2 metres in height. Mixed species composition. Unmanaged grasses present also.			
Post Development Assumptions:	Not Applicable			



PHOTO ID: 8



PHOTO ID: 9



PHOTO ID: 10

<table>
<tr><th colspan="8">VEGETATION AREA 4</th></tr>
<tr><td>Classification</td><td colspan="7">A. FOREST</td></tr>
<tr><td>Types Identified</td><td colspan="7">Open forest A-03 Low open forest A-04 Open scrub D-14</td></tr>
<tr><td>Exclusion Clause</td><td colspan="7">N/A</td></tr>
<tr><td>Effective Slope</td><td>Measured</td><td colspan="2">flat 0 degrees</td><td>Applied Range (Method 1)</td><td colspan="3">Upslope or flat 0 degrees</td></tr>
<tr><td colspan="2">Foliage Cover (all layers)</td><td>30-70%</td><td>Shrub/Heath Height</td><td>>2m</td><td>Tree Height</td><td>Up to 30m</td></tr>
<tr><td colspan="2">Description/Justification:</td><td colspan="5">Eucalypt dominant area. Understorey consists of unmanaged grasses, low shrub and low trees. Occasional open areas between canopies.</td></tr>
<tr><td colspan="2">Post Development Assumptions:</td><td colspan="5">Not Applicable</td></tr>
<tr><td colspan="4">  </td><td colspan="4">  </td></tr>
<tr><td colspan="4">PHOTO ID: 11</td><td colspan="4">PHOTO ID: 12</td></tr>
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<tr><th colspan="7">VEGETATION AREA 5</th></tr>
<tr><td>Classification</td><td colspan="6">A. FOREST</td></tr>
<tr><td>Types Identified</td><td colspan="6">Open forest A-03 Low open forest A-04 Closed scrub D-13</td></tr>
<tr><td>Exclusion Clause</td><td colspan="6">N/A</td></tr>
<tr><td>Effective Slope</td><td>Measured</td><td colspan="2">d/slope 3.8 degrees – Worst Case</td><td>Applied Range (Method 1)</td><td colspan="2">Downslope >0-5 degrees</td></tr>
<tr><td>Foliage Cover (all layers)</td><td>30-70%</td><td>Shrub/Heath Height</td><td>>2m</td><td>Tree Height</td><td colspan="2">Up to 30m</td></tr>
<tr><td>Description/Justification:</td><td colspan="6">Eucalypt dominant area. Understorey consists of unmanaged grasses, low shrub and low trees. Occasional open areas between canopies.</td></tr>
<tr><td>Post Development Assumptions:</td><td colspan="6">Not Applicable</td></tr>
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<tr><td colspan="3">PHOTO ID: 14</td><td colspan="4">PHOTO ID: 15</td></tr>
<tr><td colspan="3">  </td><td colspan="4"></td></tr>
<tr><td colspan="3">PHOTO ID: 16</td><td colspan="4"></td></tr>
</table>

VEGETATION AREA 6				
Classification	**D. SCRUB**			
Types Identified	Open heath C-11	Closed scrub D-13	Dense sown pasture G-25	
Exclusion Clause	N/A			
Effective Slope	Measured	d/slope 3.2 degrees	Applied Range (Method 1)	Downslope >0-5 degrees
Description/Justification:	Scrub dominant area. Unmanaged shrub averaging greater than 2 metres in height. Mixed species composition. Unmanaged grasses present also. Note – Area 4 can bee seen in the background of Photo ID: 17.			
Post Development Assumptions:	Not Applicable			



PHOTO ID: 17



PHOTO ID: 18

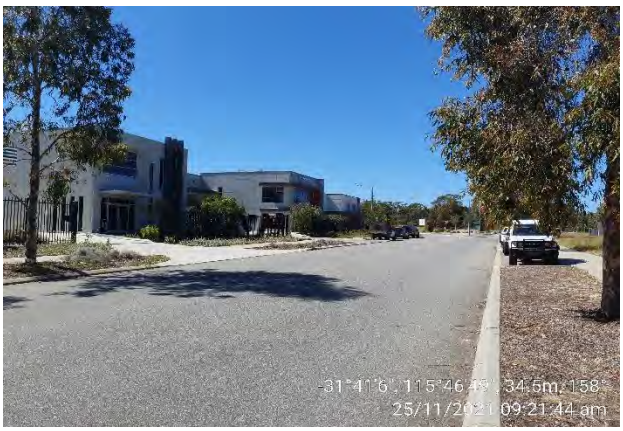
VEGETATION AREA 7				
Classification	**G. GRASSLAND**			
Types Identified	Open tussock G-23	Sown pasture G-26		
Exclusion Clause	N/A			
Effective Slope	Measured	flat 0 degrees	Applied Range (Method 1)	Upslope or flat 0 degrees
Description/Justification:	Assessed as Grassland due to areas of grasses present in paddock/open areas. Currently in an unmanaged state and required to be classified in accordance with AS3959-2018. Foliage cover less than 10%.			
Post Development Assumptions:	It is anticipated that Area 7 within the boundaries of the subject site will have some form of modification as a result of Asset Protection Zone (APZ) Implementation and construction. Note – The removal or modification to any native vegetation is subject to Local Government Authority Approvals.			



PHOTO ID: 19



PHOTO ID: 20

<table>
<tr><th colspan="8">VEGETATION AREA 8</th></tr>
<tr><td>Classification</td><td colspan="7">N/A</td></tr>
<tr><td>Types Identified</td><td colspan="7">N/A</td></tr>
<tr><td>Exclusion Clause</td><td colspan="7">2.2.3.2 (e) Non-vegetated areas and (f) Low threat vegetation - high moisture content.</td></tr>
<tr><td>Effective Slope</td><td>Measured</td><td colspan="2">N/A</td><td>Applied Range (Method 1)</td><td colspan="3">N/A</td></tr>
<tr><td colspan="2">Foliage Cover (all layers)</td><td>N/A</td><td>Shrub/Heath Height</td><td>N/A</td><td>Tree Height</td><td colspan="2">N/A</td></tr>
<tr><td colspan="2">Description/Justification:</td><td colspan="6">A developing commercial area. Managed private gardens, street frontages and median strips/road verges. Grasses slashed and maintained to less than 50mm. Mulch used to suppress weed growth. Hydro mulch used in the developing, non-vegetated areas for suppression of both dust and weed growth. Footpaths/hardstand areas cleared of unmanaged vegetation.</td></tr>
<tr><td colspan="2">Post Development Assumptions:</td><td colspan="6">Not Applicable.</td></tr>
<tr><td colspan="4"> 
</td><td colspan="4"> 
</td></tr>
<tr><td colspan="4">PHOTO ID: 21</td><td colspan="4">PHOTO ID: 22</td></tr>
<tr><td colspan="4"> 
</td><td colspan="4"> 
</td></tr>
<tr><td colspan="4">PHOTO ID: 23</td><td colspan="4">PHOTO ID: 24</td></tr>
</table>

VEGETATION AREA 8						
Classification	**N/A**					
Types Identified	N/A					
Exclusion Clause	2.2.3.2 (e) Non-vegetated areas and (f) Low threat vegetation - high moisture content.					
Effective Slope	Measured	N/A	Applied Range (Method 1)	N/A		
Foliage Cover (all layers)	N/A	Shrub/Heath Height	N/A	Tree Height	N/A	
Description/Justification:	A developing commercial area. Managed private gardens, street frontages and median strips/road verges. Grasses slashed and maintained to less than 50mm. Mulch used to suppress weed growth. Hydro mulch used in the developing, non-vegetated areas for suppression of both dust and weed growth. Footpaths/hardstand areas cleared of unmanaged vegetation.					
Post Development Assumptions:	Not Applicable.					



PHOTO ID: 25



PHOTO ID: 26



PHOTO ID: 27



PHOTO ID: 28

A1.3: EFFECTIVE SLOPE

Measuring

Effective slope refers to the slope "under the classified vegetation which most significantly influences bushfire behaviour (AS 3959:2018, clause B4, CB4). It is not the average slope.

It is described as upslope, flat or downslope when viewed from the exposed element (e.g., building) looking towards the vegetation – and measured in degrees. Ground slope has a direct and significant influence on a bushfire's rate of spread and intensity, which increases when travelling up a slope.

The slope under the vegetation in closest proximity to the exposed element(s), over the distance that will most likely carry the entire depth of the flaming front, will be a significant consideration in the determination of the effective slope. This distance is determined as a function of the potential quasi-steady rate of spread and expected residence time (i.e., the flaming combustion period at a single point on the ground), of a bushfire in the specific vegetation type/landscape scenario.

Slope Variation Within Areas of Vegetation

Where a significant variation in effective slope exists under a consistent vegetation type, these will be delineated as separate vegetation areas to account for the difference in potential bushfire behaviour, in accordance with AS 3959:2018 clauses 2.2.5 and C2.2.5.

Slope Variation Due to Multiple Development Sites

When the effective slope, under a given area of bushfire prone vegetation, will vary significantly relative to multiple proposed development sites (exposed elements), then the effective slopes corresponding to each of the different locations, are separately identified.

The relevant (worst case) effective slope is determined in the direction corresponding to the potential directions of fire spread towards the subject building(s).

Differences in Application of Effective Slope - AS 3959:2018 Method 1 versus Method 2 Procedures

The Method 1 procedure provides five different slope ranges from flat (including all upslopes) to 20 degrees downslope to define the effective slope and bushfire behaviour model calculations apply the highest value in each range (i.e., 0^0, 5^0, 10^0, 15^0 or 20^0).

The Method 2 procedure requires an actual slope (up or down in degrees) to be determined. AS 3959:2018, clause B1 limits the effective slope that can be applied to 30 degrees downslope and 15 degrees upslope. Where any upslope is greater than 15 degrees, then 15 degrees is to be used.

SITE ASSESSMENT DETAILS - EXPLANATION & JUSTIFICATION

The effective slopes determined from the site assessment are recorded in Table 3.1 of this Bushfire Management Plan. When their derivation requires additional explanation and justification, this is provided below.

A1.4: SEPARATION DISTANCE

Measuring

The separation distance is the distance in the horizontal plane between the receiver (building/structure or area of land being considered) and the edge of the classified vegetation (AS 3959:2018, clause 2.2.4)

The relevant parts of a building/structure from which the measurement is taken is the nearest part of an external wall or where a wall does not exist, the supporting posts or columns. Certain parts of buildings are excluded including eaves and roof overhangs.

The edge of the vegetation, for forests and woodlands, will be determined by the unmanaged understorey rather than either the canopy (drip line) or the trunk (AS 3959:2018, clause C2.2.5).

Measured Separation Distance as a Calculation Input

If a separation distance can be measured because the location of the building/structure relative to the edge of the relevant classified vegetation is known, this figure can be entered into the BAL calculation. The result is a determined BAL rating.

Assumed Separation Distance as a Calculation Input

When the building/structure location within the lot is not known, an assumed building location may be applied that would establish the closest positioning of the building/structure relative to the relevant area of vegetation.

The assumed location would be based on a factor that puts a restriction on a building location such as:

- An established setback from the boundary of a lot, such as a residential design code setback or a restrictive covenant; or
- Within an established building envelope.

The resultant BAL rating would be indicative and require later confirmation (via a Compliance Report) of the building/structure actual location relative to the vegetation to establish the determined BAL rating.

Separation Distance as a Calculation Output

With the necessary site specific assessment inputs and using the AS 3959:2018 bushfire modelling equations, the range of separation distances that will correspond to each BAL rating (each of which represents a range of radiant heat flux), can be calculated. This has application for bushfire planning scenarios such as:

- When the separation distance cannot be measured because the exact location of the exposed element (i.e., the building, structure or area), relative to classified vegetation, is yet to be determined.

  In this scenario, the required information is the identification of building locations onsite that will correspond to each BAL rating. That is, indicative BAL ratings can be derived for a variety of potential building/structure locations; or

- The separation distance is known for a given building, structure or area (and a determined BAL rating can be derived), but additional information is required regarding the exposure levels (to the transfer of radiant heat from a bushfire), of buildings or persons, that will exist at different points within the subject site.

The calculated range of separation distances corresponding to each BAL rating can be presented in a table and/or illustrated as a BAL Contour Map – whichever is determined to best fit the purpose of the assessment.

For additional information refer to the information boxes in Section 3 'Bushfire Attack Levels (BAL) - Understanding the Results and Section 3.2. 'Interpretation of the BAL Contour Map'.

SITE ASSESSMENT DETAILS - EXPLANATION & JUSTIFICATION

For the subject development/use the applicable separation distances values are derived from calculations applying the assessed site data. They are an output value, not an input value and therefore are not presented or justified in this appendix.

The derived values are presented in Section 3, Table 3.2 and illustrated as a BAL contour map in Figure 3.2.

APPENDIX B: ONSITE VEGETATION MANAGEMENT - THE APZ

THE ASSET PROTECTION ZONE (APZ) - DESCRIPTION

This is an area surrounding a habitable building containing either no fire fuels and/or low threat fire fuels that are managed in a minimal fuel condition. The primary objectives include:

- To ensure the building is sufficiently separated from the bushfire hazard to limit the impact of its direct attack mechanisms. That is, the dimensions of the APZ will, for most site scenarios, remove the potential for direct flame contact on the building, reduce the level of radiant heat to which the building is exposed and ensure some reduction in the level of ember attack (with the level of reduction being dependent on the vegetation types of present);
- To ensure any vegetation retained within the APZ presents low threat levels and prevents surface fire spreading to the building;
- To ensure other combustible materials that can result in consequential fire (typically ignited by embers) within both the APZ and parts of the building, are eliminated, minimised and/or appropriately located or protected. (Note: The explanatory notes in the Guidelines provide some guidance for achieving this objective and other sources are available. Research shows that consequential fire, ignited by embers, is the primary cause of building loss in past bushfire events); and
- To provide a defendable space for firefighting activities.

B1: The Dimensions and Location of the APZ to be Established and Maintained

UNDERSTANDING THE APZ PLANNING ASSESSMENT VERSUS ITS IMPLEMENTATION REQUIREMENTS

THE 'PLANNING BAL-29' APZ

It is important ***to understand is that the 'Planning BAL-29' APZ is not necessarily the size of the APZ that must be*** *physically established and maintained by a landowner. It is a screening tool for making planning approval decisions.*

The assessment against the Bushfire Protection Criteria is conducted for planning approval purposes. To satisfy acceptable solution 'A2.1: Asset Protection Zone', it must be demonstrated that certain minimum separation distances between the relevant building/structure and different classes of bushfire prone vegetation either exist or can be created and will remain in perpetuity.

The required minimum separation distances are those that will ensure the potential radiant heat impact on relevant existing or future buildings does not exceed 29 kW/m^2. The area of land contained within these separation distances is described as an Asset Protection Zone (APZ) and is to be comprised of non-vegetated land or low threat vegetation managed in a minimal fuel condition.

The applicable minimum separation distances will vary dependent on the vegetation types, the slope of the land they are growing on and other relevant factors specific to the site and its use.

The resulting 'Planning BAL-29' APZ dimensions may extend outside subject lot boundaries.

It is the purpose of the bushfire consultant's 'Supporting Assessment Detail', that is presented in the assessment against the acceptable solution A2.1, that will identify and justify how any offsite land within the 'Planning BAL-29 APZ (which the subject landowner has no authority or responsibility to manage), will meet the requirements of being either non-vegetated land or low threat vegetation managed in a minimal fuel condition and likely to remain in this state in perpetuity. Or otherwise, explain how this condition cannot be met.

It is the 'Planning BAL-29' APZ dimensions that will be stated in relevant tables and shown on maps as necessary in this BMP. The exceptions are the tables that are included within this appendix - when relevant to the subject lot(s) - which will present 'BAL Rating' and 'Landowner' APZ dimensions.

THE 'BAL RATING' APZ

The 'BAL Rating' APZ will ensure that the potential radiant heat exposure of the building/structure will be limited to the level that the applied construction requirements, (i.e., those corresponding to the building/structure's determined BAL rating), are designed to resist.

The minimum dimensions of the 'BAL Rating' APZ to be established and maintained will be those that correspond to the determined BAL rating for the specific building/structure. They will account for the specific conditions on and surrounding the subject lot.

The required dimensions of the ***'BAL Rating' APZ establish the size of the APZ that must physically exist either*** *entirely within a subject lot or in combination with an area of adjoining land.*

If in combination with adjoining (offsite) land, it must be justified how the offsite land can most reasonably be expected to either remain unvegetated or be able to meet and maintain the APZ Standards in perpetuity, without any actions by the owner of the subject lot.

The applicable determined BAL rating will have been stated in the relevant assessment section of this BMP when it can be assessed as a 'determined' rather than 'indicative' rating. Otherwise, it will be shown on the BAL Certificate that is submitted as part of a building application.

THE 'LANDOWNER' APZ

Dimensions: The 'Landowner' APZ is to be established and maintained by the owner of the subject lot. The minimum dimensions are the 'BAL Rating' APZ dimensions except that they will be limited to the distance that they can be established within the subject lot. (Note: Any removal of native vegetation my require the approval of the relevant authority.

The remaining required separation distance outside the lot has been assessed by the bushfire consultant to be most likely to remain in a low threat state in perpetuity without any actions to be taken by the owner of the subject lot.

These minimum 'within the lot' APZ dimensions will only be greater when the relevant local government's annual firebreak / hazard reduction notice (issued under s33 of the Bushfires Act 1954), specifies the APZ dimensions to be applied within the lot and they are greater. Consequently, the 'Landowner' APZ dimensions can be a combination of the 'BAL Rating' Dimensions and the Local Government requirements. Check their annual notice for revisions to these requirements.

The dimensions of the 'Landowner' *APZ establish the size of the APZ that must be established and maintained by the landowner within the subject lot.*

Location: The 'Landowner' APZ for which the landowner has the responsibility to establish and maintain, is that which will exist entirely within the boundaries of the relevant lot, unless an approved formal and enforceable agreement allows them to manage a specified area of land external to the subject lot.

In most cases the landowner will only have authority and responsibility to establish and manage the APZ within the subject lot.

Otherwise, when there is a remaining part of the 'BAL Rating' APZ existing outside the subject lot, then these areas of land will, in most situations, include non-vegetated areas (e.g., roads / parking / drainage / water body), formally managed areas of vegetation (e.g., public open space / recreation areas / services installed in a common section of land) or an APZ on a neighbouring lot that is required to be established and maintained by the owner of that adjoining lot.

For vulnerable land uses, the 'BAL Rating' APZ and 'Landowner' APZ will also refer to the dimensions corresponding to radiant heat impact levels of 10 kW/m² and 2 kW/m² (calculated using 1200K flame temperature).

For development applications only, the 'Landowner' APZ dimensions are also shown on the Property Bushfire Management Statement in Section 6.3.1 of this BMP when it is a required component of the Bushfire Management Plan.

Table B1.1: The applicable 'Landowner' APZ Dimensions when indicative BAL ratings have been established by the BMP.

THE 'LANDOWNER' APZ DIMENSIONS TO BE ESTABLISHED AND MAINTAINED							
Relevant Buildings(s)	Classified Vegetation Refer to Fig 3.1	Minimum Required Separation Distances (m) - Building to Vegetation					
		The 'BAL Rating' APZ Corresponding to the Stated 'Indicative' BAL				As Directed by the Applicable Local Government Firebreak / Hazard Reduction Notice	The 'Landowner' APZ (limited to the subject lot boundary unless otherwise justified)
		BAL-29	BAL-19	BAL-12.5	BAL-LOW		
The Control Building as the sole 'habitable' building on the lot	Area 1	8	12	17	50	N/A	Will be dependent on the subsequent 'Determined' BAL rating. It is then to be calculated as the greater of the 'BAL Rating' distance or the 'Firebreak Notice' distance, and no greater than the distance to the lot boundary.
	Area 2	8	12	17	50	N/A	
	Area 3	13	19	27	100	N/A	
	Area 4	21	31	42	100	N/A	
	Area 5	27	37	50	100	N/A	
	Area 6	15	22	31	100	N/A	
	Area 7	8	12	17	50	N/A	
	Area 8	N/A	N/A	N/A	N/A	N/A	

Comments:

Asset protection zones can be contained both within and external of the boundaries of the subject land. It can be justified that adjoining land can form part of an APZ, meeting s2.2.3.2 exclusion requirements of AS3959-2018.

The APZ that will exist, will consist of the following:

- Existing Roads/Hardstand areas
- Footpaths
- Any applicable landscaping

B2: The Standards for the APZ as Established by the Guidelines (DPLH, v1.4)

Within the Guidelines (source: https://www.wa.gov.au/government/document-collections/state-planning-policy-37-planning-bushfire-prone-areas), the management Standards are established by:

- Schedule 1: Standards for Asset Protection Zones (see extract below) established by the Guidelines; and
- The associated explanatory notes (Guidelines E2) that address (a) managing an asset protection zone (APZ) to a low threat state (b) landscaping and design of an asset protection zone and (c) plant flammability.

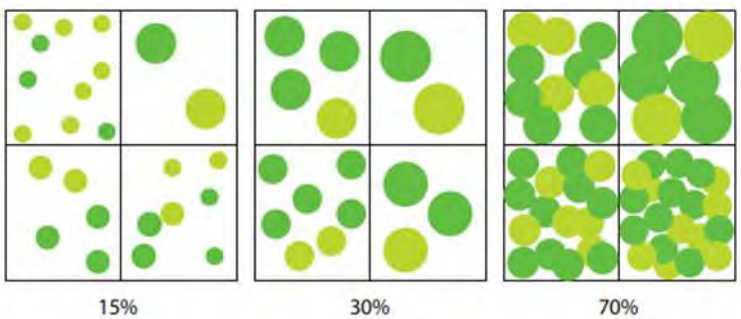


ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT

SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES

OBJECT	REQUIREMENT
Fences within the APZ	• Should be constructed from non-combustible materials (for example, iron, brick, limestone, metal post and wire, or bushfire-resisting timber referenced in Appendix F of AS 3959).
Fine fuel load (Combustible, dead vegetation matter <6 millimetres in thickness)	• Should be managed and removed on a regular basis to maintain a low threat state. • Should be maintained at <2 tonnes per hectare (on average). • Mulches should be non-combustible such as stone, gravel or crushed mineral earth or wood mulch >6 millimetres in thickness.
Trees* (>6 metres in height)	• Trunks at maturity should be a minimum distance of six metres from all elevations of the building. • Branches at maturity should not touch or overhang a building or powerline. • Lower branches and loose bark should be removed to a height of two metres above the ground and/or surface vegetation. • Canopy cover within the APZ should be <15 per cent of the total APZ area. • Tree canopies at maturity should be at least five metres apart to avoid forming a continuous canopy. Stands of existing mature trees with interlocking canopies may be treated as an individual canopy provided that the total canopy cover within the APZ will not exceed 15 per cent and are not connected to the tree canopy outside the APZ.

Figure 19: Tree canopy cover – ranging from 15 to 70 per cent at maturity



Shrub* and scrub* (0.5 metres to six metres in height). Shrub and scrub >6 metres in height are to be treated as trees.	• Should not be located under trees or within three metres of buildings. • Should not be planted in clumps >5 square metres in area. • Clumps should be separated from each other and any exposed window or door by at least 10 metres.
Ground covers* (<0.5 metres in height. Ground covers >0.5 metres in height are to be treated as shrubs)	• Can be planted under trees but must be maintained to remove dead plant material, as prescribed in 'Fine fuel load' above. • Can be located within two metres of a structure, but three metres from windows or doors if >100 millimetres in height.
Grass	• Grass should be maintained at a height of 100 millimetres or less, at all times. • Wherever possible, perennial grasses should be used and well-hydrated with regular application of wetting agents and efficient irrigation.
Defendable space	• Within three metres of each wall or supporting post of a habitable building, the area is kept free from vegetation, but can include ground covers, grass and non-combustible mulches as prescribed above.
LP Gas Cylinders	• Should be located on the side of a building furthest from the likely direction of a bushfire or on the side of a building where surrounding classified vegetation is upslope, at least one metre from vulnerable parts of a building. • The pressure relief valve should point away from the house. • No flammable material within six metres from the front of the valve. • Must sit on a firm, level and non-combustible base and be secured to a solid structure.

** Plant flammability, landscaping design and maintenance should be considered – refer to explanatory notes*

B3: The Standards for the APZ as Established by the Local Government

Refer to the firebreak / hazard reduction notice issued annually (under s33 of the Bushfires Act 1954) by the relevant local government. It may state Standards that vary from those established by the Guidelines and that have been endorsed by the WAPC and DFES as per Section 4.5.3 of the Guidelines.

A copy of the applicable notice is not included here as they are subject to being reviewed and modified prior to issuing each year. Refer to ratepayers notices and/or the local government's website for the current version.

B4: Maintaining Low Threat and Non-Vegetated Areas Excluded from Classification

AS 3959 establishes the methodology for determining a bushfire attack level (BAL). The methodology includes the classification of the subject site's surrounding vegetation according to their 'type' and the application of the corresponding bushfire behaviour models to determine the BAL. Certain vegetation can be considered as low threat and excluded from classification. Where this has occurred in assessing the site, the extract from AS3959:2018 below state the requirements (including the size of the vegetation area if relevant to the assessment) for maintenance of those areas of land.

2.2.3.2 *Exclusions—Low threat vegetation and non-vegetated areas*

The following vegetation shall be excluded from a BAL assessment:

(a) Vegetation of any type that is more than 100 m from the site.

(b) Single areas of vegetation less than 1 ha in area and not within 100 m of other areas of vegetation being classified vegetation.

(c) Multiple areas of vegetation less than 0.25 ha in area and not within 20 m of the site, or each other or of other areas of vegetation being classified vegetation.

(d) Strips of vegetation less than 20 m in width (measured perpendicular to the elevation exposed to the strip of vegetation) regardless of length and not within 20 m of the site or each other, or other areas of vegetation being classified vegetation.

(e) Non-vegetated areas, that is, areas permanently cleared of vegetation, including waterways, exposed beaches, roads, footpaths, buildings and rocky outcrops.

(f) Vegetation regarded as low threat due to factors such as flammability, moisture content or fuel load. This includes grassland managed in a minimal fuel condition, mangroves and other saline wetlands, maintained lawns, golf courses (such as playing areas and fairways), maintained public reserves and parklands, sporting fields, vineyards, orchards, banana plantations, market gardens (and other non-curing crops), cultivated gardens, commercial nurseries, nature strips and windbreaks.

NOTES:

1 Minimal fuel condition means there is insufficient fuel available to significantly increase the severity of the bushfire attack (recognizable as short-cropped grass for example, to a nominal height of 100 mm).

2 A windbreak is considered a single row of trees used as a screen or to reduce the effect of wind on the leeward side of the trees.

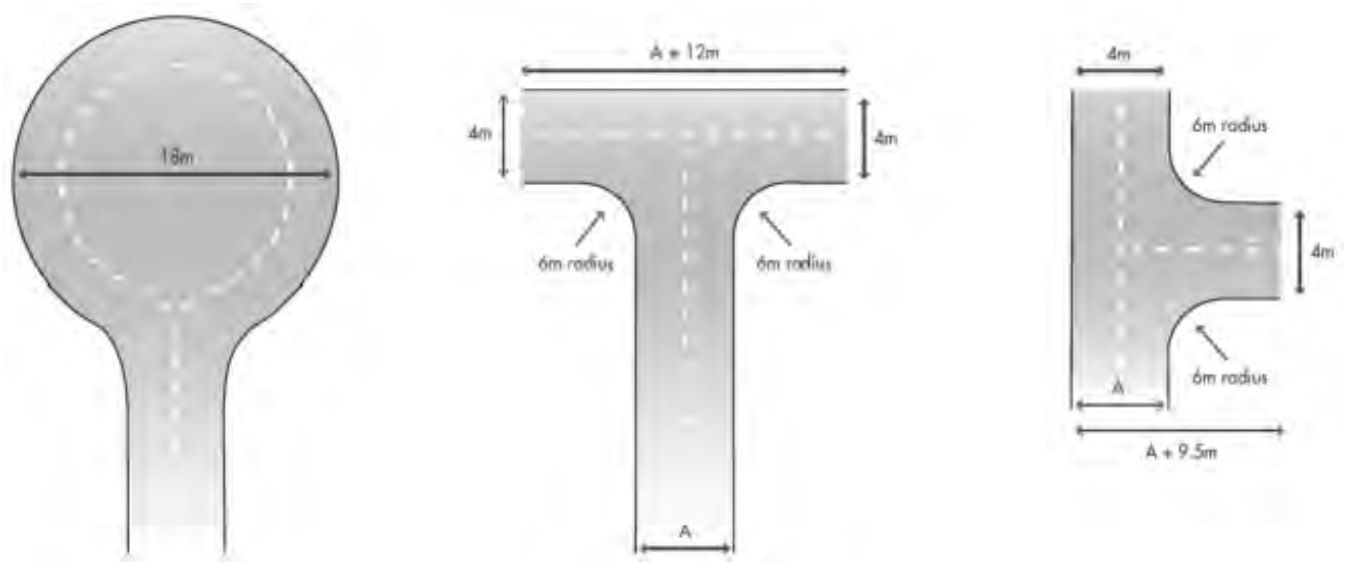
APPENDIX C: TECHNICAL REQUIREMENTS FOR VEHICULAR ACCESS

The design/layout requirements for access are established by the acceptable solutions of the Guidelines (DPLH, 2021 v1.4) Element 3 and vary dependent on the access component, the land use and the presence of 'vulnerable' persons. Consequently, the best reference source are the Guidelines. The technical requirements that are fixed for all components and uses are presented in this appendix.

GUIDELINES TABLE 6, EXPLANATORY NOTES E3.3 & E3.6 AND RELEVANT ACCEPTABLE SOLUTIONS

Technical Component	Vehicular Access Types / Components			
	Public Roads	Emergency Access Way [1]	Fire Service Access Route [1]	Battle-axe and Private Driveways [2]
Minimum trafficable surface (m)	In accordance with A3.1	6	6	4
Minimum Horizontal clearance (m)	N/A	6	6	6
Minimum Vertical clearance (m)	4.5			
Minimum weight capacity (t)	15			
Maximum Grade Unsealed Road [3]	As outlined in the IPWEA Subdivision Guidelines	1:10 (10%)		
Maximum Grade Sealed Road [3]		1:7 (14.3%)		
Maximum Average Grade Sealed Road		1:10 (10%)		
Minimum Inner Radius of Road Curves (m)		8.5		

Turnaround Area Dimensions for No-through Road, Battle-axe Legs and Private Driveways [4]



Passing Bay Requirements for Battle-axe leg and Private Driveway

When the access component length is greater than the stated maximum, passing bays are required every 200m with a minimum length of 20m and a minimum additional trafficable width of 2m (i.e. the combined trafficable width of the passing bay and constructed private driveway to be a minimum 6m).

Emergency Access Way – Additional Requirements

Provide a through connection to a public road, be no more than 500m in length, must be signposted and if gated, gates must be open the whole trafficable width and remain unlocked.

[1] To have crossfalls between 3 and 6%.

[2] Where driveways and battle-axe legs are not required to comply with the widths in A3.5 or A3.6, they are to comply with the Residential Design Codes and Development Control Policy 2.2 Residential Subdivision.

[3] Dips must have no more than a 1 in 8 (12.5% or 7.1 degree) entry and exit angle.

[4] The turnaround area should be within 30m of the main habitable building.

APPENDIX D: TECHNICAL REQUIREMENTS FOR FIREFIGHTING WATER SUPPLY

D1: Reticulated Areas – Hydrant Supply

The Guidelines state "where a reticulated water supply is existing or proposed, hydrant connection(s) should be provided in accordance with the specifications of the relevant water supply authority."

The main scheme water suppliers / authorities in WA are The Water Corporation, AqWest – Bunbury Water Corporation and Busselton Water Corporation. Various local authority exists in other non-scheme and regional areas. However, most existing fire hydrants are connected to Water Corporation water mains.

Consequently, the hydrant location specifications from The Water Corporation's 'No 63 Water Reticulation Standard' (Ver 3 Rev 15) are provided in the extract below with the key distances relevant to bushfire planning assessments being highlighted. This Standard is deemed to be the baseline criteria for developments and should be applied unless different local water supply authority conditions apply. Other applicable specification will be found in the Standard.

Note: The maximum distance from a hydrant to the rear of a lot/building is generally interpreted as not applicable to large lot sizes where the maximum distance becomes an impractical limitation i.e., typically rural residential areas.

2.2.1.5 Appurtenances

c. Hydrants

Hydrants shall be screw-down hydrant with built-in isolation valve and installed only on DN100 or larger pipes. Hydrants shall be located:

- so that the maximum distance between a hydrant and the rear of a building envelope, (or in the absence of a building envelope the rear of the lot) shall be 120m;
- so that spacing (as measured by hose-run) between hydrants in non-residential or mixed use areas shall be maximized and no greater than 100m;
- so that spacing (as measured by hose-run) between hydrants in residential areas with lots per dwelling <10,000m^2 shall be maximized and no greater than 200m;
- so that spacing between hydrants (as measured by hose-run) in rural residential areas where minimum lots per dwelling is >10,000 m^2 (1ha) shall be maximized and no greater than 400m;
- centrally along the frontage of a lot to avoid being under driveways, unless the lot features a frontage 6m or less, in which case it shall be placed to the side opposite the driveway;
- at lots that have the widest frontage in the local area;
- where appropriate at the truncation of road junctions or intersections so that they can serve more than one street and can be readily located;
- on both sides of the major roads at staggered intervals where there are mains on both sides of the road;
- at major intersections on dual multi-lane roads, where two hydrants are to be sited on diagonally opposite corners;
- hydrants should be located at least 20m from traffic calming devices i.e., median slow points or chokers, chicanes, mini traffic circles, and intersection 'pop-outs' to ensure traffic is not impeded;
- in a position not less than 10m from any high voltage main electrical distribution equipment such as transformers and distribution boards, liquefied petroleum gas or other combustible storage;
- directly on top of the main using a tee unless proved to be impractical.

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ADDENDUM:

- **City of Wanneroo - Vegetation management statement of responsibility for neighbouring road reserve – South of Area 1 – Refer to Figure 3.1**

- **City of Wanneroo - Vegetation management statement of responsibility for neighbouring road reserve – South of Area 1 – Refer to Figure 3.1**

Hi Sarina,

This road reserve is managed by the City of Wanneroo.

I have received information from the manager that manages the road reserve slashing contractors.

She says that this area was slashed last week and will be due to be slashed again in 5-6 weeks.

Any questions feel free to let me know.

Regards,

Troy

City of Wanneroo

Troy Cole
Fire Mitigation Officer
Community Safety & Emergency Management

08 9405 5297
Troy.Cole@wanneroo.wa.gov.au

Civic Centre
Locked Bag 1, Wanneroo WA 6946
wanneroo.wa.gov.au



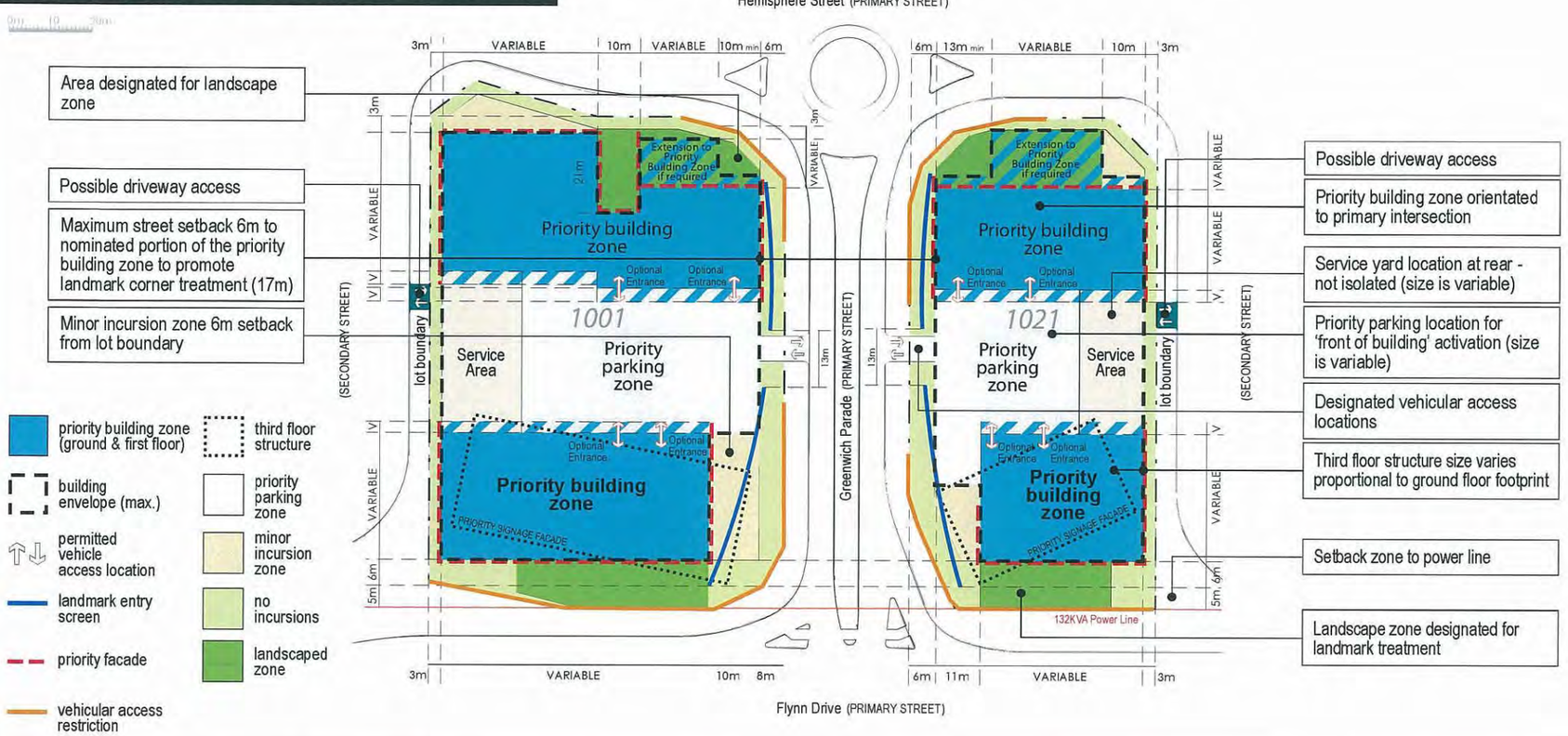
MERRY CHRISTMAS
Please note our offices are closed from 4pm on 24 December and will reopen on the 29 December 2021. Please also note our offices are closed from 4pm on 31 December and will reopen on the 4 January 2022. For a full list of the City's changed opening hours and other key City Services, please visit the Contact Us page on the City's website at wanneroo.wa.gov.au

We wish to acknowledge the Traditional Custodians of the land we are working on, the Whadjuk people. We would like to pay respect to the Elders of the Noongar nation, past, present and future, who have walked and cared for the land and we acknowledge and respect their continuing culture and the contributions made to the life of this City and this region.

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LOT 1001 & 1021 GREENWICH PARADE, MERIDIAN PARK — DETAILED AREA PLAN No.3 AGREED STRUCTURE PLAN No. 17

SCHEME VARIATIONS & DESIGN OBJECTIVES



INDICATIVE BUILDING FOOTPRINT



Detailed Area Plan No.3 details lot specific guidelines for Lots 1001 and 1021 Greenwich Parade and shall be read in conjunction with Meridian Park Design Requirements that outline performance standards, environmental sensitive design initiatives and general guidelines.

DESIGN REQUIREMENTS

- All construction (excluding minor elements and third floor structures) must be located within the building envelope depicted on the Detailed Area Plan (DAP).
- Buildings shall address both the Primary and Secondary Streets through design, materials and major openings. The secondary street elevation shall feature a suitable level of design detail including glazing in a manner consistent with the primary elevation.
- Corner treatments to primary streets shall be provided to the building in the form of building design, landscaping or sculpture. Glazed building corners and flanking walls shall provide architectural prominence to corner locations.
- Building development on the site shall be initially located within the Building Priority Zone, following full development of this zone, expansion can progress in those zones as nominated on the DAP.
- Buildings with frontage to Flynn Drive to be a minimum 2 storeys and incorporate a third floor signage element as nominated on the DAP.
- Finished ground floor levels must be within 0.5m of the finished design surface of the lot. No brick build-up or additional fill will be permitted for building construction.
- Parking, access and service areas shall be located as depicted on the DAP, so as to encourage screening and prominence of the building to the landmark intersection.
- A landmark entry screen for those buildings fronting Flynn Drive is to be provided for as depicted on the DAP. The entry screen is to be provided in accordance with the requirements of the vendor.
- No solid fencing to any street frontage (except for the landmark entry screen) is permitted. The building façade shall provide the majority of the site perimeter edge , with internal fencing/gates providing remaining security.
- Where security fencing is required to a street frontage, the fence line should be the building setback line, but as a minimum, shall be set 3m setback from lot boundary (within the minor incursion zone). Where security fencing is required to a secondary street frontage, fencing length shall be kept to a minimum. Security fencing will be permitted along side and rear boundaries.
- The minimum standard for any fencing provided is black PVC coated galvanised link mesh with black support members.

SCHEME VARIATIONS

- District Planning Scheme No.2 is varied in accordance with Amendment No.2 to Agreed Structure Plan No.17

COMPLIANCE

- Applications made to the City for planning approval for lots 1001 and 1021 Greenwich Parade, must be accompanied by an endorsement of LandCorp via its appointed Estate Architect.

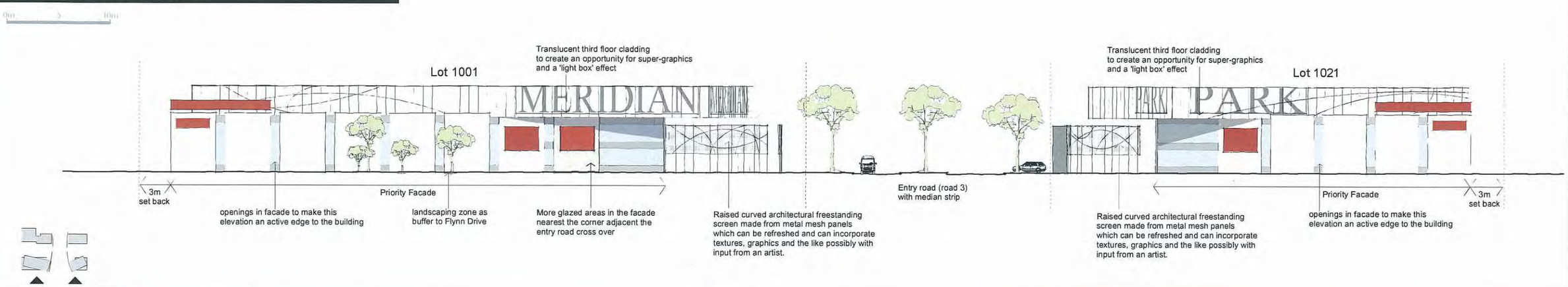
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Manager Planning Implementation **Date**

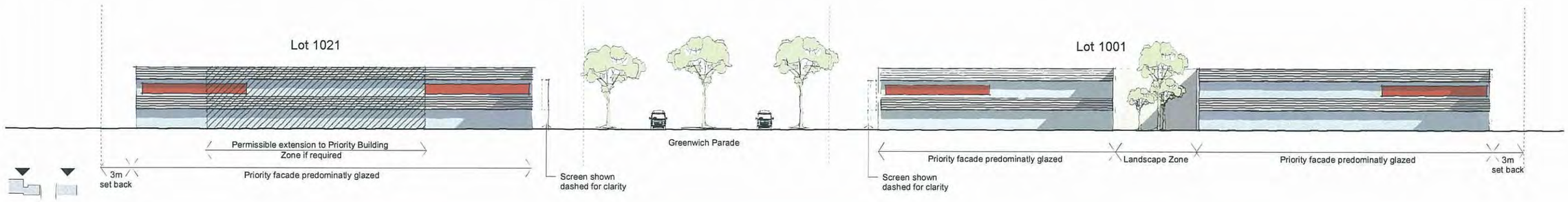
TAYLOR BURRELL BARNETT
Town Planning and Design

PLAN - 00/047/G004F
DATE - 7 January 2010

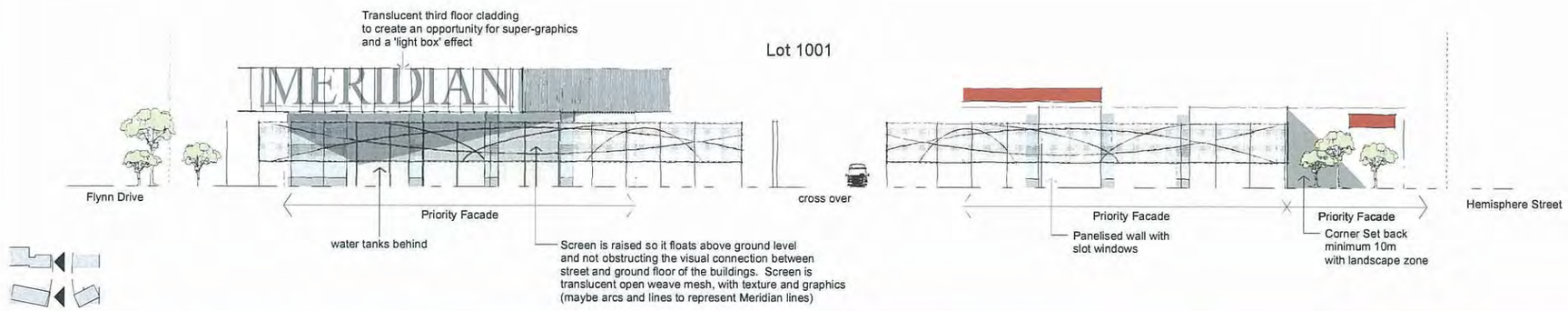
INDICATIVE ELEVATIONS



VIEW **Flynn Drive Elevation (south)**



VIEW **Hemisphere Street Elevation (north)**



VIEW **Greenwich Parade Elevation (east)**

Manager Planning Implementation — Date 12/01/10

TAYLOR BURRELL BARNETT
Town Planning and Design
PLAN - 00/047/G004G
DATE - 12 January 2010

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

LOT 1001 (11) GREENWICH PARADE, MERIDIAN PARK, NEERABUP (CITY OF WANNEROO)

TRANSPORT IMPACT ASSESSMENT



Final 2

Prepared by i3 consultants WA for

PC Infrastructure Pty Ltd

Proposed OTR (Service Station, Car Wash & Drive Thru Retail) | Lot 1001 (11) Greenwich Parade, Meridian Park, Neerabup (City of Wanneroo) | Transport Impact Assessment

Prepared by

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Published by

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Description

A Transport Impact Statement for development of a Service Station including 7 fuel bowsers (11 fueling points), automatic car wash, 4 manual car wash bays, 3 vacuum/ chamois cleaning bays, 2 electric vehicle charging bays, 17 car parking bays, 4 heavy vehicle parking bays, 1 Loading Bay and a drive-thru and walk-thru food, drinks, grocery facility on Lot 1001, Street Number 11 Greenwich Parade in Meridian Park within the City of Wanneroo suburb of Neerabup prepared in accordance with the 2016 WAPC Transport Impact Assessment Guidelines.

Client

PC Infrastructure Pty Ltd

Project ID 31804

Version Final 2

Publication Date 30 August 2023

Pages 54

File Name 31804-TIA-F2

This is not an approved document unless certified below.

Digitally signed by David Wilkins
Date: 2023.08.30 11:53:21 +08'00'

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 560 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 230 of these since 2001.

David is a member of Engineers Australia and 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.

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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 166 trips during the road network morning peak hour and up to 149 trips during the road network afternoon peak hour. The development itself is expected to reach peak trip generation of up to 179 trips between 12 noon and 1 PM. Up to 70% of these trips are expected to be pass-by trips, i.e., trips to and from the development as part of an existing trip along Flynn Drive or Greenwich Pde.

The forecast additional trips, based on 70% pass-by trips is 50 in the morning, 54 at midday and 45 in the afternoon, i.e., less than 1 trip per minute. This is classified as a moderate impact by the WAPC, i.e., between 10 and 100 additional trips in any one hour.

This *TIA* has identified that the proposed development will not result in an adverse impact on the road network. The traffic modelling has indicated that the proposed Access Driveway off Greenwich Pde and the provision of a right IN turning bay on Greenwich Pde with all departures via a left turn onto Greenwich Pde does not result in any noticeable impacts on existing performance of the assessed roads.

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 *TIA* is required for a Service Station with 11 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 7 bowser/ 11 fuelling point 'On the Run' (OTR) Service Station with an automatic car wash, 4 manual car wash bays, 3 vacuum/ chamois bays, 2 electric vehicle charging bays, 17 car parking bays, 4 heavy vehicle parking bays, 1 loading bay and a drive-thru and walk-thru food, drinks, grocery facility.

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

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 aligns with the WAPC Guidelines, clearly identifies the items that are required to be assessed in a *TIA* and the responses and/ or assessments relative to these items.

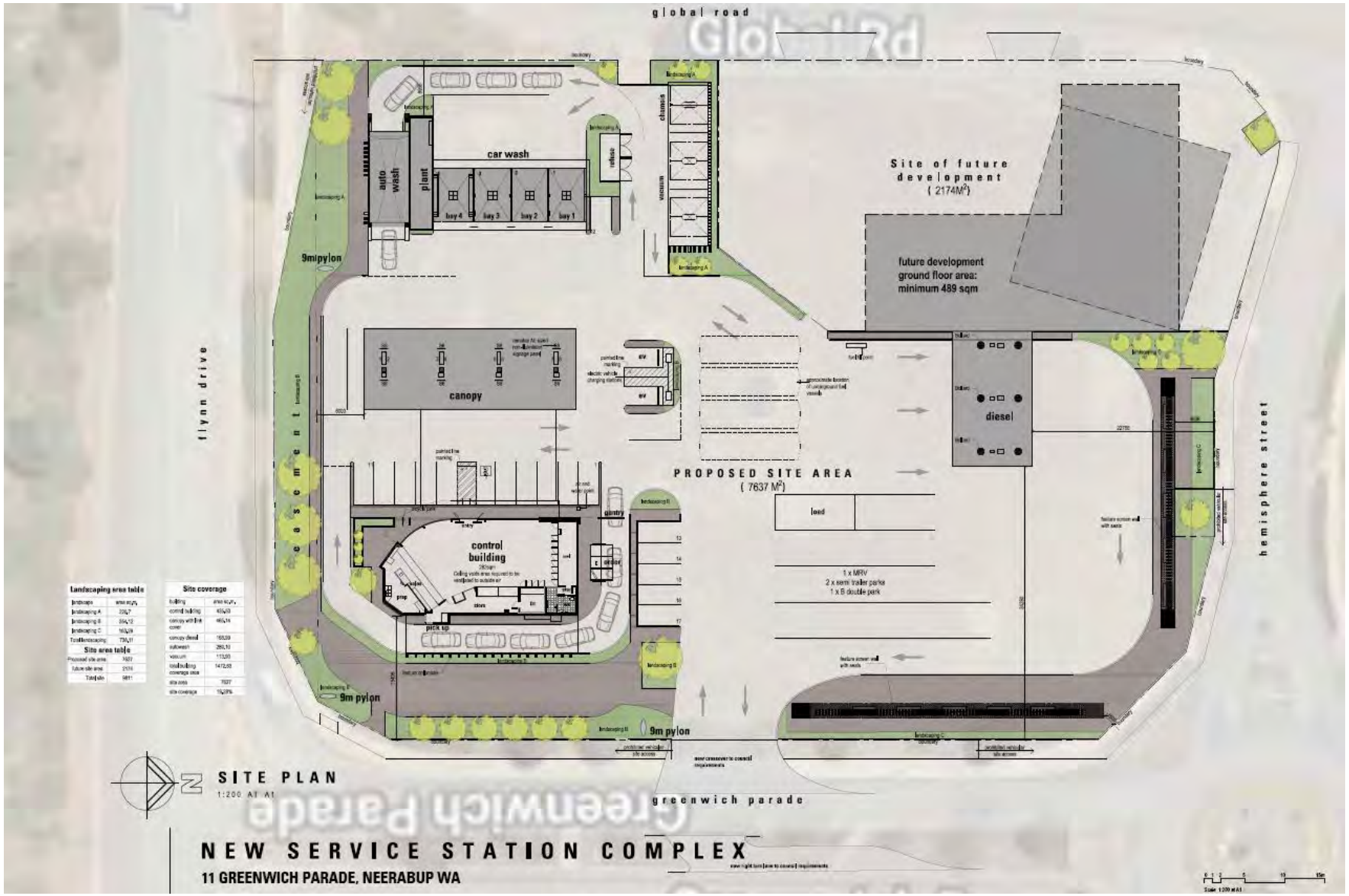


Figure 1 – Extract from Design Drawing 23JN1510sk00h

Name of applicant and consultant.	PC Infrastructure Pty Ltd (**applicant**) and i3 consultants WA (**consultant**).
Development location and context.	Lot 1001 (11) Greenwich Parade, Meridian Park, Neerabup (City of Wanneroo). Located within 'Meridian Park'. Situated in the Neerabup Industrial Area, Meridian Park is positioned to meet the business needs of Perth's fast growing North-West corridor. It includes Global Business Park and the Australian Automation and Robotics Precinct.
Brief description of development proposal.	The proposal is for a 7 bowser/ 11 fuelling point 'On the Run' (OTR) Service Station with an automatic car wash, 4 manual car wash bays, 3 vacuum bays, 2 electric vehicle charging bays, 17 car parking bays, 4 heavy vehicle parking bays, 1 loading bay and a drive-thru and walk-thru food, drinks, grocery facility. An extract from the Design Drawing for the proposed development showing the layout is provided as Figure 1 on the previous page.
Key issues	There are no identified existing issues. The City of Wanneroo has raised concerns with access to and from Flynn Dr and on 'spine roads' in Meridian Park with previous development proposals. The applicant has addressed this by restricting access movements and designing the access driveways and site to accommodate large vehicles, as described below, and shown in Figure 3 on page 8: • no access to or from Flynn Dr • right-in access is proposed off Greenwich Pde to accommodate pass-by southbound traffic, i.e., traffic leaving the precinct, • it is proposed to accommodate and fuel vehicles up to B-Doubles, as permitted on the frontage roads and within the precinct.
Background information	The **applicant** is very experienced with developing these types of service stations in South Australia, Northern Territory and Western Australia. The **consultant** prepared a Transport Impact Assessment for a much larger 'Integrated Service Hub' on the same site for a different applicant in 2018 that did not proceed to development. The **consultant** also undertook a Detailed Design Road Safety Audit for a proposed Service Station on Lot 9006 (NW cnr Flynn Dr/ Pinnacle Dr) in May 2021 for the City of Wanneroo. In addition to this, the **consultant** undertook video traffic surveys at the Flynn Dr/ Greenwich Pde Give-way controlled intersection and Greenwich Pde/ Hemisphere St roundabout on the 8th and 9th June 2019 and on the 21st December 2022.



Figure 2 – Development location and context

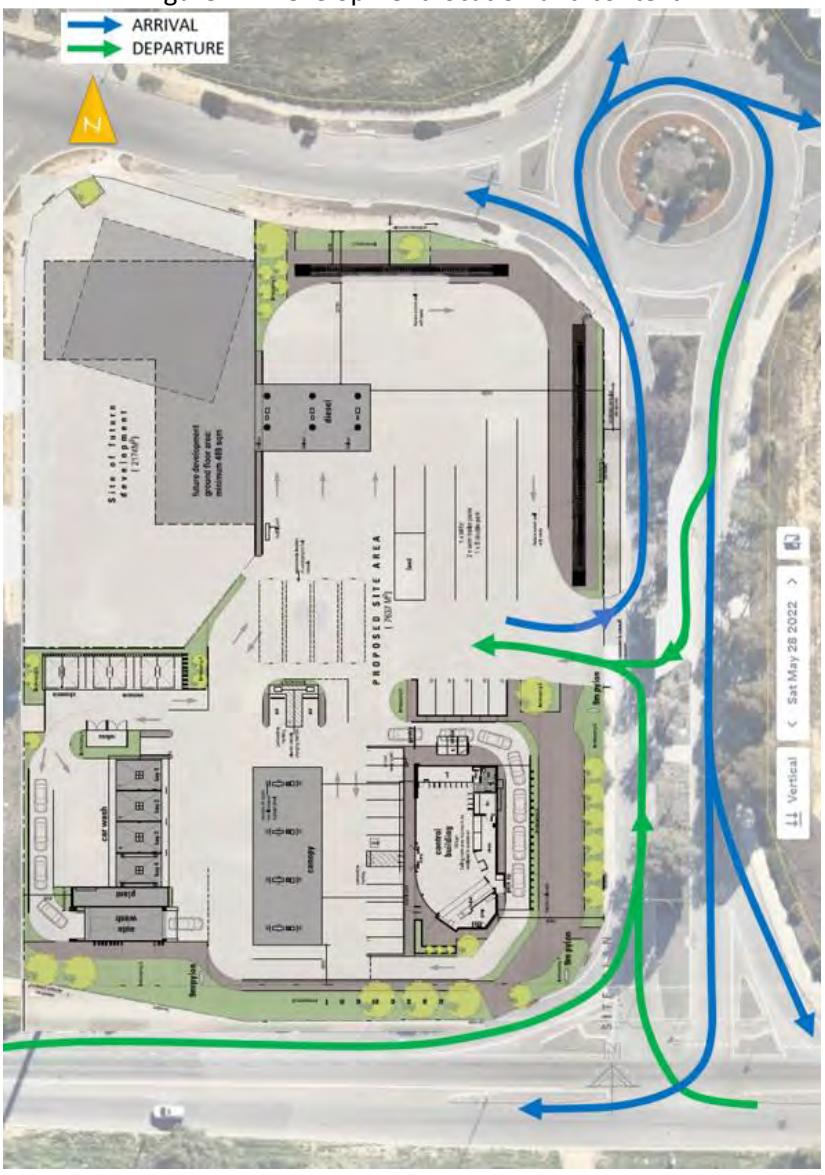


Figure 3 – Arrival & Departure Routes dictated by proposed access restrictions

3 EXISTING SITUATION

Existing site uses.	Greenfield site. Vacant since development of Meridian Park.
Existing parking and demand.	Not applicable.
Existing access arrangements	None. Embayed parking on Hemisphere St and Global Rd reduce access options off these roads due to sight line obstructions associated with parked vehicles.
Existing site traffic.	Nil due to vacant status. Forecast trip generation associated with 'industrial' development of the site is included in the *Neerabup Industrial Estate Traffic Review* (4) prepared by SKM in November 2004 to "*model the future traffic volumes predicted to be generated by the Neerabup Industrial Estate (fully developed) to determine an appropriate road network and road reserve requirements*."
Surrounding land uses.	Surrounding land use is predominantly light industrial, service industrial and warehouse.
Surrounding road network.	The closest distributor road to the site is the Flynn Dr frontage road (State Road: Regional Distributor). All other roads are classified as 'Local Access Roads' in the Main Roads WA Functional Road Hierarchy (5), as shown in Figure 4 on page 11. Flynn Dr, Greenwich Pde, Hemisphere St, and Global Rd are all classified as RAV Network 2, 3 and 4 and connect with other roads classified as RAV Network 2, 3 and 4 including Wanneroo Rd to the west and Old Yanchep Rd to the east. RAV Networks 2, 3 and 4 all permit access by various heavy vehicle combinations up to 27.5m long. The path, cycle path, cycle route and public transport network in the vicinity of the site is shown in Figure 5 on page 12.
Traffic management on frontage roads.	Flynn Dr is described in the *Neerabup Industrial Area Structure Plan No 17* (6) as the key southern east-west arterial road servicing the Neerabup Industrial Estate for the short to medium term. It is acknowledged as the defining edge between the Industrial Estate and Carramar Park and Banksia Grove to the south. It consists of a single sealed and kerbed carriageway with one lane in each direction and is subject to a posted speed limit of 80 km/h. Greenwich Pde is a dual carriageway between Flynn Dr and the roundabout at Hemisphere St and a single carriageway north of this. It has a single 4.0 m wide lane in each direction with a 2 m wide painted shoulder between Flynn Dr and Hemisphere St and is subject to the default urban speed limit of 50 km/h. It is proposed to provide a break in the median to allow for right turns into the site only.

Traffic flows on surrounding roads.

The latest available Average Monday to Friday traffic volumes, including classes of vehicles, have been sourced from a Main Roads WA traffic survey at the Flynn St/ Greenwich Pde intersection in May 2022, supplemented by traffic surveys undertaken at this intersection and the Greenwich Pde/ Hemisphere St roundabout in December 2022 by the author. AM and PM road network peak hour volumes are shown in Figure 6 on page 13. Existing Traffic volumes between 12 noon and 1 PM, the development's peak hour, are shown in Figure 7 on page 14.

A comparison of previous and existing daily volumes on Flynn Dr and Greenwich Pde is shown in Table 2 below.

	2001	2018/19	2019/20	2021/22	May 2022
Flynn Dr East of Wanneroo Road	664	7,685	9,650		
Flynn Dr West of Greenwich Pde					9,021
Greenwich Pde north of Flynn Dr					1,371
Flynn Dr East of Greenwich Pde					8,546
Flynn Dr West of Pinjar Rd*	1,194				
Flynn Dr West of Old Yanchep Rd*	3,237			2,914	

*Pinjar Rd extended to Flynn Dr October 2018

Table 2 – Existing and previous weekday daily traffic volumes

Traffic flows at major and/ or impacted intersections.

Shown in Figure 6 on page 13.

Operation of surrounding intersections.

Shown in the analysis of transport networks in **Section 6** of this report.

Existing pedestrian/ cycle networks.

Shown in Figure 5 on page 12.

Crash data.

There has been 1 reported crash at the Flynn Dr/ Greenwich Pde intersection and none on Greenwich Pde or the Greenwich Pde/ Hemisphere St roundabout in the five-year period ending 31st December 2022. There were no reported crashes in the five-year period ending 31st December 2021.

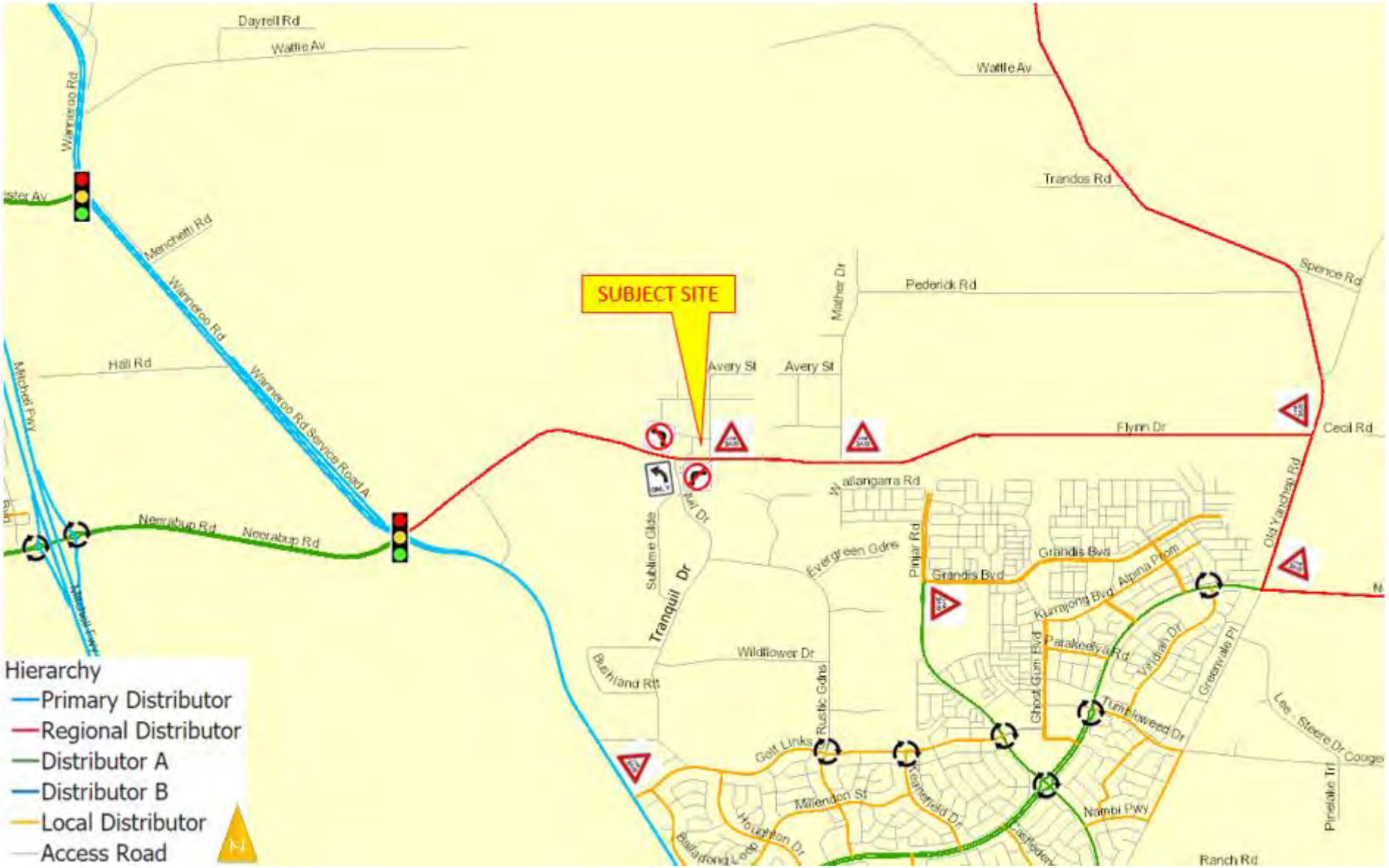


Figure 4 – Surrounding road network, hierarchy, and intersection control

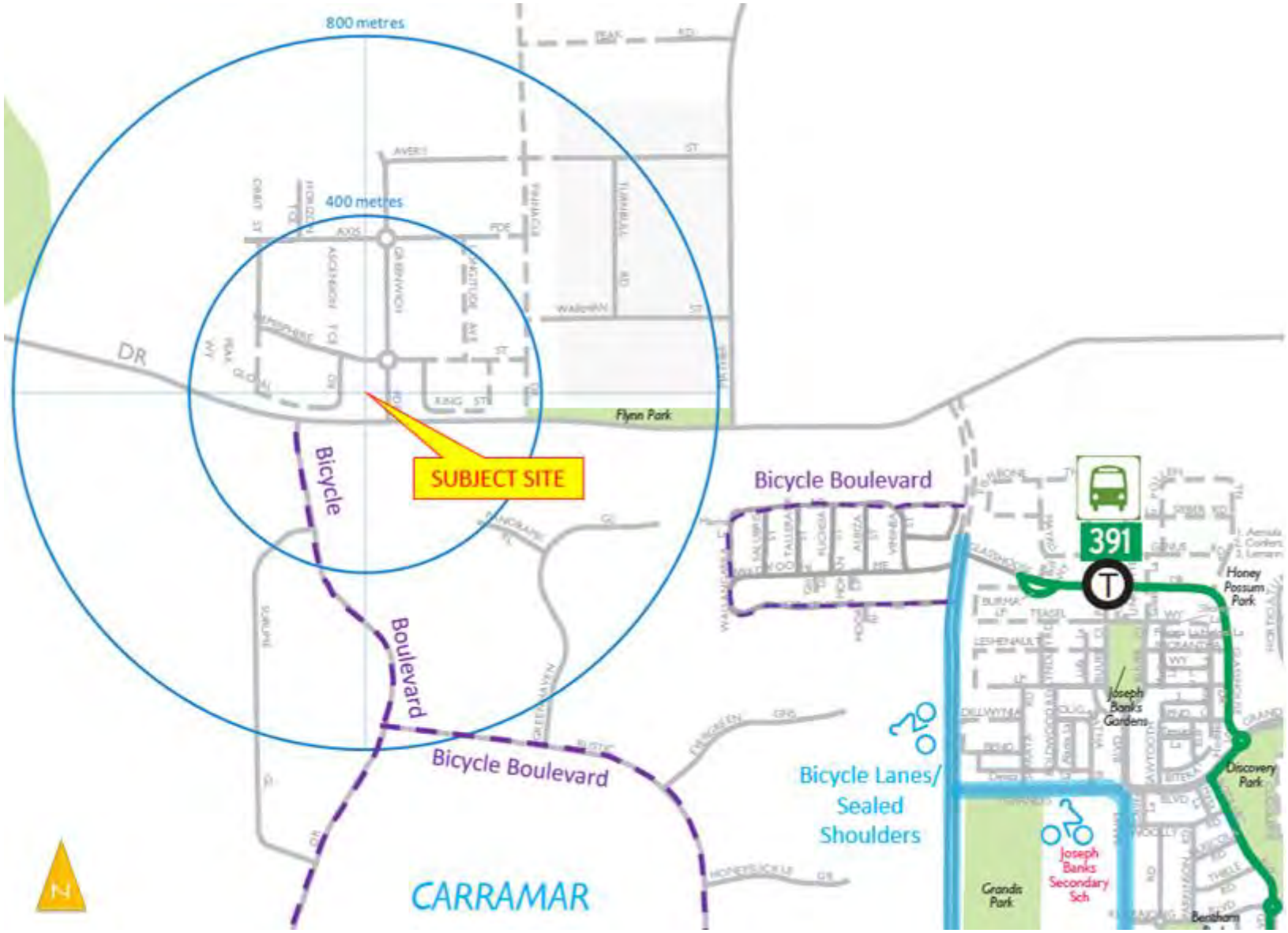


Figure 5 – Path, cycle path, cycle route and public transport in vicinity of the development site

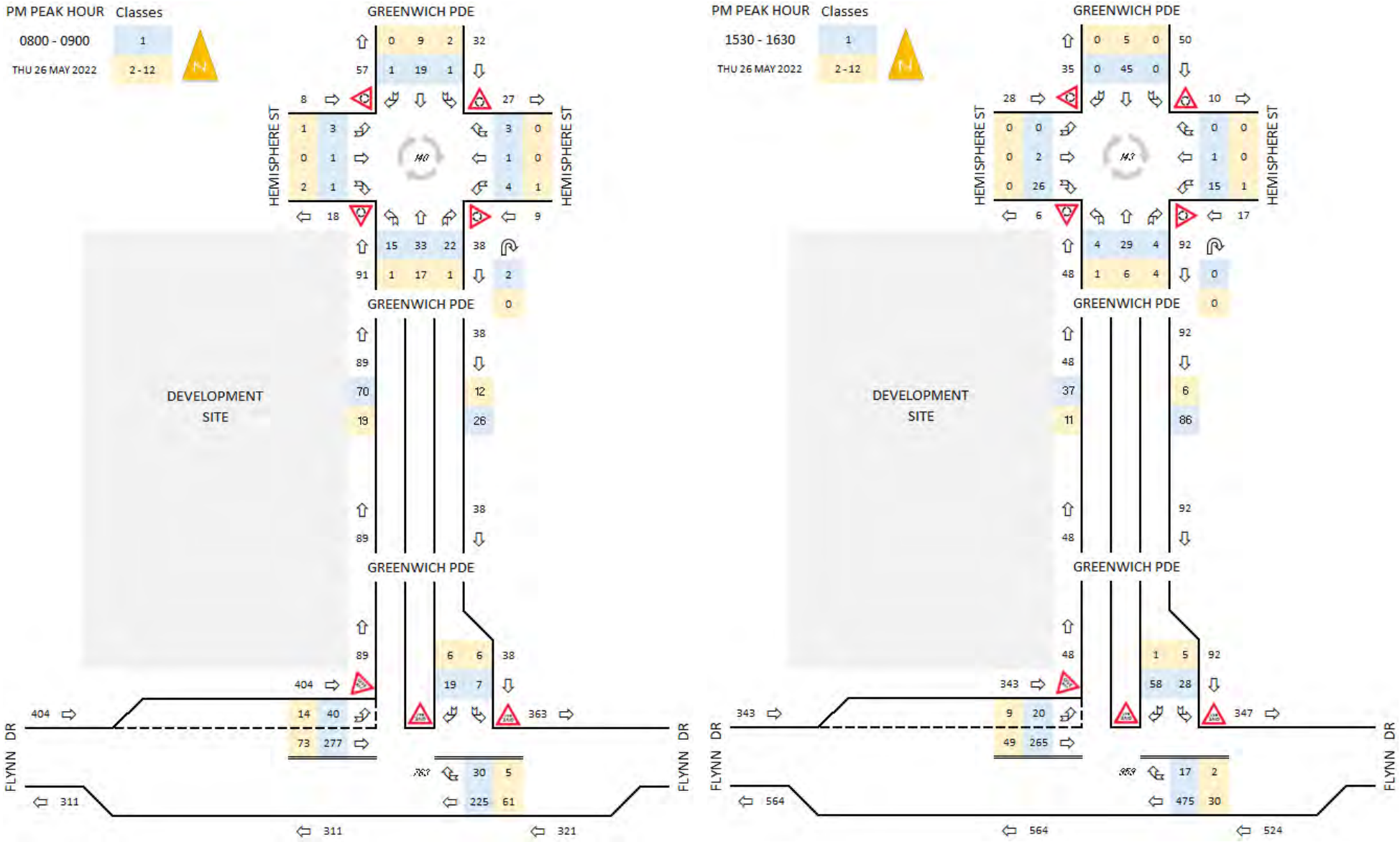


Figure 6 – Existing (May 2022) AM and PM Peak Hour traffic volumes

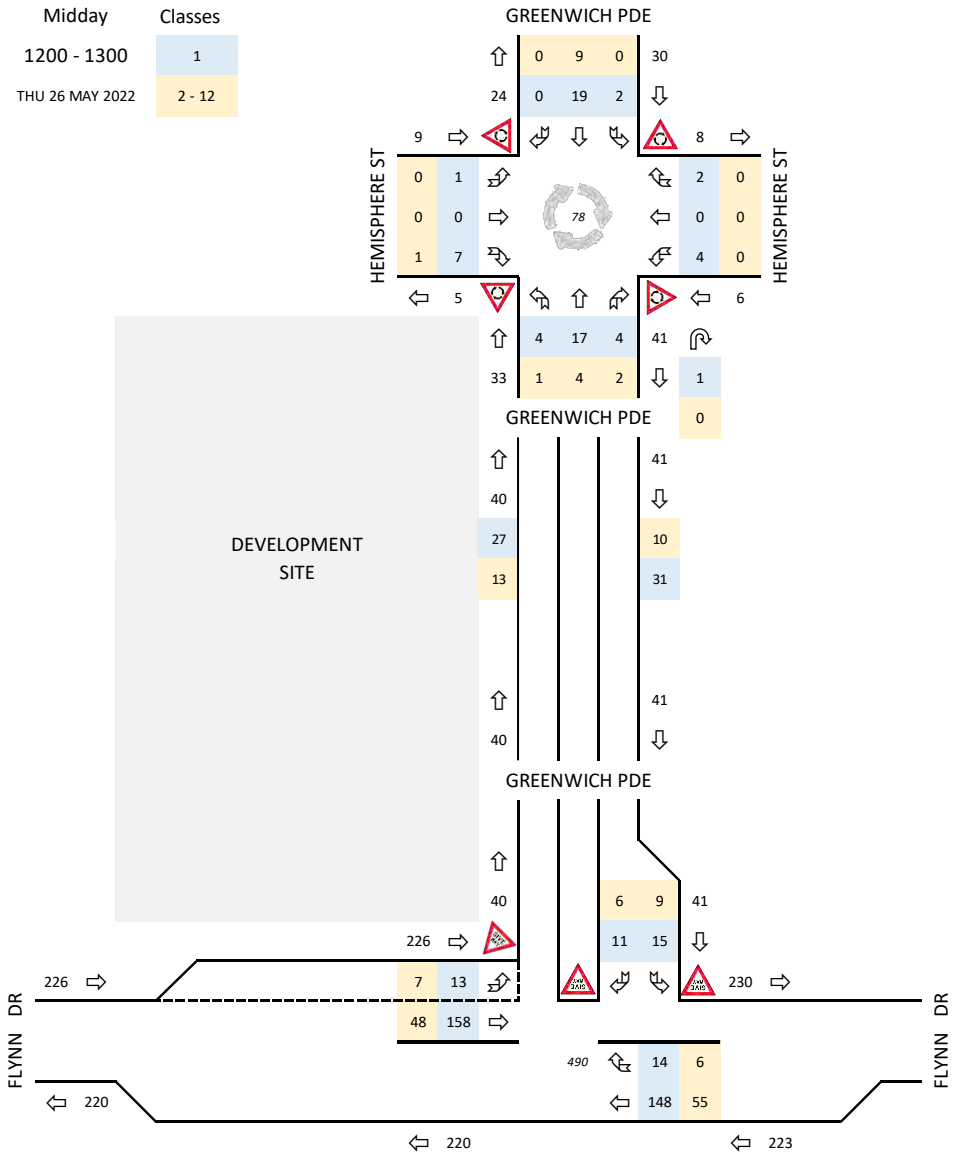


Figure 7 – Existing (May 2022) traffic volumes between 12 noon and 1 PM (Development Peak Hour)

4 DEVELOPMENT PROPOSAL

Regional context.

The Meridian Park development area comprises approximately 400 hectares of industrial land jointly developed by DevelopmentWA and the City of Wanneroo. Meridian Park is situated off Flynn Drive within the 1,000-hectare Neerabup Industrial Area, north of Wanneroo. The Meridian Park development is expected to meet the industrial land needs of Perth's rapidly growing North West Corridor for the next 20 years.

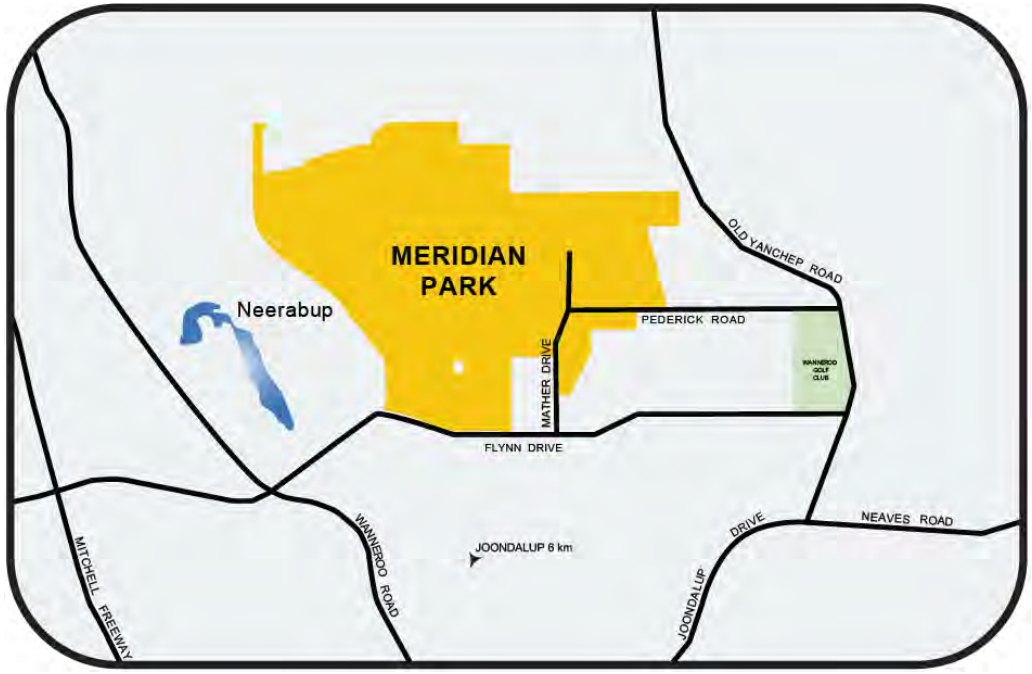


Figure 8 – Meridian Park Regional Context Map

Proposed land uses.

The proposal is for a for a 7 bowser/ 11 fuelling point 'On the Run' (OTR) Service Station with an automatic car wash, 4 manual car wash bays, 3 vacuum bays, 2 electric vehicle charging bays, 17 car parking bays, 4 heavy vehicle parking bays, 1 loading bay and a drive-thru and walk-thru food, drinks, grocery facility.

Table of land uses and quantities.

Land Use	Unit
Fuel Bowsers	4 Light Vehicle Bowsers/ 8 filling bays.
	3 Heavy Vehcile Bowsers/ 3 filling bays.
Vacuum/ Chamois Cleaning	3 bays.
Manual Car Wash	4 bays.
Auto Wash	1 Drive-thru facility.
Drive-Thru Retail	282 m^2.
Control & Retail	
Parking	16 Light Vehilces including 'disabled' with shared space.
	2 Electric Vehcile charging bays.
	4 Heavy Vehciles (1 x MRV, 2 x Semi-trailer & 1 x B-Double).
	2 rails for secure parking of 4 bicyles.
Loading & Waste Collection	1 Waste Collection area & 1 MRV Loading Bay for control building.
Vacant Tenancy	Site: 2,174 m^2, Minimum GFA 489 m^2.

Table 3 – Proposed Land Uses

Access arrangements.

A 13.3 m wide two-way left-in/ right-in/ left-out Access Driveway off Greenwich Pde with a short (30 m) right turn lane within the Greenwich Pde median. Refer Figure 3 on page 8.

Parking provision.

Up to 19 cars (including 1 'disabled' and 2 electric charging station bays), 2 Medium Rigid Vehicles (including 1 loading bay for control building), 2 x Semi Trailers and 1 B-Double, as shown in the Development Plan provided as Figure 1 on page 6.

End of trip facilities.

2 parking rails for secure parking of up to 4 bicycles.

Any specific issues.

No access permitted off Flynn Dr – refer **Analysis of transport networks** in **Section 6**.

Road network.

The road network, including classifications (hierarchy), is shown in Figure 4 on page 11. The Path, cycle path, cycle route and public transport network is shown in Figure 5 on page 12.

Intersection layout and controls.

The layout of the Give-way controlled Flynn Dr/ Greenwich Pde intersection and Greenwich Pde/ Hemisphere St roundabout is shown in Figure 1 on page 6. This shows the existing layout and a proposed short (30 m) right turn lane into the proposed Access Driveway off Greenwich Pde.

Pedestrian/ cycle networks and crossing facilities.

There are no proposals or warrants to improve the existing pedestrian/ cycle networks or crossing facilities. The most recent Main Roads WA traffic survey data (May 2022) indicated no pedestrians crossed Flynn Dr and 1 pedestrian crossed Greenwich Pde during the 24-hour recording period. This also recorded 1 cyclist northbound and 2 cyclists southbound on Greenwich Pde and 4 cyclists eastbound and 9 westbound on Flynn Dr.

Public transport services.

There are no plans within the *Transport @3.5 Million Public Transport Plan* (7) for major public transport facilities to be provided in the vicinity of the Neerabup Industrial Estate.

The *SKM report* for the Neerabup Industrial Estate (4) indicates that "*At this stage it is understood that there are no planned public transport routes for the area but it is considered that bus services could be developed on the proposed Class 1 and 2 collector roads in the Structure Plan, all of which have sufficient width to carry buses*."

The nature of the proposed development, i.e., a Service Station, Car Wash and Drive-thru, suggests that public transport, walking, and cycling is only likely to be adopted by employees, not patrons.

5 INTEGRATION WITH SURROUNDING AREA

Surrounding major attractors/ generators.

The Neerabup Industrial Area comprises approximately 1,000 ha of predominantly General Industrial land. The subject land is located approximately 30 km north of the Perth City Centre, and 4 kilometres north east of the Joondalup City Centre. Major attractors and generators are the Mitchell Fwy and Wanneroo Rd to the west, Joondalup to the southwest and Old Yanchep Rd to the east, as shown below.

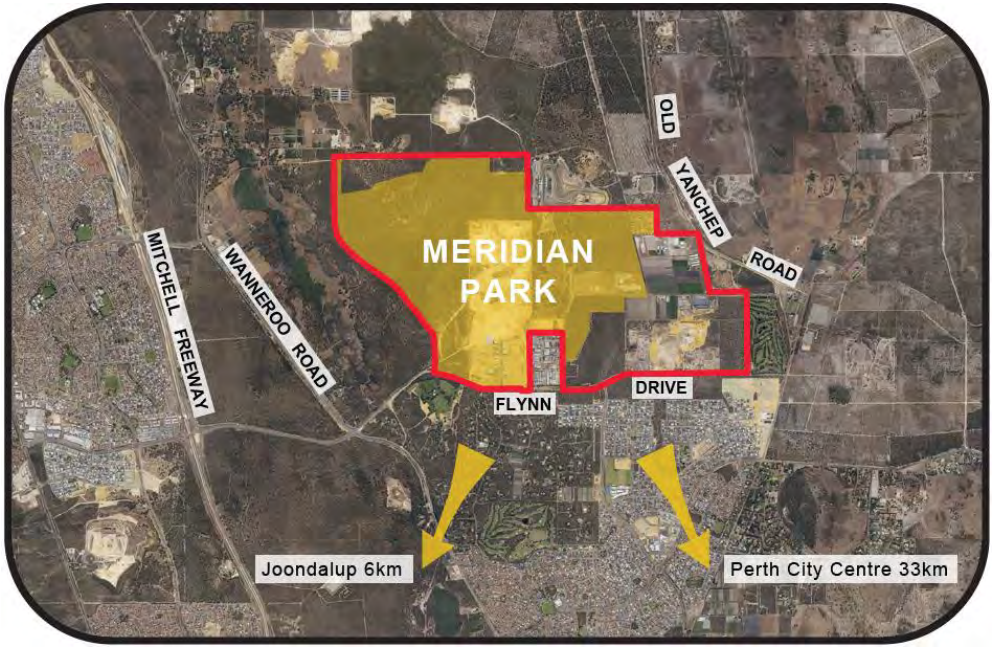


Figure 9 – Surrounding major attractors and generators

The development site's attractors and generators is traffic travelling along Flynn Dr and Greenwich Pde to and from various industries within the park.

Committed developments and transport proposals.

Meridian park is still under development and has a large number of lots available for sale and lease, including the recently released Stage 7 lots and Australian Automation and Robotics Precinct.

Proposed changes to land uses within 1.2 kms.

The extension of Pinjar Road to Flynn Dr was completed in October 2018 and has resulted in changes to traffic volumes on Flynn Dr on either side of this (refer Table 2 on page 10).

Travel desire lines from development to these attractors/ generators.

Shown in Figure 3 on page 8.

Adequacy of existing transport networks.

Full development of the Neerabup Industrial Estate, including Meridian Park, Global Business Park and Australian Automation and Robotics Precinct has been assessed as likely to generate significant increases in traffic volumes on Flynn Dr with the *SKM report* (4) forecasting volumes in excess of 20,000 vehicles per day, as shown in Figure 10 below. These volumes include assumed traffic generation from all lots, including the subject site and will ultimately require the dualling of Flynn Dr to accommodate this.

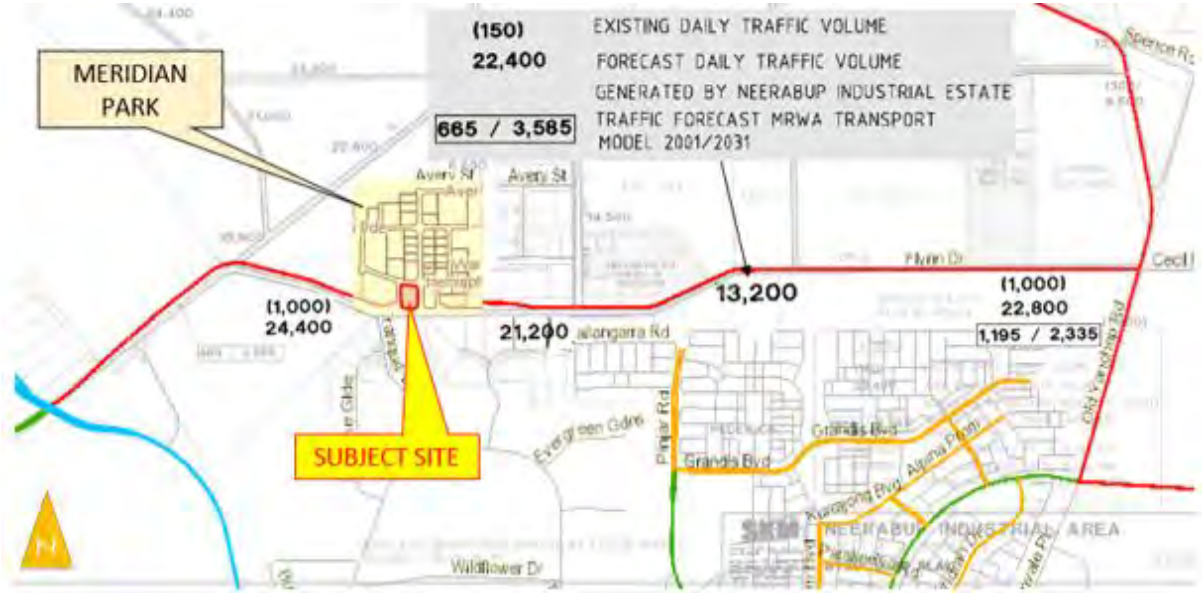


Figure 10 – Forecast Traffic Volumes on Flynn Dr with full development of Neerabup Industrial estate (4)

There is a proposal within the Perth & Peel Transport Plan (7) to construct the Whiteman-Yanchep Highway which will link Tonkin Highway with Mitchell Freeway with a freeway standard road between Tonkin Highway and Neerabup – by 3.5 million population for Perth and Peel, estimated to be 2050.

Deficiencies in existing transport networks.	There are no identified deficiencies with the existing transport network other than the need to accommodate the forecast volumes on Flynn Dr with full development of the Neerabup Industrial Estate, as indicated in the *SKM report* (4).
Remedial measures to address deficiencies.	The *SKM report* (4) has indicated that dualling of Flynn Drive will be required sometime in the future to accommodate traffic generation associated with full development of the Neerabup Industrial Estate. The assessment within this *TIA* has indicated that this is not necessary for the proposed development.

6 ANALYSIS OF TRANSPORT NETWORKS

Assessment years.

An assessment year has not been selected as traffic volumes on Flynn Dr are expected to significantly increase with full development of the Neerabup Industrial Estate with the forecast volumes including assumed traffic generation for the development site. It is however necessary to model the existing volumes and full development of the proposed site to determine the likely impact on performance of the road network without dualling of Flynn Drive.

Time periods.

Peak traffic volumes are expected to be generated between 12 noon and 1 PM, based on hourly rates from the *RMS Trip Generation Surveys, Service Stations, Analysis Report* (8). In addition to assessing impacts during the development's peak hour, it is also necessary to assess impacts during the road network AM and PM peak hours. The Main Roads WA video survey of the Flynn Dr/ Greenwich Pde intersection indicates that the peak hours are 8.00 – 9.00 AM and 3.30 – 4.30 PM.

Development generated traffic.

Peak hour volumes of traffic by class 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 12 on page 28. In summary this indicates trips into and out of the subject site of up to 166 in the morning peak hour, 179 between 12 noon and 1 PM and 149 in the afternoon peak hour. It should be noted that up to 70% of these trips are likely to be pass-by trips and hence actual increased trips on the external roads will be up to 70% less than the number of trips into and out of the site, i.e., 50 in the morning, 54 at midday and 45 in the afternoon.

Distribution & assignment of generated traffic.

The distribution (Arrival/ Departure volumes) and assignment of traffic to the road network is based on all traffic to and from the site via the Access Driveway off Greenwich Pde. All departing traffic must turn left due to the median preventing right turns out. Consideration was given to providing a median break to allow right turns out, but this was discarded in favour of providing a break for right turn IN traffic only and reducing conflicts associated with allowing right turns out as well. The existing roundabout 47 m north of the Access Driveway allows for departing traffic to return to Flynn Dr with relative ease. The model allows for 45% of departing traffic in the morning peak hour to return to Flynn Dr, increasing to 84% in the afternoon peak hour. The distribution and assignment of development generated traffic, including percentages, classes, and volumes, is shown in Figure 13 on page 29 and Figure 14 on page 30.

Parking supply and demand.

19 parking bays including 1 bay designated for use by a person with a disability with an adjacent shared space and 2 electric vehicle charging bays. The indicated parking demand for various relevant land uses are included in Table 2 (Car Parking Standards) of the City of Wanneroo's District Planning Scheme 2 (*DPS2*) (8), with relevant requirements reproduced as Table 4 below.

USE CLASS	NUMBER OF ON-SITE CAR PARKING SPACES
Car Wash	Nil if incidental to other development on same site otherwise 1
Convenience Store	7 per 100m^2 NLA. Up to 50% of bays may be located in refuelling positions
Drive –Through Food Outlet	1 per 4 guests in indoor and outdoor seated areas plus 7 per 100m^2 NLA for non seated areas. Up to 50% of non seated area parking may be located in drive through queue
Service Station	*5 bays per service bay plus 7 per 100m^2 non service bay NLA. Up to 50% of non service bays may be located in refuelling positions*

Table 4 – Relevant land use parking requirements (Table 2: Wanneroo DPS2)

Based on the above, the assessed statutory parking bay requirement is a total of 16 bays, as shown in Table 5 below.

Land Use	Required bays and determination
Car Wash	0 bays (inidental to ther development)
Convenience Store	5 (50% of 7 per 100 m^2 NLA - shared with Drive-Thru non seated below on 50/50 basis)
Drive-Thru Food Outlet	5 (O indoor and outdoor seating, 50% of non-seated area parking in drive-thru-queue)
Service Station	6 (50% of 5 per service bay)
TOTAL	**16 bays.**

Table 5 – Assessed parking requirements

The development drawings indicate it is proposed to provide 16 light vehicle bays, 2 electric vehicle charging bays and 4 heavy vehicle bays, which exceed the assessed statutory parking provision requirements.

Base and 'with development' traffic flows.

The assessed Base (2022) and forecast OTR AM, midday, and PM peak hour volumes through each intersection and proposed access driveways off Greenwich Pde are shown in Figure 15 on page 31 and Figure 16 on page 32.

Analysis of development accesses.

Analysis of the proposed Access Driveway off Greenwich Pde is included in the SIDRA 9.1 Network Model as an intersection between Flynn St and Hemisphere St.

Impact on surrounding roads.

The *WAPC Guidelines* indicates 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 certain individual turn and approach volumes exceed these thresholds, as shown in Figure 11 below. (red shaded percentages are above the threshold, green shaded percentages are below the threshold).

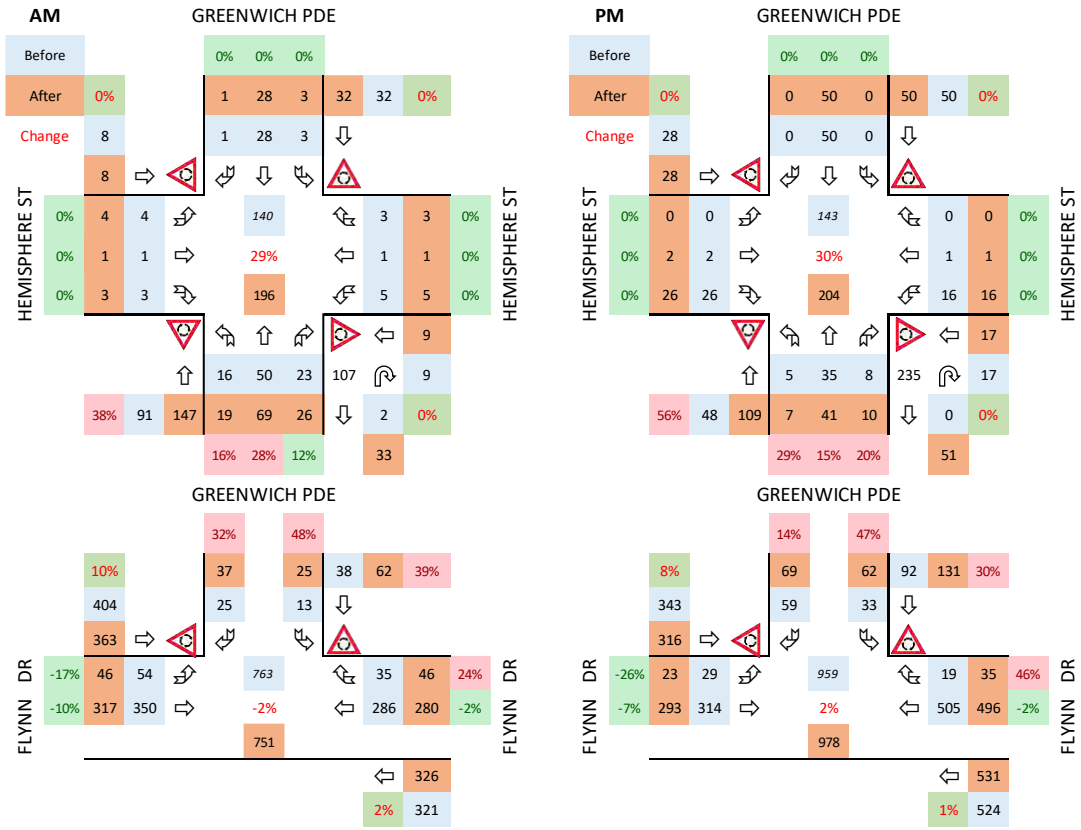


Figure 11 – Assessment of percentage traffic flow increases

Based on the above, the existing and forecast traffic volumes at both intersections and the forecast volumes at the proposed Access Driveway have been assessed in a SIDRA Intersection 9.1 network model. This has revealed that these intersections currently perform at a good level with spare capacity and will continue to do so with the forecast increased traffic volumes and flows, as shown in the intersection performance criteria assessment, provided as Table 6 and Table 7 on the following pages.

Intersection	Movement	Existing AM Peak Hour					Forecast AM Peak Hour					Change
		DoS	Ave Delay (s)	LoS	Ave BoQ (m)	Avail Q	DoS	Ave Delay (s)	LoS	Ave BoQ (m)	Avail Q	Ave Delay
Ki2	Greenwich NB left into Hemisphere	0.068	3.6	A	0.6	117.0	0.112	2.8	A	1.1	47.0	-0.8
	Greenwich NB straight ahead	0.068	3.6	A	0.6	117.0	0.112	2.7	A	1.1	47.0	-0.9
	Greenwich NB right into Hemisphere	0.068	7.0	A	0.6	117.0	0.112	6.1	A	1.1	47.0	-0.9
	Greenwich NB U turn	0.068	9.9	A	0.6	117.0	0.112	8.1	A	1.1	47.0	-1.8
	Hemisphere WB left into Greenwich	0.008	3.4	A	0.1	60.0	0.008	3.5	A	0.1	60.0	0.1
	Hemisphere WB straight ahead	0.008	3.3	A	0.1	60.0	0.008	3.4	A	0.1	60.0	0.1
	Hemisphere WB right into Greenwich	0.008	6.8	A	0.1	60.0	0.008	7.0	A	0.1	60.0	0.2
	Greenwich SB left into Hemisphere	0.031	4.2	A	0.4	245.0	0.032	4.5	A	0.4	245.0	0.3
	Greenwich SB straight ahead	0.031	3.8	A	0.4	245.0	0.032	4.0	A	0.4	245.0	0.2
	Greenwich SB right into Hemisphere	0.031	7.1	A	0.4	245.0	0.032	7.2	A	0.4	245.0	0.1
	Hemisphere EB left into Greenwich	0.008	4.0	A	0.1	80.0	0.009	4.3	A	0.1	80.0	0.3
	Hemisphere EB straight ahead	0.008	3.7	A	0.1	80.0	0.009	4.0	A	0.1	80.0	0.3
	Hemisphere EB right into Greenwich	0.008	7.9	A	0.1	80.0	0.009	8.3	A	0.1	80.0	0.4
Access	Greenwich NB left into Access 2	NA	NA	NA	NA	NA	0.080	4.1	A	0.0	54.0	NA
	Greenwich NB straight ahead	NA	NA	NA	NA	NA	0.080	0.0	A	0.0	54.0	NA
	Greenwich SB straight ahead	NA	NA	NA	NA	NA	0.028	0.0	A	0.0	47.0	NA
	Greenwich SB right into Access 2	NA	NA	NA	NA	NA	0.020	5.2	A	0.3	47.0	NA
	Access 2 left into Greenwich	NA	NA	NA	NA	NA	0.061	0.3	A	0.8	40.0	NA
Ki1	Flynn WB straight through	0.136	0.2	A	1.2	145.0	0.146	0.2	A	1.9	145.0	0.0
	Flynn WB left into Greenwich	0.136	12.1	B	1.2	145.0	0.146	11.3	B	1.9	145.0	-0.8
	Greenwich SB left into Flynn	0.017	7.2	A	0.2	117.0	0.024	6.1	A	0.3	54.0	-1.1
	Greenwich SB right into Flynn	0.087	15.3	C	0.9	117.0	0.110	15.0	C	1.2	54.0	-0.3
	Flynn EB left into Flynn	0.041	7.9	A	0.6	1600.0	0.062	7.9	A	0.8	1600.0	0.0
	Flynn EB straight through	0.197	0.1	A	0.0	1600.0	0.187	0.1	A	0.0	1600.0	0.0

Table 6 – Intersection performance criteria assessment: Existing and Forecast AM Peak Hour

Refer Table 9 on page 33 for Intersection Performance Criteria descriptions used in the SIDRA Intersection 9.1 modelling software. Refer **Appendix B** for SIDRA Intersection 9.1 figures and data.

Intersection	Movement	Existing PM Peak Hour					Forecast PM Peak Hour					Change
		DoS	Ave Delay (s)	LoS	Ave BoQ (m)	Avail Q	DoS	Ave Delay (s)	LoS	Ave BoQ (m)	Avail Q	Ave Delay
Ki2	Greenwich NB left into Hemisphere	0.037	3.8	A	0.3	117.0	0.085	2.8	A	0.8	47.0	-1.0
	Greenwich NB straight ahead	0.037	3.5	A	0.3	117.0	0.085	2.7	A	0.8	47.0	-0.8
	Greenwich NB right into Hemisphere	0.037	7.4	A	0.3	117.0	0.085	6.1	A	0.8	47.0	-1.3
	Greenwich NB U turn	0.037	9.9	A	0.3	117.0	0.085	8.1	A	0.8	47.0	-1.8
	Hemisphere WB left into Greenwich	0.023	3.6	A	0.2	60.0	0.016	3.7	A	0.2	60.0	0.1
	Hemisphere WB straight ahead	0.023	3.5	A	0.2	60.0	0.016	3.6	A	0.2	60.0	0.1
	Hemisphere WB right into Greenwich	0.023	7.1	A	0.2	60.0	0.016	7.2	A	0.2	60.0	0.1
	Greenwich SB left into Hemisphere	0.062	3.7	A	0.7	245.0	0.047	3.8	A	0.5	245.0	0.1
	Greenwich SB straight ahead	0.062	3.7	A	0.7	245.0	0.047	3.9	A	0.5	245.0	0.2
	Greenwich SB right into Hemisphere	0.062	7.1	A	0.7	245.0	0.047	7.3	A	0.5	245.0	0.2
	Hemisphere EB left into Greenwich	0.035	3.7	A	0.3	80.0	0.025	3.9	A	0.3	80.0	0.2
	Hemisphere EB straight ahead	0.035	3.6	A	0.3	80.0	0.025	3.8	A	0.3	80.0	0.2
	Hemisphere EB right into Greenwich	0.035	7.1	A	0.3	80.0	0.025	7.4	A	0.3	80.0	0.3
Access	Greenwich NB left into Access 2	NA	NA	NA	NA	NA	0.055	4.1	A	0.0	54.0	NA
	Greenwich NB straight ahead	NA	NA	NA	NA	NA	0.055	0.0	A	0.0	54.0	NA
	Greenwich SB straight ahead	NA	NA	NA	NA	NA	0.068	0.0	A	0.0	47.0	NA
	Greenwich SB right into Access 2	NA	NA	NA	NA	NA	0.018	5.0	A	0.2	47.0	NA
	Access 2 left into Greenwich	NA	NA	NA	NA	NA	0.052	0.2	A	0.7	40.0	NA
Ki1	Flynn WB straight through	0.193	0.4	A	0.6	145.0	0.201	0.3	A	1.3	145.0	-0.1
	Flynn WB left into Greenwich	0.193	11.7	B	0.6	145.0	0.201	11.2	B	1.3	145.0	-0.5
	Greenwich SB left into Flynn	0.048	6.1	A	0.6	117.0	0.060	5.3	A	0.7	54.0	-0.8
	Greenwich SB right into Flynn	0.262	15.4	C	2.9	117.0	0.214	15.0	C	2.2	54.0	-0.4
	Flynn EB left into Flynn	0.022	7.9	A	0.3	1600.0	0.039	7.8	A	0.5	1600.0	-0.1
	Flynn EB straight through	0.172	0.1	A	0.0	1600.0	0.162	0.1	A	0.0	1600.0	0.0

Table 7 – Intersection performance criteria assessment: Existing and Forecast PM Peak Hour

Refer Table 9 on page 33 for Intersection Performance Criteria descriptions used in the SIDRA Intersection 9.1 modelling software. Refer **Appendix B** for SIDRA Intersection 9.1 figures and data.

Intersection	Movement	Existing 12 noon - 1 PM					Forecast 12 noon - 1 PM					Change
		DoS	Ave Delay (s)	LoS	Ave BoQ (m)	Avail Q	DoS	Ave Delay (s)	LoS	Ave BoQ (m)	Avail Q	Ave Delay
Ki2	Greenwich NB left into Hemisphere	0.026	3.8	A	0.2	117.0	0.124	2.8	A	1.1	47.0	-1.0
	Greenwich NB straight ahead	0.026	3.6	A	0.2	117.0	0.124	2.7	A	1.1	47.0	-0.9
	Greenwich NB right into Hemisphere	0.026	7.3	A	0.2	117.0	0.124	6.1	A	1.1	47.0	-1.2
	Greenwich NB U turn	0.026	9.9	A	0.2	117.0	0.124	8.1	A	1.1	47.0	-1.8
	Hemisphere WB left into Greenwich	0.006	3.3	A	0.1	60.0	0.008	3.5	A	0.1	60.0	0.2
	Hemisphere WB straight ahead	0.006	3.3	A	0.1	60.0	0.008	3.4	A	0.1	60.0	0.1
	Hemisphere WB right into Greenwich	0.006	6.8	A	0.1	60.0	0.008	7.0	A	0.1	60.0	0.2
	Greenwich SB left into Hemisphere	0.028	3.5	A	0.3	245.0	0.032	4.5	A	0.4	245.0	1.0
	Greenwich SB straight ahead	0.028	3.7	A	0.3	245.0	0.032	4.0	A	0.4	245.0	0.3
	Greenwich SB right into Hemisphere	0.028	7.0	A	0.3	245.0	0.032	7.2	A	0.4	245.0	0.2
	Hemisphere EB left into Greenwich	0.010	3.9	A	0.1	80.0	0.009	4.3	A	0.1	80.0	0.4
	Hemisphere EB straight ahead	0.010	3.5	A	0.1	80.0	0.009	4.0	A	0.1	80.0	0.5
	Hemisphere EB right into Greenwich	0.010	7.2	A	0.1	80.0	0.009	8.4	A	0.1	80.0	1.2
Access	Greenwich NB left into Access 2	NA	NA	NA	NA	NA	0.083	4.1	A	0.0	54.0	NA
	Greenwich NB straight ahead	NA	NA	NA	NA	NA	0.083	0.0	A	0.0	54.0	NA
	Greenwich SB straight ahead	NA	NA	NA	NA	NA	0.030	0.0	A	0.0	47.0	NA
	Greenwich SB right into Access 2	NA	NA	NA	NA	NA	0.022	5.2	A	0.3	47.0	NA
	Access 2 left into Greenwich	NA	NA	NA	NA	NA	0.067	0.3	A	0.8	40.0	NA
Ki1	Flynn WB straight through	0.095	0.1	A	0.7	145.0	0.146	0.2	A	1.9	145.0	0.1
	Flynn WB left into Greenwich	0.095	10.1	B	0.7	145.0	0.146	11.2	B	1.9	145.0	1.1
	Greenwich SB left into Flynn	0.024	5.9	A	0.3	117.0	0.024	6.1	A	0.3	54.0	0.2
	Greenwich SB right into Flynn	0.038	10.2	B	0.5	117.0	0.110	15.0	B	1.2	54.0	4.8
	Flynn EB left into Flynn	0.015	8.0	A	0.2	1600.0	0.064	7.9	A	0.9	1600.0	-0.1
	Flynn EB straight through	0.118	0.1	A	0.0	1600.0	0.186	0.1	A	0.0	1600.0	0.0

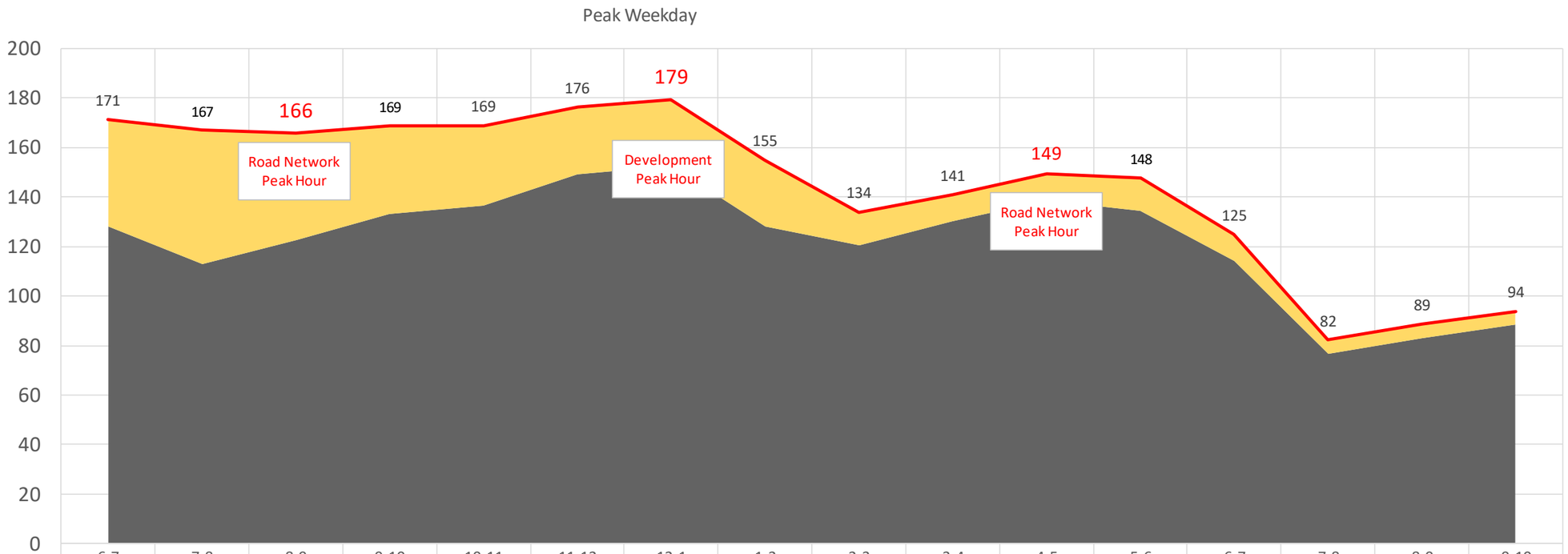
Table 8 – Intersection performance criteria assessment : Development's Peak Hour: 12 noon – 1PM

Refer Table 9 on page 33 for Intersection Performance Criteria descriptions used in the SIDRA Intersection 9.1 modelling software. Refer **Appendix B** for SIDRA Intersection 9.1 figures and data.

Impact on intersections.	The assessed impact of the forecast development generated traffic on each intersection for each peak hour is negligible, with the greatest assessed change during the road network peak hours being an increase of 0.4 and 0.3 seconds in average delay for the Hemisphere EB right turn into Greenwich Pde during the morning and afternoon peak hours respectively. The greatest change during the development's peak hour, i.e., 12 noon to 1 PM is an extra 4.8 seconds for the Greenwich Pde right turn movement into Flynn Dr. The assessed low changes are due to the existing good performance of both intersections with spare capacity (as would be expected for a partially developed precinct) and the fact that up to 70% of the forecast volumes into and out of the site will be from pass-by traffic, i.e., traffic that is already in the area travelling along the frontage roads to or from different origin and destination locations.
Impact on neighbouring areas.	There are no residential properties or accesses in the vicinity of the proposed development.
Road Safety.	Refer **Section 7**. It will be necessary to extend the traffic island in Flynn St on the west side of Greenwich Pde to physically prevent right turns into the site.
Public transport access.	Refer **Section 4**.
Pedestrian access/ amenity.	Pedestrian access to the site is via paths on all frontage roads and informal pedestrian crossing facilities within the intersections.
Traffic Management Plan.	Not applicable.
Site specific issues.	The traffic modelling has indicated that the proposed Access Driveway off Greenwich Pde and the provision of a right IN turning bay on Greenwich Pde with all departures via a left turn onto Greenwich Pde does not result in any noticeable impacts on existing performance of the assessed roads.

Land Use	Source	Adopted Trip Generation Rate	Units	Land Use's Peak	AM Distribution IN	AM Distribution OUT	PM Distribution IN	PM Distribution OUT	Pass-By
Service Station + Convenience Store + Car Wash	ITE	13.86 per 1 Fuel Point	11	152	50%	50%	51%	49%	70%
Proposed Drive-thru Drinks, Food, Small Grocery	i3 surveys	54 per 1 Drive-thru facility	1	54	50%	50%	50%	50%	70%
				206					

Time of Day	Midweek Hourly Profile (Trips) 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	128	113	123	133	136	149	152	128	120	130	139	134	114	77	83	88
Proposed Drive-thru	43	54	43	36	32	27	27	27	14	11	11	14	11	5	5	5
TOTAL	171	167	166	169	169	176	179	155	134	141	149	148	125	82	89	94
			AM				Dev				PM					



	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
Proposed Drive-thru Drinks, Food, Small Grocery	43	54	43	36	32	27	27	27	14	11	11	14	11	5	5	5
Service Station + Convenience Store + Car Wash	128	113	123	133	136	149	152	128	120	130	139	134	114	77	83	88
TOTAL	171	167	166	169	169	176	179	155	134	141	149	148	125	82	89	94

Figure 12 – Assessed trip generation by land use

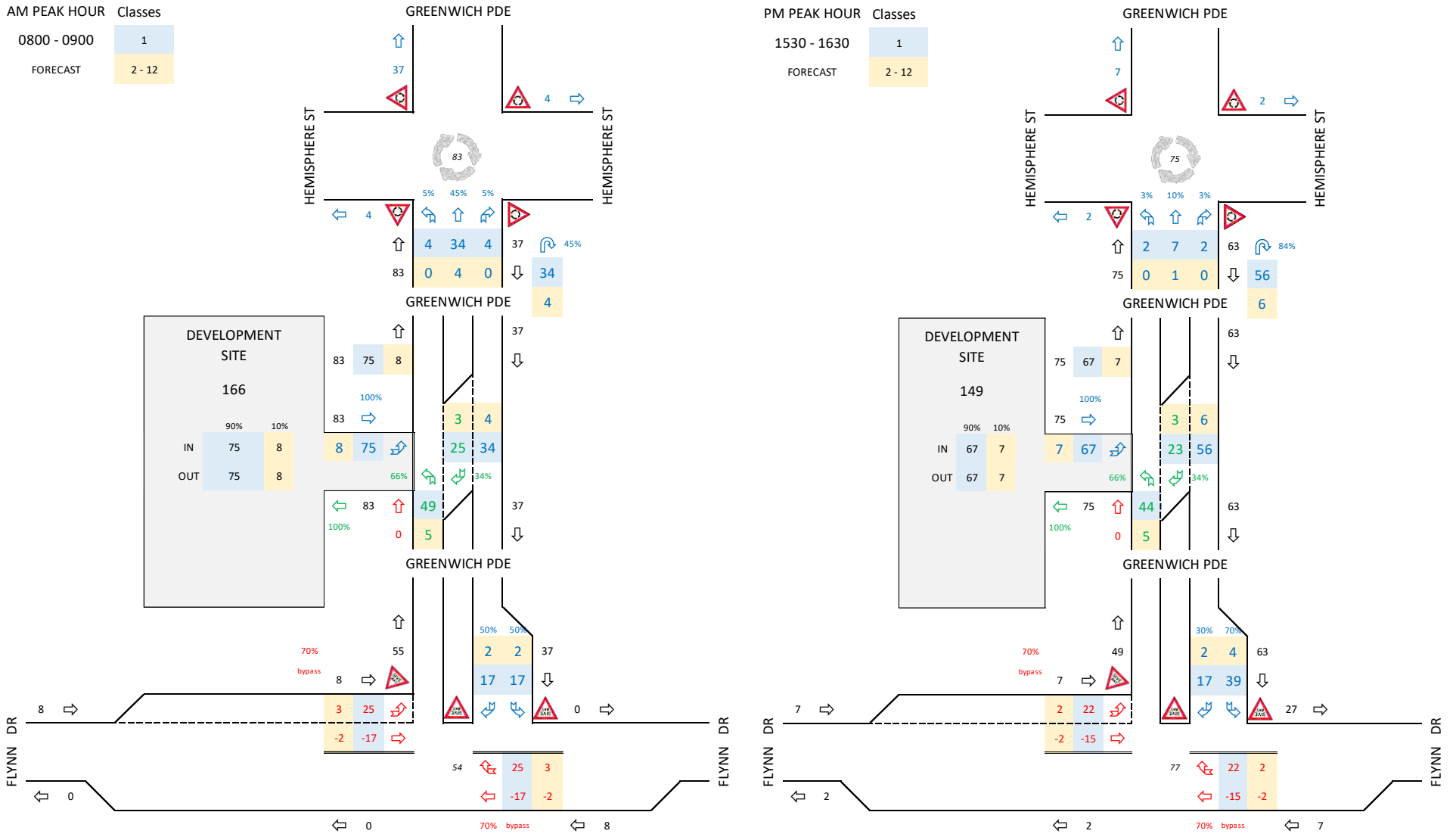


Figure 13 – Trip Distribution (IN/ OUT) and Trip Assignment: AM Peak Hour (0800-0900) & PM Peak Hour (1530-1630)

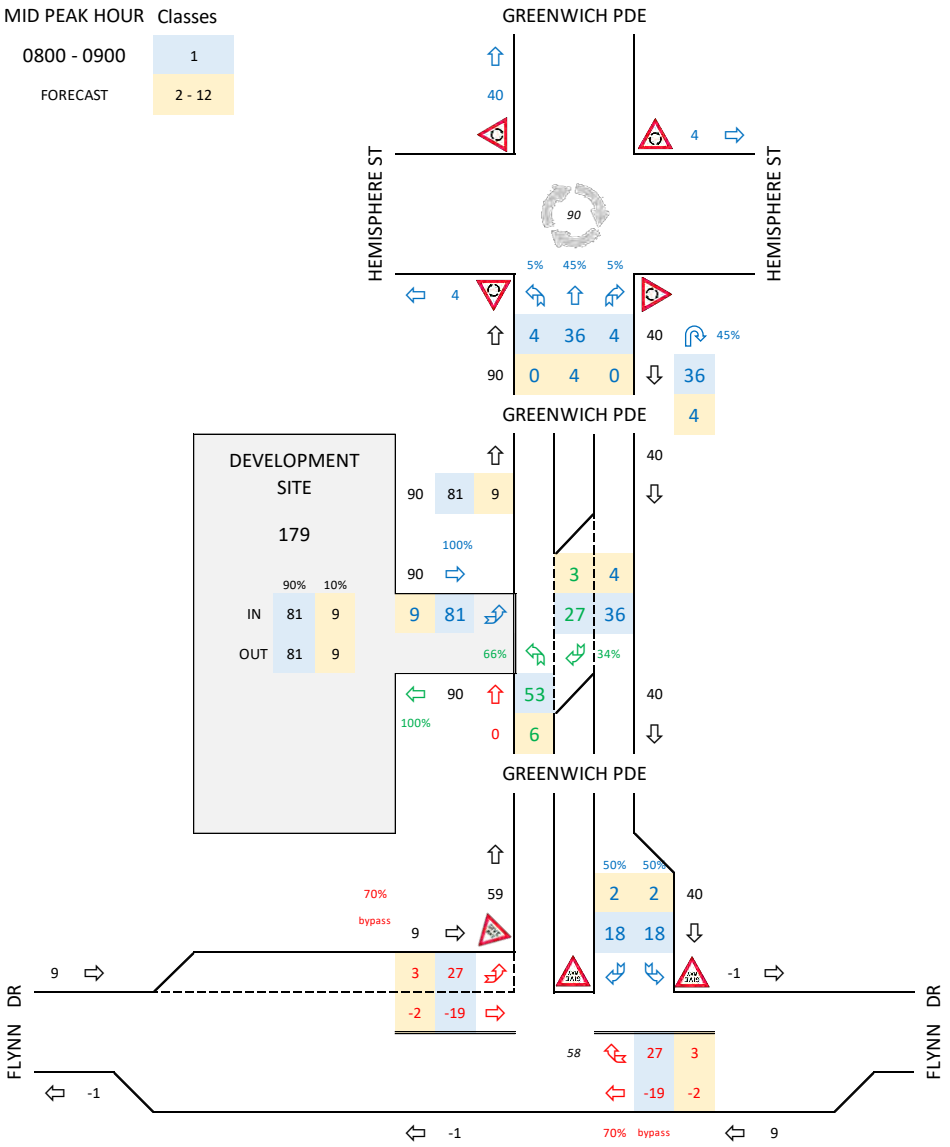


Figure 14 – Trip Distribution (IN/ OUT) and Trip Assignment: Development's Peak Hour: 12 noon to 1 PM

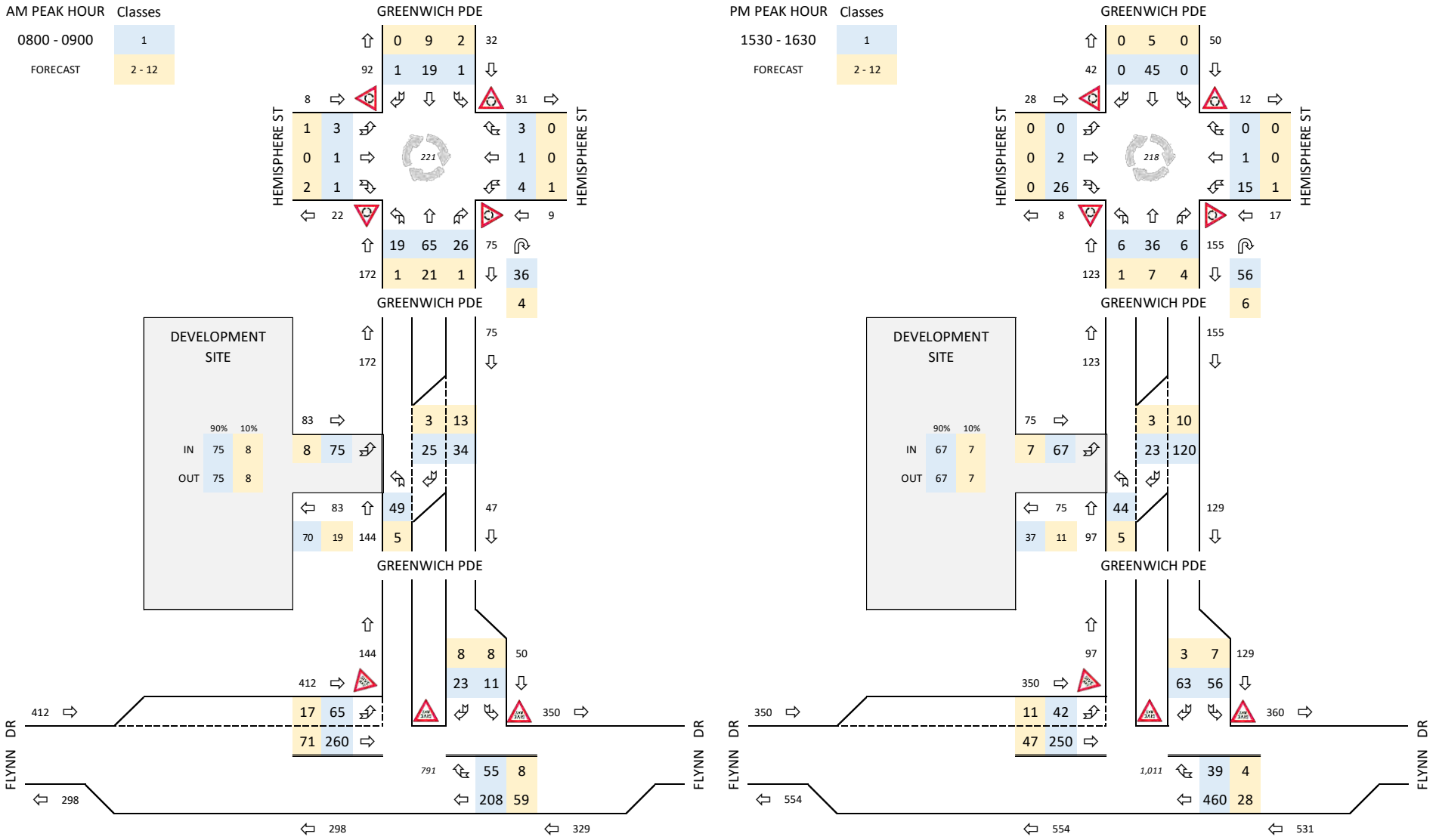


Figure 15 – Existing + Development AM and PM Peak Hour Volumes

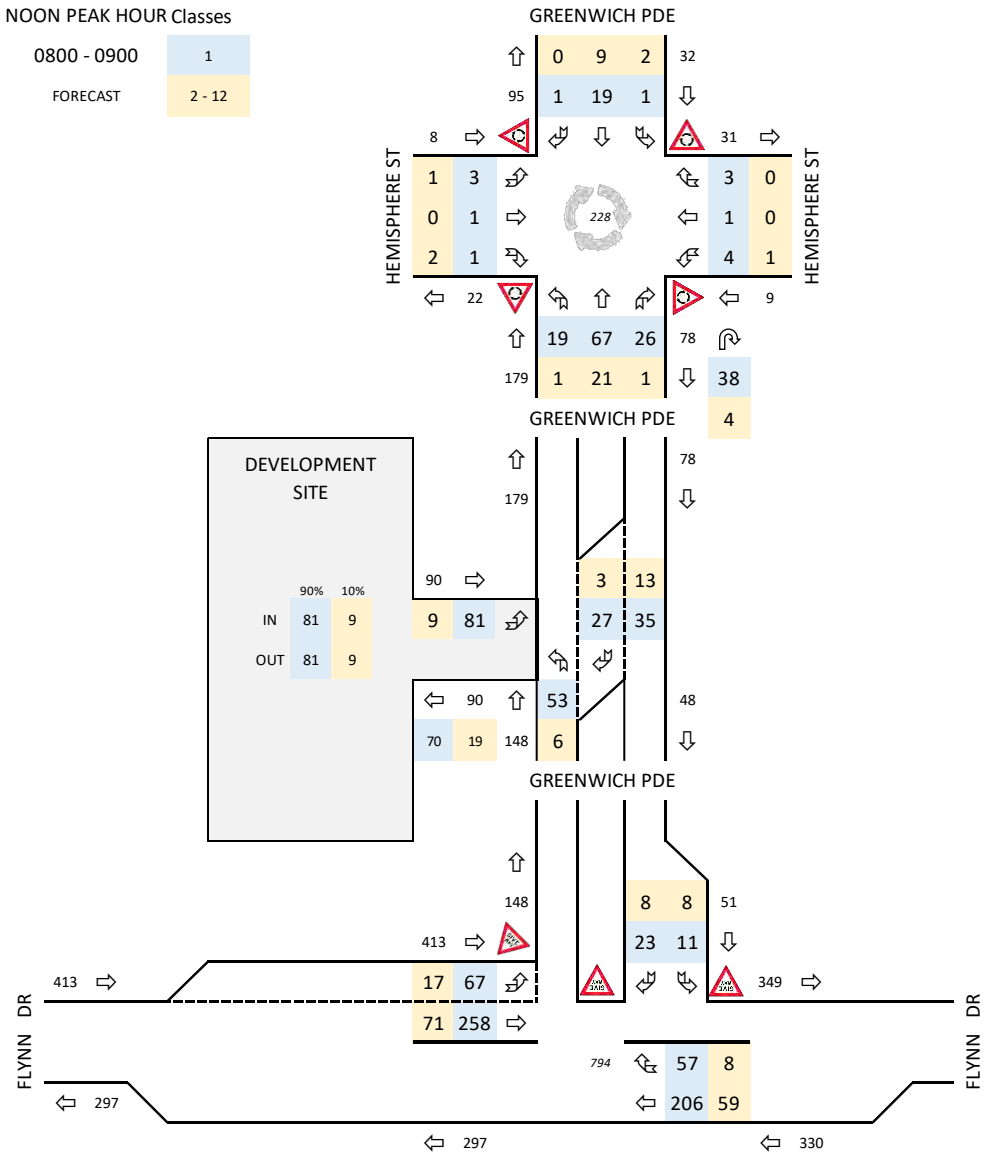


Figure 16 – Existing + Development: Development's Peak Hour: 12 noon – 1 PM

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 9 – SIDRA Intersection performance criteria and descriptions

7 SAFETY

As indicated in **Section 3**, there has been 1 reported crash at the Flynn Dr/ Greenwich Pde intersection and none on Greenwich Pde or the Greenwich Pde/ Hemisphere St roundabout in the five-year period ending 31st December 2022. There were no reported crashes in the five-year period ending 31st December 2021.A review of the 12-hour video survey recordings of the two intersections did not result in the identification of any safety concerns.

Based on the above, and the assessed impact of the proposed development in terms of increased volumes and performance within the SIDRA Intersection 9.1 Network Model, there are no identified safety concerns with the proposed development.

The approving authority raised a safety concern with a previous version of this *TIA* associated with the possibility of queued cars for the drive-thru blocking access for following vehicles. The width of the circulating aisle at this location is very wide (a minimum of 11 m) and allows for following vehicles to pass any queued vehicles without obstructing or interfering with any traffic in the opposite direction, as shown in the swept path diagrams provided in **Appendix A**.

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 Flynn Dr, a Regional Distributor Rd. Up to 70% of trips are expected to be pass-by trips, significantly reducing impacts on Flynn Dr and Greenwich Pde.
The impacts of the traffic generated by the development proposal on the surrounding transport networks.	Assessed as 'Moderate', i.e., forecast additional trips through the Greenwich Pde/ Flynn Dr intersection are 54 in the morning, 77 at midday and 58 in the afternoon, i.e., around 1 additional trip per minute.

References

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6. **City of Wanneroo & LandCorp.** *Neerabup Industrial Area Structure Plan No. 17.* Subiaco : Taylor Burrell Barnett, September 2017. p. 183, Includes Amendment No 4. Rev 12. WAPC Reference: SPN/0813M-1.

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10. **Roads and Traffic Authority NSW.** *Guide to Traffic Generating Developments.* Transport Planning Section. Sydney : Roads and Traffic Authority NSW, October 2002. p. 174. Version 2.2. ISBN 0 7305 9080 1.

APPENDIX A SWEPT PATH ASSESSMENTS

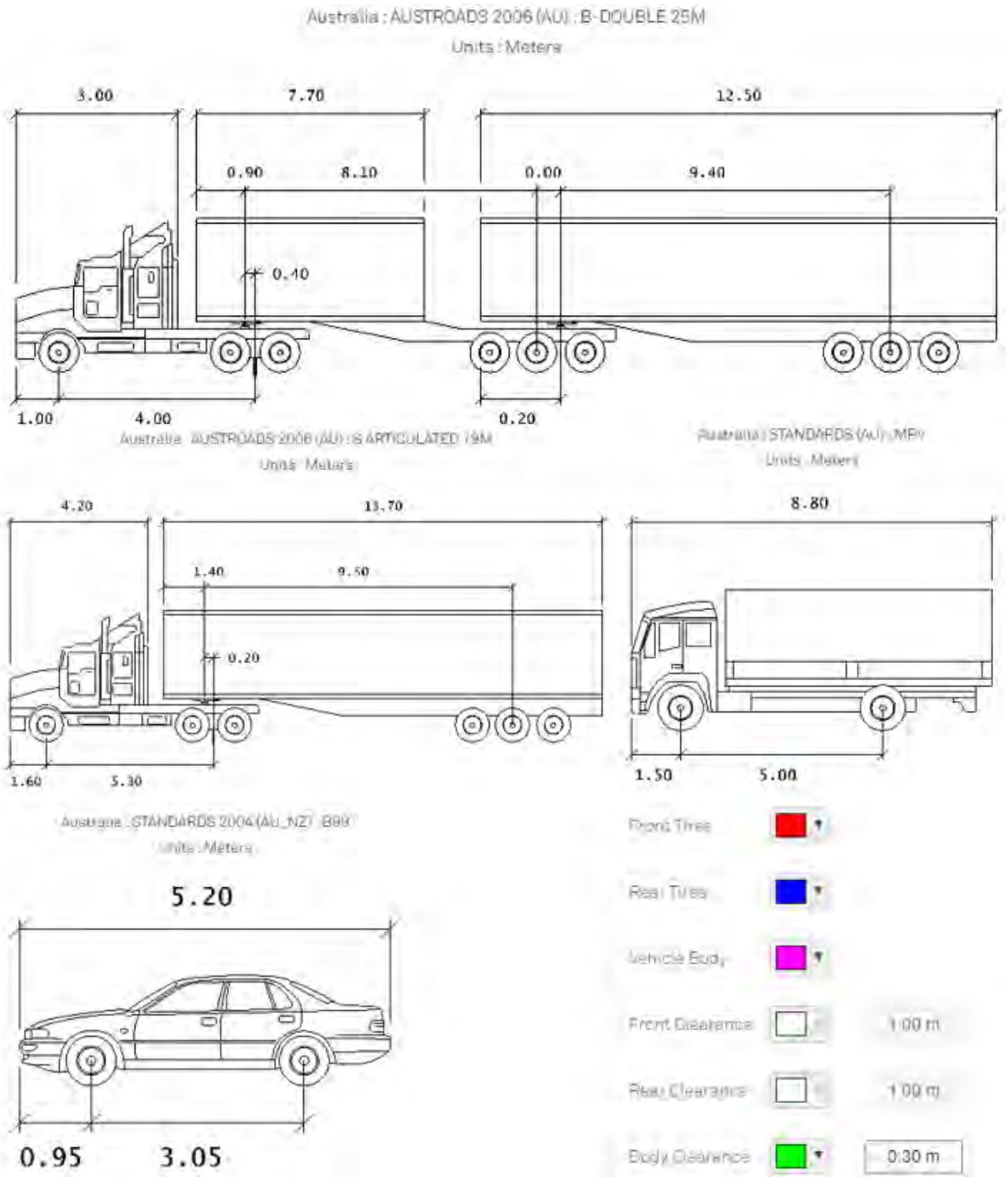


Figure 17 – Assessed Design Vehicles

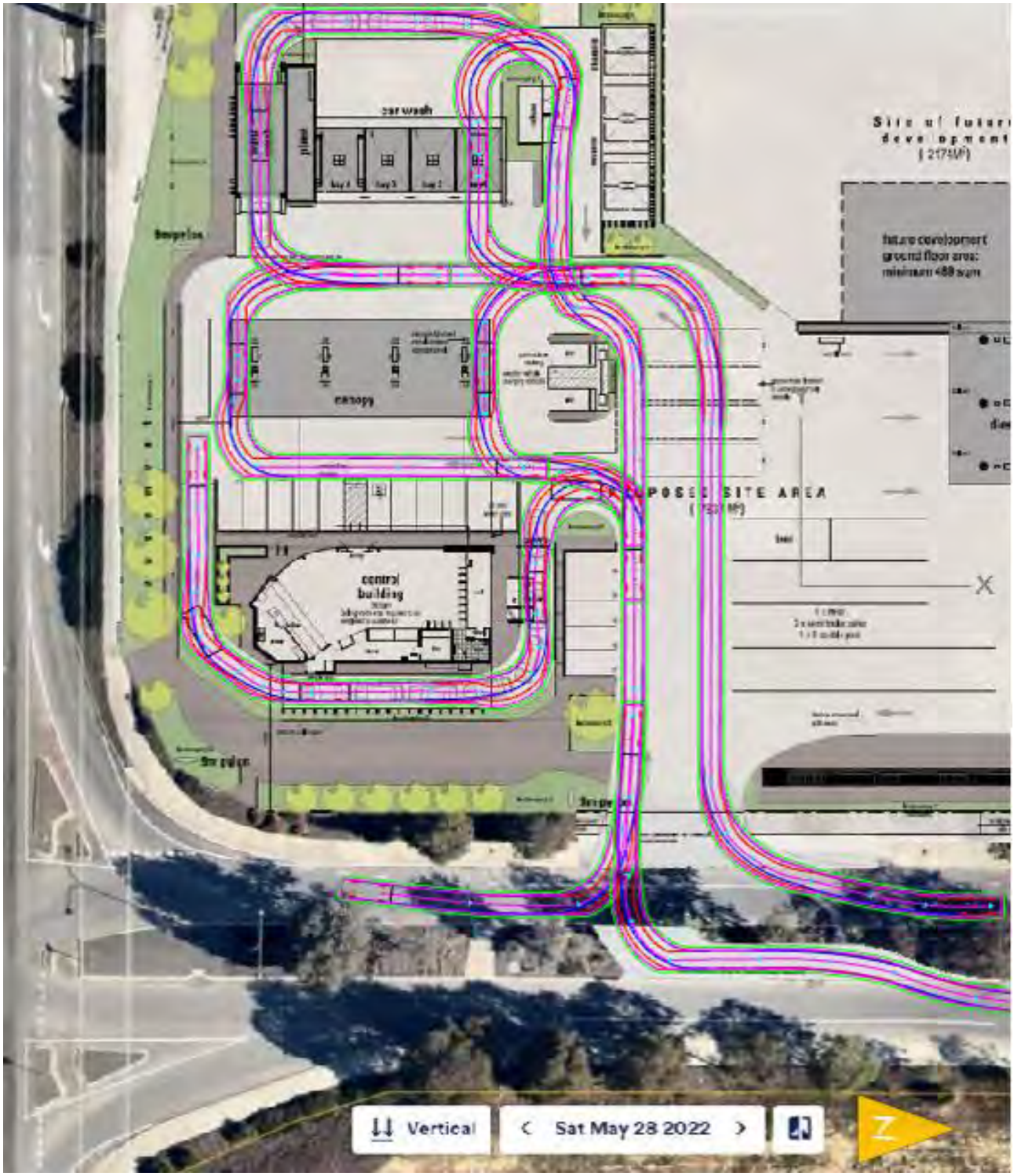


Figure 18 – Swept path assessment of B99 (Large Car) movements (refuelling, car was, drive-thru and parking)

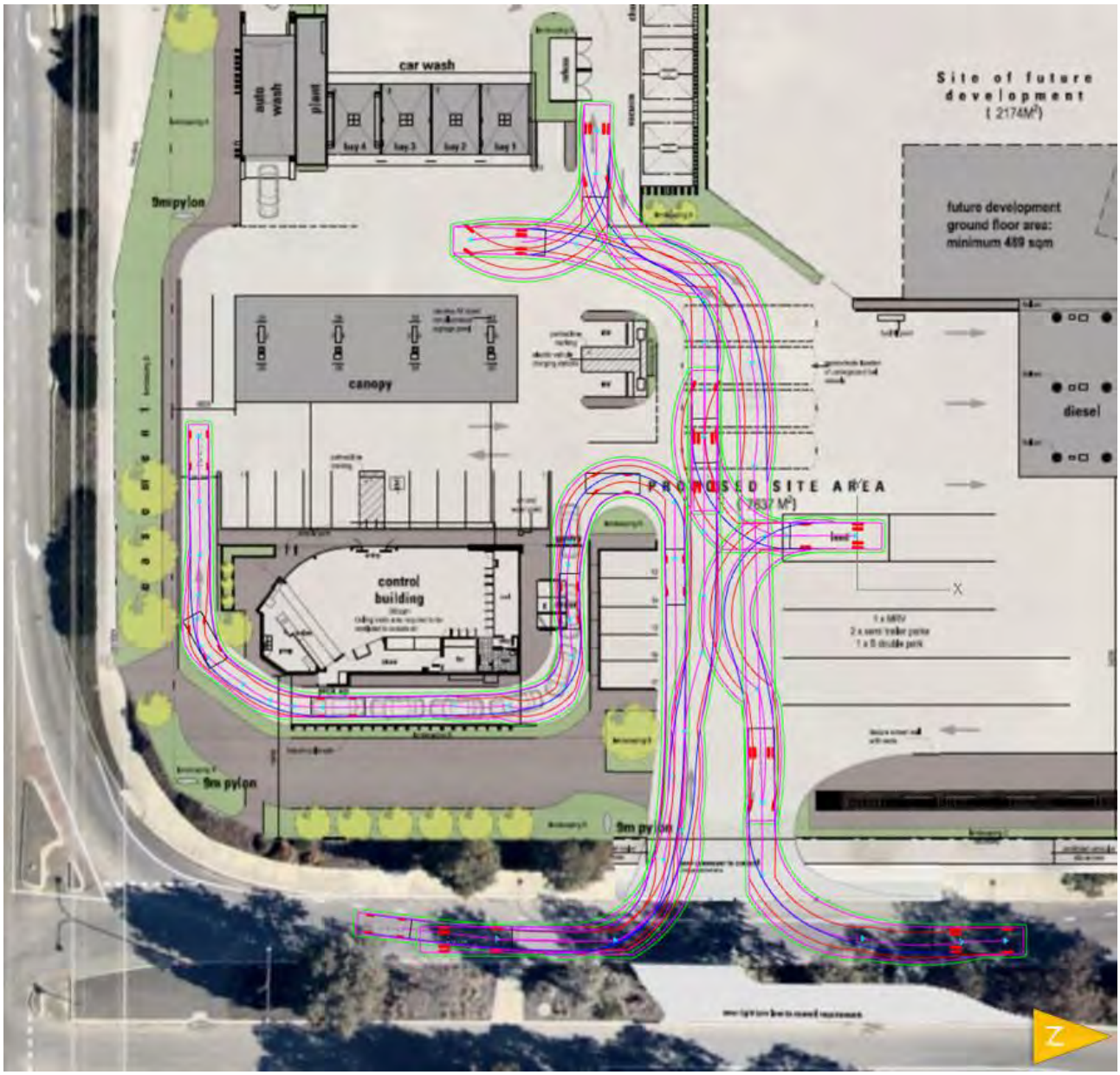


Figure 19 – Swept path assessment of MRV (Service & Waste Collection Vehicle) including passing any queued drive-thru B99 Design Vehicle

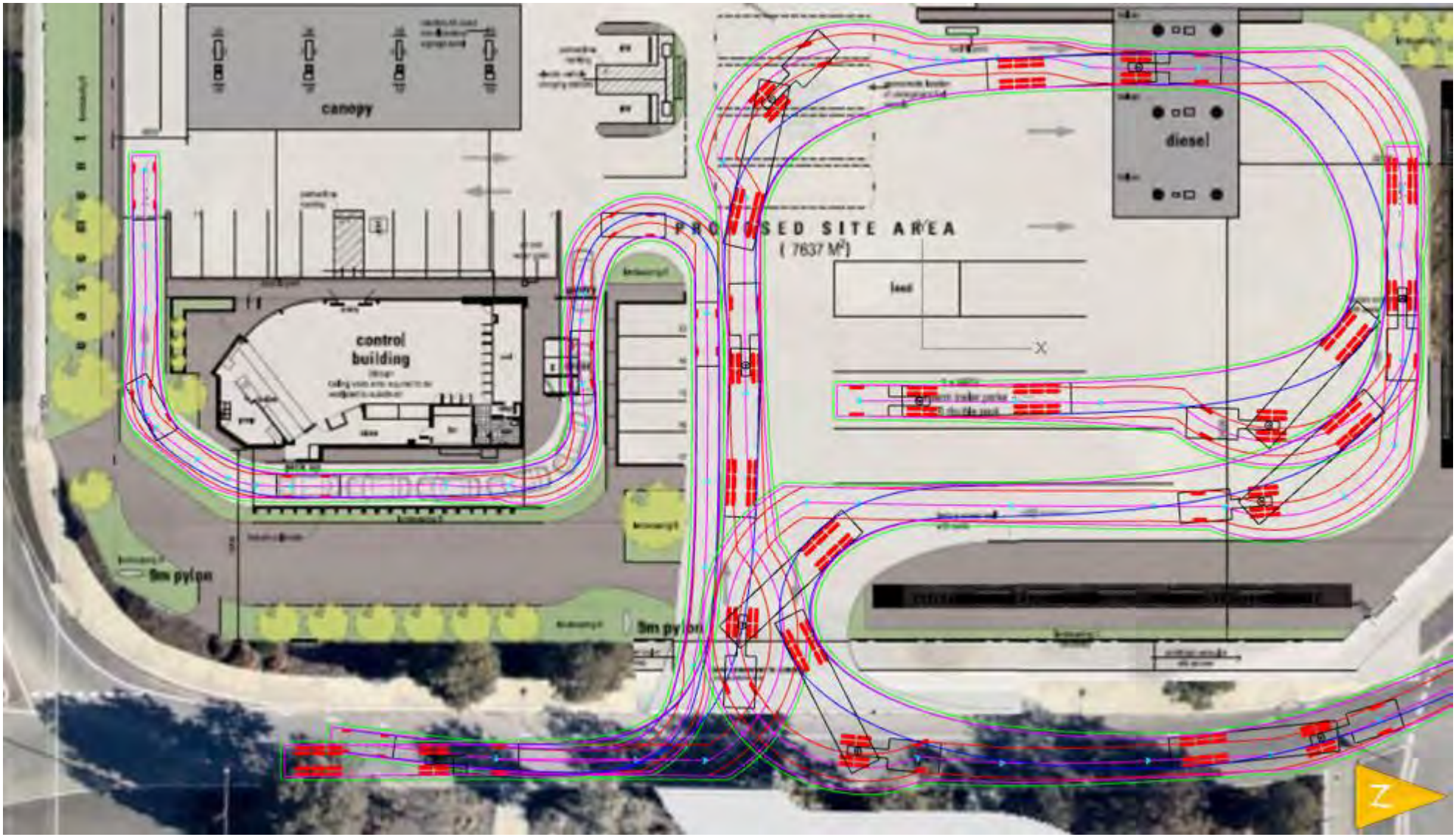


Figure 20 – Swept path assessment of 19 m Semi Trailer (Fuel Tanker) and refuelling and parking movements, including passing any queued drive-thru B99 Design Vehicle

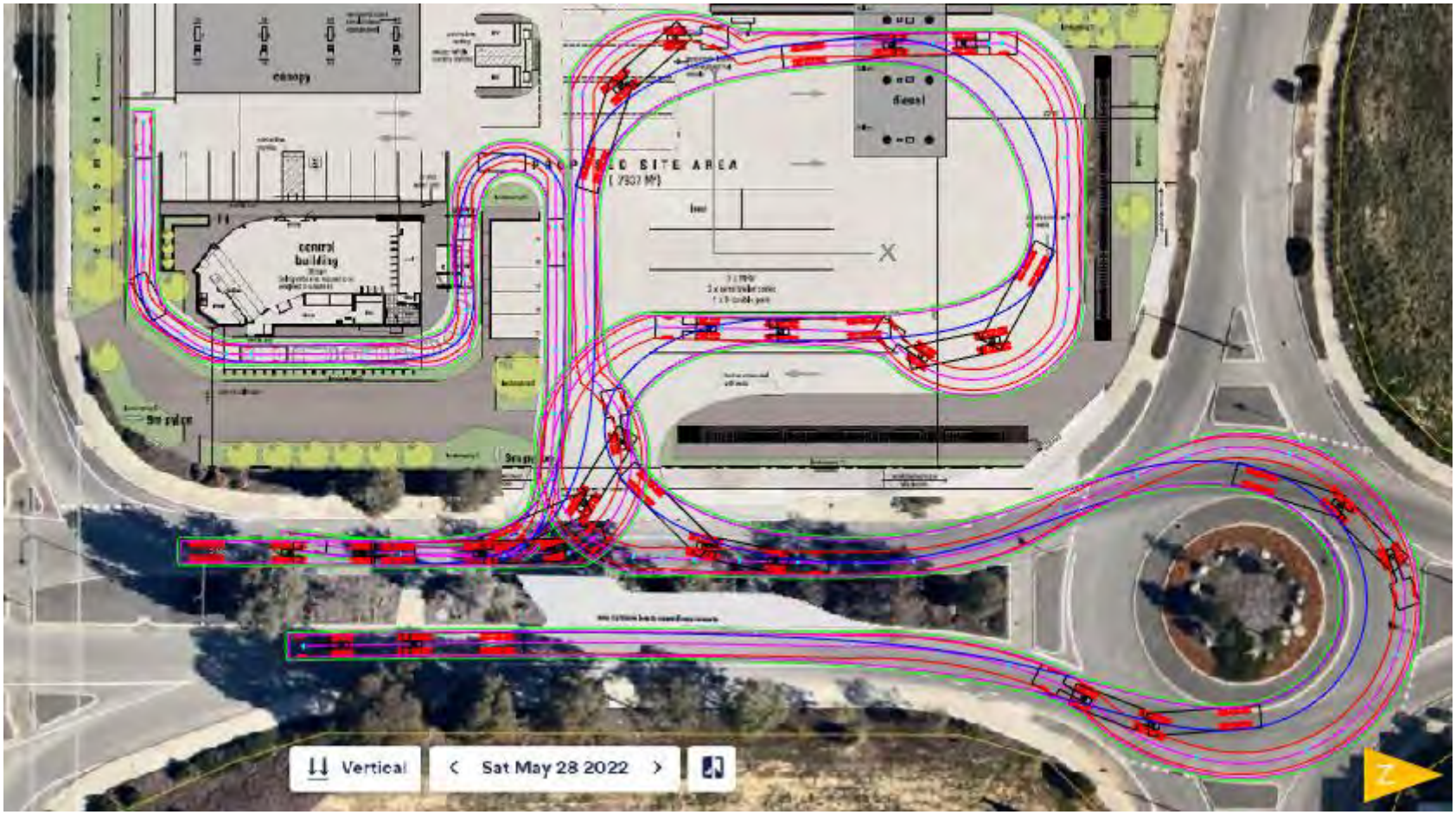


Figure 21 – Swept path assessment of 26 m B-Double refuelling and parking movements, including passing any queued drive-thru B99 Design Vehicle

APPENDIX B SIDRA INTERSECTION 9 DATA

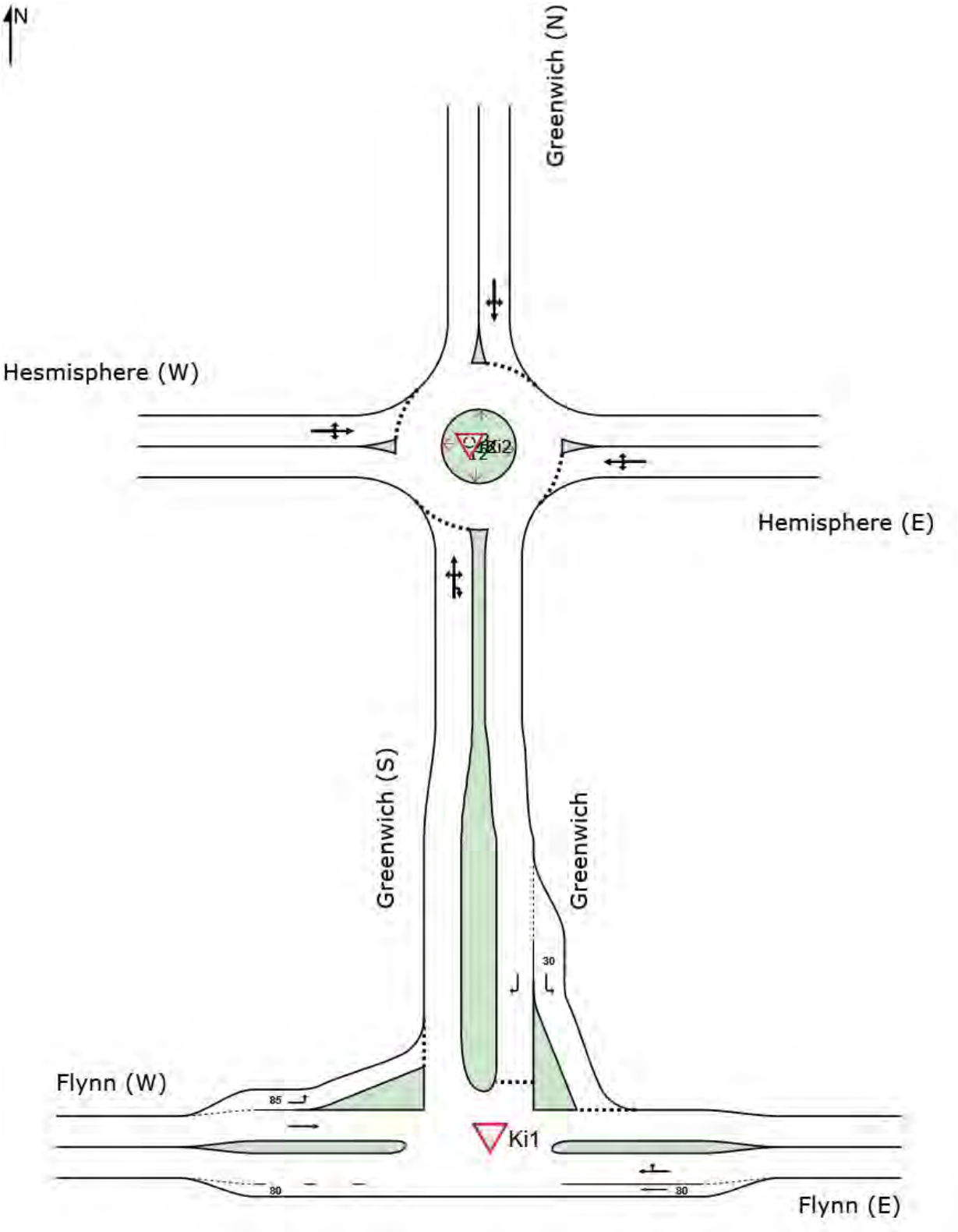


Figure 22 – Existing SIDRA Intersection 9.1 Network Model layout

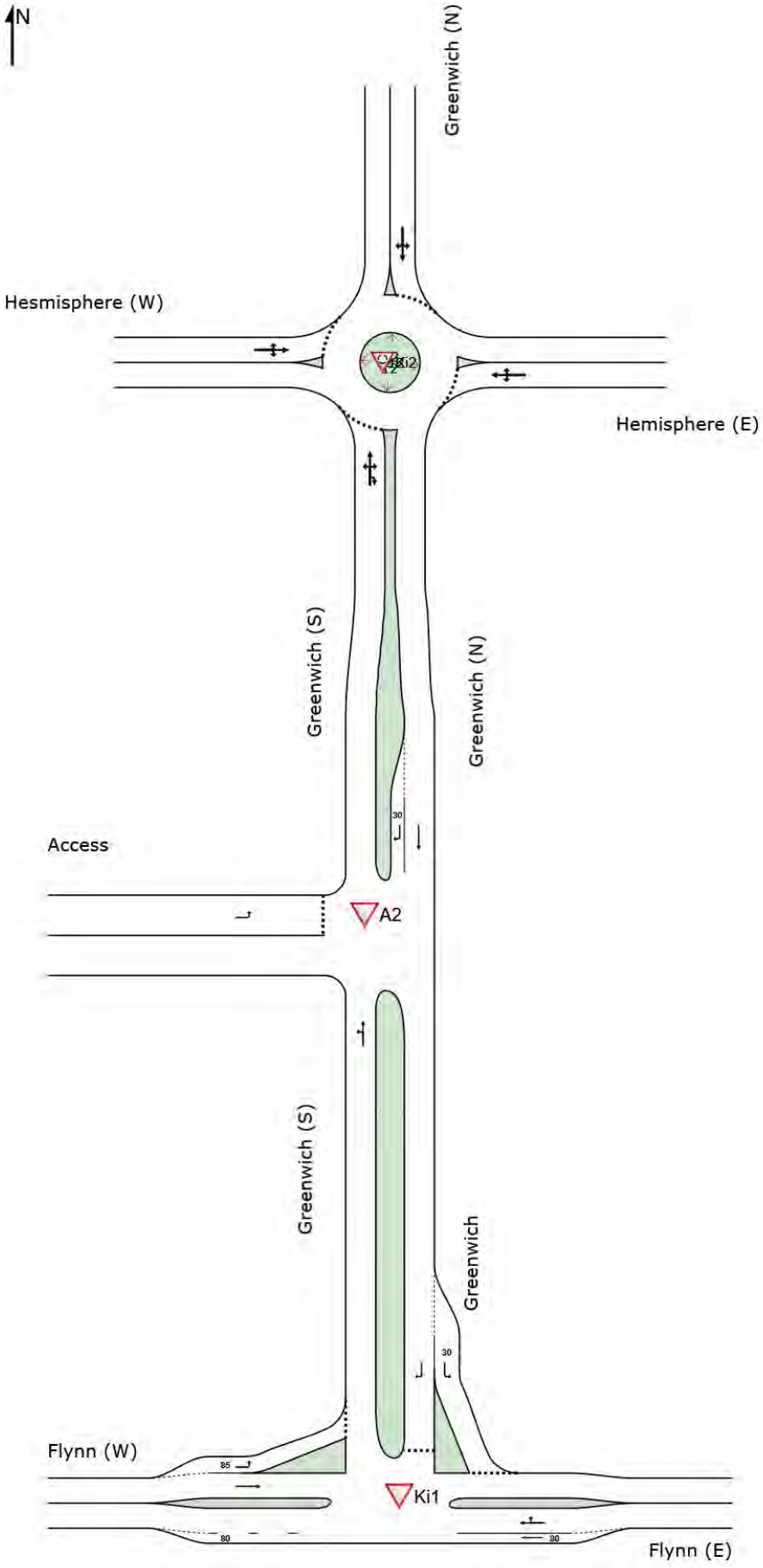


Figure 23 – Proposed Development SIDRA Intersection 9.1 Network Model layout

EXISTING PEAK HOURS WITHOUT DEVELOPMENT

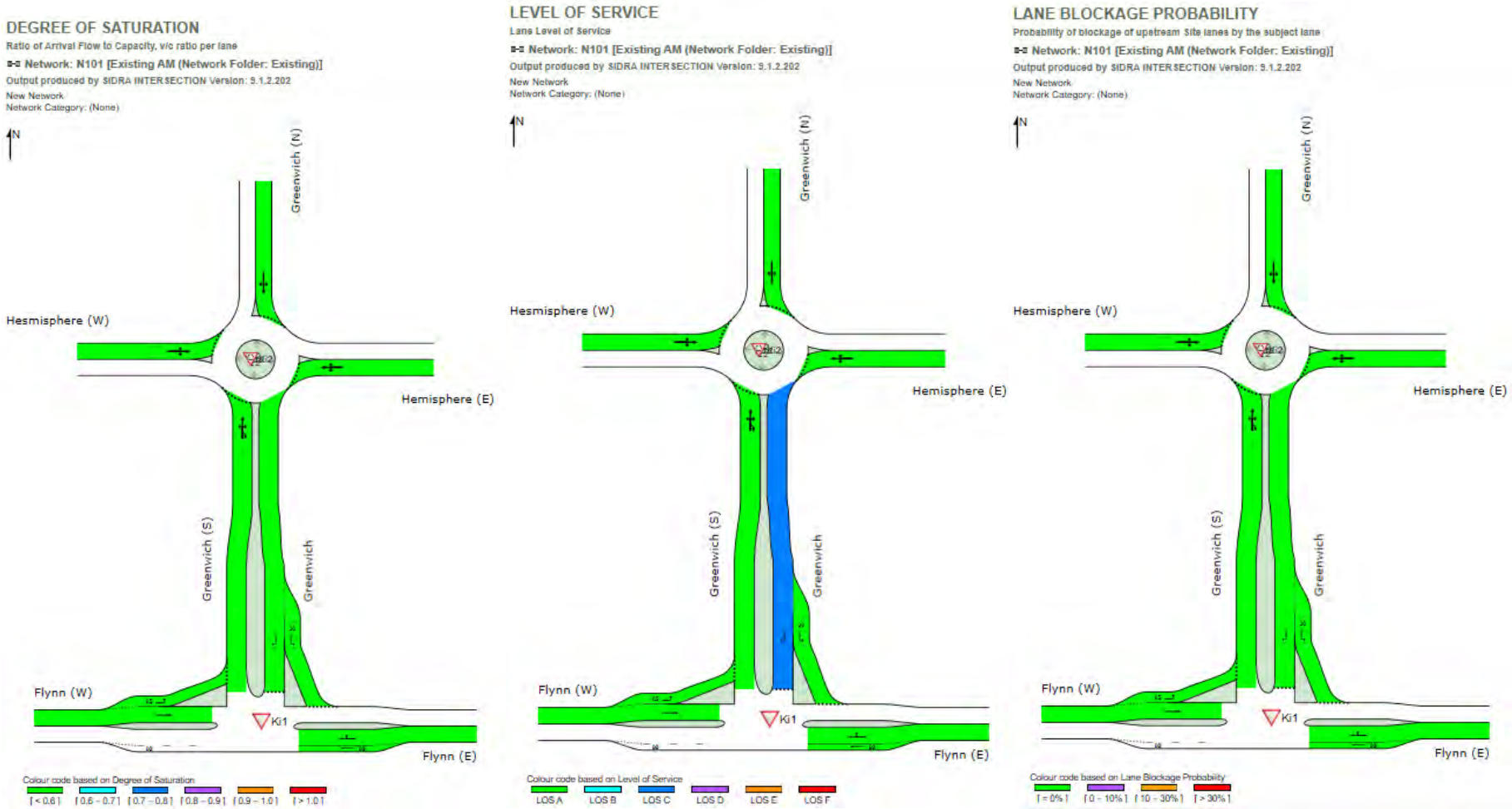


Figure 24 – Existing AM Peak Hour Network Performance

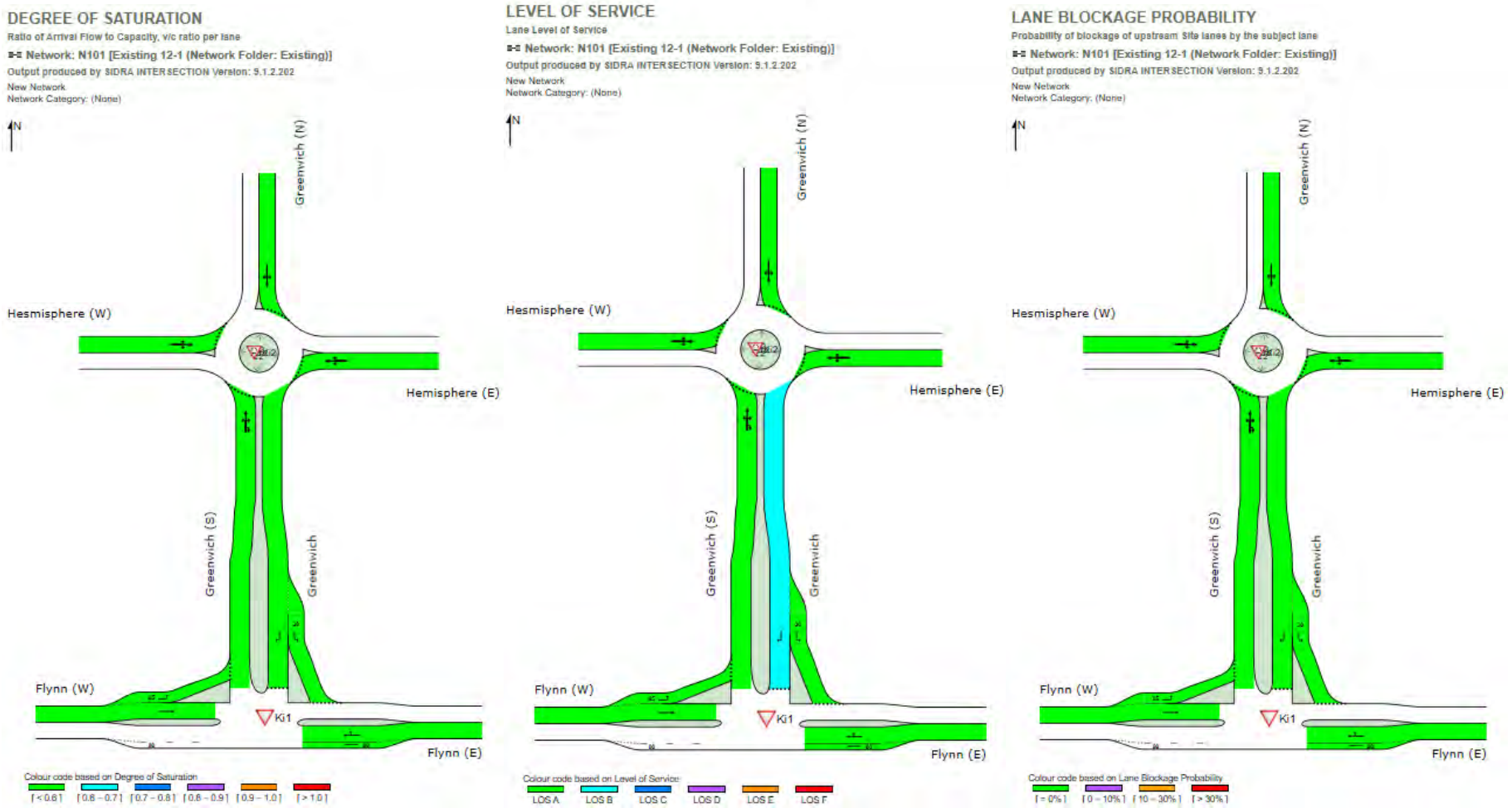


Figure 25 – Existing 12 noon to 1 PM Network Performance

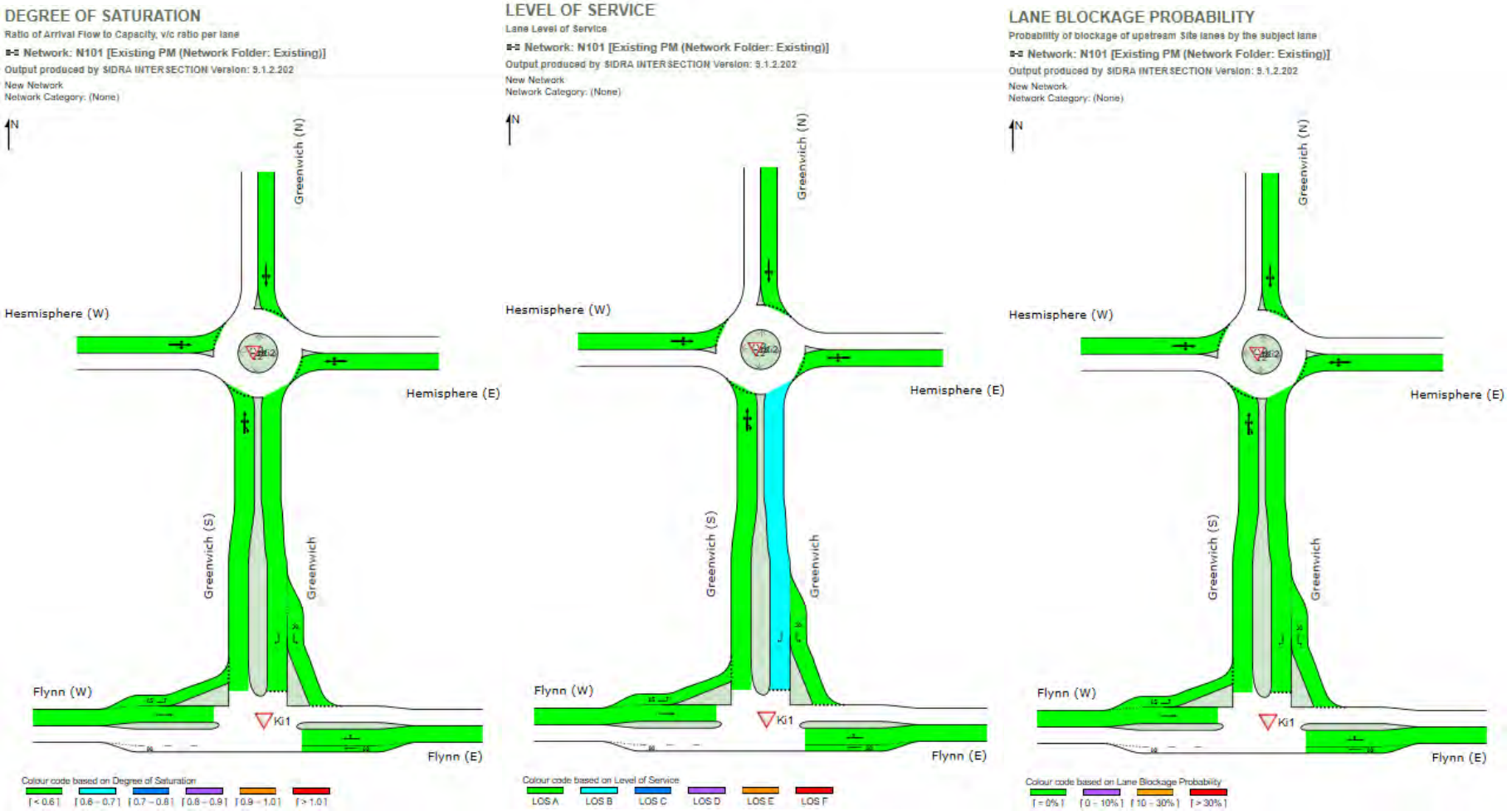


Figure 26 – Existing PM Peak Hour Network Performance

EXISTING PEAK HOURS WITH DEVELOPMENT

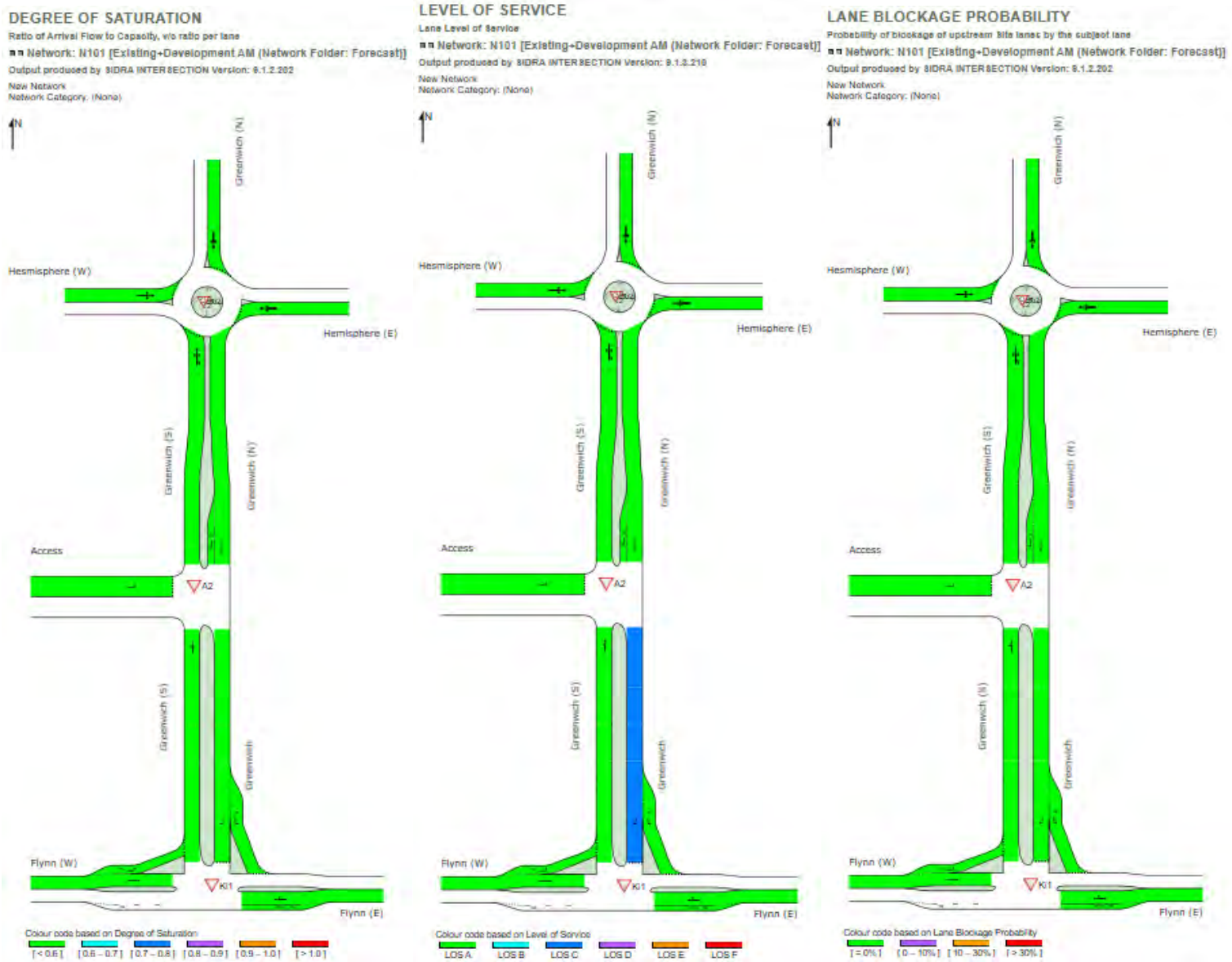


Figure 27 – Forecast AM Peak Hour Network Performance

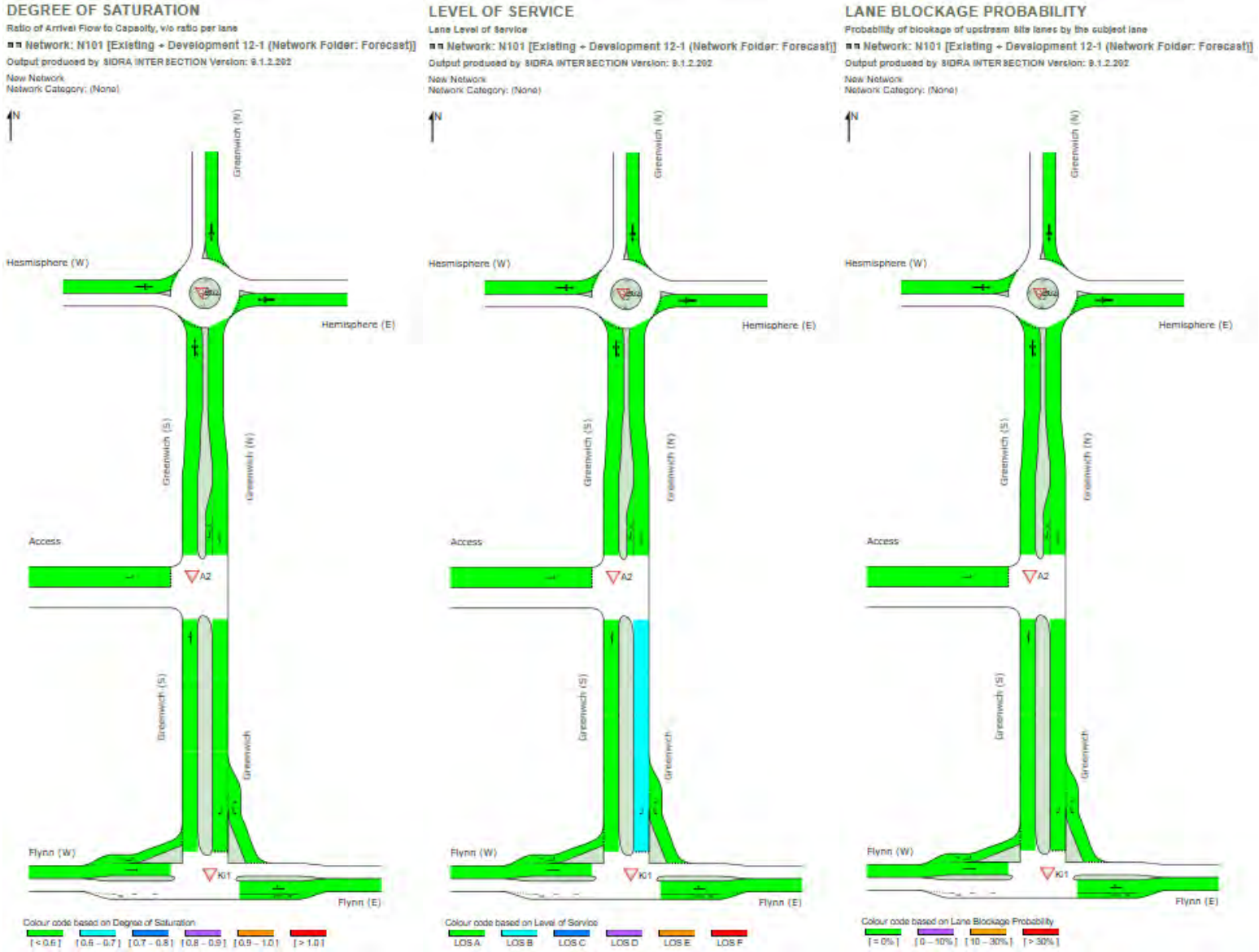


Figure 28 – Forecast 12 noon to 1 PM Network Performance

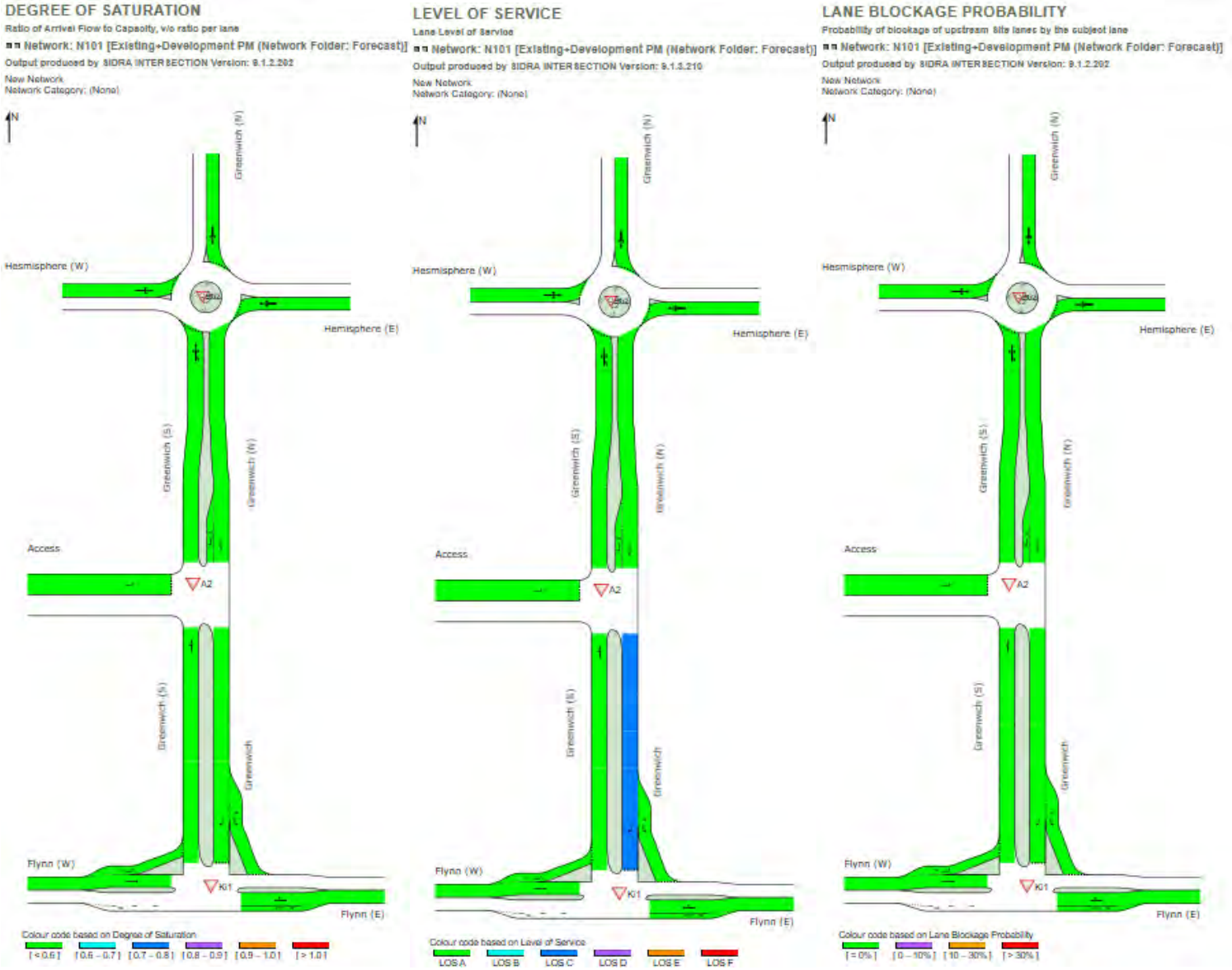


Figure 29 – Forecast PM Peak Hour Network Performance

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	✓	
Introduction/Background	✓	
name of applicant and consultant	✓	
development location and context	✓	
brief description of development proposal	✓	
key issues	✓	
background information	✓	
Existing situation	✓	
existing site uses (if any)	✓	
existing parking and demand (if appropriate)	✓	
existing access arrangements	✓	
existing site traffic	✓	
surrounding land uses	✓	
surrounding road network	✓	
traffic management on frontage roads	✓	
traffic flows on surrounding roads (usually AM and PM peak hours)	✓	
traffic flows at major intersections (usually AM and PM peak hours)	✓	
operation of surrounding intersections	✓	
existing pedestrian/cycle networks	✓	
existing public transport services surrounding the development	✓	
crash data	✓	

ITEM	PROVIDED	COMMENTS/ PROPOSALS
Development proposal	✓	
regional context	✓	
proposed land uses	✓	
table of land uses and quantities	✓	
access arrangements	✓	
parking provision	✓	
end of trip facilities	✓	
any specific issues	✓	
road network	✓	
intersection layouts and controls	✓	
pedestrian/cycle networks and crossing facilities	✓	
public transport services	✓	
Integration with surrounding area	✓	
surrounding major attractors/ generators	✓	
committed developments and transport proposals	✓	
proposed changes to land uses within 1200 metres	✓	
travel desire lines from development to these attractors/ generators	✓	
adequacy of existing transport networks	✓	
deficiencies in existing transport networks	✓	
remedial measures to address deficiencies	✓	
Analysis of transport networks	✓	
assessment years	✓	
time periods	✓	
development generated traffic	✓	
distribution of generated traffic	✓	
parking supply and demand	✓	
base and 'with development' traffic flows	✓	
analysis of development accesses	✓	
impact on surrounding roads	✓	
impact on intersections	✓	
impact on neighbouring areas	✓	

ITEM	PROVIDED	COMMENTS/ PROPOSALS
road safety	✓	
public transport access	✓	
pedestrian access/amenity	✓	
cycle access/amenity	✓	
analysis of pedestrian/cycle networks	✓	
safe walk/cycle to school (for residential and school site developments only)	×	Not applicable.
traffic management plan (where appropriate)	×	Not applicable.
Conclusions	✓	

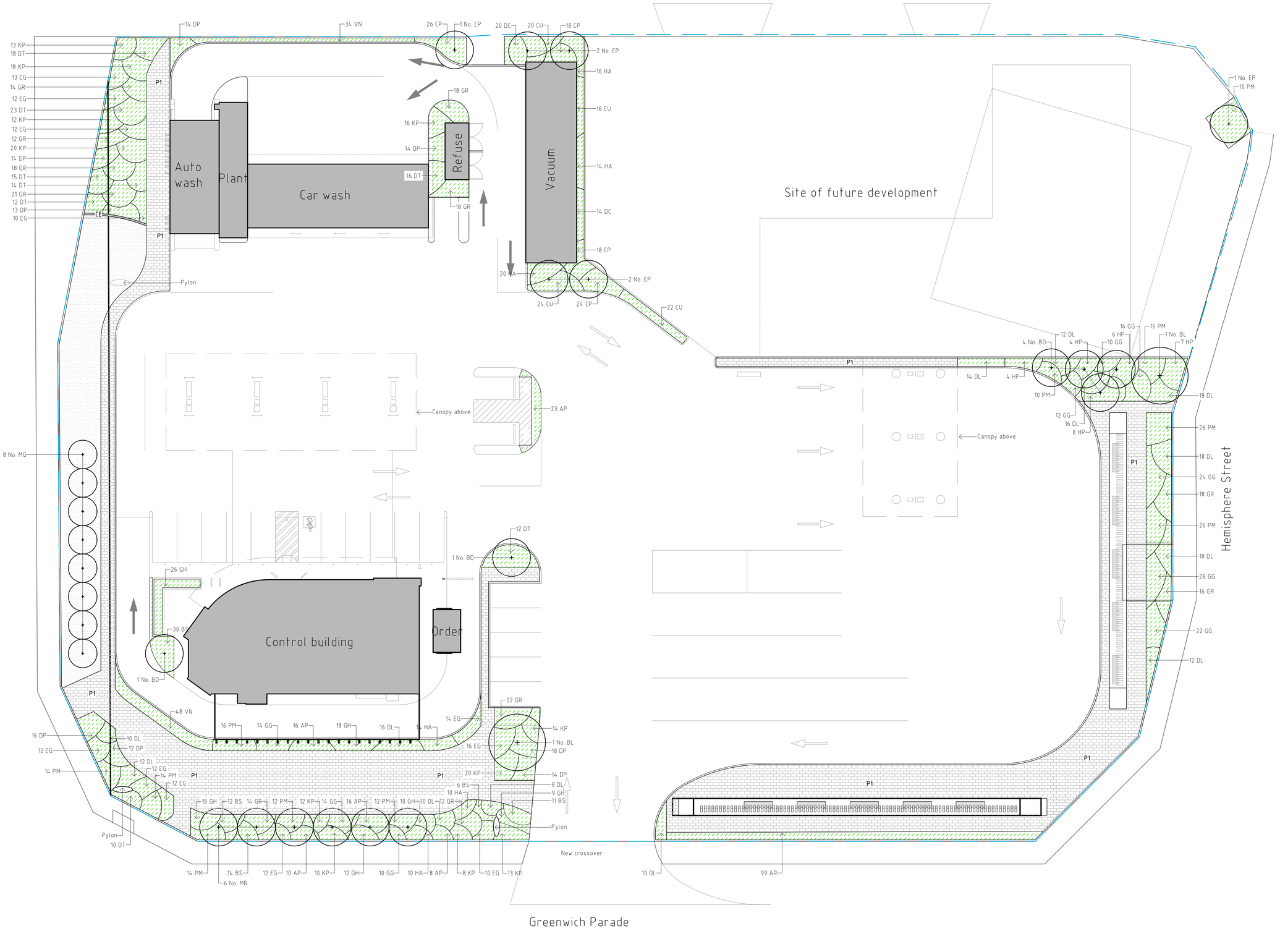
Proponent's name

Company PC Infrastructure Pty Ltd **Date** 30 August 2023

Transport assessor's name David Wilkins

Company i3 consultants WA **Date** 30 August 2023

Attachment 8 - Landscaping Plan



This drawing must be read in conjunction with all other contract documents including the project specifications, schedules and any instructions issued during the course of the contract. The Contractor must verify all dimensions on site and check the location of services before commencement of work. The Contractor is to notify the Superintendent of any discrepancies between the drawings or specifications. Drawings are not to be used for construction unless identified in the title block as 'for construction'. All drawings to be read at A1 unless otherwise stated. Drawings are intended for digital setout and DWG files will be issued upon request. Copyright Oxigen Pty Ltd

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

LEGEND

NEW

- EXTENT OF WORKS
- NEW TREE REFER TO DETAIL 01
- PLANTING REFER TO DETAIL 02
- CONCRETE EDGE
- TURF REFER TO DETAIL 04
- COMPACTED GRAVEL
- PAVING REFER TO DETAIL 03

TREE SCHEDULE

CODE	BOTANIC NAME	SPACING	SIZE	QTY
BD	Brachychiton discolor x populneus	AS SHOWN	45L	6
BL	Banksia littoralis	AS SHOWN	45L	2
EP	Eucalyptus platypus	AS SHOWN	45L	6
MG	Magnolia grandiflora 'Little Gem'	AS SHOWN	45L	8
MR	Melaleuca rhaphiophylla	AS SHOWN	45L	6

PLANT SCHEDULE

CODE	BOTANIC NAME	SPACING	SIZE	QTY
AP	Anigozanthos flavidus x pulcherrimus	3.0/m²	140mm	73
AR	Anigozanthos flavidus x rufus	3.0/m²	140mm	99
BS	Beaufortia squarrosa	3.0/m²	140mm	73
CP	Melaleuca phoenicea	3.0/m²	140mm	86
CU	Chamelaucium uncinatum	3.0/m²	140mm	82
DC	Darwinia citriodora	3.0/m²	140mm	34
DL	Dianella revoluta 'Little Rev'	3.0/m²	140mm	174
DP	Dianella prunina 'Utopia'	3.0/m²	140mm	115
DT	Dianella tasmanica	3.0/m²	140mm	120
EG	Eremophila glabra 'Emu Bush'	3.0/m²	140mm	135
GH	Grevillea 'Honey Gem'	3.0/m²	140mm	91
GG	Grevillea obtusifolia 'Gin Gin Gem'	3.0/m²	140mm	148
GR	Gazania rigens	3.0/m²	140mm	148
HA	Hypocalymma angustifolium	3.0/m²	140mm	84
HP	Hakea petiolaris	1.0/m²	140mm	29
KP	Kunzea pulchella	3.0/m²	140mm	156
PM	Protea magnifica	3.0/m²	140mm	170
VN	Verticordia nitens	3.0/m²	140mm	82

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ARCHITECTS
ADS ARCHITECTS

PROJECT
NEERABUP OTR

drawing title
101 LANDSCAPE PLAN

15.047.107

issue
DRAFT F

ISSUE	DATE	ISSUE	DWN	CHK	APP
A	30.08.22	DRAFT	EH		TW
B	29.09.22	DRAFT	EH		JH
C	20.10.22	DRAFT	EH		JH
D	03.02.22	DRAFT	EH		JH
E	03.02.23	DRAFT	EH		JH
F	23.12.23	DRAFT	EH		JH

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SCALE
VARIES

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 200 MM AND PLACE 200MM IMPORTED SANDY-LOAM TOPSOIL (80%-20% SANDY-LOAM) MIXED THOROUGHLY PRIOR TO PLACING WITH 20% ORGANIC COMPOST).

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

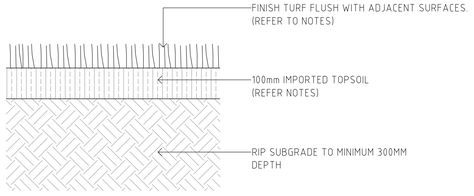
PLACE A 100MM MINIMUM DEPTH OF FINE GREEN WASTE MULCH. THOROUGHLY WATER PLANTS BEFORE AND IMMEDIATELY AFTER PLANTING, AND AS REQUIRED.

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

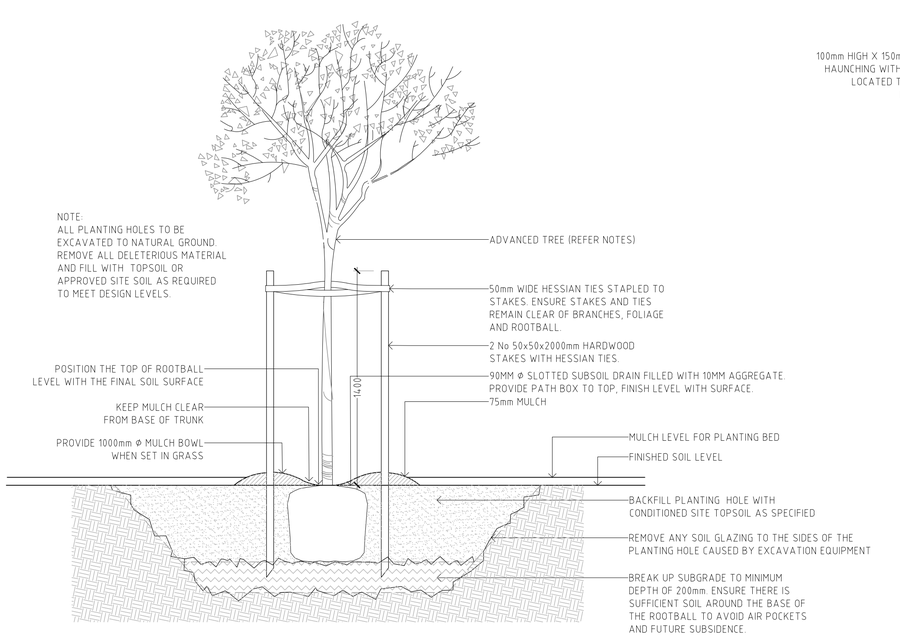
DRIP IRRIGATION SPECIFIED AS NETAFIM TECHLINE 16 POLY TUBE 1.6Lph @ 0.5M SPACINGS.

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

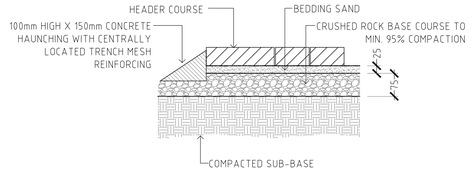
ALL POLY TUBING TO BE LAID ON SURFACE AND COVERED WITH MULCH. PROVIDE BACKFLOW PREVENTION, AUTOMATIC CONTROLLER AND OTHER DEVICES AS REQUIRED.



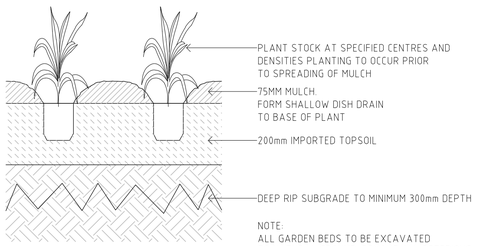
04 - TYPICAL TURF DETAIL
SCALE 1:10 @ A1



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



03 - TYPICAL PAVING AND PAVING EDGE DETAIL
SCALE 1:10 @ A1



02 - TYPICAL SHRUB PLANTING DETAIL
SCALE 1:10 @ A1

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PROJECT
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102 DETAILS

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issue
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F	23.12.23	DRAFT	EH		JH

HERRING STORER ACOUSTICS

PROPOSED SERVICES STATION

CNR FLYNN DRIVE & GREENWICH PARADE NEERABUP

ENVIRONMENTAL ACOUSTIC ASSESSMENT

NOVEMBER 2022

OUR REFERENCE: 30334-3-18107-02

Rochdale Holdings Pty Ltd A.B.N. 85 009 049 067 trading as:
HERRING STORER ACOUSTICS
P.O. Box 219, Como, W.A. 6952
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DOCUMENT CONTROL PAGE

ENVIRONMENTAL ACOUSTIC ASSESSMENT

NEERABUP PROPOSED INTEGRATED SERVICES HUB

Job No: 18107-02

Document Reference: 30334-3-18107-02

FOR

PEREGRINE CORPORATION

DOCUMENT INFORMATION			
Author:	Tim Reynolds	**Checked By:**	George Watts
Date of Issue:	24 November 2022		

REVISION HISTORY

Revision	Description	Date	Author	Checked
1	Client Comments	29/11/2022	TR	N/A
2	Update for Council's recommendations	05/03/2024	TR	N/A

DOCUMENT DISTRIBUTION

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This report has been prepared in accordance with the scope of services and on the basis of information and documents provided to Herring Storer Acoustics by the client. To the extent that this report relies on data and measurements taken at or under the times and conditions specified within the report and any findings, conclusions or recommendations only apply to those circumstances and no greater reliance should be assumed. The client acknowledges and agrees that the reports or presentations are provided by Herring Storer Acoustics to assist the client to conduct its own independent assessment.

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APPENDICIES

A	Plans
B	Assessment of Sources not required to achieve compliance with the Regulations

1. INTRODUCTION

Herring Storer Acoustics were commissioned by Peregrine Corporation to undertake an acoustic assessment of noise emissions associated with the proposed development to be located at Lot 1001 Greenwich Parade, Neerabup, being on the north west corner of Flynn drive and Greenwick Parade, Neerabup.

This report assesses noise emissions from the premises with regards to compliance with the requirements of the *Environmental Protection (Noise) Regulations 1997*. It is understood that the development consists of a service station, convenience store, drive-thru facility and car wash. Therefore, noise sources considered as part of this assessment include:

- Car wash and vacuum units;
- Mechanical Services;
- Voices within the drive thru facility; and
- Car and truck doors closing.

We note that from recent information received from the DWER, the bitumised area would be considered as a road, thus noise relating to the "propulsion and braking" of motor vehicles is exempt from the *Environmental Protection (Noise) Regulations 1997*. We note that these noise sources are rarely critical in the determination of compliance. For completeness, we have also provided an assessment of the noise emissions (attached in Appendix B) from the following:

- Car movements on site;
- Car and truck engine starts; and
- Truck air brakes.

For reference, the plans for the proposed development is attached in Appendix A.

2. SUMMARY

The closest neighbouring residences to this development are located to the south of the development, across Flynn Drive. As the facility (ie fuel station and carwash) would be open 24 hours per day, noise received at the neighbouring noise (highly) sensitive premises from these noise sources needs to comply with the appropriate assigned noise levels for the night period.

Noise from the carwash could operate 24 hours per day, hence noise received at the neighbouring residences need to comply with the assigned night period noise levels. Analysis of the noise from the carwash shows that compliance with the assigned L_{A10} noise levels would be achieved, with the inclusion of the following noise mitigation:

- The entry and exit doors to the car was provide a minimum reduction of 12 dB(A); and
- Either limit the number of vacuum units that can be used during the night period to 2; or they be installed with hoods orientated to protect the neighbouring residences.

Noise from the mechanical services would also comply with the assigned L_{A10} noise levels at all times.

The assessment indicates that noise emissions from car and truck doors closing have been assessed to comply with the assigned L_{AMax} noise levels at all times.

Finally, noise from the drive thru facility would also comply with the assigned L_{A10} noise levels at all times.

From the analysis undertaken, noise emissions from the proposed development has been assessed to comply with the requirements of the *Environmental Protection (Noise) Regulations 1997* at all times, provided the noise mitigation to the carwash, as outlined above is incorporated into the development.

As requested by council, the following are recommended :

1. The carwash entry and exit to be fitted with an acoustically absorptive material including the roof.

2. Plant located at the auto carwash to be lined with appropriate sound absorbing material to reduce noise from any equipment.

3. Vacuum cleaning area to be fitted with insulated roof and a solid wall of appropriate material.

4. Vacuum units to be installed with hoods that will attenuate noise to protect the neighbouring residences at night.

5. Drive through wall where orders will be taken to be made of sound absorbing insulation material to reduce any noise from speakers and cars.

6. All mechanical services to be located on the roof.

3. CRITERIA

The allowable noise level for noise sensitive premises in the vicinity of the proposed Facility site is prescribed by the *Environmental Protection (Noise) Regulations 1997*. Regulations 7 and 8 stipulate maximum allowable external noise levels or assigned noise levels that can be received at a premise from another premises. For residential premises, this noise level is determined by the calculation of an influencing factor, which is then added to the base levels shown below. The influencing factor is calculated for the usage of land within two circles, having radii of 100m and 450m from the premises of concern. The base noise levels for residential premises and the assigned noise levels for industrial premises are listed in Table 3.1.

TABLE 3.1 - BASELINE ASSIGNED OUTDOOR NOISE LEVEL

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		L_{A10}	L_{A1}	L_{Amax}
Noise sensitive premises: highly sensitive area	0700 - 1900 hours Monday to Saturday (Day)	45 + IF	55 + IF	65 + IF
	0900 - 1900 hours Sunday and Public Holidays (Sunday / Public Holiday Day)	40 + IF	50 + IF	65 + IF
	1900 - 2200 hours all days (Evening)	40 + IF	50 + IF	55 + IF
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays (Night)	35 + IF	45 + IF	55 + IF

Note: L_{A10} is the noise level exceeded for 10% of the time.
L_{A1} is the noise level exceeded for 1% of the time.
L_{Amax} is the maximum noise level.
IF is the influencing factor.

It is a requirement that received noise be free of annoying characteristics (tonality, modulation and impulsiveness), defined below as per Regulation 9.

"impulsiveness" means a variation in the emission of a noise where the difference between L_{Apeak} and $L_{Amax(Slow)}$ is more than 15 dB when determined for a single representative event;

"modulation" means a variation in the emission of noise that –

(a) is more than 3 dB L_{AFast} or is more than 3 dB L_{AFast} in any one-third octave band;

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

(c) is regular, cyclic and audible;

"tonality" means the presence in the noise emission of tonal characteristics where the difference between –

(a) the A-weighted sound pressure level in any one-third octave band; and

(b) the arithmetic average of the A-weighted sound pressure levels in the 2 adjacent one-third octave bands,

is greater than 3 dB when the sound pressure levels are determined as $L_{Aeq,T}$ levels where the time period T is greater than 10% of the representative assessment period, or greater than 8 dB at any time when the sound pressure levels are determined as L_{ASlow} levels.

Where the noise emission is not music, if the above characteristics exist and cannot be practicably removed, then any measured level is adjusted according to Table 3.2 below.

TABLE 3.2 - ADJUSTMENTS TO MEASURED LEVELS

Where **tonality** is present	Where **modulation** is present	Where **impulsiveness** is present
+5 dB(A)	+5 dB(A)	+10 dB(A)

Note: These adjustments are cumulative to a maximum of 15 dB.

For this development, the closest residential premises of concern are located, as shown on Figure 3.1 below.



FIGURE 3.1 – AREA AROUND PROPOSED DEVELOPMENT

The influencing factor at the nearest residential locations to the south of Flynn Drive have been determined as summarised in Table 3.3.

TABLE 3.3 – INFLUENCING FACTORS

Influencing Factor Parameter	Influencing Factor (dB)	
	Residences R1, R2, R3 & R5	Residence R4
Major Road within inner circle	-	-
Major Road within outer circle	+2	+2
Secondary Road within inner circle	-	-
Industrial Premises within the inner circle	0	0
Industrial Premises within the outer circle	+2	+3
TOTAL IF	+4	+5

Note: It should be noted that in the future, Flynn Drive would be a major road and the influencing factor for a major road in the outer circle is +2dB.

Based on the above, the assigned noise levels are as listed in Tables 3.4 and 3.5.

TABLE 3.4 - ASSIGNED OUTDOOR NOISE LEVEL FOR RESIDENCES R1, R2, R3 AND R5

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		$L_{A\ 10}$	$L_{A\ 1}$	$L_{A\ max}$
Noise sensitive premises: Highly sensitive area	0700 - 1900 hours Monday to Saturday	49	59	69
	0900 - 1900 hours Sunday and Public Holidays	44	54	69
	1900 - 2200 hours all days	44	54	59
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays	39	49	59

Note: L_{A10} is the noise level exceeded for 10% of the time.
L_{A1} is the noise level exceeded for 1% of the time.
L_{Amax} is the maximum noise level.

TABLE 3.5 - ASSIGNED OUTDOOR NOISE LEVEL FOR RESIDENCE R4

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		$L_{A\ 10}$	$L_{A\ 1}$	$L_{A\ max}$
Noise sensitive premises: Highly sensitive area	0700 - 1900 hours Monday to Saturday	50	60	70
	0900 - 1900 hours Sunday and Public Holidays	45	55	70
	1900 - 2200 hours all days	45	55	60
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays	40	50	60

Note: L_{A10} is the noise level exceeded for 10% of the time.
L_{A1} is the noise level exceeded for 1% of the time.
L_{Amax} is the maximum noise level.

4. MODELLING

Modelling of the noise propagation from the proposed development was carried out using an environmental noise modelling computer program, "SoundPlan". Calculations were carried out using the EPA weather conditions as stated in the Environmental Protection Authority's *"Draft Guidance for Assessment of Environmental Factors No.8 - Environmental Noise"*.

Noise emissions from the development, include:

- Carwash and vacuum units;
- Mechanical Services;
- Voice within the drive thru facility; and
- Doors closing for both cars and trucks.

Although, the noise emissions associated with car and truck activities on site would be considered exempt from the Regulations, for completeness, noise modelling and assessment were also undertaken for the following sources:

- Car movements on site;
- Car and truck engine starts; and
- Truck air brakes.

The modelling results and assessment for these items are contained in Appendix B.

The calculations were based in the sound power levels listed in Tables 4.1 to 4.4.

TABLE 4.1 – CAR WASH SOUND POWER LEVELS

Plant Item	Sound Power Level dB(A)
Vacuum Units	89
Auto Carwash	93
Self Carwash	91

TABLE 4.2 – GENERAL SOUND POWER LEVELS

Item of Equipment	Sound Power Level, (dB(A))
Cars moving	81
Truck moving	89
Car Start	85
Car Door	87
Truck Start	94
Truck Door	95
Truck Air Brake	103

TABLE 4.3 – MECHANICAL SERVICES NOISE LEVELS

Plant Item	Sound Power Level dB(A)
Air Conditioning Condensing Units	2 at 67 dB(A)

TABLE 4.4 – VOICES SOUND POWER LEVEL

Plant Item	Sound Power Level dB(A)
Air Conditioning Condensing Units	2 at 67 dB(A)

The above noise sources need to comply with the following assigned noise levels:

L_{A10} - Carwash, Mechanical services and voices within drive thru.
L_{AMax} - Car and truck doors closing.

With regards to noise emissions, the following are noted:

1 Noise associated with the mechanical services does not take into account any diversity of operation. Such diversity would occur during the night period. Thus, this is a conservative assessment. At this stage of the project, the mechanical service has not been design. Therefore, the noise sources have been based on designs used for the same or similar tenancies.

2 It has been assumed that the mechanical services would be located on the roof.

3 Preliminary noise modelling indicated that with standard entry door to the “auto” carwash, noise received at the neighbouring residences could exceed the assigned noise level during the night period. Additionally, with all vacuum units operating, an exceed could also occur. Therefore, for the carwash to comply with the assigned noise levels, the following is recommended:

- The entry and exit doors to the car was provide a minimum reduction of 12 dB(A); and
- Either limit the number of vacuum units that can be used during the night period to 2; or they be installed with hoods orientated to protect the neighbouring residences.

5. RESULTS

Calculations were undertaken to all the residences noted on Figure 3.1. The resultant noise levels are listed in Tables 5.1 and 5.2.

NOTE: The results for those sources exempt of the regulations are attached in Appendix B.

TABLE 5.1 – WORST CASE CALCULATED NOISE LEVELS
NOISE SOURCES REQUIRING COMPLIANCE

Item	Calculated Noise Levels (dB(A))				
	R1	R2	R3	R4	R5
Carwash	34	34	33	32	27
Mechanical services	17	18	20	26	18
Voices	10	8	17	22	16
Car Door	27	28	31	36	27
Truck Door	37	38	39	43	38

6. ASSESSMENT

The following provided the acoustic assessment for the noise sources requiring compliance, as listed in Table 5.1.

For those sources that are exempt from the Regulations, the assessments are attached in Appendix B.

6.1 L_{A10} NOISE EMISSIONS – CARWASH

During operation, noise emissions from the carwash would at times occur for more than 10% of the time. Thus, noise received at the neighbouring residences needs to comply with the assigned L_{A10} noise levels.

Given the resultant noise level at the residences and likely background noise level associated noise from vehicles travelling along Flynn Drive, we believe that it is unlikely that noise received at the neighbouring residences would be tonal. However, again to be conservative, a +5 dB(A) penalty has been applied to the calculated noise level associated with the carwash. Table 6.1 lists the characteristics that should be included in the assessable noise level.

TABLE 6.1 – APPLICABLE ADJUSTMENTS AND ASSESSABLE L_{A10} NOISE LEVELS, dB(A)
CARWASH

Location	Calculated Noise Level, dB(A)	Applicable Adjustments to Measured Noise Levels, dB(A)			Assessable Noise Level, dB(A)
		Where Noise Emission is NOT music			
		Tonality	Modulation	Impulsiveness	
R1	34	+5	-	-	39
R2	34	+5	-	-	39
R3	33	+5	-	-	38
R4	32	+5	-	-	37
R5	27	+5	-	-	32

Table 6.2 shows the applicable Assigned Noise Levels, and assessable noise level emissions associated with the carwash.

TABLE 6.2 – ASSESSMENT OF L_{A10} NOISE LEVEL EMISSIONS CARWASH

Location	Assessable Noise Level, dB(A)	Applicable Times of Day	Applicable Assigned L_{A10} Noise Level (dB)	Exceedance to Assigned Noise Level (dB)
R1	39	Night Period	39	Complies
R2	39	Night Period	39	Complies
R3	38	Night Period	39	Complies
R4	37	Night Period	40	Complies
R5	32	Night Period	39	Complies

6.2 L_{A10} NOISE EMISSIONS – MECHANICAL SERVICES

Noise emissions from the mechanical services would be steady state and would operate for the majority of time. Hence noise received from the mechanical services needs to comply with the assigned L_{A10} noise level.

Given the resultant noise level at the residences and likely background noise level associated noise from vehicles travelling along Flynn drive, we believe that it is unlikely that noise received at the neighbouring residences would be tonal. However, again to be conservative, a +5 dB(A) penalty has been applied to the calculated noise level associated with the mechanical services. Table 6.3 lists the characteristics that should be included in the assessable noise level.

TABLE 6.3 – APPLICABLE ADJUSTMENTS AND ASSESSABLE L_{A10} NOISE LEVELS, dB(A) MECHANICAL SERVICES

Location	Calculated Noise Level, dB(A)	Applicable Adjustments to Measured Noise Levels, dB(A)			Assessable Noise Level, dB(A)
		Where Noise Emission is NOT music			
		Tonality	Modulation	Impulsiveness	
R1	17	+5	-	-	22
R2	18	+5	-	-	23
R3	20	+5	-	-	25
R4	26	+5	-	-	31
R5	18	+5	-	-	23

Table 6.4 shows the applicable Assigned Noise Levels, and assessable noise level emissions associated for the scenarios associated with the mechanical services.

TABLE 6.4 – ASSESSMENT OF L_{A10} NOISE LEVEL EMISSIONS MECHANICAL SERVICES

Location	Assessable Noise Level, dB(A)	Applicable Times of Day	Applicable Assigned L_{A10} Noise Level (dB)	Exceedance to Assigned Noise Level (dB)
R1	22	Night Period	39	Complies
R2	23	Night Period	39	Complies
R3	25	Night Period	39	Complies
R4	31	Night Period	40	Complies
R5	23	Night Period	39	Complies

6.3 L_{A10} NOISE EMISSIONS – VOICES AT DRIVE THRU

During operation, noise emissions from voices within the drive thru would at times occur for more than 10% of the time. Thus, noise received at the neighbouring residences needs to comply with the assigned L_{A10} noise levels.

Noise emission from voices does not contain any annoying characteristics. Thus, the assessable noise levels are as listed in Table 5.1. Thus, Table 6.5 shows the applicable Assigned Noise Levels, and assessable noise level emissions associated with the carwash.

TABLE 6.5 – ASSESSMENT OF L_{A10} NOISE LEVEL EMISSIONS VOICES WITHIN DRIVE THRU

Location	Assessable Noise Level, dB(A)	Applicable Times of Day	Applicable Assigned L_{A10} Noise Level (dB)	Exceedance to Assigned Noise Level (dB)
R1	10	Night Period	39	Complies
R2	8	Night Period	39	Complies
R3	17	Night Period	39	Complies
R4	22	Night Period	40	Complies
R5	16	Night Period	39	Complies

6.4 L_{AMAX} NOISE EMISSION – CAR DOOR

Noise emissions from a car door closing on site need to comply with the assigned L_{AMax} noise level. As the critical period for compliance for this source is the night period, this scenario includes noise emissions from the sources associated with L_{AMax} noise levels. However, under the Regulations, each of these sources needs to be considered individually, it is the highest calculated noise levels used for assessment, rather than the cumulative overall noise levels.

Noise associated with the closing of a car door could be impulsive and to be conservative, a +10 dB(A) penalty for impulsiveness would be applied.

Table 6.6 list the characteristics that should be included and the assessable noise levels and the assessable noise level for car doors closing.

TABLE 6.6 – APPLICABLE ADJUSTMENTS AND ASSESSABLE L_{AMAX} NOISE LEVELS, dB(A) CAR DOOR

Locations	Calculated Noise Level, dB(A)	Applicable Adjustments to Measured Noise Levels, dB(A)			Assessable Noise Level, dB(A)
		Where Noise Emission is NOT music			
		Tonality	Modulation	Impulsiveness	
R1	27	-	-	+10	37
R2	28	-	-	+10	38
R3	31	-	-	+10	41
R4	36	-	-	+10	46
R5	27	-	-	+10	37

Table 6.7 shows the applicable Assigned Noise Levels, and assessable noise level emissions associated for the scenarios associated with the car doors closing.

TABLE 6.7 – ASSESSMENT OF L_{AMAX} NOISE LEVEL EMISSIONS
CAR DOOR

Location	Assessable Noise Level, dB(A)	Applicable Times of Day	Applicable Assigned L_{AMax} Noise Level (dB)	Exceedance to Assigned Noise Level (dB)
R1	37	Night Period	59	Complies
R2	38	Night Period	59	Complies
R3	41	Night Period	59	Complies
R4	46	Night Period	60	Complies
R5	37	Night Period	59	Complies

6.5 L_{AMAX} NOISE EMISSION – TRUCK DOOR

Noise emissions from a truck door closing on site need to comply with the assigned L_{AMax} noise level. As the critical period for compliance for this source is the night period, this scenario includes noise emissions from the sources associated with L_{AMax} noise levels. However, under the Regulations, each of these sources needs to be considered individually, it is the highest calculated noise levels used for assessment, rather than the cumulative overall noise levels.

Noise associated with the closing of a truck door could be impulsive and to be conservative, a +10 dB(A) penalty for impulsiveness would be applied.

Table 6.8 list the characteristics that should be included and the assessable noise levels and the assessable noise level for truck doors closing.

TABLE 6.8 – APPLICABLE ADJUSTMENTS AND ASSESSABLE L_{AMAX} NOISE LEVELS, dB(A)
TRUCK DOOR

Locations	Calculated Noise Level, dB(A)	Applicable Adjustments to Measured Noise Levels, dB(A)			Assessable Noise Level, dB(A)
		Where Noise Emission is NOT music			
		Tonality	Modulation	Impulsiveness	
R1	37	-	-	+10	47
R2	38	-	-	+10	48
R3	39	-	-	+10	49
R4	43	-	-	+10	53
R5	38	-	-	+10	48

Table 6.9 shows the applicable Assigned Noise Levels, and assessable noise level emissions associated for the scenarios associated with the truck doors closing.

TABLE 6.9 – ASSESSMENT OF L_{AMAX} NOISE LEVEL EMISSIONS
TRUCK DOOR

Location	Assessable Noise Level, dB(A)	Applicable Times of Day	Applicable Assigned L_{AMax} Noise Level (dB)	Exceedance to Assigned Noise Level (dB)
R1	47	Night Period	59	Complies
R2	48	Night Period	59	Complies
R3	49	Night Period	59	Complies
R4	53	Night Period	60	Complies
R5	48	Night Period	59	Complies

From the above assessments, it can be seen that noise received at the neighbouring residences, even using a conservative analysis, complies with the requirements of the *Environmental Protection (Noise) Regulations 1997* at all times, with the following noise mitigation applied to the carwash:

- The entry and exit doors to the car was provide a minimum reduction of 12 dB(A); and
- Either limit the number of vacuum units that can be used during the night period to 2; or they be installed with hoods orientated to protect the neighbouring residences.

7. RECOMMENDATION

As requested by council, the following are recommended :

1. The carwash entry and exit to be fitted with an acoustically absorptive material including the roof.

2. Plant located at the auto carwash to be lined with appropriate sound absorbing material to reduce noise from any equipment.

3. Vacuum cleaning area to be fitted with insulated roof and a solid wall of appropriate material.

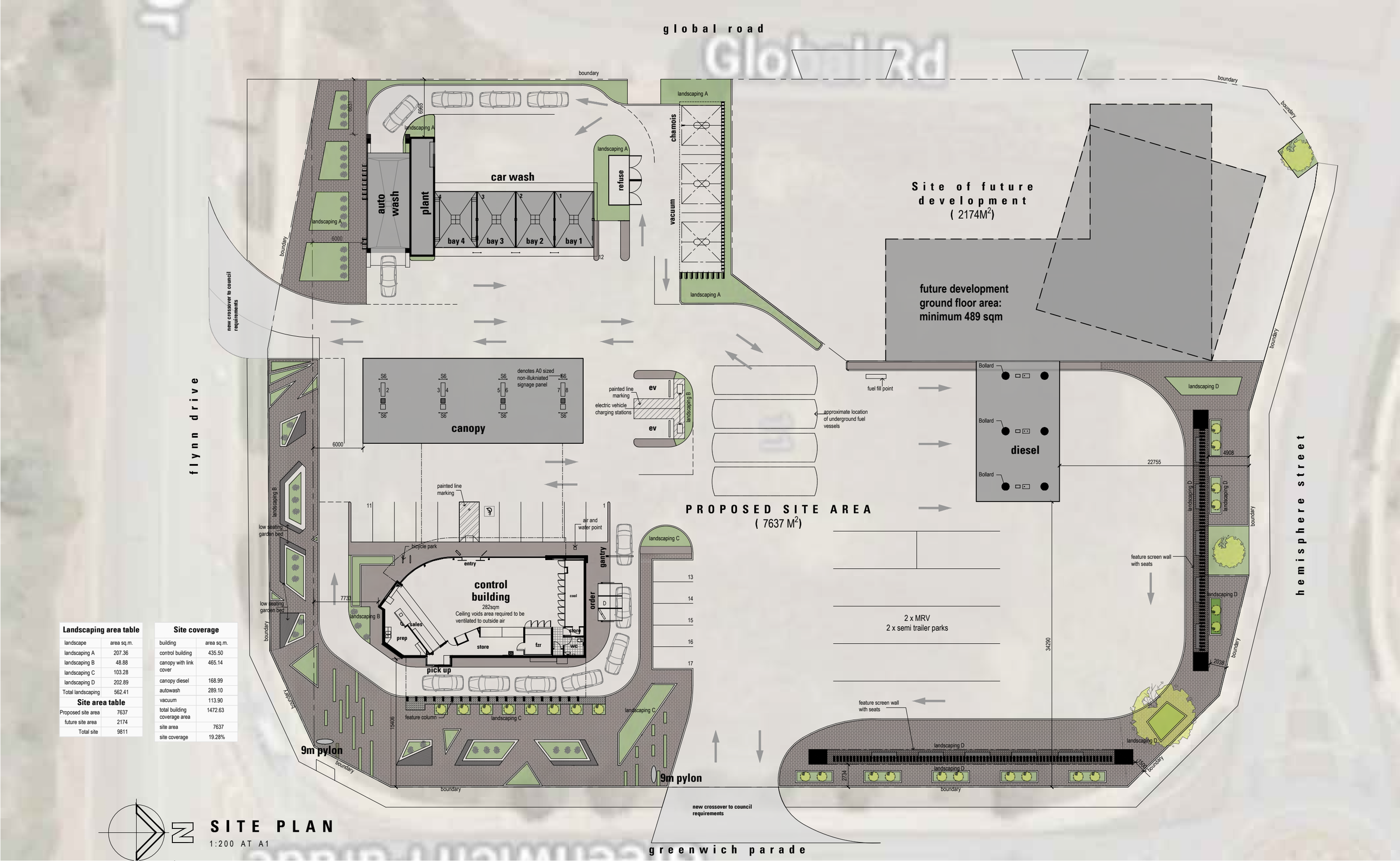
4. Vacuum units to be installed with hoods that will attenuate noise to protect the neighbouring residences at night.

5. Drive through wall where orders will be taken to be made of sound absorbing insulation material to reduce any noise from speakers and cars.

6. All mechanical services to be located on the roof.

APPENDIX A

PLANS



Landscaping area table	
landscape	area sq.m.
landscaping A	207.36
landscaping B	48.88
landscaping C	103.28
landscaping D	202.89
Total landscaping	562.41

Site area table	
Proposed site area	7637
future site area	2174
Total site	9811

Site coverage	
building	area sq.m.
control building	435.50
canopy with link cover	465.14
canopy diesel	168.99
autowash	289.10
vacuum	113.90
total building coverage area	1472.63
site area	7637
site coverage	19.28%

N

SITE PLAN

1:200 AT A1

NEW SERVICE STATION COMPLEX

11 GREENWICH PARADE, NEERABUP WA

0 1 2 5 10m

Scale 1:100 at A1

12.10.22

Neerabup sk00d

design

APPENDIX B

ASSESSMENT OF SOURCES NOT REQUIRED TO ACHIEVE COMPLIANCE WITH THE REGULATIONS

Table B1 lists the resultant noise levels received at the residence located around the development from those sources that are exempt from the Regulations.

TABLE B.1 – WORST CASE CALCULATED NOISE LEVELS FOR NOISE SOURCE EXEMPT FROM REGULATIONS

Location	Item / Calculated Noise Levels (dB(A))				
	Car Movements	Truck Movements	Car Start	Truck Start	Truck Air Brake
R1	23	28	26	33	40
R2	25	29	28	35	41
R3	27	33	30	35	43
R4	31	36	36	39	48
R5	22	33	26	33	41

We note that with regards to vehicles accessing the site, that as anyone can access the site and the operators of the premises have no control on who can enter the car park, these areas would be designated as public places. Regulation 6 of the *Environmental Protection (Noise) Regulations 1997* relates to noise emissions from public places and under this Regulation, "*the person who is causing or permitting that noise to be emitted is to be treated as the occupier...*". Therefore, noise emissions from each individual vehicle using the car park needs to comply with the assigned noise levels.

The following provides an assessment for those noise sources that are exempt from the Regulations and do not need to achieve compliance.

A1 L_{A1} NOISE EMISSIONS – CAR AND TRUCK MOVEMENTS

Noise emissions from car and truck movements on site would be compared with the assigned L_{A1} noise level. As the critical period for compliance for this source is the night period, this scenario includes noise emissions from the sources associated with L_{A1} noise levels. However, under the Regulations, each of these sources needs to be considered individually, it is the highest calculated noise levels used for assessment, rather than the cumulative overall noise levels.

Noise emissions from car and truck movements, needing to comply with the assigned L_{A1} noise levels, would under the Regulations not be considered tonal. Thus, the assessable noise levels would be as listed in Table B.1.

Tables B.2 and B.3 summarise the applicable Assigned Noise Levels, and assessable noise level emissions for each identified noise.

TABLE B.2 – ASSESSMENT OF L_{A1} NOISE LEVEL EMISSIONS FROM CAR MOVEMENTS

Location	Assessable Noise Level, dB(A)	Applicable Times of Day	Applicable Assigned L_{A1} Noise Level (dB)	Exceedance to Assigned Noise Level (dB)
R1	23	Night Period	49	Complies
R2	25	Night Period	49	Complies
R3	27	Night Period	49	Complies
R4	31	Night Period	50	Complies
R5	22	Night Period	49	Complies

TABLE B.3 – ASSESSMENT OF L_{A1} NOISE LEVEL EMISSIONS FROM TRUCK MOVEMENTS

Location	Assessable Noise Level, dB(A)	Applicable Times of Day	Applicable Assigned L_{A1} Noise Level (dB)	Exceedance to Assigned Noise Level (dB)
R1	28	Night Period	49	Complies
R2	29	Night Period	49	Complies
R3	33	Night Period	49	Complies
R4	36	Night Period	50	Complies
R5	33	Night Period	49	Complies

7.1 L_{AMAX} NOISE EMISSIONS

Noise emissions from car and truck engine starts on site would be compared with the assigned L_{AMax} noise level. Additionally, noise emission from trucks air brakes also would be compared with the assigned L_{AMax} noise level. As the critical period for compliance for this source is the night period, this scenario includes noise emissions from the sources associated with L_{AMax} noise levels. However, under the Regulations, each of these sources needs to be considered individually, it is the highest calculated noise levels used for assessment, rather than the cumulative overall noise levels.

Noise emissions from a car and truck starting, needing to comply with the assigned L_{AMax} noise levels, would under the Regulations not be considered tonal. Thus, the assessable noise levels would be as listed in Table B.1.

Noise emissions from truck air brakes, when received at the neighbouring residence could be impulsive and to be conservative, a +10dB for impulsive characteristics would be applied.

Table B.4 list the characteristics that should be included and the assessable noise levels and the assessable noise level for air brakes.

TABLE B.4 – APPLICABLE ADJUSTMENTS AND ASSESSABLE L_{AMAX} NOISE LEVELS TRUCK AIR BRAKE

Item	Calculated Noise Level, dB(A)	Applicable Adjustments to Measured Noise Levels, dB(A)			Assessable Noise Level, dB(A)
		Where Noise Emission is NOT music			
		Tonality	Modulation	Impulsiveness	
R1	40	-	-	+10	50
R2	41	-	-	+10	51
R3	43	-	-	+10	53
R4	48	-	-	+10	58
R5	41	-	-	+10	51

Tables B.5 to B.7 summarise the applicable Assigned Noise Levels, and assessable noise level emissions for each identified noise.

TABLE B.5 – ASSESSMENT OF L_{AMAX} NOISE LEVEL EMISSIONS FROM CAR STARTS

Location	Assessable Noise Level, dB(A)	Applicable Times of Day	Applicable Assigned L_{AMax} Noise Level (dB)	Exceedance to Assigned Noise Level (dB)
R1	26	Night Period	59	Complies
R2	28	Night Period	59	Complies
R3	30	Night Period	59	Complies
R4	36	Night Period	60	Complies
R5	26	Night Period	59	Complies

TABLE B.6 – ASSESSMENT OF L_{AMAX} NOISE LEVEL EMISSIONS FROM TRUCK STARTS

Location	Assessable Noise Level, dB(A)	Applicable Times of Day	Applicable Assigned L_{AMax} Noise Level (dB)	Exceedance to Assigned Noise Level (dB)
R1	33	Night Period	59	Complies
R2	35	Night Period	59	Complies
R3	35	Night Period	59	Complies
R4	39	Night Period	60	Complies
R5	33	Night Period	59	Complies

TABLE B.7 – ASSESSMENT OF L_{AMAX} NOISE LEVEL EMISSIONS FROM TRUCK AIR BRAKE

Location	Assessable Noise Level, dB(A)	Applicable Times of Day	Applicable Assigned L_{AMax} Noise Level (dB)	Exceedance to Assigned Noise Level (dB)
R1	50	Night Period	59	Complies
R2	51	Night Period	59	Complies
R3	53	Night Period	59	Complies
R4	58	Night Period	60	Complies
R5	51	Night Period	59	Complies

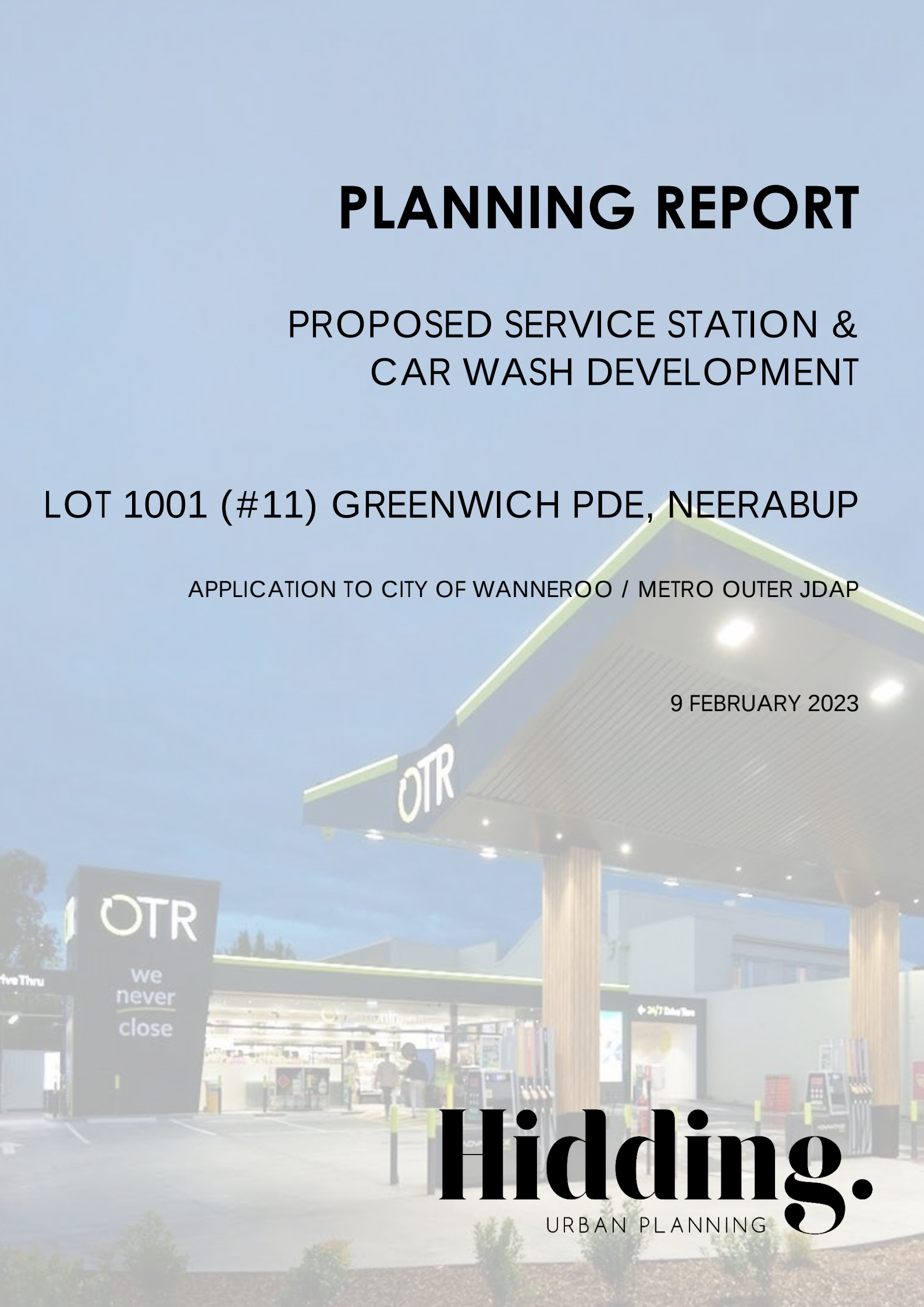
PLANNING REPORT

PROPOSED SERVICE STATION & CAR WASH DEVELOPMENT

LOT 1001 (#11) GREENWICH PDE, NEERABUP

APPLICATION TO CITY OF WANNEROO / METRO OUTER JDAP

9 FEBRUARY 2023



Hidding.
URBAN PLANNING

This Planning Report has been prepared by **Hidding Urban Planning** for the proposed Service Station & Car Wash Development at Lot 1001 (#11) Greenwich Parade, Neerabup

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DOCUMENT HISTORY & DETAILS

AUTHOR	REVISION	APPROVED BY	DATE
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File No. C2470
Client: PC Infrastructure Pty Ltd
Project: OTR Neerabup
File Name: C2470appln01
Document Revision: R01

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Annexure 7: Environmental Noise Assessment

Annexure 8: Bushfire Management Plan & Bushfire Risk Assessment Management Report

APPLICATION DETAILS

Table 1: Application Details

Property Location	Lot 1001 (#11) Greenwich Parade, Neerabup
Applicant	Hidding Urban Planning
Landowner	OTR 374 Pty Ltd
Local Government	City of Wanneroo
Determining Authority	Metro Outer Joint Development Assessment Panel (JDAP)
City of Wanneroo DPS2 Zoning	"Industrial Development"
Planning Framework	City of Wanneroo District Planning Scheme No. 2 Neerabup Industrial Area Local Structure Plan (ASP17) Detailed Area Plan No. 3 (DAP3) Local Planning Policy 2.9 'Service Stations & Roadhouses' Local Planning Policy 4.6 'Signs' State Planning Policy 7.0 'Design of the Built Environment'
Zoning	"Industrial Development" (DPS2) "Service Industrial" (ASP17)
Proposed Use Class	Service Station ("D" use) Car Wash ("P" use)
Existing Use	Vacant Land
Site Area	9811m^2
Estimated Construction Value	$3,500,000

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 1001 (#11) Greenwich Parade, Neerabup (**Subject Site**) for a proposed OTR 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 "Service Station" and "Car Wash" development 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 **$3.5 million**, the Applicant has elected that this application be determined as an Optional Application for determination by the Metro Outer Joint Development Assessment Panel (**JDAP**).

Accordingly, please find ***attached*** our completed City of Wanneroo Application for Development Approval Form, MRS Form 1 and DAP Form 1, each signed and authorised by the landowner.

1.2 PRE-APPLICATION DISCUSSIONS

The proponent engaged with the DevelopmentWA Estate Architect (DnA Architects) in the development design of the project through multiple submissions on 24 May 2022, 22 July 2022, 9 August 2022 and 30 September 2022 as part of the Design Guidelines (DG) Stage 1 Pre-Development Approval requirement. The Estate Architect's endorsement is included within this report.

A lodgement meeting has also been completed with the City of Wanneroo planning department. The City confirm that due to the Estate Architect endorsement, referral to the City's Design Review Panel (DRP) will not be required.

2.0 SITE DETAILS

2.1 LEGAL DESCRIPTION OF LAND

This development application applies to Lot 1001 (#11) Greenwich Parade, Neerabup, the details of which are provided in **Table 2** below.

Table 2: Legal Description of Land

Lot	Deposited Plan	Vol/Folio	Area	Address	Proprietors
1001	61212	2988/955	9811m^2	11 Greenwich Parade, Neerabup	OTR 374 Pty Ltd

The Certificate of Title for the lot is attached at **Annexure 1**.

2.2 SITE DETAILS

The subject site has a total land area of 9811m^2 and is currently vacant land.

An Aerial Photograph of the subject site is included at **Figure 1**.

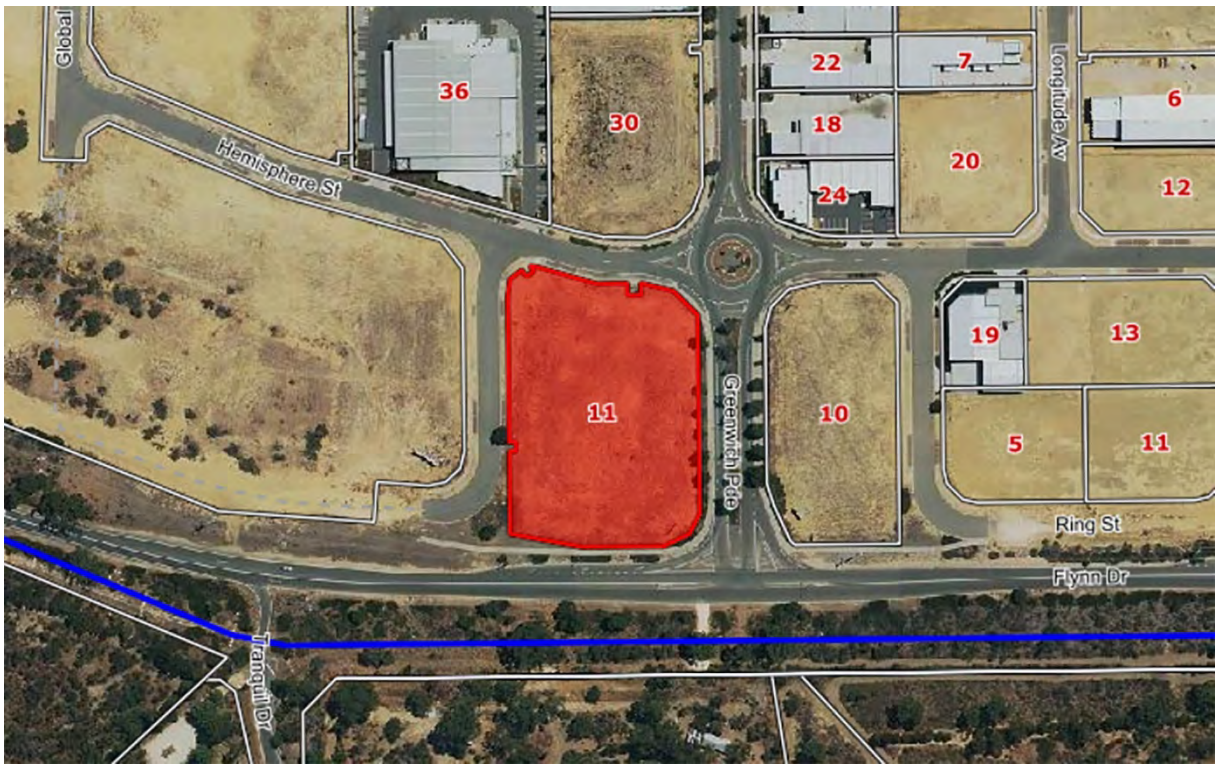


Figure 1: **Aerial Photograph (City of Wanneroo)**

3.0 THE PROPOSAL

The proposal is to develop an OTR Service Station & Car Wash development on the subject land.

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

The proponent engaged with the DevelopmentWA Estate Architect (DnA Architects) in the development design of the project through multiple submissions on 24 May 2022, 22 July 2022, 9 August 2022 and 30 September 2022 as part of the Design Guidelines (DG) Stage 1 Pre-Development Approval requirement.

The Estate Architect's endorsement is included at **Annexure 3**.

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 / Architect	Plan/Document	Annexure
ADS Architects	Development Plans & Feature Survey	**2**
DnA Architects	Estate Architect Endorsement	**3**
Oxigen	Landscaping Plan	**4**
i3 Consultants	Transport Impact Assessment	**5**
JCCE	Civil Design	**6**
Herring Storer Acoustics	Environmental Noise Assessment	**7**
Bushfire Prone Planning	Bushfire Management Plan & Bushfire Risk Assessment and Management Report	**8**

3.2 GENERAL DEVELOPMENT DETAILS

3.2.1 Landscaping & Feature Screens

The proposed landscaping of the site is intended to ensure that the entire development provides an attractive and high-quality presentation to external streets and site boundaries.

A formal Landscaping Plan has been prepared by Oxigen in support of this application and is included at **Annexure 4**.

5.30m high feature screen walls with seating areas are proposed along the Greenwich Parade and Hemisphere Street boundaries as shown on the Site Plan.

3.2.2 Access & Movement

The proposed development entails a left-in only crossover from Flynn Drive and a left-in, right in and left-out crossover from Greenwich Parade.

A Transport Impact Assessment (**Annexure 5**) has been prepared by DVC to address the traffic movements associated with the proposed development. The design has demonstrated that access and traffic movements for both cars and heavy vehicles (i.e. fuel tankers) 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 the following car parking facilities:

- 17 marked bays (including one (1) accessible parking bay) located in proximity to the convenience store building
- 8 fuel bowser parking positions located under the light vehicle fuel canopy
- 3 diesel bowser parking positions located under the diesel canopy
- 2 EV charging station bays
- 1 MRV parking bay
- 2 semi trailer parking bays
- 1 B-double parking bay
- 4 vacuum bays
- 2 drying bays
- A drive thru facility that can accommodate 7 cars in the drive thru queue lane.

The Drive Thru is primarily for ordering and collection of coffee and other pre-packaged goods from the convenience store building.

3.2.4 Signage

The proposed development involves three (3) 9.00m high pylon signs, with one located midway along Flynn Drive, one located at the corner of Greenwich Parade and Flynn Drive, and one located along Greenwich Parade, adjacent to the proposed crossover. The pylons are proposed for the purpose of displaying fuel pricing and relevant sigange for the proposed uses.

Given the site has frontage to fourt different roads, three pylon signs for the development is considered appropriate.

A range of other signage on buildings and the fuel canopy is proposed as shown on the Elevations.

LED signage elements will be used to display text and images relating to good and services provided on the site. There will be no third-party advertising displayed using the LED elements (or otherwise). LED elements will display static, but changeable, images, which will have a dwell time

of no less than 30 seconds per image and will change over rapidly, i.e. no more than 0.1 second. Luminance of the LED panels will be controlled in accordance with prevailing ambient light to avoid illumination or glare which may distract drivers or other road users, ranging from a maximum of 6,000 Cd/m^2 (maximum average) on a sunny day, to no more than 300 Cd/m^2 (maximum average) at night. These standards are in accordance with Main Roads WA (MRWA) advertising policy and are appropriate guidelines to follow.

The LED signage elements will allow the full range of goods and services offered at the site (including fuel sales and promotions, convenience retail including the retail drive-through, coffee and food offers) to be brought to the attention of customers in a contemporary, engaging way, reducing the need to seek approval for a larger number of static signage elements which would present the same information in a manner that might be more likely to contribute to visual clutter and over-proliferation of signage.

In relation to the Pylon Signs, these are double-sided signs that will display the same information on both faces. The bottom half (approximately) of the sign will display (in white changeable LED numerals) the current price of 5 grades of fuel. The LED signage panels above will display content of the kind referred to above, with dwell time, changeover time and luminance as described above.

3.2.5 Civil Design

This application is supported by a Civil Design prepared by JCCE and is included at **Annexure 6**.

3.3 PROPOSED SERVICE STATION DETAILS

3.3.1 Building & Design

The design of the Service Station development is typically commercial in appearance and will adopt the corporate branding normally associated with a OTR Convenience Store / Service Station.

The convenience store building includes design features such as the covered drive thru tunnel which has timber colonnade design which is also reflected in other buildings and structures on the development site, providing a cohesive, high-quality built form outcome. The building features brickwork and cladding materials together with a large, glazed shopfront area, resulting in a quality outcome.

The proposed convenience store building will be set back 7.733m from the Flynn Drive easement line Street boundary and 15.406m from Greenwich Parade.

The convenience store building is proposed at a height of 4.95m extending to 7.05m at the southern end closest to the intersection giving the building a larger presence to the streets. Extensive glazing is proposed along the main (western) 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 building also has a large awning

extending out over the footpath area in front of it. Large landscape and hardscape zones are proposed around the convenience store building.

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 include an four-bowser fuel canopy with the capability to service 8 light vehicles simultaneously. A drive-thru facility is also proposed around the rear and side of the convenience store building and involves separate order and pick-up locations.

The fuel canopy will also have the OTR branding and livery. The fuel canopy has a total height of 7.15m and features a butterfly design that is an OTR signature design feature. The fuel canopy has a 4.50m clearance. The columns of the fuel canopy will be treated with a timber-look cladding, as shown in the Elevations, and the timber-look cladding is also replicated across other buildings and structures on the site, for a cohesive design outcome. The fuel canopy will be linked to the convenience store building with a curved roof structure to provide cover from extreme weather conditions. The fuel canopy will be set back 6.00m from the Flynn Drive easement line.

The proposed diesel fuel canopy will be a flat roof structure.

The Service Station will also offer two (2) Electric Vehicle (EV) charging stations located to the north of the light vehicle fuel canopy.

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 fuel and other internal sales.

3.3.3 Fuel Types, Dispensing & Fuel Delivery

The proposed Service Station will offer five (5) different fuel types (E10, ULP, ULP95, ULP98, Diesel) under the fuel canopy, and hi-flow diesel from the diesel canopy. The dispensing arrangements are through 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 Service Station will be serviced with 19m fuel tankers 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.

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.

3.4 CAR WASH USE

3.4.1 Building & Design

The proposed Car Wash facility will include an Auto Wash building with queuing area and four (4) undercover manual washing bays which has a roof design which features a butterfly design similar to the Service Station fuel canopy. The Auto Wash building has an interesting design fronting Flynn Drive that has an angled shape with timber look columns and glazed windows.

As part of the Car Wash use, there will be four (4) vacuum bays and two (2) drying bays located on the northern side of the wash facility. The vacuum bays are intended to have a covered structure installed over the bays, to provide cover from sun and inclement weather. The vacuum bays will also have a feature screen behind, in a similar design to the other timber-look screens and features throughout the development.

The manual washing bay structure will be 4.784m high and the auto wash building will be 5.00m high fronting Flynn Drive, extending up to 6.650m high.

The Car Wash facility has a minimum set back of 6.00m to the Flynn Drive easement line.

The design of the Car Wash facility enables plenty of queuing area around the rear of the facility for both the auto wash and manual washing bays.

3.4.2 Hours of Operation & Staff

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

3.5 NOISE MANAGEMENT

Herring Storer Acoustics was engaged to prepare an Environmental Noise Assessment for the proposed development (see **Annexure 7**).

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

4.0 PLANNING ASSESSMENT

4.1 METROPOLITAN REGION SCHEME

The subject land is zoned "Industrial" in the Metropolitan Region Scheme (**MRS**). The land fronts Flynn Drive which is reserved under the MRS as an Other Regional Road (refer Figure 4 below).

4.2 CITY OF WANNEROO DISTRICT PLANNING SCHEME NO. 2

4.2.1 Zoning

The subject land is zoned "Industrial Development" in the City of Wanneroo District Planning Scheme No. 2 (**DPS 2**). Refer to **Figure 2** for an extract of the DPS 2 Scheme Map.

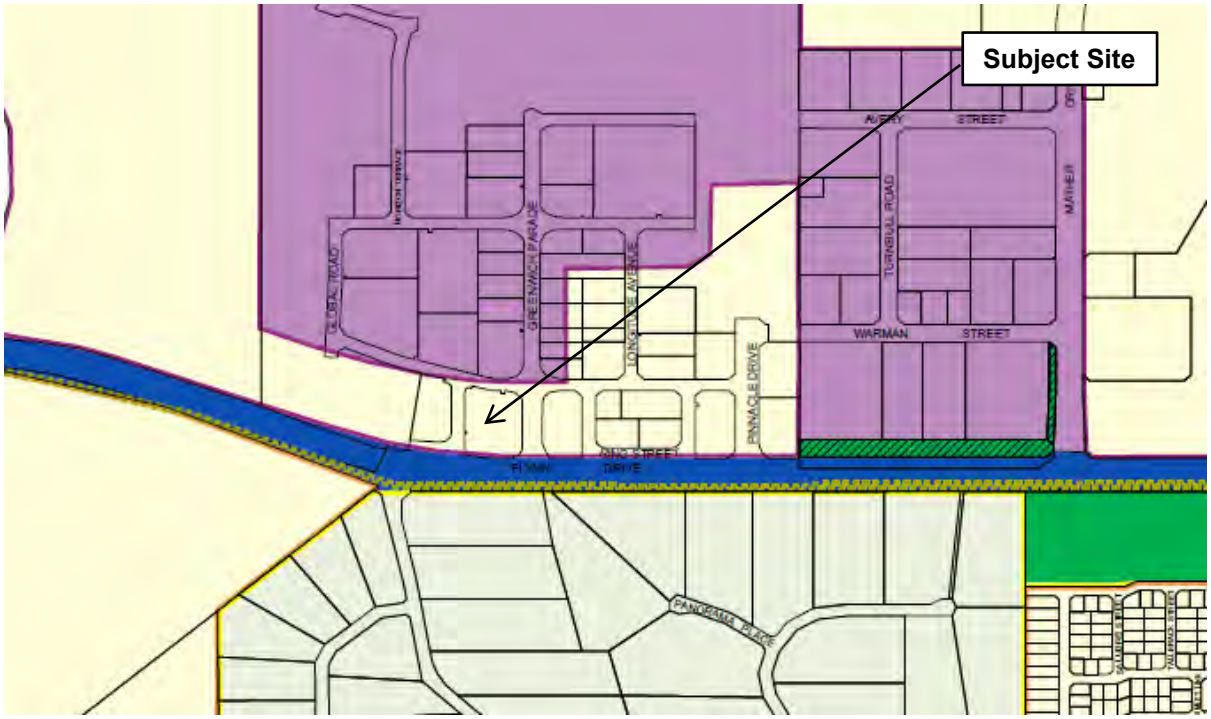


Figure 2: **DPS 2 Scheme Map Extract**

The purpose of the "Industrial Development" zone from DPS2 is to, *"provide for the orderly planning of larger areas of land proposed for industrial use in an integrated manner within a regional context whilst retaining flexibility to review planning with changing circumstances."*

The objectives of the "Industrial Development" zone are to:

(a) *designate land for future industrial development;*

(b) *provide for the orderly and comprehensive planning and development of large areas of industrial land for industrial and employment purposes;*

(c) enable planning to be flexible and responsive to changing circumstances throughout the developmental stages of the area.

4.2.2 Land Use

Land uses for the "Industrial Development" zone are not included in Table 1 (Clause 3.2) of DPS2. Clause 3.2.3 of DPS2 states that if the zoning table does not identify any permissible uses for land in a zone, the local government may have due regard to a structure plan and local development plan that applies to the site.

Clause 3.15.4 of DPS2 states that, *"The permissibility of uses in the Industrial Development Zone subject to Clause 27 of the Deemed Provisions shall be determined with regard to the provisions of the relevant Structure Plan."*

The Structure Plan that applies to the site zones the land as "Service Industrial" (refer section 4.3 of this report).

A "Car Wash" use is defined in Schedule 1 of DPS2 as:

> *"Means any land or buildings used for mechanical vehicle washing. Such uses may or may not be associated with a service station and may include such other uses considered by local government to be ancillary to the predominant use of the land."*

A "Service Station" use is defined in DPS2 as:

> *"means premises other than premises used for a transport depot, panel beating, spray painting, major repairs or wrecking, that are used for –*
>
> *(a) the retail sale of petroleum products, motor vehicle accessories and goods of an incidental or convenience nature; or*
>
> *(b) the carrying out of greasing, tyre repairs and minor mechanical repairs to motor vehicles."*

Accordingly, the defined use classes of "Car Wash" and "Service Station" are appropriate for the development/uses proposed.

A "Car Wash" use is a "P" Permitted use in the "Service Industrial" zone. A "Service Station" use is a "D" Discretionary use in the "Service Industrial" zone. Both uses are, therefore, capable of approval.

4.2.3 Development Standards

Part IV of DPS2 sets out a range of General Development Requirements.

The relevant standards are considered below in **Table 4**.

Table 4: Assessment of DPS2 Development Standards

Development Standard	Proposed Development
Clause 4.7 **Setbacks for Non-Residential Dev't** *Street Boundary – 6 metres* *Side and Rear Boundaries – Nil* *Secondary Streets – 3 metres* *Portion of lot within 3 metres from street alignment to be used for landscaping and access only*	**Clause 4.7** **Setbacks for Non-Residential Dev't** Street Boundary – 6 metres from easement line Side and Rear Boundaries – n/a Secondary Streets – >3 metres Portion of lot within 3 metres is used for landscaping and access.
Clause 4.8 **Building Facades for Non-Res Dev't** *Façade to be high standard of architectural design.* *Integrated Signage*	**Clause 4.8** **Building Facades for Non-Res Dev't** Proposed facades are to high standard of architectural design endorsed by the Estate Architect. Signage is integrated into buildings, except the pylon signs which are required to be provided to display fuel pricing.
Clause 4.9 **Traffic Entrances** *Limit access and egress in the interests of traffic safety.*	**Clause 4.9** **Traffic Entrances** Proposed development includes a consolidated access point from Greenwich Parade midway along the site frontage consistent with the local planning requirements for the land. A left-in crossover from Flynn Drive is also proposed.
Clause 4.12 **Service Areas and Access** *Provision should be made for service access to the rear of commercial uses for loading and unloading goods.*	**Clause 4.12** **Service Areas and Access** The proposed development provides for a loading/unloading bay at the rear of the car wash facility. Fuel deliveries will be made near the heavy vehicle refuelling area.
Clause 4.14 **Car Parking Standards** *Car parking numbers should be provided in accordance with Table 2 of DPS 2.*	**Clause 4.14** **Car Parking Standards** Car parking has been provided in accordance with DPS 2. Refer to Section 4.24 of this Report.
Clause 4.17 **Landscaping Requirements** *A minimum of 8% of the area of a development site shall be set aside, developed and maintained as landscaping. In addition, the verge area of the lot shall be landscaped and maintained.*	**Clause 4.17** **Landscaping Requirements** The proposed development provides for 9.66% of the development site for the purposes of landscaping (738.11m^2 landscaping proposed on a development site area of 7637m^2 (excluding the future development site area)). A Landscaping Plan has been prepared for this application. The landscaping proposal has also

Development Standard	Proposed Development
	been endorsed by the Estate Architect. The stage 2 future development site may involve additional landscaping areas.

The proposed development generally complies with the Development Standards of DPS2.

4.2.4 Car Parking

Car parking is required to be provided in accordance with Table 2 'Car Parking Standards' of DPS 2.

The site has been provided with the following car parking facilities:

- 17 marked bays (including one (1) accessible parking bay) located in proximity to the convenience store building
- 8 fuel bowser parking positions located under the light vehicle fuel canopy
- 3 diesel bowser parking positions located under the diesel canopy
- 2 EV charging station bays
- 1 MRV parking bay
- 2 semi trailer parking bays
- 1 B-double parking bay
- 4 vacuum bays
- 2 drying bays
- A drive thru facility that can accommodate 7 cars in the drive thru queue lane.

The car parking calculation is demonstrated below at **Table 5**.

Table 5: Car Parking Requirements of DPS 2

Use Class	DPS2 Requirement	Required	Provided
Service Station	7 bays per 100m^2 NLA Up to 50% of bays may be located in refuelling positions	**19.74 (20)**	**17 marked bays 2 EV bays 8 refuelling positions 3 diesel positions 4 truck bays**
Car Wash	Nil if incidental to other development on the same site otherwise 1	**0**	
Total		**20**	**34**

The proposed development is required under DPS 2 to provide a total of 20 car parking bays. The proposed development exceeds the overall requirement by providing a total of 34 car parking bays in various arrangements and formats as described in Table 5 above.

Having considered the range of car parking options across the site and the total number of bays provided, the car parking provision complies with the requirements of DPS 2.

4.2.5 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 6 below provides an assessment against matters relevant to this proposal.

Table 6: 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 development is consistent with the aims and provisions of the City's DPS2 for the following reasons: • The proposal seeks approval for land uses which are capable of approval and are appropriate for the site/location. • The proposal is generally compliant with the development standards of DPS2.
(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 matter is not relevant to this proposal as there is no proposed local planning scheme or amendment to the scheme that has been advertised.
(c) Any approved State Planning Policy	This report demonstrates the proposed development complies with the relevant State Planning Policies.
(d) Any environmental protection policy approved under the Environmental Protection Act 1986 section 31 (d);	This matter is not relevant to this proposal.
(e) Any policy of the Commission	This matter is not relevant to this proposal.
(f) Any policy of the State	This is addressed further in this report.
(g) Any local planning policy for the Scheme area;	This report demonstrates 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.	The proposed development gives consideration to the provisions of ASP17 and DAP No. 3 – refer Section 4.3 and 4.4 of this report.
(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	This matter is not relevant to this proposal as the subject land is not reserved under the Scheme.

Relevant Matters to be Considered	Comment
and the additional and permitted uses identified in this Scheme for the reserve.	
(k) The built heritage conservation of any place that is of cultural significance.	This matter is not relevant to this proposal.
(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 growing service industrial area. • The proposal is compatible with nearby existing developments. • The scale of the development does not impact any adjacent properties. Having regard to the above, the nature of the proposed development is entirely compatible with its surroundings.
(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;*	<u>Environmental Impacts:</u> The proposed development is not anticipated to result in any adverse environmental impacts. <u>Character of the Locality:</u> The proposed development is consistent with the character of the area. <u>Social Impacts:</u> 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. It will also provide a facility that will be used by workers and customers in the area.
(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.	This matter is not relevant to this proposal.
(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.	Areas of landscaping have been provided on the site in accordance with the requirements of DPS2. A Landscape Plan has been provided with this Application.
(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.	The application is supported with a bushfire management plan and civil design.

Relevant Matters to be Considered	Comment
(r) The suitability of the land for the development taking into account the possible risk to human health or safety.	This matter is not relevant to this proposal.
(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 the proposed access arrangements to and from the site are satisfactory and appropriate. The development has been appropriately designed, including appropriate arrangements for loading, unloading, manoeuvring and parking of light and heavy 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;* *(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;*	The Transport Impact Assessment addresses these matters.
(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. The proposal responds to a growing need in the area.
(w) The history of the site where the development is to be located.	No significant historical matter is relevant to this proposal.
(x) The impact of the development on the community as a whole notwithstanding the impact of the development on particular individuals.	The proposed development is unlikely to have a detrimental impact on the community.
(y) Any submissions received on the application.	The City is able to advertise the application for public submissions although both uses do not need to be advertised, as they are not “A” uses.
(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 6** above, the proposal appropriately addresses the relevant matters to be considered as set out in the Deemed Provisions.

4.3 NEERABUP INDUSTRIAL AREA LOCAL STRUCTURE PLAN

The land is subject to the Neerabup Industrial Area Local Structure Plan (Agreed Structure Plan No. 17 (**ASP17**)).

ASP17 provides the statutory framework for planning with the Neerabup Industrial Area.

The land is designated as "Service Industrial" zone under ASP17 (refer to **Figure 3** below).



Figure 3: ASP17 Structure Plan Map Extract

ASP17 describes that the permissibility of uses and development shall be in accordance with the "Service Industrial" zone under DPS2.

A "Service Station" use is a "D" Discretionary use in the "Service Industrial" zone under DPS2 and capable of approval. A "Car Wash" use is a "P" Permitted use in the "Service Industrial" zone.

Clause 16 of ASP17 applies to land within Meridian Park. All of the provisions of Clause 16 of ASP17 are generally complied with.

Specially, Clause 16.10 of ASP17 requires all applications for planning approval within Meridian Park Industrial Estate to have an endorsement of the 'Estate Architect'. The Proponent has received the endorsement of DnA Architects, the Estate Architect of the Meridian Park Industrial Estate, which is included within this report (Annexure 3).

Specifically, the objectives of the NIA Service Industrial Zone set out in ASP17 are to:

a. encourage high quality service, business and commercial activity at the entrance to the NIA to take advantage of greater exposure generated by the industrial park and passing trade at these locations; and

b. enable the seamless transition of uses extending into the General Industrial Area

The objectives of the Service Industrial zone under DPS2 are to:

a. accommodate a range of light industries, showrooms and warehouses, entertainment and recreational activities, and complementary business services which, by their nature, would not detrimentally affect the amenity of surrounding areas; and

b. ensure that development within this zone creates an attractive façade to the street for the visual amenity of surrounding areas.

The proposed development is consistent with both sets of objectives for the "Service Industrial" zone.

4.4 DETAILED AREA PLAN NO. 3

The land is subject to Detailed Area Plan No. 3 (**DAP3**) under ASP17, which was prepared in 2010. Refer to **Figure 4** for an extract of DAP3 relative to the subject site.

DAP3 details specific guidelines for the subject site and is to be read in conjunction with the Meridian Park Design Guidelines that outline performance standards, environmental sensitive design initiatives and general guidelines.

The provisions of DAP3 are not binding on a decision-maker due to the operation of Clause 56(1) and Clause 67(h) of the Deemed Provisions.

DAP3 sets out a range of design requirements including:

- Building envelope;
- Priority building zones
- Priority facades;
- Landmark entry screens;
- Permitted vehicle access locations;
- Priority parking zones;
- Vehicular access restriction areas; and
- Landscaped zones.

The proposed development does not necessarily meet the building design requirements of DAP3, however many of the intentions of DAP3 are satisfied general building locations, setbacks, priority facades, vehicle access locations, landscape zones and parking areas.

The development has also been endorsed by the Estate Architect and therefore, it is considered appropriate to depart from the provisions of DAP3.

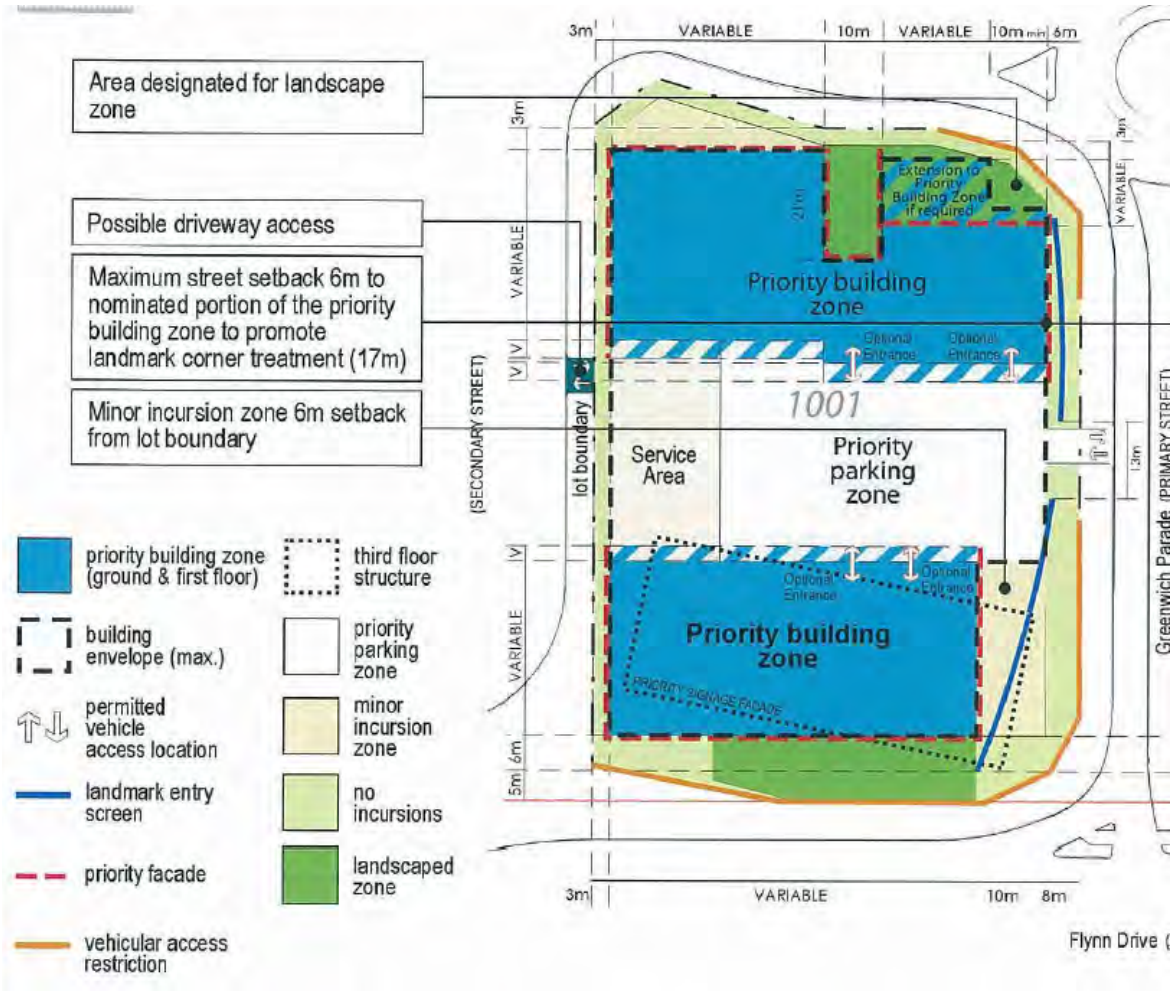


Figure 4: **Detailed Area Plan No. 3 extract identifying Lot 1001**

4.5 LOCAL PLANNING POLICIES

4.5.1 Local Planning Policy 2.9 – Service Stations and Roadhouses

The City's Local Planning Policy 2.9 'Service Stations and Roadhouses' (**LPP2.9**) has been prepared to provide guidance on the development of Service Stations and applies to the proposed development.

The proposed development has been designed with regard to the provisions of LPP2.9, with respect to architectural design requirements, canopy structure requirements, façade treatments, articulation, colour/material requirements and landscaping.

4.5.2 Local Planning Policy 4.6 - Signs

The City's Local Planning Policy 4.6 'Signs' (**LPP4.6**) provides guidance on the design and placement of common forms of advertising signs within the City of Wanneroo.

The proposed development involves three (3) Pylon Signs and a range of Wall Signs on buildings.

The proposed 9.00m high pylon signs exceed the 6.00m height limit (maximum 8.00m for multiple tenancy signs) outlined in LPP4.6, however, they are considered appropriate in the circumstances. It is noted that the recently approved service station at Pinnacle Drive in Neerabup was approved with an 8.00m high pylon sign. LPP4.6 permits one pylon sign per street frontage, so as the site has four road frontages, the three (3) pylon signs are capable of approval.

The proposed wall signs are considered appropriate for the development in terms of their number and size.

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 proposed development/use is consistent with the existing service industrial context. The development of the site will improve the amenity of the locality, by incorporating well-designed built form (together with landscaped setting). The proposed development has been well-designed and has been endorsed by the Estate Architect.
2. Landscape quality *Good design recognises that together landscape and buildings operate as an integrated and sustainable system, within a broader ecological context.*	The proposed development provides a large area of the site area as landscaping (9.66% of site area) which exceeds the City's requirements under DPS2. The landscaping areas provides opportunity for planting of trees and shrubs which is considered to be a positive aspect of the proposed development. It is considered that the proposed landscaping regime provides both a good quantity and high quality. Landscape treatment to the streets is more visible and thus an important aspect to consider – and in response, the planting and landscaping areas have been focussed in these areas, so that the development presents with a foreground of landscaped areas. The width of landscaped bed sizes are good, enabling consolidated plantings to occur as well as the establishment of trees. A Landscaping Plan has been prepared in support of the application.
3. Built form and scale *Good design ensures that the massing and height of development is appropriate to its setting and successfully negotiates between*	The built form is a function of the proposed uses and involves buildings, canopy structures, queuing areas and accessways. The built form, scale and height of the proposed development is appropriate to this setting and appropriate for the development type.

SPP 7.0 Design Principles	Comment
existing built form and the intended future character of the local area.	The built form includes a range of building materials and feature treatments which provide a high quality outcome. The built form has been supported by the Estate Architect.
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 development has been designed to be highly functional, with a range of car-based uses such as a convenience store, fuel sales, EV charging, car washing and vacuum facilities. The design of the development is aimed at providing user efficiency.
5. Sustainability *Good design optimises the sustainability of the built environment, delivering positive environmental, social and economic outcomes.*	The proposed building and fuel canopy is designed to support PV (Solar) Panels, and the development also provides EV charging stations. Hardstand areas will be constructed using recycled asphalt (RAP) where possible. The site provides for the opportunity for large trees to be planted, to provide shade.
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 improves the amenity of the locality and provides an environment that is universally accessible. Good quality landscaping areas (including planting of trees) is also proposed to provide a healthy environment and improved amenity. The convenience function of the service station itself 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 proposed access arrangements, including proposed crossovers from Flynn Street and Greenwich Parade provide for easily legible entry and exit. Similarly, access to the drive through and the car wash area is easily identifiable.
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. Assessment has been completed for bushfire risk to ensure compliance with standards.
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 and services 24/7 and responds to a growing need in the area. 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 building has been architecturally designed with a range of materials and colours and includes feature treatments and screens. 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.

4.6.2 WAPC SPP 3.7 - Planning in Bushfire Prone Areas

The WAPC State Planning Policy 3.7 (**SPP 3.7**) – Planning in Bushfire Prone Areas states that planning proposals within bushfire prone areas are to be accompanied by a bushfire assessment relevant to the nature and scale of the development.

The subject site is within a bushfire prone area (refer **Figure 5** below) and a Service Station is classified as a High-Risk land use. As such, a Bushfire Management Plan (**BMP**) and Bushfire Risk Assessment & Management Report (**BRAM**) has been prepared in support of the proposal - refer **Annexure 8**.

Referral of the application to the Department of Fire and Emergency Services (**DFES**) is required for comment.

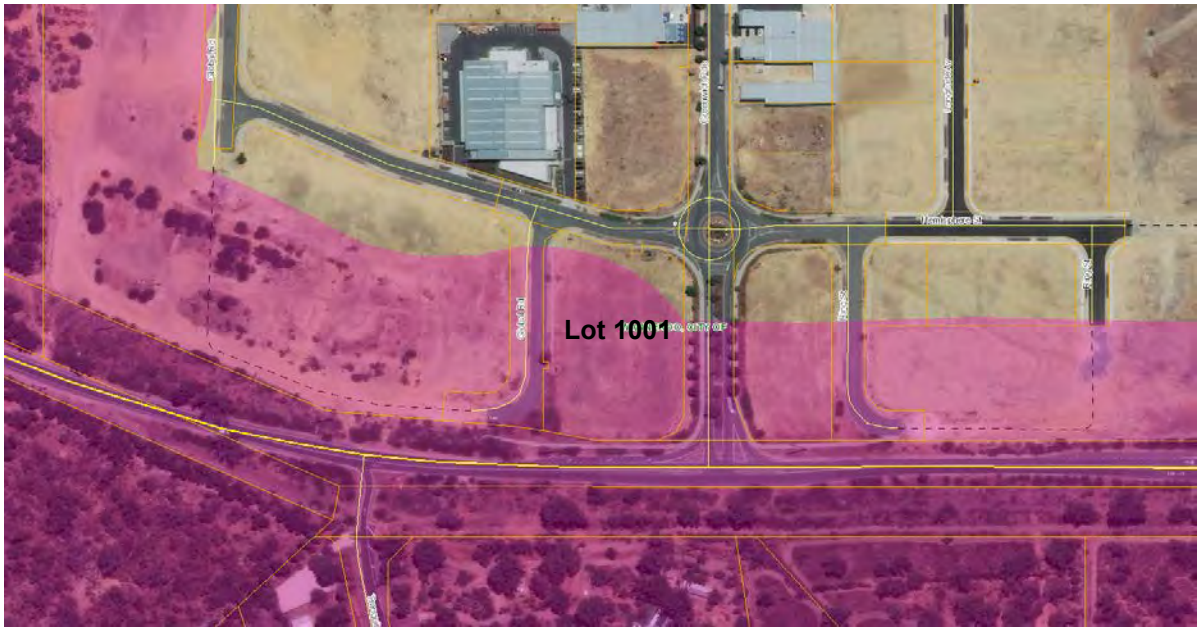


Figure 5: Extract from Map of Bushfire Prone Areas

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 gaseous, noise, odour and risk, and recommends a generic buffer distance of 200m to sensitive land uses. These recommended buffer distances are not absolute

separation distances but are instead default provisions in the absence of site-specific technical assessment.

Rural Residential areas exist to the south, on the opposite side of Flynn Drive.

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. Transmission of noise in these circumstances is not an issue, and noise generated from a fuel facility is generally consistent with other similar commercial uses. No dense urban residential areas exist within 200m of the subject land. A comprehensive Environmental Noise Assessment has been prepared to address noise issues, and it is has been concluded that the site will comply with the Environmental Protection (Noise) Regulations (refer **Annexure 7**).
Risk	As the proposed Service Station provides 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. Accordingly, Risk can be appropriately managed through the Dangerous Goods Storage and Handling licence requirements.
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 are inset and orientated internally to ensure light spill is contained within the site. It is not anticipated that light sources from the proposed development will affect any rural residential dwellings which are located over 100m away and not directly facing the proposed development. Rural residential dwellings to the south are also located amongst heavily vegetated areas, also reducing the impact of any light sources. 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 in the Table 8 above, the proposed Service Station development has been appropriately designed and sited to mitigate any potential amenity and environmental impacts on nearby sensitive (rural 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 Lot 1001 (#11) Greenwich Parade, Neerabup.

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

- The proposed “Service Station” and “Car Wash” is compliant with the development standards and requirements of the City of Wanneroo District Planning Scheme No. 2;
- The proposed uses are capable of approval in the “Industrial Development” zone and appropriate for the site and location;
- The proposed development will provide increased services to the Neerabup locality;
- The proposed development provides for new development of the vacant site;
- The proposed development has been endorsed by the Estate Architect;
- The proposed development is supported by a range of expert technical reports and plans (including traffic, acoustic, bushfire, landscape and civil design), demonstrating that all relevant technical issues have been considered and addressed.

Having regard to the above, the proposed Service Station and Car Wash Development should be supported and approved.

For these reasons, and considering the assessment contained within this report, we respectfully request that the City of Wanneroo 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 Outer JDAP, subject to reasonable conditions.

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5 October 2022

Meridian Park - DAP Lot 1001 Stage 1, Design Guideline Endorsement - Conditional

Dear Nik

Thank you for your submission received 24th May, 22nd July, 9th Aug and 30th Sept 2022, as part of your Design Guidelines (DG) Stage 1: Pre-Development Approval.

Your application for verification and compliance approval for DAP Lot 1021 is conditionally endorsed for Stage 1: Pre-Development Approval at Meridian Park Stage 1 in accordance with the Design Guidelines dated July 2021 and DAP 3.

Attached is the Design Guideline Checklist and stamped application drawings 00 to 09 all revision C, plus 09 B, 101 B and 102 B with comments and notes for your attention and read in conjunction with this cover letter.

Conditions:

1. Plant species trees, shrubs and ground cover to be selected from the approved species list, refer to Section A7
2. Remove proposed lawn, which is only permitted as per clause M4.6
3. Soft landscaping needs to be between 627 and 784sqm. NB: notes on Site Plan don't distinguish hard and soft landscaping
4. Ground cover planting (shrubs) need to be at least three (#3) plants per square metre (sqm), as per clause M4.5
5. Remove any suggestion or indication in your drawings of Works outside the Lot boundary. NB: verge landscaping is installed by DevelopmentWA and maintained and reticulated by the Lot owner, refer to clause M4.16
6. Ceiling voids are required to be ventilated to outside air, refer to clause M2.6
7. The minimum Site Coverage of 20% is almost met if the future development (NW corner) is removed from the site area and canopies added to building areas as 'Site Coverage' which is 19.3%. To comply the future development needs to have a site coverage of at least 489sqm.

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8. Only one pylon sign is permitted as per clause M6.4, however due to the relatively low built area and the use case, two signs is acceptable.

9. This is a Detailed Area Plan site (DAP #3) which requires a strong corner presence, landmark landscape zones and taller buildings which is problematic with a service station, but also a reason to comply with the minimum 7.0m height, reference clause M1.7

Notes:

A. Creation of new cross-overs, must be at the applicants cost and with DevelopmentWA's prior approval. Final Works must comply with the City of Wanneroo's requirements and statutory construction standards including co-ordination with existing in-ground services and be complete prior to occupation.

B. Solar absorbance of the walls and roof will need to be assessed at DGS2.

We will submit to the City of Wanneroo Regulatory Services a copy of this endorsement letter and the stamped drawings for their record.

Prior to a Building Permit, you are required to lodge with us a Design Guideline Stage 2 application for Endorsement (reference DG section G4).

Thank you for your application, we look forward to seeing this development on the estate.

If you have any queries please do not hesitate to get in touch.

Sincerely



Wayne Dufty RAIA

Director

Copies: N Varma - DevelopmentWA
City of Wanneroo - Planning Department

MERIDIAN PARK Design Guideline Stage 1 Checklist - Pre-development	Self Assessment	DevelopmentWA Assessment	
		Compliant	Non Compliant
Documents			
Completed Stage 1 Check List (this document)	✔	✔	
Site Plan	✔	✔	
Floor Plans of all buildings including breeze path information	✔	✔	
Shadow Diagram	✔	✔	
Elevations	✔	✔	
Design Requirements			
Urban and Architectural Form M1			
Consolidated customer service and employee amenities within front building zone		NA	
Operational area within rear building zone	✔	✔	
6m front set back for building	✔	✔	
3m side set back for minimum 21m from front boundary	✔	NA	
Service Industrial lots have 6m access way to rear	NA	NA	
Active building edges to street and adjacent open parking areas	✔	✔	
Secondary street facades of similar quantity to primary facade	✔	✔	
Ancillary use areas contained within the same built form envelope.	NA	NA	
Passive Design M2			
Development optimises use of passive solar design		✔	
External shading devices to North, East and West facing openings		✔	
Suitable level of natural lighting to the floor level of all buildings	✔	✔	
Hi level operable windows and vents for cross ventilation			✗
Pale roof and wall materials including max roof solar absorbance of 0.5		?	
Ventilated ceiling voids		?	
Parking and Access M3			
Required car parking bays provided	✔	✔	
Public parking within parking zone	✔	✔	
Landscaping M4			
Micro-climate zone provided	✔	NA	
Landscaping (hard and soft) between 8% and 10% of Site Area	✔	?	

MERIDIAN PARK Design Guideline Stage 1 Checklist - Pre-development	Self Assessment	DevelopmentWA Assessment	
		Compliant	Non Compliant
Shade trees provided to east and west building walls and 1 per 10m on front boundary. One shade tree per four car bays.	✔		✗
Impermeable hardstand limited as far as practicable	✔	✔	
Service, Storage and Display Areas M5			
Service areas screened behind front building line	✔	✔	
Display areas in line or behind building line		NA	
Fencing and Signage M6			
Fencing to front and secondary streets kept to minimum	✔	✔	
Front fence behind building line (building line does not include blade walls)		-	
Conditional fence in front of micro-climate zone		NA	
Fence complies with minimum standard		-	
Pylon sign symmetrical or aligned with facade		✔	
Sign is less than 8m height and 20m^2 surface area	9m height		✗

17 November 2023

OTR Neerabup - Control Building

11 Greenwich Parade, Neerabup WA 6031

Energy Efficiency Report

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Member of BDAV, AIBA, HIA and MBA



[TABLE A] – Document Control

Project:	**OTR Neerabup - Control Building**	**SUHO ref: SH363901**
Project Address	11 Greenwich Parade, Neerabup WA 6031	
Building Class	6 (primary)	
Council	City of Wanneroo	
Report commissioned by	Peregrine Corporation	
Client Reference	OTR Neerabup, Western Australia	

Date:	**Version:**	**Prepared by:**	**Checked by:**
17/11/2022	1	Yamini Shrikhande	Kevin Xiao

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ENERGY MANAGEMENT

SUHO was engaged by Peregrine Corporation to assess the proposed OTR Neerabup Control Building for compliance with Section J - Energy Efficiency and daylight of the National Construction Code (NCC) 2019, Volume 1 (Amendment 1).

The building is located in 11 Greenwich Parade, Neerabup WA 6031 (NCC Climate Zone 5) and has been classified as a Class 6 Building.

ACTION SUMMARY

All actions/items mentioned in 'Action Summary' will comply with the Performance Requirements of the Meridian Park Design Guidelines.

1.	M7.2	Minimum 80% of the selected lamps for internal use will have an efficacy of at least 90 lumens/Watt output and manufacturers quoted life of 20,000 hours.
2.	M7.3	Minimum 80% of the selected lamps for external use will have an efficacy of at least 65 lumens/Watt output and manufacturers quoted life of 20,000 hours.
3.	M7.3	No external up-lighting will be used.
4.	M7.3	All external luminaries will have an upward light component of less than 4%. No stray lighting such as floodlighting will be used to illuminate signage.
5.	M7.3	Glare or light spill will not adversely impact adjoining properties or passing motorists. Preferred corporate signage lighting will be internal, halo, or well-focussed indirect lighting.
6.	M7.4	If applicable, hot water systems can be solar, heat-pump or 5 star gas if hot water facilities are required including showers. If limited to kitchen sinks and bathroom basins (not showers), then alternative hot water systems, such as electric instantaneous or small-scale electric storage hot water systems are permitted.
7.	M7.4	External hot water systems (if present) will be positioned or screened to conceal visibility from the street.
8.	S13.1	Where installed heating and cooling systems will achieve a minimum 4-star energy rating.

Additional Compliance Requirements

1. All internal lighting will be integrated with a lighting management system where all lighting will be clearly labelled and easily accessible by building occupants, all areas with sufficient natural daylight will incorporate daylight linked lighting controls to switchoff lights (eg. Photo-cell sensors.)

2. An automated time clock control system will be provided to all areas and all internal lighting will incorporate Power Factor improvement measures within the fitting.

3. Light levels will be in accordance with AS 1680 Interior Lighting Part 2 and all lamp fittings will have a minimum Light Output Ratio of 0.75.

4. Photovoltaic (PV) panels will be installed on developments to offset energy demand and Smart meters might be installed to use PV to provide surplus power to grid.

ENERGY MODELING AND ANALYSIS

FABRIC

Care has been taken to ensure that energy consumption is reduced and operating costs are minimised. The following features will assist in this strategy:

[TABLE 1] – Control building fabric details

Sr. No	Energy Efficiency Features	Responsibility
	JV3 modelling using Design Builder was undertaken for the development. The following material thermal specification for the building envelope was used:	ESD Consultant / Builder
1.	Insulated roofing panels with a total R-value of R4.94	
2.	Precast concrete walls with an internal insulated lightweight skin with a total R-value of R2.8	
3.	Concrete slab on ground with no insulation	
4.	Below glazing values to be equal to or better than External Glazed Window: U=5.0, SHGC=0.40 (±5%) External Glazed Door: U=5.0, SHGC=0.40 (±5%)	

Note: Refer to Appendix 1 – 'Prelim JV3 Report' for further details. `

SIMULATION OUTPUTS

The greenhouse gas emissions calculated in the following table are generated using design conditions and calculations methods as required by Verification Method JV3 and requirements stipulated by Specification JVb Modelling parameters and represents theoretical values for the operation of the building. These values provide a means for the comparison of the building fabric performance, against the minimum DTS requirements of Section J.

[TABLE 2] – GHG Emission Simulation Outputs

Energy Use Components	Proposed Fabric DTS Services	Reference Building
Heating	1,008	1,195
Cooling	4,198	4,160
Internal Lighting	13,090	13,090
Total Annual GHG Emissions ($KgCO_2$-e/GJ)	**18,295**	**18,444**

Note: Not all Energy Use Components as identified in Section J are represented in the table above. As compliance has been undertaken as a Performance Solution, some energy use components may have either been assessed to DTS requirements or assessed by other consultants.

INDOOR ENVIRONMENT QUALITY (IEQ)

DAYLIGHT MODELING AND ANALYSIS

In order to check the building's daylight performance and check with the council's comment mentioned below, modelling has been performed with Design Builder v5 with Radiance:

Council's comment - 'The proposed buildings do not provide the required skylights or northern glazed windows. The city is of the opinion that either the requirement is to be met, or alternatively given the natue of the proposal, justification to be provided to demonstrate why this Meridian Park requirement has not been met.'

The retail space gets enough natural daylight from the external façade glazing and hence does not require the provision of skylights. The north part of the building consists of a cool room and toilet and hence does not require north glazing.

[TABLE 3] – Daylight analysis

Sr.no	IEQ Features	Responsibility
1	77% of the conditioned control building receive daylight factor of 2% (Daylight modelling and parameters are represented below).	Architect / ESD Consultant

Below is a summary of the development's performance against the indoor environment quality category. The generous provision of glazing to retail space ensures the building performs very well. The following table summarises the percentage of floor area that achieves a Daylight Factor of at least 2%.

[TABLE 4] – Daylight analysis

Area	% of area receiving a daylight factor of 2% or more
Retail	94
Sales + Pick Up	35

APPENDIX 1 – PRELIMINARY SECTION J JV3 REPORT

APPENDIX 1 – PRELIMINARY SECTION J JV3 REPORT

1. ACTION SUMMARY

All actions/items mentioned in '1. Action Summary' must be met to comply with the Performance Requirements of Section J (JP1 - Energy Use).

Specification Upgrades

The following performance upgrades must be made to the supplied building specification in order to achieve compliance:

1.	J3	The chimney or flue (if present) of an solid-fuel burning appliance must be provided with a damper or flap that can be closed to create a seal.
2.	J3	All envelope doors and openable windows or the like must be sealed.
3.	J3	All entrance to the building to a conditioned space of greater than 50m2, must have an airlock, self-closing door, rapid roller door, revolving door or the like.
4.	J3	Exhaust fans in conditioned spaces or habitable rooms must be fitted with a sealing device such as a self closing damper or the like.
5.	J3	Ceilings, walls and floors to be enclosed by internal (close fitting) lining systems or constructed at junctions and penetrations to minimise air leakage in accordance with requirements of J3.6 (b)(i).
6.	J3	Openings in ceilings, walls and floors are to be constructed to minimise air leakage at junctions and penetrations in accordance with J3.6 (b)(ii)
7.	J6.3	Artificial lighting within all rooms and spaces must be controlled by a switch and or control device.
8.	J6.3	90% of Artificial lighting controlled from adjacent rooms or spaces, must be visible from an easily accessible switch and or control device.
9.	J6.3	95% of the light fittings in a building or storey of more than 250m2, must be controlled by a time switch in accordance with Specification J6 or an occupant sensing device. Motion detectors provided as an occupant sensing device must also be in accordance with Specification J6.
10.	J6	Exterior artificial lighting must be controlled by either a daylight sensor or compliant time switch as per requirements of J6.5(a)(i).
11.	J6.6	The power supply to specified boiling water and or chilled water units, must be controlled by a time switch in accordance with Specification J6.
12.	J7	The heated water supply system must be designed and installed in accordance with Part B2 of NCC Volume 3 - Plumbing Code.

Additional Compliance Requirements

Insufficient information was provided to verify the following items. These must be adopted in order to achieve compliance:

1.	J1.2	All insulation should be both tested and labelled in accordance with in accordance with AS4859.1 and installed to the requirement of J1.2 (a) and (c).
2.	J1.2	All reflective insulation must be installed in accordance with the requirements of J1.2 (b) for compliance.
3.	J5.2	An air conditioning system must have a control dead band of not less than 2C, except where a smaller range is required for specialized applications – J5.2(a)(viii).

PRELIM

4. J5.2 A time switch must be provided to control the air-conditioning system which is capable of switching electric power on and off at variable pre-programmed times and on variable pre-programmed days – J5.2(c)(A), J5.2(c)(B) and J5.2(c)(ii).

5. J5.3 A mechanical ventilation system, including one that is part of an air-conditioning system, when serving a conditioned space must have an energy reclaiming system that preconditions outdoor air at a minimum sensible heat transfer effectiveness of 60% – J5.3(a)(ii)(A)(ii).

6. J5.3 Mechanical ventilation system including one that is part of an air-conditioning system and has more than 500 L/s outdoor flow rate must have an energy reclaiming system that preconditions outdoor air at a minimum sensible heat transfer effectiveness of 60%. J5.3(a)(ii) (aa) and J5.3(a)(ii) (bb).

7. J5.3 Time switches must be provided to a mechanical ventilation system with an airflow rate of more than 1000 L/s and must be capable of switching electric power on and off at variable pre-programmed times and on variable pre-programmed cycles J5.3(d)(i) and J5.3(d)(ii).

8. J5.5 Ductwork and fitting in an air-conditioning system must be provided with insulation complying with AS/NZS 4859.1 and having an insulation R-value greater than or equal to 1.0 for flexible ductwork. Also, the insulation must be protected against the effect of the weather and sunlight. J5.5(a) and J5.5(b).

9. J5.6 Any ductwork in an air-conditioning system with a capacity of 3000L/s or more, not located within the last or only room served must be sealed in accordance to the duct sealing requirements of AS 4254.1 and AS 4254.2 for the static pressure in the system.

10. J5.11 The specified air-conditioning system must comply with MEPS.

Thermal Comfort Requirements

A prescribed thermal comfort level must be achieved to the building's occupied zones during its hour of operation. Appendix TCA of this report includes the thermal comfort assessment details and results.

For Relevant BCA Clauses

For the full statement of specific BCA clauses refer to the NCC Volume One online version located at https://www.abcb.gov.au/ncc-online/NCC.

PRELIM

2. COMPLIANCE REPORT

2.1 INTRODUCTION

SUHO was engaged by Peregrine Corporation to assess the proposed OTR Neerabup Control Building for compliance with Section J - Energy Efficiency of the National Construction Code (NCC) 2019, Volume 1 (Amendment 1).

The building is located in 11 Greenwich Parade, Neerabup WA 6031 (NCC Climate Zone 5) and has been classified as a Class 6 Building.

There are no amendments listed in NCC Volume 1, Schedule 1 – State & Territory appendices, that apply specifically to the Section J requirements for this building

2.2 COMPLIANCE SUMMARY

The Performance Requirement JP1 must be satisfied by complying with the J0.1 (a) under Application of Section J.

JP1

This report shows compliance using a Performance Solution. It uses a combination of 'Assessments Methods' including:

1. Verification Method JV3, facilitated for parts J1 and

2. A 'Deemed-to-Satisfy' (DTS) comparison for Parts J3 - J8 (as applicable).

Building Fabric

For a Class 6 (primary), 6 Building, thermal performance and the necessary level of human comfort required of the building fabric, is covered by NCC Volume 1, Parts J1 (Building Fabric), and J3 (Building Sealing), in accordance with Part J0 Energy Efficiency, J0.1(a)(ii).

Building Services

Additionally, the operational energy efficiency of the building services is covered by J5 (Air-conditioning and ventilation services), J6 (Artificial lighting and power), J7 (Heated water supply and swimming pool and spa pool plant) and J8 (Facilities for energy monitoring), also in accordance with J0.1 (b) – (e).

A full list of actions and items requiring further detail to achieve compliance with the Performance requirements is provided in part '1. Action Summary' on page 1 of this report.

Notes:

1. The verification process does not assess all items required by Section J in calculating the GHG theoretical estimate for the building. All DTS requirements, including those required by JVa, have been satisfied or otherwise documented, except where review of that part has been completed by others.

2. The content of this report stipulates the minimum requirements to achieve compliance with the NCC BCA 2019 Section J Energy Efficiency. It should not be interpreted as sustainable advice.

PRELIM

Greenhouse Gas Emissions

The thermal performance of this building is quantified as the energy consumed by the operation of the building's services, conveyed as an annual (theoretical) amount of greenhouse gas emissions for state/ territory of WA.

Under the JV3 Verification Method, the greenhouse gas (GHG) emissions of a reference building (based on the Deemed-to-Satisfy Provisions for both envelope and minimum services) is modelled. This sets a target amount of energy consumption that the proposed building must not exceed. The simulated energy consumption of the Reference Building is expressed as the maximum allowable annual GHG emissions, and are calculated to be **18,444** $kgCO_2$-e/annum for this building.

The material construction (or fabric) of the proposed building envelope is modelled with the same building services. Compliance is verified when it is determined that the annual greenhouse gas emissions of the proposed building, is not more than reference building. The proposed GHG emissions is calculated to be **18,295** $kgCO_2$- e/annum.

This is an overall **0.81%** reduction in greenhouse gas emissions from the reference building.

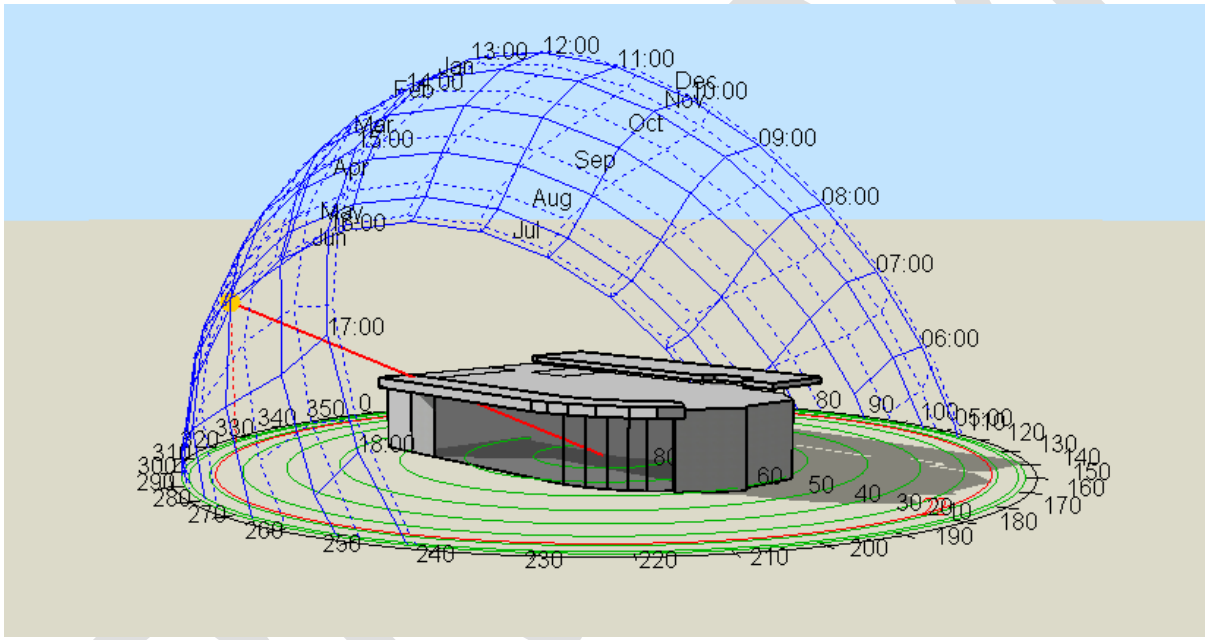


Figure 1 – Energy Plus (Design Builder) energy modelling

Thermal Comfort Assessment

The proposed building with the proposed services, must also achieve thermal comfort.

The code requirement for a thermal comfort level of between a Predicted Mean Vote of -1 to +1, is achieved across not less than 95% of the floor area of all occupied zones for not less than 98% of the annual hours of operation of the building, meaning the thermal comfort compliance requirement is satisfied. (See Appendix TCA for further details.)

The combined Thermal Comfort results for all Room/Spaces is **99.5%**. Thermal comfort modelling results for the nominated areas are shown in the table below.

[TABLE 3] – Thermal Comfort Results

Room/Space	Zone	Average PMV	PMV % in range	Compliance Achieved
Retail	Single	0.232	99.0	YES
Sales + Pick up	Single	0.148	100.0	YES
Overall Result		**0.190**	**99.5**	**YES**

PRELIM

Performance Solutions – Duty of Care Statement

The intent of this Verification Method is to demonstrate that a Performance Solution meets the Performance Requirements, providing flexibility from prescriptive Deemed-to-Satisfy (DTS) provisions, where they are not mandatory under Specification JVa.

The trade-off is that performance solutions derived in this report must not have unintended consequences on any other Section or Part of the NCC. In satisfying the requirements, all practitioners and stakeholder utilising the outcomes of this report, should exercise a duty of care.

PRELIM

3. FINAL BUILDING SPECIFICATION

3.1 STRUCTURE

Envelope Description

The following describes the building envelope to be assessed:

The building envelope is defined as illustrated in the stamped plans attached to this report.

[TABLE B] – Parts

Ground level

Qnty	Name	Classification of Part	Floor Area (m^2)
1	Control Building	6 - shop or service	282.0
Total area of building:			**282.0**

PRELIM

3.2 J1 FABRIC

The following items apply to the elements forming the building envelope of the Parts of the building listed in the table above.

J1.2 – Thermal construction - general

Refer to Part 1. Action Summary, 'Additional Compliance Requirements'.

J1.3 – Roofs and Ceilings Constructions

The proposed roof in the building envelope must achieve the minimum R-value shown in the calculations below.

[TABLE 4] - Typical Roof, Non ventilated – Insulated Roof Panel
Outer solar absorptance: 0.33

Layer	Specification	R-Value [Downwards] (m^2.K/w)
External Air Film	Wind speed: Up to 3 m/s	0.04
Steel sheeting	Conductivity: 47.5 W/m.K, Thickness: 0.48 mm, Material Density: 7850	0
Insulated panel	Achieved R-Value of 4.7 K.m^2/W	4.7
Steel sheeting	Conductivity: 47.5 W/m.K, Thickness: 0.48 mm, Material Density: 7850	0
Internal Air Film	Wind speed: Still - 0m/s	0.16
		Total: 4.9

J1.4 – Roof Lights

There are no roof light/s in the nominated building envelope.

PRELIM

J1.5 – Walls

The proposed walls in the building envelope must achieve the minimum R-value shown in the calculations below.

[TABLE 5] – Precast concrete wall (White)
Outer solar absorptance: 0.23

Layer	Specification	R-Value [Inwards] (m^2.K/w)
External Air Film	Wind speed: Up to 3 m/s	0.04
Precast concrete panel	Conductivity: 1.44 W/m.K, Thickness: 100 mm, Material Density: 2400	0.07
Insulation	Achieved R-Value of 2.5 K.m^2/W	2.5
Internal Lining - Gypsum plasterboard	Conductivity: 0.17 W/m.K, Thickness: 10 mm, Material Density: 880	0.06
Internal Air Film	Wind speed: Still - 0m/s	0.12
		Total: 2.8

[TABLE 6] - Precast concrete wall (Dark grey)
Outer solar absorptance: 0.73

Layer	Specification	R-Value [Inwards] (m^2.K/w)
External Air Film	Wind speed: Up to 3 m/s	0.04
Precast concrete panel	Conductivity: 1.44 W/m.K, Thickness: 100 mm, Material Density: 2400	0.07
Insulation	Achieved R-Value of 2.5 K.m^2/W	2.5
Internal Lining - Gypsum plasterboard	Conductivity: 0.17 W/m.K, Thickness: 10 mm, Material Density: 880	0.06
Internal Air Film	Wind speed: Still - 0m/s	0.12
		Total: 2.8

PRELIM

J1.5 – Glazing

Glazing (including all glazed door elements) in the building envelope must be equal to or better than the following proposed values (U-value and SGHC) as per the table below.

Compliant Minimum Proposed Glazing Specification

[TABLE 7] – Ground level

Window ID./ Name	Description	Total System U-value	SHGC
Glazed door and window	All external glazed doors and windows	<=5.0	<=0.40

Note: These proposed minimum values are derived from thermal modelling based the JV3 Verification Method. The DTS glazing values applied in the reference building simulation be found in Appendix CCC.

J1.6 – Floors

The proposed floor in the building envelope must achieve the minimum R-value shown in the calculations below.

[TABLE 8] – Concrete slab on ground

Layer	Specification	R-Value [Downwards] (m^2.K/w)
Internal Air Film	Wind speed: Still - 0m/s	0.16
Vinyl floor tiles	Conductivity: 0.79 W/m.K, Thickness: 2 mm, Material Density: 2050	0
Solid concrete	Conductivity: 1.44 W/m.K, Thickness: 150 mm, Material Density: 2400	0.1
Soil	Soil Contact Resistance	1.89
		Total: 2.2

Building Fabric (Additional)

There are “non-envelope” fabrics. The specifications below must be meet in order to ensure compliance is satisfied.

[TABLE 9] - Non-Envelope Fabric

Type	Description	R value
Internal Wall	Internal Walls	Nil

PRELIM

3.3 J3 BUILDING SEALING

The following items apply to the elements forming the envelope of the following parts of the building:

1. Control Building, Class 6 - shop or service

J3.1 – APPLICATION OF PART

There are no exemptions under this Part.

J3.2 – CHIMNEYS AND FLUES

The sealing requirements of Section J3.2 are not met. Refer to the Specification Upgrades on Page 3

J3.3 – ROOF LIGHTS

There are no roof lights in a conditioned space or a habitable room to be sealed under the requirement of J3.3

J3.4 – WINDOWS AND DOORS

The sealing requirements of Section J3.4 are not met. Refer to the Specification Upgrades on Page 3

There are no loading dock entrances required to meet the requirements of J3.4.

J3.5 – EXHAUST FANS

The sealing requirements of Section J3.5 are not met. Refer to the Specification Upgrades on Page 3.

J3.6 – CONSTRUCTION OF CEILING, WALLS AND FLOORS

The sealing requirements of Section J3.6 are not met. Refer to the Specification Upgrades on Page 3.

J3.7 – EVAPORATIVE COOLERS

There are no evaporative coolers.

For further details on Building Sealing go to:

www.airtightness.com.au – or contact SUHO for more information on air tightness testing.

PRELIM

3.4 J5 AIR CONDITIONING AND VENTILATION SYSTEMS

50kW Ducted System

- Type: Ducted System
- Rated cooling capacity: 50kW or similar
- Rated heating capacity: 50kW or similar
- MEPS Cooling energy efficiency ratio (EER): 2.9
- MEPS Heating coefficient of performance (COP): 2.9

J5.2 – AIR-CONDITIONING SYSTEM CONTROL

Air conditioning system control must comply with J5.2(a)(i).

Refer to specification upgrades on Page 4.

J5.3 – MECHANICAL VENTILATION SYSTEM CONTROL

No mechanical ventilation system is provided by the system.

J5.5 – DUCTWORK INSULATION

Ductwork insulation must comply with J5.5(a), J5.5(b).

Refer to specification upgrades on Page 4.

J5.6 – DUCTWORK SEALING

Refer to specification upgrades on Page 4.

J5.11 – UNITARY AIR-CONDITIONING EQUIPMENT

Refer to specification upgrades on Page 4.

PRELIM

3.5 J6 ARTIFICIAL LIGHTING AND POWER

J6.2 ARTIFICIAL LIGHTING

There are artificial (internal) lights specified. The (compliant) lighting calculations below define maximum DTS allowance and proposed design lighting power loads, to ensure compliance is satisfied.

Class 6 - shop or service

Maximum Illumination Power Load Allowance (DTS): 3946W

Building name/description	Classification
363901 - Control Building	Class 6

Number of rows preferred in table below: 7 (as currently displayed)

	Description	Floor area of the space	Perimeter of the space	Floor to ceiling height	Design Illumination Power Load	Space	Illuminance: Designed Lux Level	Illuminance: Recommended Lux Level	Adjustment Factor One	Adjustment Factor One: Dimming % Area	Adjustment Factor One: Illuminance Turndown	Adjustment Factor Two	Adjustment Factor Two: Dimming % Area	Adjustment Factor Two: Illuminance Turndown	Light Colour Adjustment Factors: Light Colour Adjustment Factor One	Light Colour Adjustment Factors: Light Colour Adjustment Factor Two	SATISFIES PART J6.2: System Illumination Power Load Allowance	SATISFIES PART J6.2: Lighting System Share of % of Aggregate Allowance Used
							These columns do not represent a requirement of the NCC and are suggestions only		Adjustment Factors			Adjustment Factors						
1	Convenience Store	152.0 m²	52 m	4.5 m	2956 W	Retail space including a museum and gallery whose purpose is the sale of objects											2956 W	75% of 100%
2	Sales + Pick Up	31.0 m²	33 m	4.5 m	761 W	Retail space including a museum and gallery whose purpose is the sale of objects											761 W	19% of 100%
3	Prep	17.0 m²	19 m	4.5 m	119 W	Kitchen and food preparation area											119 W	3% of 100%
4	Store 1	16.0 m²	19 m	4.5 m	43 W	Storage											43 W	1% of 100%
5	Store 2	2.0 m²	7 m	4.5 m	8 W	Storage											8 W	0% of 100%
6	WC	6.0 m²	12 m	4.5 m	33 W	Toilet, locker room, staff room, rest room and the like											33 W	1% of 100%
7	WC corridor	3.0 m²	8 m	4.5 m	26 W	Corridors											26 W	1% of 100%
				Total	3946 W											Total	3946 W	

if inputs are valid ✓

No internal lighting controls specified are required to meet Specification J6

J6.3 – INTERIOR ARTIFICIAL LIGHTING AND POWER CONTROL

Refer to Part 1. Action Summary on page 3 of this report.

There is no requirement to control lights in the natural lighting zone as per J6.3(e).

J6.4 – INTERIOR DECORATIVE AND DISPLAY LIGHTING

No interior decorative and or display lighting is present in this building.

J6.5 – EXTERIOR ARTIFICIAL LIGHTING

External artificial lighting does not exceed 100W.

J6.6 – BOILING WATER AND CHILLED WATER STORAGE UNITS

Refer to Part 1. Action Summary for details.

J6.7 – LIFTS – ENERGY CONSUMPTION

No passenger or goods lifts (with rated speed more than 0.15m/s) present.

J6.8 – ESCALATORS OR MOVING WALKWAYS

No escalators or moving walkways present.

PRELI

3.6 J7 HEATED WATER SUPPLY & SWIMMING POOL & SPA POOL PLANT

Refer to Part 1. Action Summary for details.

3.7 J8 FACILITIES FOR ENERGY MONITORING

This building has no J8 requirements.

PRELIM

4. APPENDIX A - ENERGY USE

4.1 PERFORMANCE REQUIREMENT JP1

A building, including its services, must have features that facilitate the efficient use of energy to minimise greenhouse gas emissions, to the degree necessary, appropriate to—

(a) the function and use of the building; and
(b) the level of human comfort required for the building use; and
(c) solar radiation being—
    (i) utilised for heating; and
    (ii) controlled to minimise energy for cooling; and
(d) the energy source of the services; and
(e) the sealing of the building envelope against air leakage; and
(f) for a *conditioned space*, achieve an hourly *regulated energy* consumption, average over the annual *hours of operation*, of not more than -
    (i) for a class 6 building, 80 kJ/m^2.hr, and
    (ii) for a Class 5, 7b, 8, 9a building other than a *ward area*, or a Class 9b *school*, 43 kJ/m^2.hr, and
    (iii) for all other building classifications, other than a *sole-occupancy unit* of a Class 2 building or a Class 4 part of a building, 15 kJ/m^2.hr.

Assessment Method – NCC Volume 1, Part A2.4

The building has been assessed using a combination of Performance and Deemed-to-Satisfy Solutions including; Verification Method JV3 (using a modelled reference building) and the Deemed-to-Satisfy (DTS) provisions, as provided for in the NCC (A2.2).

Thermal modelling simulations were conducted with EnergyPlus software, compliant with ANSI/ASHRAE Standards 140, 'Standard Method of Test for the Evaluation of Building Energy Analysis Computer Programs'.

Specifications for the 'required' modelling parameter, have been used for calculating the annual greenhouse gas emissions of a building as per 'Specification JVb' – 'Modelling parameters'. A summary of the parameters can be found in the 'Fixed Inputs' below.

Additional Requirements – NCC Volume 1, Specification JVa

In addition to modelling requirements, a building must also comply with the requirements of Specification Jva. These additional requirements are not executed within the energy modelling; therefore, it must be properly demonstrated that the project documentation meets the DTS Provisions.

These additional requirements have been assessed, and the appropriate observations recorded based on the extent of the works commissioned, as described under Part 2. COMPLIANCE REPORT, 'Scope of Assessment'.

PRELIM

Fixed Inputs

The following table lists the fixed input data used to establish JV3 annual greenhouse gas emission calculations. This data is from Specification JVb and JVc NCC 2019, unless otherwise stated.

[TABLE 10] – Fixed Inputs Data

Input	Specification
Common Inputs:	
Weather file selection:	Perth Airport
Infiltration Rate:	0.7 ac/hr – when there is no mechanically outdoor air supply; 0.35 ac/hr at all other times.
Conditioned Space Temperature Settings:	21-24°C for 98% of annual hours of operation – (18-25°C for conditioned transitory occupancy)
External Shading:	As per drawing and specification.
Class 6 Shop/Shopping Centre - Inputs:	
Occupancy and operation profiles:	As per Table 2e, JVc Modelling profiles.
Internal heat gains from appliances and equipment:	As per Table 2l, JVc Modelling profiles – 5W/m².
Internal heat gains for occupants and hot meals:	As per Table 2n, JVc Modelling profiles - 130W (75W sensible heat and 55W latent heat).
Number of Persons accommodated:	As per table D1.13 of part D1 - Area per person according to usage.
Heated (daily) water supply consumption rates:	As per Table 2m, JVc Modelling profiles - 0.8L/m².
Outside air cycle:	As per minimum mechanical ventilation required by Part F4.

PRELIM

Variable Inputs

This following table compares the differences between the proposed building and the Deemed-to-Satisfy (DTS) compliant 'reference building' assessed using Verification Method JV3.

[TABLE 11] - Variable Inputs Data

Construction Type	Proposed Fabric	Reference Fabric
J1.3 Roof & Ceilings:		
Typical Roof	4.9	3.7
J1.5 Walls:		
Precast Concrete Panel (white)	2.8	See Appendix CCC.
Precast Concrete Panel (dark grey)	2.8	See Appendix CCC.
J1.5 Glazing:	U-value / SHGC	U-value / SHGC
All external glazing	5.0 / 0.40	See Appendix CCC.
J1.6 Floors:		
Concrete slab on ground	2.2	2.0

Notes:

1. Proposed roof and external wall colours have been simulated as per the solar absorptances in Part 3 Final Building Specification. The reference inputs for solar absorptances have been input as 0.6 for External Walls (JVb) and roof solar absorptance of 0.45.

Reference Information:

The values in the Variable Input table above, were calculated in accordance with:

1. NCC Specification J1.2, Table 2a for material properties.
2. AS/NZS 4859.2 for roof and floor (including allowance for thermal bridging).
3. Specification J1.5a for wall-glazing construction (AS/NZS 4859.2, (including allowance for thermal bridging).
4. Specification J1.5b for spandrel panels.
5. Specification J1.6 for soil and or sub-floor spaces.
6. Glazing proposed values are calculated from the thermal performance model and are summarized under 'GLAZING' in the Part 3. Final Building Specification.
7. Glazing reference value are calculated for each facade and storey and are presented in J1.5 Wall-Glazing Calculations in Appendix CCC.
8. As per clause 2(f) of Specification JVb, where services are not covered by Parts J5 and Parts J7, MEPS must be applied.
9. As per Part J5.11, as described in the Energy Efficiency Vol. 1 Handbook, unitary equipment with capacity of less than 65kWr, must comply with MEPS, the national Minimum Energy Performance Standards. For further details see: https://www.energyrating.gov.au/products-0

PRELIM

4.2 SIMULATION OUTPUTS

The greenhouse gas emissions calculated in the following table are generated using design conditions and calculations methods as required by Verification Method JV3 and requirements stipulated by Specification JVb Modelling parameters and represents theoretical values for the operation of the building. These values provide a means for the comparison of the building fabric performance, against the minimum DTS requirements of Section J.

[TABLE 12] – GHG Emission Simulation Outputs

Energy Use Components	Proposed Fabric DTS Services	Reference Building
Heating	1,008	1,195
Cooling	4,198	4,160
Internal Lighting	13,090	13,090
Total Annual GHG Emissions ($KgCO_2$-e/GJ)	**18,295**	**18,444**

Note: Not all Energy Use Components as identified in Section J are represented in the table above. As compliance has been undertaken as a Performance Solution, some energy use components may have either been assessed to DTS requirements or assessed by other consultants. Refer to Part 2.2 Compliance Summary, 'JP1' for clarification.

PRELIM

5. APPENDIX B – THERMAL COMFORT ASSESSMENT

This Appendix explains how a mandatory Thermal Comfort Assessment is undertaken, required for all JV1 - JV3 Verification assessments under Section J.

5.1 BACKGROUND

The aim of Thermal Comfort of NCC2019 is to ensure that projects achieve a minimum benchmark for the occupant thermal comfort, equivalent to ≥75% of all occupants being satisfied in the space.

This project is demonstrating compliance via the "Verification using a reference building" pathway which has the following requirements:

- The space must meet specified prescriptive criteria for Thermal Comfort or the Predicted Mean Vote (PMV) levels are between -1 and +1 (1 point);
- PMV levels are calculated in accordance with either ASHRAE Standard 55-2013 or ISO 7730-2005;
- PMV levels to be met for each room or space and not averaged;
- Modelling carried out in accordance with ASHRAE Standard 55-2013 and justified and sourced from either ASHRAE Standard 55-2013 or ISO 7730-2005.

Predicted Mean Vote

The Predicated Mean Vote (PMV) is a measure of how satisfied a typical occupant would be with the thermal conditions based on the following Fanger PMV scale:

Predicted Mean Vote (PMV)	Sensation
+3	Hot
+2	Warm
+1	Slightly Warm
0	Neutral
-1	Slightly Cool
-2	Cool
-3	Cold

The PMV calculation is based on the following factors:

- Air Temperature (Dry Bulb)
- Mean Radiant Temperature
- Relative Humidity
- Air Velocity
- Metabolic Rate
- Clothing Resistance to Heat Transfer

Achieving Compliance

To achieve compliance under NCC2019, the proposed building must achieve a thermal comfort level between a PMV of -1 to +1. This should be achieved across ≥95% of the floor area of all occupied zones, for ≥98% of the building's annual operational hours.

PRELIM

5.2 METHOD

The thermal comfort simulation was performed using Design Builder which uses the EnergyPlus simulation engine. The proposed model and services from the energy simulations are used. This model considers construction types, materials, internal loads, occupancy profile and local weather data. It also factors in occupant activity, clothing levels, and relative air velocities.

In line with the credit requirements the following modelling and design parameters were included:

- All perimeter zones modelled with a maximum depth of 4m;
- Perimeter zones are reported independently of interior zones;
- Zoning to match the air conditioning zones (except for perimeter zones which must be 4m in depth) with exceptions permitted for small enclosed spaces at the discretion of the mechanical engineer (e.g., a small perimeter office);
- Modelling of Inter-zone virtual partitions;
- Perimeter air conditioning zones not exceeding 75m^2;
- Model completed with all systems assessed simultaneously;
- Comfort predictions measured at the midpoint of each zone (i.e 2m from the perimeter in a 4m deep zone) and at a height of between 0.8m and 1.5m above FFL, or comfort predictions shall be taken as an average across the zone.

The nominated areas for which the PMV calculations have performed are based on the NCC2019 definitions of occupied zone.

ASHRAE Standard 55-2013 has been used to source and justify values throughout the assessment. The following outlines the inputs used:

- Metabolic Rates of Occupants:
  - 100 W/m^2 (Office - Walking about)
- Skin Surface Areas of Occupants (to determine metabolic rate per person)
  - Adults: 1.80m^2
- Clothing of Occupants:
  - Summer: 0.36 CLO (walking shorts, short-sleeve shirt)
  - Winter: 1.37 CLO (Trousers, Long-sleeve shirts, long-sleeve sweater)
- Air Velocity:
  - 0.2 m/s
- Hours of Operation:
  - The number of hours when occupancy of the building is greater than 20% of the peak occupancy
- Occupancy Profile:
  - Is expressed as a percentage of the maximum number of people that can be accommodated in that building class.
- HVAC Selection: 50kW Ducted System
- Design Temperature Setpoints
  - Summer Cooling Setpoint: 24^{o}C
  - Winter Heating Setpoint: 21^{o}C
- Internal Loads:
  - As per NCC Section J.

PRELIM

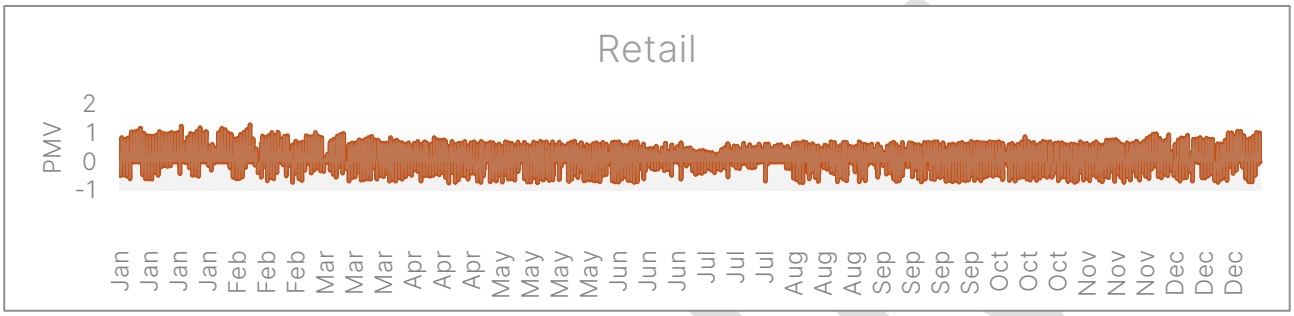
5.3 RESULTS

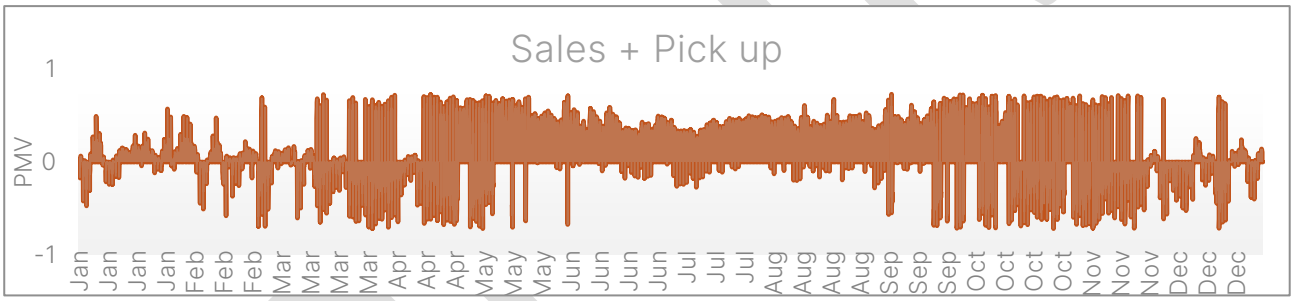
The building maintains a PMV of between -1 and +1 for **99.5%** of the nominated area. The Thermal comfort results for each of the zones assessed is included in Part 2: Compliance Summary of this report.

Thermal comfort graphs

The following graphs display the PMV that the building maintains for each room or space at each Level of the building.

Ground level, 2 zones





PRELIMINARY

6. APPENDIX C – CODE COMPLIANCE CALCULATIONS

This Appendix includes derived calculations undertaken to determine minimum DTS reference building requirements for assessment.

NCC 2019 Volume 1 - Facade Calculator (V3.0)

Project Name:	OTR Neerabup WA

SUHO Job #:	363901
Floor Level:	Ground

Climate Zone:	5
Building Class:	Other

Wall Details:

	CPS Wall Name	Location	R-value	U-value
Fabric 1	External Wall	External	1	1.00
Fabric 2				0.00
Fabric 3				0.00
Fabric 4				0.00
Fabric 5				0.00
Fabric 6				0.00
Fabric 7				0.00
Fabric 8				0.00

Total Façade Area Details (m²):

North	East	South	West
59.9	115.2	22.5	120.6

Door Details:

Name	Area (m²)
Internal Door	1.9

Glazing Details:

Window Entry							Proposed Values		Shading Entry		Factors	
Name	Orientation	Fabric #	Height (m)	Width (m)	Window Multiplier	Area (m²)	Proposed U-value	Proposed SHGC	P (m)	H (m)	Blind Factor	Display Glazing
W1_Retail	W	Fabric 1	4.15	18.4		76.36			2.3	4.3		
W2_Pick Up	E	Fabric 1	2.2	1.7		3.74			3.7	3.6		
W3_Pick Up	N	Fabric 1	1	1.7		1.70			3.7	3.6		

J1.5 – Walls and Glazing

There are two methods of calculation provided under the NCC 2019 requirements. The following methodology has been used to calculate the minimum DTS reference requirements:

> Method 2. Combines all four orientations to provide one combined performance requirement.

Method 2 - Combined	
Glazing Percentage (%)	25.7%
DTS Minimum Wall R-value	1.00
Achieved Wall R-value	1.00
Maximum Glazing U-value	4.89
Maximum SHGC	0.36

APPENDIX 2 – DAYLIGHT

PART C – OTHER BUSINESS

1. State Administrative Tribunal Applications and Supreme Court Appeals

The DAP notes the status of the following State Administrative Tribunal Applications and Supreme Court Appeals:

Current SAT Applications				
File No. & SAT DR No.	**LG Name**	**Property Location**	**Application Description**	**Date Lodged**
DR169/2023 DAP/23/02486	City of Swan	Lot 1 (No.9) Waterhall Road, South Guildford	Child Care Premises	13/11/2023
DR175/2023 DAP/22/02166	City of Joondalup	1 Lyell Grove (Lot 2), Woodvale	Child Care Premises	30/11/2023
DR179/2023 DAP/22/02358	Shire of Serpentine Jarrahdale	Lot 806 South Western Highway, Byford	Proposed Showroom and Fast Food/Takeaway Development	4/12/2023

Finalised SAT Applications*				
File No. & SAT DR No.	**LG Name**	**Property Location**	**Application Description**	**Date Lodged**
DR193/2023 DAP/23/02545	Shire of Serpentine Jarrahdale	575 (Lot 218) Abernethy Road, Oakford	Proposed Educational Establishment	19/12/2023

Current Supreme Court Appeals				
File No.	**LG Name**	**Property Location**	**Application Description**	**Date Lodged**
DAP/23/02496 CIV 2251 of 2023	City of Swan	Lot 2 & 67 (No.163) and Lot 18 (No.159) James Street, Guildford	Proposed redevelopment of Vaudeville Theatre	03/11/2023

*Matters finalised during the last meeting cycle.

2. General Business

3. Meeting Closure

In accordance with Section 7.3 of the DAP Standing Orders 2024 a DAP member must not publicly comment on any action or determination of a DAP.

APPENDIX 2 – DAYLIGHT MODELING AND ANALYSIS

Daylight simulation calculations have been undertaken using Design Builder v5.4, which uses the Radiance Daylighting software. The Design-Builder Radiance simulation provides a detailed multi-zone physics-based calculation of illumination levels on the working plane of a building. The calculation allows light to be transmitted through exterior and interior windows and the shading and reflective effect of local shading devices and component/assembly blocks are included.

Modelling parameters and assumptions are generally based on Green Star daylight modelling requirements as follows:

- Uniform Design Sky
- Internal floor reflectance = 30%
- Internal wall reflectance = 70%
- Internal ceiling reflectance = 80%
- Glazing VLT = 0.40
- Working plane defined as 0.7m.

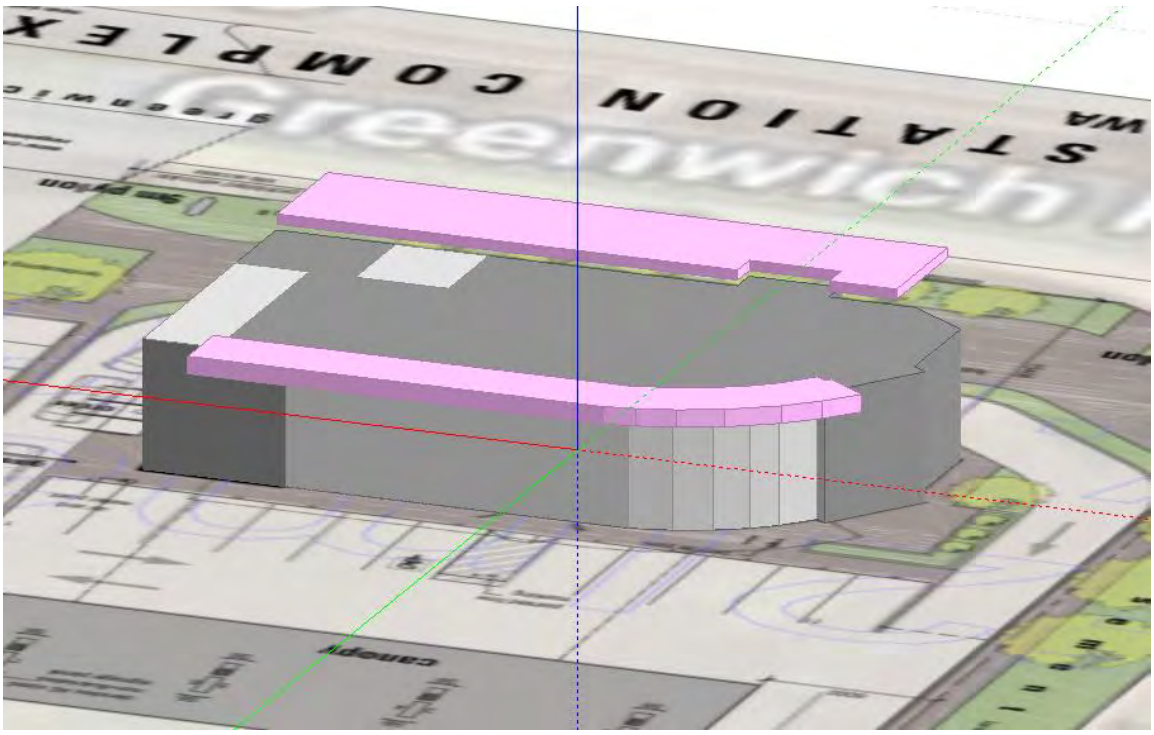


Fig 1. Model Geometry used for Daylight Modelling

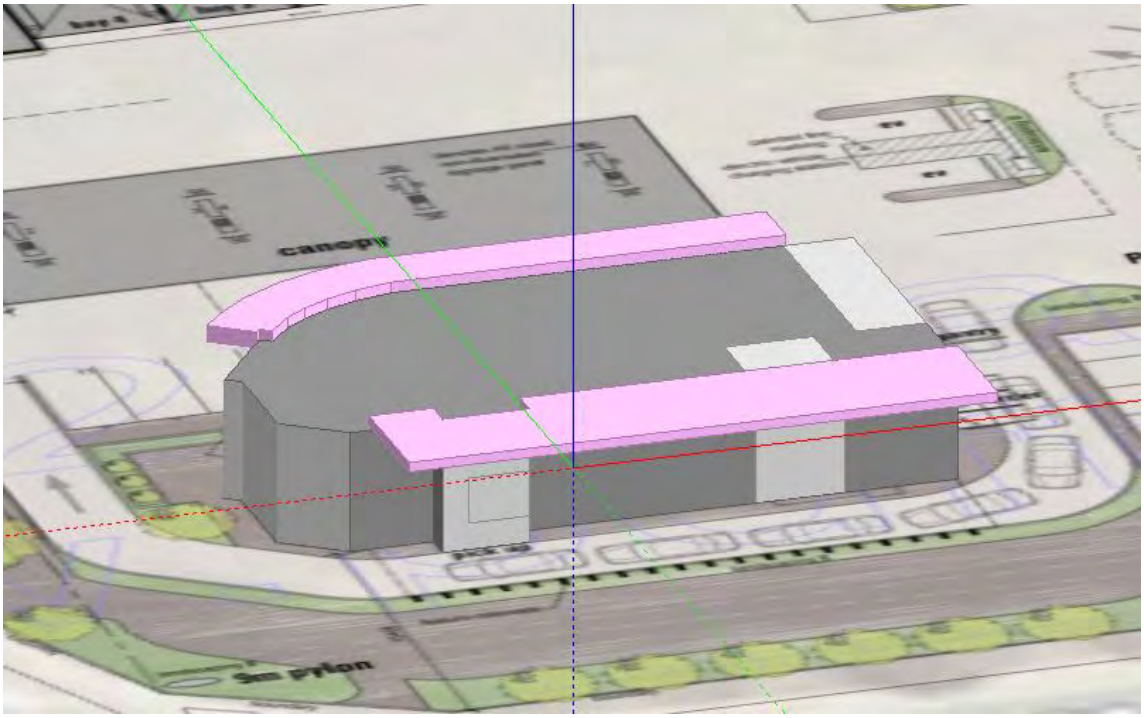


Fig 2. Model Geometry used for Daylight Modelling

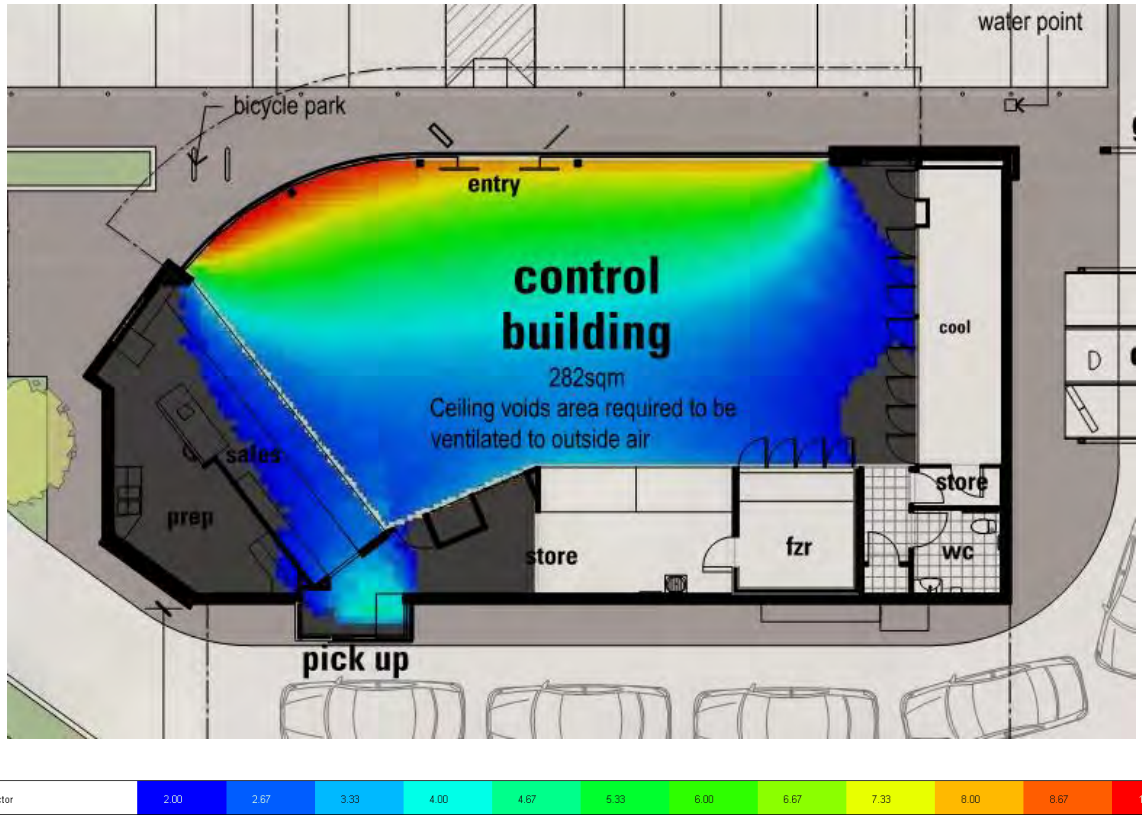


Fig 3: Daylight Map for the Control Building

Date: 17/11/2023
Job Ref: SH363901
Refer to page 3, 'Action Summary' for compliance requirements.
SUHO
BDAV Member - Jim Woolcock

global road

flynn drive

hemisphere street

greenwich parade

boundary

landscaping A

landscaping B

landscaping C

prohibited vehicular site access

6965

auto wash

plant

car wash

bay 4

bay 3

bay 2

bay 1

refuse

chamis

vacuum

9m pylon

Site of future development
(2174M^2)

future development ground floor area: minimum 489 sqm

fuel fill point

approximate location of underground fuel vessels

Bollard

diesel

22755

4908

canopy

S6

denotes A0 sized non-illuminated signage panel

6000

painted line marking

electric vehicle charging stations

ev

PROPOSED SITE AREA
(7637 M^2)

air and water point

gantry

bicycle park

entry

control building

282sqm

Ceiling voids area required to be ventilated to outside air

cool

order

sales

prep

store

fzr

wic

store

pick up

feature collonade

15406

load

1 x MRV
2 x semi trailer parks
1 x B double park

34290

feature screen wall with seats

1557

new crossover to council requirements

new right turn lane to council requirements

Landscaping area table	
landscape	area sq.m.
landscaping A	220.7
landscaping B	354.12
landscaping C	163.29
Total landscaping	738.11
Site area table	
Proposed site area	7637
future site area	2174
Total site	9811

Site coverage	
building	area sq.m.
control building	435.50
canopy with link cover	465.14
canopy diesel	168.99
autowash	289.10
vacuum	113.90
total building coverage area	1472.63
site area	7637
site coverage	19.28%

N

SITE PLAN

1:200 AT A1

NEW SERVICE STATION COMPLEX

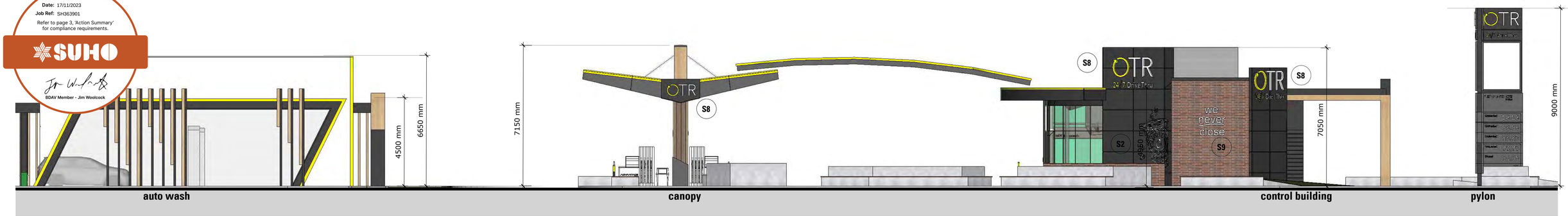
11 GREENWICH PARADE, NEERABUP WA

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Scale 1:200 at A1

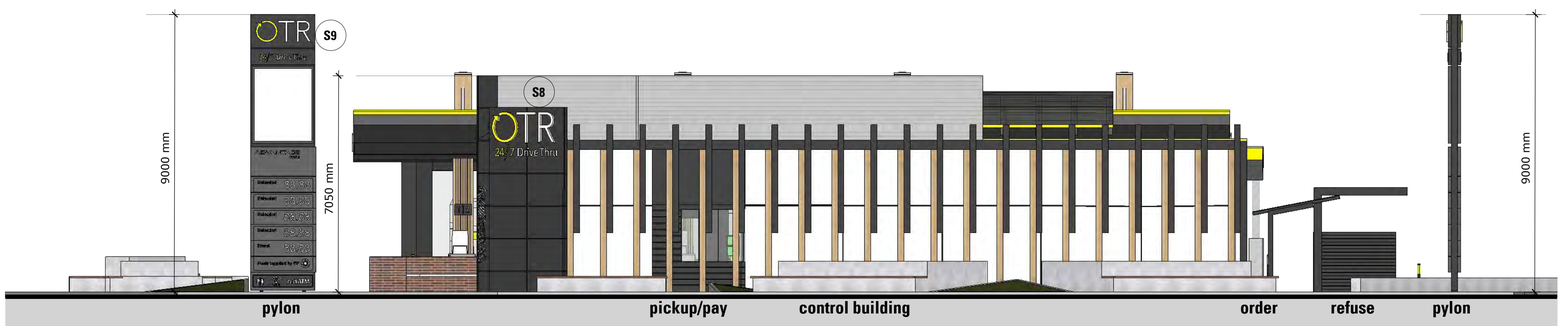
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23JN1510sk00h

planning

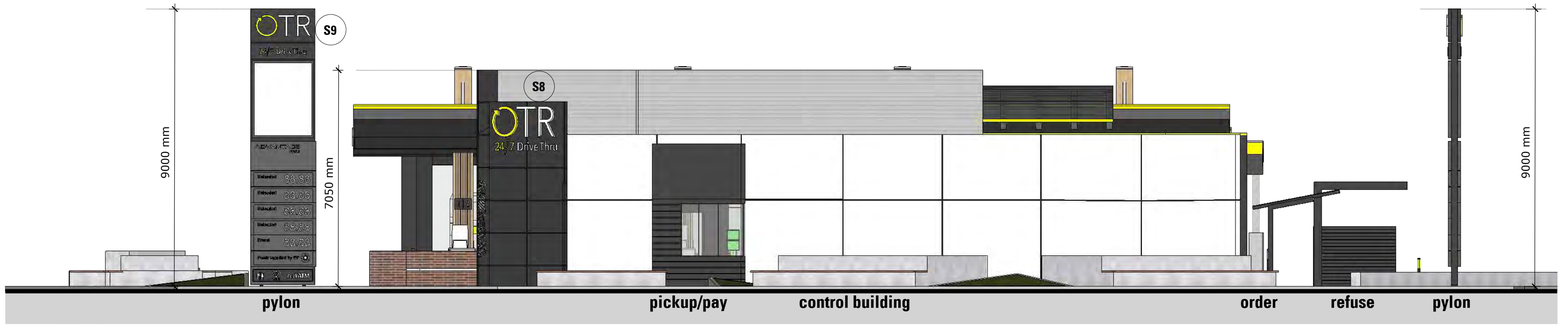
Date: 17/11/2023
Job Ref: SH363901
Refer to page 3, 'Action Summary' for compliance requirements.
SUHO
BDAV Member - Jim Woolcock



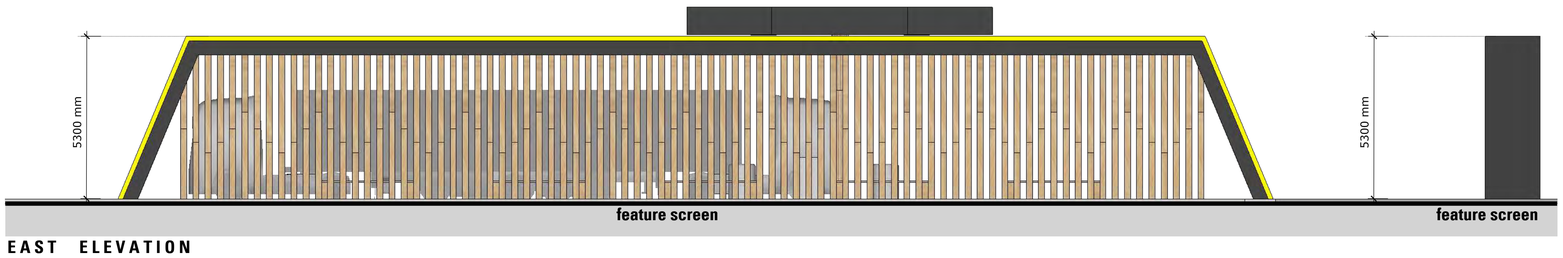
SOUTH ELEVATION
1:100 AT A1



EAST ELEVATION
1:100 AT A1



EAST ELEVATION
1:100 AT A1



EAST ELEVATION
1:100 AT A1

NEW SERVICE STATION COMPLEX

11 GREENWICH PARADE, NEERABUP WA

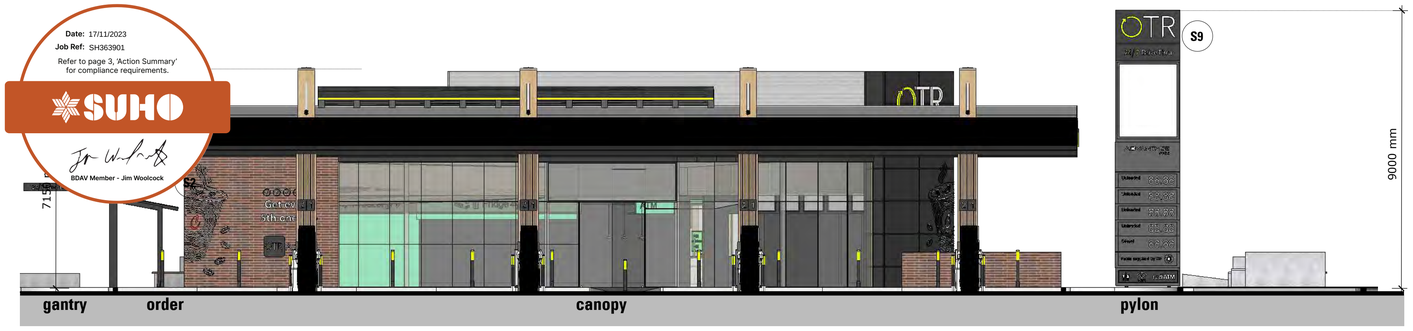
DESIGN

06.09.22
Neerabup sk 02c

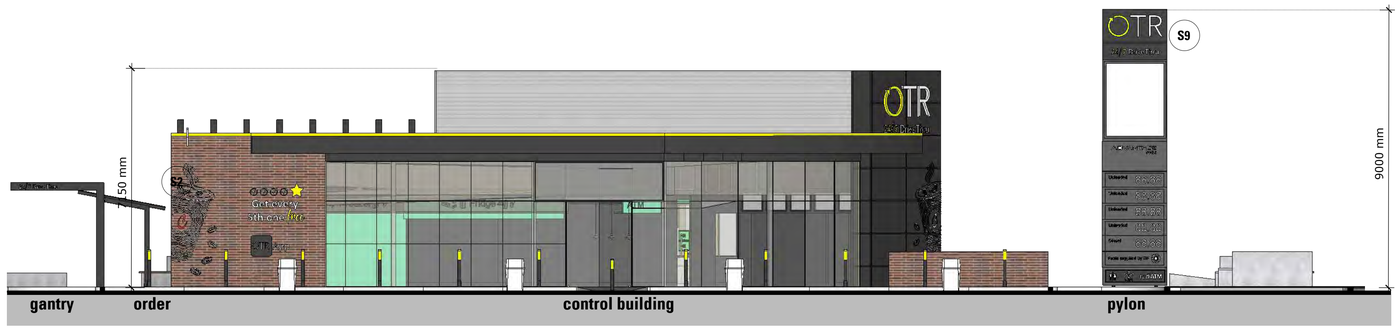
0 1 2 5 10 15
Scale 1:200 at A1

ADS Architects
93 Gilles street Adelaide 5000 T:82232244

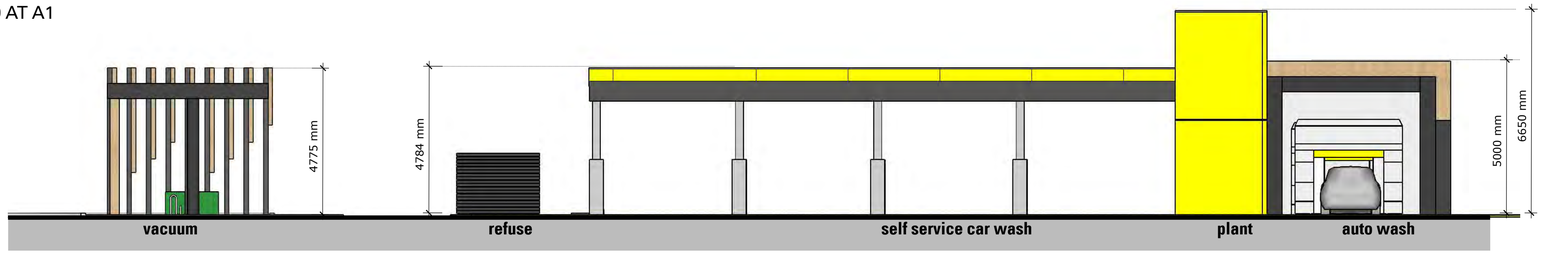
Date: 17/11/2023
Job Ref: SH363901
Refer to page 3, 'Action Summary' for compliance requirements.
SUHO
BDAV Member - Jim Woolcock



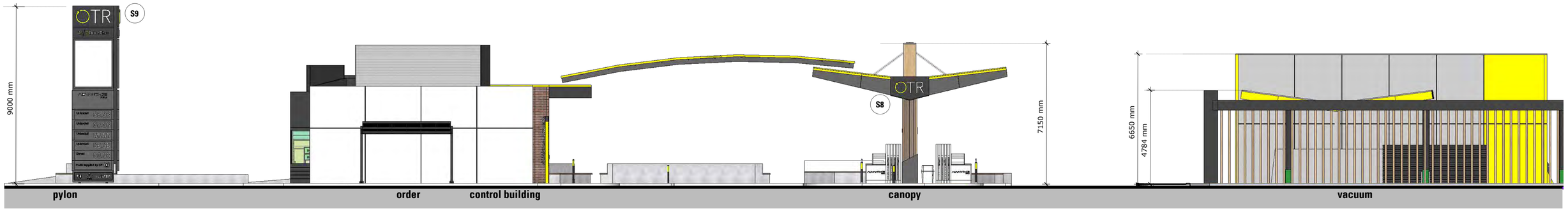
WEST ELEVATION
1:100 AT A1



WEST ELEVATION
1:100 AT A1



WEST ELEVATION
1:100 AT A1



NORTH ELEVATION
1:100 AT A1

NEW SERVICE STATION COMPLEX

11 GREENWICH PARADE, NEERABUP WA

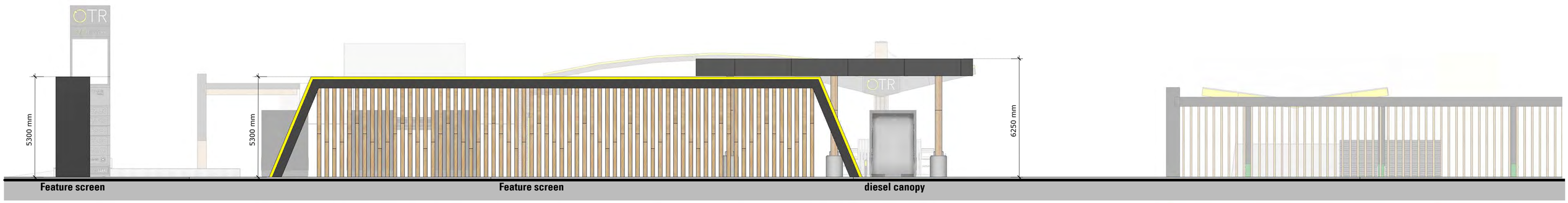
DESIGN

06.09.22
Neerabup sk 03c

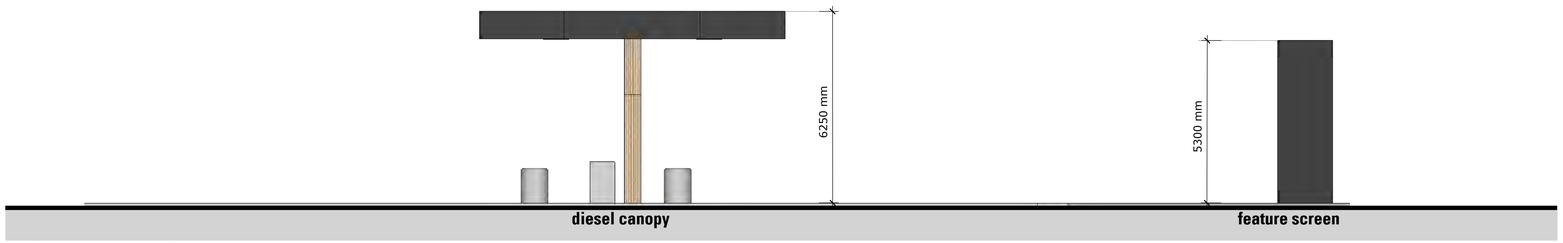
0 1 2 5 10 15
Scale 1:200 at A1

ADS Architects
93 Gilles street Adelaide 5000 T:82232244

Date: 17/11/2023
Job Ref: SH363901
Refer to page 3, 'Action Summary' for compliance requirements.
SUHO
BDAV Member - Jim Woolcock



NORTH ELEVATION
1:100 AT A1



EAST ELEVATION
1:100 AT A1

NEW SERVICE STATION COMPLEX

11 GREENWICH PARADE, NEERABUP WA

06.09.22
Neerabup sk 04c

DESIGN

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

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SUHO

BDAV Member - Jim Woolcock



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11 GREENWICH PARADE, NEERABUP WA

06.09.22
Neerabup sk 06c

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11 GREENWICH PARADE, NEERABUP WA

06.09.22
Neerabup sk 07c

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

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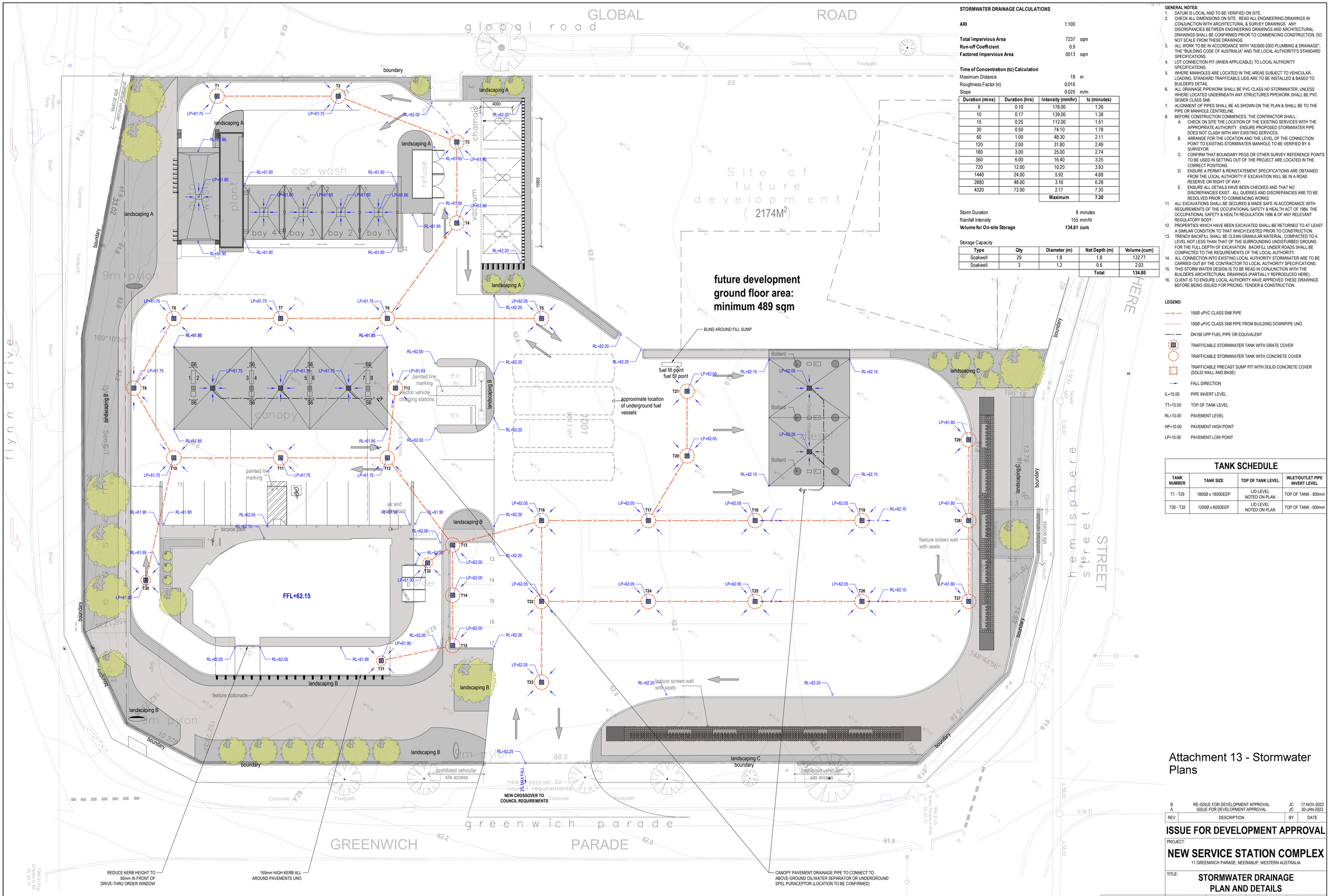
11 GREENWICH PARADE, NEERABUP WA

06.09.22
Neerabup sk05c

DESIGN

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

ADS Architects
93 Gilles street Adelaide 5000 T:82232244



STORMWATER DRAINAGE CALCULATIONS

ARI	1:100	
Total Impervious Area	7237	sqm
Run-off Coefficient	0.9	
Factored Impervious Area	6513	sqm

Time of Concentration (tc) Calculation

Maximum Distance	18	m
Roughness Factor (n)	0.016	
Slope	0.025	m/m

Duration (mins)	Duration (hrs)	Intensity (mm/hr)	tc (minutes)
6	0.10	176.00	1.26
10	0.17	139.00	1.38
15	0.25	112.00	1.51
30	0.50	74.10	1.78
60	1.00	48.30	2.11
120	2.00	31.80	2.49
180	3.00	25.00	2.74
360	6.00	16.40	3.25
720	12.00	10.20	3.93
1440	24.00	5.92	4.88
2880	48.00	3.16	6.28
4320	72.00	2.17	7.30
		Maximum	**7.30**

Storm Duration	8	minutes
Rainfall Intensity	155	mm/hr
Volume for On-site Storage	**134.61**	**cum**

Storage Capacity

Type	Qty	Diameter (m)	Net Depth (m)	Volume (cum)
Soakwell	29	1.8	1.8	132.77
Soakwell	3	1.2	0.6	2.03
			Total	**134.80**

GENERAL NOTES:

1. DATUM IS LOCAL AND TO BE VERIFIED ON SITE.
2. CHECK ALL DIMENSIONS ON SITE. READ ALL ENGINEERING DRAWINGS IN CONJUNCTION WITH ARCHITECTURAL & SURVEY DRAWINGS. ANY DISCREPANCIES BETWEEN ENGINEERING DRAWINGS AND ARCHITECTURAL DRAWINGS SHALL BE CONFIRMED PRIOR TO COMMENCING CONSTRUCTION. DO NOT SCALE FROM THESE DRAWINGS.
3. ALL WORK TO BE IN ACCORDANCE WITH "AS3500-2003 PLUMBING & DRAINAGE", THE "BUILDING CODE OF AUSTRALIA" AND THE LOCAL AUTHORITY'S STANDARD SPECIFICATIONS.
4. LOT CONNECTION PIT (WHEN APPLICABLE) TO LOCAL AUTHORITY SPECIFICATIONS.
5. WHERE MANHOLES ARE LOCATED IN THE AREAS SUBJECT TO VEHICULAR LOADING, STANDARD TRAFFICABLE LIDS ARE TO BE INSTALLED & BASED TO BUILDER'S DETAIL.
6. ALL DRAINAGE PIPEWORK SHALL BE PVC CLASS HD STORMWATER, UNLESS WHERE LOCATED UNDERNEATH ANY STRUCTURES PIPEWORK SHALL BE PVC SEWER CLASS SN8.
7. ALIGNMENT OF PIPES SHALL BE AS SHOWN ON THE PLAN & SHALL BE TO THE PIPE OR MANHOLE CENTRELINE.
8. BEFORE CONSTRUCTION COMMENCES, THE CONTRACTOR SHALL:
   - A. CHECK ON SITE THE LOCATION OF THE EXISTING SERVICES WITH THE APPROPRIATE AUTHORITY. ENSURE PROPOSED STORMWATER PIPE DOES NOT CLASH WITH ANY EXISTING SERVICES.
   - B. ARRANGE FOR THE LOCATION AND THE LEVEL OF THE CONNECTION POINT TO EXISTING STORMWATER MANHOLE TO BE VERIFIED BY A SURVEYOR.
   - C. CONFIRM THAT BOUNDARY PEGS OR OTHER SURVEY REFERENCE POINTS TO BE USED IN SETTING OUT OF THE PROJECT ARE LOCATED IN THE CORRECT POSITIONS.
   - D. ENSURE A PERMIT & REINSTATEMENT SPECIFICATIONS ARE OBTAINED FROM THE LOCAL AUTHORITY IF EXCAVATION WILL BE IN A ROAD RESERVE OR RIGHT OF WAY.
   - E. ENSURE ALL DETAILS HAVE BEEN CHECKED AND THAT NO DISCREPANCIES EXIST. ALL QUERIES AND DISCREPANCIES ARE TO BE RESOLVED PRIOR TO COMMENCING WORKS.
11. ALL EXCAVATIONS SHALL BE SECURED & MADE SAFE IN ACCORDANCE WITH REQUIREMENTS OF THE OCCUPATIONAL SAFETY & HEALTH ACT OF 1984, THE OCCUPATIONAL SAFETY & HEALTH REGULATION 1996 & OF ANY RELEVANT REGULATORY BODY.
12. PROPERTIES WHICH HAVE BEEN EXCAVATED SHALL BE RETURNED TO AT LEAST A SIMILAR CONDITION TO THAT WHICH EXISTED PRIOR TO CONSTRUCTION.
13. TRENCH BACKFILL SHALL BE CLEAN GRANULAR MATERIAL, COMPACTED TO A LEVEL NOT LESS THAN THAT OF THE SURROUNDING UNDISTURBED GROUND, FOR THE FULL DEPTH OF EXCAVATION. BACKFILL UNDER ROADS SHALL BE COMPACTED TO THE REQUIREMENTS OF THE LOCAL AUTHORITY.
14. ALL CONNECTION INTO EXISTING LOCAL AUTHORITY STORMWATER ARE TO BE CARRIED OUT BY THE CONTRACTOR TO LOCAL AUTHORITY SPECIFICATIONS.
15. THIS STORM WATER DESIGN IS TO BE READ IN CONJUNCTION WITH THE BUILDER'S ARCHITECTURAL DRAWINGS (PARTIALLY REPRODUCED HERE).
16. CLIENT IS TO ENSURE LOCAL AUTHORITY HAVE APPROVED THESE DRAWINGS BEFORE BEING ISSUED FOR PRICING, TENDER & CONSTRUCTION.

LEGEND:

- 150Ø uPVC CLASS SN8 PIPE
- 150Ø uPVC CLASS SN8 PIPE FROM BUILDING DOWNPIPE UNO
- DN160 UPP FUEL PIPE OR EQUIVALENT
- TRAFFICABLE STORMWATER TANK WITH GRATE COVER
- TRAFFICABLE STORMWATER TANK WITH CONCRETE COVER
- TRAFFICABLE PRECAST SUMP PIT WITH SOLID CONCRETE COVER (SOLID WALL AND BASE)
- FALL DIRECTION
- IL+10.00 PIPE INVERT LEVEL
- TT+10.00 TOP OF TANK LEVEL
- RL+10.00 PAVEMENT LEVEL
- HP+10.00 PAVEMENT HIGH POINT
- LP+10.00 PAVEMENT LOW POINT

TANK SCHEDULE

TANK NUMBER	TANK SIZE	TOP OF TANK LEVEL	INLET/OUTLET PIPE INVERT LEVEL
T1 - T29	1800Ø x 1800DEEP	LID LEVEL NOTED ON PLAN	TOP OF TANK - 800mm
T30 - T32	1200Ø x 600DEEP	LID LEVEL NOTED ON PLAN	TOP OF TANK - 600mm

Attachment 13 - Stormwater Plans

REV	DESCRIPTION	BY	DATE
B	RE-ISSUE FOR DEVELOPMENT APPROVAL	JC	17-NOV-2023
A	ISSUE FOR DEVELOPMENT APPROVAL	JC	30-JAN-2023

ISSUE FOR DEVELOPMENT APPROVAL

PROJECT:
NEW SERVICE STATION COMPLEX
11 GREENWICH PARADE, NEERABUP, WESTERN AUSTRALIA

TITLE:
STORMWATER DRAINAGE PLAN AND DETAILS

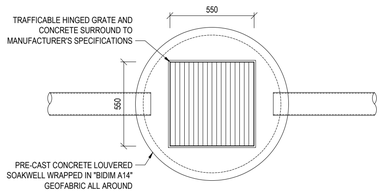
DRAWING:	SCALE:	PROJECT #:	REVISION:
J. GABRIEL	AS NOTED	20991	B
DESIGN: J. CUBONG	PAPER SIZE: A1	DRAWING #: C1	

JCCE JC Consulting Engineers

STORMWATER DRAINAGE PLAN
SCALE 1:200

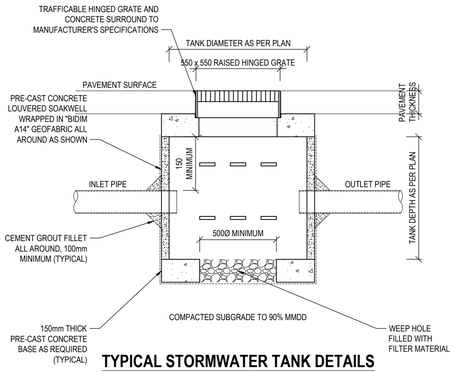
NOTE: ALL UNITS ARE IN MILLIMETERS UNO

DIAL BEFORE YOU DIG www.1100.com.au



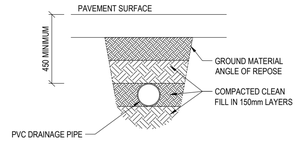
TYPICAL STORMWATER TANK PLAN

SCALE 1:20



TYPICAL STORMWATER TANK DETAILS

SCALE 1:20



TYPICAL PVC DRAINAGE PIPE BEDDING DETAILS

SCALE 1:20

REV	DESCRIPTION	BY	DATE
B	RE-ISSUE FOR DEVELOPMENT APPROVAL	JC	17-NOV-2023
A	ISSUE FOR DEVELOPMENT APPROVAL	JC	30-JAN-2023

ISSUE FOR DEVELOPMENT APPROVAL

PROJECT:

NEW SERVICE STATION COMPLEX

11 GREENWICH PARADE, NEERABUP, WESTERN AUSTRALIA

TITLE:

STORMWATER DRAINAGE DETAILS

DRAWING:	SCALE:	PROJECT #:	REVISION:
J. GABRIEL	AS NOTED	20991	B
DESIGN:	PAPER SIZE:	DRAWING #:	
J. CUBONG	A1	C2	

JCCE
JC Consulting Engineers

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