Metro Outer Development Assessment Panel Agenda

Meeting Date and Time: Tuesday, 7 January 2025; 9:30am
Meeting Number: MODAP/53
Meeting Venue: 140 William Street, Perth

A live stream will be available at the time of the meeting, via the following link:
MODAP/53 – 7 January 2024 – City of Rockingham

PART A – INTRODUCTION

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

PART B – CITY OF ROCKINGHAM

1. Declarations of Due Consideration
2. Disclosure of Interests
3. Form 1 DAP Applications
   - 3.1 Lot 9021 Furnivall Parade, Baldivis – Proposed Fast Food Outlet – DAP/24/02778
   - 3.2 Lot 9021 Furnivall Parade, Baldivis – Proposed Service Station – DAP/24/02768
4. Form 2 DAP Applications
5. Section 31 SAT Reconsiderations

PART C – OTHER BUSINESS

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

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

ATTENDANCE

DAP Members

Eugene Koltasz (Presiding Member)
Karen Hyde (Deputy Presiding Member)
Mike Mouritz (Specialist Member)
Cr Mark Jones (Local Government DAP Member, City of Rockingham)
Cr Dawn Jecks (Local Government DAP Member, City of Rockingham)

Minute Secretary

Claire Ortlepp (DAP Secretariat)

Officers in Attendance

Ashlee Kelly (DAP Secretariat)

PART A – INTRODUCTION

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2. **Apologies**
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PART B – CITY OF ROCKINGHAM

1. Declarations of Due Consideration

2. Disclosure of Interests

3. Form 1 DAP Applications

3.1 Lot 9021 Furnivall Parade, Baldivis – Proposed Fast Food Outlet – DAP/24/02778

3.2 Lot 9021 Furnivall Parade, Baldivis – Proposed Service Station – DAP/24/02768

4. Form 2 DAP Applications

Nil.

5. Section 31 SAT Reconsiderations

Nil.

PART C – OTHER BUSINESS

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2. Meeting Closure

Part B – Item 3.1 – LOT 9021 FURNIVALL PARADE, BALDIVIS – PROPOSED FAST FOOD OUTLET

Form 1 – Responsible Authority Report
(Regulation 12)

DAP Name:	Metro Outer Development Assessment Panel	
Local Government Area:	City of Rockingham	
Applicant:	Planning Solutions	
Owner:	Rockingham Park Pty Ltd	
Value of Development:	$3 million	
Responsible Authority:	City of Rockingham	
Authorising Officer:	Mr Brett Ashby, A/Director Planning and Development Services	
LG Reference:	DD020.2024.00000271	
DAP File No:	DAP/24/02778	
Application Received Date:	6 September 2024	
Report Due Date:	7 January 2025	
Application Statutory Process Timeframe:	90 Days	
Attachment(s):	1. Development Plans 2. Original Application 3. Schedule of Submissions	
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 Development Assessment Panel (**MODAP**) resolves to:

APPROVE DAP Application reference DAP/24/02778 and accompanying plans in accordance with Clause 68 of the *Planning and Development (Local Planning Schemes) Regulations 2015* and the provisions of clause 68(2)(b) of the deemed provisions of the City of Rockingham Town Planning Scheme No.2, subject to conditions as follows:

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. In the event of an inconsistency between the approved plans and a requirement of the conditions set out below, the requirement of the conditions shall prevail.

3. This decision constitutes planning approval only and is valid for a period of four (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.

4. Earthworks over the site associated with the development must be stabilised to prevent sand or dust blowing off the site, and appropriate remediation measures must be implemented within the time and in the manner directed by the City of Rockingham in the event that sand or dust is blown from the site.

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

   All stormwater generated by the development must be managed in accordance with *Local Planning Policy No.3.4.3 - Urban Water Management* to the satisfaction of the City of Rockingham. The approved plans must be implemented and all works must be maintained for the duration of the development.

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

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

   (i) provide a minimum of 8 car parking spaces;

   (ii) be designed, constructed, sealed, kerbed, drained and marked in accordance with User Class 3A and User Class 4 of Australian/New Zealand Standard AS/NZS 2890.1:2004, Parking facilities, Part 1: Off-street car parking prior to applying for a Building Permit;

   (iii) provide at least one (1) car parking space(s) dedicated to people with disabilities, which are designed, constructed, sealed, kerbed, drained and marked in accordance with User Class 4 of Australian/New Zealand Standard AS/NZS 2890.6:2009, Parking facilities, Part 6: Off-street parking for people with disabilities and which are linked to the main entrance of the development by a continuous accessible path of travel designed and constructed in accordance with Australian Standard AS 1428.1—2009, Design for access and mobility, Part 1: General Requirements for access—New building work;

   (iv) be constructed, sealed, kerbed, drained and marked prior to the development being occupied and maintained thereafter; and

   (v) comply with the above requirements for the duration of the development.

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

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

   (ii) any lawns to be established and areas to be mulched;

   (iii) any natural landscape areas to be retained;

   (iv) those areas to be reticulated or irrigated;

   (v) proposed upgrading to landscaping, paving and reticulation of the street setback area and all verge areas.

   The landscaping (including all verge landscaping) must be completed prior to the occupation of the development, and must be maintained at all times to the satisfaction of the City of Rockingham.

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

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

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

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

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

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

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

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

   (vi) frequency and timing of bin collections.

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

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

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

14. Prior to the occupation of the development, written confirmation from the builder to be provided that demonstrates that all requirements indicated in the Acoustic Report mentioned in Condition No.13 have been incorporated into the development.

15. Prior to the occupation of the development, a final Illumination Report must be prepared which demonstrates to the satisfaction of the City of Rockingham, that the completed development complies with the requirements of *Australian Standard AS 4282—2019, Control of the obtrusive effects of outdoor lighting.*

Advice Notes

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

2. In regards to Condition No.6, the applicant is advised that an inspection of the existing infrastructure surrounding the proposed area of works needs to be identified and documented prior to works commencing. Particular interest is to be paid to the state of the existing road pavements. Any damage due to the works, will need to be repaired to the satisfaction of the City of Rockingham.

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

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

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

Background:

Historical Context

- In February 2013, the Parkland Heights Local Structure Plan (**PHLSP**) was originally approved by the Western Australian Planning Commission (**WAPC**). The PHLSP has been amended on five occasions since and provides for the development of a 'Neighbourhood Centre' at the core of the Parkland Heights estate.

- In April 2023, the MODAP granted Development Approval for a Neighbourhood Centre on the subject land that included:

  - An 'L' shaped 'Main Street' running through the centre of the site, accessed from Furnivall Parade and Nairn Drive;

  - Two 'Supermarkets' (a 'major' and 'minor'), a 'Liquor Store' and 'Speciality' tenancies at the southern end of the internal Main Street;

  - 'Food and Beverage' tenancies along the western side of the 'Main Street', with car parking beyond to the west.

  - Car parking abutting the eastern side of the 'Main Street', some of which in the longer term will be replaced by built form to eventually frame up the eastern side of the 'Main Street'; and

  - Indicative pad site locations for two (2) 'Fast Food'; a 'Specialty' tenancy and a future 'Service Station' abutting Nairn Drive on the eastern portion of the site, for which approval was not sought at that time.

- In June 2024, the City of Rockingham (**City**) approved the current Local Development Plan (**LDP**) for the PHNC. The LDP sets out the key design parameters to inform development within the PHNC.

- In August 2024, approval was granted by the City to amend the Development Approval granted by the MODAP that included:

  - Modifying the 'Food and Beverage' precinct layout to provide for a Family Restaurant;

  - Consequential modifications to the western car park;

  - Straightening the north-facing façade of the 'Food and Beverage' tenancy on the north side of the Town Square;

  - Modifying the northern facing 'Specialty' retail tenancies abutting the main supermarket; and

  - Removing shade sails from the central car parking aisle within the eastern car park and replacing with trees.

- The most recent approved site plan is depicted in the Figure 3.

- In September 2024, an application was submitted to the MODAP for approval of a Service Station development on the north-eastern corner of the PHNC. The application is the subject of a separate report in this agenda.

Site and Context

The PHNC comprises of two land portions separated by Nairn Drive, including:

- a 5.1ha portion on the western side of Nairn Drive zoned 'Commercial' in the PHLSP (Figure 1); and

- a 1.3ha portion on the eastern side zoned 'Special Use' in the PHLSP.

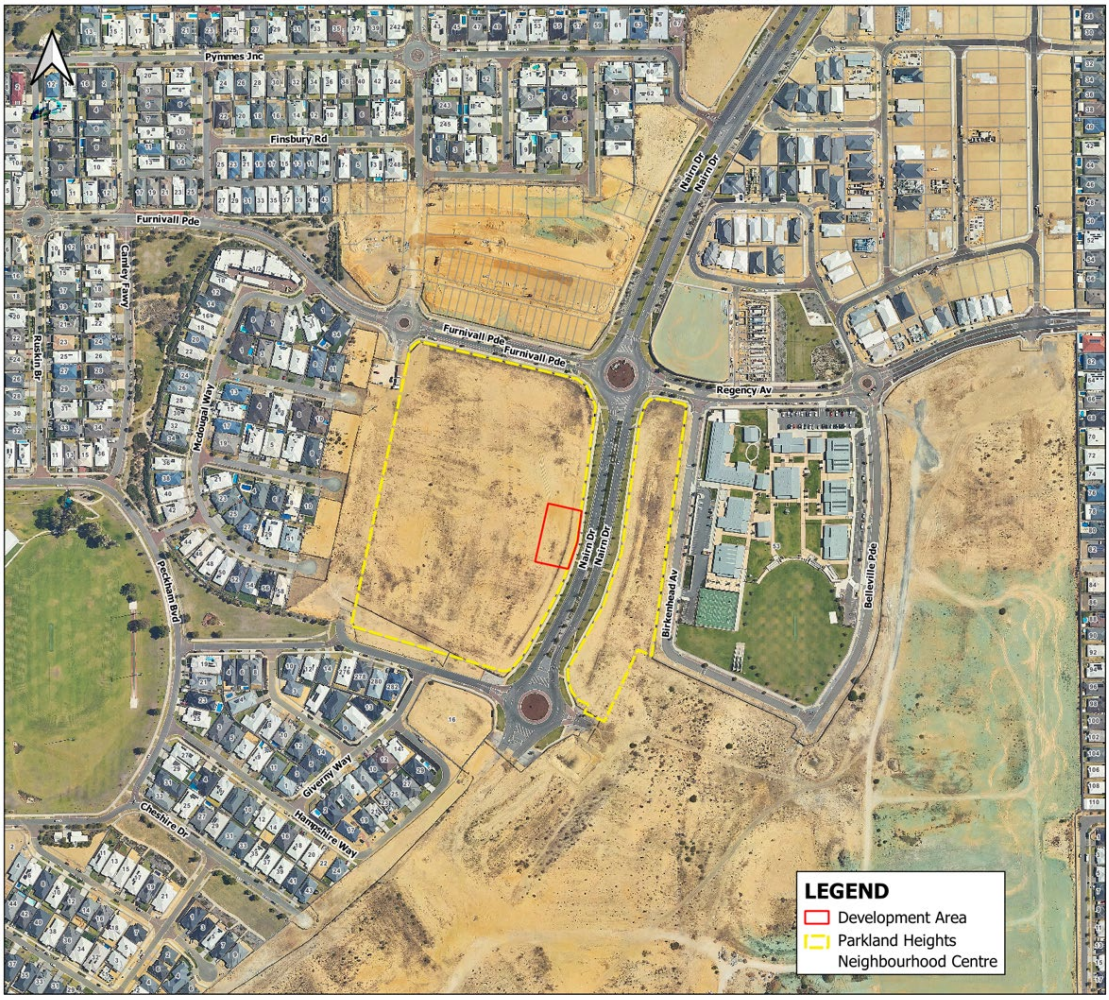
The PHNC site has been cleared in readiness for construction to commence.

Furnivall Parade and Arpenteur Drive frame the site to the north, west and south respectively.

While residential development is progressing around the PHNC in a staged manner, there are pockets of undeveloped residential land that are immediately adjacent to the north, west and south of the PHNC.

The Pine View Primary School is approximately 100m east of the subject site.

1. Parkland Heights Local Structure Plan Map Extract



2. Aerial Photography

3. PHNC Approved Site Plan

Details: outline of development application

Region Scheme	Metropolitan Region Scheme
Region Scheme Zone	Urban
Local Planning Scheme	Town Planning Scheme No.2
Local Planning Scheme Zone	Development
Structure Plan	Parkland Heights Local Structure Plan
Structure Plan - Land Use Designation	Commercial
Use Class and permissibility:	Fast Food Outlet Discretionary 'D'
Lot Size:	5.4ha
Existing Land Use:	Vacant land
State Heritage Register	No
Local Heritage	☒ N/A ☐ Heritage List ☐ Heritage Area
Design Review	☒ N/A ☐ Local Design Review Panel ☐ State Design Review Panel ☐ Other
Bushfire Prone Area	No
Swan River Trust Area	No

Details of the proposal are summarised as follows:

- A 'McDonalds' outlet with a floor area of 380m², including internal dining room and children's play area;
- A dual lane drive-through with ordering menus and speaker boxes on the northern side of the building; queuing facilities for 14 vehicles; two (2) servery windows on the eastern side of the building and two (2) waiting bays;
- Eight (8) dedicated car bays in front of the building, including a universal access bay;
- A loading bay adjoining a bin store on the northern side of the building;
- Landscaping along both the sides of the site and between the building and the boundary of Nairn Drive that includes low feature walls and decorative screen timber battens;
- The proposed operating hours are 24 hours, seven (7) days per week; and
- Various wall signs, illuminated way finding signs and a 9m high freestanding pylon sign are proposed.

The following Reports and supporting material accompany the proposal:

- Development Application Report;
- Development Plans;
- Acoustic Report;
- Waste Management Plan;
- Transport Impact Assessment (TIA);
- Landscape Plan; and
- Civil Engineering Drawings.

Legislation and Policy:

Legislation

- Planning and Development Act 2005;
- Planning and Development (Development Assessment Panels) Regulations 2011;
- Planning and Development (Local Planning Schemes) Regulations 2015;
- Metropolitan Region Scheme;
- City of Rockingham Town Planning Scheme; and
- Environmental Protection (Noise) Regulations 1997.

State Government Policies

- State Planning Policy 4.2 - Activity Centres; and
- State Planning Policy 7.0 - Design of the Built Environment.

Structure Plan

- Parkland Heights Local Structure Plan.

Local Development Plan

- Parkland Heights Local Development Plan.

Local Policies

- Local Planning Policy 3.1.2 - Local Commercial Strategy;
- Local Planning Policy 3.3.1 - Control of Advertisements;
- Local Planning Policy 3.3.14 - Bicycle Parking and End-of-Trip Facilities;
- Local Planning Policy 3.3.9 - Fast Food Outlets; and
- Local Planning Policy 3.3.27 - Community Consultation for Development Applications.

Consultation:

Public Consultation

The proposal was advertised for public comment for a period of 14 days between 28 October and 11 November 2024, in accordance with Clause 64, Schedule 2 of the *Planning and Development (Local Planning Schemes) Regulations 2015*, and *Local Planning Policy No.3.3.27 - Community Consultation for Development Applications*.

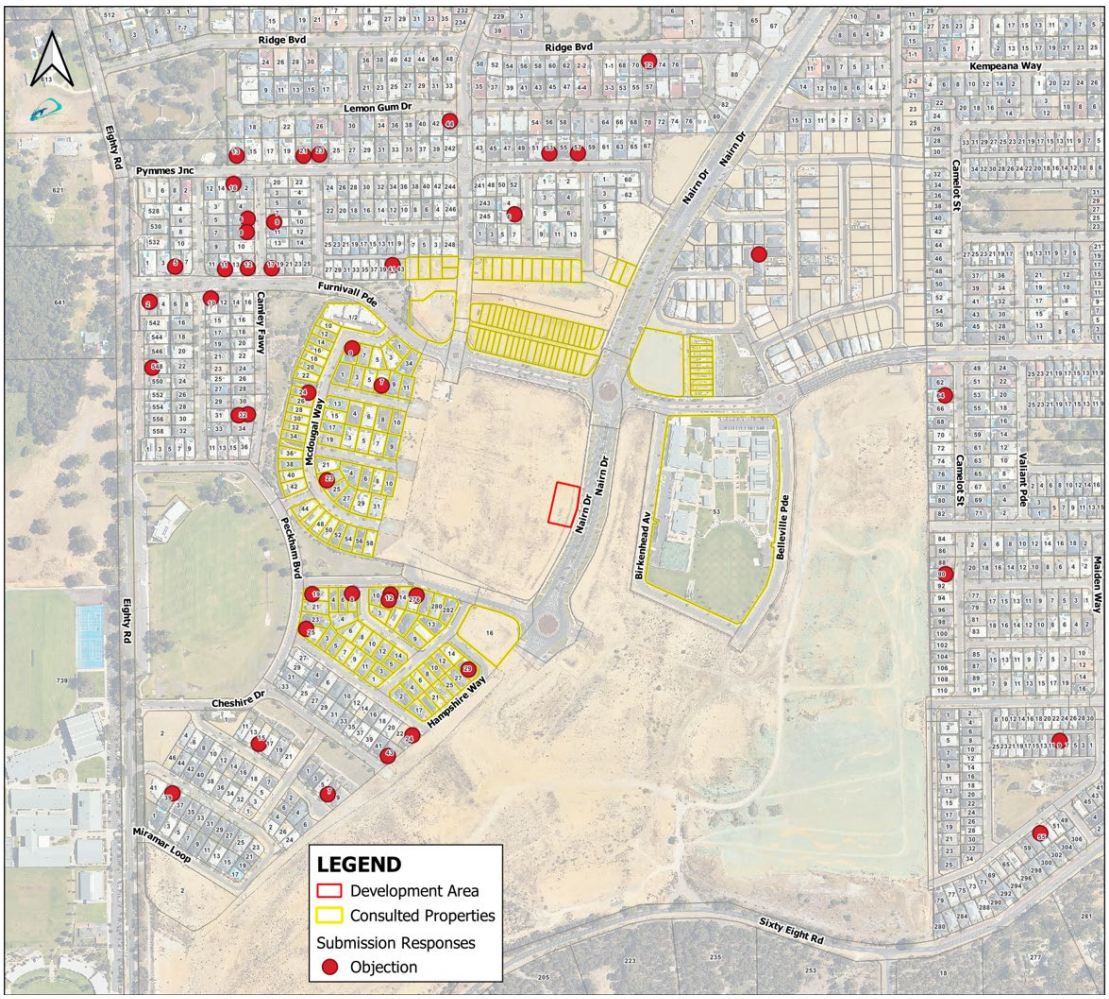
Advertising was carried out in the following manner:

- All owners and occupiers identified in the Consultation Map (Figure 4) were notified in writing of the proposed development. This included writing to prospective landowners under contract to purchase land at the commencement of advertising, on the northern side of Furnivall Parade;
- A sign was erected on the site;
- The application was published on the City's website; and
- The application documents were made available for public inspection at the City's Administration Offices.

At the close of the public consultation period, a total of 73 public submissions were received.

One (1) submission supported the application, one (1) was neutral, and 71 submissions opposed.

Figure 4 depicts the consultation area and the submitter locations, noting several submissions were received from beyond the frame.



4. Consultation Plan

The issues raised in the submissions are addressed in the following table.

1. Need and Land Use
Submission: **Concerns were raised about the need for a McDonalds Fast Food Outlet at the PHNC given the prevalence of McDonalds outlets in the surrounding Baldivis area. Various alternative land uses were suggested to be more acceptable, while some submitters did not want a Fast Food Outlet in the centre at all.**
Applicant Response: *"The proposed McDonald's is appropriately located within the Parkland Heights Neighbourhood Centre (PHNC), a commercial precinct designed to cater to the retail and service needs of the local community. The site is zoned "Commercial" under the Parkland Heights Local Structure Plan and the proposed development is consistent with the statutory planning framework.* *The approved Local Development Plan (LDP) for the PHNC specifically identifies fast-food outlets as a* ***preferred land use*** *(refer to Item 8, Preferred Uses). It also explicitly contemplates drive-through businesses within the centre, aligning with the design and functionality of the proposed McDonald's development. The proposed land use is entirely consistent with the planning framework and the approved LDP for the site.* *State Planning Policy 4.2 (SPP 4.2) further identifies fast-food outlets as desired land uses within Neighbourhood Centres. The development complements the existing retail mix, activates the streetscape, and supports the broader intent of PHNC as a vibrant community hub. Additionally, it provides convenience for residents and passing traffic along Nairn Drive."*
City's Comment: This was the most prevalent concern raised in the objections received (78%). The question of 'need' for a Fast Food Outlet is a commercial consideration for the shopping centre proponent and the applicant to consider, and is not relevant planning consideration. Similarly, the proximity to other McDonalds' restaurants is not a relevant planning consideration. For context, however, it is noted there are no other McDonalds Fast Food Outlets in Baldivis south of Safety Bay Road, with the nearest one (1) being in the Baldivis District Town Centre 3km to the north. Baldivis is a suburb of almost 45,000 people and has potential to reach a population in excess of 60,000 people. In 2023, South Baldivis (south of Safety Bay Road) had an estimated population of 29,300. The area is still growing. While the various alternative land use suggestions are noted, the decision maker must consider the application for which approval has been sought. It is also worthy to note that the PHNC development (once built) will ultimately incorporate a diverse range of Food and Beverage offerings including cafes, a restaurant and fast food outlets which contribute towards activating the centre.

2. Proximity to School
Submission: **Concerns were raised about the proximity of the subject site to the nearby Pine View Primary School. A number of the submitters opposed a fast food outlet 'directly across the road from a primary school'.**
Applicant Response: *"The subject site is part of the Parkland Heights Neighbourhood Centre (PHNC), which has been planned and approved through a comprehensive structure planning and Local Development Plan (LDP) process. The LDP for the PHNC appropriately designates the site for commercial uses, including fast-food outlets, as part of a balanced land use framework.* *This planning process ensures that the development of the Neighbourhood Activity Centre (NAC) adheres to strategic guidelines and provides for the co-location of compatible land uses, consistent with broader planning objectives."*
City's Comment: The proposed development is consistent with the adopted PHLSP and is generally consistent with the approved LDP which established the development control provisions over the PHNC, details of which are provided in the following sections of this Report. The City notes that the Pine View Primary School, located on Regency Avenue, which is approximately 100m east of the proposed Fast Food Outlet site and is not directly opposite it. The future development of the portion of the PHNC on the eastern side of Nairn Drive will ultimately provide a visual barrier between the school and the proposed Fast Food Outlet. Zoning of the eastern portion of the PHNC site is 'Special Use', which means that Fast Food Outlets on the eastern side of Nairn Drive near the school are not permitted.
3. Amenity
Submission: **Concerns were expressed about the following impacts of a 24/7 operating Fast Food Outlet on the general amenity of surrounding residential properties:** • **Noise from car engines and drive through speakers, particularly late at night;** • **Fast food cooking odour;** • **Lighting;** • **Waste generated by the restaurant; food wrappers, litter and other trash attracting rodents and generating smell;** • **Anti-social behaviour, in particular from youth late at night; and** • **Additional traffic.**

3. Amenity (cont…)

Applicant Response:

"The proposed development has been carefully designed in accordance with comprehensive planning and design principles to manage and mitigate impacts on local amenity.

- ***Noise**: The Environmental Noise Assessment confirms that the proposed development complies with the Environmental Protection (Noise) Regulations 1997 during all operational hours.*
- ***Odour**: The kitchen exhaust systems are designed to comply with AS1668.2-2012 and the National Construction Code (NCC 2022). Cooking odours are managed using advanced extraction systems, including grease filters and appropriately located exhaust discharge points, ensuring odours are diluted and dispersed away from surrounding properties.*
- ***Waste**: A detailed Waste Management Plan (WMP) has been prepared which ensures regular collection schedules and litter patrols to maintain cleanliness. Waste storage is designed with sealed bins to prevent odours and discourage pests.*
- ***Anti-Social Behaviour**: Anti-social behaviour is a perceived but unsubstantiated concern. The development's 24/7 operation enhances passive surveillance, deterring such behaviours through increased activity and visibility. The proposed design includes pedestrian pathways and lighting to further improve safety and surveillance, creating a secure and monitored environment.*
- ***Lighting**: McDonald's restaurant lighting is designed to adhere to AS/NZS4282:2023, which addresses the control of obtrusive effects of outdoor lighting. The design ensures minimal light spill onto adjacent properties while maintaining adequate site safety and security.*
- ***Traffic**: The Transport Impact Assessment (TIA) confirms that the surrounding road network can accommodate the anticipated traffic volumes without adverse impacts. On-site parking and drive-through queuing capacity further support efficient traffic flow and minimise any external impacts.*

The comprehensive planning, design, and operational measures for this development ensure that potential impacts on local amenity are effectively addressed and managed."

City's Comment:

The nearest residential land is located at least 130m away from the Development Area. Given the separation it is considered unlikely that residential amenity will be adversely impacted by the operation of a 24/7 Fast Food Outlet.

Nevertheless, concerns raised about noise, odour, lighting and waste can be effectively managed by conditions, should Development Approval be granted.

The PHNC has been designed to minimise anti-social behaviour through applying Crime Prevention though Environmental Design ('CPTED") principles in the LDP and Development Approval processes.

3. Amenity (cont…)

The proposed Floor and Elevation Plans provide for glazing in the building elevations which facilitate passive surveillance, while opportunities of 'entrapment' have been minimised through the design of the building form and site landscaping.

4. Traffic

Submission:

Concern was raised that traffic generated by the proposal will congest the surrounding street network; increase the potential for accidents and increase traffic safety risks generally for pedestrians and children in particular.

Applicant Response:

"The Transport Impact Assessment (TIA) prepared by Transcore demonstrates that the surrounding road network, including Nairn Drive, is capable of handling the additional traffic generated by the proposal. Key findings include:

- *The approved Parkland Heights Local Development Plan (LDP) and Local Structure Plan (LSP) identified this Neighbourhood Centre as an appropriate location for commercial uses, including drive-through facilities such as the proposed McDonald's restaurant.*
- *Access is provided via internal circulation roads within the Neighbourhood Centre, with ingress and egress consistent with the LDP. A planned right-in/left-in/left-out (RILILO) crossover on Nairn Drive ensures efficient traffic movement and safety.*
- *Intersection analysis confirms that all intersections and driveways, including the Nairn Drive crossover, will operate within acceptable capacity limits post-development, maintaining good traffic flow and safety.*
- *Adequate on-site parking (plus 16 queuing spaces in the drive-through) ensures that there will be no overflow effects. The broader shared parking arrangement within the Neighbourhood Centre provides additional capacity, consistent with the LDP.*
- *Pedestrian safety is prioritised through designated pathways and crossing points that align with Liveable Neighbourhoods principles, ensuring safe access within and around the site.*

These findings confirm that the proposed development aligns with the comprehensive planning framework established for the Parkland Heights Neighbourhood Centre, and will not compromise traffic safety or efficiency in the area."

City's Comment:

The TIA has been assessed and demonstrates that development traffic can be accommodated in the surrounding street network; and that the proposed intersections and crossovers to the PHNC and the subject site are likely to operate efficiently with minimal traffic queues and delays.

There is adequate provision for safe pedestrian movement around and within the PHNC site by way of footpaths, pedestrian crossing points in the surrounding road reserves, and dedicated paths of travel for pedestrians in the car park.

5. Community and Public Health Impact
Submission: **There were concerns raised that the Fast Food Outlet would detrimentally affect the health and wellbeing of the community and promote unhealthy eating habits, due to the proximity of the subject site to the nearby School and homes.**
Applicant Response: *"The proposed development is consistent with the approved LSP and LDP for the Parkland Heights Neighbourhood Centre (PHNC), which designates this site as part of a commercial precinct intended to provide a range of services to the community. Fast food outlets are an appropriate and anticipated use within this context.* *In addition, health and wellbeing related concerns from a restaurant facility are perceived impacts and not a valid planning consideration."*
City's Comment: The City notes this concern is often raised in submissions received on Fast Food Outlets including from some organisations, however this is not a valid planning consideration. The planning framework does not differentiate between the various forms of Fast Food sold in terms of land use permissibility. Given that a Fast Food Outlet is a 'discretionary' ('D') land use and that the land use is considered to be appropriate in the context of a Neighbourhood Centre, discretion may be exercised to grant Development Approval pursuant to the City's TPS2.

A copy of the public submission responses are included in Attachment 3 to this Report.

Referrals/consultation with Government/Service Agencies

The following Agencies were consulted on the application:

- Department of Planning Lands and Heritage (DPLH); and
- Department of Education (DoE).

The following Table summaries the submissions received along with the Applicant and City responses. The submissions received from the Government Agencies are repeated in full in the Schedule of Submisions in Attachment 3 to this report.

1. Department of Planning Lands and Heritage
Submission: The DPLH raised no objection to the proposal on Other Regional Road planning grounds.
Applicant's Response: No response was received from the Applicant on the matter.
City Response: The department's non-objection is noted.

With regard to the supplementary comments received on the directional split of vehicles and vehicle swept paths, the City notes that:- • From reviewing the applicants Transport Impact Assessment, the City considers that all internal and external intersections can operate with acceptable levels of service; and • The design of the intersection (immediately south of the Fast Food Outlet) onto Nairn Drive will incorporate measures to prevent right hand, southbound turns. Turning movements were thoroughly investigated as part of the Local Development Plan preparations for the Parkland Heights Neighbourhood Centre.
2. Department of Education
Submission: Concern is raised about the proximity of the subject site to the nearby Pine View Primary School. The DoE and the school Principal consider a Fast Food Outlet (FFO) is not a compatible land use given the proximity of the primary school, as FFO's may cause unhealthy eating habits; students may meet at the FFO without parental consent, and this would be the fifth McDonalds outlet 'in the locality'.
Applicant's Response: *"The issues raised in the Department of Education submission have been addressed and responded to in the 'Community and Public Health Impact' section of the Report".*
City Response: The concerns raised by DoE and the Principal of Pine View Primary School are acknowledged, however, as outlined earlier in the response to public submission summary table under the headings "Need and Land Use", "Proximity to School" and "Community and Public Health Impact", these issues are not relevant planning considerations.

Design Review Panel Advice

Not applicable.

Swan Valley Planning

Not applicable.

Other Advice

Not applicable.

Planning Assessment:

This proposal has been assessed against the relevant legislative requirements of the Scheme, State and Local Planning Policies, as outlined below.

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

PP3.3.1 seeks to ensure that advertising is of good quality, proportionate to the site it is located on and complements the character and amenity of the locality and the public realm.

The application includes building signs, wayfinding signage, and a 9m high internally illuminated Pylon Sign located in the north-eastern corner of the subject site adjacent to Nairn Drive.

A 9m high Shopping Centre 'Monolith' Sign was approved by the MODAP when the Shopping Centre was approved in 2023, adjacent the southern boundary of the subject site on the northern side of the intersection of Nairn Drive and the centre's Main Street.

As the proposed Pylon Sign exceeds 6m height and will be in addition to the Shopping Centre Monolith Sign, due regard is required to the following policy considerations:

Policy Requirement	**Assessment**
Advertisements are to be appropriate to the locality in terms of the number of advertisements, size, prominence, visual impact, colour, content and relevance to the property upon which it is located;	The proposed Fast Food Outlet Pylon Sign (9m) is the same height as the Monolith sign proposed for the PHNC, which is proposed adjoining the subject site to the south. The Service Station Monolith Sign proposed 90m further north is 7m high. The planned streetscape of Nairn Drive as it bisects the PHNC is commercial in nature, meaning business advertisements can be expected. The proposed sign: • is not out of context with the scale of the proposed built form (7.2m building height); • is similar in height compared with Pylon Signs approved for other developments; • is relevant to the business which it advertises; and • does not create a traffic hazard.
Advertisements shall be commensurate to the size of the buildings/structures on the lot and in the immediate locality and be complementary to its surrounds;	As above.
Signage shall not have undue adverse impact on: • *the amenity of the locality, including residential and/or rural amenity;* • *the visual amenity and/or character of the locality;* • *other advertisements;* • *pedestrian or vehicle safety; or* • *other land uses.*	There will be no impact on residential amenity given the proximity of the pylon sign to the nearest residential development approximately 130m away. As above, the streetscape is commercial and the sign presents no traffic or pedestrian safety issues.

The sign is supported because it satisfies the requirements of PP3.3.1 Control of Advertising; is consistent in size with other approvals issued by the City (McDonalds 9m pylon sign, Fifty Road - a Local Centre); is consistent with the scale of the shopping centre's monolith sign (9m); consistent with the scale of the proposed built form, also noting that this is a commercial streetscape.

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

PP3.3.9 provides guidance for the development of Fast Food Outlets within the City.

In terms of land use, the policy states that the preferred locations for Fast Food Outlets include Neighbourhood Centres, consistent with Parkland Heights.

In terms of design, the Policy requires the on-site queue accessway to accommodate a minimum of 10 cars (measured from the pick-up point). This accessway must not obstruct access to car parking spaces and not extend onto the external roadway.

A dual lane drive-through with provision for 13 cars (measured from the primary pick-up point) is proposed, with a second servery window and two (2) additional 'park and wait' bays also provided.

The design is sufficient and the queue analysis provided in the TIA confirms that all queuing at peak hour can be accommodated within the drive-through queuing area.

The Policy also provides for parking spaces within the drive-through facility to be included in the car parking allocation up to 50% of the TPS2 parking requirements. This is considered in the parking analysis below.

The application is consistent with LPP3.3.9.

Planning Policy No.3.3.14 - Bicycle Parking and End-of-Trip Facilities (PP3.3.14)

PP3.3.14 provides for secure, well defined and effective on-site bicycle parking and end-of-trip (EOT) facilities, to encourage the use of bicycles as a means of transport and access within the City.

Bicycle Parking Requirement

Land use	**Minimum Short Term**		**Minimum Long Term**		
	Rate	**Number**	**Rate**	**Number**	**Required**
Food and Drink Premises	0.1 spaces per five seats	60 seats requiring 2	0.1 spaces per staff	20	2
Provided		**2**			**2**

Four (4) bicycle parking spaces are provided, conveniently located near the main building entries.

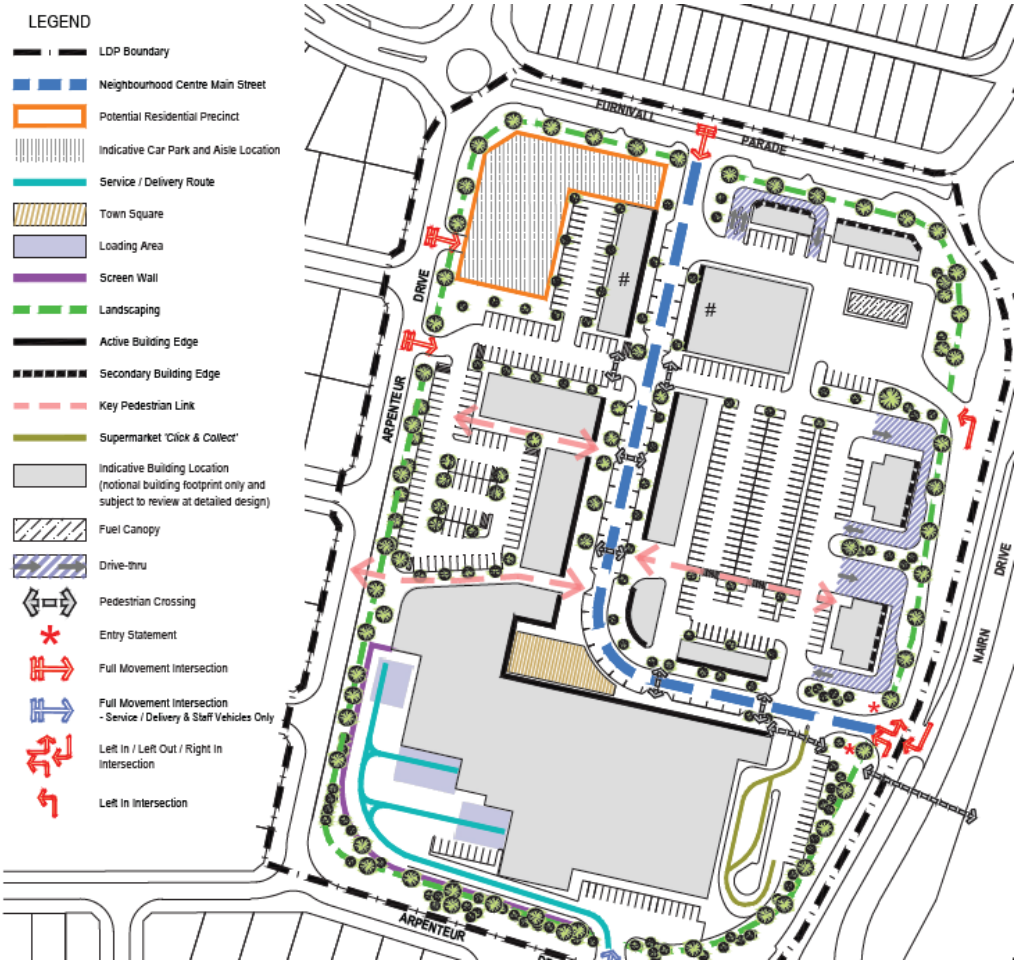
A condition can be imposed on any Development Approval for bicycle parking to be provided in accordance with the PP3.3.14 and relevant Australian Standard (AS).

End of Trip Facilities (EoT)

There is no requirement for end-of-trip facilities for this development.

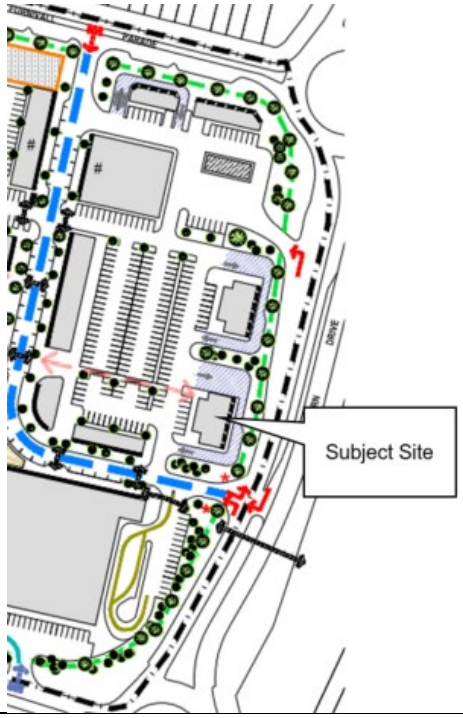
Local Development Plan - Parkland Heights Neighbourhood Centre

As a requirement of the PHLSP, a LDP was prepared in September 2019, with the latest version approved by the City in June 2024.



5. Local Development Plan Map Extract

The pertinent elements of the LDP are considered below.

LDP Provision	Provided	Compliance
The LDP identifies the location of drive-through Fast Food Outlet pad sites adjacent Nairn Drive.	The location proposed is consistent with the LDP. 	Complies
<u>Other Building Facades:</u> Secondary building edges (ie the elevation facing Nairn Drive) shall be designed to provide visual relief through an architectural response.	The eastern building elevation presents a 6.3m high parapet wall, awning and window openings to the street, with low feature walls, decorative timber battens and landscaping softening the street elevation.	Complies
<u>Landscaping:</u> A 2m wide landscape strip is required adjacent to the street boundary. At least 10% of the site shall be provided in landscaping. Parking, loading and building facades shall be screened with shrubs and tree planting.	A 2.5m - 6.5m wide landscape strip is provided along the street boundary. 22% of the site is landscaping. The building façade visible from Nairn Drive is screened by tree planting, shrubs and ground cover plants, while low feature walls and decorative timber battens add interest to the elevation.	Complies

LDP Provision	Provided	Compliance
Where loading areas are proposed an Acoustic Assessment shall be submitted outlining strategies to mitigate and manage the potential impacts of noise from delivery vehicles and activities on surrounding sensitive land uses.	The Environmental Noise Assessment report provided by Lloyd George Associates demonstrates compliance with the *Environmental Protection (Noise) Regulations 1997*.	Complies

City of Rockingham Town Planning Scheme No.2 (TPS2)

The subject site is zoned 'Development' in TPS2.

Land use permissibility within the Development zone is determined by reference to the PHLSP, which designates the land 'Commercial'.

The land use is considered a 'Fast Food Outlet', which TPS2 defines to mean:

"…*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 the premises."

A Fast Food Outlet is a discretionary ('D') use within the 'Commercial' zone, meaning that the use is not permitted unless the local government has exercised its discretion by granting Development Approval.

Clause 4.6.2 Form of Development:
Development within the Commercial zone must ensure that the form of development considers *the site planning, scale, built form, elevations and landscaping to provide a positive contribution to the streetscape, appearance and amenity of the locality*.
The proposed built form presents as a two storey building, being up to 7.2m high, which is appropriate in appearance and consistent in scale with the broader PHNC development.

The built form incorporates natural looking materials, articulated elevations and glazing, which when combined with the proposed landscaping will ensure the development will fit appropriately in context with the PHNC, while appropriately responding to Nairn Drive.

Clause 4.6.3 Parking:

On-site car parking is required to be provided at a rate of *1 bay per 11m² NLA* (Net Lettable Area) in accordance with Table 4 of TPS2.

Furthermore, in accordance with clause 4.3 of *LPP No.3.3.9 Fast Food Outlets*, parking spaces within the drive-through facility can be included in the car parking allocation up to 50% of the TPS2 parking requirements.

Car parking is analysed as follows:

Car Parking Analysis				
Land Use	**NLA**	**Required**	**Provided**	**Shortfall**
Fast Food Outlet	280m²	26 (@1 bay/11m²)	8 on-site bays 13 drive-through Bays (allowing for 50% as per LPP3.3.9)	
Total		**26 Bays**	**21 Bays**	**5 Bays**

The Application proposes 21 on-site car parking bays, whereas 26 bays are required, meaning discretion is required to vary a scheme provision in accordance with clause 4.20.3 of TPS2, which states:

"The power conferred by this clause may only be exercised if Local Government is satisfied that:

(a) Approval of the proposed development would be appropriate having regard to the criteria set out in Clause 67 of the deemed provisions;

(b) Approval of the proposed development would be consistent with the orderly and proper planning of the locality and the preservation of the amenity of the locality;

(c) The non-compliance will not have any adverse effect upon the occupiers or users of the development, the inhabitants of the locality or the likely future development of the locality; and

(d) The spirit and purpose of the requirements or standards will not be unreasonably departed from."

A parking variation can be considered against the matters set out in Clause 67 of the Deemed Provisions, specifically clause 67(2)(s), which enables the decision maker to have "*due regard*" to *"the adequacy of…(ii) arrangements for the loading, unloading, manoeuvring and parking of vehicles*".

It is recognised there will be customers who will attend the Fast Food Outlet, in conjunction with visiting the Shopping Centre as well. In this event, there would be no material increase in parking demand.

For context, the Shopping Centre development is required to provide 445 on-site car bays. The Applicant's TIA estimates approximately 33% of the traffic generated by the Fast Food Outlet will be from 'internal' trips within the shopping centre.

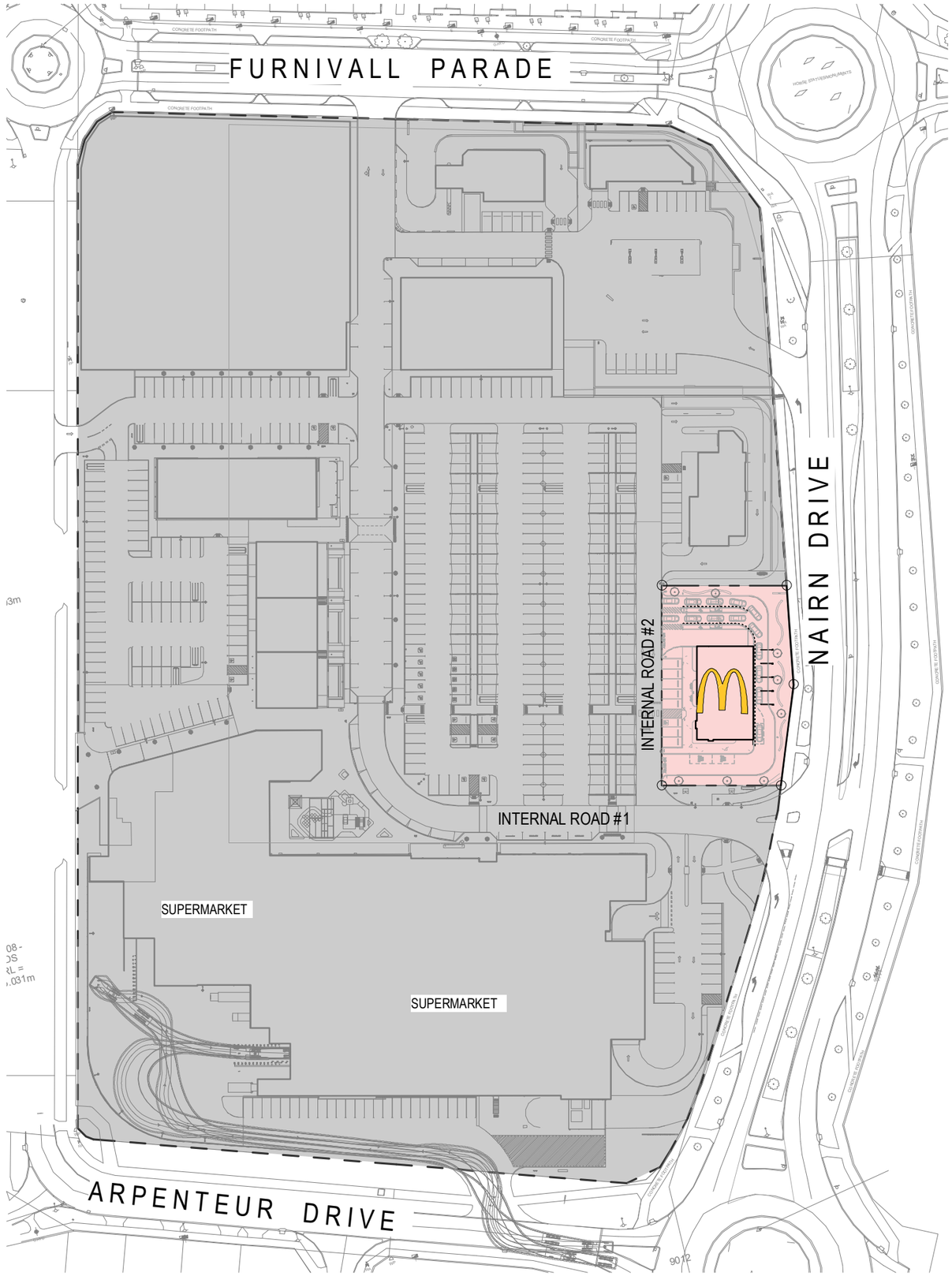
It is considered that a five (5) car bay 'technical' short fall is minor in nature and can be sustained on the PHNC site.

Conclusion:

The proposed development is appropriately located within the Parkland Heights Neighbourhood Centre, a commercial precinct designed to cater to the needs of the local community. The concerns from submissioners in relation to the health impacts of eating Fast Food is a broader health matter outside of the applicable planning framework.

Subject to appropriate conditions, the proposed development is considered to be compliant with TPS2, PHLSP, LDP and Policy requirements.

It is therefore recommended that the application be conditionally approved.



LEGEND:

PROPOSED McDONALD'S RESTAURANT.

PROPOSED FUTURE DEVELOPMENT SUBJECT TO SEPARATE APPLICATION.

1 OVERALL SITE PLAN
1 : 1300

DEVELOPMENT APPLICATION

Revisions				
Issue	Description	Date	Chk	Int
0	AMENDED DA AS CLOUDED	AUGUST 2024	AJJ	NR

General Notes

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Drawing Notes

North

Client
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ABN. 43 008 496 928
☎ 02 9875 6666

Project Manager

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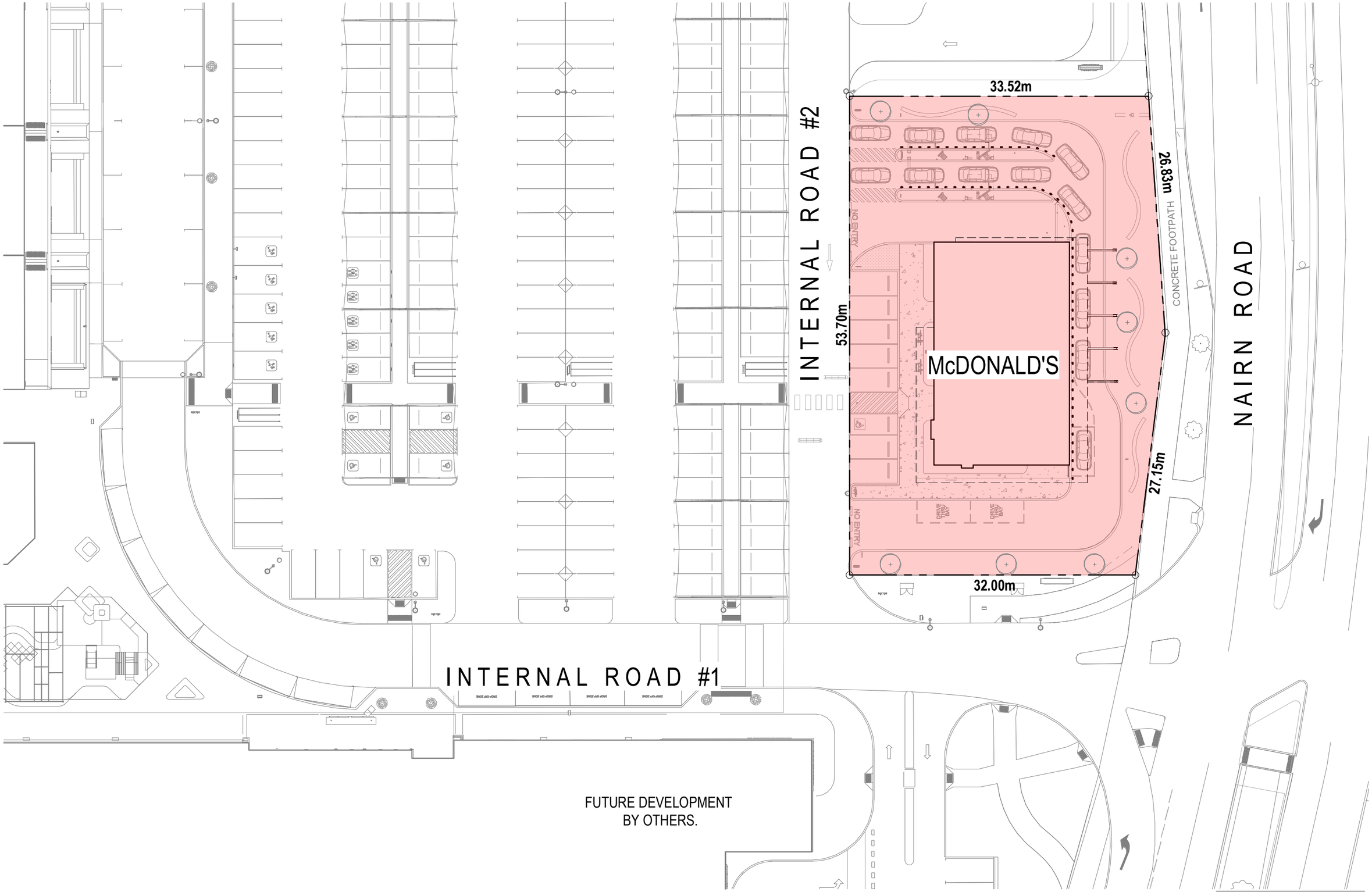
Project
NEW McDONALDS RESTAURANT

Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale: 1 : 1300 @ A3
Series: BIO MOD 380
Drawing: LOCATON PLAN
Project Number: 0890
Drawing Number: DA01
Issue: 0

File Name D:\Documents\0890_McDONALDS-BIOMOD-450_SITE_[DA]_R23_nicoleWMET6.rvt



DEVELOPMENT APPLICATION

Revisions

Issue	Description	Date	Chk	Int
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Project
NEW McDONALDS RESTAURANT

Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale: 1 : 400 @ A3
Series: BIO MOD 380
Drawing: OVERALL SITE PLAN
Project Number: 0890
Drawing Number: DA02
Issue: 0

FileName D:\Documents\0890_McDONALDS-BIOMOD-450_SITE_[DA]_R23_nicoleWMET6.rvt

NAIRN ROAD

ALUMINIUM DECORATIVE SCREEN TIMBER BATTENS.

McDONALD'S PYLON.

BLACK POWDERCOATED POSTS REFER TO ELEVATION FOR MORE DETAILS.

LOW CURVE FEATURE WALLS 800mm HIGH.

CONCRETE FOOTPATH

SITE BC

26.83m

27.15m

1180

800

3600

3600

CONCRETE

CENTTRE PYLON 9m HIGH.

CASHIER

SERVERY

3RD WINDOW

PROPOSED McDONALD'S RESTAURANT

BIOMOD 380
FFL = 16.800

CORRAL

PLAYPLACE

DRIVE THRU BAY

DRIVE THRU BAY

33.52m

32.00m

3000 1500 3000 1500

LOADING BAY

CONCRETE

NO ENTRY

NO ENTRY

5400

2700

53.70m

DUAL LANE DRIVE-THRU
14DT CAR STACK.

ACCESSIBLE PARKING
BAY TO AS2890.6 AND AS1428.1.

PEDESTRIAN CROSSING.

INTERNAL ROAD #2

INTERNAL ROAD #1

SITE AREA SCHEDULE

IDENTITY	AREA m2
McDONALD;S PAD SITE	1831 m2

LEGEND:

- CONCRETE EXPOSED AGGREGATE FOOTPATH AS SPECIFIED. REFER STRUCT. ENG'S DWGS FOR DETAILS.
- NEW LANDSCAPING BEDS.
- WS — RUBBER WHEELSTOPS AS SPECIFIED. QTY: 8.
- SELECTED TREES REFER LANDSCAPING PLAN.

DEVELOPMENT APPLICATION

Revisions

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Project
NEW McDONALDS RESTAURANT

Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale
1 : 250 @ A3

Series
BIO MOD 380

Drawing
SITE PLAN

Project Number
0890

Drawing Number
DA03

Issue
0

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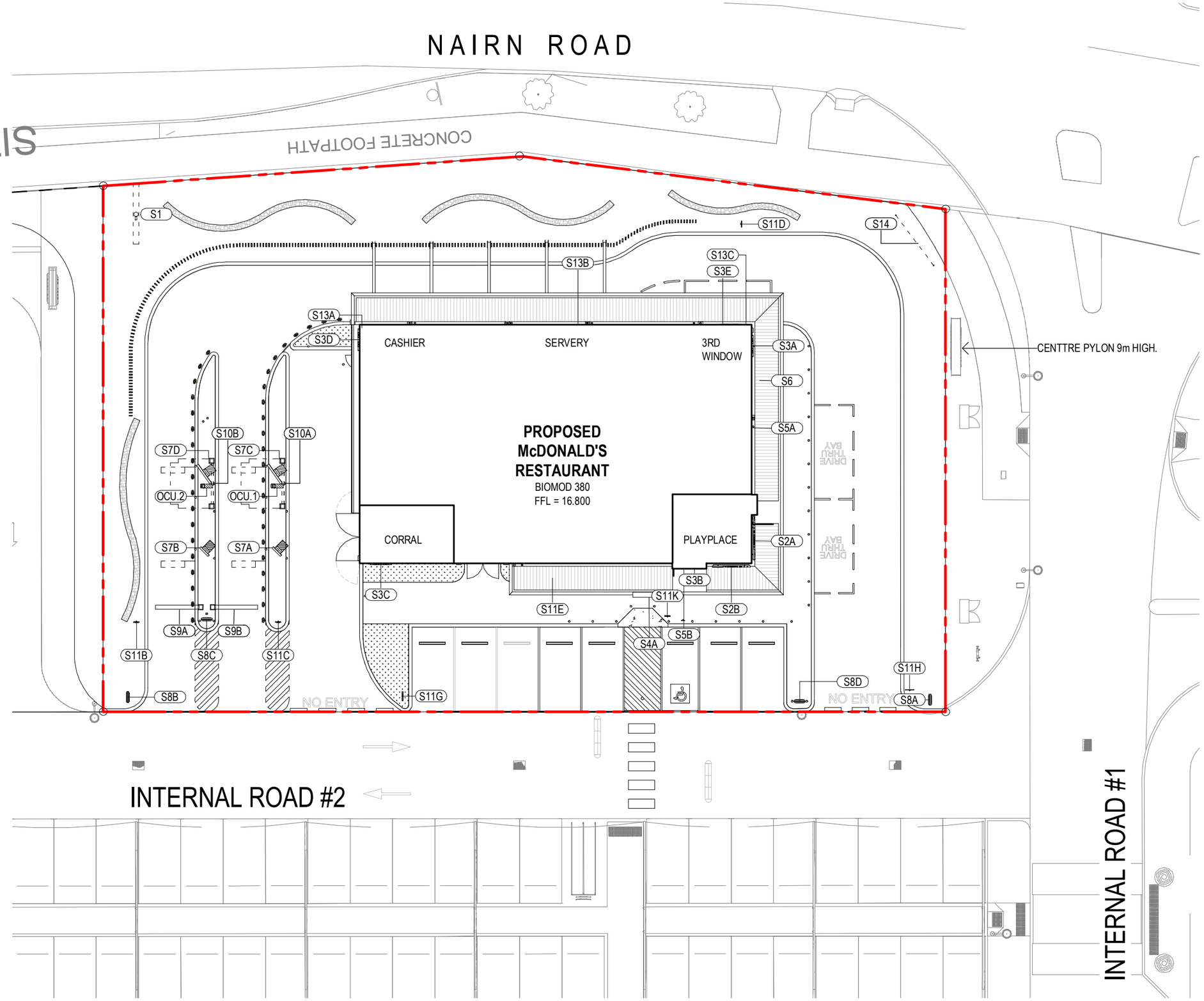

SIGNAGE SCHEDULE

Tag	Description	Illuminated
S1	Pylon Sign	
S2A	Play Place Wall Sign	Yes
S2B	Play Place Wall Sign	Yes
S3A	"Golden Arches" Wall Sign	Yes
S3B	"Golden Arches" Wall Sign	Yes
S3C	"Golden Arches" Wall Sign	Yes
S3D	"Golden Arches" Wall Sign	Yes
S3E	"Golden Arches" Wall Sign	Yes
S4A	"McDonald's" Wordmark Wall Sign	
S5A	"McCafe" Button Sign Ø1200mm	
S5B	"McCafe" Wall Sign	
S6	McDelivery Wall Sign (Double Sided)	Yes
S7A	OUTDOOR MENUBOARD SINGLE 55"	Yes
S7B	OUTDOOR MENUBOARD SINGLE 55"	Yes
S7C	OUTDOOR MENUBOARD DOUBLE 55"	Yes
S7D	OUTDOOR MENUBOARD DOUBLE 55"	Yes
S8A	Directional Sign - Entry	Yes
S8A Side 2	Directional Sign - Thank You	Yes
S8B	Directional Sign - Entry - Left Arrow	Yes
S8B Side 2	Directional Sign - Entry - Right Arrow	Yes
S8C	Directional Sign - Drive Thru - Double Arrow - Any Lane Any Time	Yes
S8C Side 2	Directional Sign - Blank	Yes
S8D	Directional Sign - No Entry	Yes
S8D Side 2	Directional Sign - Thank You	Yes
S9A	Height Clearance Gantry Sign	Yes
S9B	Height Clearance Gantry Sign	Yes
S10A	Canopy - Drive Thru - Wording "1. Order here"	Yes
S10B	Canopy - Drive Thru - Wording "1. Order here"	Yes
S11B	No Pedestrian Access Sign	No
S11C	No Pedestrian Access Sign	No
S11D	No Pedestrian Access Sign	No
S11E	Bicycle Parking Sign	No
S11F	Accessible Parking Sign	No
S11G	Pedestrian Crossing Sign	No
S11H	Stop Sign	No
S11K	Pedestrian Caution - Look Both Ways Sign	No
S13A	Drive-Thru Information Sign "2. PAY HERE"	No
S13B	Drive-Thru Information Sign "3. PICK UP HERE"	No
S13C	Drive-Thru Information Sign "4. PICK UP HERE"	No
S14	Banner Signage	No

DEVELOPMENT APPLICATION

Revisions

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Project
NEW McDONALDS RESTAURANT

Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale: 1 : 250 @ A3
Series: BIO MOD 380
Drawing: SITE SIGNAGE PLAN
Project Number: 0890
Drawing Number: DA04
Issue: 0

File Name D:\Documents\0890_South Baldivis_McDONALDS-BIOMOD-380_R23_nicoleWMET6.rvt

REFER TO SITE PLAN FOR EXTENT.

REFER TO SITE PLAN FOR EXTENT.

ALUMINIUM DECORATIVE
SCREEN TIMBER BATTENS.

DA09
6

DA09
5

BLACK POWDERCOATED POSTS
REFER TO ELEVATION
FOR MORE DETAILS.

AWNING OVER

2000

CASHIER
24

PCS 1

BUN STORE
22a

MANAGER
25

IT ROOM
26

SERVERY
27

PCS 1

3rd WINDOW
29

BEVERAGE CELL
28

DRY GOODS
22

PCS 1

MB U PLT 585 x 1165

2448 610 x 1219

2436 610 x 914

KITCHEN
23

PCS 2

DRIVER
PICK-UP
32

SALES & SERVICE
30

McCAFE
31

2000

DA08
4

TUN

2430 610x762

FRONT COUNTER
03

REFRIG.
21

2448

WASH UP
19

DA08
3

FREEZER
20

CORRIDOR
18

2460

FILTERS
17

MALE
09

FEMALE
08

W.C.
16

DINING ROOM
02

GPO
HC

1

DA07

PCS 1

TUN

BREAK
ROOM
14

LOCKERS

CORRAL
13

AIRLOCK
06

PCS 2

ACCESSIBLE
15

RF. AC
11

DP2

ENTRY
01

PLAYLAND
04

HC

2000

AWNING OVER

ENTRY CLIP

2

DA07

DEVELOPMENT APPLICATION

Revisions				
Issue	Description	Date	Chk	Int
0	AMENDED DA AS CLOUDED	AUGUST 2024	AJJ	NR

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Project	NEW McDONALDS RESTAURANT
Location	PART LOT 9018 NAIRN DRIVE, BALDIVIS.
Scale	1 : 100 @ A3
Series	BIO MOD 380
Drawing	FLOORPLAN
Project Number	0890
Drawing Number	DA05
Issue	0

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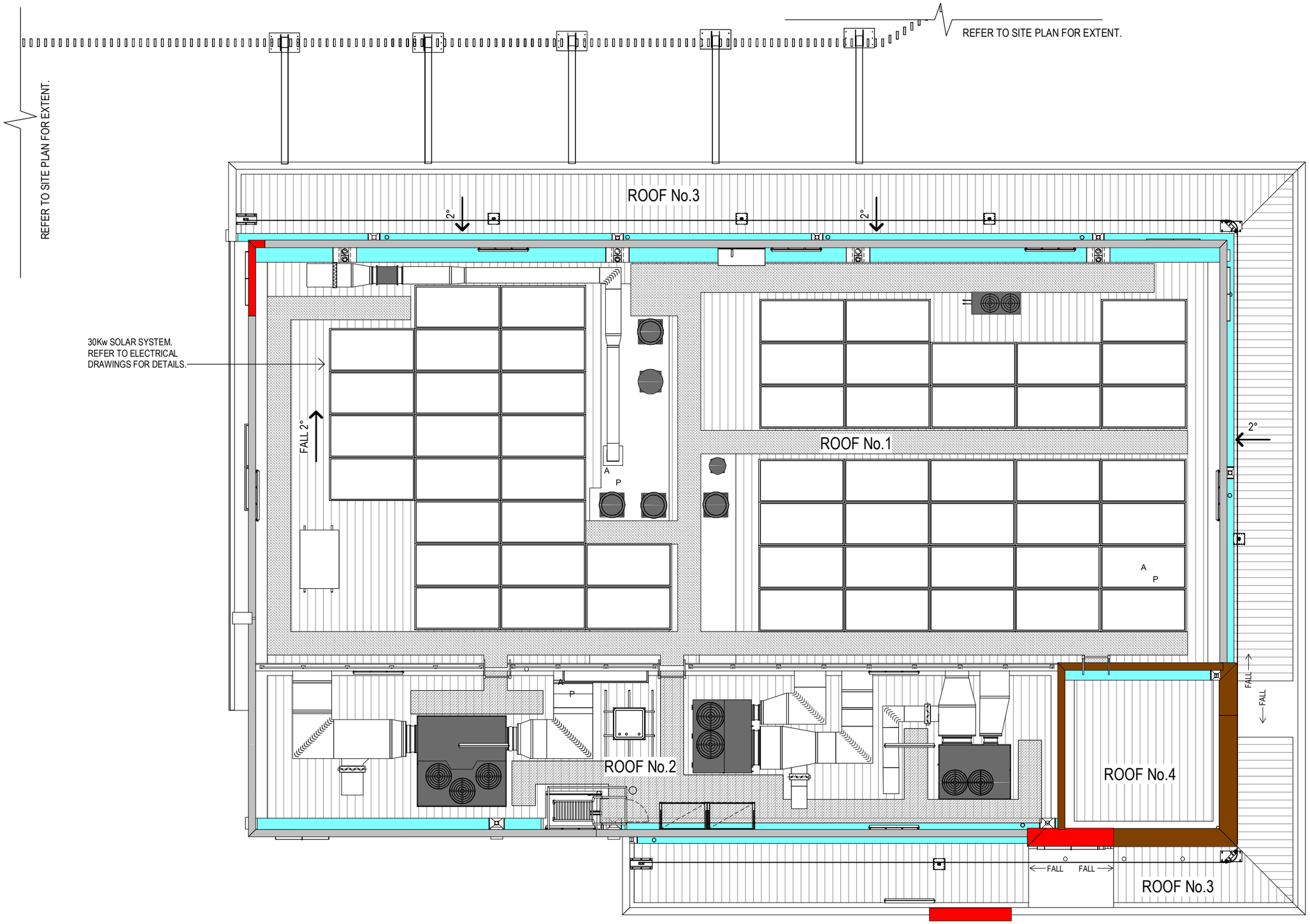

DEVELOPMENT APPLICATION

Revisions				
Issue	Description	Date	Chk	Int
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Project
NEW McDONALDS RESTAURANT

Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale
1 : 100 @ A3

Series
BIO MOD 380

Drawing
ROOF PLAN

Project Number
0890

Drawing Number
DA06

Issue
0

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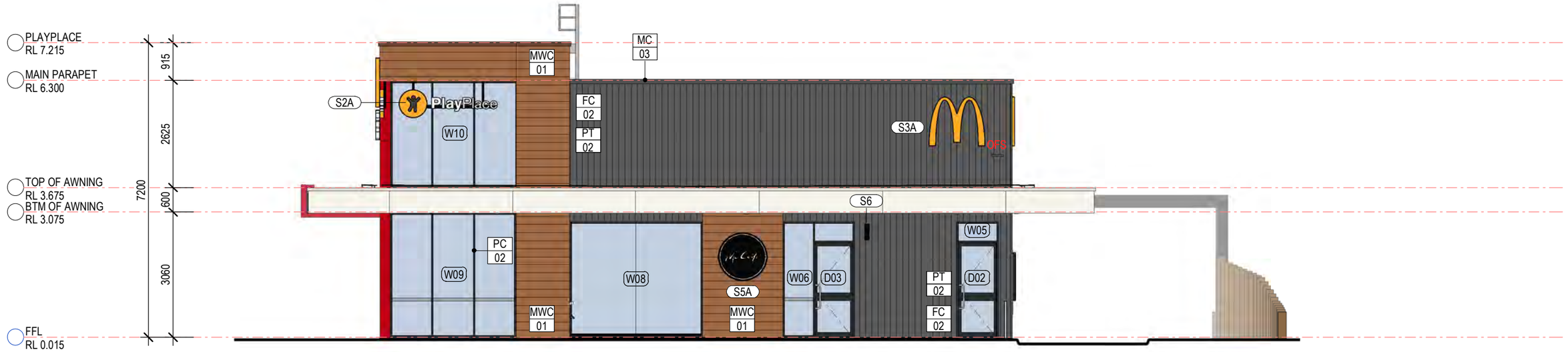
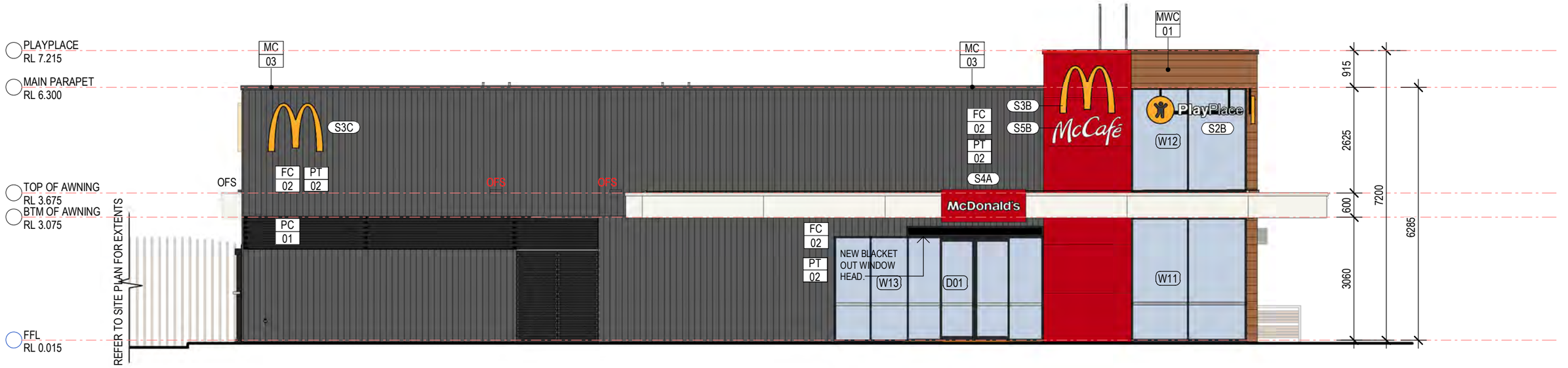


1 FRONT ELEVATION
1 : 100



2 SIDE ELEVATION
1 : 100

DEVELOPMENT APPLICATION

Revisions

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Project
NEW McDONALDS RESTAURANT

Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale
1 : 100 @ A3

Series
BIO MOD 380

Drawing
FRONT & SIDE BUILDING ELEVATIONS

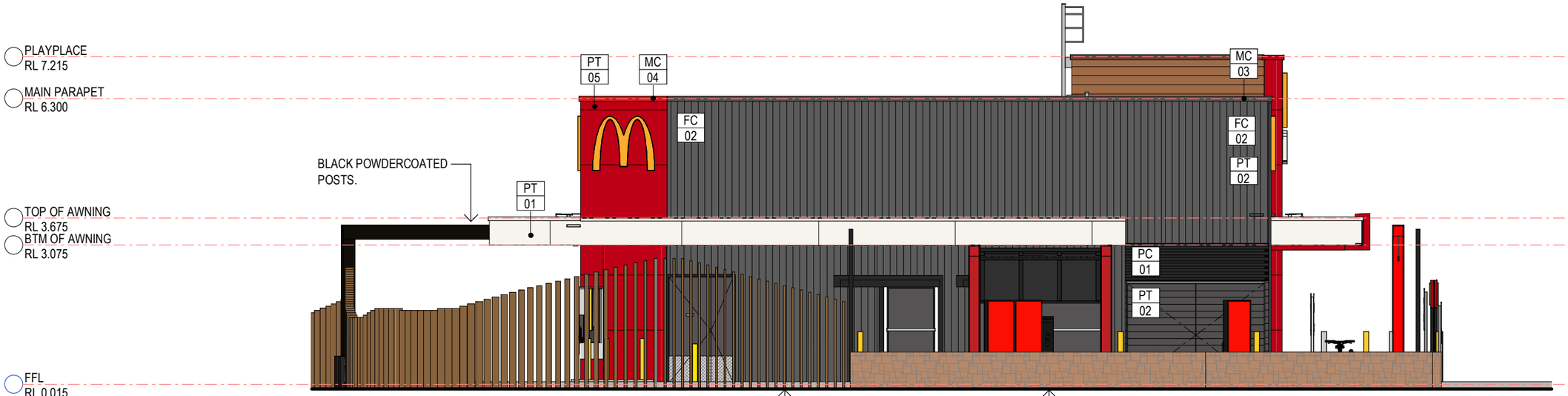
Project Number
0890

Drawing Number
DA07

Issue
0

File Name D:\Documents\0890_South Baldivis_McDONALDS-BIOMOD-380_R23_nicole\WMET6.rvt

3 REAR ELEVATION
1 : 100



4 REAR ELEVATION
1 : 100

DEVELOPMENT APPLICATION

Revisions				
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Drawing Notes

Client
McDonald's Australia Limited
ABN. 43 008 496 928
☎ 02 9875 6666

Project Manager
NATIONAL DEVELOPMENT GROUP

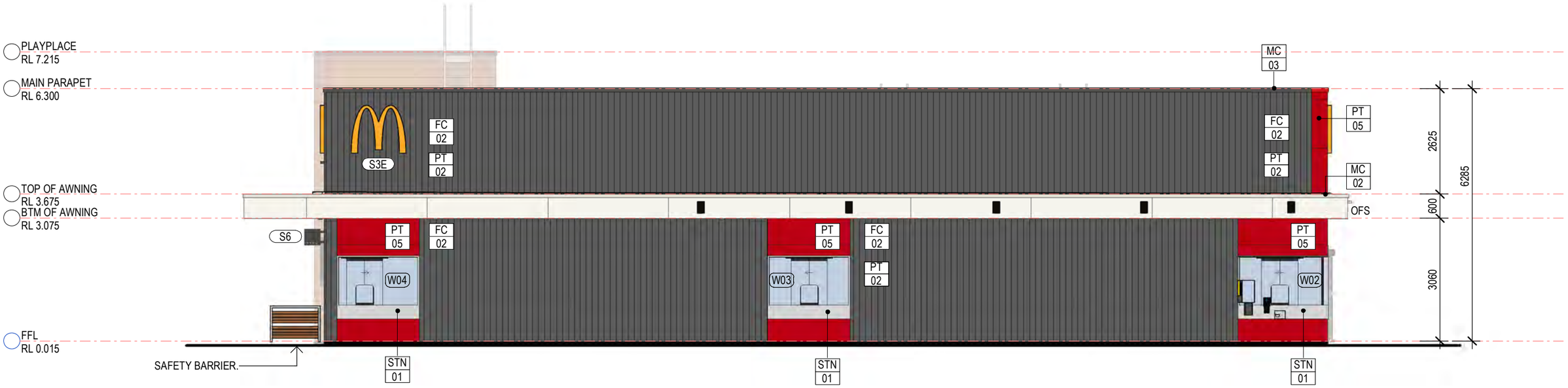
Architect
Hindley and Associates Pty Ltd
Building Designers
Unit 4/166 Stirling Highway
Nedlands WA 6009
PO Box 199 Nedlands WA 6909
08 9386 6699
www.hindley.com.au

Project
NEW McDONALDS RESTAURANT

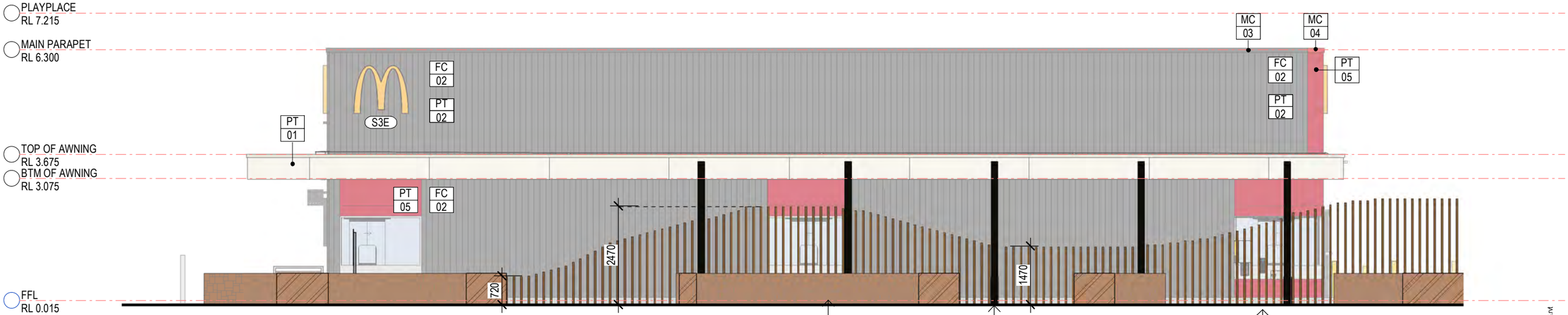
Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale: 1 : 100 @ A3
Series: BIO MOD 380
Drawing: REAR BUILDING ELEVATIONS
Project Number: 0890
Drawing Number: DA08
Issue: 0

File Name D:\Documents\0890_South Baldivis_McDONALDS-BIOMOD-380_R23_nicoleWMET6.rvt



5 DRIVETHRU ELEVATION
1 : 100



6 DRIVETHRU ELEVATION
1 : 100

Revisions

Issue	Description	Date	Chk	Int
0	AMENDED DA AS CLOUDED	AUGUST 2024	AJJ	NR

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DEVELOPMENT APPLICATION

Client
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Project
NEW McDONALDS RESTAURANT

Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale
1 : 100 @ A3

Series
BIO MOD 380

Drawing
DRIVETHRU BUILDING ELEVATIONS

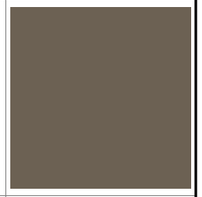
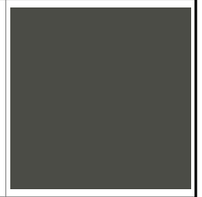
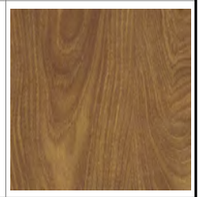
Project Number
0890

Drawing Number
DA09

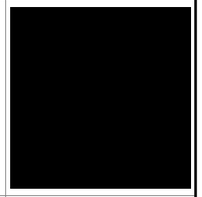
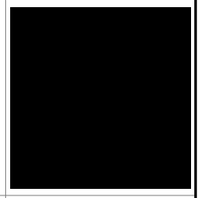
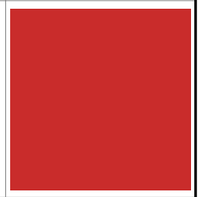
Issue
0

File Name D:\Documents\0890_South Baldivis_McDONALDS-BIOMOD-380_R23_nicolelWMET6.rvt

EXTERNAL FINISHES SCHEDULE

CODE	No.	AREA	DESCRIPTION	MANUFACTURER	COLOUR	IMAGE
FC	02	MAIN BUILDING WALLS	FIBRE CEMENT WEATHERTEX VERTICAL WEATHERBOARDS	WEATHERTEX	WAYWARD GREY PG1G8	
MC	01	PARAPET CAPPING - ADJACENT TIMBER LOOK CLADDING (PLAYLAND)	PREFINISHED METAL CAPPING / FLASHING	COLORBOND	JASPER	
MC	02	PARAPET CAPPING - AWNINGS	PREFINISHED METAL CAPPING / FLASHING	COLORBOND	SURFMIST	
MC	03	PARAPET CAPPING - MAIN BUILDING WALLS	PREFINISHED METAL CAPPING / FLASHING	COLORBOND	WOODLAND GREY	
MC	04	PARAPET CAPPING	PREFINISHED METAL CAPPING / FLASHING	COLORBOND	MANOR RED	
MC	05	TIMBER BATTENS ON DRIVETHRU SCREEN	TIMBER LOOK ALUMINIUM CLADDING SYSTEM USING KNOTWOOD 200mm CLADDING PROFILE	KNOTWOOD	ROYAL OAK	
MWC	01	PLAYPLACE & PARAPETS	TIMBER LOOK ALUMINIUM CLADDING SYSTEM USING KNOTWOOD 200mm CLADDING PROFILE	KNOTWOOD	LIGHT OAK	

EXTERNAL FINISHES SCHEDULE

CODE	No.	AREA	DESCRIPTION	MANUFACTURER	COLOUR	IMAGE
MWC	02	ROOF WELL (INTERNAL PARAPET LINING)	CUSTOM ORB CORRUGATED STEEL RIVET FIXED VERTICALLY TO FRAMES	LYSAGHT	ZINCALUME	
PC	01	CORRAL BATTENS & ROOF ACCESS, ELEC. ROOM DOORS	POWDERCOAT FINISH	DULUX DURATEC ZEUS	LUNAR ECLIPSE SATIN (BLACK)	
PC	02	ALUMINIUM WINDOWS & DOOR FRAMES. REFER NOTE 1.	POWDERCOAT FINISH	DULUX DURATEC ZEUS	LUNAR ECLIPSE SATIN (BLACK)	
PT	01	FASCIAS (RIBBON)	PAINT FINISH. REFER SPECIFICATION FOR DETAILS ON PAINT TYPE & APPLICATION	DULUX	VIVID WHITE PW1H9	
PT	02	MAIN BUILDING WALLS	PAINT FINISH. REFER SPECIFICATION FOR DETAILS ON PAINT TYPE & APPLICATION	DULUX	WAYWARD GREY PG1G8	
PT	05	BLADE WALL & DRIVETHRU WINDOWS	PAINT FINISH. REFER SPECIFICATION FOR DETAILS ON PAINT TYPE & APPLICATION	DULUX	HOTLIPS PB1F2	
STN	01	DRIVETHRU WINDOW SILL & SURROUND	RECONSTITUTED STONE. REFER TO DECOR DOCUMENTS	REFER DECOR	REFER DECOR	

DEVELOPMENT APPLICATION

Revisions

Issue	Description	Date	Chk	Int
0	AMENDED DA AS CLOUDED	AUGUST 2024	AJJ	NR

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Project Manager

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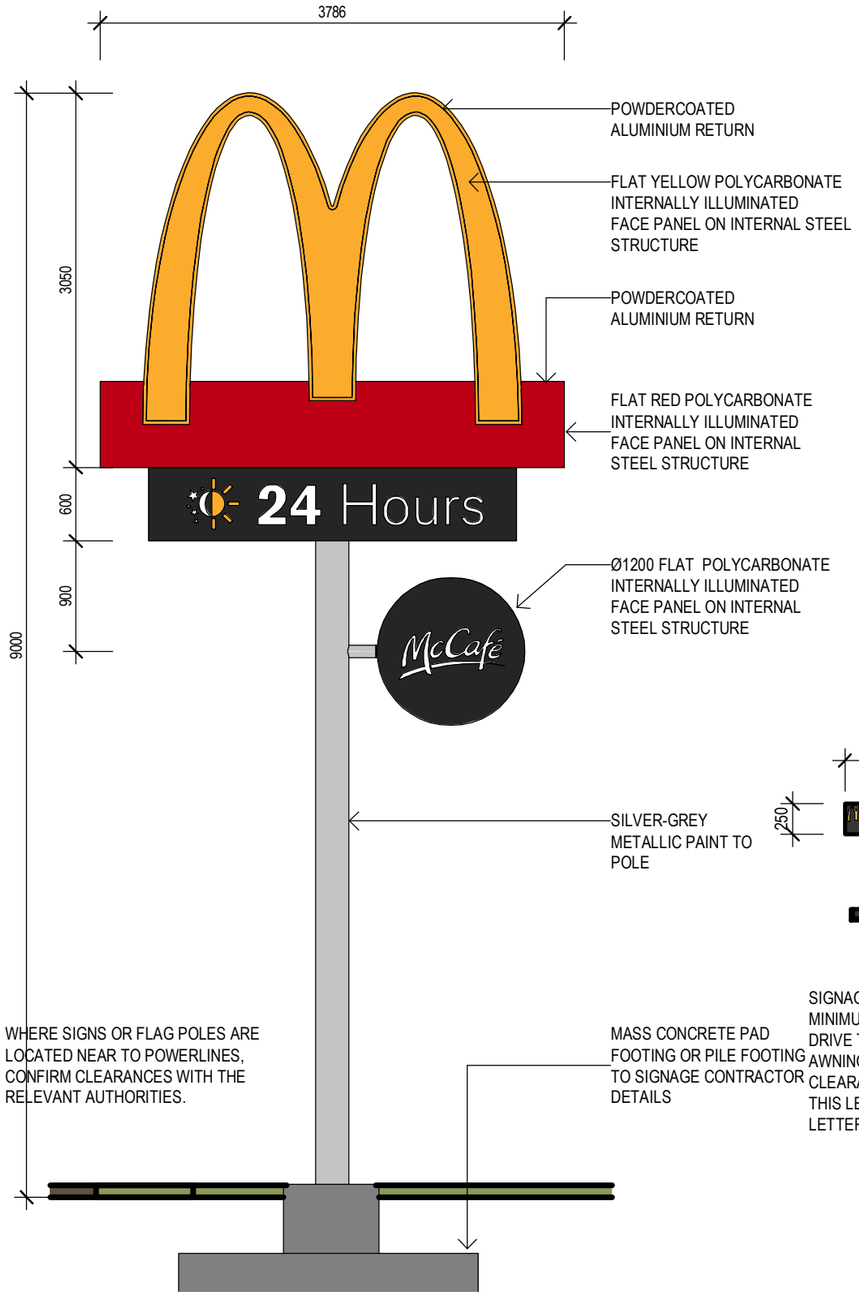
Project
NEW McDONALDS RESTAURANT

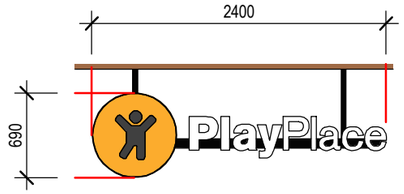
Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale: @ A3
Series: BIO MOD 380
Drawing: EXTERNAL FINISHES SCHEDULE
Project Number: 0890
Drawing Number: DA10
Issue: 0

File Name: D:\Documents\0890_South Baldivis_McDONALDS-BIOMOD-380_R23_nicole\WMET6.rvt

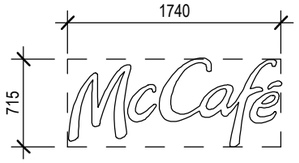


S1 PYLON
1 : 50



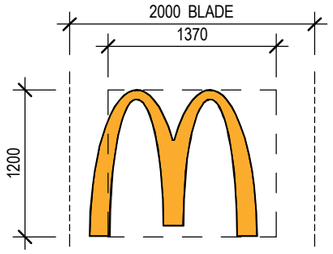
S2 PLAYPLACE
1 : 50

YELLOW LOGO WITH INDIVIDUAL POLYCARBONATE LETTERING FIXED TO FRAME. INTERNALLY ILLUMINATED. WHITE LETTERS.



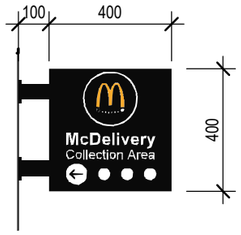
S5 WALL SIGN
1 : 50

INDIVIDUAL HALO ILLUMINATED REVERSE PAN FABRICATED ALUMINIUM CHANNEL LETTERS. BRUSHED ALUMINIUM FINISH.



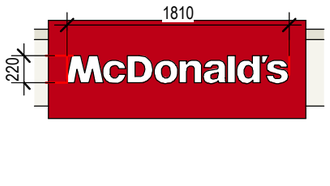
S3 WALL SIGN
1 : 50

YELLOW FLAT FACE POLYCARBONATE LOGO. INTERNALLY ILLUMINATED. YELLOW LOGO



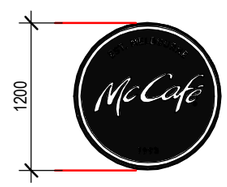
S6 McDELIVERY WALL SIGN
1 : 20

FABRICATED METAL SIGN. OPAL FACES WITH BLACK VINYL GRAPHICS. LED ILLUMINATION.



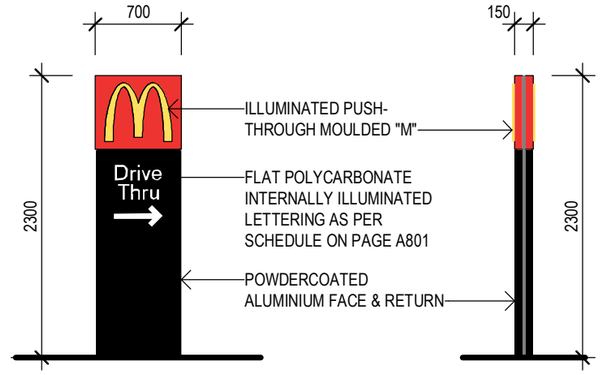
S4 CLIP SIGN
1 : 50

LED ILLUMINATED WORDMARK ONLY. RED CLIP TO BE CONSTRUCTED BY THE BUILDER..



S5 McCAFE WALL BUTTON SIGN
1 : 50

FABRICATED METAL BUTTON SIGN. OPAL FACES WITH BLACK VINYL GRAPHICS. LED ILLUMINATION.



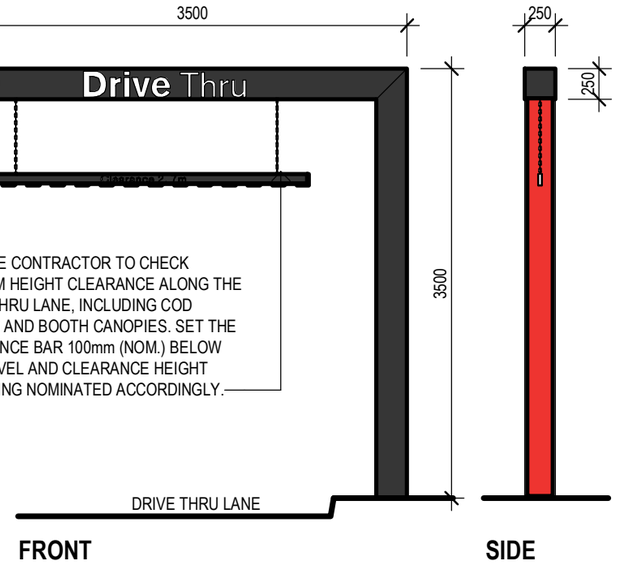
FRONT **SIDE**

ALTERNATIVE WORDING

(ALL IN TITLE CASE):

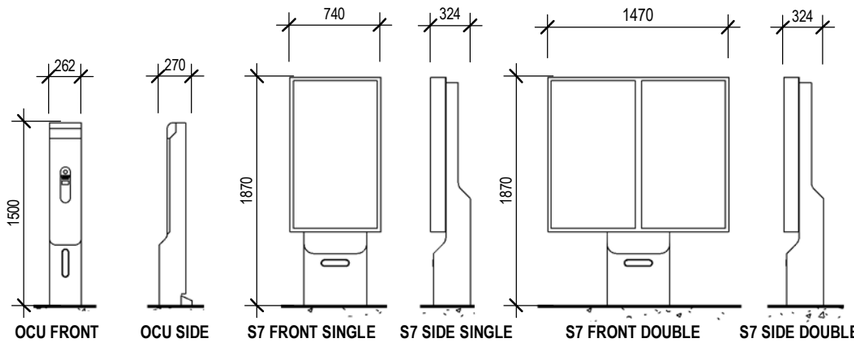
S8A	"ENTRY / ENTRY" (DOUBLE SIDED) W/- ARROWS"	**S8C**	"ANY LANE, ANY TIME" (SINGLE SIDED)
S8B	"DRIVE THRU / DRIVE THRU" (DOUBLE SIDED)	**S8D**	"THANK YOU / NO ENTRY" (DOUBLE SIDED)
		S8E	"THANK YOU / ENTRY" (DOUBLE SIDED)

DIRECTIONAL SIGNAGES8
1 : 50



SIGNAGE CONTRACTOR TO CHECK MINIMUM HEIGHT CLEARANCE ALONG THE DRIVE THRU LANE, INCLUDING COD AWNING AND BOOTH CANOPIES. SET THE CLEARANCE BAR 100mm (NOM.) BELOW THIS LEVEL AND CLEARANCE HEIGHT LETTERING NOMINATED ACCORDINGLY.

S6 HEIGHT CLEARANCE GANTRY
1 : 50



OCU FRONT | OCU SIDE | S7 FRONT SINGLE | S7 SIDE SINGLE | S7 FRONT DOUBLE | S7 SIDE DOUBLE

DEVELOPMENT APPLICATION

Revisions					General Notes	Drawing Notes
Issue	Description	Date	Chk	Int	Do not scale this drawing. The drawing shows design intent only. All dimensions to be checked on site prior to construction or production. Construction details to be confirmed by contractor/manufacturer. This is a computer generated drawing. Do not amend by hand. Figure dimensions are to be used. Contact architect for clarification if dimensions are not clear. All dimensions are in millimeters. All discrepancies and omissions on site must be reported to the architect for their comments or approval prior to commencing work.	
0	AMENDED DA AS CLOUDED	AUGUST 2024	AJJ	NR		

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Project Manager

Architect: Hindley and Associates Pty Ltd
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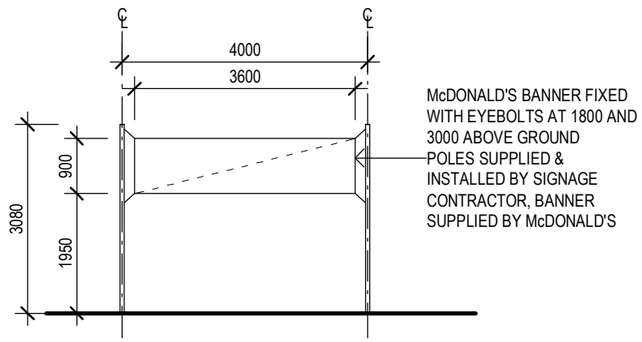
PO Box 199 Nedlands WA 6909
08 9386 6699
www.hindley.com.au

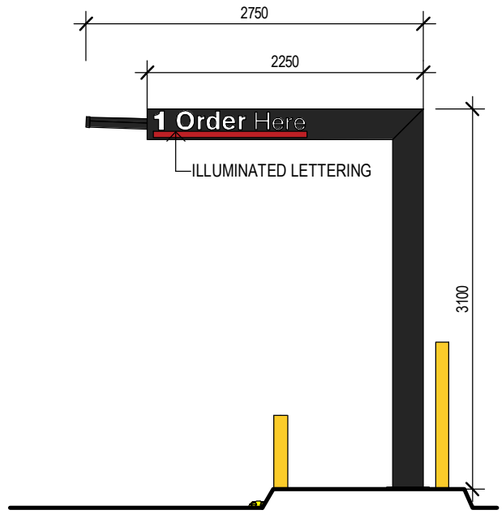
Project: NEW McDONALDS RESTAURANT
Location: PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale: As indicated @ A3
Series: BIO MOD 380
Drawing: SIGNAGE DETAILS
Project Number: 0890
Drawing Number: DA11
Issue: 0

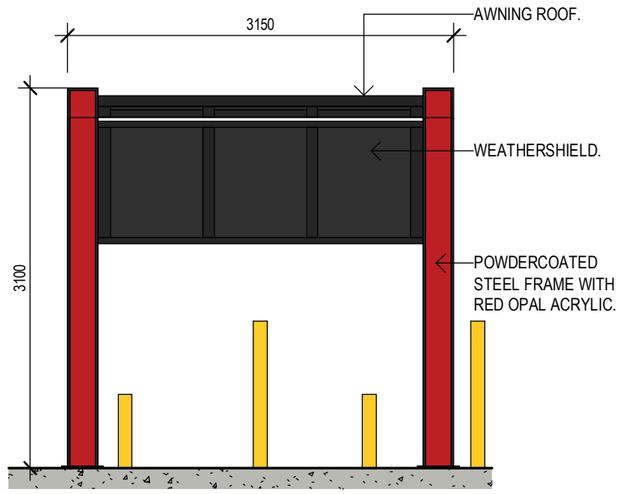
File Name: D:\Documents\0890_South Baldivis_McDONALDS-BIOMOD-380_R23_nicole\WMET6.rvt



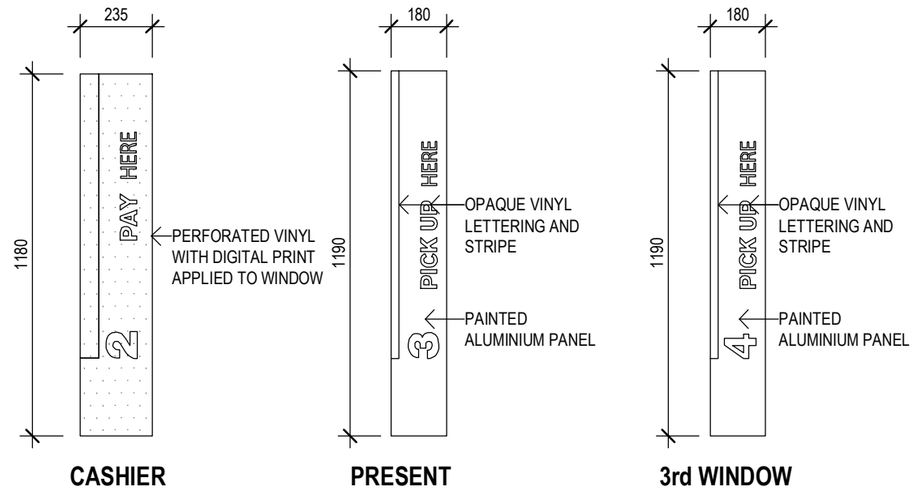
S14 - BANNERS
1 : 100



S10 ORDER CANOPY SIDE
1 : 50



S10 ORDER CANOPY ELEVATION
1 : 50



S13 DRIVE THRU INFORMATION SIGNS
1 : 20

Revisions

Issue	Description	Date	Chk	Int
0	AMENDED DA AS CLOUDED	AUGUST 2024	AJJ	NR

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DEVELOPMENT APPLICATION

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Project Manager

Architect
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PO Box 199 Nedlands WA 6909
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Project
NEW McDONALDS RESTAURANT

Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale
As indicated @ A3

Series
BIO MOD 380

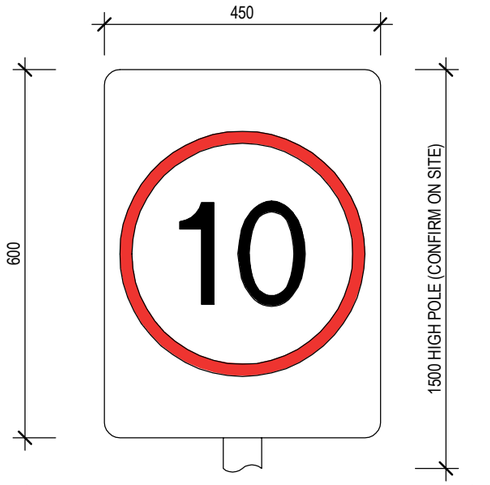
Drawing
SIGNAGE DETAILS

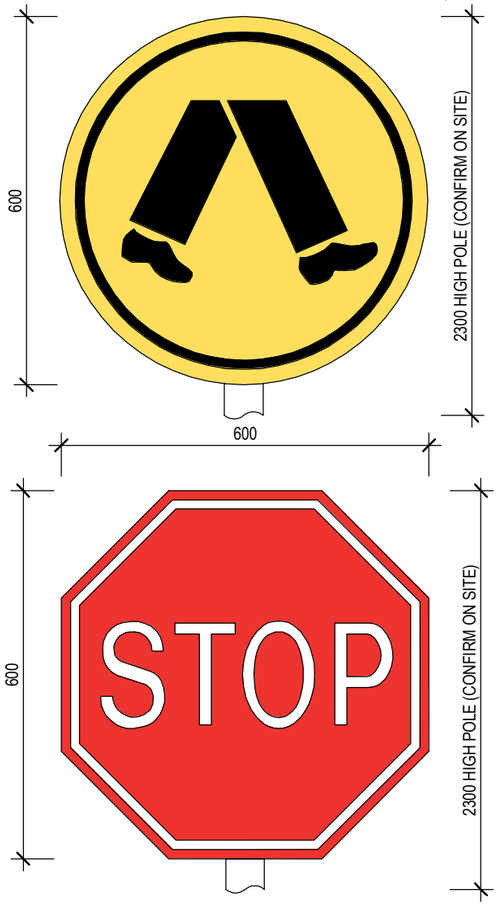
Project Number
0890

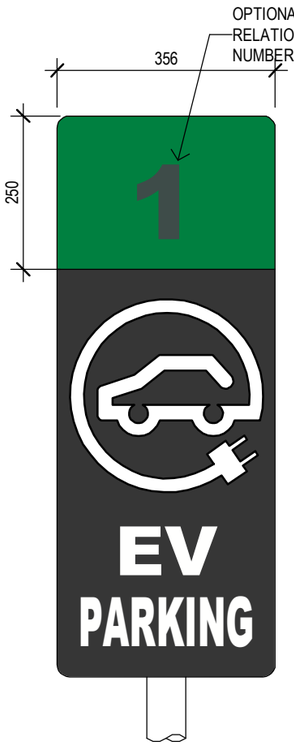
Drawing Number
DA12

Issue
0

File Name D:\Documents\0890_South Baldivis_McDONALDS-BIOMOD-380_R23_nicoleWMET6.rvt







S11 CAR PARK SIGNAGE

McDONALD's Signage Colours

McDonalds Gold	McDonalds Red	Green	Charcoal	Light Grey	Black	Reflex Blue
PMS 1235 C 122 U	PMS 2035 C	PMS 350 C	PMS Cool Gray 11C	PMS Cool Gray 1C	PMS Black 6 C	PMS Reflex Blue
CMYK 0.29.96.0	CMYK 0.100.95.0	CMYK 80.43.86.42	CMYK 0.0.0.80	CMYK 0.0.0.8	CMYK 82.71.59.75	CMYK 100.96.13.9
RGB 255.188.13	RGB 219.0.7	RGB 43.82.51	RGB 45.45.45	RGB 247.247.247	RGB 16.24.32	RGB 0.22.137
HEX FFBC0D	HEX DB0007	HEX 2B5233	HEX 2D2D2D	HEX B69A81	HEX 101820	HEX ~~001689~~

DEPENDING ON LOCATION WITHIN SITE, S11 SIGNAGE SHOULD BE SET A MINIMUM OF 2m ABOVE TOP OF KERB TO PREVENT OBSTRUCTION TO OCCASIONAL PEDESTRIANS, OR TO REDUCE INTERFERENCE FROM PARKED VEHICLES. IF THIS DOESN'T APPLY, SIGNAGE HEIGHTS SHALL BE SET AS NOTED.

DEVELOPMENT APPLICATION

Revisions

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Project Manager

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www.hindley.com.au

Project
NEW McDONALDS RESTAURANT

Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale
1 : 10 @ A3

Series
BIO MOD 380

Drawing
SIGNAGE DETAILS

Project Number
0890

Drawing Number
DA13

Issue
0

File Name D:\Documents\0890_South Baldivis_McDONALDS-BIOMOD-380_R23_nicole\WMET6.rvt

ALUMINIUM DECORATIVE SCREEN.

LOW HIGH FEATURE WALLS.

DEVELOPMENT APPLICATION

Revisions					
Issue	Description	Date	Chk	Int	
0	AMENDED DA AS CLOUDED	AUGUST 2024	AJJ	NR	

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Project
NEW McDONALDS RESTAURANT

Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale	Series
@ A3	BIO MOD 380

Drawing
PERSPECTIVE VIEWS

Project Number	Drawing Number	Issue
0890	DA14	0

File Name D:\Documents\0890_South Baldivis_McDONALDS-BIOMOD-380_R23_nicole\WMET6.rvt

Development Application Report

Proposed McDonald's Restaurant with Drive-Through Facility

Part Lot 9018 Nairn Drive,
Baldivis

PLANNING SOLUTIONS
URBAN & REGIONAL PLANNING
PS

Prepared for
McDonald's Australia Ltd
September 2024

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1 PRELIMINARY

1.1 Introduction

Planning Solutions acts on behalf of McDonald's Australia Ltd, the proponent of the proposed fast food outlet on Part Lot 9018 Nairn Drive, Baldivis (**subject site**). The proposed development is located along the Nairn Drive frontage of the approved Parkland Heights Neighbourhood Centre.

Planning Solutions has prepared the following report in support of an application for development approval. This report will discuss various matters pertinent to the proposal, including:

- Background.
- Site details.
- Proposed development.
- Statutory planning framework.

This application seeks approval for the use and development of a McDonald's fast food outlet on the subject site. The application includes associated signage, landscaping, parking and access arrangements.

The proposed development is appropriately situated within the Parkland Heights Neighbourhood Centre and will complement the retail, food and convenience offering to users in the precinct and the wider catchment.

Planning Solutions respectfully requests the Development Assessment Panel (**DAP**) grant approval to the development application.

1.2 Background

1.2.1 Parkland Heights Neighbourhood Centre

The Parkland Heights Neighbourhood Centre was approved by the Metro Outer JDAP at its meeting held on 12 April 2023. The development approval included the anchor supermarket, speciality retail tenancies, and food and beverage tenancies, however did not include the fast food and service station development sites fronting Nairn Drive.

This application seeks approval for the McDonald's development located adjacent to the approved Nairn Drive crossover. It does not include the remaining fast food and service station development sites fronting Nairn Drive. Refer to **Figure 1** below for the development area subject to this application.

1.2.2 Meeting with City of Rockingham

Planning Solutions and McDonald's representatives met with officers from the City of Rockingham on 9 July 2024 to discuss the proposal and background. Planning Solutions presented the layout and design for the proposed McDonald's restaurant for review and discussion, and confirmed the application requirements and technical reporting required to support the development application.

2 SITE DETAILS

2.1 Land description

Refer to **Table 1** below for the lot details and a description of the subject site.

Table 1: Lot details

Lot	Deposited Plan	Volume	Folio	Area (m²)
9018	426041	4043	987	66,793 m²

There are several easements and encumbrances listed on the Certificate of Title and Deposited Plan, however none of these encumbrances affect the McDonald's development site.

Refer **Appendix 1** for the Certificate of Title and Deposited Plan.

2.2 Location

2.2.1 Regional context

The development site is situated in the suburb of Baldivis, within the municipality of the City of Rockingham. The development site is approximately 3km south of the Baldivis town centre, and approximately 45km south of the Perth CBD.

The development site is situated along Nairn Drive, which is a local distributor connecting the site to the Baldivis town centre. Nairn Drive currently terminates at Arpenteur Drive, however is planned to connect to Sixty Eight Road.

2.2.2 Local context, land use and topography

The development site is located within the Parkland Heights Neighbourhood Centre. The Parkland Heights Neighbourhood Centre has received development approval, however construction is yet to commence. The development site has been cleared, ready for construction. The surrounding road network has been constructed, with the exception of the Nairn Drive southern extension.

Refer to **Figure 1** below for the site aerial and proposed development area.

Figure 1: Subject site aerial image (Source: Nearmap)

3 PROPOSED DEVELOPMENT

3.1 Development Summary

This application seeks approval for the use and development of a McDonald's restaurant and associated parking, access, landscaping, and advertisements on the development site. The proposed restaurant will operate 24 hours per day, 7 days per week.

The development has been designed in a site responsive and contextual manner, being sympathetic to existing site conditions as well as its location within the Parkland Heights Neighbourhood Centre. The proposed development activates the streetscape of the surrounding roads through passive surveillance, attractive landscaping, and additional activity that is generated.

The proposed development will provide a convenient service to the local community and patrons travelling along the surrounding road network. The proposed development is suitably located within the planned commercial precinct, and will provide activation and interest.

3.2 Site layout and built form

The proposed McDonald's restaurant will provide for the preparation, sale and serving of food and beverages to customers, for consumption either on or off the premises, through its internal dining room or drive through facility.

Specifically, the proposed development comprises:

- A McDonald's family restaurant building comprising a floor area of 380m².
- A servicing area to the north of the building, with a designated 4.5m wide loading bay for service vehicles.
- A dual-lane drive-through facility with ordering menus and speaker boxes to the north of the building.
- A single lane drive-through and pick-up window with canopy along the eastern elevation of the building, screened by landscaping and design treatments.
- Various signage associated with McDonald's imagery and branding.
- 8 car parking bays for customers and staff, including one accessible parking bay, along with access to the adjoining shopping centre car park.
- Two drive-through waiting bays plus capacity for 14 standard vehicles within the drive-through area.
- Two bicycle parking racks that provide four bicycle bays located on the western side of the restaurant.
- Landscaping along the street frontage and along boundaries of the development site, including a mix of soft landscaping beds and shade trees.

Refer to **Appendix 2** for the Development and Signage Plans.

The proposed restaurant building employs a range of architectural design features, resulting in an appropriate built form outcome. These features include:

- Articulation of the built form, including the second storey 'Play Place' to a height of 7.2 metres.
- Building entrances and glazing to the western and southern façades to allow for access and a direct line of sight between the restaurant building, street and car parking area.

- Integrated signage which is sympathetic to the scale, layout and design of the overall building.
- Attractive frontage and screening to Nairn Drive achieved through a combination of landscaping, low curve feature walls, drive through canopy structure, and timber batten vertical screens.

3.3 Signage

The proposal incorporates various advertising signage on the premises as part of the overall development. The signage includes wall signs, illuminated signs, and brand-specific signs consistent with McDonald's branding. A freestanding pylon sign with at height of 9 metres is proposed in the north-east corner of the development site.

Refer to **Appendix 2** for a copy of the Development and Signage Plans.

3.4 Landscaping

The proposed landscaping includes the provision of eight new trees, including Coral Gum, Tuckeroo and Western Coolibah. These trees are positioned to enhance the aesthetic appeal of the site and provide shade, particularly in areas adjacent to the car parking bays and pedestrian footpaths.

In addition to these trees, the landscaping plan incorporates various shrubs, grasses and ground covers. Key shrub species such as White Correa, Cushion Bush and Emu Bush work to create a lush environment. Grasses such as Lomandra Lime Tuff and Mat Rush have been selected for their hardiness and visual appeal. Groundcovers such as Tanika and Coastal Tussock-Grass cover the ground with dense vegetation, helping to control soil erosion and reduce maintenance needs.

The on-site landscaping consists of approximately 398m^2 of new proposed landscaping beds, which makes up approximately 22% of the development site. Landscaping is focused along the frontages to soften the street frontage and provide visual appeal for pedestrians.

Refer to **Appendix 3** for a copy of the Landscaping Plan.

3.5 Traffic, access and parking

Access to the proposed development is provided through the main centre access and crossover to Nairn Drive. This access and the surrounding internal access arrangements will be established through the approved Parkland Heights Neighbourhood Centre.

The development proposes two vehicle access points to allow for ingress and egress from an internal shopping centre road. The northern access point will be used for vehicle ingress and deliveries, and the southern access point for vehicle egress. The site layout will facilitate the safe and efficient movement of light vehicles and service vehicles, ensuring minimal conflict between the fast-food drive through, deliveries and pedestrian movements.

Eight car parking bays, including an accessible bay, are included with the development area. The proposed development will utilise these eight car parking bays, along with the substantial parking provided within the shopping centre.

A Transport Impact Assessment (**TIA**), prepared by Transcore, has assessed the proposed access, egress, traffic generation, impact on surrounding roads, and parking arrangements. The assessment demonstrates that traffic generated by the proposed development can be accommodated within the surrounding road network and would not have a significant impact.

Refer **Appendix 4** for the Transport Impact Assessment and swept paths.

3.6 Acoustic Management

An Environmental Noise Assessment has been prepared in response to the proposed 24/7 fast-food development's proximity to sensitive land uses. The assessment demonstrates that the proposed development will comply with the assigned levels determined in accordance with the *Environmental Protection (Noise) Regulations 1997*, at all times.

Refer to **Appendix 5** for the Environmental Noise Assessment.

3.7 Waste management

The Waste Management Plan (**WMP**) outlines the procedures for effective waste handling and disposal. General waste will be placed in sealed garbage bags and deposited in an 1100L bin, while recycling waste will go into a separate 1100L bin. These bins will be located in the covered bin room at the rear of the restaurant.

Bins will be emptied twice a week by a private contractor, who will also clean them. The bin room will have a concrete floor with drainage connected to the sewer and a tap for cleaning spills, and it will be pressure washed twice a week.

All waste collections will occur between 7:00am and 7:00pm. Waste cooking oil will be stored in sealed containers and collected monthly by an accredited contractor. Eight waste bins will be placed around the restaurant to control litter and will be regularly checked and emptied by staff.

The main bin will be collected at 11:00am on weekdays, supervised by staff to ensure minimal disruption, taking less than 90 seconds per collection.

McDonald's procedures aim to reduce waste and maximise recycling. All dining room bins will be cleaned daily, and litter patrols conducted daily by the shift manager, with additional patrols by a maintenance contractor twice a week.

Refer to **Appendix 6** for the Waste Management Plan.

3.8 Stormwater Management

A Civil Plan was prepared by Pritchard Francis for the proposed development. The proposed stormwater design for the site allows for on-site disposal through a series of soak wells and connecting drainage infrastructure.

Refer to **Appendix 7** for the Stormwater Drainage Plan.

4 STATUTORY PLANNING FRAMEWORK

4.1 Metropolitan Region Scheme

Under the provisions of the Metropolitan Region Scheme (**MRS**), the development site is zoned Urban and Nairn Drive is reserved Other Regional Roads. The proposed development is consistent with the intent of the Urban zone and may be approved accordingly.

4.2 Local Planning Scheme

The City of Rockingham Local Planning Scheme No.2 (**LPS2**) is the guiding statutory document for development within the City.

4.2.1 Zoning and Land Use

The development site is zoned 'Development' under LPS2.

The proposed land use is classified as a Fast Food Outlet, which is defined in LPS2 as:

> *"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 the premises."*

In accordance with Table 1 of LPS2, the land use permissibility of the 'Development' zone is determined by the applicable structure plan. In this instance, Parkland Heights Local Structure Plan (**Parkland Heights LSP**) applies to the subject site and development proposal.

4.3 Parkland Heights Local Structure Plan

The subject site is zoned 'Commercial' under the Parkland Heights LSP. A Fast Food Outlet is listed as a 'D' (discretionary) use within the Commercial zone Table 1 of LPS2, requiring the City to exercise its discretion by granting development approval.

The Parkland Heights LSP also requires a Local Development Plan to be prepared prior to the development of any land zoned 'Commercial'. The relevant Local Development Plan for the subject site is the Parkland Heights Neighbourhood Centre Local Development Plan (**LDP**). An assessment against the development standards and requirements of the LDP is undertaken in the following section.

4.4 Parkland Heights Neighbourhood Centre Local Development Plan

The LDP sets out the development standards for the neighbourhood centre in addition to the requirements of LPS2. The development site is identified as having an indicative building location that is setback from Nairn Drive, with drive through areas circulating around the building and parking areas accessed through the shopping centre internal roads. The proposed development is entirely consistent with the site layout envisaged for the development site under the LDP.

Table 2 below provides an assessment of the proposed development against the relevant development standards of the LDP.

Table 2: Parkland Heights Neighbourhood Centre LDP Development Standards

Development Standard	Requirement	Applicant Response
Other building façades	*With the exception of 'Active Building Edges' and walls adjoining loading areas, building facades should avoid blank walls to enhance visual presentation through the use of features such as glazing (where conducive to the floor plan and use), alternative colours, finishes and textures and/or intrusions and extrusions in the wall.*	Variation of materials and finishes has been used throughout the proposed development to enhance the visual presentation of the building. A combination of painted Weathertex panels and timber-look aluminium cladding has been used throughout the proposed development to create a varied and visually appealing design. Large windows will be included along the southern and western elevations of the building, enabling visibility of the Play Place and restaurant interior. A series of intrusions and extrusions have also been used to create visual interest and provide variation to the form of the building.
	In addition to the above, 'Secondary Building Edges' are to be designed to provide visual relief through an architectural response.	The secondary building edge along Nairn Drive has been provided with a thoughtful architectural design. Timber-look battens will be arranged to form a decorative screen that provides visual relief and shielding along the building's eastern elevation. In addition to this, feature walls and attractive landscaping is included as part of the street setback to Nairn Drive. These elements work together to provide a street frontage that is varied and visually pleasing.
Vehicle access	*Intersection treatments for vehicle access points to the Neighbourhood Centre are to be provided in accordance with the LDP.*	The proposed development will utilise the access points at centre, in accordance with the LDP.
Landscaping	*Landscaping strips a minimum of 2.0m wide are to be provided within the property boundary in the general locations depicted on the LDP. Timing for the installation of the landscaping is to coincide with the construction of the adjoining car park to provide screening.*	Landscaping strips that are consistent with those depicted on the LDP have been provided as part of the proposed development. The installation of landscaping will coincide with the construction of car parking facilities to ensure compliance with this requirement.
	Where landscaping strips adjoin car parking areas, loading areas and buildings facades, the Landscape Plan that accompanies the Development Application is to provide details that demonstrate screening of these areas through the use of shrubs and tree planting.	The landscaping plan provided in **Appendix 3** demonstrates the screening of the drive-through area with extensive landscaping and complementary architectural design. A range of plant species including native shrubs and trees have been used to appropriately screen these areas and provide an attractive landscaping space.
	A minimum of 10% of the site area should be provided as landscaping. This may include shade trees and landscaping areas within car parks.	Approximately 22% of the development site will be provided as landscaping – refer to **Appendix 3** for the landscaping plan.
Noise management	*A Development Application that includes a 'Loading Area' depicted on the LDP is to be accompanied by an Acoustic Assessment prepared by a suitably qualified Acoustic Consultant that outlines strategies to mitigate and manage the potential impacts of noise from delivery vehicles and activities on surrounding sensitive land uses.*	An Environmental Noise Assessment has been prepared for the proposed development (refer **Appendix 5**). The report indicates that the development complies with all requirements of the *Environmental Protection (Noise) Regulations 1997*.

	The screen wall is to be articulated and finished in materials and colours that match the overall development and seek to minimise the potential impact of bulk and form on the streetscape.	A visually permeable screen wall has been provided on the eastern elevation of the development. Timber-look aluminium battens have been arranged to form the screening structure, providing an architectural design that is responsive to the design of the rest of the building.

4.5 Local Planning Policies

4.5.1 Local Planning Policy No. 3.3.1 – Control of Advertisements

Pursuant to the requirements of *Local Planning Policy No. 3.3.1 – Control of Advertisements* (**LPP3.3.1**), development approval is required for the advertisements proposed as part of this development. The proposed signage is appropriate for the locality in terms of volume, size, prominence, visual impact, content and relevance. The proposed advertisements do not impact any other advertisements, pedestrian or vehicle safety, or the operation of other land uses.

A 9 metre pylon sign is located in the north-east corner of the development site. This location has been selected as it provides an appropriate level of separation from the approved shopping centre pylon located near the south-east corner of the development site. The height of the sign is appropriate for the scale of the surrounding development, considering the commercial nature of the neighbouring land uses.

4.5.2 Local Planning Policy No. 3.3.9 – Fast Food Outlets

Local Planning Policy No. 3.3.9 – Fast Food Outlets (**LPP3.3.9**) identifies Neighbourhood Centres as preferred locations for fast food land uses. LPP3.3.9 also provides development requirements which the City is to have due regard to during the development assessment and determination process.

Having regard to clause 4.3 of LPP3.3.9, space for 14 cars has been provided within the drive-through queueing area. The layout of the drive-through queuing area is such that queued cars do not obstruct access to parking spaces or adjacent roadways.

Care has been taken to minimise the potential negative impact of the development on the amenity of the surrounding area. Wherever possible, the layout of the development site has been provided in accordance with the indicative site layout shown in the LDP. In addition to this, the impact of trading hours, noise, lighting and waste have been carefully considered as part of this development application.

4.5.3 Local Planning Policy No. 3.3.14 – Bicycle Parking and End-of-Trip Facilities

Local Planning Policy No. 3.3.14 – Bicycle Parking and End-of-Trip Facilities (**LPP3.3.14**) provides the bicycle parking minimums for food and drink premises. The minimum requirements for the proposed development are provided in **Table 33** below.

Table 3: Minimum Bicycle Parking Requirements

Parking Type	Parking Rate	Development Characteristic	Parking Requirement
Short-term	0.1 spaces per five seats	60 seats	1.2 spaces
Long-term	0.1 spaces per staff	20 staff	2 spaces

The proposed development provides a total of four bicycle parking spaces, satisfying the requirements of LPP3.3.14. As the number of long-term parking spaces is below five, there is no requirement for the development to include shower facilities. Clothing lockers have been provided in the break room of the proposed development.

4.6 Car Parking Requirements

LPS2 contains parking requirements that set the minimum number of parking bays required for specified land uses. Pursuant to Table 4 of LPS2, a fast food outlet requires 1 bay per 11m² NLA (including outdoor eating areas).

Having regard to the definition of NLA under LPS2, the proposed development comprises an NLA of 280m². Refer to **Figure 2** below for the areas included in the NLA calculation.

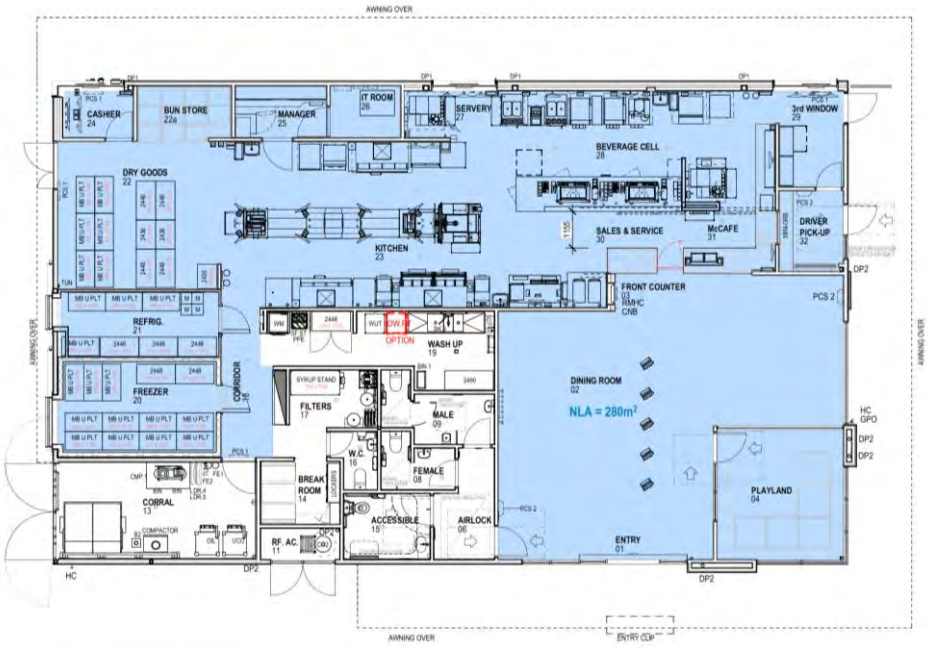

Figure 2: NLA calculation

With an NLA of 280m², the proposed development requires 26 car parking bays under LPS2. LPP3.3.9 allows drive through queuing bays to be included in the car parking allocation to a maximum of 50% of the LPS2 car parking requirement. The proposed development includes 14 drive through queuing bays and two wait bays. Therefore, the parking requirement is reduced to 13 car parking bays under the City's planning framework.

The proposed development contains 8 car parking bays within the McDonald's development site. As the development site is located within the Parkland Heights Neighbourhood Centre and will not be subdivided from the parent lot, the additional 5 car parking bays required for the McDonald's proposal can be accommodated within the overall parking supply of the Parkland Heights Neighbourhood Centre. The location of the proposed development adjacent to the main shopping centre parking areas allows for convenient shared parking.

In April 2023, the Metro Outer JDAP resolved to approve the development of the Parkland Heights Neighbourhood Centre on the subject site, with a parking supply of 477 bays. According to the City's Responsible Authority Report (**RAR**), the proposed shopping centre development, which excluded the pad sites fronting Nairn Drive, contained a 'on paper' shortfall of 103 car parking bays under LPS2.

The City supported a variation to the 'on paper' shortfall under LPS2 by assessing the proposal against the car parking rates under State Planning Policy 4.2 at that time, along with comparing the overall parking supply with similar centres within the City. Under this assessment and methodology, a surplus of 82 car parking bays was established.

Having regard to the 82 bay surplus identified in the City's RAR for the Parkland Heights Neighbourhood Centre, there is sufficient parking supply on the subject site to accommodate the additional 5 car parking bays required for the McDonald's proposal.

4.7 State Planning Policies

4.7.1 State Planning Policy 7.0 – Design of the Built Environment

State Planning Policy No.7.0 Design of the Built Environment (**SPP 7.0**) became operational on 24 May 2019. SPP7.0 is the lead policy that elevates the importance of design quality, and sets out the principles, processes and considerations which apply to the design of the built environment in Western Australia, across all levels of planning and development.

SPP7.0 establishes a set of ten 'Design Principles', providing a consistent framework to guide the design, review, and decision-making process for planning proposals. **Table 5** discusses the development against the ten design principles of SPP7.0.

Table 5: SPP7.0 Design of the Built Environment Assessment

Design Element		Design Outcome
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 is designed to integrate with the urban fabric of the approved Parkland Heights Neighbourhood Centre. By incorporating a neutral colour palette and timber-look cladding, the building will complement the character of the surrounding environment. The design includes landscaping elements that reflect the native vegetation of the area, providing continuity with the surrounding natural landscape. Building articulation and façade detailing create visual interest at the pedestrian level, enhancing the streetscape and contributing to the area's sense of place.
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 landscaping includes significant areas of vegetation around the site boundaries, providing a softer appearance to the street and adjoining lots. Native plant species have been selected to enhance the local ecological context and reduce water usage. The landscaping design incorporates water-sensitive urban design principles, ensuring stormwater retention on-site. This integrated approach creates an attractive setting for the development and enhances the natural amenity of the locality.
3.	**Built form and scale.** Good design provides development with massing and height that is appropriate to its setting and successfully negotiates between existing built form and the intended future character of the local area.	The development is proposed to be two storeys tall, with a height of 7.2 metres, which is appropriate for the scale and character of the nearby planned development. By adding an active use to a currently vacant site, the development will contribute positively to the developing neighbourhood centre.
4.	**Functionality and build quality.** Good design meets the needs of users efficiently and effectively, balancing functional requirements to deliver optimum benefit and performing well over the full lifecycle.	The proposed layout of the subject site supports the drive-through function while providing an inviting pedestrian environment. This includes pedestrian links to surrounding paths, internal seating areas and pedestrian crossing areas. The development includes four bicycle bays, promoting diverse access options. The use of durable materials, such as timber-look aluminium cladding and high-quality paving, ensures the development will perform well over its lifecycle, providing long-term value and amenity to users.

Design Element		Design Outcome
5.	**Sustainability** Good design optimises the sustainability of the built environment, delivering positive environmental, social, and economic outcomes.	The proposed development incorporates several sustainability features, including the installation of solar panels to harness renewable energy. The use of Weathertex cladding, made from 97% sustainably sourced natural timber and 3% natural wax, ensures the building materials are environmentally friendly. Weathertex products contain no added silica, glues, resins, or formaldehydes, making them a healthier choice for both the environment and occupants. The development enhances the surrounding town centre by creating additional activity, landscaped spaces, and boosting economic trade. Natural tones in the building facade align with nearby mature vegetation, contributing to the area's aesthetic appeal.
6.	**Amenity** Good design optimises internal and external amenity for occupants, visitors, and neighbours, contributing to living and working environments that are comfortable and productive.	The proposed development enhances the amenity of the neighbourhood centre by integrating well with the surrounding urban fabric. Landscaped buffering with native plants and trees creates a visual and acoustic barrier between the development and adjacent properties. The design includes seating areas, shaded pedestrian pathways, and ample landscaping to enhance user comfort. The indoor Play Place provides a dedicated, engaging environment for children, improving internal amenity for families. The building's façade, with natural tones and timber-look cladding, aligns with the local aesthetic. Four bicycle bays promote alternative transport, enhancing site accessibility for the community.
7.	**Legibility** Good design results in buildings and places that are legible, with clear connections and memorable elements to help people find their way around.	The proposed development is designed to be easily understandable for both vehicles and pedestrians. Clear signage allows passers-by on all elevations to identify and navigate the site. The layout features well-marked entrances, pedestrian pathways, and intuitive circulation routes that aid wayfinding. The building's distinctive façade and the positioning of the Play Place provide visual cues, making it easy for visitors to orient themselves and find their way around the site.
8.	**Safety** Good design optimises safety and security, minimizing the risk of personal harm and supporting safe behaviour and use.	The proposed development prioritises clear sightlines within and around the site and incorporates strategic lighting to enhance visibility and deter antisocial behaviour. The 24-hour operation of the fast-food outlet promotes passive surveillance, with constant lighting and activity contributing to an increased perception of safety and security in the area. Façade treatments and well-marked entrances further support safe behaviour and use.
9.	**Community** Good design responds to local community needs as well as the wider social context, providing buildings and spaces that support a diverse range of people and facilitate social interaction.	The proposed development is designed to serve both the local area and the wider community. Its proximity to Nairn Drive and location within the Parkland Heights Neighbourhood Centre will make it easily accessible. The indoor Play Place and dining areas are key features that cater to families and children, providing a safe and engaging environment for social interaction. The interactive play equipment and seating areas encourage community engagement. The integration of these amenities supports diverse community needs and promotes social interaction within the area.

Design Element		Design Outcome
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 fast-food restaurant incorporates building articulation, colours, and glazing to create an inviting and visually appealing entry space. These design elements are aimed at accommodating individuals and family groups, ensuring the building is easily identifiable and welcoming. The use of natural tones and timber-look cladding enhances the aesthetic appeal, aligning with the local character and creating a cohesive streetscape.

4.8 Clause 67 (2) Matters to be Considered

Clause 67 (2) of the Deemed Provisions sets out the matters for which due regard is to be given when considering a development application. Refer **Table 5** below for an assessment of the relevant matters.

Table 5: Deemed provisions Clause 67 (2) matters to be considered.

Matter to be considered	Provided
(a) the aims and provisions of this Scheme (including any planning codes that are read, with or without modifications, into this Scheme) and any other local planning scheme operating within the Scheme area;	The proposal is demonstrated to be consistent with the aims and provisions of the City's Local Planning Scheme.
(c) any approved State planning policy	The proposal is demonstrated to be consistent with the relevant state planning policies.
(d) any environmental protection policy approved under the Environmental Protection Act 1986 section 31(d)	There are no environmental protection policies that would affect the assessment of this application.
(e) any policy of the Commission	There are no policies of the Commission that would affect the assessment of this application.
(f) any policy of the State	The proposal is demonstrated to be consistent with policies of the State.
(h) any structure plan or local development plan that relates to the development	The development is demonstrated to be consistent with the Parkland Heights LSP and Parkland Heights Neighbourhood Centre LDP, as discussed in this report.
(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;*	As discussed in this report, the proposed development is compatible with the current and desired future character of the locality. It aligns with the neighbourhood centre and integrates well with the existing urban fabric. The height, bulk, scale, and orientation of the development are in harmony with adjoining properties and the broader locality. The building's design, with its thoughtful articulation and use of materials, ensures it will not negatively impact the amenity of neighbouring properties.
(n) the amenity of the locality including the following – *(i) environmental impacts of the development;* *(ii) the character of the locality;* *(iii) social impacts of the development;*	The proposed development aligns with the expected amenity and character of the Parkland Heights centre. Environmental impacts are mitigated through the use of sustainable materials, native landscaping, and stormwater management practices. The development enhances the social fabric of the area by providing a family-friendly environment with amenities such as the indoor Play Place, contributing positively to the local community and encouraging social interaction without causing adverse social impacts.
(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;	The proposed development includes suitable landscaping. Native plants and trees have been incorporated to enhance the site's visual appeal and ecological value. The landscaping plan supports water-sensitive urban design principles and contributes to the overall amenity of the area.

Matter to be considered	Provided
(q) the suitability of the land for the development taking into account the possible risk of flooding, tidal inundation, subsidence, landslip, bushfire, soil erosion, land degradation or any other risk	The development is not situated within a flood prone area or bushfire prone area. No other natural hazards are likely to have any impact on the site.
(r) the suitability of the land for the development taking into account the possible risk to human health or safety	There is no actual or perceived threat to human safety proposed as part of this development application.
(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 demonstrated, access and egress to the site and servicing arrangements are suitable for the development and consistent with the approved LDP.
(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;	Refer **Appendix 4** which demonstrates that the traffic generated is suitable for the locality.
(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;	There will be no loss of any community service or benefit resulting from the development.
(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 likely to have a positive impact on the broader community. It enhances the neighbourhood centre centre by providing a family-friendly dining option, increasing local employment opportunities, and improving the pedestrian environment with new pathways and landscaping.

5 CONCLUSION

As demonstrated throughout this report, the proposed fast food outlet aligns with land use and built form outcomes envisaged for the development site through the Parkland Heights LSP and Parkland Heights Neighbourhood Centre LDP. Additionally:

- The proposed development is consistent with the Commercial zoning and intent as outlined under the City of Rockingham Local Planning Scheme No. 2, the Parkland Heights LSP and the Parkland Heights Neighbourhood Centre LDP.
- The proposed development has been adequately assessed against the requirements of SPP7.0 and is deemed to address all development requirements.
- The design of the development is sympathetic to the surrounding urban context and will enhancing the overall streetscape. This development is functional, visually appealing and provides landscaped areas which enhance the amenity of the site.
- Comprehensive technical assessments confirm that the proposed development will not adversely affect the amenity of adjoining properties. Factors such as noise, traffic, waste management, civil design and landscaping have been carefully considered and addressed through thoughtful design and planning.
- The design incorporates clear sightlines and strategic lighting, improving visibility and security. The 24-hour operation of the development promotes ongoing activity and passive surveillance, contributing to a safer environment for the community.

For the reasons outlined above, it is respectfully requested that the Metro Outer Development Assessment Panel grant approval to the proposed development.

Appendix 1:
Certificate of Title and Deposited Plan

WESTERN AUSTRALIA

TITLE NUMBER	
Volume	Folio
4043	**987**

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

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

BGRoberts

REGISTRAR OF TITLES

REGISTRAR OF TITLES WESTERN AUSTRALIA

LAND DESCRIPTION:

LOT 9018 ON DEPOSITED PLAN 426041

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

ROCKINGHAM PARK PTY LTD OF 242 LEACH HIGHWAY MYAREE WA 6154
(AF P772485) REGISTERED 1/11/2023

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

1. L866767 EASEMENT TO ELECTRICITY NETWORKS CORPORATION FOR ELECTRICITY PURPOSES - SEE DEPOSITED PLAN 426041 REGISTERED 24/2/2012.
2. EASEMENT BURDEN CREATED UNDER SECTION 167 P. & D. ACT FOR ELECTRICITY SUPPLY PURPOSES TO ELECTRICITY NETWORKS CORPORATION - SEE DEPOSITED PLAN 426041 AS CREATED ON DEPOSITED PLAN 74698
3. EASEMENT BURDEN CREATED UNDER SECTION 167 P. & D. ACT TO NBN CO LIMITED FOR TELECOMMUNICATIONS SUPPLY SERVICES - SEE DEPOSITED PLAN 426041 AS CREATED ON DEPOSITED PLAN 74698
4. EASEMENT BURDEN CREATED UNDER SECTION 167 P. & D. ACT FOR DRAINAGE/IRRIGATION/WATER SUPPLY/SEWERAGE PURPOSES TO WATER CORPORATION - SEE DEPOSITED PLAN 426041 AS CREATED ON DEPOSITED PLAN 400283
5. EASEMENT BURDEN CREATED UNDER SECTION 167 P. & D. ACT FOR DRAINAGE/SEWERAGE PURPOSES TO LOCAL AUTHORITY - SEE DEPOSITED PLAN 426041 AS CREATED ON 406822
6. EASEMENT BURDEN CREATED UNDER SECTION 167 P. & D. ACT FOR DRAINAGE/IRRIGATION/WATER SUPPLY/SEWERAGE PURPOSES TO WATER CORPORATION - SEE DEPOSITED PLAN 426041 AS CREATED ON DEPOSITED PLAN 406822
7. EASEMENT BURDEN CREATED UNDER SECTION 167 P. & D. ACT FOR ELECTRICITY SUPPLY PURPOSES TO ELECTRICITY NETWORKS CORPORATION - SEE DEPOSITED PLAN 426041 AS CREATED ON DEPOSITED PLAN 406822
8. EASEMENT BURDEN CREATED UNDER SECTION 167 P. & D. ACT FOR DRAINAGE/IRRIGATION/WATER SUPPLY/SEWERAGE PURPOSES TO WATER CORPORATION - SEE DEPOSITED PLAN 426041 AS CREATED ON DEPOSITED PLAN 417866
9. EASEMENT BURDEN CREATED UNDER SECTION 167 P. & D. ACT FOR ELECTRICITY SUPPLY PURPOSES TO ELECTRICITY NETWORKS CORPORATION - SEE DEPOSITED PLAN 426041 AS CREATED ON DEPOSITED PLAN 417866

END OF PAGE 1 - CONTINUED OVER

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

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

STATEMENTS:

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

SKETCH OF LAND:	DP426041
PREVIOUS TITLE:	4042-921
PROPERTY STREET ADDRESS:	NO STREET ADDRESS INFORMATION AVAILABLE.
LOCAL GOVERNMENT AUTHORITY:	CITY OF ROCKINGHAM

NOTE 1: P958819 DEPOSITED PLAN 427796 LODGED
NOTE 2: P959300 DEPOSITED PLAN 427841 LODGED

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Plan Information

Tenure Type	Freehold
Plan Type	Deposited Plan
Plan Purpose	Subdivision

Plan Heading

Lots 1207-1225, 1246-1259, 1270, 9018, Roads and Restrictive Covenant

Locality & Local Government

Locality	Baldivis
Local Government	City of Rockingham

Department of Planning, Lands and Heritage

File Number	

Examination

E. Milewska 21.08.2023

Examined | Date

Planning Approval

Planning Authority	Western Australian Planning Commission
Reference	160229

25-Oct-2023

Delegated under S. 16 P&D Act 2005 | Date

In Order For Dealings

Subject To

Dealing on DP426632
SEC 168(1)(2) OF THE P&D ACT
SEC 136D OF THE TLA

25.10.2023

For Registrar of Titles | Date

Plan Approved

Reg. 26A (4)

1.11.2023

Inspector of Plans and Surveys / Authorised Land Officer | Date

Survey Details

Field Records	115785
Declared as Special Survey Area	Yes

Survey Method Regulatory Statement

Survey carried out under Reg. 26A Special Survey Area Guidelines. See survey sheet(s) to determine the true final position and type of all survey marks placed for this plan.

Survey Method and Plan Content Variations

Approved Variation Type	Reference

Survey Certificate - Regulation 54

I, Nigel J. SIMPSON
hereby certify that this plan is accurate and is a correct representation of the -
(a) survey; and
(b) calculations from measurements recorded in the field records,
undertaken for the purposes of this plan and that it complies with the relevant written law(s) in relation to which it is lodged.

Nigel Simpson
2023.08.17
10:19:31 +08'00'

Licensed Surveyor | Date

Survey Organisation

Name	MNG MCMULLEN NOLAN GROUP
Address	PO Box 3526, SUCCESS W.A. 6964
Phone	6436 1599
Fax	6436 1500
Email	info @ mngsurvey.com.au
Reference	101955dp-064e

Amendments

Version	Lodgement Type	Amendment Description	Authorised By	Date

Former Tenure

New Lot / Land	Parent Plan Number	Parent Lot Number	Title Reference	Subject Land Description
1207-1225, 1246-1259, 1270 & 9018	DP 426632	Pt Lot 9019		

Former Tenure Interests and Notifications

Subject	Purpose	Statutory Reference	Origin	Land Burdened	Benefit To	Comments
A3	EASEMENT	ENERGY OPERATORS (POWERS) ACT 1979	DOC L866767	LOT 9018	ELECTRICITY NETWORKS CORPORATION	
33c	EASEMENT (Electricity Supply)	SEC 167 OF THE P.& D. ACT 2005 REG 33 (c)	DP 74698	LOT 9018	ELECTRICITY NETWORKS CORPORATION	
33c A	EASEMENT (Electricity Supply)	SEC 167 OF THE P.& D. ACT 2005 REG 33 (c)	DP 74698	LOT 9018	ELECTRICITY NETWORKS CORPORATION	
33e	EASEMENT (Telecommunications Supply Services)	SEC 167 OF THE P.& D. ACT 2005 REG 33 (e)	DP 74698	LOT 9018	NBN CO LTD	
33b N , 33b O , 33b P	EASEMENT (Sewerage)	SEC 167 OF THE P.& D. ACT 2005 REG 33 (b)	DP 400283	LOT 9018	WATER CORPORATION	
33a S	EASEMENT (Drainage)	SEC 167 OF THE P.& D. ACT 2005 REG 33 (a)	DP 406822	LOT 9018	CITY OF ROCKINGHAM	
33b S	EASEMENT (Sewerage & Water Supply)	SEC 167 OF THE P.& D. ACT 2005 REG 33 (b)	DP 406822	LOT 9018	WATER CORPORATION	
33c S	EASEMENT (Electricity Supply)	SEC 167 OF THE P.& D. ACT 2005 REG 33 (c)	DP 406822	LOT 9018	ELECTRICITY NETWORKS CORPORATION	
33b 4 , 33b 9	EASEMENT (Sewerage)	SEC 167 OF THE P.& D. ACT 2005 REG 33 (b)	DP 417866	LOT 9018	WATER CORPORATION	
33b 5	EASEMENT (Sewerage)	SEC 167 OF THE P.& D. ACT 2005 REG 33 (b)	DP 417866	LOT 9018	WATER CORPORATION	
33b 6	EASEMENT (Water)	SEC 167 OF THE P.& D. ACT 2005 REG 33 (b)	DP 417866	LOT 9018	WATER CORPORATION	
33b 8	EASEMENT (Water)	SEC 167 OF THE P.& D. ACT 2005 REG 33 (b)	DP 417866	LOT 9018	WATER CORPORATION	
33c 4	EASEMENT (Electricity Supply)	SEC 167 OF THE P.& D. ACT 2005 REG 33 (c)	DP 417866	LOT 9018	ELECTRICITY NETWORKS CORPORATION	

New Interests

Subject	Purpose	Statutory Reference	Origin	Land Burdened	Benefit To	Comments
	RESTRICTIVE COVENANT	SEC 136D OF THE TLA 1893	THIS PLAN & DOC P772486	ALL LOTS EXCEPT LOT 9018	ALL LOTS EXCEPT LOT 9018	

GOVERNMENT OF WESTERN AUSTRALIA | Landgate | MNG MCMULLEN NOLAN GROUP PO Box 3526, Success W.A. 6964 Tel: (08) 6436 1599 Fax: (08) 6436 1500 Email: info@mngsurvey.com.au

MNG Ref : 101955dp-064e - Stage 13B - DP426041#00.CSD

ADDITIONAL SHEETS	SHEET		SHEETS	VERSION NUMBER	DEPOSITED PLAN
SURVEY SHEET	1	OF	10	1	426041

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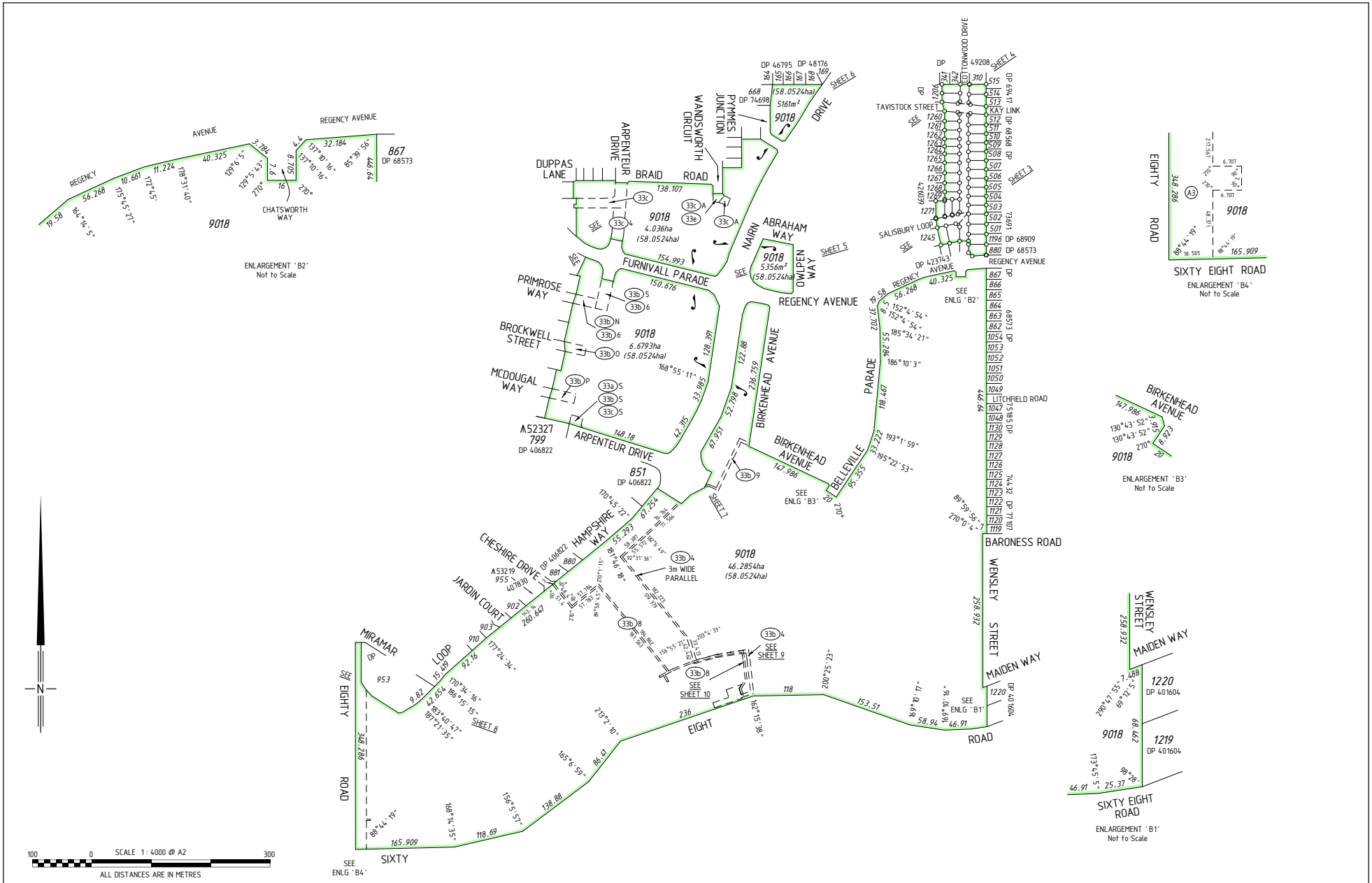

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ALL DISTANCES ARE IN METRES

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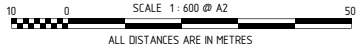

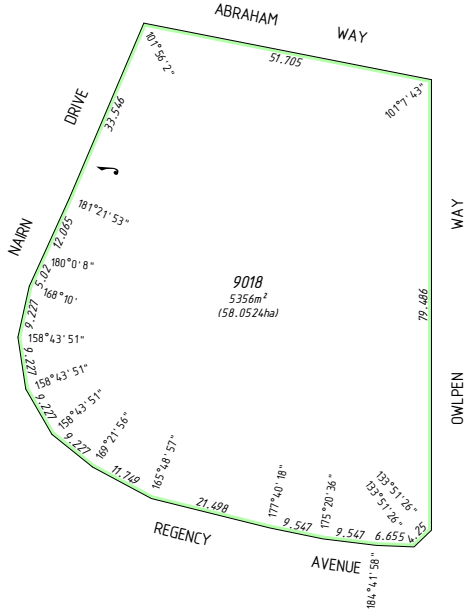

GOVERNMENT OF WESTERN AUSTRALIA · Landgate · MNG. MC MULLEN NOLAN GROUP PO Box 3126, Success W.A. 6964 Tel: (08) 6436 1599 Fax: (08) 6436 1500 Email: info@mngsurvey.com.au MNG Ref : 101955dp-064e - Stage 13B - DP426041#00.CSD	ADDITIONAL SHEETS SURVEY SHEET	SHEET 5 OF SHEETS 10	VERSION NUMBER 1	DEPOSITED PLAN 426041

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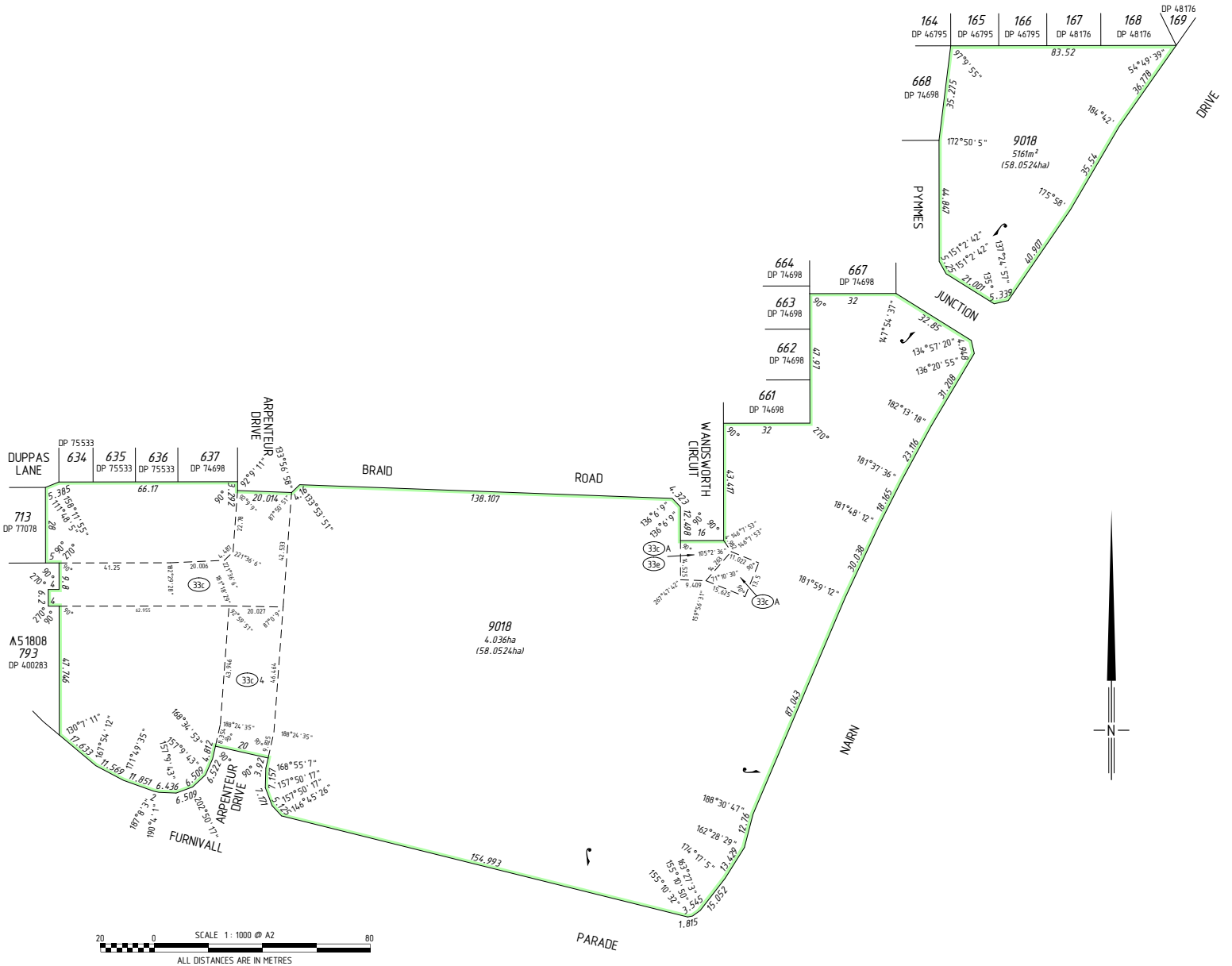

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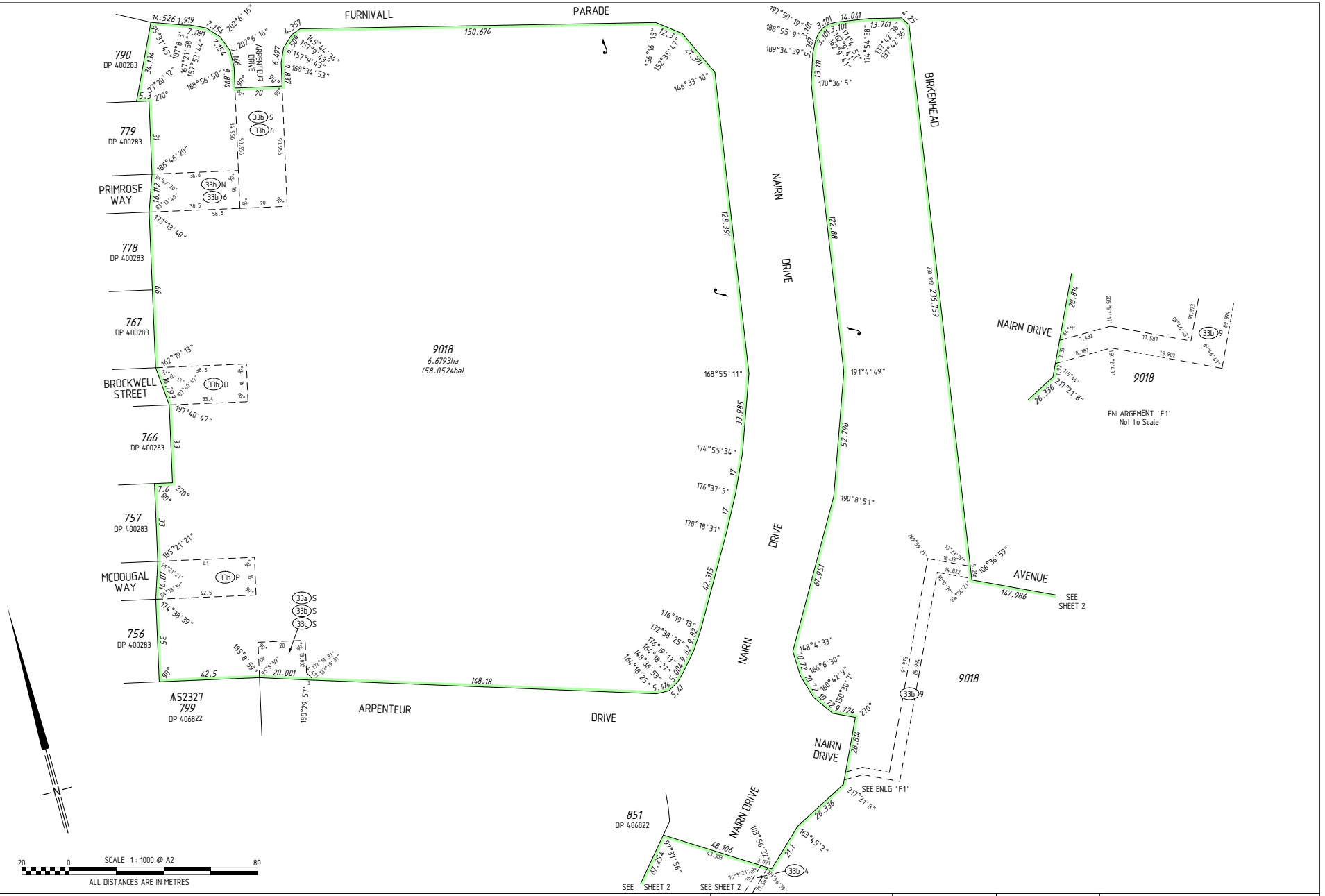

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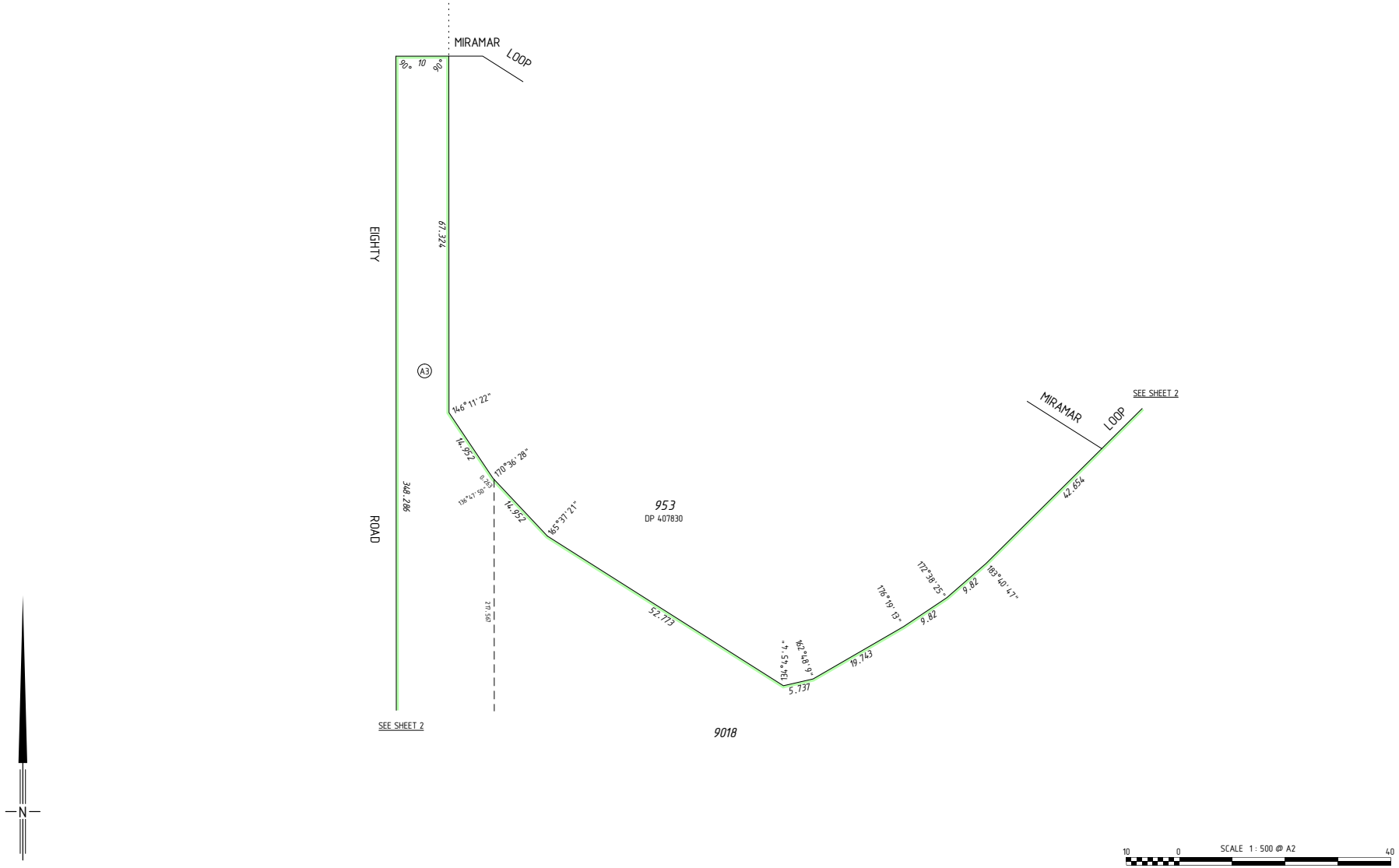

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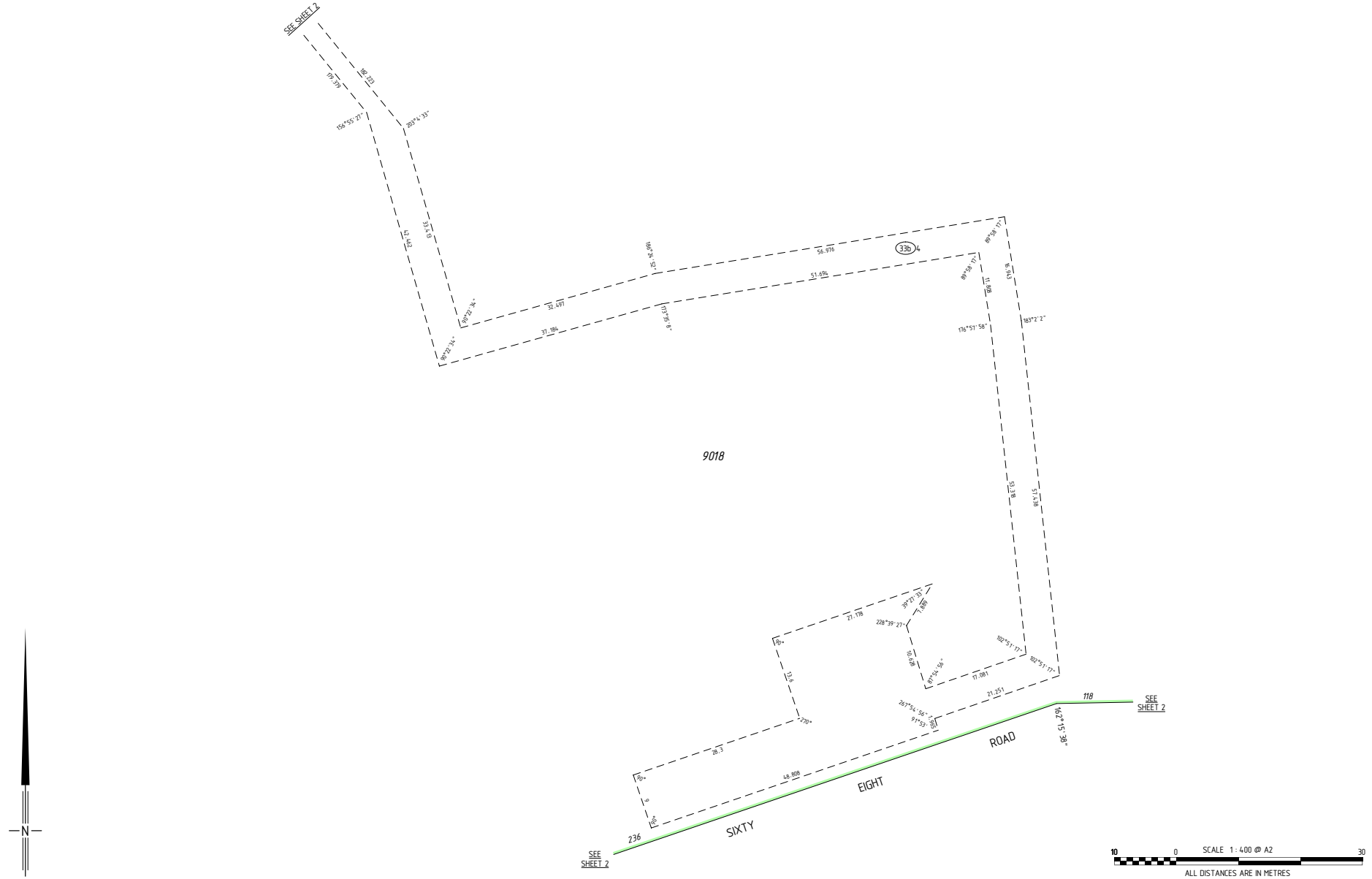

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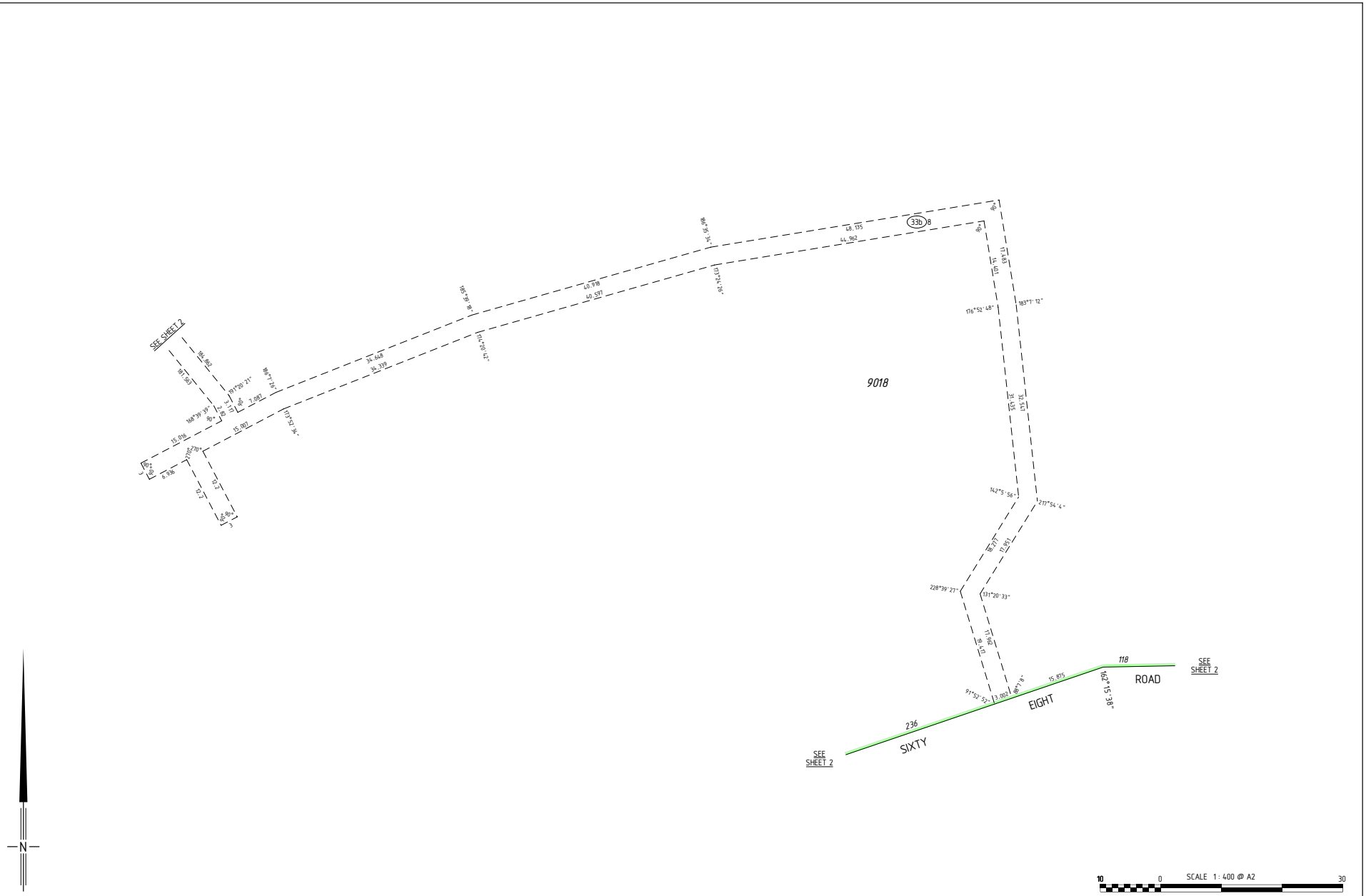

GOVERNMENT OF WESTERN AUSTRALIA

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ADDITIONAL SHEETS	SHEET		SHEETS	VERSION NUMBER	DEPOSITED PLAN
SURVEY SHEET	10	OF	10	1	426041

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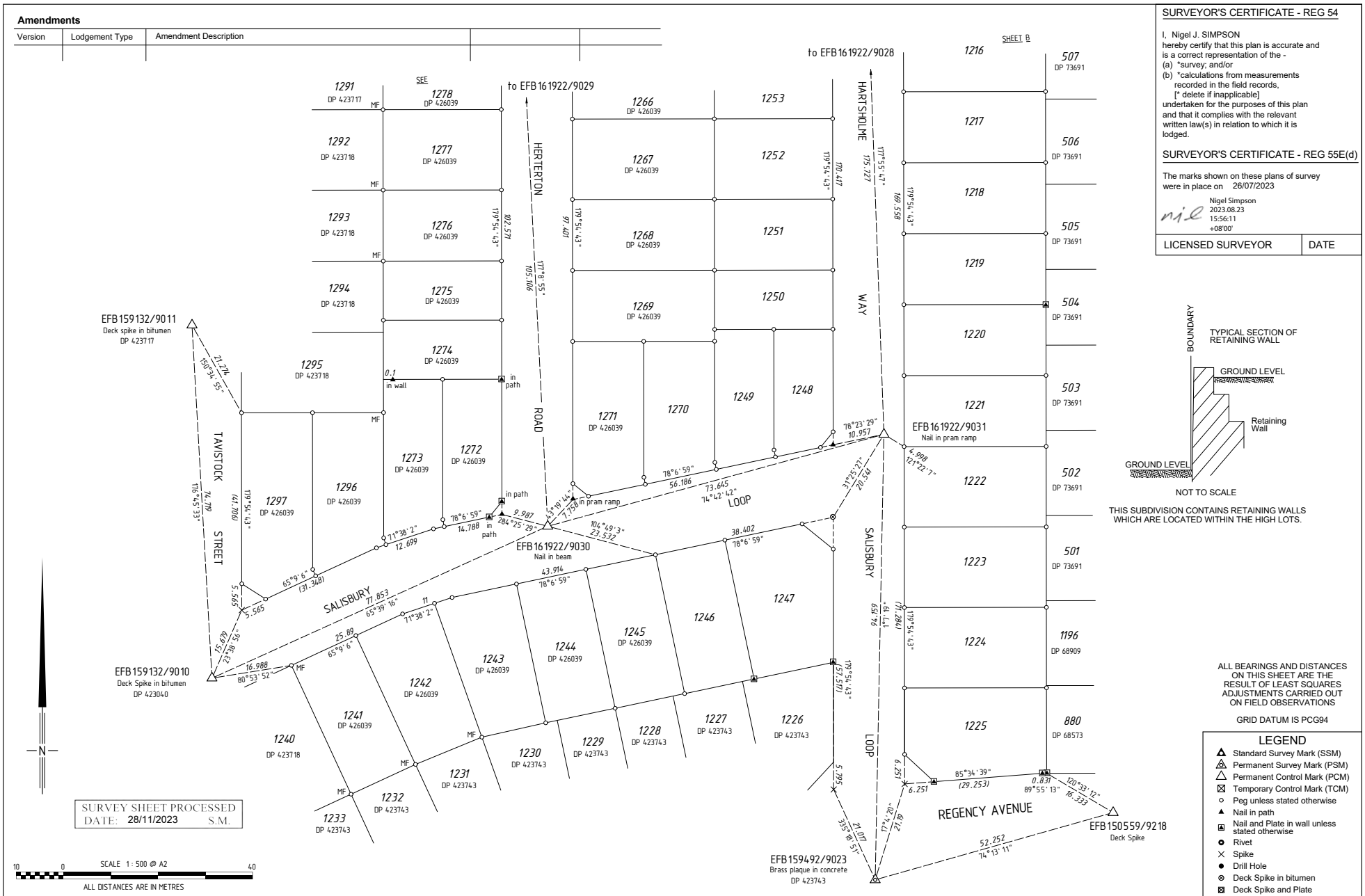
Amendments

Version	Lodgement Type	Amendment Description		



SURVEYOR'S CERTIFICATE - REG 54

I, Nigel J. SIMPSON
hereby certify that this plan is accurate and is a correct representation of the -
(a) *survey; and/or
(b) *calculations from measurements recorded in the field records,
[* delete if inapplicable]
undertaken for the purposes of this plan and that it complies with the relevant written law(s) in relation to which it is lodged.

SURVEYOR'S CERTIFICATE - REG 55E(d)

The marks shown on these plans of survey were in place on 26/07/2023

Nigel Simpson
2023.08.23
15:56:11
+08'00'

LICENSED SURVEYOR	DATE

TYPICAL SECTION OF RETAINING WALL

NOT TO SCALE

THIS SUBDIVISION CONTAINS RETAINING WALLS WHICH ARE LOCATED WITHIN THE HIGH LOTS.

ALL BEARINGS AND DISTANCES ON THIS SHEET ARE THE RESULT OF LEAST SQUARES ADJUSTMENTS CARRIED OUT ON FIELD OBSERVATIONS

GRID DATUM IS PCG94

LEGEND

- Standard Survey Mark (SSM)
- Permanent Survey Mark (PSM)
- Permanent Control Mark (PCM)
- Temporary Control Mark (TCM)
- Peg unless stated otherwise
- Nail in path
- Nail and Plate in wall unless stated otherwise
- Rivet
- Spike
- Drill Hole
- Deck Spike in bitumen
- Deck Spike and Plate

GOVERNMENT OF WESTERN AUSTRALIA

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MNG

MC MULLEN NOLAN GROUP
PO Box 3126, Success W.A. 6964
Tel: (08) 6436 1599
Fax: (08) 6436 1500
Email: info@mngsurvey.com.au

MNG Ref : 101955ss-076b - EFB161922.CSD

FOR SURVEY INFORMATION ONLY

SURVEY INFORMATION COMPRISES SURVEY SHEETS . A-B .
SURVEY CARRIED OUT UNDER REG 26A SPECIAL SURVEY AREA GUIDELINES

SURVEY SHEET	VERSION NUMBER
A	1

SURVEY SHEET PLAN
426041

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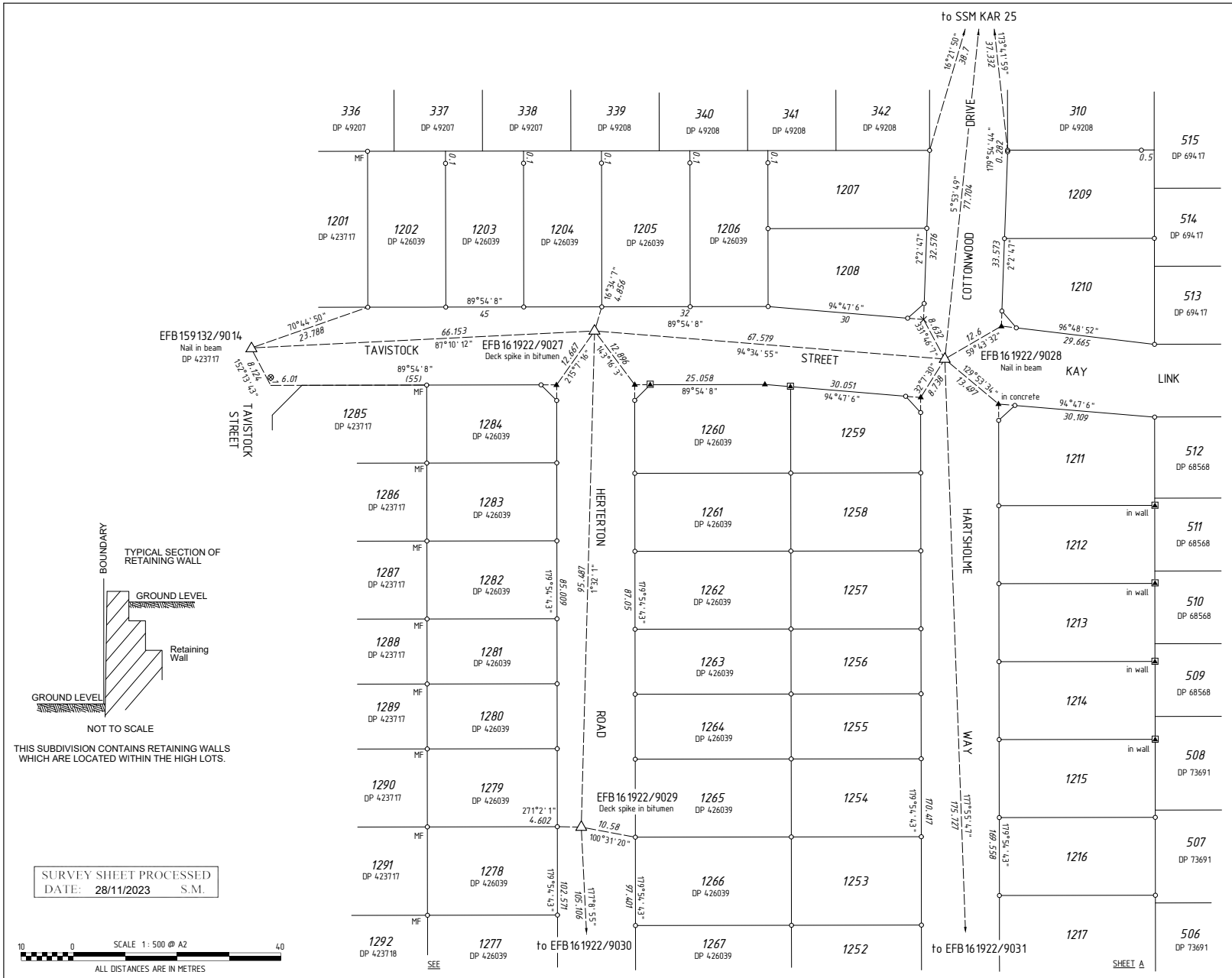

TYPICAL SECTION OF RETAINING WALL

NOT TO SCALE

THIS SUBDIVISION CONTAINS RETAINING WALLS WHICH ARE LOCATED WITHIN THE HIGH LOTS.

SURVEY SHEET PROCESSED
DATE: 28/11/2023 S.M.

SCALE 1 : 500 @ A2

10 0 40

ALL DISTANCES ARE IN METRES

SURVEYOR'S CERTIFICATE - REG 54

I, Nigel J. SIMPSON
hereby certify that this plan is accurate and is a correct representation of the -
(a) *survey; and/or
(b) *calculations from measurements recorded in the field records,
[* delete if inapplicable]
undertaken for the purposes of this plan and that it complies with the relevant written law(s) in relation to which it is lodged.

SURVEYOR'S CERTIFICATE - REG 55E(d)

The marks shown on these plans of survey were in place on 26/07/2023

Nigel Simpson
2023.08.23
15:56:33
+08'00'

LICENSED SURVEYOR	DATE

ALL BEARINGS AND DISTANCES ON THIS SHEET ARE THE RESULT OF LEAST SQUARES ADJUSTMENTS CARRIED OUT ON FIELD OBSERVATIONS

GRID DATUM IS PCG94

LEGEND

- Standard Survey Mark (SSM)
- Permanent Survey Mark (PSM)
- Permanent Control Mark (PCM)
- Temporary Control Mark (TCM)
- Peg unless stated otherwise
- Nail in path
- Nail and Plate in path unless stated otherwise
- Rivet
- Spike
- Drill Hole
- Deck Spike
- Deck Spike and Plate

GOVERNMENT OF WESTERN AUSTRALIA

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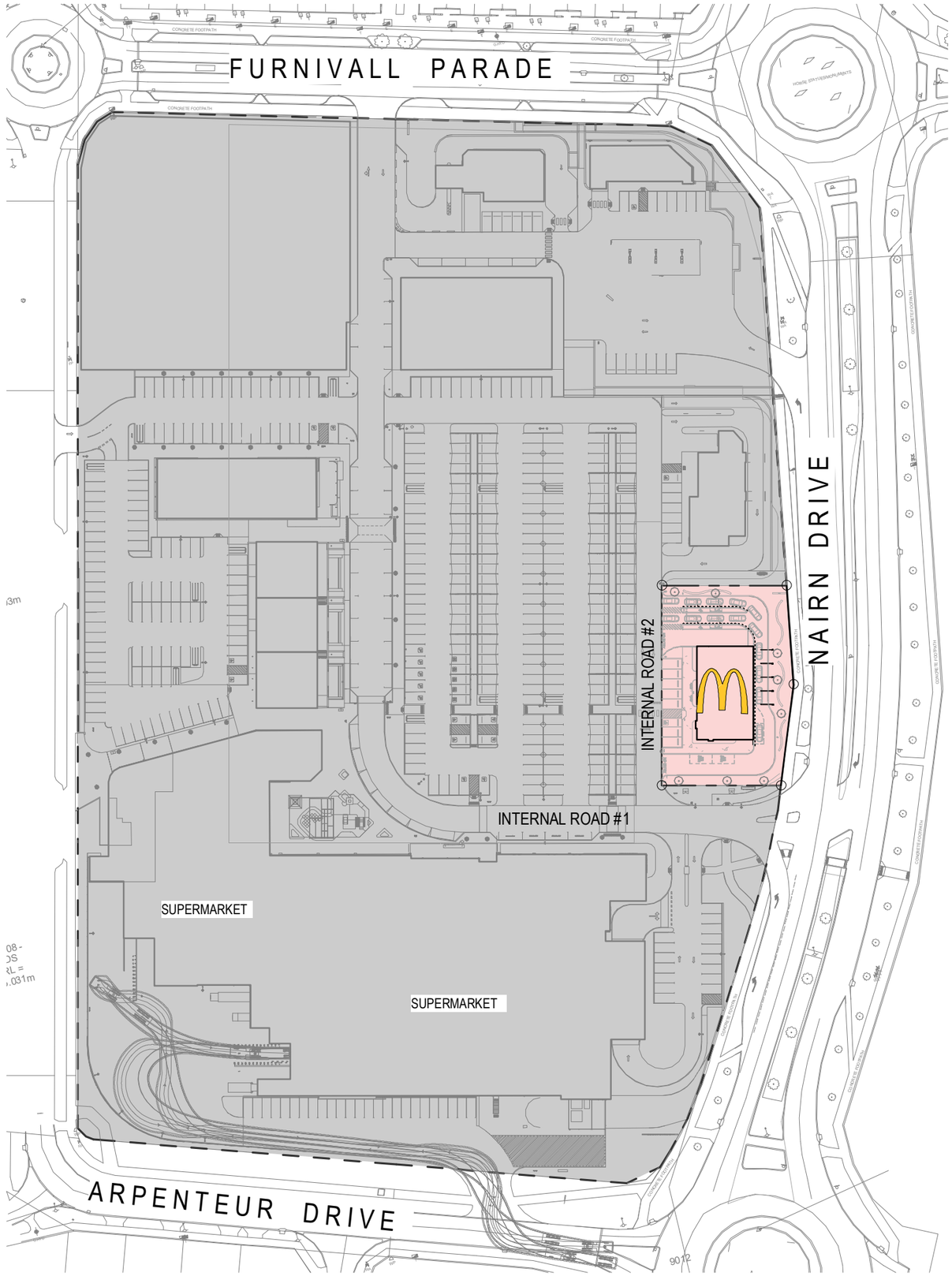
MNG Ref : 101955ss-076b - EFB161922.CSD

FOR SURVEY INFORMATION ONLY

SURVEY INFORMATION COMPRISES SURVEY SHEETS . A-B . SURVEY CARRIED OUT UNDER REG 26A SPECIAL SURVEY AREA GUIDELINES	SURVEY SHEET	VERSION NUMBER	SURVEY SHEET PLAN
	B	1	426041

Appendix 2:
Development and Signage Plans



LEGEND:

PROPOSED McDONALD'S RESTAURANT.

PROPOSED FUTURE DEVELOPMENT SUBJECT TO SEPARATE APPLICATION.

1 OVERALL SITE PLAN
1 : 1300

DEVELOPMENT APPLICATION

Revisions				
Issue	Description	Date	Chk	Int
0	AMENDED DA AS CLOUDED	AUGUST 2024	AJJ	NR

General Notes

Do not scale this drawing. The drawing shows design intent only. All dimensions to be checked on site prior to construction or production. Construction details to be confirmed by contractor/manufacturer. This is a computer generated drawing. Do not amend by hand. Figure dimensions are to be used. Contact architect for clarification if dimensions are not clear. All dimensions are in millimeters. All discrepancies and omissions on site must be reported to the architect for their comments or approval prior to commencing work.

Drawing Notes

North

Client
McDonald's Australia Limited
ABN. 43 008 496 928
☎ 02 9875 6666

Project Manager
NATIONAL DEVELOPMENT GROUP

Architect
Hindley and Associates Pty Ltd
Building Designers
Unit 4/166 Stirling Highway
Nedlands WA 6009
PO Box 199 Nedlands WA 6909
08 9386 6699
www.hindley.com.au

Project
NEW McDONALDS RESTAURANT

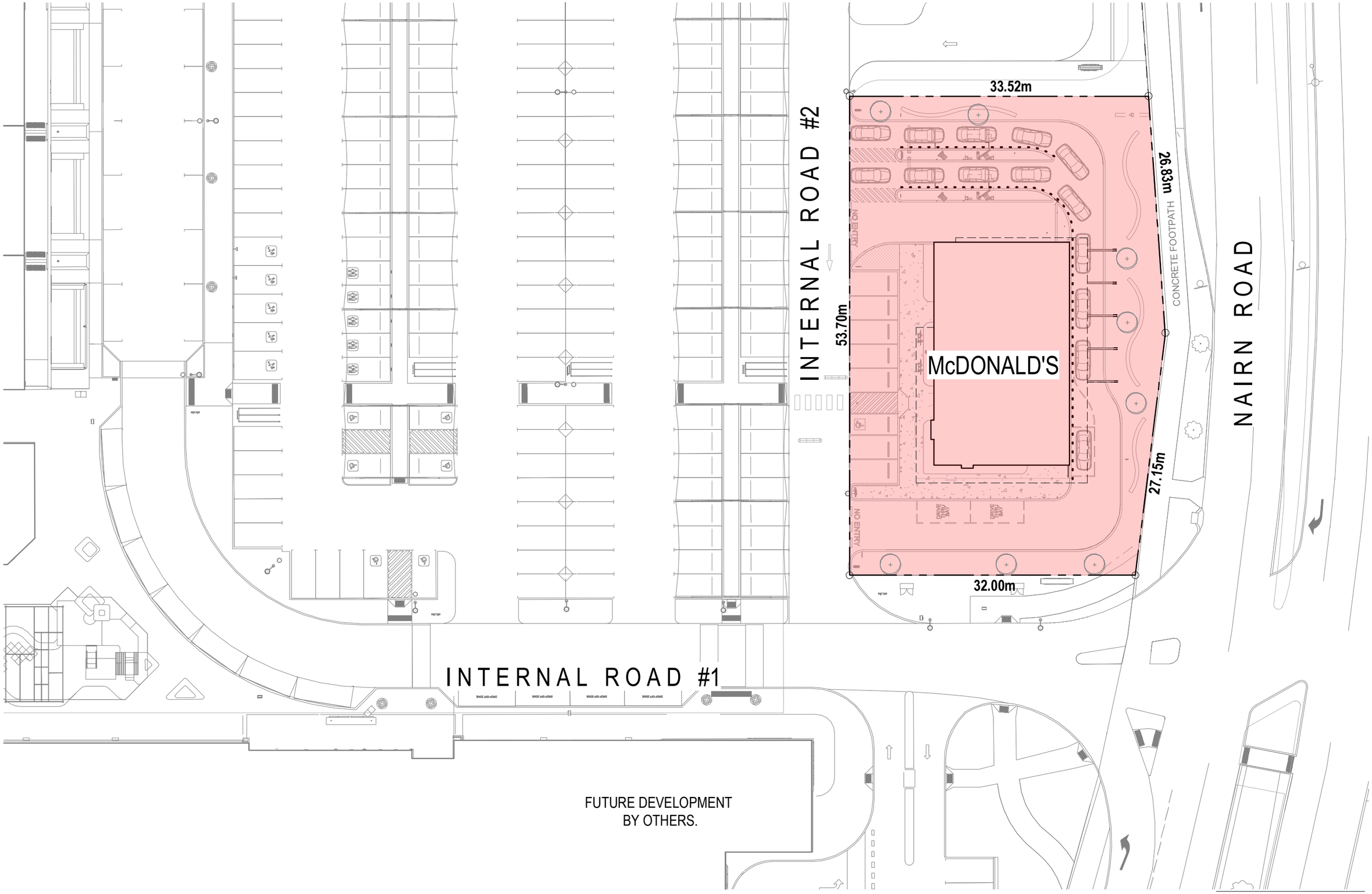
Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale	Series
1 : 1300 @ A3	BIO MOD 380

Drawing
LOCATON PLAN

Project Number	Drawing Number	Issue
0890	DA01	0

File Name D:\Documents\0890_McDONALDS-BIOMOD-450_SITE_[DA]_R23_nicoleWMET6.rvt



DEVELOPMENT APPLICATION

Revisions

Issue	Description	Date	Chk	Int
0	AMENDED DA AS CLOUDED	AUGUST 2024	AJJ	NR

General Notes

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Drawing Notes

North

Client
McDonald's Australia Limited
ABN. 43 008 496 928
☎ 02 9875 6666

Project Manager

Architect
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Project
NEW McDONALDS RESTAURANT

Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale: 1 : 400 @ A3
Series: BIO MOD 380
Drawing: OVERALL SITE PLAN
Project Number: 0890
Drawing Number: DA02
Issue: 0

FileName D:\Documents\0890_McDONALDS-BIOMOD-450_SITE_[DA]_R23_nicoleWMET6.rvt

NAIRN ROAD

ALUMINIUM DECORATIVE SCREEN TIMBER BATTENS.

McDONALD'S PYLON.

BLACK POWDERCOATED POSTS REFER TO ELEVATION FOR MORE DETAILS.

LOW CURVE FEATURE WALLS 800mm HIGH.

CONCRETE FOOTPATH

SITE BC

26.83m

27.15m

1180

800

3600

3600

CASHIER

SERVERY

3RD WINDOW

CONCRETE

CENTTRE PYLON 9m HIGH.

PROPOSED McDONALD'S RESTAURANT

BIOMOD 380
FFL = 16.800

CORRAL

PLAYPLACE

DRIVE THRU BAY

DRIVE THRU BAY

33.52m

32.00m

3000 1500 3000 1500

LOADING BAY

CONCRETE

NO ENTRY

NO ENTRY

5400

2700

53.70m

DUAL LANE DRIVE-THRU
14DT CAR STACK.

ACCESSIBLE PARKING
BAY TO AS2890.6 AND AS1428.1.

PEDESTRIAN CROSSING.

INTERNAL ROAD #2

INTERNAL ROAD #1

SITE AREA SCHEDULE

IDENTITY	AREA m2
McDONALD;S PAD SITE	1831 m2

LEGEND:

- CONCRETE EXPOSED AGGREGATE FOOTPATH AS SPECIFIED. REFER STRUCT. ENG'S DWGS FOR DETAILS.
- NEW LANDSCAPING BEDS.
- WS — RUBBER WHEELSTOPS AS SPECIFIED. QTY: 8.
- SELECTED TREES REFER LANDSCAPING PLAN.

DEVELOPMENT APPLICATION

Revisions

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Drawing Notes

North

Client
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Project Manager
NATIONAL DEVELOPMENT GROUP

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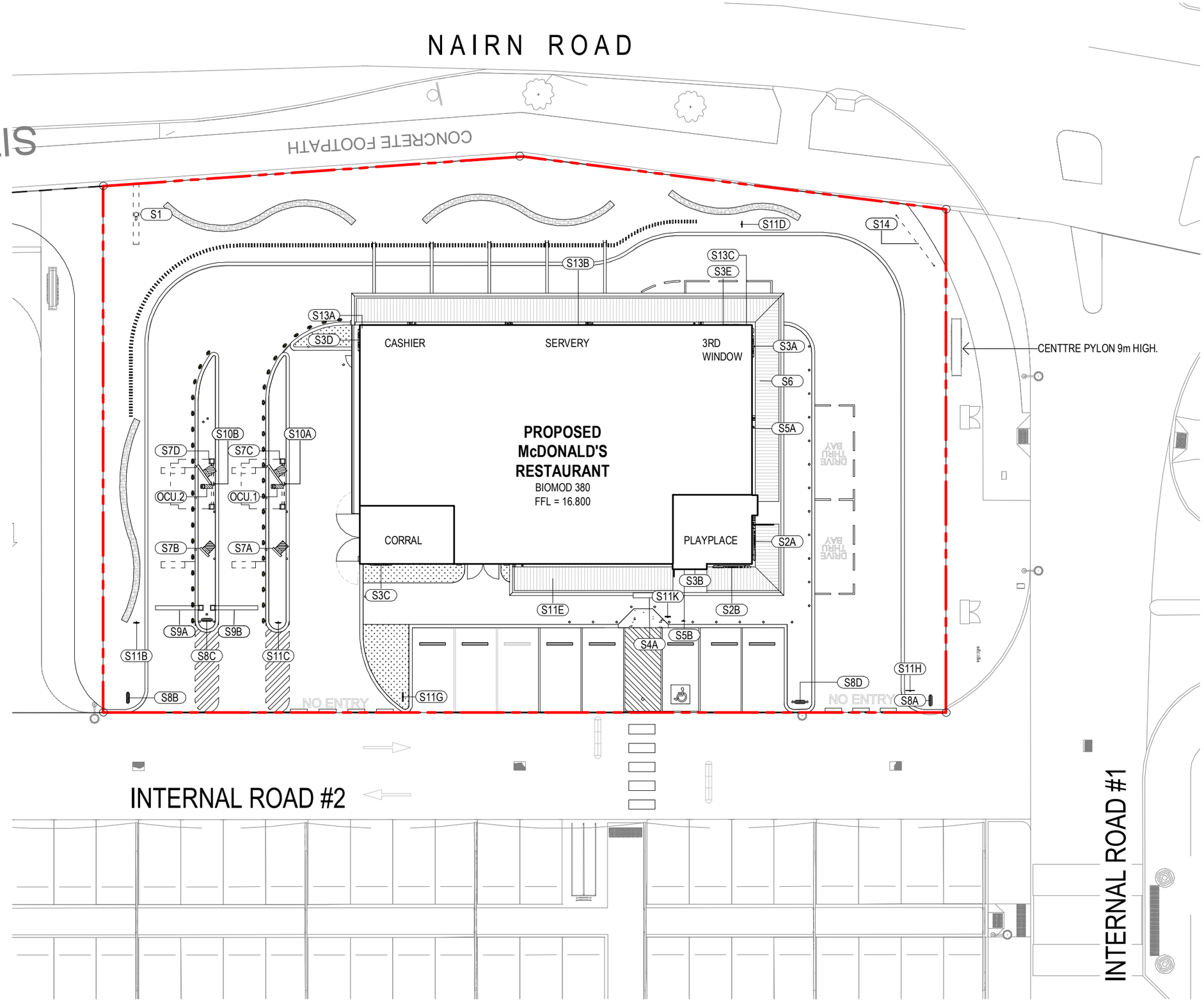
Project
NEW McDONALDS RESTAURANT

Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale	Series
1 : 250 @ A3	BIO MOD 380
Drawing	
SITE PLAN	
Project Number	Drawing Number	Issue
0890	DA03	0

File Name D:\Documents\0890_South Baldivis_McDONALDS\BIOMOD-380_R23_nicoleWMET6.rvt



SIGNAGE SCHEDULE

Tag	Description	Illuminated
S1	Pylon Sign	
S2A	Play Place Wall Sign	Yes
S2B	Play Place Wall Sign	Yes
S3A	"Golden Arches" Wall Sign	Yes
S3B	"Golden Arches" Wall Sign	Yes
S3C	"Golden Arches" Wall Sign	Yes
S3D	"Golden Arches" Wall Sign	Yes
S3E	"Golden Arches" Wall Sign	Yes
S4A	"McDonald's" Wordmark Wall Sign	
S5A	"McCafe" Button Sign Ø1200mm	
S5B	"McCafe" Wall Sign	
S6	McDelivery Wall Sign (Double Sided)	Yes
S7A	OUTDOOR MENUBOARD SINGLE 55"	Yes
S7B	OUTDOOR MENUBOARD SINGLE 55"	Yes
S7C	OUTDOOR MENUBOARD DOUBLE 55"	Yes
S7D	OUTDOOR MENUBOARD DOUBLE 55"	Yes
S8A	Directional Sign - Entry	Yes
S8A Side 2	Directional Sign - Thank You	Yes
S8B	Directional Sign - Entry - Left Arrow	Yes
S8B Side 2	Directional Sign - Entry - Right Arrow	Yes
S8C	Directional Sign - Drive Thru - Double Arrow - Any Lane Any Time	Yes
S8C Side 2	Directional Sign - Blank	Yes
S8D	Directional Sign - No Entry	Yes
S8D Side 2	Directional Sign - Thank You	Yes
S9A	Height Clearance Gantry Sign	Yes
S9B	Height Clearance Gantry Sign	Yes
S10A	Canopy - Drive Thru - Wording "1. Order here"	Yes
S10B	Canopy - Drive Thru - Wording "1. Order here"	Yes
S11B	No Pedestrian Access Sign	No
S11C	No Pedestrian Access Sign	No
S11D	No Pedestrian Access Sign	No
S11E	Bicycle Parking Sign	No
S11F	Accessible Parking Sign	No
S11G	Pedestrian Crossing Sign	No
S11H	Stop Sign	No
S11K	Pedestrian Caution - Look Both Ways Sign	No
S13A	Drive-Thru Information Sign "2. PAY HERE"	No
S13B	Drive-Thru Information Sign "3. PICK UP HERE"	No
S13C	Drive-Thru Information Sign "4. PICK UP HERE"	No
S14	Banner Signage	No

DEVELOPMENT APPLICATION

Revisions

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Drawing Notes

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Project
NEW McDONALDS RESTAURANT

Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale
1 : 250 @ A3

Series
BIO MOD 380

Drawing
SITE SIGNAGE PLAN

Project Number
0890

Drawing Number
DA04

Issue
0

File Name D:\Documents\0890_South Baldivis_McDONALDS-BIOMOD-380_R23_nicoleWMET6.rvt

REFER TO SITE PLAN FOR EXTENT.

REFER TO SITE PLAN FOR EXTENT.

ALUMINIUM DECORATIVE
SCREEN TIMBER BATTENS.

DA09
6

DA09
5

BLACK POWDERCOATED POSTS
REFER TO ELEVATION
FOR MORE DETAILS.

AWNING OVER

2000

CASHIER
24

PCS 1

BUN STORE
22a

MANAGER
25

IT ROOM
26

SERVERY
27

PCS 1

3rd WINDOW
29

BEVERAGE CELL
28

DRY GOODS
22

PCS 1

MB U PLT 585 x 1165

2448 610 x 1219

2436 610 x 914

KITCHEN
23

PCS 2

DRIVER
PICK-UP
32

SALES & SERVICE
30

McCAFE
31

2000

DA08
4

TUN

2430 610x762

FRONT COUNTER
03

REFRIG.
21

2448

WASH UP
19

DA08
3

FREEZER
20

CORRIDOR
18

2460

FILTERS
17

MALE
09

FEMALE
08

W.C.
16

DINING ROOM
02

GPO
HC

1

DA07

PCS 1

TUN

BREAK
ROOM
14

LOCKERS

CORRAL
13

ACCESSIBLE
15

AIRLOCK
06

PCS 2

RF. AC
11

DP2

ENTRY
01

PLAYLAND
04

HC

2000

AWNING OVER

ENTRY CLIP

2

DA07

DEVELOPMENT APPLICATION

Revisions				
Issue	Description	Date	Chk	Int
0	AMENDED DA AS CLOUDED	AUGUST 2024	AJJ	NR

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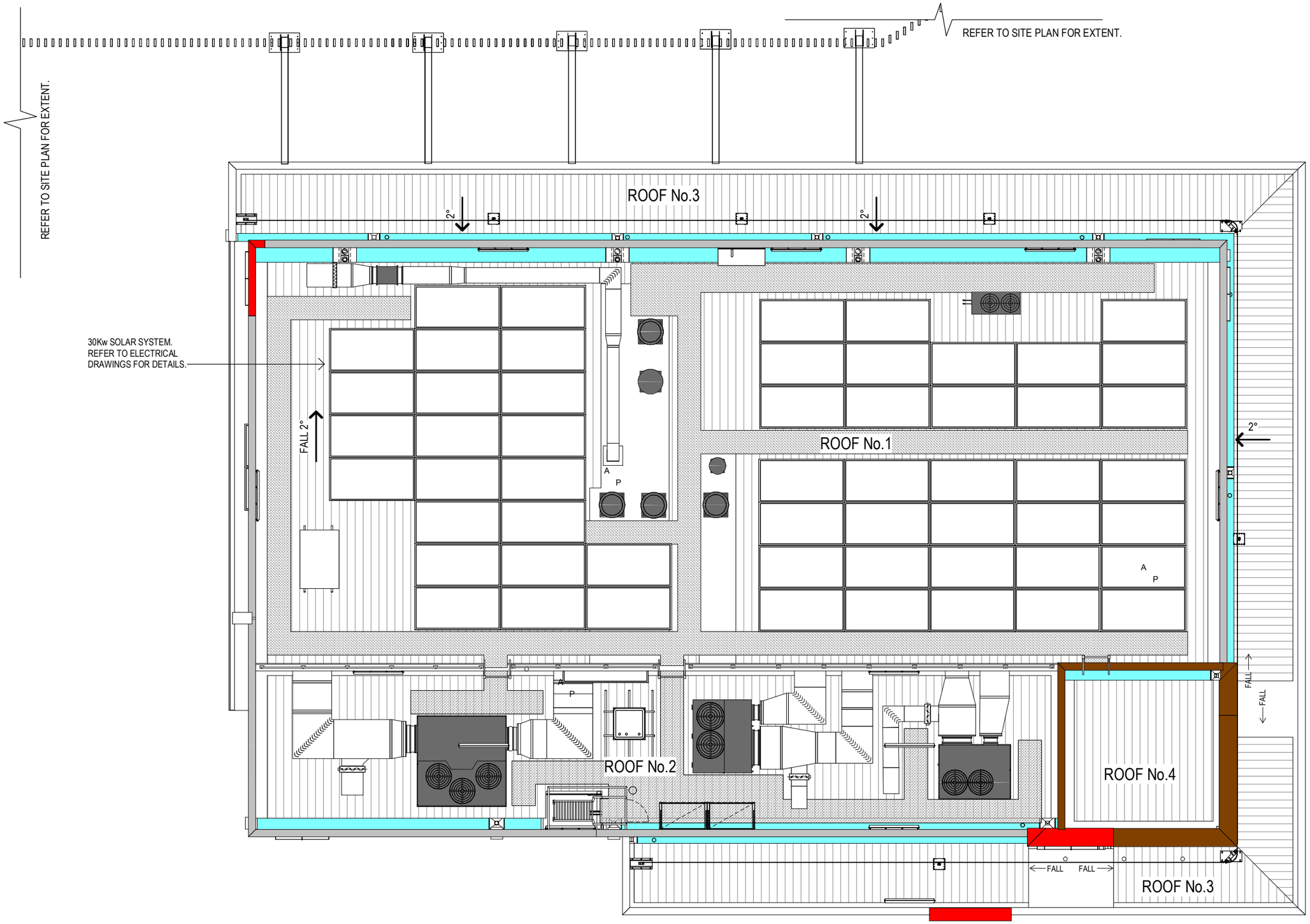
Project	Scale	Series
NEW McDONALDS RESTAURANT	1 : 100 @ A3	BIO MOD 380
Location	Drawing	
PART LOT 9018 NAIRN DRIVE, BALDIVIS.	FLOORPLAN	
	Project Number	Drawing Number / Issue
	0890	DA05 / 0

File Name D:\Documents\0890_South Baldivis_McDONALDS-BIOMOD-380_R23_nicoleWMET6.rvt



DEVELOPMENT APPLICATION

Revisions				
Issue	Description	Date	Chk	Int
0	AMENDED DA AS CLOUDED	AUGUST 2024	AJJ	NR

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Project
NEW McDONALDS RESTAURANT

Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale
1 : 100 @ A3

Series
BIO MOD 380

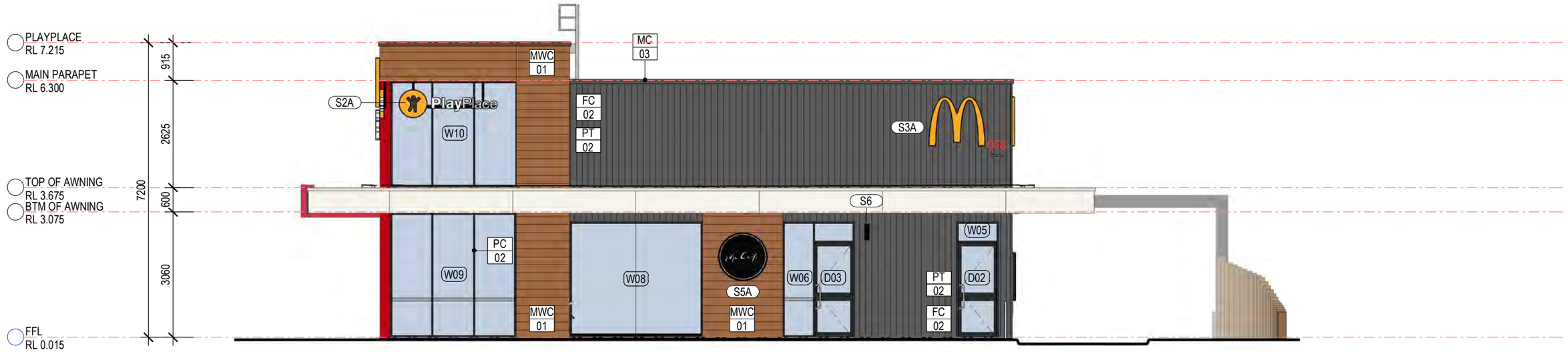
Drawing
ROOF PLAN

Project Number
0890

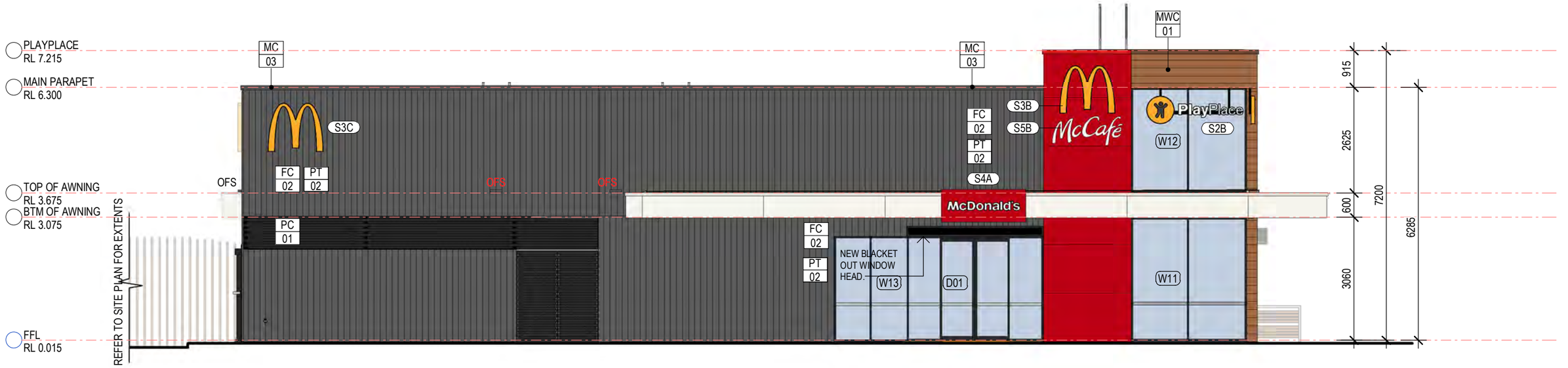
Drawing Number
DA06

Issue
0

File Name D:\Documents\0890_South Baldivis_McDONALDS-BIOMOD-380_R23_nicoleWMET6.rvt



1 FRONT ELEVATION
1 : 100



2 SIDE ELEVATION
1 : 100

DEVELOPMENT APPLICATION

Revisions

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Project
NEW McDONALDS RESTAURANT

Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale
1 : 100 @ A3

Series
BIO MOD 380

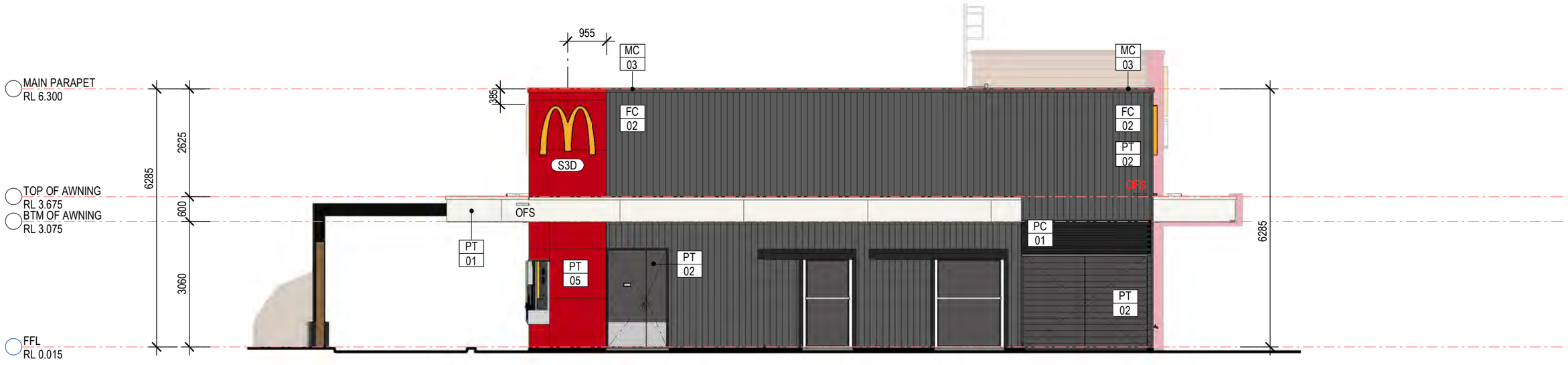
Drawing
FRONT & SIDE BUILDING ELEVATIONS

Project Number
0890

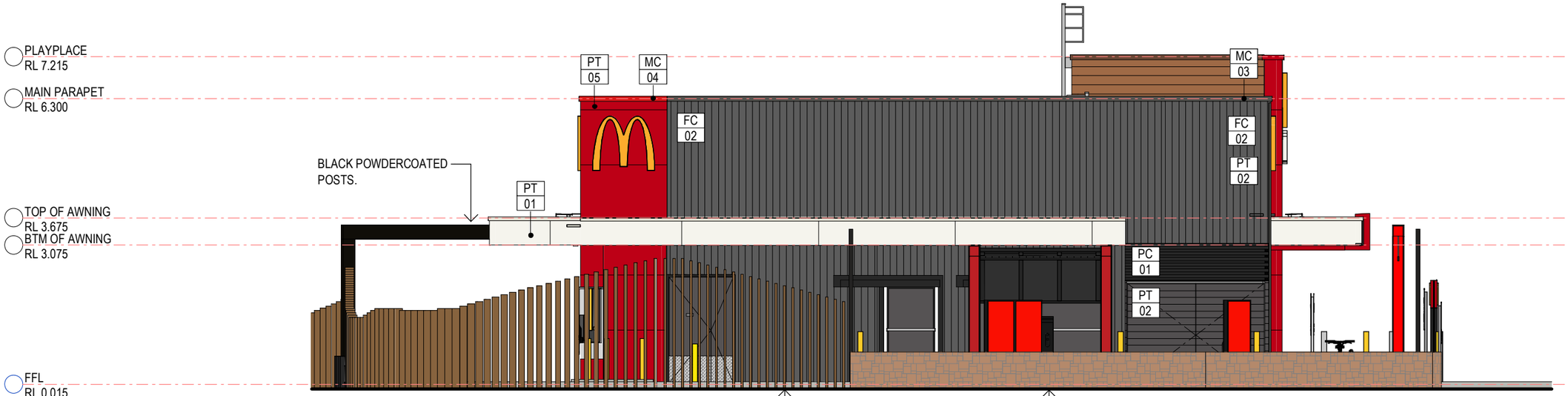
Drawing Number
DA07

Issue
0

File Name D:\Documents\0890_South Baldivis_McDONALDS-BIOMOD-380_R23_nicole\WMET6.rvt



3 REAR ELEVATION
1 : 100



4 REAR ELEVATION
1 : 100

DEVELOPMENT APPLICATION

Revisions

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Project
NEW McDONALDS RESTAURANT

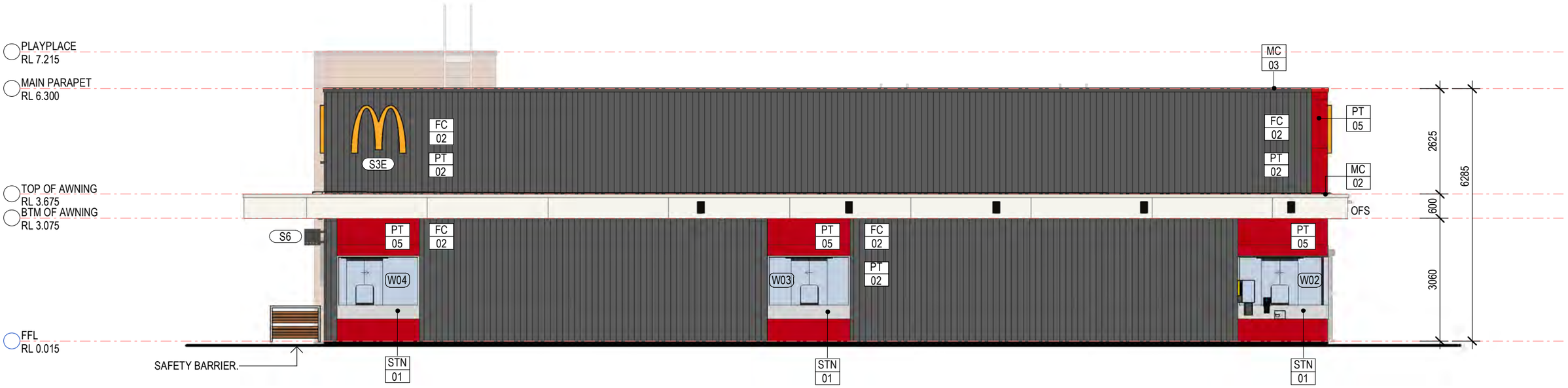
Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale	Series
1 : 100 @ A3	BIO MOD 380

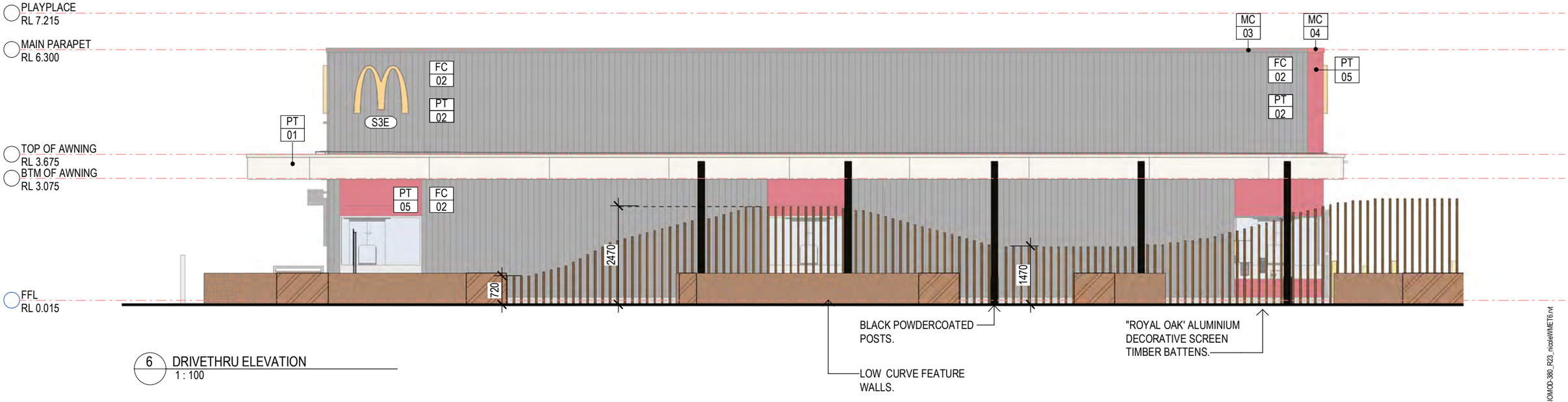
Drawing
REAR BUILDING ELEVATIONS

Project Number	Drawing Number	Issue
0890	DA08	0

File Name D:\Documents\0890_South Baldivis_McDONALDS-BIOMOD-380_R23_nicoleWMET6.rvt



5 DRIVETHRU ELEVATION
1 : 100



6 DRIVETHRU ELEVATION
1 : 100

Revisions

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Drawing Notes

DEVELOPMENT APPLICATION

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Project
NEW McDONALDS RESTAURANT

Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale
1 : 100 @ A3

Series
BIO MOD 380

Drawing
DRIVETHRU BUILDING ELEVATIONS

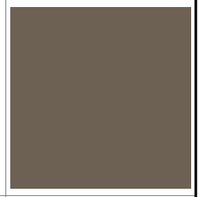
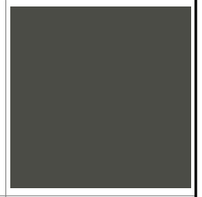
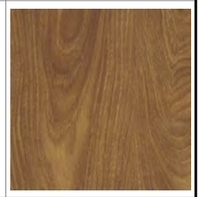
Project Number
0890

Drawing Number
DA09

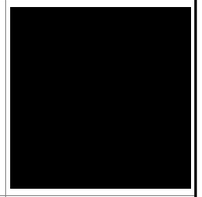
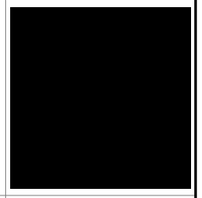
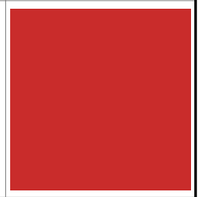
Issue
0

File Name D:\Documents\0890_South Baldivis_McDONALDS-BIOMOD-380_R23_nicoleWMET6.rvt

EXTERNAL FINISHES SCHEDULE

CODE	No.	AREA	DESCRIPTION	MANUFACTURER	COLOUR	IMAGE
FC	02	MAIN BUILDING WALLS	FIBRE CEMENT WEATHERTEX VERTICAL WEATHERBOARDS	WEATHERTEX	WAYWARD GREY PG1G8	
MC	01	PARAPET CAPPING - ADJACENT TIMBER LOOK CLADDING (PLAYLAND)	PREFINISHED METAL CAPPING / FLASHING	COLORBOND	JASPER	
MC	02	PARAPET CAPPING - AWNINGS	PREFINISHED METAL CAPPING / FLASHING	COLORBOND	SURFMIST	
MC	03	PARAPET CAPPING - MAIN BUILDING WALLS	PREFINISHED METAL CAPPING / FLASHING	COLORBOND	WOODLAND GREY	
MC	04	PARAPET CAPPING	PREFINISHED METAL CAPPING / FLASHING	COLORBOND	MANOR RED	
MC	05	TIMBER BATTENS ON DRIVETHRU SCREEN	TIMBER LOOK ALUMINIUM CLADDING SYSTEM USING KNOTWOOD 200mm CLADDING PROFILE	KNOTWOOD	ROYAL OAK	
MWC	01	PLAYPLACE & PARAPETS	TIMBER LOOK ALUMINIUM CLADDING SYSTEM USING KNOTWOOD 200mm CLADDING PROFILE	KNOTWOOD	LIGHT OAK	

EXTERNAL FINISHES SCHEDULE

CODE	No.	AREA	DESCRIPTION	MANUFACTURER	COLOUR	IMAGE
MWC	02	ROOF WELL (INTERNAL PARAPET LINING)	CUSTOM ORB CORRUGATED STEEL RIVET FIXED VERTICALLY TO FRAMES	LYSAGHT	ZINCALUME	
PC	01	CORRAL BATTENS & ROOF ACCESS, ELEC. ROOM DOORS	POWDERCOAT FINISH	DULUX DURATEC ZEUS	LUNAR ECLIPSE SATIN (BLACK)	
PC	02	ALUMINIUM WINDOWS & DOOR FRAMES. REFER NOTE 1.	POWDERCOAT FINISH	DULUX DURATEC ZEUS	LUNAR ECLIPSE SATIN (BLACK)	
PT	01	FASCIAS (RIBBON)	PAINT FINISH. REFER SPECIFICATION FOR DETAILS ON PAINT TYPE & APPLICATION	DULUX	VIVID WHITE PW1H9	
PT	02	MAIN BUILDING WALLS	PAINT FINISH. REFER SPECIFICATION FOR DETAILS ON PAINT TYPE & APPLICATION	DULUX	WAYWARD GREY PG1G8	
PT	05	BLADE WALL & DRIVETHRU WINDOWS	PAINT FINISH. REFER SPECIFICATION FOR DETAILS ON PAINT TYPE & APPLICATION	DULUX	HOTLIPS PB1F2	
STN	01	DRIVETHRU WINDOW SILL & SURROUND	RECONSTITUTED STONE. REFER TO DECOR DOCUMENTS	REFER DECOR	REFER DECOR	

Revisions

Issue	Description	Date	Chk	Int
0	AMENDED DA AS CLOUDED	AUGUST 2024	AJJ	NR

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Drawing Notes

DEVELOPMENT APPLICATION

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ABN. 43 008 496 928
☎ 02 9875 6666
Project Manager

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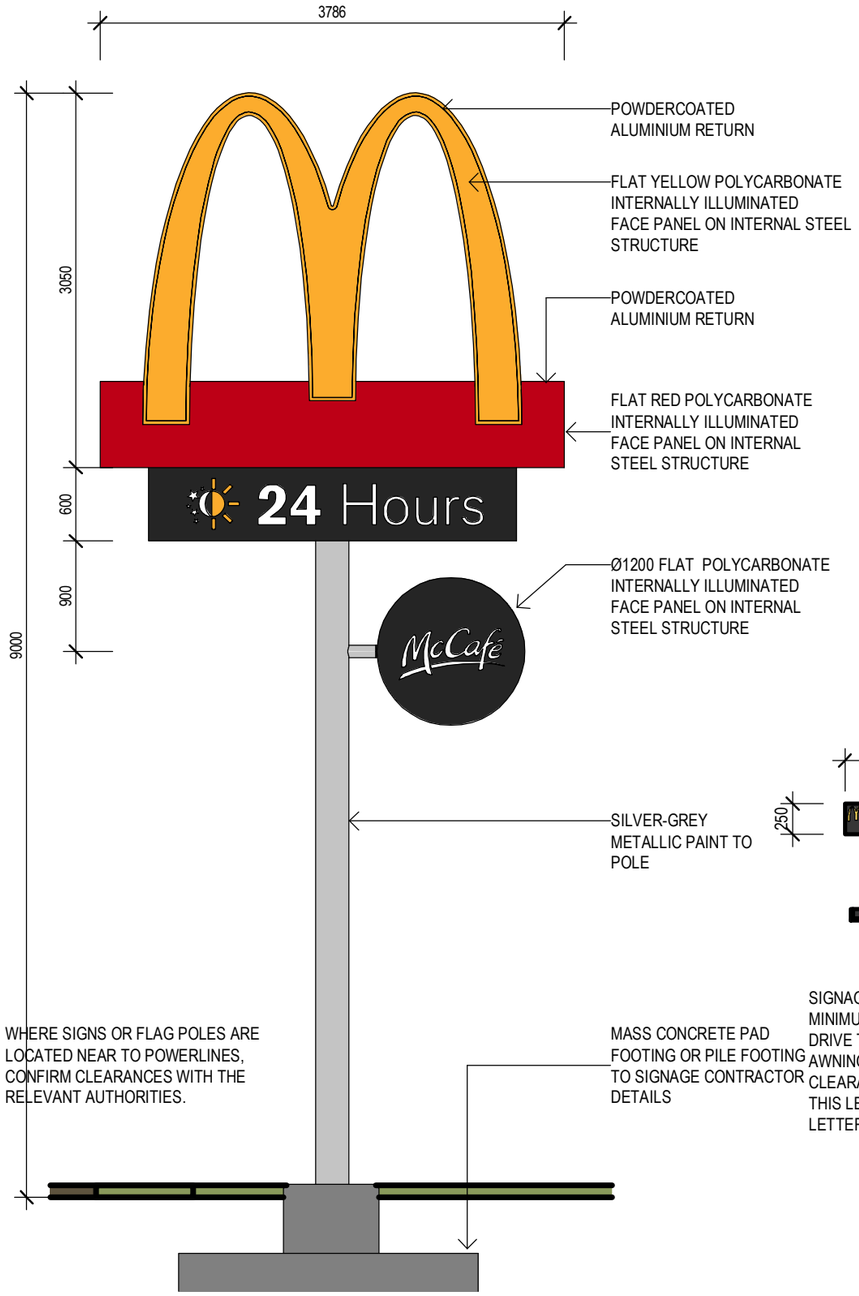
Project
NEW McDONALDS RESTAURANT

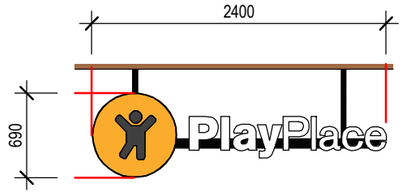
Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale: @ A3
Series: BIO MOD 380
Drawing: EXTERNAL FINISHES SCHEDULE
Project Number: 0890
Drawing Number: DA10
Issue: 0

File Name: D:\Documents\0890_South Baldivis_McDONALDS-BIOMOD-380_R23_nicole\WMET6.rvt

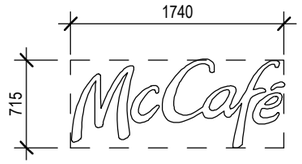


S1 PYLON
1 : 50



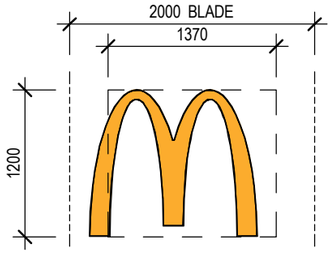
S2 PLAYPLACE
1 : 50

YELLOW LOGO WITH INDIVIDUAL POLYCARBONATE LETTERING FIXED TO FRAME. INTERNALLY ILLUMINATED. WHITE LETTERS.



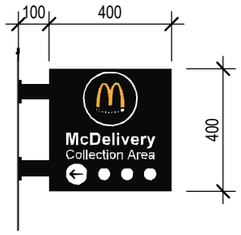
S5 WALL SIGN
1 : 50

INDIVIDUAL HALO ILLUMINATED REVERSE PAN FABRICATED ALUMINIUM CHANNEL LETTERS. BRUSHED ALUMINIUM FINISH.



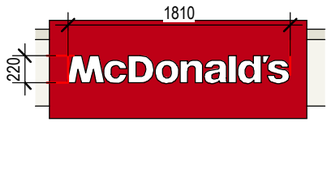
S3 WALL SIGN
1 : 50

YELLOW FLAT FACE POLYCARBONATE LOGO. INTERNALLY ILLUMINATED. YELLOW LOGO



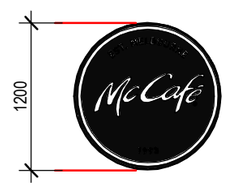
S6 McDELIVERY WALL SIGN
1 : 20

FABRICATED METAL SIGN. OPAL FACES WITH BLACK VINYL GRAPHICS. LED ILLUMINATION.



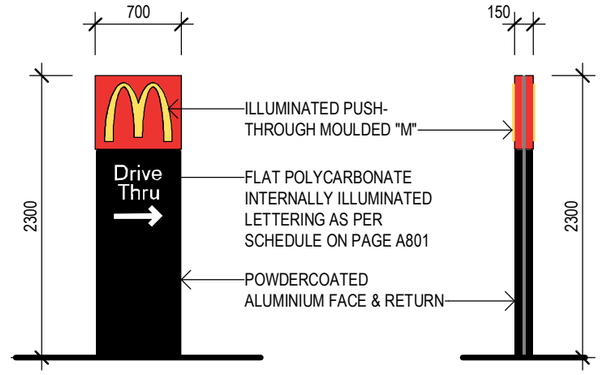
S4 CLIP SIGN
1 : 50

LED ILLUMINATED WORDMARK ONLY. RED CLIP TO BE CONSTRUCTED BY THE BUILDER..



S5 McCAFE WALL BUTTON SIGN
1 : 50

FABRICATED METAL BUTTON SIGN. OPAL FACES WITH BLACK VINYL GRAPHICS. LED ILLUMINATION.



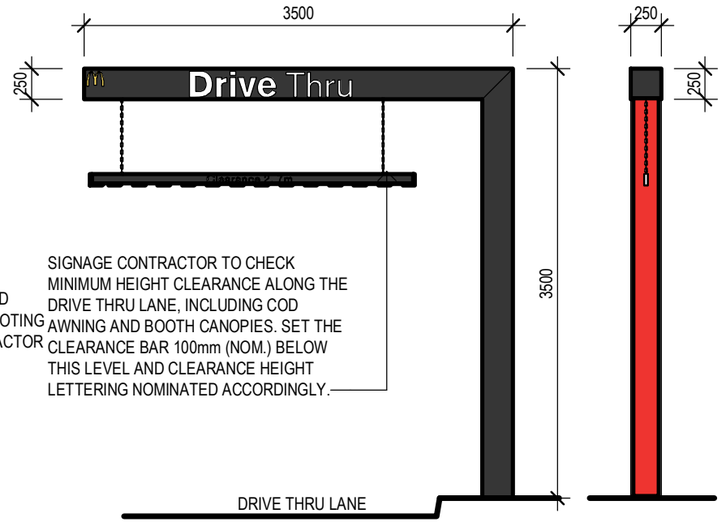
FRONT **SIDE**

ALTERNATIVE WORDING

(ALL IN TITLE CASE):

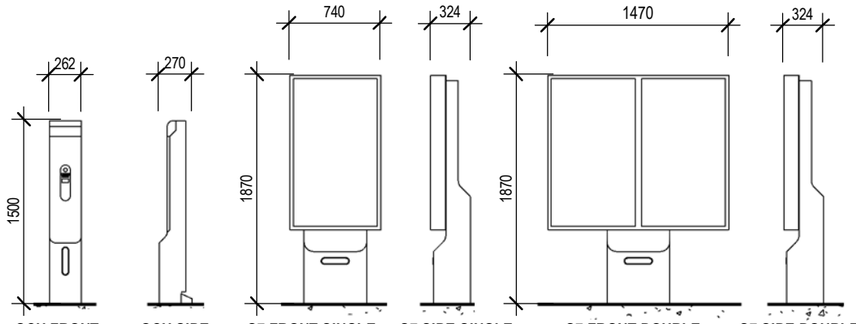
S8A	"ENTRY / ENTRY" (DOUBLE SIDED) W/- ARROWS"	**S8C**	"ANY LANE, ANY TIME" (SINGLE SIDED)
S8B	"DRIVE THRU / DRIVE THRU" (DOUBLE SIDED)	**S8D**	"THANK YOU / NO ENTRY" (DOUBLE SIDED)
		S8E	"THANK YOU / ENTRY" (DOUBLE SIDED)

DIRECTIONAL SIGNAGES8
1 : 50



FRONT **SIDE**

S6 HEIGHT CLEARANCE GANTRY
1 : 50



OCU FRONT | OCU SIDE | S7 FRONT SINGLE | S7 SIDE SINGLE | S7 FRONT DOUBLE | S7 SIDE DOUBLE

DEVELOPMENT APPLICATION

Revisions					General Notes	Drawing Notes
0	AMENDED DA AS CLOUDED	AUGUST 2024	AJJ	NR	Do not scale this drawing. The drawing shows design intent only. All dimensions to be checked on site prior to construction or production. Construction details to be confirmed by contractor/manufacturer. This is a computer generated drawing. Do not amend by hand. Figure dimensions are to be used. Contact architect for clarification if dimensions are not clear. All dimensions are in millimeters. All discrepancies and omissions on site must be reported to the architect for their comments or approval prior to commencing work.	
Issue	Description	Date	Chk	Int		

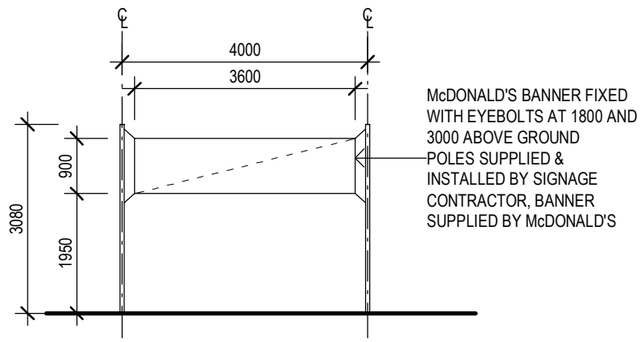
Client: McDonald's Australia Limited
ABN. 43 008 496 928
☎ 02 9875 6666
Project Manager

Architect: Hindley and Associates Pty Ltd
Building Designers
Unit 4/166 Stirling Highway
Nedlands WA 6009
PO Box 199 Nedlands WA 6909
08 9386 6699
www.hindley.com.au

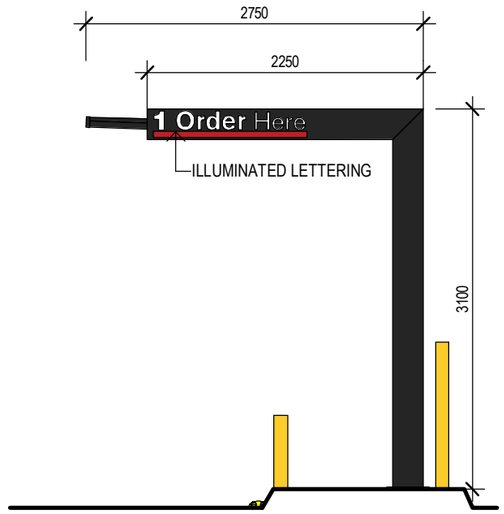
Project: NEW McDONALDS RESTAURANT
Location: PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale: As indicated @ A3
Series: BIO MOD 380
Drawing: SIGNAGE DETAILS
Project Number: 0890
Drawing Number: DA11
Issue: 0

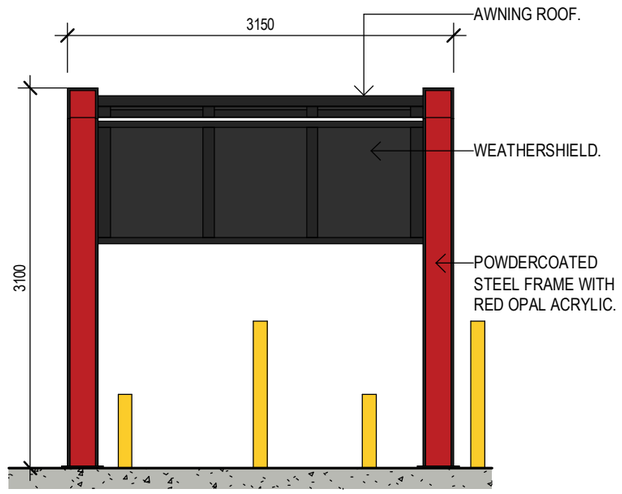
File Name: D:\Documents\0890_South Baldivis_McDONALDS-BIOMOD-380_R23_nicole\WMET6.rvt



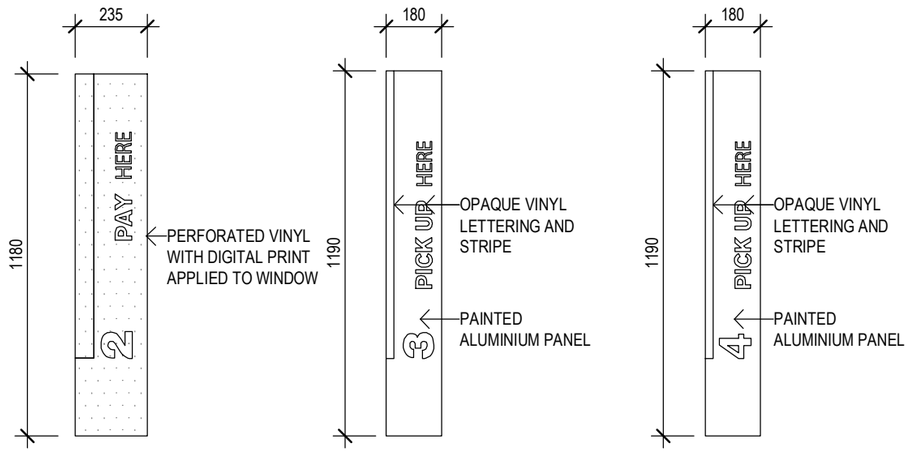
S14 - BANNERS
1 : 100



S10 ORDER CANOPY SIDE
1 : 50



S10 ORDER CANOPY ELEVATION
1 : 50



S13 DRIVE THRU INFORMATION SIGNS
1 : 20

Revisions

Issue	Description	Date	Chk	Int
0	AMENDED DA AS CLOUDED	AUGUST 2024	AJJ	NR

General Notes

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Drawing Notes

DEVELOPMENT APPLICATION

Client
McDonald's Australia Limited
ABN. 43 008 496 928
☎ 02 9875 6666

Project Manager

Architect
Hindley and Associates Pty Ltd
Building Designers
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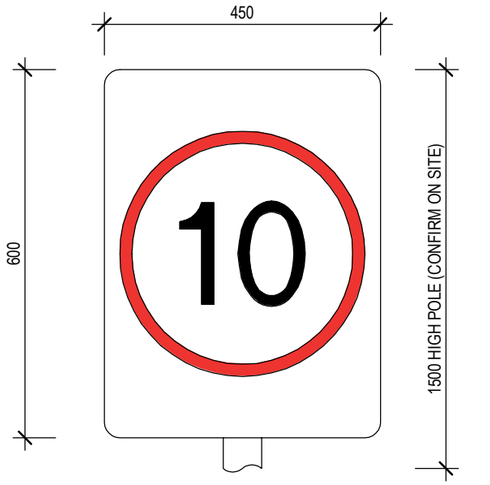
Nedlands WA 6009
PO Box 199 Nedlands WA 6909
08 9386 6699
www.hindley.com.au

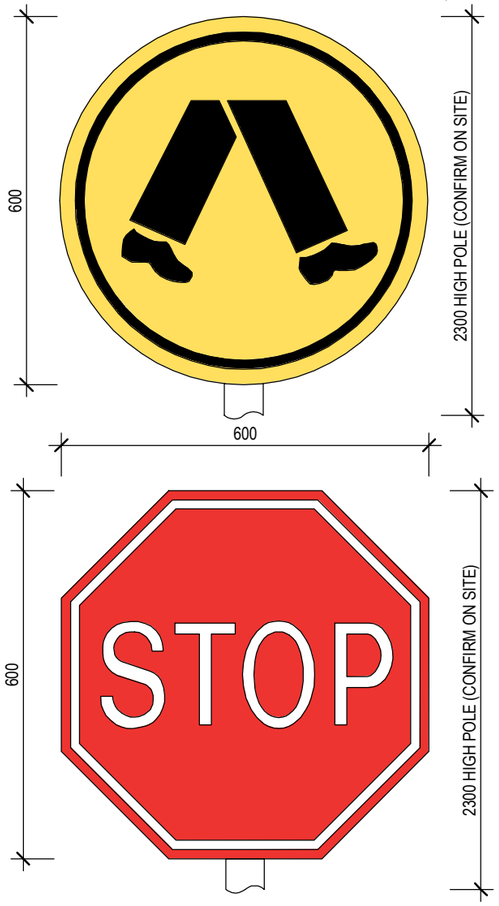
Project
NEW McDONALDS RESTAURANT

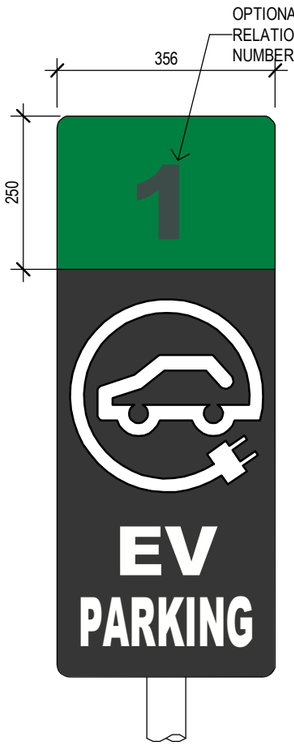
Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale: As indicated @ A3
Series: BIO MOD 380
Drawing: SIGNAGE DETAILS
Project Number: 0890
Drawing Number: DA12
Issue: 0

File Name: D:\Documents\0890_South Baldivis_McDONALDS-BIOMOD-380_R23_nicoleWMET6.rvt







S11 CAR PARK SIGNAGE

DEPENDING ON LOCATION WITHIN SITE, S11 SIGNAGE SHOULD BE SET A MINIMUM OF 2m ABOVE TOP OF KERB TO PREVENT OBSTRUCTION TO OCCASIONAL PEDESTRIANS, OR TO REDUCE INTERFERENCE FROM PARKED VEHICLES. IF THIS DOESN'T APPLY, SIGNAGE HEIGHTS SHALL BE SET AS NOTED.

McDONALD's Signage Colours

McDonalds Gold	McDonalds Red	Green	Charcoal	Light Grey	Black	Reflex Blue
PMS 1235 C 122 U	PMS 2035 C	PMS 350 C	PMS Cool Gray 11C	PMS Cool Gray 1C	PMS Black 6 C	PMS Reflex Blue
CMYK 0.29.96.0	CMYK 0.100.95.0	CMYK 80.43.86.42	CMYK 0.0.0.80	CMYK 0.0.0.8	CMYK 82.71.59.75	CMYK 100.96.13.9
RGB 255.188.13	RGB 219.0.7	RGB 43.82.51	RGB 45.45.45	RGB 247.247.247	RGB 16.24.32	RGB 0.22.137
HEX FFBC0D	HEX DB0007	HEX 2B5233	HEX 2D2D2D	HEX B69A81	HEX 101820	HEX ~~001689~~

DEVELOPMENT APPLICATION

Revisions

Issue	Description	Date	Chk	Int
0	AMENDED DA AS CLOUDED	AUGUST 2024	AJJ	NR

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ABN. 43 008 496 928
☎ 02 9875 6666
Project Manager

Architect
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Unit 4/166 Stirling Highway
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PO Box 199 Nedlands WA 6909
08 9386 6699
www.hindley.com.au

Project
NEW McDONALDS RESTAURANT

Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale
1 : 10 @ A3

Series
BIO MOD 380

Drawing
SIGNAGE DETAILS

Project Number
0890

Drawing Number
DA13

Issue
0

File Name D:\Documents\0890_South Baldivis_McDONALDS-BIOMOD-380_R23_nicole\WMET6.rvt

ALUMINIUM DECORATIVE SCREEN.

LOW HIGH FEATURE WALLS.

DEVELOPMENT APPLICATION

Revisions					
Issue	Description	Date	Chk	Int	
0	AMENDED DA AS CLOUDED	AUGUST 2024	AJJ	NR	

General Notes

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Drawing Notes

Client
McDonald's Australia Limited
ABN. 43 008 496 928
☎ 02 9875 6666

Project Manager
NATIONAL DEVELOPMENT GROUP

Architect
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Unit 4/166 Stirling Highway
Nedlands WA 6009
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www.hindley.com.au

Project
NEW McDONALDS RESTAURANT

Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale: @ A3
Series: BIO MOD 380
Drawing: PERSPECTIVE VIEWS
Project Number: 0890
Drawing Number: DA14
Issue: 0

File Name D:\Documents\0890_South Baldivis_McDONALDS-BIOMOD-380_R23_nicole\WMET6.rvt

Appendix 3:
Landscaping Plan

NAIRN ROAD

ALUMINIUM DECORATIVE SCREEN TIMBER BATTENS.

McDONALD'S PYLON.

RETAINING WALL, AS DETAILED & SPECIFIED ON L02

LOW CURVE FEATURE WALL 300mm HIGH.

BLACK POWDERCOATED POSTS REFER TO ELEVATION FOR MORE DETAILS.

27.61m

25.46m

32.85m

31.78m

52.86m

PROPOSED McDONALD'S RESTAURANT
BIOMOD 450
FFL =

CASHIER

SERVERY

3RD WINDOW

CONCRETE

LOADING BAY

DRIVE THRU BAY

CORRAL

PLAYPLACE

NO ENTRY

DUAL LANE DRIVE-THRU
14DT CAR STACK.

ACCESSIBLE PARKING BAY TO AS2890.6 AND AS1428.1.

PEDESTRIAN CROSSING.

INTERNAL ROAD #2

Lt (12) Dc (21) Ec (11) Cr (5) Axh (11) Cr (5) Wf (4) Pp (17) Dc (21) Et (3) Ec (15) Wf (5) Axh (13) Cg (6) Wf (5) Ec (13) Lt (12) Pp (9) Axh (8) Eg (5) Wf (9) Lt (39)

Cg (9) Wf (4) Cg (28) Dc (10) Ll (9) Dc (10) Ll (9) Dc (11) Lt (20) Axh (27) Ri (7) Dc (8) Eg (6) Dc (21) Axt (15) Ca (1) Dc (6) Pp (14) Dc (17) Vt (11) Pp (15) Ev (1) Lt (30) Ri (9) Ri (13) Lxt (6) Ri (9) Dc (17) Ca (1) Wfm (5) Dc (27) Ca (1) Wfm (5) Ca (1) Wfm (6) Lb (4)

LANDSCAPE NOTES:

IRRIGATION
If irrigation is to be installed, we recommend an automatic controller, such as Rainbird ESP or similar. Lateral lines should be PVC and HDPE combination, drip irrigation lines are to be Netafirm 'Techline' or similar, installed beneath mulch.

A qualified irrigation contractor should be engaged to design the system (including controller, valve and piping requirements) and to complete all irrigation works (trenching and conduit installation may be completed by the contractor).

Conduits to planters and garden beds are to be installed beneath paving, drainage outlet points are to be coordinated with the building storm water design.

Water and electrical connection points are to be coordinated with the building design and specified on the engineers drawings. Upon completion, the system is to be tested and commissioned prior to hand-over, as-built drawings and manuals to be prepared and submitted.

DRAINAGE
Drainage for the development will be integrated and connected into the building stormwater design. Proposed topping areas to be graded/drained to prevent water discharge into neighbouring properties.

PLANTING
Driveway trees to have lower limbs uplifted to maintain clear site lines and be positioned to ensure trunk is offset min. 600mm from kerb. Trees adjacent to driveway should incorporate structural soil mix within 2.0m radius under pavement.

Trees and shrubs shall be healthy nursery stock free from insects, diseases and weeds, the specified plant heights, and pot sizes are minimum. If plant material is unavailable in these sizes, larger stock must be used. Plant substitution is not acceptable.

GENERAL NOTES
This drawing is for Town Planning purposes only.
Do not scale from plan - contractor to verify all dimensions on site prior to commencing construction.

The plants used have low water requirements.
Native plant species selection chosen for environmental appropriateness and low maintenance/irrigation requirements.

Low growing shrub forms maintain sight lines and provide colour interest.

Neat architectural foliage to provide year-round green texture without ongoing maintenance (clipping, pruning) requirements.

LEGEND

- Proposed Trees (Refer to planting schedule)
- Proposed Shrubs (Refer to planting schedule)
- Proposed Grasses & Groundcovers (Refer to planting schedule)
- Mulched Gardenbed (Mossrock 'Hogged Bark' or similar)
- Road / Carpark (Refer to Engineer Drawings)
- Concrete Exposed Aggregate (Refer to Engineer Drawings)
- Extent of Works

INDICATIVE PLANTING PALETTE

Cupaniopsis anacardioides

Eucalyptus torquata

Eucalyptus victrix

Correa alba

Euphorbia characias Wulfenii

Leucophyta brownii

Viburnum tinus 'Laurustinus

Westringia hybrid

Anigozanthos x hybrid Yellow

Dianella caerulea 'King Alfred'

Lomandra longifolia 'Tanika'

Poa poiformis

TAYLORS
Urban Development | Built Environments | Infrastructure
T:+61 3 9501 2800 | E:tds@taylords.com.au | W:taylords.com.au
Taylors Development Strategists - ABN 48 042 392 373
c:\users\ndo\taylors development strategists pty ltd\24894 - documents\acad\landscape architecture\24894_mcdonalds baldivist_detailed landscape plan_rev b.dwg | L01 PLAN

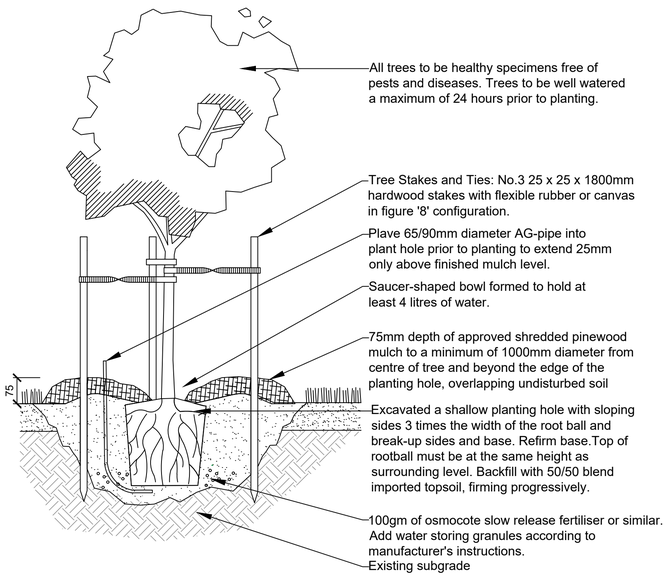
Job No. 24894/LA | LANDSCAPE PLAN | REV B
Date 04/09/2024
By. NDO Ckd. KAS

McDONALD'S AUSTRALIA LIMITED
LOT 9014 SIXTY EIGHT ROAD, BALDIVIS
City of Rockingham Council

LANDSCAPE PLAN
L01: Overall Layout

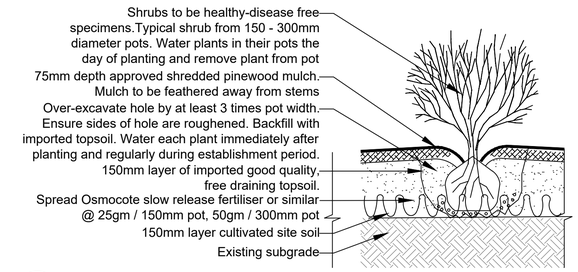
PLANT SCHEDULE

CODE	BOTANIC NAME	COMMON NAME	SIZE (MATURITY)	RECOMMEND POT SIZE	QUANTITY
TREES					
Ca	*Cupaniopsis anacardioides*	Tuckeroo	5-8 x 5-7m	45Lt	4
Et	*Eucalyptus torquata*	Coral Gum	6 x 3m	45Lt	3
Ev	*Eucalyptus victrix*	Western Coolibah	12m x 8m	45Lt	1
SHRUBS					
Cr	*Correa alba*	White Correa	1.5 x1.5m	250mm	10
Ec	*Euphorbia characias ssp. Wulfenii*	Euphorbia Wulfenii	1.5 x0.8m	250mm	39
Lb	*Leucophyta brownii*	Cushion Bush	1.2 x1.2m	250mm	4
Ri	*Rhaphiolepis indica*	Cosmic Pink	0.5-0.8 x 0.5-0.8m	250mm	38
Vt	*Viburnum tinus 'Laurustinus*	Viburnmum Laurustinus	3.0m x 2.5-3 m	250mm	11
Wf	*Westringia hybrid*	Blue Gem	1.0-1.5 x 0.8-1.30m	250mm	22
GRASSES & GROUNDCOVERS					
Axh	*Anigozanthos x hybrid 'Yellow Gem'*	Kangaroo paw	1.5 x 1.0m	140mm	74
Cg	*Carpobrotus glaucescens*	Aussie Ramblerrls	0.2 x 2.0m	140mm	43
Dc	*Dianella caerulea 'King Alfred'*	Dianella King Alfred	0.7 x 0.7m	140mm	177
Eg	*Eremophila glabra Roseworthy*	Emu Bush	0.3 x 2.0m	140mm	11
Ll	*Lomandra longifolia*	Mat Rush	0.6 x 1.0m	140mm	18
Lt	*Lomandra longifolia tanika*	Tanika	0.65 x 0.65m	140mm	113
Lxt	*Lomandra Lime Tuff*	Lomandra Lime Tuff	0.4 x 0.4m	140mm	6
Pp	*Poa poiformis*	Coastal Tussock-Grass	0.5 x 0.8m	140mm	55
Wfm	*Westringia fruticosa 'Mundi'*	Westringia Mundi	0.4 x 1.5m	140mm	16



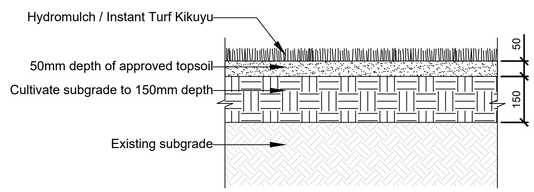
A L02 TYPICAL TREE PLANTING DETAIL (ADVANCED STOCK)

not to scale



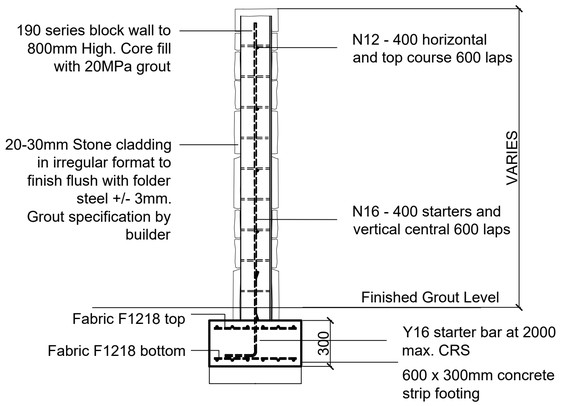
B L02 TYPICAL SHRUB PLANTING DETAIL

not to scale



C L02 TYPICAL GRASSING DETAIL

not to scale



D L02 TYPICAL STONE CLAD WALL DETAIL

not to scale

TAYLORS
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Taylors Development Strategists - ABN 48 042 392 373

c:\users\ndo\taylors development strategists pty ltd\24894 - documents\acad\landscape architecture\24894_mcdonalds baldivist_detailed landscape plan_rev b.dwg | L02 DETAILS

Job No. 24894/LA | LANDSCAPE PLAN | REV B
Date. 04/09/2024
By. NDO Ckd. KAS

McDONALD'S AUSTRALIA LIMITED
LOT 9014 SIXTY EIGHT ROAD, BALDIVIS
City of Rockingham Council

LANDSCAPE PLAN
L02: Landscape Details

MAINTENANCE NOTES

The Landscape maintenance period is to be a minimum **12 months** duration from Practical Completion.

Maintenance shall be comprised of the following works to ensure continuous healthy growth of all vegetation and ensure the site is maintained in a tidy fashion for the duration of the Maintenance Period:

Initial establishment (first 3 months);
- **minimum weekly site visits**

Consolidation period (3-6 months);
- **minimum weekly site visits during warmer months**
- **minimum fortnightly site visits during cooler months**

Ongoing period (6-12 months);
- **minimum fortnightly site visits**

Maintenance Works
Commencement: Immediately following Practical Completion
Maintenance Period Duration: 12 months (52 weeks)

Actions to be undertaken: All vegetation planted as part of the program of works will be regularly maintained to ensure ongoing health and establishment of the works, including:

- watering,
- weeding,
- rubbish removal,
- fertilising,
- pest and disease control,
- re-staking and tying,
- replanting,
- mulching, and
- pruning.

This work will be undertaken by the landscape contractor appointed by the developer. The work is to be undertaken on a minimum basis outlined above and as required to ensure successful establishment as per the contract specifications.
The developer will be responsible for the costs associated with the Maintenance Period.

Maintenance Specification
Maintain the landscape works intensely for a period of 13 weeks to ensure healthy establishment (weekly visits) followed by regular ongoing maintenance for a minimum duration of 12 months following the date of the issue of the Certificate of Practical Completion.
Any defects shall be rectified immediately.
Maintenance shall include the care of the works by accepted horticultural practices, as well as rectifying any defects that become apparent in the works under normal use. This shall include, but shall not be limited to, the following items where and as required:

WATERING, FERTILIZING, CULTIVATION, TOP DRESSING, RENOVATING, WEEDING, PESTS AND DISEASE CONTROL, STAKING MAINTENANCE, REPLACEMENT OF PLANT MATERIALS, REPLANTING, PRUNING, RE-MULCHING, MOWING OF GRASS, KEEPING THE SITE NEAT AND TIDY.

Any soil subsidence or erosion which may occur after the soil filling and preparation operations shall be made good.
All newly planted areas shall be protected from casual pedestrian traffic as specified herein. Protective fences, where required, shall be removed following successful establishment of the works.

All mulched surfaces shall be kept in a clean and tidy condition and be reinstated or topped up where necessary.

Defects liability: The whole of the works shall be upheld against any defects due to faulty and / or inferior quality materials
and / or workmanship as per the requirements of the Head Contract.
.
Practical completion of planting: Practical completion of the planting works includes, but is not limited to the replacement of plants which have failed, been damaged or been stolen during the works.

Program: Furnish a proposed planting maintenance program, and amend it as required. Comply with the amended program.

Log book: Keep a log book recording when and what maintenance work has been done and what materials, including toxic materials, have been used. Make the log book available for inspection on request.

Existing planting and grass: Where existing planting or grass is within the landscape contract area, maintain it as for the corresponding classifications of new grassland or planting.

Recurrent works: Throughout the maintenance period, continue to carry out recurrent works of a maintenance nature including, but not limited to, watering, mowing, weeding, rubbish removal, fertilising, pest and disease control, reseeding, returfing, staking and tying, replanting, cultivating, pruning, hedge clipping, aerating, renovating, top dressing, weekly mowing of grass and keeping the site neat and tidy.

Replacements: Continue to replace failed, damaged or stolen plants. If failed due to incorrect/insufficient establishment or maintenance or technique, or neglect, no additional cost for replacement may be claimed.
It is the Contractor's responsibility to demonstrate plants have been stolen/vandalised.

Mulched surfaces: Maintain the surface in a clean and tidy condition and reinstate the mulch as necessary.

Grassed areas: Carry out grass mowing throughout the contract period only as required to maintain the site in a neat, healthy condition

Insecticide Spraying: Spray against insect and fungus infestation as required, and if considered necessary by the Superintendent.
All spraying shall be carried out in accordance with the manufacturer's directions.
Report any occurrence of insect attack or evidence of disease amongst the plant material. The Superintendent shall be notified prior to spraying work being carried out.

Watering: All planting and garden beds are to be watered regularly to ensure continuous healthy growth. The minimum requirement shall be consistent with the natural rainfall of the site location. New planting shall receive regular and frequent deep soakings to ensure establishment and healthy growth. Watering method and technique shall accord with current water restrictions. Monitor water requirements and water adequately to ensure active growth, especially during warmer months.

Garden Areas: Garden beds shall be maintained in a weed free state. Any use of spot spraying or other form of weeding shall be
undertaken so as not to damage plants planted as art of the contract. Any planting planted as part of the contract which is damaged by the contractor shall be replaced at the contractor's expense.
The Contractor shall mow the grass areas at a suitable height as instructed so as to maintain healthy growth and a neat appearance. The mowing frequency may be subject to change as approved by the Superintendent due to weather and other circumstances. Other maintenance activities for grassing such as weeding, reseeding, and rolling etc. shall be priced separately and approved by the Superintendent. If approved, grass areas to be weeded shall be sprayed with approved selective herbicide against broadleaf weeds in accordance with the manufacturer's directions.

Appendix 4:
Transport Impact Assessment

Engineering a better future for over 20 years!

McDonald's Baldivis South – Parkland Heights Neighbourhood Centre

Transport Impact Assessment

PREPARED FOR:
McDonald's Australia Ltd

September 2024

Document history and status

Author	Revision	Approved by	Date approved	Revision type
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1 Introduction

This Transport Impact Assessment has been prepared by Transcore on behalf of McDonald's Australia Limited with respect to a proposed McDonald's restaurant at Lot 9018 Nairn Drive, Baldivis, in the City of Rockingham.

The subject site is located on the western side of Nairn Drive approximately midway between Furnivall Parade and Arpenteur Drive within the future Parkland Heights Neighbourhood Centre site in Baldivis, as shown in **Figure 1**.

Figure 1: Location of the subject site

2 Development Proposal

The proposed development is a McDonald's restaurant with drive through facility, as shown in the site plans at **Appendix A** and **Figure 2**.

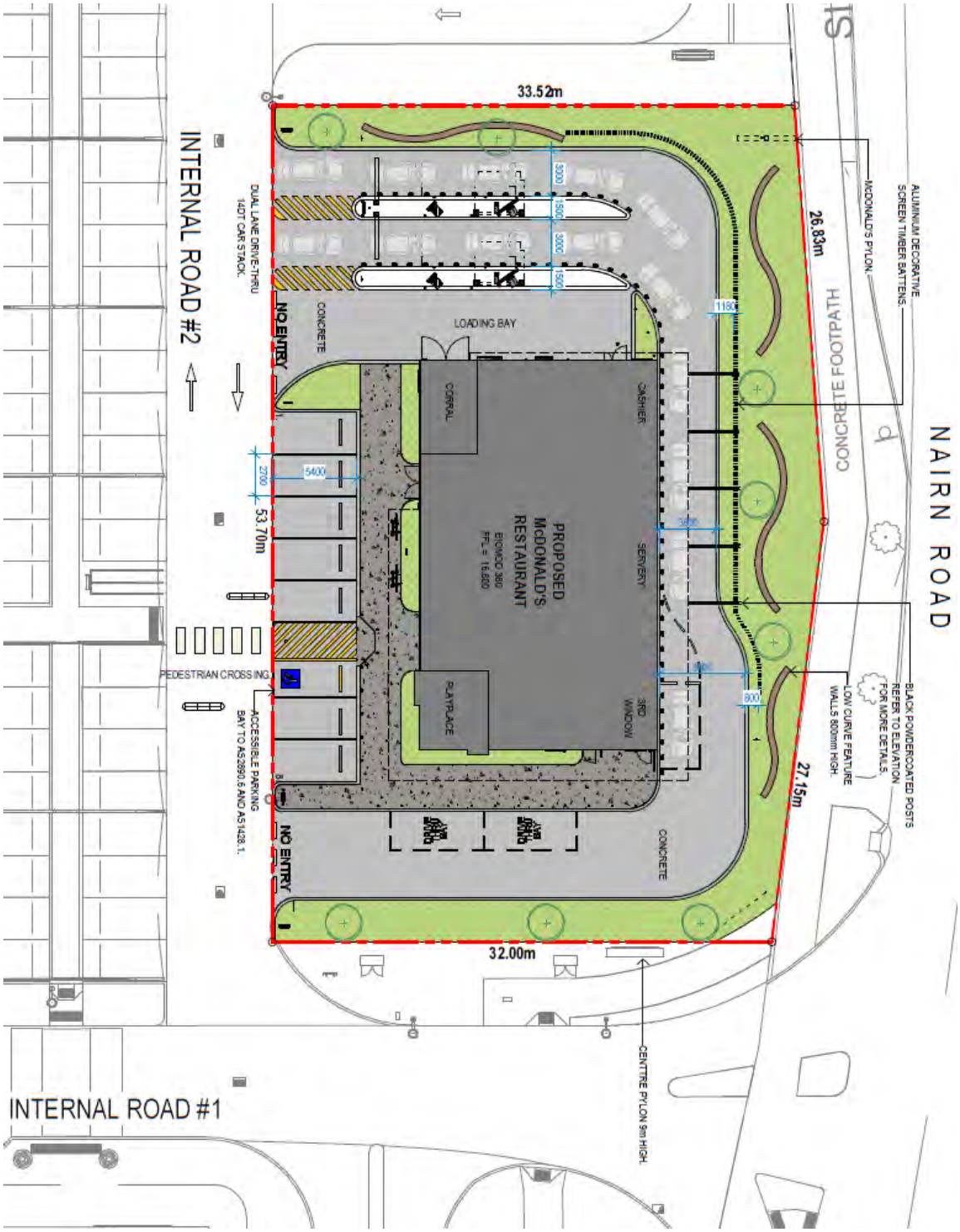


Figure 2: Proposed development

The site plan shows that the proposed development includes:

- Proposed McDonald's restaurant (380m^2 floor area);
- Drive through facility with two ordering lanes, cashier window (queuing space for 13 cars), servery window and third window (servery window with separate waiting bay) and two waiting bays (total queuing / waiting capacity 16 cars);
- 8 parking bays including 1 disabled bay; and
- Loading bay adjacent to bin store (corral).

Access to the proposed development will utilise internal circulation roads within the overall Parkland Heights Neighbourhood Centre Local Develoment Plan, as illustrated in **Figure 3** below.

Figure 3: Site location within Parkland Heights Neighbourhood Centre LDP

The main access route from the public road network will be via the planned right in / left in / left out driveway crossover of the shopping centre on Nairn Drive adjacent to the proposed McDonald's restaurant.

A loading bay and bin store (corral) is shown at the northern side of the building. Turn path plans have been prepared for entry and exit movements by a 12.5m heavy rigid vehicle to demonstrate that service vehicles up this size can be accommodated by the proposed site layout. The turn paths are presented in **Appendix B**.

Turn paths for a large car (B99 car) have been prepared for the drive through lanes to demonstrate satisfactory operation of the drive through lanes, as well.

3 Existing Situation

3.1 Existing Land Use

The planned Parkland Heights Neighbourhood Centre site, including the subject site, is currently vacant land, as shown in **Figure 1**. Residential subdivision is progressing all around the Neighbourhood Centre site with substantial areas of residential development already completed further to the east, north, west and southwest of the Neighbourhood Centre site, including a primary school east of Nairn Drive.

3.2 Existing Road Network

The current extent of the existing road network constructed around the Parkland Heights Neighbourhood Centre site is shown in **Figure 1**.

Nairn Drive is constructed as a 4-lane, dual carriageway road with a 6m median and 1.5m on-road cycle lanes. 2.5m shared paths are provided on both sides of the road in the vicinity of the subject site.

Nairn Drive is currently classified as a Local Distributor in the Main Roads WA functional road hierarchy, but is planned as an Integrator Arterial in the local structrure plan (LSP) and is already constructed to Integrator A standard. The default built up area speed limit of 50km/h currently applies on this section of Nairn Drive within the LSP area but on other sections further north (north of the LSP area boundary) a 70km/h posted speed limit applies.

Furnivall Parade is constructed as a 2-lane divided road with a 3m median and 1.5m on-road cycle lanes and parallel parking bays indented in the verge on both sides in this vicinity. 2.5m shared paths are provided on both sides of the road in the vicinity of the subject site.

Furnivall Parade is currently classified as an Access Road in the Main Roads WA functional road hierarchy, but is planned as a Neighbourhood Connector A the LSP and is already constructed to that standard. The default built up area speed limit of 50km/h applies on this road.

Arpenteur Drive is classified as a Local Distributor on the sections that have been constructed north of Furnivall Parade and further north of the LSP area. The section of Arpenteur Drive on the western side of the Subject Site has not yet been constructed but the section abutting the southern boundary of the site is constructed as a single carriageway, 2-lane road with 7.4m width between kerbs. It currently has a 2m path on the southern side only as the western section is only recently constructed. The default built up area speed limit of 50km/h applies on this road.

3.3 Existing Traffic Volumes

Traffic count information on roads in the surrounding area previously obtained from the City of Rockingham is as follows:

- Arpenteur Drive (south of Ridge Boulevard) 1,146vpd (April 2019)
- Regency Avenue (west of Gareth Land) 298vpd (July 2018)
- Nairn Drive (north of Ridge Boulevard) 6,030vpd (April 2022)

The Main Roads WA website provides a 2023/24 traffic count on Eighty Road north of Sixty Eight Road, which recorded average weekday traffic flows of 3,677 vehicles per day with 5.4% heavy vehicles.

3.4 Public Transport Access

The existing bus service in the Baldivis area includes routes 564 and 565 from Warnbro station, as shown in **Figure 4**. Route 564 currently terminates at Ridge Boulevard approximately 600m north of the subject site and route 565 passes to the east of the LSP area on Smirk Road, approximately 750m east of the subject site.

Figure 4: Existing Bus Routes

3.5 Pedestrian and Cyclist Facilities

Shared paths are provided on both sides of Nairn Drive and Furnivall Parade, and on the southern side of Chelsea Way / Arpenteur Drive opposite the southern boundary of the neighbourhood centre site. Pedestrian crossing opportunities with refuge islands are available at each of the roundabouts at the southeast, northeast and northwest corners of the neighbourhood centre site and midblock on Nairn Drive adjacent to the subject site, as can be seen in **Figure 5**.

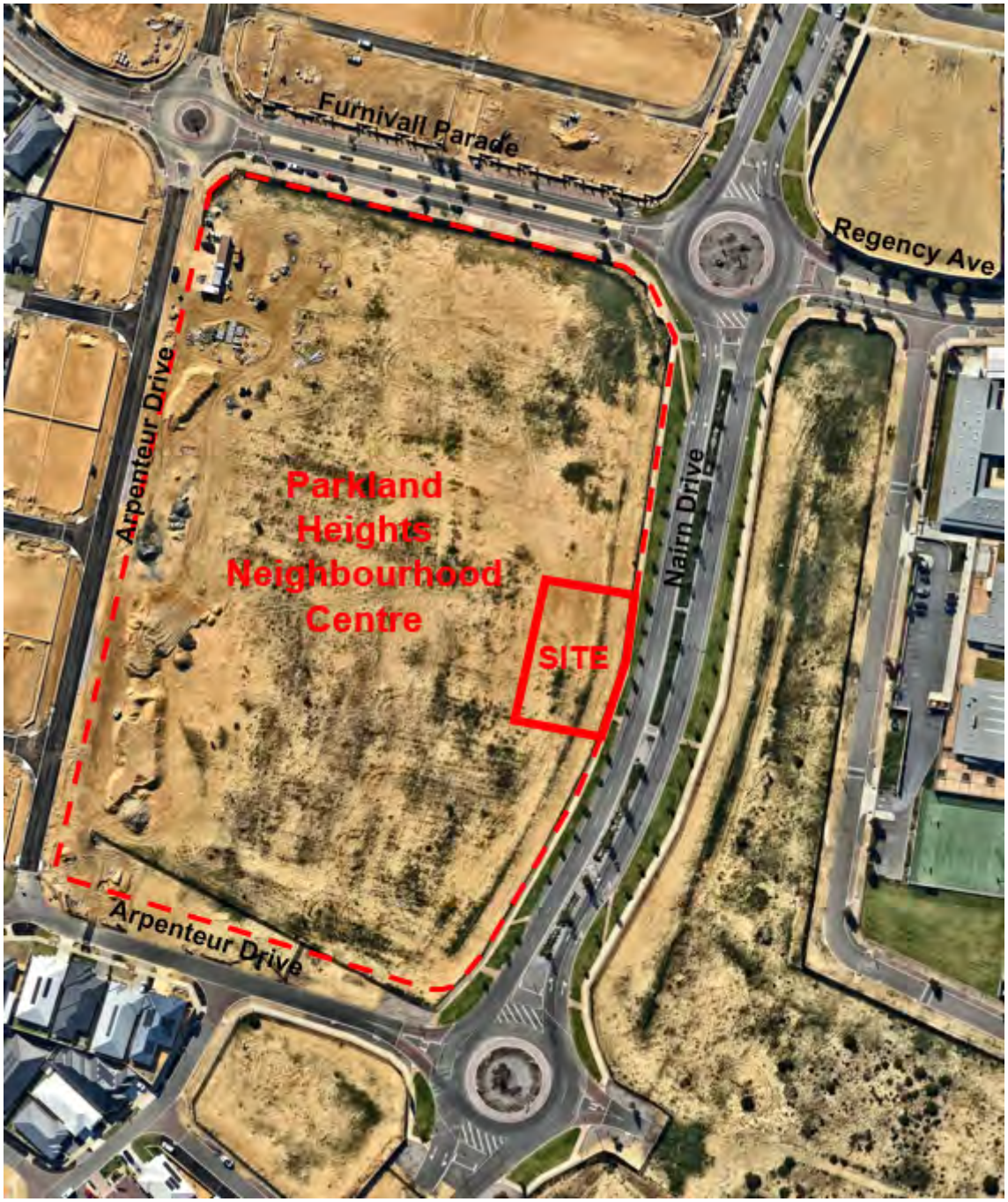


Figure 5: Existing roads and paths

There are also 1.5m on-road cycle lanes provided on Nairn Drive and Furnivall Parade adjacent to the subject site.

3.6 Crash Data

No crashes were recorded for the five-year period 2019-2023 on the roads adjacent to the Parkland Heights Neighbourhood Centre (Nairn Drive, Furnivall Parade and Arpenteur Drive).

Figure 6: Location of Crashes

The adjacent section of Furnivall Parade was constructed in 2019, Nairn Drive in 2020, Arpenteur Drive to the south in 2020 and Arpenteur Drive to the west in 2024.

4 Changes to Surrounding Transport Networks

Full development of the Parkland Heights LSP area will include construction of Nairn Drive southwards to connect to Eighty Road at the existing Eighty Rd / Sixty Eight Rd intersection. This will complete this arterial road link from Safety Bay Road to Sixty Eight Road and will take over that arterial route function from the corresponding section of Eighty Road.

Eighty Road will be realigned north of Sixty Eight Road to connect at right angles to Nairn Drive about 200m north of Sixty Eight Road and the current alignment immediately north of Sixty Eight Road will be closed off. This will reinforce the arterial route function of Nairn Drive northwards through Baldivis past the planned Parkland Heights Neighbourhood Centre.

5 Integration with Surrounding Area

The Parkland Heights Neighbourhood Centre is an integral component of the surrounding Parkland Heights Local Structure Plan. It is appropriately located adjacent to the main arterial route (Nairn Drive) through this precinct and well located to serve the local catchment area in this southwestern portion of Baldivis.

The proposed development is consistent with the type of land uses appropriate within this Neighbourhood Centre

6 Traffic Assessment

6.1 Assessment Period

The *Parkland Heights, Baldivis - Neighbourhood Centre Stage 1 Development Transport Impact Assessment* (February 2023) has recently been updated with an *Initial Stages Development Transport Impact Assessment Addendum* (19 August 2024), which includes traffic analysis of the future full development scenario (Local Development Plan full development) for an assessment year of 2036.

The traffic analysis for the Parkland Heights Neighbourhood Centre addresses the weekday AM and PM peak periods, which are anticipated to be the overall peak periods of total traffic flows on the adjacent road network.

The peak period for the proposed McDonald's restaurant is anticipated to be the Saturday lunchtime peak period, but overall road network peak periods will be the weekday AM and PM peak periods.

Accordingly, traffic analysis in this report focusses on that future, full development scenario and assesses weekday AM and PM peaks.

6.2 Trip Generation and Distribution

The traffic volumes anticipated to be generated by the proposed development have been estimated using trip generation rates derived from the ITE *Trip Generation Manual (11th Edition)*. The applicable trip rates which were used to estimate the proposed land uses are:

Fast-Food Restaurant with Drive-Through Window (#934)

- Weekday road network AM peak hour: 48.0 vph per 100m^2 GFA;
- Weekday road network PM peak hour: 35.6 vph per 100m^2 GFA;
- Weekday peak hour of development: 54.8 vph per 100m^2 GFA;
- Saturday peak hour of development: 59.5 vph per 100m^2 GFA.

The ITE data indicates that the peak hours of development traffic generation on weekdays and Saturdays occur during the lunchtime peak period, which is not a road network peak period.

Trips associated with the proposed restaurant may be internal trips within the neighbourhood centre site (eg. combined with trips to the shopping centre) or passing-trade trips (trips already on the road network and not specifically generated by the proposed development), or primary trips (new trips only visiting the proposed restaurant).

The ITE *Trip Generation Handbook (3rd Edition)* provides additional information on internal trips within a mixed-use development and on pass-by and primary trips for various types of land use. Based on the information provided it is estimated that approximately 33% of the trips visiting the restaurant would be internal trips within the neighbourhood centre site (eg. to/from the shopping centre, service station, etc.) and approximately 50% of the remainder would be pass-by trips.

Accordingly, it is estimated that the proposed McDonald's restaurant (380m^2 floor area) would generate the following total traffic flows:

- Weekday road network AM peak hour: 182 vph;
- Weekday road network PM peak hour: 136 vph;
- Weekday peak hour of development: 208 vph;
- Saturday peak hour of development: 226 vph.

Table 1: Traffic generation

	AM peak hour		PM peak hour		Saturday peak hour	
	IN	OUT	IN	OUT	IN	OUT
Internal trips	31	31	22	22	37	37
Pass-by trips	30	30	23	23	38	38
Primary trips	30	30	23	23	38	38
Total trips	**91**	**91**	**68**	**68**	**113**	**113**

These traffic flows are already factored into the overall traffic generation of the neighbourhood centre site in the *Transport Impact Assessment Addendum* (19 August 2024) for the Parkland Heights Neighbourhood Centre.

6.3 Future Total Traffic Flows

The peak period traffic flows expected to be generated by the full development of the neighbourhood centre site, including the proposed McDonald's restaurant, have been sourced from the *Transport Impact Assessment Addendum* (19 August 2024) for the Parkland Heights Neighbourhood Centre.

Future total traffic flows for 2036 weekday AM and PM peak hours are shown in **Figure 7**.

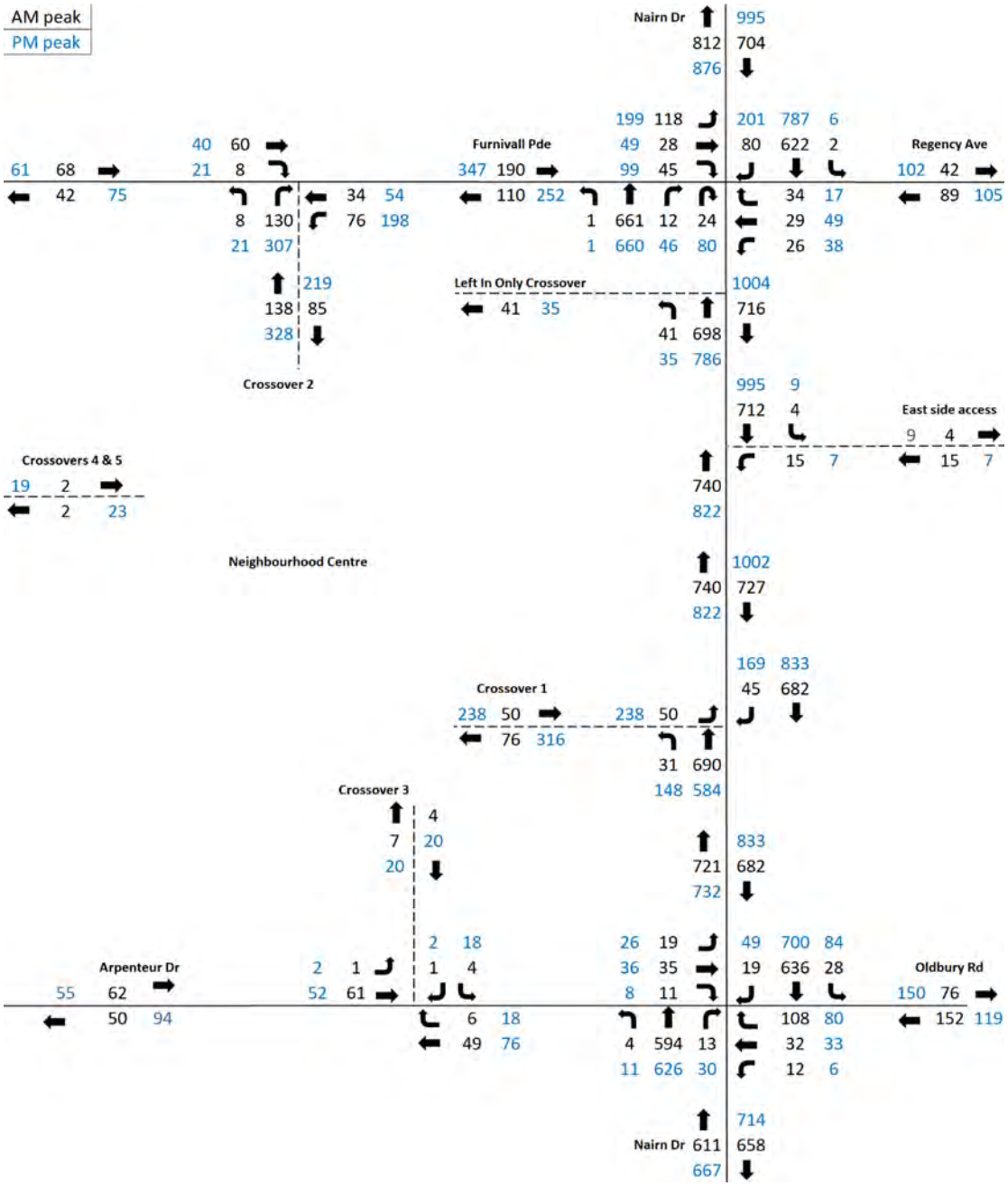


Figure 7: 2036 Peak hour total traffic flows with future full development

6.4 Intersection Analysis

Intersection capacity analysis (sourced from the *Transport Impact Assessment Addendum* (19 August 2024) for the Parkland Heights Neighbourhood Centre) has been undertaken for the overall neighbourhood centre site crossovers on Nairn Drive, Furnivall Parade and Arpenteur Drive, the Nairn Dr / Furnivall Pde / Regency Ave roundabout and the Nairn Dr / Arpenteur Dr / Oldbury Rd roundabout to confirm satisfactory intersection operations under the modelled 2036 AM and PM peak hour traffic flows shown in **Figure 7**.

For this assessment, relevant heavy vehicle parameters in SIDRA are in accordance with current Main Roads WA guidelines.

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

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

The results of the SIDRA analysis are summarised in **Appendix C** and show the following degrees of saturation (DoS) in the 2036 weekday AM peak and PM peak hours, respectively:

- Nairn Dr / Furnivall Pde / Regency Ave roundabout: DoS 0.254 / 0.417
- Nairn Dr / Arpenteur Dr / Oldbury Rd roundabout: DoS 0.222 / 0.278
- Nairn Dr / Crossover 1 (right in / left in / left out): DoS 0.202 / 0.500
- Nairn Dr / left in only driveway crossover: DoS 0.210 / 0.294
- Furnivall Pde / Crossover 2 driveway crossover: DoS 0.128 / 0.327
- Arpenteur Dr / Crossover 3 driveway crossover: DoS 0.034 / 0.054

The most important driveway crossover for access for the proposed McDonald's restaurant is the Nairn Dr / Crossover 1 driveway crossover, which is planned to accommodate right in / left in / left out (RILILO) traffic movements. It will have a right turn lane in the Nairn Drive median to allow right turning vehicles to slow and queue within that right turn lane without impeding southbound through traffic on Nairn Drive. A left turn inbound deceleration lane is also included due to the modelled left

turn traffic volume in the PM peak, although this has not been required at most other existing intersections along Nairn Drive.

The SIDRA results for this RILILO driveway crossover are shown in Tables C5a (AM peak) and C5b (PM peak). They indicate that this proposed access arrangement would operate at degree of saturation 0.202 in the 2036 AM peak and 0.500 in the PM peak. All movements would be at LoS A, B or C indicating good traffic operation. The right turn inbound movement only shows a 95% queue length of 2.3 vehicles in the PM peak hour, so the proposed right turn lane in the median will easily accommodate this movement.

All movements at all of the other intersections and driveways analysed are indicated as operating at Level of Service A or B (very good operation) with minimal traffic queues and delays.

The analysis confirms that all of the intersections and driveways assessed will have more than sufficient capacity to accommodate the forecast traffic flows in that future, full-development scenario, with significant spare capacity available.

6.5 Impact on Surrounding Roads and Neighbouring Areas

The WAPC *Transport Impact Assessment Guidelines* (2016) provides the following guidance on the assessment of traffic impacts:

"As a general guide, an increase in traffic of less than 10 percent of capacity would not normally be likely to have a material impact on any particular section of road, but increases over 10 percent may. All sections of road with an increase greater than 10 percent of capacity should therefore be included in the analysis. For ease of assessment, an increase of 100 vehicles per hour for any lane can be considered as equating to around 10 percent of capacity. Therefore, any section of road where development traffic would increase flows by more than 100 vehicles per hour for any lane should be included in the analysis."

As can be seen in **Table 1**, the proposed development will not increase traffic on any lanes on the surrounding road network by more than 100vph (increases will actually be significantly less than this threshold). Therefore, the proposed development will not increase traffic flows at or above the quoted WAPC threshold on the surrounding roads to warrant further detailed analysis.

6.6 Traffic Noise and Vibration

It generally requires a doubling of traffic volumes on a road to produce a perceptible 3dB(A) increase in road noise. The proposed development traffic will be very much less than half of the future total traffic on adjacent roads so it will not represent a sufficient proportion of total traffic volumes to account for a perceptible increase in noise on the surrounding roads.

6.7 Road Safety

No particular road safety issues have been identified in relation to the proposed development.

7 Parking Assessment

The site plan at **Appendix A** shows that the proposed development includes:

- Drive through facility with two ordering lanes, cashier window (queuing space for 13 cars), servery window and third window (servery window with separate waiting bay) and two waiting bays (total queuing / waiting capacity 16 cars);
- 8 parking bays including 1 disabled bay; and
- Loading bay adjacent to bin store (corral).

The proposed restaurant is located within the overall neighbourhood centre site and it is understood that customers will have unrestricted access to the surrounding parking areas, which will generally function as a shared parking facility for all retail / commercial uses on the overall neighbourhood centre site.

Accordingly, parking provision is considered satisfactory for the proposed development.

8 Drive-Through Queue Analysis

NSW Guidelines:

Section 5.8.1 of the New South Wales *Guide to Traffic Generating Developments* deals with the parking requirements for drive-in, take-away food outlets. This clause states that:

"An exclusive area for queuing of cars for a drive through is required (queue length of 5 to 12 cars measured from pick up point). There should also be a minimum of four car spaces for cars queued from the ordering point."

The proposed McDonald's restaurant proposes a two-lane drive through facility with two Customer Order Booths (COB). This facility merges into a single lane for payment and pickup. The proposed drive through facility entails provision of at least 13 car queuing capacity within the drive through facility including a combined queuing space for at least six cars at the COBs, plus one space at the third window (second servery) and two waiting bays in the drive-through exit lane.

Accordingly, the proposed drive through facility meets the NSW guide's recommended drive through queuing area provisions.

Drive-through queue length analysis model

Based on the peak hour trip generation, the proposed McDonald's restaurant is estimated to generate a total of 226vph (113vph inbound and 113vph outbound) during the critical morning peak hour. It is further estimated that, allowing for 10% walk-in trade and a 60/40 drive-through/park'n'sit ratio typical for such restaurants, it is estimated that there could be around 61 drive-through transactions/customers/cars during the Saturday peak period.

According to the advice provided, the average order-taking cycle is estimated at approximately 45 seconds, translating into a service rate of 80 vehicles per hour (maximum capacity of the single COB drive through system). However, in order to provide for a robust assessment, it is assumed that the order-taking cycle would average 1 minute equating to 60 vehicles per hour service rate capacity. It is assumed that two COBs will be in operation during the peak periods, giving a theoretical order taking service rate of 120 vehicles per hour. It is also assumed that cars would enter the COB with the shortest queue, therefore over the peak hour the transactions at each COB would be more or less evenly split.

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

The queuing model adopts the following assumptions:

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

The results of the queuing analysis are detailed in **Figure 8**.

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

M/M/s	vph	vps
Arrival rate	61	0.016944
Service rate	60	0.016667
Number of servers	2	2

Utilization	50.83%		50.83%	
P(0), probability that the system is empty	0.3260		0.3260	
Lq, expected queue length	0.3542	(cars)	6.0000	(metres)
L, expected number in system	1.3709	(cars)	12.0000	(metres)
Wq, expected time in queue	0.0058	(hours)	20.9065	(seconds)
W, expected total time in system	0.0225	(hours)	80.9065	(seconds)
Probability that a customer waits	0.3426		0.3426	
95% Queue	4.0000	(cars)	24.0000	(metres)

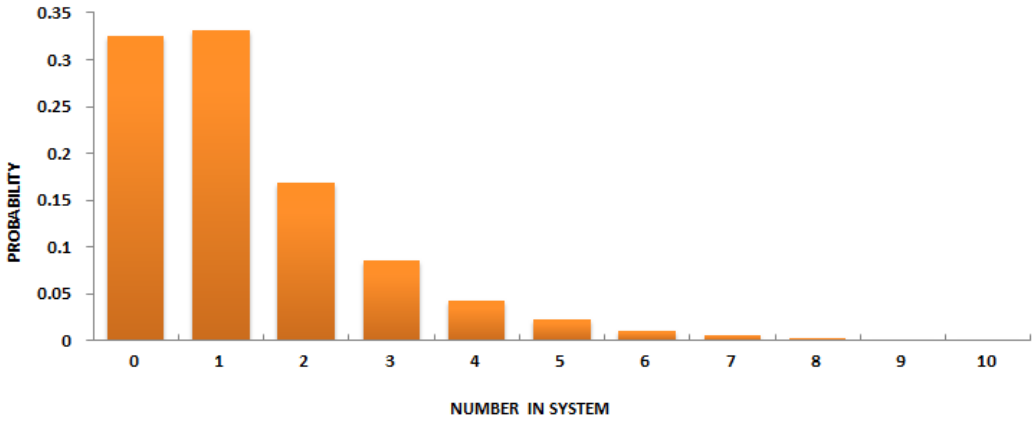


Figure 8: Saturday peak drive-through queuing analysis

In summary, critical peak hour queuing analysis of the drive through system established the following for each COB:

- There is zero queuing 32% of the time;
- The expected (average) number of vehicles in the system is two;
- The expected (average) total time in the system is 81 seconds; and,
- The 95th percentile queue is two vehicles at each COB.

The queue length usually adopted for robust analysis is the 95th percentile queue. This queue length will not be exceeded 95% of the time.

Based on the queue estimation model, it is concluded that under typical peak conditions the queue back from each COB will be accommodated within the site with no impact on other internal driveways and surrounding road network.

9 Public Transport Access

Details of the available public transport services in this locality are provided in Section 3.4 of this report.

It is anticipated that the planning for future upgrades to existing public transport services will ultimately provide an appropriate level of public transport accessibility for this site as part of the overall Parkland Heights Neighbourhood Centre in Baldivis.

10 Pedestrian and Cyclist Access

Details of the pedestrian and cyclist facilities in this locality are provided in Section 3.5 of this report.

The existing and planned facilities within the overall Parkland Heights Neighbourhood Centre will provide satisfactory pedestrian and cyclist access for the proposed development.

11 Conclusions

This Transport Impact Assessment relates to a proposed McDonald's restaurant at Lot 9018 Nairn Drive, Baldivis, in the City of Rockingham.

The subject site is located on the western side of Nairn Drive approximately midway between Furnivall Parade and Arpenteur Drive within the future Parkland Heights Neighbourhood Centre site in Baldivis.

The proposed development is a McDonald's restaurant (380m^2 floor area) with drive through facility.

The proposed development includes 8 parking bays (including 1 disabled bay) and 16 spaces within the drive-through facility, and a separate loading bay adjacent to the bin store (corral). It is understood that customers will have unrestricted access to the surrounding parking areas of the overall neighbourhood centre site, which will generally function as a shared parking facility for all retail / commercial uses on the overall neighbourhood centre site, so parking provision is considered satisfactory for the proposed development.

Access to the proposed development will utilise internal circulation roads within the overall neighbourhood centre site. The main access route from the public road network will be via the planned right in / left in / left out driveway crossover of the shopping centre on Nairn Drive adjacent to the proposed McDonald's restaurant.

The proposed development is anticipated to generate a total of approximately 226 vehicle trips (113 in / 113 out) during the Saturday peak period. This traffic would form part of the total traffic generation of the planned Parkland Heights Neighbourhood Centre that the adjacent road network has been planned for, with approximately one third being trips already attracted by other uses in the neighbourhood centre, one third being pass-by trips already on the adjacent road network and only one third being additional traffic generation to the neighbourhood centre. Thus, the proposed development would not have a significant traffic impact on the surrounding road network.

Intersection capacity analysis for the future, full development of the neighbourhood centre, including this proposed restaurant, confirms satisfactory operation of all of the neighbourhood centre driveways and adjacent intersections on Nairn Drive.

Pedestrian and cyclist access to the proposed development will be accommodated by the existing and planned path network and on-road cycle lanes on the adjacent road network, in accordance with WAPC *Liveable Neighbourhoods* principles.

No particular transport or safety issues have been identified for the proposed development within the scope of this assessment.

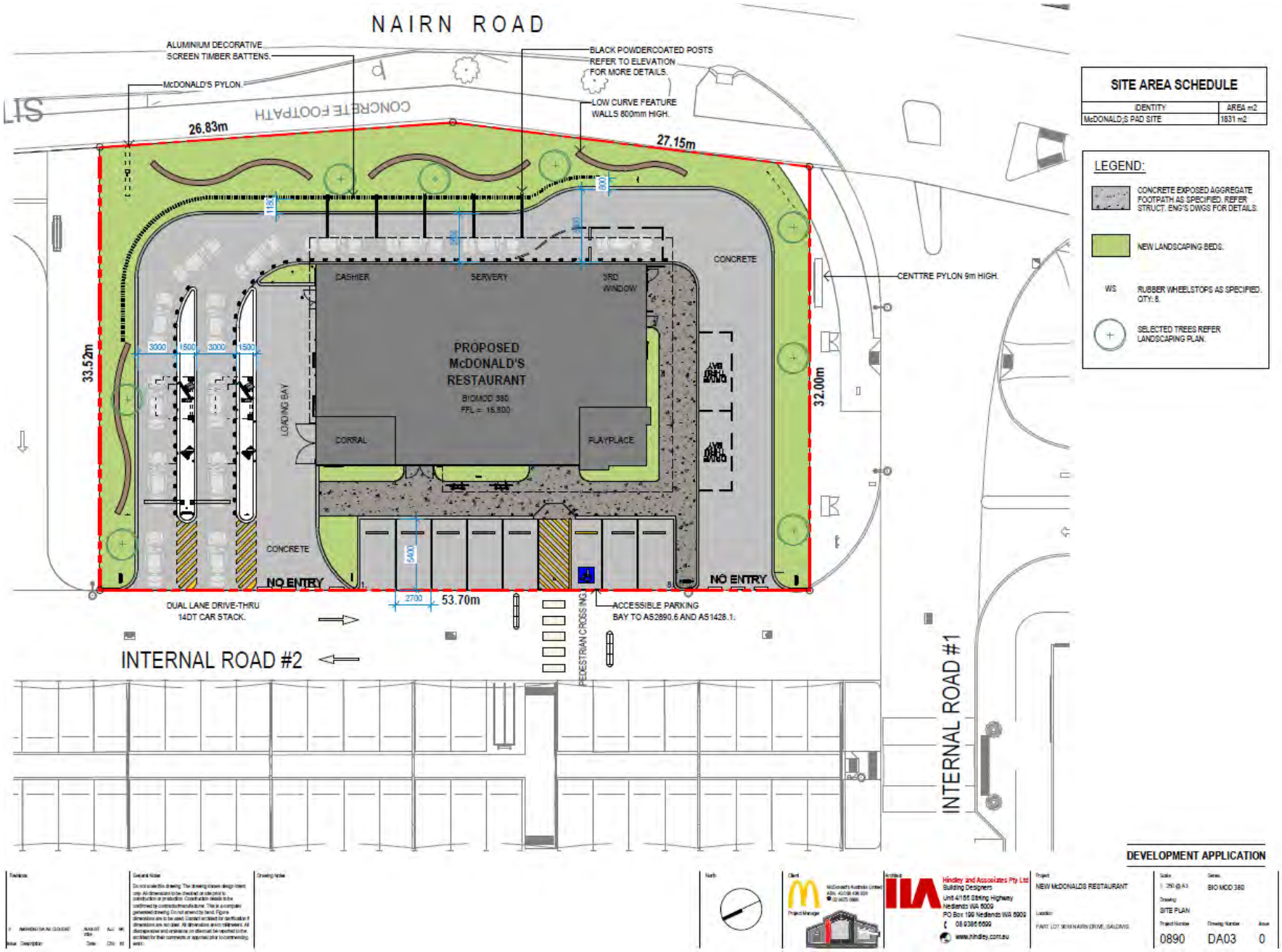
Accordingly, it is concluded that traffic-related issues should not form any impediment to the approval of the proposed development.

Appendix A

PROPOSED DEVELOPMENT PLAN

transcore

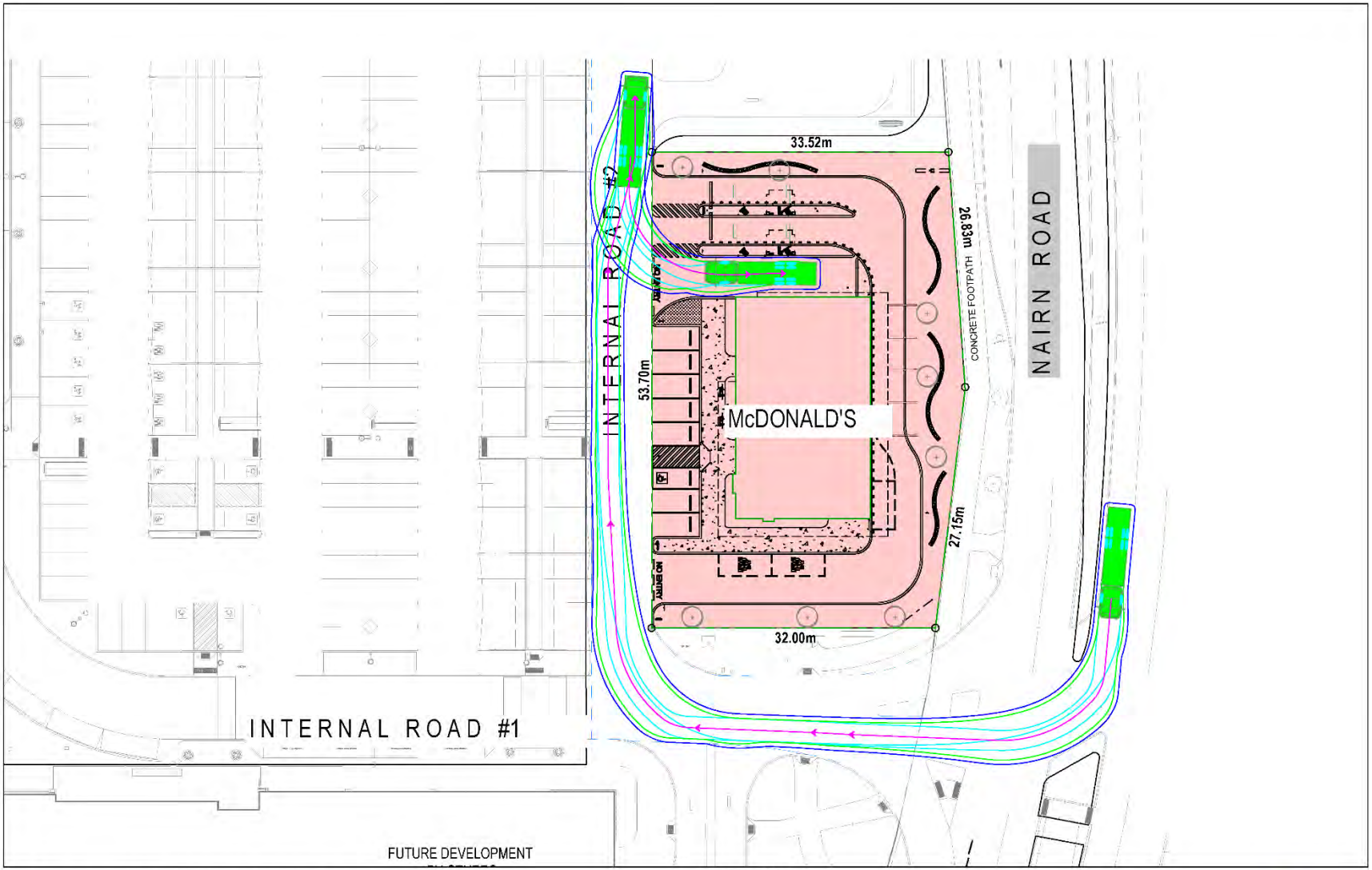
Engineering a better future for over 20 years!


NAIRN ROAD
ALUMINIUM DECORATIVE SCREEN TIMBER BATTENS.
McDONALD'S PYLON.
BLACK POWDERCOATED POSTS REFER TO ELEVATION FOR MORE DETAILS.
LOW CURVE FEATURE WALLS 800mm HIGH.
CONCRETE FOOTPATH
26.83m
27.15m
33.52m
32.00m
CASHIER
SERVERY
3RD WINDOW
PROPOSED McDONALD'S RESTAURANT
BIOMOD 380
FFL = 16.800
CORRAL
PLAYPLACE
LOADING BAY
CONCRETE
CENTTRE PYLON 9m HIGH.
NO ENTRY
NO ENTRY
DUAL LANE DRIVE-THRU 14DT CAR STACK.
53.70m
ACCESSIBLE PARKING BAY TO AS2890.6 AND AS1428.1.
PEDESTRIAN CROSSING
INTERNAL ROAD #2
INTERNAL ROAD #1
SITE AREA SCHEDULE
IDENTITY
AREA m2
McDONALD;S PAD SITE
1631 m2
LEGEND:
CONCRETE EXPOSED AGGREGATE FOOTPATH AS SPECIFIED, REFER STRUCT. ENG'S DWGS FOR DETAILS.
NEW LANDSCAPING BEDS.
WS
RUBBER WHEELSTOPS AS SPECIFIED. QTY: 8.
SELECTED TREES REFER LANDSCAPING PLAN.
DEVELOPMENT APPLICATION
Hindley and Associates Pty Ltd
Building Designers
Unit 4/166 Stirling Highway
Nedlands WA 6009
PO Box 199 Nedlands WA 6909
08 9386 6699
www.hindley.com.au
NEW McDONALDS RESTAURANT
SITE PLAN
BIO MOD 380
0890
DA03
0

Appendix B

TURN PATH ANALYSIS

Engineering a better future for over 20 years!

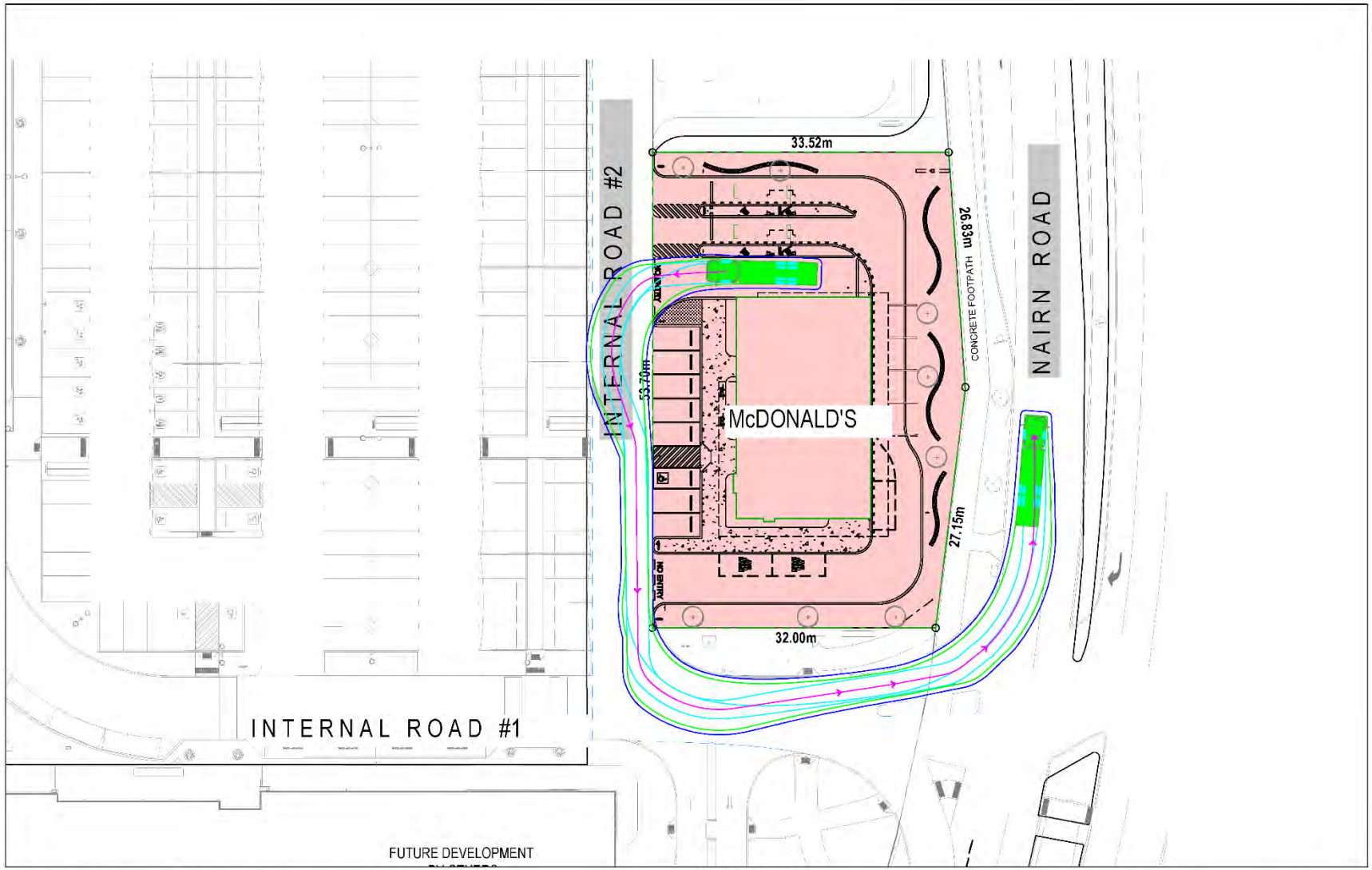


McDonald's Baldivis South - Parklands Heights
Austroads 2023 :12.5m Service Vehicle
Service vehicle entry

LEGEND
Vehicle Body
Wheel Path
500mm Clearance

t24.181.sk01a
02/09/2024
Scale: 1:400 @ A3

transcore



McDonald's Baldivis South - Parklands Heights

Austroads 2023 :12.5m Service Vehicle

Service vehicle exit

LEGEND

Vehicle Body

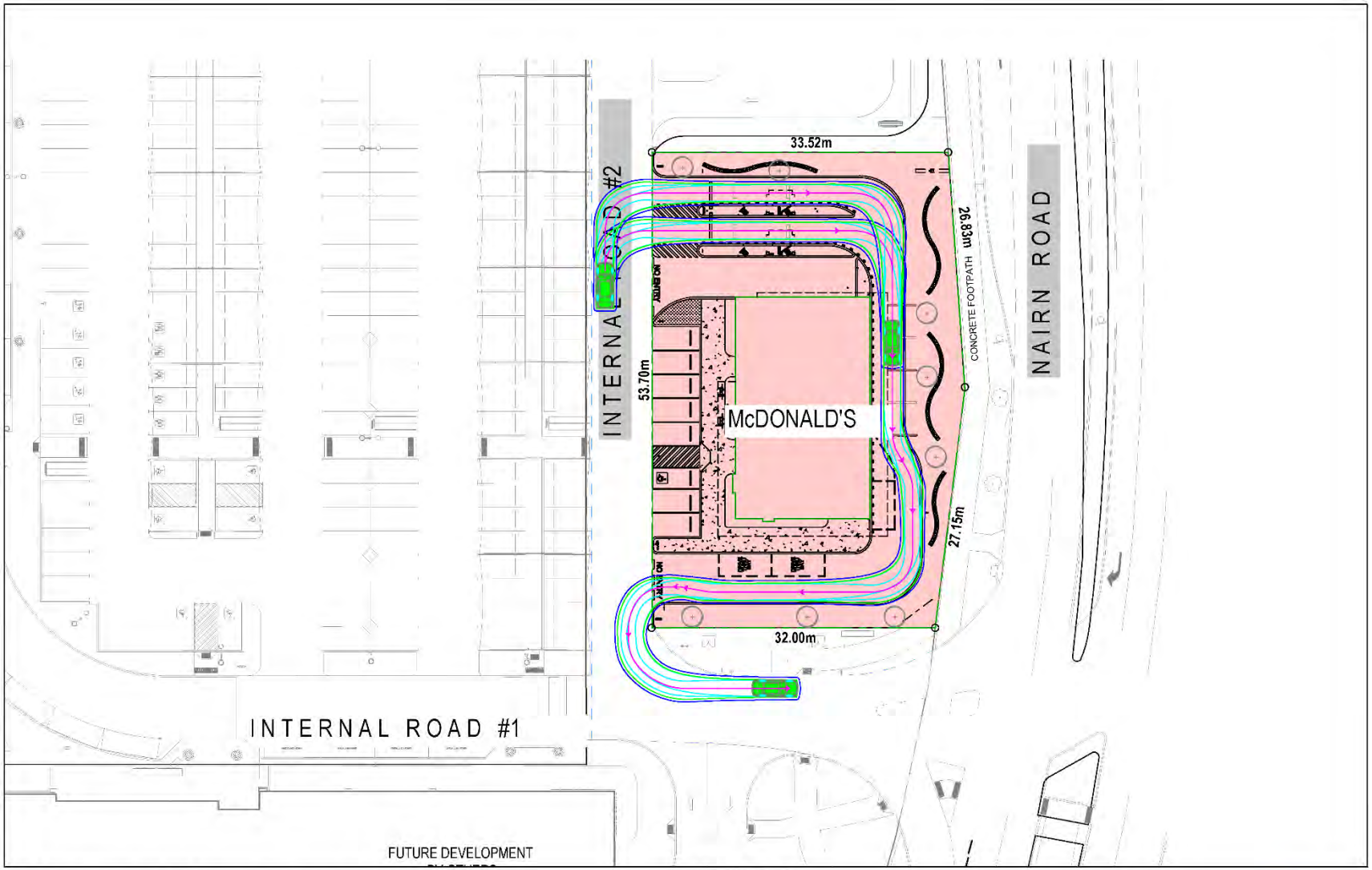
Wheel Path

500mm Clearance

t24.181.sk02a

02/09/2024

Scale: 1:400 @ A3



McDonald's Baldivis South - Parklands Heights
Austroads 2023: B99 Passenger Car
B99 Car circulation - Drive-through lanes

LEGEND
Vehicle Body
Wheel Path
300mm Clearance

t24.181.sk03a
02/09/2024
Scale: 1:400 @ A3

Appendix C

SIDRA INTERSECTION ANALYSIS

transcore

Engineering a better future for over 20 years!

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.

Not to Scale

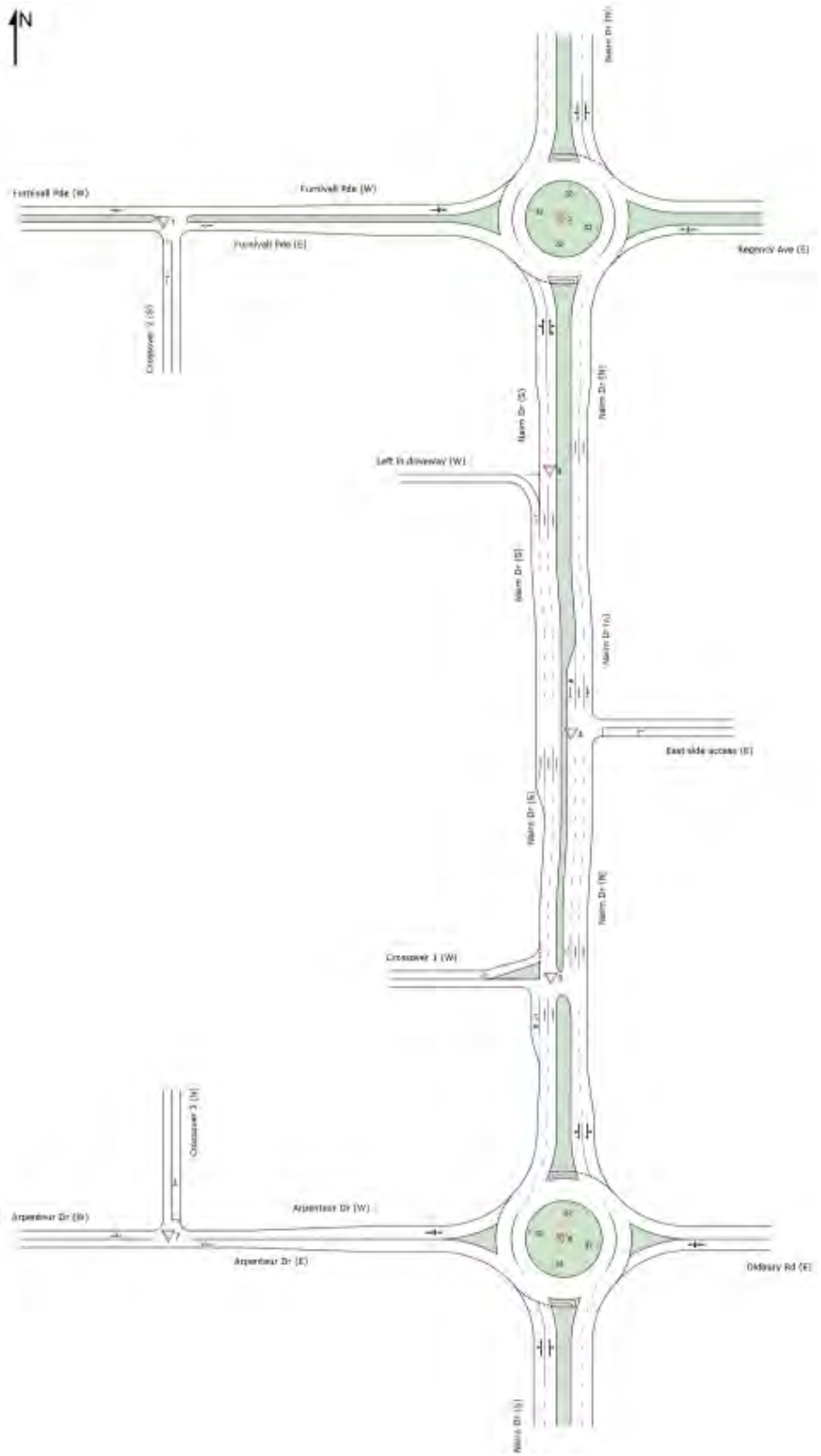


Figure C1: Nairn Drive Intersections and Neighbourhood Centre Driveway Crossovers Analysed in SIDRA Network

Table C1a. SIDRA results – Furnivall Pde / Crossover 2 intersection – 2036 Weekday AM peak (with full LDP development)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Crossover 2 (S)															
7	L2	All MCs	8	3.0	8	3.0	0.128	0.1	LOS A	0.4	3.4	0.22	0.15	0.22	23.0
9	R2	All MCs	137	3.0	137	3.0	0.128	0.8	LOS A	0.4	3.4	0.22	0.15	0.22	18.0
Approach			145	3.0	145	3.0	0.128	0.8	LOS A	0.4	3.4	0.22	0.15	0.22	18.5
East: Furnivall Pde (E)															
10	L2	All MCs	80	3.0	80	3.0	0.063	4.6	LOS A	0.0	0.0	0.00	0.37	0.00	33.8
11	T1	All MCs	36	3.1	36	3.1	0.063	0.0	LOS A	0.0	0.0	0.00	0.37	0.00	40.1
Approach			116	3.0	116	3.0	0.063	3.2	NA	0.0	0.0	0.00	0.37	0.00	35.8
West: Furnivall Pde (W)															
5	T1	All MCs	63	3.1	63	3.1	0.039	0.1	LOS A	0.1	0.4	0.06	0.08	0.06	44.3
6	R2	All MCs	8	3.0	8	3.0	0.039	4.9	LOS A	0.1	0.4	0.06	0.08	0.06	31.9
Approach			72	3.1	72	3.1	0.039	0.6	NA	0.1	0.4	0.06	0.08	0.06	41.7
All Vehicles			333	3.0	333	3.0	0.128	1.6	NA	0.4	3.4	0.11	0.22	0.11	29.6

Table C1b. SIDRA results – Furnivall Pde / Crossover 2 intersection – 2036 Weekday PM peak (with full LDP development)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Crossover 2 (S)															
7	L2	All MCs	22	3.0	22	3.0	0.327	0.2	LOS A	1.4	10.4	0.34	0.25	0.34	22.5
9	R2	All MCs	323	3.0	323	3.0	0.327	1.4	LOS A	1.4	10.4	0.34	0.25	0.34	17.3
Approach			345	3.0	345	3.0	0.327	1.3	LOS A	1.4	10.4	0.34	0.25	0.34	17.9
East: Furnivall Pde (E)															
10	L2	All MCs	208	3.0	208	3.0	0.144	4.6	LOS A	0.0	0.0	0.00	0.42	0.00	32.9
11	T1	All MCs	57	3.1	57	3.1	0.144	0.0	LOS A	0.0	0.0	0.00	0.42	0.00	39.0
Approach			265	3.0	265	3.0	0.144	3.6	NA	0.0	0.0	0.00	0.42	0.00	34.3
West: Furnivall Pde (W)															
5	T1	All MCs	42	3.1	42	3.1	0.039	0.5	LOS A	0.1	1.1	0.26	0.28	0.26	35.2
6	R2	All MCs	22	3.0	22	3.0	0.039	5.5	LOS A	0.1	1.1	0.26	0.28	0.26	28.4
Approach			64	3.1	64	3.1	0.039	2.2	NA	0.1	1.1	0.26	0.28	0.26	31.9
All Vehicles			675	3.0	675	3.0	0.327	2.3	NA	1.4	10.4	0.20	0.32	0.20	26.7

Table C2a. SIDRA results – Nairn Dr / Furnivall Pde / Regency Ave roundabout – 2036 Weekday AM peak (with full LDP development)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Nairn Dr (S)															
1	L2	All MCs	1	3.1	1	3.1	0.254	3.0	LOS A	1.5	12.0	0.32	0.42	0.32	37.3
2	T1	All MCs	696	9.1	696	9.1	0.254	3.7	LOS A	1.5	12.0	0.33	0.44	0.33	54.2
3	R2	All MCs	13	3.1	13	3.1	0.254	9.1	LOS A	1.4	11.6	0.34	0.47	0.34	40.7
3u	U	All MCs	25	3.1	25	3.1	0.254	11.8	LOS B	1.4	11.6	0.34	0.47	0.34	35.2
Approach			735	8.8	735	8.8	0.254	4.0	LOS A	1.5	12.0	0.33	0.44	0.33	53.9
East: Regency Ave (E)															
4	L2	All MCs	27	3.1	27	3.1	0.113	4.0	LOS A	0.5	3.5	0.53	0.61	0.53	35.8
5	T1	All MCs	31	3.1	31	3.1	0.113	4.5	LOS A	0.5	3.5	0.53	0.61	0.53	35.8
6	R2	All MCs	36	3.1	36	3.1	0.113	10.1	LOS B	0.5	3.5	0.53	0.61	0.53	49.5
Approach			94	3.1	94	3.1	0.113	6.5	LOS A	0.5	3.5	0.53	0.61	0.53	43.7
North: Nairn Dr (N)															
7	L2	All MCs	2	3.1	2	3.1	0.248	5.0	LOS A	1.4	11.6	0.27	0.42	0.27	53.7
8	T1	All MCs	655	9.1	655	9.1	0.248	5.3	LOS A	1.4	11.6	0.28	0.45	0.28	56.0
9	R2	All MCs	84	3.1	84	3.1	0.248	11.3	LOS B	1.4	11.1	0.29	0.49	0.29	54.7
Approach			741	8.4	741	8.4	0.248	6.0	LOS A	1.4	11.6	0.28	0.45	0.28	55.8
West: Furnivall Pde (W)															
10	L2	All MCs	124	3.1	124	3.1	0.211	3.8	LOS A	0.9	7.2	0.51	0.56	0.51	51.8
11	T1	All MCs	29	3.1	29	3.1	0.211	3.9	LOS A	0.9	7.2	0.51	0.56	0.51	39.0
12	R2	All MCs	47	3.1	47	3.1	0.211	9.5	LOS A	0.9	7.2	0.51	0.56	0.51	30.8
Approach			201	3.1	201	3.1	0.211	5.2	LOS A	0.9	7.2	0.51	0.56	0.51	48.1
All Vehicles			1771	7.7	1771	7.7	0.254	5.1	LOS A	1.5	12.0	0.34	0.47	0.34	53.5

Table C2b. SIDRA results – Nairn Dr / Furnivall Pde / Regency Ave roundabout – 2036 Weekday PM peak (with full LDP development)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Nairn Dr (S)															
1	L2	All MCs	1	3.1	1	3.1	0.317	3.6	LOS A	2.1	16.8	0.48	0.48	0.48	34.5
2	T1	All MCs	695	9.1	695	9.1	0.317	4.3	LOS A	2.1	16.8	0.49	0.52	0.49	52.7
3	R2	All MCs	48	3.1	48	3.1	0.317	9.8	LOS A	2.0	15.5	0.51	0.59	0.51	38.1
3u	U	All MCs	84	3.1	84	3.1	0.317	12.6	LOS B	2.0	15.5	0.51	0.59	0.51	30.9
Approach			828	8.1	828	8.1	0.317	5.5	LOS A	2.1	16.8	0.49	0.53	0.49	51.2
East: Regency Ave (E)															
4	L2	All MCs	40	3.1	40	3.1	0.168	5.2	LOS A	0.8	6.1	0.69	0.68	0.69	35.4
5	T1	All MCs	52	3.1	52	3.1	0.168	5.8	LOS A	0.8	6.1	0.69	0.68	0.69	35.4
6	R2	All MCs	18	3.1	18	3.1	0.168	11.4	LOS B	0.8	6.1	0.69	0.68	0.69	49.5
Approach			109	3.1	109	3.1	0.168	6.5	LOS A	0.8	6.1	0.69	0.68	0.69	39.7
North: Nairn Dr (N)															
7	L2	All MCs	6	3.1	6	3.1	0.396	5.8	LOS A	2.7	21.7	0.50	0.51	0.50	52.1
8	T1	All MCs	828	9.1	828	9.1	0.396	6.2	LOS A	2.7	21.7	0.51	0.54	0.51	53.5
9	R2	All MCs	212	3.1	212	3.1	0.396	12.3	LOS B	2.6	20.1	0.53	0.60	0.53	51.7
Approach			1046	7.9	1046	7.9	0.396	7.4	LOS A	2.7	21.7	0.51	0.55	0.51	53.1
West: Furnivall Pde (W)															
10	L2	All MCs	209	3.1	209	3.1	0.417	4.6	LOS A	2.3	17.7	0.66	0.65	0.67	50.7
11	T1	All MCs	52	3.1	52	3.1	0.417	4.6	LOS A	2.3	17.7	0.66	0.65	0.67	37.9
12	R2	All MCs	104	3.1	104	3.1	0.417	10.2	LOS B	2.3	17.7	0.66	0.65	0.67	29.1
Approach			365	3.1	365	3.1	0.417	6.2	LOS A	2.3	17.7	0.66	0.65	0.67	46.2
All Vehicles			2349	7.0	2349	7.0	0.417	6.5	LOS A	2.7	21.7	0.54	0.57	0.54	50.9

Table C3a. SIDRA results – Nairn Dr / west side left in only driveway – 2036 Weekday AM peak (with full LDP development)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Nairn Dr (S)															
10	L2	All MCs	43	3.0	43	3.0	0.024	7.2	LOS A	0.0	0.0	0.00	0.67	0.00	31.6
11	T1	All MCs	735	9.1	735	9.1	0.204	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach			778	8.8	778	8.8	0.204	0.4	NA	0.0	0.0	0.00	0.04	0.00	63.1
North: Nairn Dr (N)															
5	T1	All MCs	754	9.1	754	9.1	0.210	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach			754	9.1	754	9.1	0.210	0.0	NA	0.0	0.0	0.00	0.00	0.00	69.9
All Vehicles			1532	8.9	1532	8.9	0.210	0.2	NA	0.0	0.0	0.00	0.02	0.00	65.5

Table C3b. SIDRA results – Furnivall Pde / west side left in only driveway – 2036 Weekday PM peak (with full LDP development)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Nairn Dr (S)															
10	L2	All MCs	37	3.0	37	3.0	0.020	7.2	LOS A	0.0	0.0	0.00	0.67	0.00	31.6
11	T1	All MCs	827	9.1	827	9.1	0.230	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach			864	8.8	864	8.8	0.230	0.3	NA	0.0	0.0	0.00	0.03	0.00	64.5
North: Nairn Dr (N)															
5	T1	All MCs	1057	9.1	1057	9.1	0.294	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.8
Approach			1057	9.1	1057	9.1	0.294	0.0	NA	0.0	0.0	0.00	0.00	0.00	69.8
All Vehicles			1921	9.0	1921	9.0	0.294	0.1	NA	0.0	0.0	0.00	0.01	0.00	66.7

Table C4a. SIDRA results – Nairn Dr / East side access LILO intersection – 2036 Weekday AM peak (with full LDP development)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Nairn Dr (S)															
5	T1	All MCs	779	9.1	779	9.1	0.144	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach			779	9.1	779	9.1	0.144	0.0	NA	0.0	0.0	0.00	0.00	0.00	69.9
East: East side access (E)															
7	L2	All MCs	16	3.0	16	3.0	0.016	1.0	LOS A	0.1	0.4	0.33	0.19	0.33	17.7
Approach			16	3.0	16	3.0	0.016	1.0	LOS A	0.1	0.4	0.33	0.19	0.33	17.7
North: Nairn Dr (n)															
10	L2	All MCs	4	3.0	4	3.0	0.140	5.2	LOS A	0.0	0.0	0.00	0.01	0.00	40.9
11	T1	All MCs	749	9.1	749	9.1	0.140	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.5
Approach			754	9.1	754	9.1	0.140	0.0	NA	0.0	0.0	0.00	0.00	0.00	69.1
All Vehicles			1548	9.0	1548	9.0	0.144	0.0	NA	0.1	0.4	0.00	0.00	0.00	67.9

Table C4b. SIDRA results – Furnivall Pde / East side access LILO intersection – 2036 Weekday PM peak (with full LDP development)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Nairn Dr (S)															
5	T1	All MCs	865	9.1	865	9.1	0.160	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach			865	9.1	865	9.1	0.160	0.0	NA	0.0	0.0	0.00	0.00	0.00	69.9
East: East side access (E)															
7	L2	All MCs	7	3.0	7	3.0	0.008	1.6	LOS A	0.0	0.2	0.39	0.24	0.39	17.3
Approach			7	3.0	7	3.0	0.008	1.6	LOS A	0.0	0.2	0.39	0.24	0.39	17.3
North: Nairn Dr (n)															
10	L2	All MCs	9	3.0	9	3.0	0.196	5.2	LOS A	0.0	0.0	0.00	0.02	0.00	40.7
11	T1	All MCs	1047	9.1	1047	9.1	0.196	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	69.2
Approach			1057	9.0	1057	9.0	0.196	0.1	NA	0.0	0.0	0.00	0.01	0.00	68.6
All Vehicles			1929	9.0	1929	9.0	0.196	0.0	NA	0.0	0.2	0.00	0.00	0.00	68.4

Table C5a. SIDRA results – Nairn Dr / Crossover 1 RILILO intersection – 2036 Weekday AM peak (with full LDP development)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Nairn Dr (S)															
10	L2	All MCs	33	3.1	33	3.1	0.018	5.4	LOS A	0.0	0.0	0.00	0.60	0.00	34.0
11	T1	All MCs	726	9.1	726	9.1	0.202	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach			759	8.8	759	8.8	0.202	0.2	NA	0.0	0.0	0.00	0.03	0.00	65.6
North: Nairn Dr (N)															
5	T1	All MCs	718	9.1	718	9.1	0.200	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
6	R2	All MCs	47	3.1	47	3.1	0.135	12.1	LOS B	0.4	3.2	0.68	0.86	0.68	16.2
Approach			765	8.7	765	8.7	0.200	0.8	NA	0.4	3.2	0.04	0.05	0.04	51.5
West: Crossover 1 (W)															
7	L2	All MCs	53	3.1	53	3.1	0.060	1.8	LOS A	0.2	1.6	0.42	0.32	0.42	17.2
Approach			53	3.1	53	3.1	0.060	1.8	LOS A	0.2	1.6	0.42	0.32	0.42	17.2
All Vehicles			1577	8.6	1577	8.6	0.202	0.5	NA	0.4	3.2	0.03	0.05	0.03	56.0

Table C5b. SIDRA results – Furnivall Pde / Crossover 1 RILILO intersection – 2036 Weekday PM peak (with full LDP development)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Nairn Dr (S)															
10	L2	All MCs	156	3.1	156	3.1	0.086	5.4	LOS A	0.0	0.0	0.00	0.60	0.00	34.0
11	T1	All MCs	615	9.1	615	9.1	0.171	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach			771	7.9	771	7.9	0.171	1.1	NA	0.0	0.0	0.00	0.12	0.00	54.4
North: Nairn Dr (N)															
5	T1	All MCs	877	9.1	877	9.1	0.244	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.8
6	R2	All MCs	178	3.1	178	3.1	0.500	16.4	LOS C	2.3	17.8	0.78	1.01	1.18	13.6
Approach			1055	8.1	1055	8.1	0.500	2.8	NA	2.3	17.8	0.13	0.17	0.20	33.0
West: Crossover 1 (W)															
7	L2	All MCs	251	3.1	251	3.1	0.266	1.8	LOS A	1.1	8.2	0.44	0.35	0.44	17.2
Approach			251	3.1	251	3.1	0.266	1.8	LOS A	1.1	8.2	0.44	0.35	0.44	17.2
All Vehicles			2076	7.4	2076	7.4	0.500	2.0	NA	2.3	17.8	0.12	0.17	0.15	37.1

Table C6a. SIDRA results – Nairn Dr / Arpenteur Dr / Oldbury Rd roundabout – 2036 Weekday AM peak (with full LDP development)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Nairn Dr (S)															
1	L2	All MCs	4	3.1	4	3.1	0.220	5.1	LOS A	1.2	9.5	0.30	0.44	0.30	56.4
2	T1	All MCs	625	9.1	625	9.1	0.220	5.5	LOS A	1.2	9.5	0.31	0.45	0.31	56.2
3	R2	All MCs	14	3.1	14	3.1	0.220	11.4	LOS B	1.1	9.1	0.33	0.46	0.33	52.5
Approach			643	8.9	643	8.9	0.220	5.6	LOS A	1.2	9.5	0.31	0.45	0.31	56.0
East: Oldbury Rd (E)															
4	L2	All MCs	13	3.1	13	3.1	0.161	3.5	LOS A	0.5	4.1	0.44	0.63	0.44	49.5
5	T1	All MCs	34	3.1	34	3.1	0.161	3.5	LOS A	0.5	4.1	0.44	0.63	0.44	35.1
6	R2	All MCs	114	3.1	114	3.1	0.161	9.1	LOS A	0.5	4.1	0.44	0.63	0.44	35.1
Approach			160	3.1	160	3.1	0.161	7.5	LOS A	0.5	4.1	0.44	0.63	0.44	37.3
North: Nairn Dr (N)															
7	L2	All MCs	29	3.1	29	3.1	0.227	3.9	LOS A	1.1	9.2	0.17	0.40	0.17	44.3
8	T1	All MCs	669	9.1	669	9.1	0.227	4.1	LOS A	1.1	9.2	0.17	0.41	0.17	54.7
9	R2	All MCs	20	3.1	20	3.1	0.227	10.0	LOS A	1.1	9.0	0.18	0.42	0.18	40.7
Approach			719	8.7	719	8.7	0.227	4.3	LOS A	1.1	9.2	0.17	0.41	0.17	54.3
West: Arpenteur Dr (W)															
10	L2	All MCs	20	3.1	20	3.1	0.067	2.6	LOS A	0.2	1.6	0.39	0.47	0.39	30.8
11	T1	All MCs	37	3.1	37	3.1	0.067	2.9	LOS A	0.2	1.6	0.39	0.47	0.39	40.2
12	R2	All MCs	12	3.1	12	3.1	0.067	8.1	LOS A	0.2	1.6	0.39	0.47	0.39	52.5
Approach			68	3.1	68	3.1	0.067	3.7	LOS A	0.2	1.6	0.39	0.47	0.39	42.4
All Vehicles			1591	8.0	1591	8.0	0.227	5.1	LOS A	1.2	9.5	0.27	0.45	0.27	53.3

Table C6b. SIDRA results – Nairn Dr / Arpenteur Dr / Oldbury Rd roundabout – 2036 Weekday PM peak (with full LDP development)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Nairn Dr (S)															
1	L2	All MCs	12	3.1	12	3.1	0.240	5.1	LOS A	1.3	10.3	0.31	0.44	0.31	56.4
2	T1	All MCs	659	9.1	659	9.1	0.240	5.5	LOS A	1.3	10.3	0.31	0.46	0.31	56.0
3	R2	All MCs	32	3.1	32	3.1	0.240	11.4	LOS B	1.2	9.9	0.33	0.48	0.33	52.2
Approach			702	8.7	702	8.7	0.240	5.7	LOS A	1.3	10.3	0.32	0.46	0.32	55.8
East: Oldbury Rd (E)															
4	L2	All MCs	6	3.1	6	3.1	0.130	3.5	LOS A	0.4	3.3	0.46	0.64	0.46	49.6
5	T1	All MCs	35	3.1	35	3.1	0.130	3.6	LOS A	0.4	3.3	0.46	0.64	0.46	35.3
6	R2	All MCs	84	3.1	84	3.1	0.130	9.2	LOS A	0.4	3.3	0.46	0.64	0.46	35.3
Approach			125	3.1	125	3.1	0.130	7.3	LOS A	0.4	3.3	0.46	0.64	0.46	36.7
North: Nairn Dr (N)															
7	L2	All MCs	88	3.1	88	3.1	0.278	3.9	LOS A	1.4	11.5	0.19	0.41	0.19	44.0
8	T1	All MCs	737	9.1	737	9.1	0.278	4.2	LOS A	1.4	11.5	0.20	0.43	0.20	54.3
9	R2	All MCs	52	3.1	52	3.1	0.278	10.1	LOS B	1.4	11.3	0.21	0.45	0.21	39.3
Approach			877	8.1	877	8.1	0.278	4.5	LOS A	1.4	11.5	0.20	0.43	0.20	53.3
West: Arpenteur Dr (W)															
10	L2	All MCs	27	3.1	27	3.1	0.072	2.7	LOS A	0.2	1.8	0.40	0.46	0.40	30.9
11	T1	All MCs	38	3.1	38	3.1	0.072	3.0	LOS A	0.2	1.8	0.40	0.46	0.40	40.5
12	R2	All MCs	8	3.1	8	3.1	0.072	8.2	LOS A	0.2	1.8	0.40	0.46	0.40	52.8
Approach			74	3.1	74	3.1	0.072	3.5	LOS A	0.2	1.8	0.40	0.46	0.40	41.3
All Vehicles			1778	7.8	1778	7.8	0.278	5.2	LOS A	1.4	11.5	0.27	0.45	0.27	53.1

Table C7a. SIDRA results – Arpenteur Dr / Crossover 3 – 2036 Weekday AM peak (with full LDP development)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Arpenteur Dr (E)															
5	T1	All MCs	52	3.1	52	3.1	0.031	0.0	LOS A	0.0	0.3	0.04	0.07	0.04	47.9
6	R2	All MCs	6	3.0	6	3.0	0.031	4.0	LOS A	0.0	0.3	0.04	0.07	0.04	29.8
Approach			58	3.1	58	3.1	0.031	0.5	NA	0.0	0.3	0.04	0.07	0.04	46.0
North: Crossover 3 (N)															
7	L2	All MCs	4	3.0	4	3.0	0.004	0.2	LOS A	0.0	0.1	0.15	0.06	0.15	18.7
9	R2	All MCs	1	3.0	1	3.0	0.004	0.9	LOS A	0.0	0.1	0.15	0.06	0.15	28.7
Approach			5	3.0	5	3.0	0.004	0.3	LOS A	0.0	0.1	0.15	0.06	0.15	22.0
West: Arpenteur Dr (W)															
10	L2	All MCs	1	3.0	1	3.0	0.034	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	34.3
11	T1	All MCs	64	3.1	64	3.1	0.034	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.6
Approach			65	3.1	65	3.1	0.034	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.1
All Vehicles			128	3.1	128	3.1	0.034	0.3	NA	0.0	0.3	0.02	0.04	0.02	46.2

Table C7b. SIDRA results – Arpenteur Dr / Crossover 3 – 2036 Weekday PM peak (with full LDP development)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Arpenteur Dr (E)															
5	T1	All MCs	80	3.1	80	3.1	0.054	0.0	LOS A	0.1	0.9	0.06	0.12	0.06	46.5
6	R2	All MCs	19	3.0	19	3.0	0.054	4.0	LOS A	0.1	0.9	0.06	0.12	0.06	28.8
Approach			99	3.1	99	3.1	0.054	0.8	NA	0.1	0.9	0.06	0.12	0.06	43.3
North: Crossover 3 (N)															
7	L2	All MCs	19	3.0	19	3.0	0.014	0.2	LOS A	0.1	0.4	0.14	0.05	0.14	18.9
9	R2	All MCs	2	3.0	2	3.0	0.014	1.1	LOS A	0.1	0.4	0.14	0.05	0.14	28.8
Approach			21	3.0	21	3.0	0.014	0.2	LOS A	0.1	0.4	0.14	0.05	0.14	20.7
West: Arpenteur Dr (W)															
10	L2	All MCs	2	3.0	2	3.0	0.030	4.6	LOS A	0.0	0.0	0.00	0.02	0.00	34.1
11	T1	All MCs	55	3.1	55	3.1	0.030	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	49.1
Approach			57	3.1	57	3.1	0.030	0.2	NA	0.0	0.0	0.00	0.02	0.00	48.0
All Vehicles			177	3.1	177	3.1	0.054	0.5	NA	0.1	0.9	0.05	0.08	0.05	41.9

Appendix 5:
Environmental Noise Assessment

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Environmental Noise Assessment - McDonald's Restaurant

Part Lot 9018 Nairn Drive, Baldivis

Reference: 24079165-01A

Prepared for:
McDonald's Australia Ltd

Reference: 24079165-01A

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Date	Rev	Description	Author	Verified
31-Jul-24	0	Issued to Client	Matt Moyle	Matt Nolan
06-Jul-24	-	Finalised Issue	Matt Moyle	Matt Nolan
4-Sep-24	A	Updated Site Plan	Matt Moyle	Matt Nolan

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EXECUTIVE SUMMARY

Lloyd George Acoustics was engaged by McDonald's Australia Ltd to undertake an environmental noise assessment for a proposed McDonald's Restaurant that will operate 24/7 to be located at Part Lot 9018 Nairn Drive, Baldivis. With regard to noise emissions, consideration was given to noise from mechanical services, vehicles idling in the drive-through, speaker noise in the drive-through, and closing car doors at neighbouring properties, against the prescribed standards of the *Environmental Protection (Noise) Regulations 1997*.

The assessment has demonstrated by way of computer modelling, compliance with the assigned levels as determined in accordance with the *Environmental Protection (Noise) Regulations 1997*.

The mechanical plant sources were based on file data and manufacturer specifications provided from previous McDonald's Restaurants. Once the mechanical plant has been designed and selected, the noise levels should be reviewed prior to Building Permit to ensure compliance is achieved.

1. INTRODUCTION

Lloyd George Acoustics was engaged by McDonald's Australia Ltd to undertake an environmental noise assessment for a proposed development to be located at Part Lot 9018 Nairn Drive, Baldivis - refer *Figure 1-1*. The proposal is amongst the Parkland Heights Shopping Centre, which consists of other commercial proposals not part of this assessment. The proposal locality is also likely to consist of future residential land uses, which are considered generally within this report. The overall site plan for Parkland Heights Shopping Centre, highlighting the subject restaurant, is shown in *Figure 1-2*.

Previous DA noise assessments have been conducted for the overall Shopping Centre site, with the latest being by Reverberate Consultants Ref: P191290RP1 dated 26 April 2024. This report utilises similar methodology to the previous work but provides an update to the site plan and specifics relating to the McDonald's noise sources and scenarios.

The proposed McDonald's will operate 24 hours a day, 7 days a week.

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

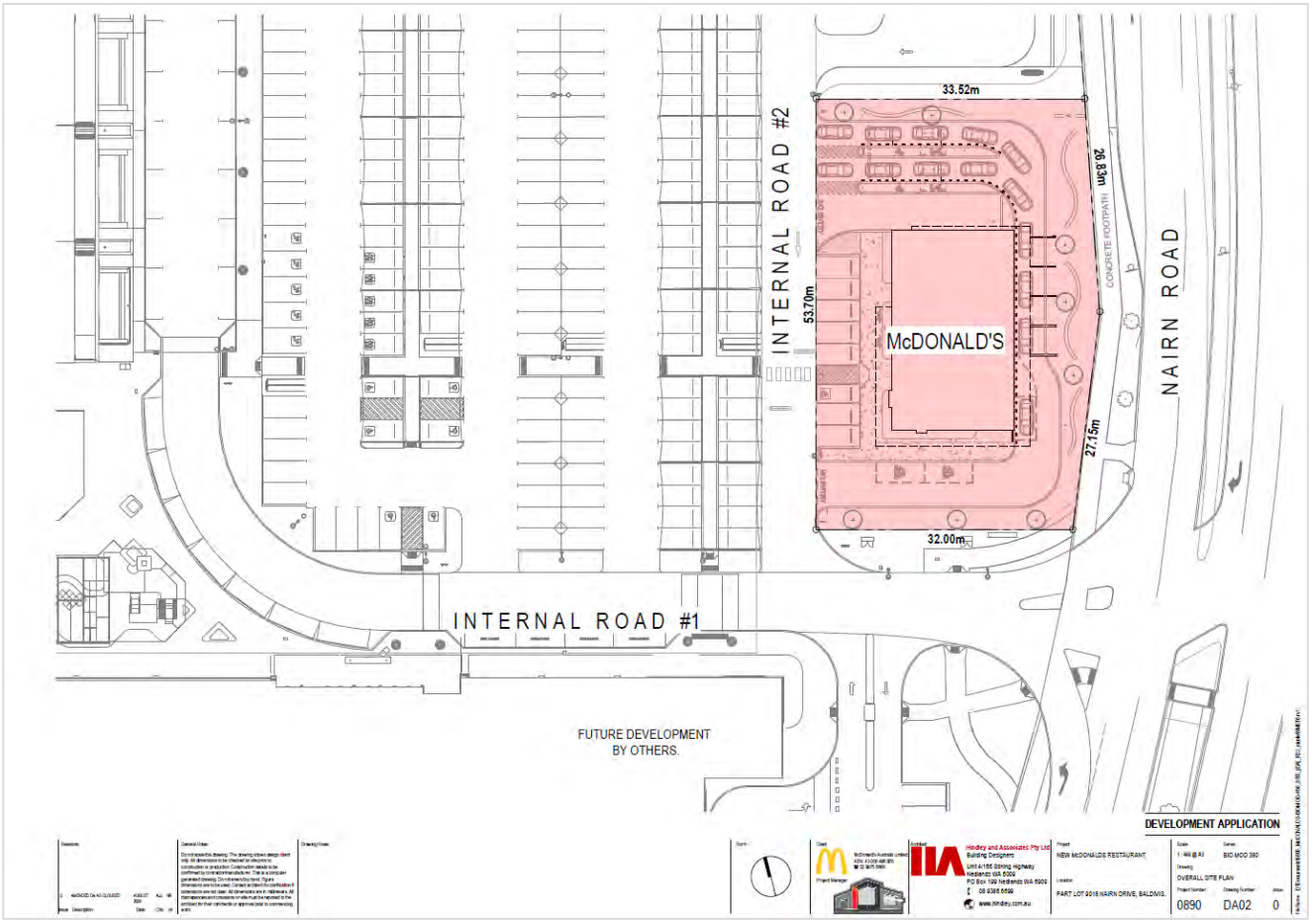


Figure 1-2: Site Plan (Source: Hindley and Associates)

With regard to noise emissions, consideration is given to noise from mechanical services, vehicles idling in the drive-through, speaker noise in the drive-through, and closing car doors at existing and future neighbouring properties, against the prescribed standards of the *Environmental Protection (Noise) Regulations 1997*.

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

2. CRITERIA

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

2.1. Regulations 7, 8 & 9

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

"7. Prescribed standard for noise emissions

(1) Noise emitted from any premises or public place when received at other premises –

(a) must not cause, or significantly contribute to, a level of noise which exceeds the assigned level in respect of noise received at premises of that kind; and

(b) must be free of –

(i) tonality; and

(ii) impulsiveness; and

(iii) modulation,

when assessed under regulation 9.

(2) For the purposes of subregulation (1)(a), a noise emission is taken to significantly contribute to a level of noise if the noise emission … exceeds a value which is 5 dB below the assigned level at the point of reception."

Tonality, impulsiveness and modulation are defined in regulation 9 (refer *Appendix C*). Under regulation 9(3), *"Noise is taken to be free of the characteristics of tonality, impulsiveness and modulation if -*

(a) the characteristics cannot be reasonably and practicably removed by techniques other than attenuating the overall level of noise emission; and

(b) the noise emission complies with the standard prescribed under regulation 7(1)(a) after the adjustments in the table [Table 2-1] … are made to the noise emission as measured at the point of reception."

Table 2-1 Adjustments Where Characteristics Cannot Be Removed

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

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

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

Table 2-2 Baseline Assigned Levels

Premises Receiving Noise	Time Of Day	Assigned Level (dB)		
		L_{A10}	L_{A1}	L_{Amax}
Noise sensitive premises: highly sensitive area[1]	0700 to 1900 hours Monday to Saturday (Day)	45 + influencing factor	55 + influencing factor	65 + influencing factor
	0900 to 1900 hours Sunday and public holidays (Sunday)	40 + influencing factor	50 + influencing factor	65 + influencing factor
	1900 to 2200 hours all days (Evening)	40 + influencing factor	50 + influencing factor	55 + influencing factor
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays (Night)	35 + influencing factor	45 + influencing factor	55 + influencing factor
Noise sensitive premises: any area other than highly sensitive area	All hours	60	75	80
Commercial Premises	All hours	60	75	80
Industrial and Utility Premises	All hours	65	80	90

1. ***highly sensitive area*** means that area (if any) of noise sensitive premises comprising —
   (a) a building, or a part of a building, on the premises that is used for a noise sensitive purpose; and
   (b) any other part of the premises within 15 metres of that building or that part of the building.

The influencing factor (IF), in relation to noise received at noise sensitive premises, has been calculated as 2 dB and match those determined in the *DA Report*[1] and is assumed for all nearest noise sensitive premises – refer *Appendix B*. *Table 2-3* shows the assigned levels including the influencing factor and transport factor at the receiving locations.

[1] *Reverberate Consultants P191290RP1 26 Apr 2024*

Table 2-3 Assigned Levels

Premises Receiving Noise	Time Of Day	Assigned Level (dB)		
		L_{A10}	L_{A1}	L_{Amax}
North Future Residences Noise sensitive premises: highly sensitive area[1]	0700 to 1900 hours Monday to Saturday (Day)	47	57	67
	0900 to 1900 hours Sunday and public holidays (Sunday)	42	52	67
	1900 to 2200 hours all days (Evening)	42	52	57
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays (Night)	37	47	57
Commercial Premises	All hours	60	75	80

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

The assigned levels are statistical levels and therefore the period over which they are determined is important. The Regulations define the Representative Assessment Period (RAP) as "*a period of time of not less than 15 minutes, and not exceeding 4 hours, determined by* an *inspector* or *authorised person to be appropriate for the assessment of a noise emission, having regard to the type and nature of the noise emission*". An inspector or authorised person is a person appointed under Sections 87 & 88 of the *Environmental Protection Act 1986* and include Local Government Environmental Health Officers and Officers from the Department of Water Environmental Regulation. Acoustic consultants or other environmental consultants are not appointed as an inspector or authorised person. Therefore, whilst this assessment is based on a 4-hour RAP, which is assumed to be appropriate given the nature of the operations, this is to be used for guidance only.

2.2. Regulation 3

"3. Regulations do not apply to certain noise emissions

(1) Nothing in these regulations applies to the following noise emissions –

(a) Noise emissions from the propulsion and braking systems of motor vehicles operating on a road;"

The car park is considered a road and therefore vehicle noise (propulsion and braking) is not assessed in this area. However, vehicle noise in the drive-through area has been considered assessable in this report due to the lanes being solely for ordering purposes and not road access. Vehicle door closing noise also requires assessment, as it does not form part of the propulsion or braking systems. Noise from delivery truck condensing units is also considered assessable.

2.3. Regulation 14A

"14A. Waste Collection and Other Works

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

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

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

class 1 works means specified works carried out between -

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

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

specified works means -

(a) The collection of waste; or

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

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

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

3. METHODOLOGY

3.1. Noise Modelling

Computer modelling has been used to predict the noise emissions from the development to all nearby receivers. The software used was *SoundPLAN 9.0* with the ISO 9613 algorithms (ISO 17534-3 improved method) selected, as they include the influence of meteorological conditions. Input data required in the model are listed below and discussed in *Section 3.1.1* to *Section 3.1.5*:

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

3.1.1. Meteorological Conditions

Meteorological information utilised is provided in *Table 3-1* and is considered to represent worst-case conditions for noise propagation. At wind speeds greater than those shown, sound propagation may be further enhanced, however background noise from the wind itself and from local vegetation is likely to be elevated and dominate the ambient noise levels.

Table 3-1: Modelling Meteorological Conditions

Parameter	Day (7.00am to 7.00pm)	Night (7.00pm to 7.00am)
Temperature (°C)	20	15
Humidity (%)	50	50
Wind Speed (m/s)	Up to 5	Up to 5
Wind Direction*	All	All

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

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

3.1.2. Topographical Data

Topographical data was adapted from publicly available information (e.g. *Google*) in the form of spot heights and combined with the site plan.

Surrounding existing and future buildings were incorporated in the noise model, as these can provide noise shielding as well as reflection paths. Single storey residential buildings are modelled with a height of 3.5 metres and commercial buildings are modelled with a height of 4.0 metres, with receivers 1.4 metres above ground.

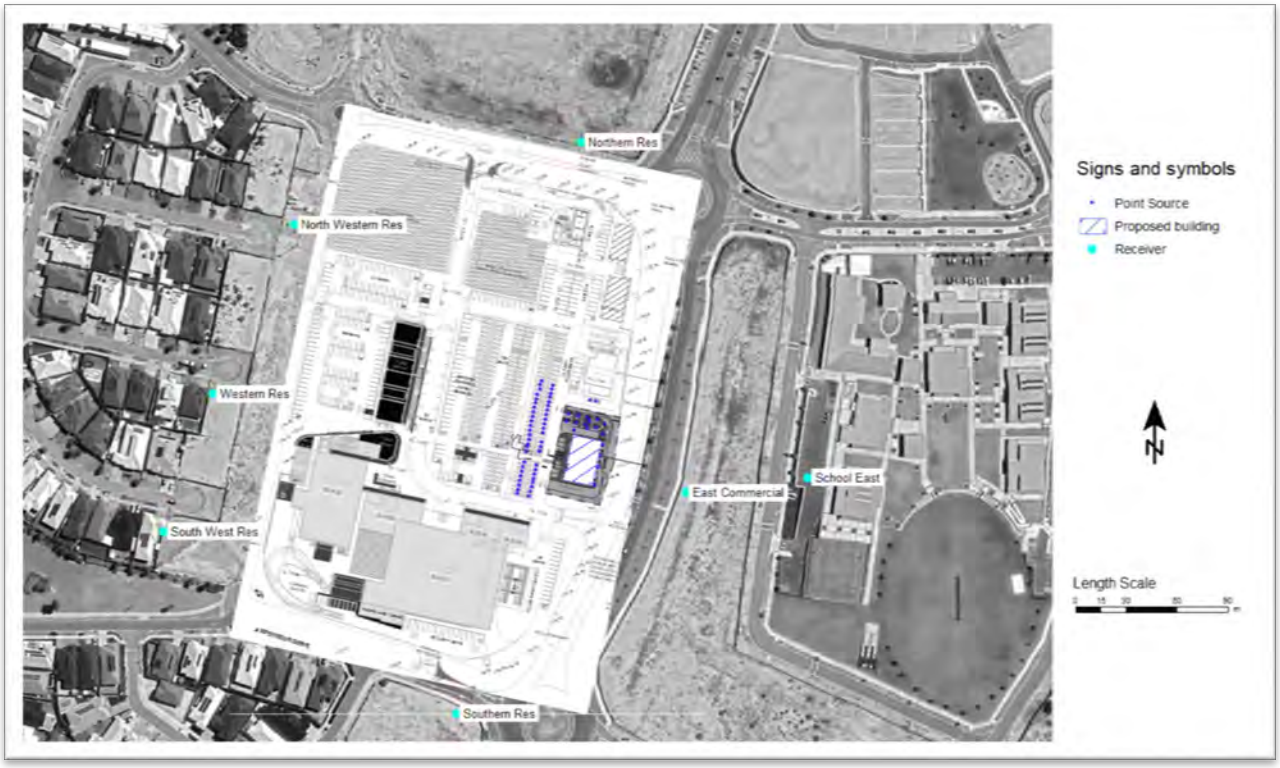


Figure 3-1: Overview of Noise Model

3.1.3. Ground Absorption

The ground absorption has been assumed to be 0.1 (10%) for the roads and carparks, and 0.5 (50%) elsewhere, noting that 0.0 represents hard reflective surfaces such as water and 1.0 represents absorptive surfaces such as grass.

3.1.4. Source Sound Levels

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

Table 3-2: Source Sound Power Levels, dB

Description	Octave Band Centre Frequency (Hz)								Overall dB(A)
	63	125	250	500	1k	2k	4k	8k	
Condenser Package MAC90RP – L_{A10}	88	87	85	81	76	70	64	59	**82**
AC-1 Actron PKY960T Low Speed – L_{A10}	-	84	78	75	73	69	60	54	**78**
AC-1 Actron PKY960T High Speed – L_{A10}	-	89	83	80	78	74	64	60	**83**
AC-2 and AC-3 Actron PCG340 Package Low Speed – L_{A10}	-	75	74	73	71	67	65	60	**76**
AC-2 and AC-3 Actron PCG340 Package Unit High Speed – L_{A10}	-	78	78	77	75	71	69	64	**80**
AC-4 Actron PCA233U Package Unit Low Speed – L_{A10}	-	71	71	70	67	62	61	56	**69**
AC-4 Actron PCA233U Package Unit High Speed – L_{A10}	-	76	75	74	71	66	65	60	**71**
Fan 1 Fantech TCE354, Toilet – L_{A10}	80	78	74	71	62	64	63	53	**73**
Fan 2 Fantech CGD354, Fry EF – L_{A10}	80	78	74	71	62	64	63	53	**73**
Fan 3 Fantech CGD354, Fillet EF – L_{A10}	80	78	74	71	62	64	63	53	**73**
Fan 4 Fantech CGD404, Grille EF – L_{A10}	83	81	77	74	65	67	66	56	**76**
Fan 5 Fantech CE192V, Wash-up EF – L_{A10}	78	77	68	65	60	58	56	52	**68**
Fan 6 Fantech CE406D, IT Room EF – L_{A10}	78	77	68	65	60	58	56	52	**68**
Car Idling/moving slowly, L_{A10}	81	78	74	72	74	74	67	64	**79**
Closing Car Door, L_{Amax}	71	74	77	81	80	78	72	61	**84**
Medium Rigid Refrigerated Truck– L_{A1}	100	91	87	88	83	81	79	75	**90**
Drive-Through Speaker – L_{A1}	62	64	66	77	80	73	57	42	**82**

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

- Mechanical plant noise sources were based on file data and manufacturer specifications provided from previous McDonald's Restaurants. Mechanical plant is modelled at 0.5 metres above roof level.
- 7 to 14 cars idling in the drive-through were modelled as point sources located 0.5 metres above ground, depending on the calculation scenario;
- Closing car doors were modelled as point sources located 1.0 metre above ground. A small refrigerated delivery truck was modelled as a point source located 2.0 metres above ground in the loading bay.

4. RESULTS

The noise levels were predicted for various scenarios:

- Night L_{A10} Noise – Includes seven cars idling in the drive-through and mechanical plant operating on low speed mode.
- Night L_{A1} Noise – Includes fourteen cars idling in the drive-through, speaker noise and a small delivery truck in the loading bay.
- Sunday Day L_{A10} Noise – Includes fourteen cars idling in the drive-through and mechanical plant operating at high speeds.
- Night L_{Amax} Noise – Includes noise from car doors.

4.1. Night L_{A10} Noise

The results for the Night L_{A10} Noise Scenario are provided in *Table 4-1*. A noise contour plot is also provided in *Figure 4-1* showing noise levels at ground floor. The noise from vehicles alone would not be considered tonal due to the number of vehicles and variation in engine sounds over a representative period, or when combined with mechanical plant noise (unless mechanical plant is dominant), therefore no adjustments have been applied.

Table 4-1: Night L_{A10} Noise Predicted Levels, dB(A)

Receiver*	Cars Idling	Mechanical Plant	Combined	Night-Time Assigned Level	Assessment
East Commercial	43	30	**44**	**60**	*Complies*
North Western Residential	31	20	**32**	**37**	*Complies*
Northern Residential	32	24	**33**	**37**	*Complies*
School East	37	25	**37**	**37**	*Complies*
South West Residential	19	18	**22**	**37**	*Complies*
Southern Residential	28	24	**30**	**37**	*Complies*
Western Residential	19	22	**24**	**37**	*Complies*

*The highest noise level from predictions at multiple receivers were used in the assessment

Noise from seven idling cars and mechanical plant operating at low speeds is predicted to comply at all nearest potential receivers during the critical night period. Noise levels at all nearest commercial premises is predicted to be compliant.

Figure 4-1 Scenario 1: Night Time Noise Ground Floor (1.5m AGL), dB L_{A10}

McDonald's - Baldivis South

Predicted Noise level

- = 30
- = 35
- = 40
- = 45
- = 50

Legend

- Receiver
- New Buildings
- Parapet
- Mech Plant Source

N

Scale 1:3000

0 15 30 60 90 m

Project No: 24079165
Consultant: MM
Date: 4/09/2024
Algorithm: ISO 9613
SoundPLAN Version: 9.0

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

4.2. Night L_{A1} Noise

The results for the Night L_{A1} Noise Scenario are provided in *Table 4-2* which includes noise from fourteen idling cars, speaker noise and a small delivery truck in the loading bay. It is assessed against the night-time L_{A1} assigned level due to the shorter duration of this noise source. A noise contour plot is also provided in *Figure 4-2* showing noise levels at ground floor.

Table 4-2: Night L_{A1} Noise Predicted Levels, dB(A)

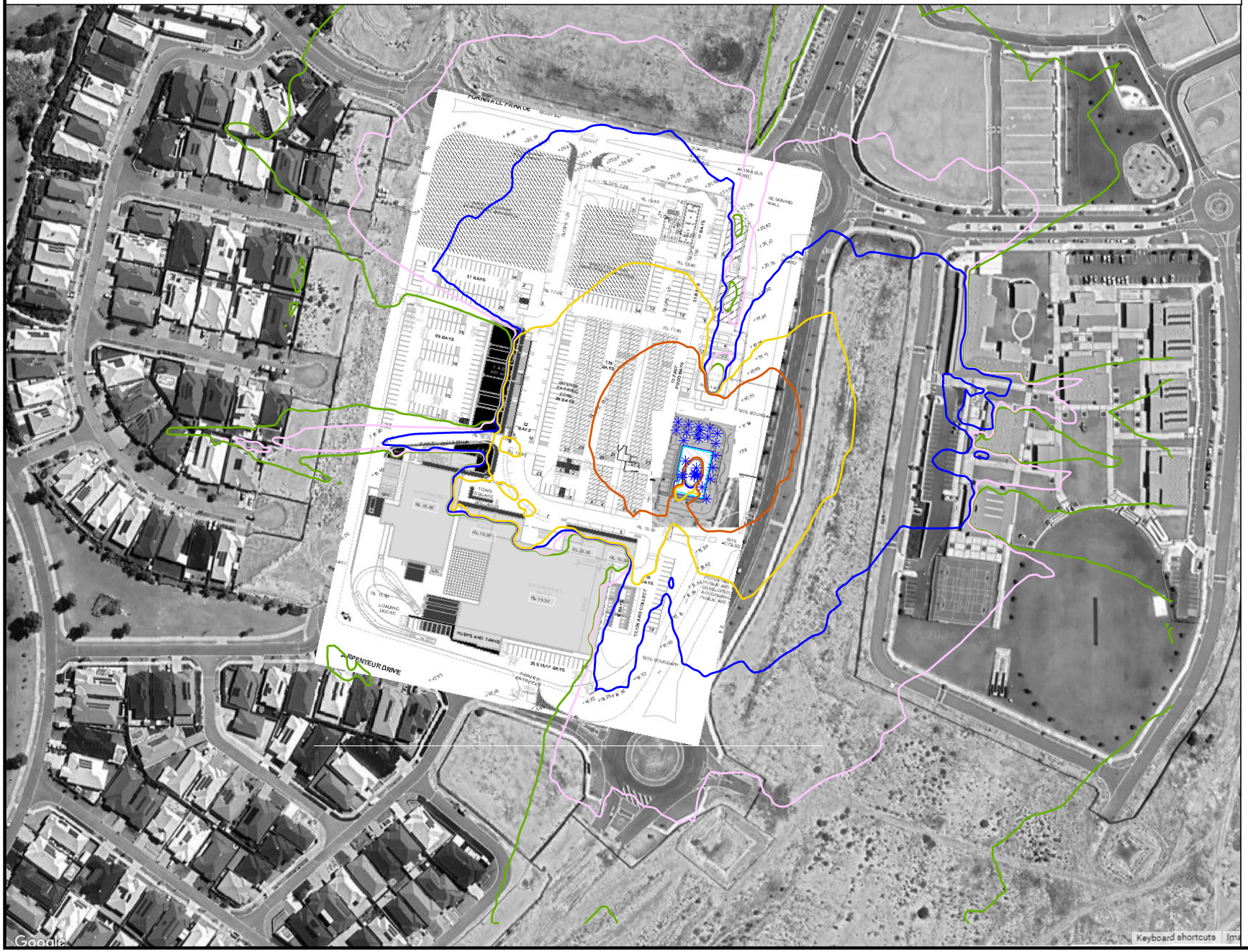
Receiver*	Small Delivery Truck	Cars Idling	Speaker Noise	Total	Night-Time Assigned Level	Assessment
East Commercial	32	46	30	**46**	**75**	*Complies*
North Western Residential	34	34	28	**38**	**47**	*Complies*
Northern Residential	36	35	28	**39**	**47**	*Complies*
School East	35	39	22	**41**	**47**	*Complies*
South West Residential	26	24	20	**29**	**47**	*Complies*
Southern Residential	33	30	10	**35**	**47**	*Complies*
Western Residential	26	23	20	**30**	**47**	*Complies*

*The highest noise level from predictions at multiple receivers were used in the assessment

Noise from the L_{A1} sources during the night period is predicted to comply at all nearest receivers during the critical night period.

Figure 4-2 Scenario 2: Night Time Noise Ground Floor (1.5m AGL), dB L_{A1}

McDonald's - Baldivis South



Predicted Noise level

- = 30
- = 35
- = 40
- = 45
- = 50

Legend

- Receiver
- New Buildings
- Parapet
- Mech Plant Source

N

Scale 1:3000

0 15 30 60 90 m

Project No: 24079165
Consultant: MM
Date: 4/09/2024
Algorithm: ISO 9613
SoundPLAN Version: 9.0

Lloyd George Acoustics
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HILLARYS WA 6923
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4.3. Sunday Daytime L_{A10} Noise

The results for the Sunday Daytime L_{A10} Noise Scenario are provided in *Table 4-3* which includes noise from fourteen idling cars and the mechanical plant operating at high speeds. A noise contour plot is also provided in *Figure 4-3* showing noise levels at ground floor.

Table 4-3: Sunday Day L_{A10} Noise Predicted Levels, dB(A)

Receiver*	Cars Idling	Mechanical Plant	Combined	Sunday Daytime Assigned Level	Assessment
East Commercial	46	33	**46**	**60**	*Complies*
North Western Residential	34	22	**35**	**42**	*Complies*
Northern Residential	35	26	**36**	**42**	*Complies*
School East	39	28	**39**	**42**	*Complies*
South West Residential	24	20	**25**	**42**	*Complies*
Southern Residential	30	26	**32**	**42**	*Complies*
Western Residential	23	24	**27**	**42**	*Complies*

*The highest noise level from predictions at multiple receivers were used in the assessment

Noise from fourteen idling cars and mechanical plant operating at high speeds is predicted to comply between 9.00am and 7.00pm on a Sunday.

Figure 4-3 Scenario 3: Sunday Noise Ground Floor (1.5m AGL), dB L_{A10}

McDonald's - Baldivis South

Predicted Noise level

	= 30
	= 35
	= 40
	= 45
	= 50

Legend

- Receiver
- New Buildings
- Parapet
- Mech/Car Source

N

Scale 1:3000

0 15 30 60 90 m

Project No: 24079165
Consultant: MM
Date: 4/09/2024
Algorithm: ISO 9613
SoundPLAN Version: 9.0

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4.4. Night L_{Amax} Noise

The results for the Night L_{Amax} Noise Scenario are provided in *Table 4-4.* A noise contour plot (non-cumulative) is also provided in *Figure 4-4* showing noise levels at ground floor. Noise from car doors is likely to be impulsive and therefore attracts a +10 dB adjustment to predicted levels.

Table 4-4: Night L_{Amax} Noise Predicted Levels, dB(A)

Receiver*	Car Door	Maximum Adjusted#	Night-Time Assigned Level	Assessment
East Commercial	39	**49**	**80**	*Complies*
North Western Residential	32	**42**	**57**	*Complies*
Northern Residential	34	**44**	**57**	*Complies*
School East	31	**41**	**57**	*Complies*
South West Residential	21	**31**	**57**	*Complies*
Southern Residential	24	**34**	**57**	*Complies*
Western Residential	32	**42**	**57**	*Complies*

*The highest noise level from predictions at multiple receivers were used in the assessment
#Includes + 10 dB adjustment for impulsiveness

Noise from car doors are predicted to comply at all nearest receivers during the night period.

Figure 4-4 Scenario 4: Car Park Noise Ground Floor (1.5m AGL), dB L_{Amax}

McDonald's - Baldivis South

Predicted Noise level

	= 30
	= 35
	= 40
	= 45
	= 50

Legend

- Receiver
- New Buildings
- Parapet
- Car Door Source

N

Scale 1:3000

0 15 30 60 90 m

Project No: 24079165
Consultant: MM
Date: 4/09/2024
Algorithm: ISO 9613
SoundPLAN Version: 9.0

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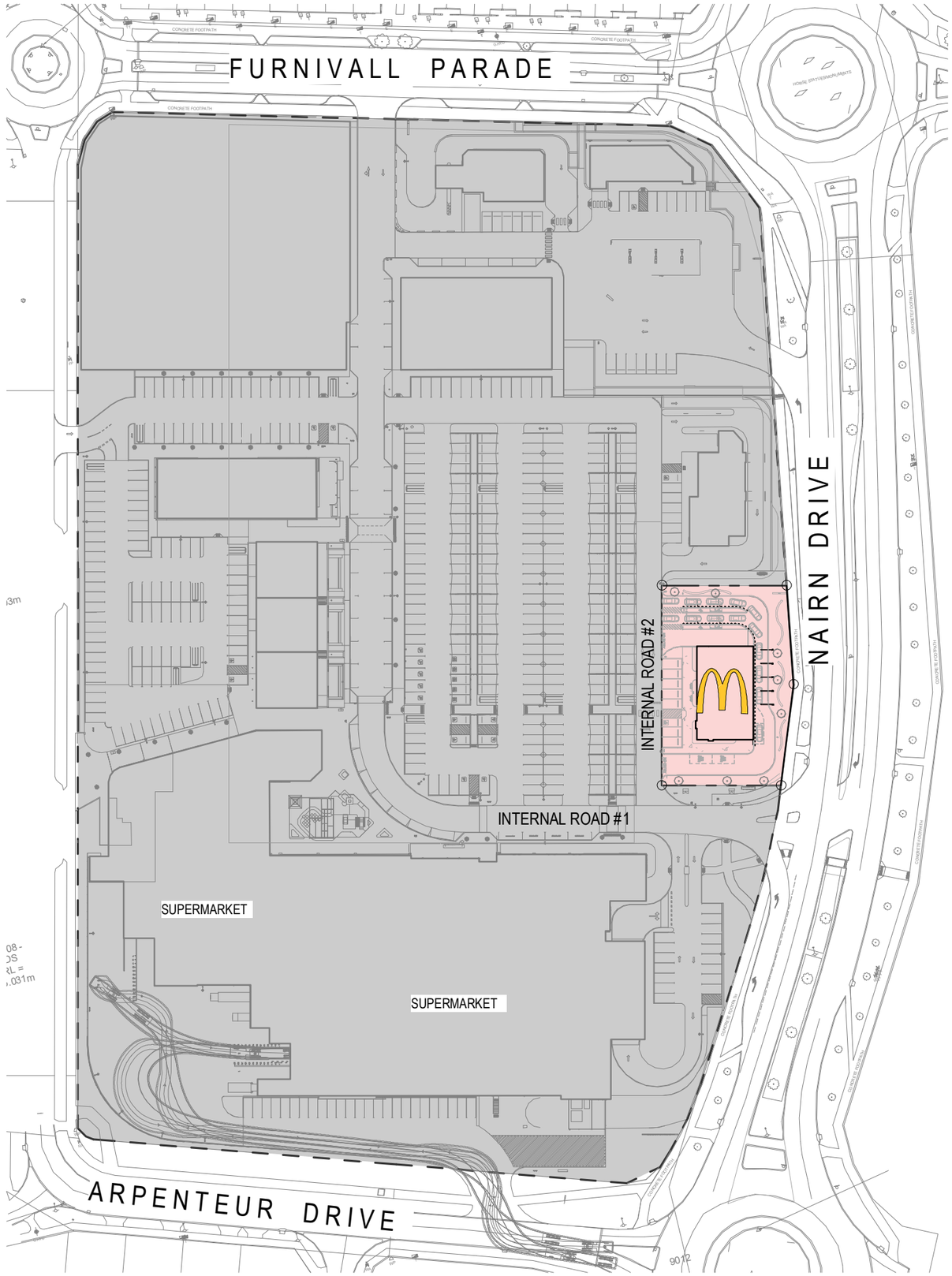
5. CONCLUSION

The assessment has demonstrated compliance with the assigned levels as determined in accordance with the *Environmental Protection (Noise) Regulations 1997*. No boundary fencing has been included in the modelling assumptions at this time, and it is noted that future commercial (service and retail) are planned in the Parkland Heights Shopping Centre. In most cases, these other commercial buildings will serve as barriers between future noise sensitive land uses.

The mechanical plant sources were based on file data and manufacturer specifications provided from previous McDonald's Restaurants. Once the mechanical plant has been designed and selected, the noise levels should be reviewed prior to Building Permit to ensure compliance is achieved.

Regulation 14A provides requirements for the collection of waste, stating that this activity can be exempt from having to comply with *Regulation 7* prescribed standards, provided it is undertaken between 7am and 7pm Mondays to Saturdays and undertaken in the quietest reasonable manner. Collection outside of these hours will require a separate noise management plan.

Appendix A – Development Plans



LEGEND:

PROPOSED McDONALD'S RESTAURANT.

PROPOSED FUTURE DEVELOPMENT SUBJECT TO SEPARATE APPLICATION.

1 OVERALL SITE PLAN
1 : 1300

DEVELOPMENT APPLICATION

Revisions				
Issue	Description	Date	Chk	Int
0	AMENDED DA AS CLOUDED	AUGUST 2024	AJJ	NR

General Notes

Do not scale this drawing. The drawing shows design intent only. All dimensions to be checked on site prior to construction or production. Construction details to be confirmed by contractor/manufacturer. This is a computer generated drawing. Do not amend by hand. Figure dimensions are to be used. Contact architect for clarification if dimensions are not clear. All dimensions are in millimeters. All discrepancies and omissions on site must be reported to the architect for their comments or approval prior to commencing work.

Drawing Notes

North

Client
McDonald's Australia Limited
ABN. 43 008 496 928
☎ 02 9875 6666

Project Manager
NATIONAL DEVELOPMENT GROUP

Architect
Hindley and Associates Pty Ltd
Building Designers
Unit 4/166 Stirling Highway
Nedlands WA 6009
PO Box 199 Nedlands WA 6909
08 9386 6699
www.hindley.com.au

Project
NEW McDONALDS RESTAURANT

Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale	Series
1 : 1300 @ A3	BIO MOD 380

Drawing
LOCATON PLAN

Project Number	Drawing Number	Issue
0890	DA01	0

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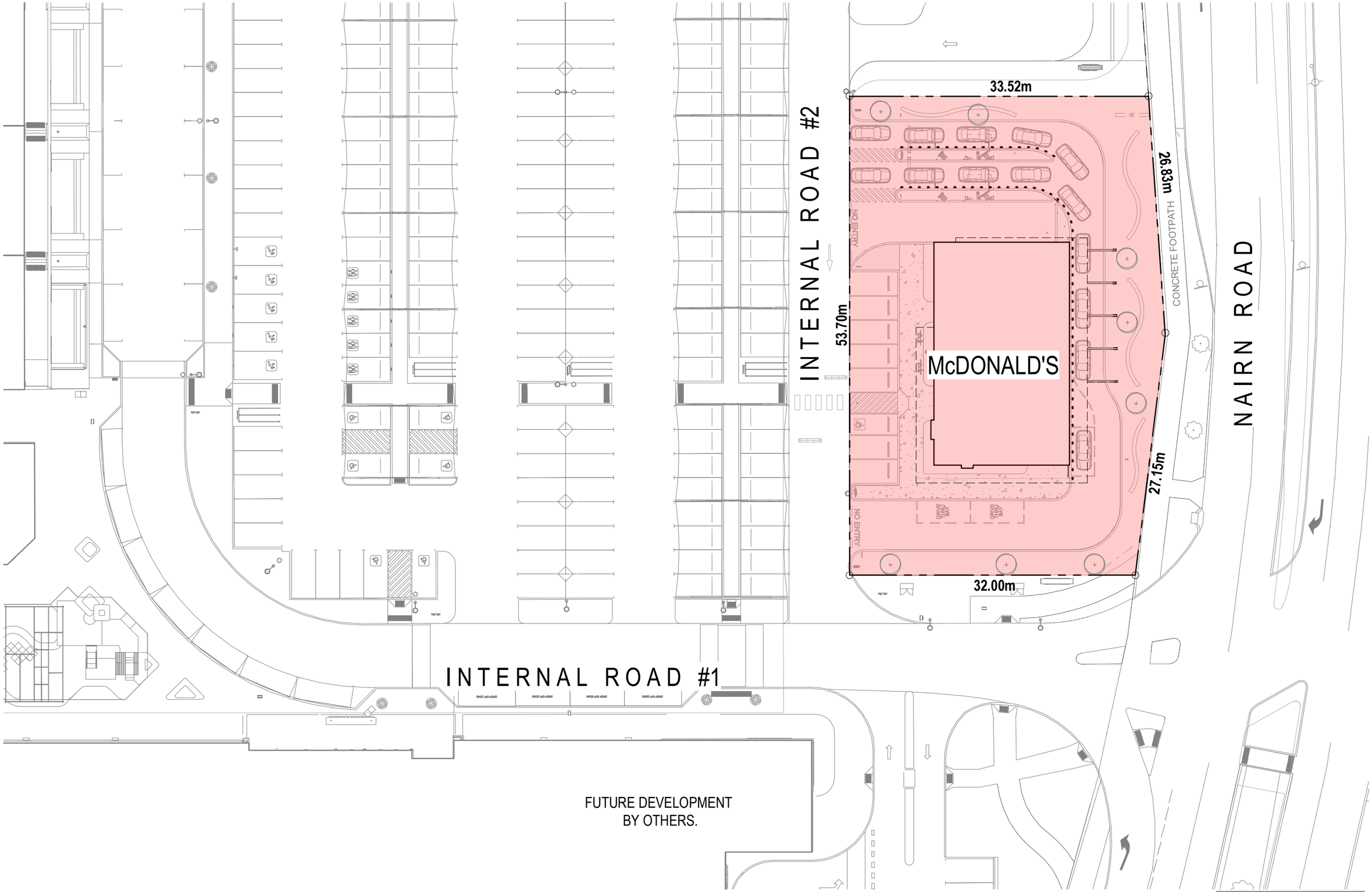

DEVELOPMENT APPLICATION

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PO Box 199 Nedlands WA 6909
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Project
NEW McDONALDS RESTAURANT

Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale: 1 : 400 @ A3
Series: BIO MOD 380
Drawing: OVERALL SITE PLAN
Project Number: 0890
Drawing Number: DA02
Issue: 0

FileName D:\Documents\0890_McDONALDS-BIOMOD-450_SITE_[DA]_R23_nicoleWMET6.rvt

NAIRN ROAD

ALUMINIUM DECORATIVE SCREEN TIMBER BATTENS.

McDONALD'S PYLON.

BLACK POWDERCOATED POSTS REFER TO ELEVATION FOR MORE DETAILS.

LOW CURVE FEATURE WALLS 800mm HIGH.

CONCRETE FOOTPATH

SITE BC

26.83m

27.15m

1180

800

3600

3600

CASHIER

SERVERY

3RD WINDOW

CONCRETE

CENTTRE PYLON 9m HIGH.

PROPOSED McDONALD'S RESTAURANT

BIOMOD 380
FFL = 16.800

CORRAL

PLAYPLACE

DRIVE THRU BAY

DRIVE THRU BAY

33.52m

32.00m

3000 1500 3000 1500

LOADING BAY

CONCRETE

NO ENTRY

NO ENTRY

5400

2700

53.70m

DUAL LANE DRIVE-THRU
14DT CAR STACK.

ACCESSIBLE PARKING
BAY TO AS2890.6 AND AS1428.1.

PEDESTRIAN CROSSING.

INTERNAL ROAD #2

INTERNAL ROAD #1

SITE AREA SCHEDULE

IDENTITY	AREA m2
McDONALD;S PAD SITE	1831 m2

LEGEND:

- CONCRETE EXPOSED AGGREGATE FOOTPATH AS SPECIFIED. REFER STRUCT. ENG'S DWGS FOR DETAILS.
- NEW LANDSCAPING BEDS.
- WS — RUBBER WHEELSTOPS AS SPECIFIED. QTY: 8.
- SELECTED TREES REFER LANDSCAPING PLAN.

DEVELOPMENT APPLICATION

Revisions

Issue	Description	Date	Chk	Int
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Project
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Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale	Series
1 : 250 @ A3	BIO MOD 380
Drawing	
SITE PLAN	
Project Number	Drawing Number	Issue
0890	DA03	0

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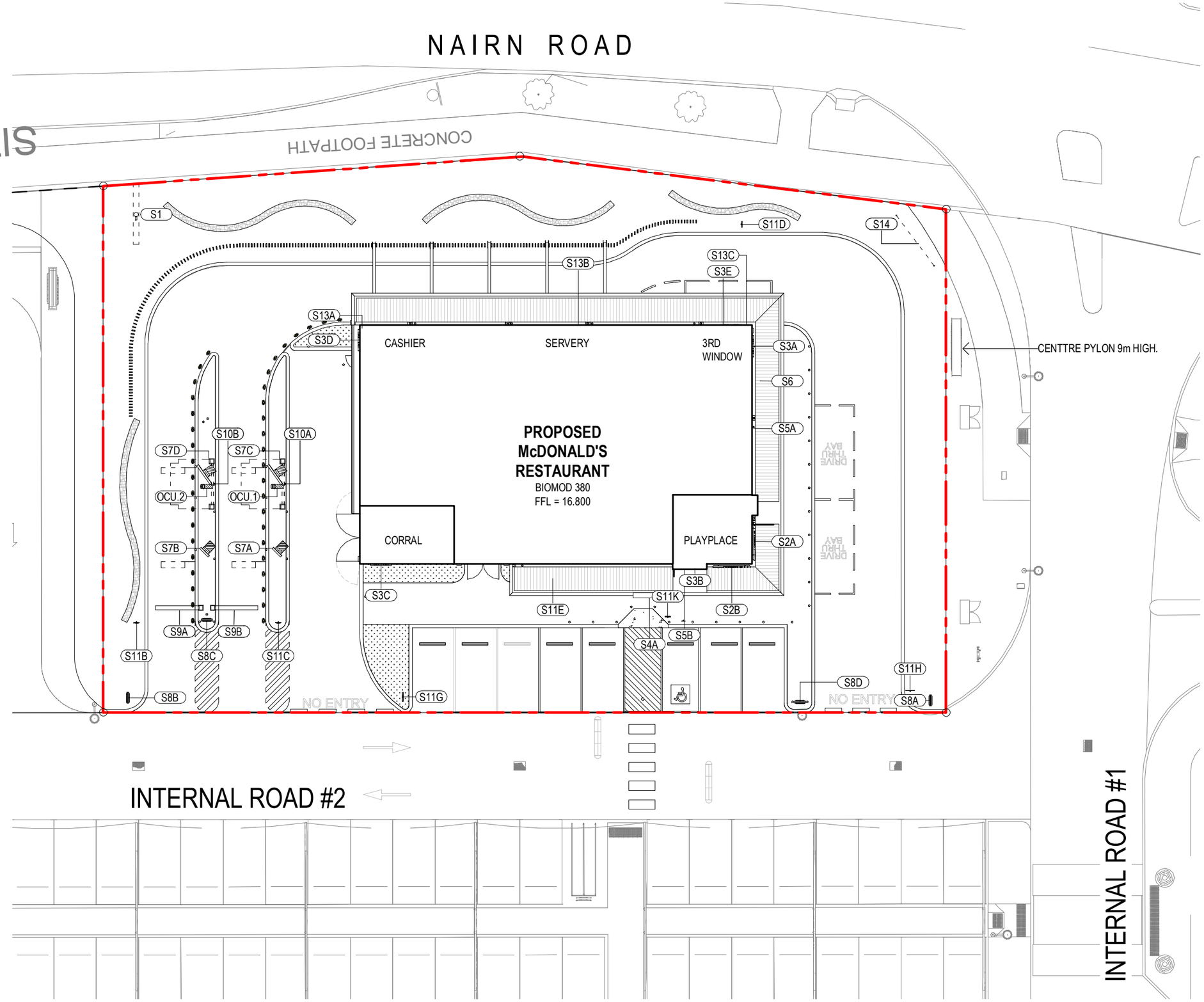

SIGNAGE SCHEDULE

Tag	Description	Illuminated
S1	Pylon Sign	
S2A	Play Place Wall Sign	Yes
S2B	Play Place Wall Sign	Yes
S3A	"Golden Arches" Wall Sign	Yes
S3B	"Golden Arches" Wall Sign	Yes
S3C	"Golden Arches" Wall Sign	Yes
S3D	"Golden Arches" Wall Sign	Yes
S3E	"Golden Arches" Wall Sign	Yes
S4A	"McDonald's" Wordmark Wall Sign	
S5A	"McCafe" Button Sign Ø1200mm	
S5B	"McCafe" Wall Sign	
S6	McDelivery Wall Sign (Double Sided)	Yes
S7A	OUTDOOR MENUBOARD SINGLE 55"	Yes
S7B	OUTDOOR MENUBOARD SINGLE 55"	Yes
S7C	OUTDOOR MENUBOARD DOUBLE 55"	Yes
S7D	OUTDOOR MENUBOARD DOUBLE 55"	Yes
S8A	Directional Sign - Entry	Yes
S8A Side 2	Directional Sign - Thank You	Yes
S8B	Directional Sign - Entry - Left Arrow	Yes
S8B Side 2	Directional Sign - Entry - Right Arrow	Yes
S8C	Directional Sign - Drive Thru - Double Arrow - Any Lane Any Time	Yes
S8C Side 2	Directional Sign - Blank	Yes
S8D	Directional Sign - No Entry	Yes
S8D Side 2	Directional Sign - Thank You	Yes
S9A	Height Clearance Gantry Sign	Yes
S9B	Height Clearance Gantry Sign	Yes
S10A	Canopy - Drive Thru - Wording "1. Order here"	Yes
S10B	Canopy - Drive Thru - Wording "1. Order here"	Yes
S11B	No Pedestrian Access Sign	No
S11C	No Pedestrian Access Sign	No
S11D	No Pedestrian Access Sign	No
S11E	Bicycle Parking Sign	No
S11F	Accessible Parking Sign	No
S11G	Pedestrian Crossing Sign	No
S11H	Stop Sign	No
S11K	Pedestrian Caution - Look Both Ways Sign	No
S13A	Drive-Thru Information Sign "2. PAY HERE"	No
S13B	Drive-Thru Information Sign "3. PICK UP HERE"	No
S13C	Drive-Thru Information Sign "4. PICK UP HERE"	No
S14	Banner Signage	No

DEVELOPMENT APPLICATION

Revisions

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PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale
1 : 250 @ A3

Series
BIO MOD 380

Drawing
SITE SIGNAGE PLAN

Project Number
0890

Drawing Number
DA04

Issue
0

File Name D:\Documents\0890_South Baldivis_McDONALDS-BIOMOD-380_R23_nicoleWMET6.rvt

REFER TO SITE PLAN FOR EXTENT.

REFER TO SITE PLAN FOR EXTENT.

ALUMINIUM DECORATIVE
SCREEN TIMBER BATTENS.

DA09
6

DA09
5

BLACK POWDERCOATED POSTS
REFER TO ELEVATION
FOR MORE DETAILS.

AWNING OVER

2000

CASHIER
24

PCS 1

BUN STORE
22a

MANAGER
25

IT ROOM
26

SERVERY
27

PCS 1

3rd WINDOW
29

BEVERAGE CELL
28

DRY GOODS
22

PCS 1

MB U PLT 585 x 1165

2448 610 x 1219

2436 610 x 914

KITCHEN
23

PCS 2

DRIVER
PICK-UP
32

SALES & SERVICE
30

McCAFE
31

2000

DA08
4

TUN

2430 610x762

FRONT COUNTER
03

REFRIG.
21

2448

WASH UP
19

DA08
3

FREEZER
20

CORRIDOR
18

2460

FILTERS
17

MALE
09

FEMALE
08

W.C.
16

DINING ROOM
02

GPO
HC

1

DA07

PCS 1

TUN

BREAK
ROOM
14

LOCKERS

CORRAL
13

ACCESSIBLE
15

AIRLOCK
06

PCS 2

RF. AC
11

DP2

ENTRY
01

PLAYLAND
04

HC

2000

AWNING OVER

ENTRY CLIP

2

DA07

DEVELOPMENT APPLICATION

Revisions				
Issue	Description	Date	Chk	Int
0	AMENDED DA AS CLOUDED	AUGUST 2024	AJJ	NR

General Notes

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Drawing Notes

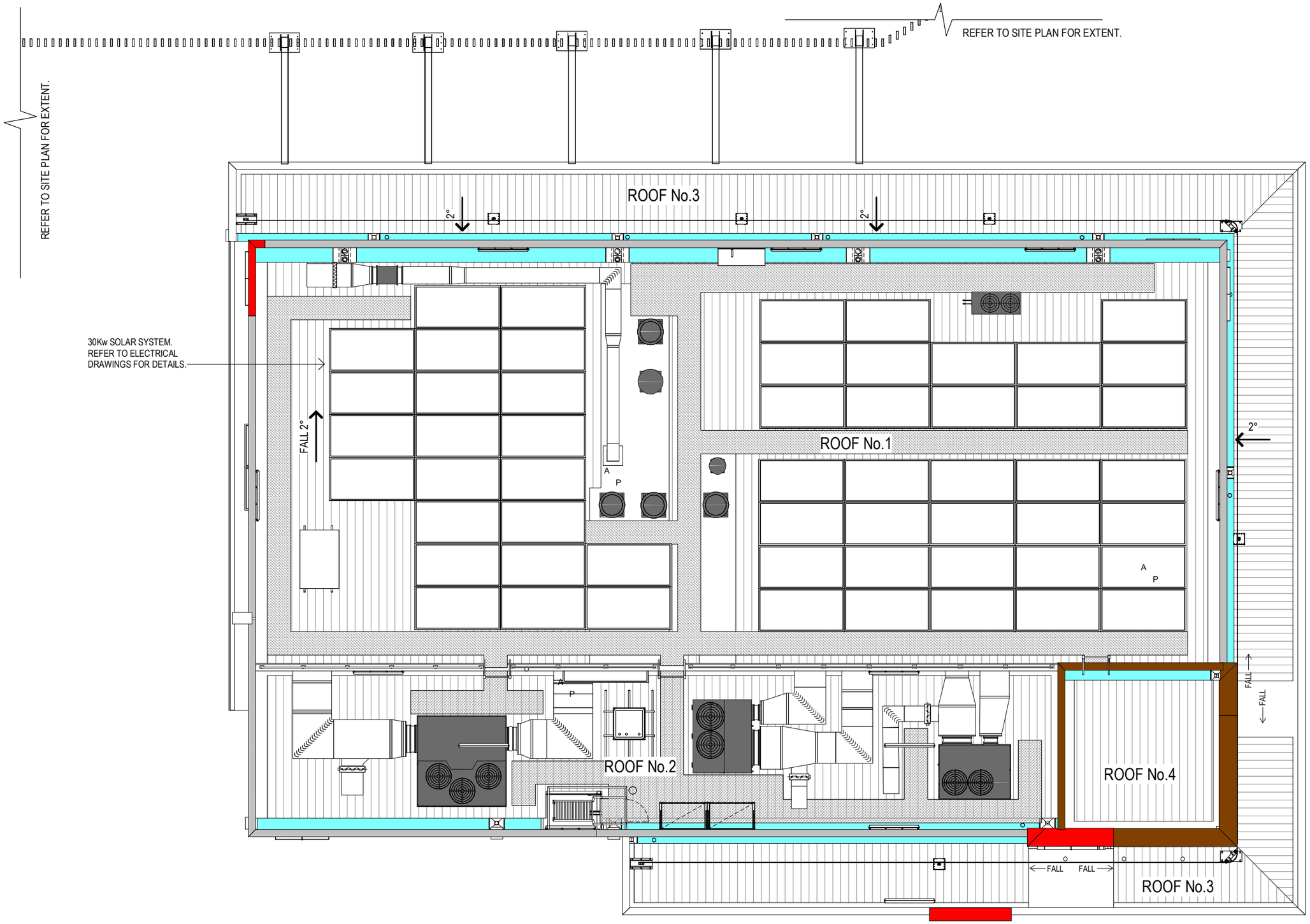
Client
McDonald's Australia Limited
ABN. 43 008 496 928
☎ 02 9875 6666

Project Manager

Architect
Hindley and Associates Pty Ltd
Building Designers
Unit 4/166 Stirling Highway
Nedlands WA 6009
PO Box 199 Nedlands WA 6909
08 9386 6699
www.hindley.com.au

Project	Scale	Series
NEW McDONALDS RESTAURANT	1 : 100 @ A3	BIO MOD 380
Location	Drawing	
PART LOT 9018 NAIRN DRIVE, BALDIVIS.	FLOORPLAN	
	Project Number	Drawing Number / Issue
	0890	DA05 / 0

File Name D:\Documents\0890_South Baldivis_McDONALDS-BIOMOD-380_R23_nicoleWMET6.rvt



DEVELOPMENT APPLICATION

Revisions				
Issue	Description	Date	Chk	Int
0	AMENDED DA AS CLOUDED	AUGUST 2024	AJJ	NR

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Project
NEW McDONALDS RESTAURANT

Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale
1 : 100 @ A3

Series
BIO MOD 380

Drawing
ROOF PLAN

Project Number
0890

Drawing Number
DA06

Issue
0

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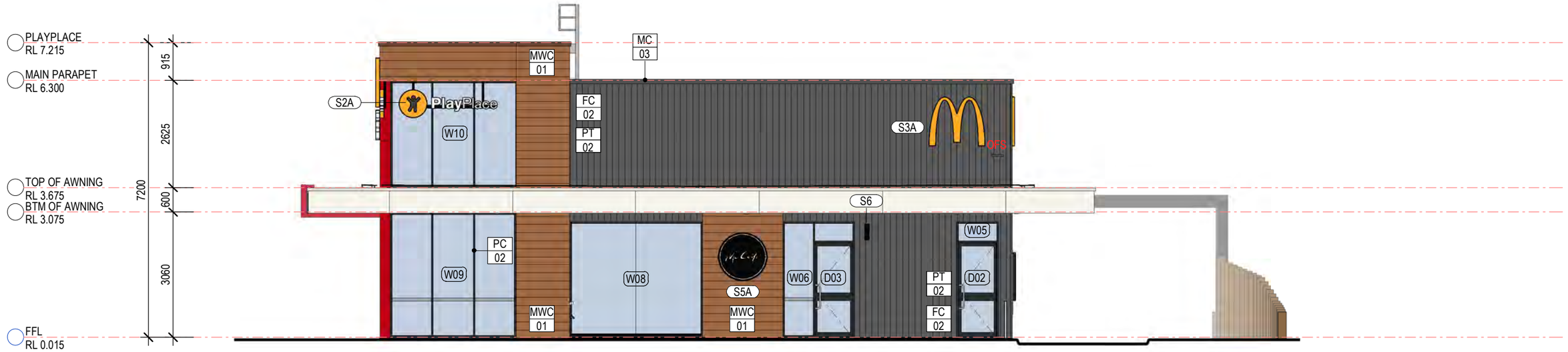
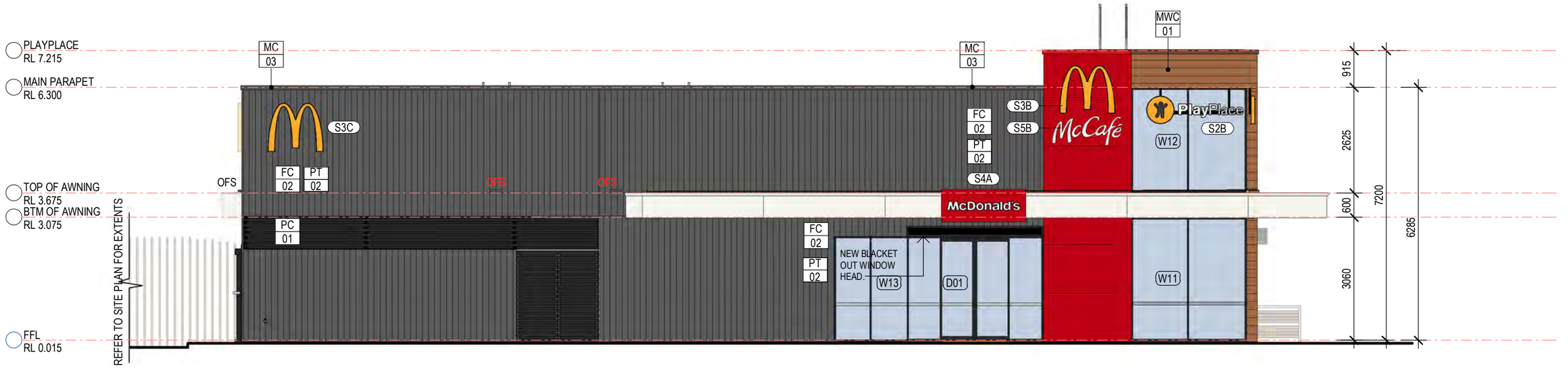


1 FRONT ELEVATION
1 : 100



2 SIDE ELEVATION
1 : 100

DEVELOPMENT APPLICATION

Revisions

Issue	Description	Date	Chk	Int
0	AMENDED DA AS CLOUDED	AUGUST 2024	AJJ	NR

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Project
NEW McDONALDS RESTAURANT

Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale
1 : 100 @ A3

Series
BIO MOD 380

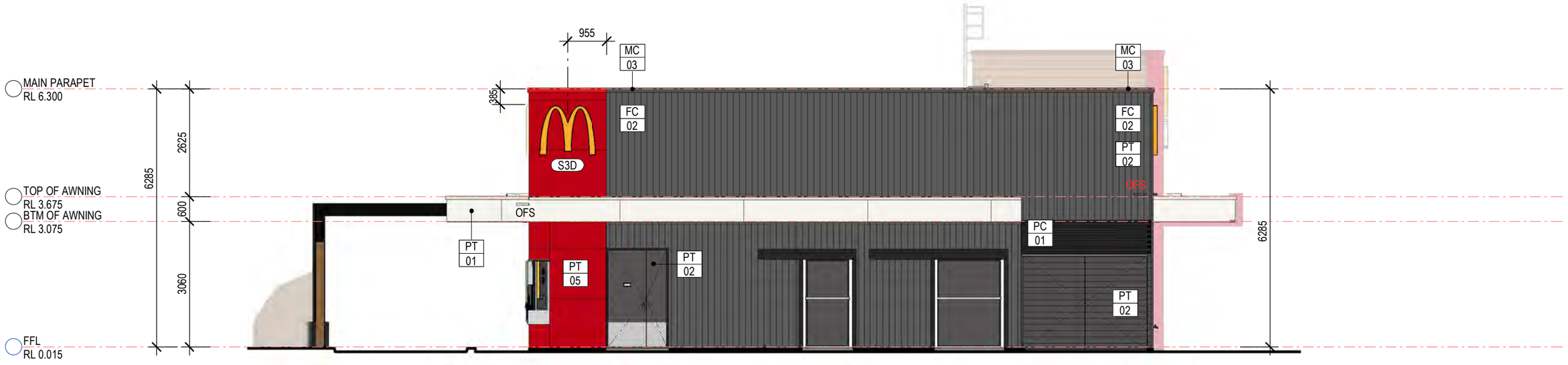
Drawing
FRONT & SIDE BUILDING ELEVATIONS

Project Number
0890

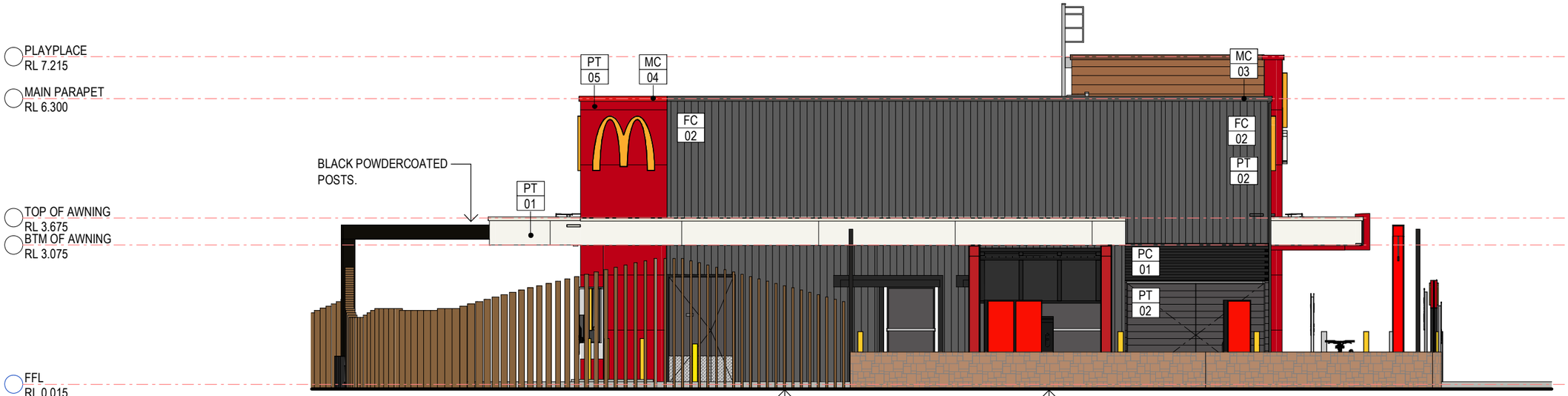
Drawing Number
DA07

Issue
0

File Name D:\Documents\0890_South Baldivis_McDONALDS-BIOMOD-380_R23_nicole\WMET6.rvt



3 REAR ELEVATION
1 : 100



4 REAR ELEVATION
1 : 100

DEVELOPMENT APPLICATION

Revisions

Issue	Description	Date	Chk	Int
0	AMENDED DA AS CLOUDED	AUGUST 2024	AJJ	NR

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Project
NEW McDONALDS RESTAURANT

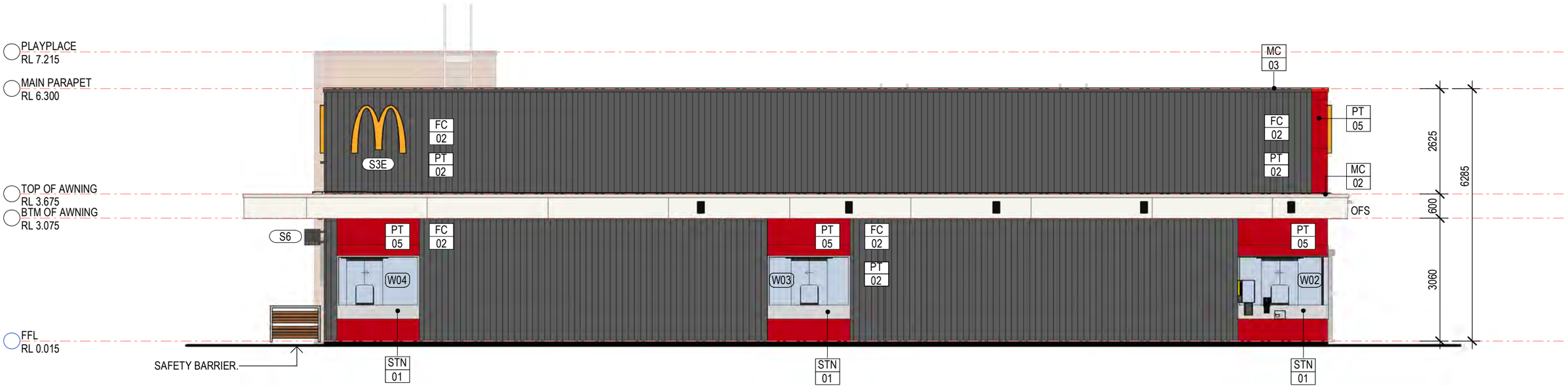
Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale	Series
1 : 100 @ A3	BIO MOD 380

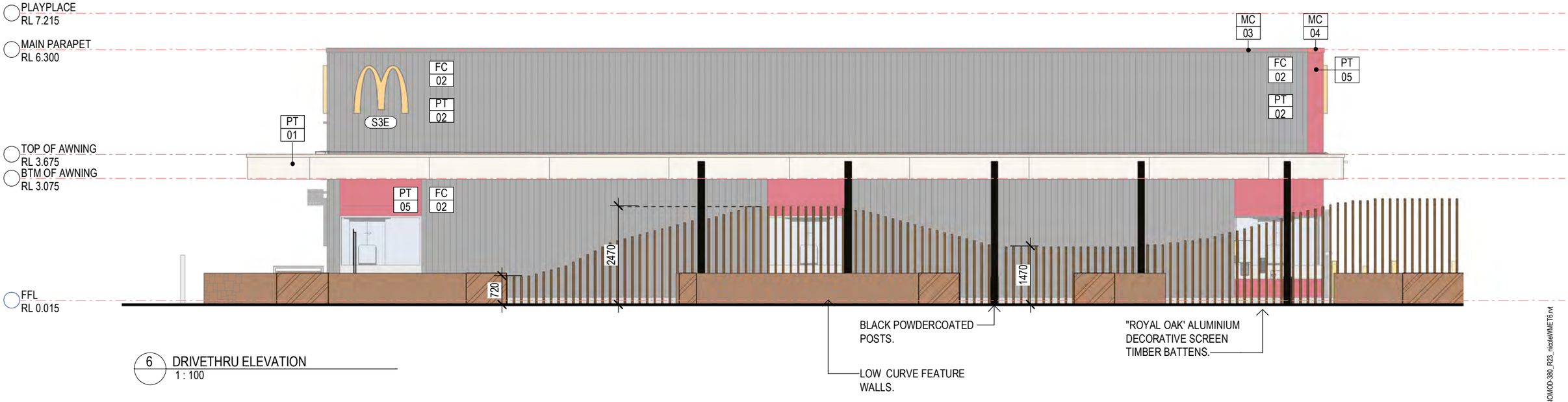
Drawing
REAR BUILDING ELEVATIONS

Project Number	Drawing Number	Issue
0890	DA08	0

File Name D:\Documents\0890_South Baldivis_McDONALDS-BIOMOD-380_R23_nicoleWMET6.rvt



5 DRIVETHRU ELEVATION
1 : 100



6 DRIVETHRU ELEVATION
1 : 100

Revisions

Issue	Description	Date	Chk	Int
0	AMENDED DA AS CLOUDED	AUGUST 2024	AJJ	NR

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Drawing Notes

DEVELOPMENT APPLICATION

Client
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ABN. 43 008 496 928
☎ 02 9875 6666

Project Manager

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Project
NEW McDONALDS RESTAURANT

Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale
1 : 100 @ A3

Series
BIO MOD 380

Drawing
DRIVETHRU BUILDING ELEVATIONS

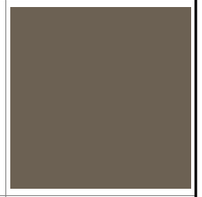
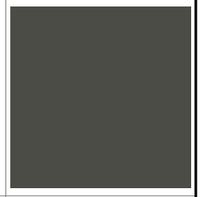
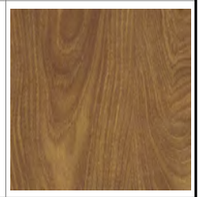
Project Number
0890

Drawing Number
DA09

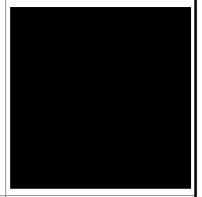
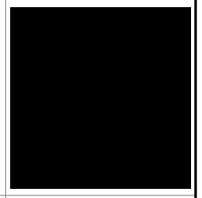
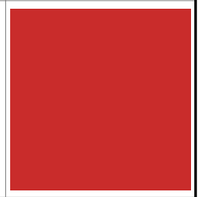
Issue
0

File Name D:\Documents\0890_South Baldivis_McDONALDS-BIOMOD-380_R23_nicoleWMET6.rvt

EXTERNAL FINISHES SCHEDULE

CODE	No.	AREA	DESCRIPTION	MANUFACTURER	COLOUR	IMAGE
FC	02	MAIN BUILDING WALLS	FIBRE CEMENT WEATHERTEX VERTICAL WEATHERBOARDS	WEATHERTEX	WAYWARD GREY PG1G8	
MC	01	PARAPET CAPPING - ADJACENT TIMBER LOOK CLADDING (PLAYLAND)	PREFINISHED METAL CAPPING / FLASHING	COLORBOND	JASPER	
MC	02	PARAPET CAPPING - AWNINGS	PREFINISHED METAL CAPPING / FLASHING	COLORBOND	SURFMIST	
MC	03	PARAPET CAPPING - MAIN BUILDING WALLS	PREFINISHED METAL CAPPING / FLASHING	COLORBOND	WOODLAND GREY	
MC	04	PARAPET CAPPING	PREFINISHED METAL CAPPING / FLASHING	COLORBOND	MANOR RED	
MC	05	TIMBER BATTENS ON DRIVETHRU SCREEN	TIMBER LOOK ALUMINIUM CLADDING SYSTEM USING KNOTWOOD 200mm CLADDING PROFILE	KNOTWOOD	ROYAL OAK	
MWC	01	PLAYPLACE & PARAPETS	TIMBER LOOK ALUMINIUM CLADDING SYSTEM USING KNOTWOOD 200mm CLADDING PROFILE	KNOTWOOD	LIGHT OAK	

EXTERNAL FINISHES SCHEDULE

CODE	No.	AREA	DESCRIPTION	MANUFACTURER	COLOUR	IMAGE
MWC	02	ROOF WELL (INTERNAL PARAPET LINING)	CUSTOM ORB CORRUGATED STEEL RIVET FIXED VERTICALLY TO FRAMES	LYSAGHT	ZINCALUME	
PC	01	CORRAL BATTENS & ROOF ACCESS, ELEC. ROOM DOORS	POWDERCOAT FINISH	DULUX DURATEC ZEUS	LUNAR ECLIPSE SATIN (BLACK)	
PC	02	ALUMINIUM WINDOWS & DOOR FRAMES. REFER NOTE 1.	POWDERCOAT FINISH	DULUX DURATEC ZEUS	LUNAR ECLIPSE SATIN (BLACK)	
PT	01	FASCIAS (RIBBON)	PAINT FINISH. REFER SPECIFICATION FOR DETAILS ON PAINT TYPE & APPLICATION	DULUX	VIVID WHITE PW1H9	
PT	02	MAIN BUILDING WALLS	PAINT FINISH. REFER SPECIFICATION FOR DETAILS ON PAINT TYPE & APPLICATION	DULUX	WAYWARD GREY PG1G8	
PT	05	BLADE WALL & DRIVETHRU WINDOWS	PAINT FINISH. REFER SPECIFICATION FOR DETAILS ON PAINT TYPE & APPLICATION	DULUX	HOTLIPS PB1F2	
STN	01	DRIVETHRU WINDOW SILL & SURROUND	RECONSTITUTED STONE. REFER TO DECOR DOCUMENTS	REFER DECOR	REFER DECOR	

Revisions

Issue	Description	Date	Chk	Int
0	AMENDED DA AS CLOUDED	AUGUST 2024	AJJ	NR

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Drawing Notes

DEVELOPMENT APPLICATION

Client
McDonald's Australia Limited
ABN. 43 008 496 928
☎ 02 9875 6666
Project Manager

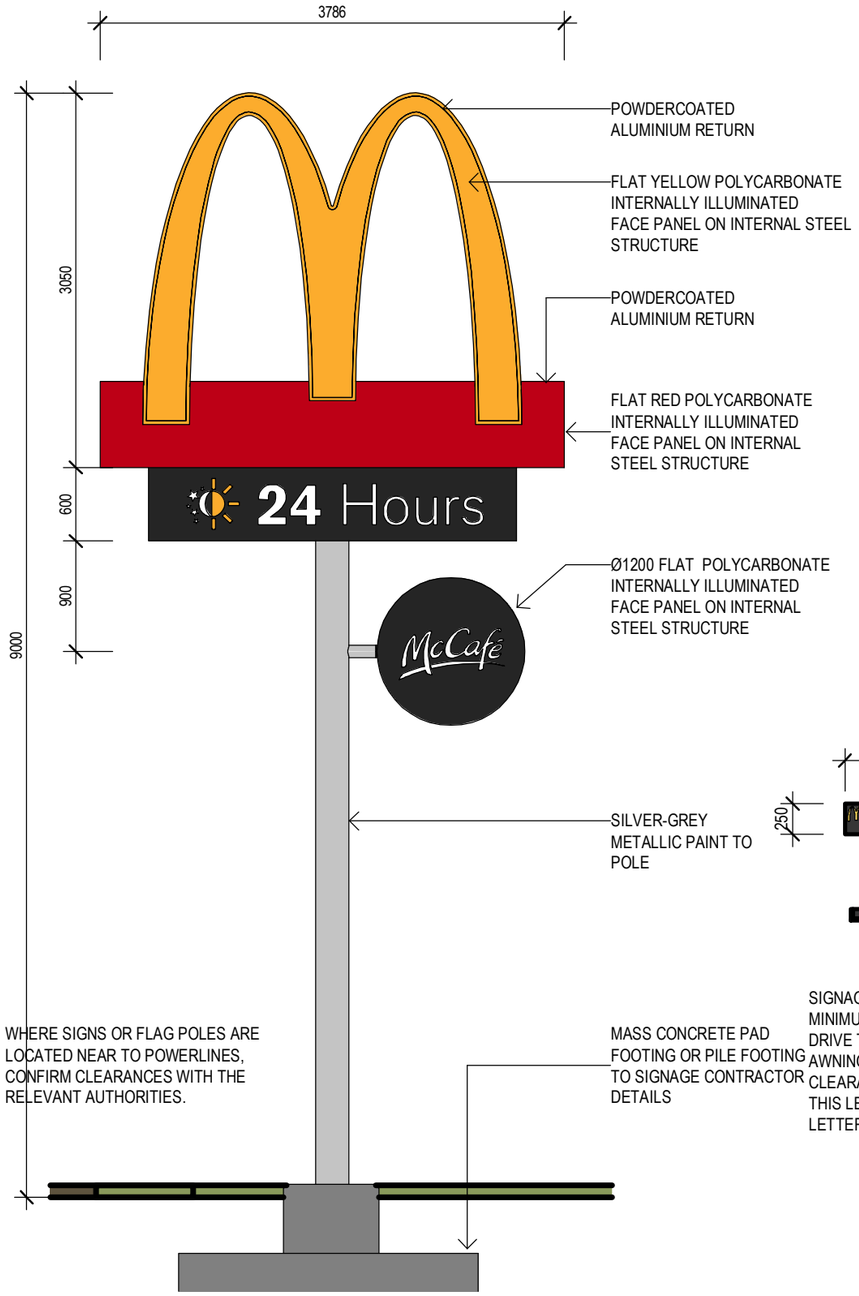
Architect
Hindley and Associates Pty Ltd
Building Designers
Unit 4/166 Stirling Highway
Nedlands WA 6009
PO Box 199 Nedlands WA 6909
08 9386 6699
www.hindley.com.au

Project
NEW McDONALDS RESTAURANT

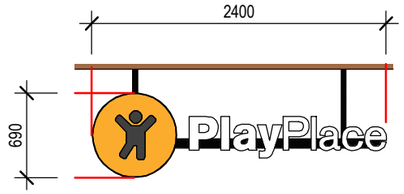
Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale: @ A3
Series: BIO MOD 380
Drawing: EXTERNAL FINISHES SCHEDULE
Project Number: 0890
Drawing Number: DA10
Issue: 0

File Name: D:\Documents\0890_South Baldivis_McDONALDS-BIOMOD-380_R23_nicole\WMET6.rvt

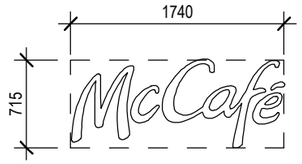


S1 PYLON
1 : 50



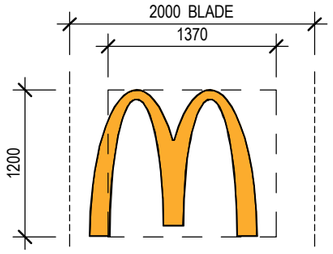
S2 PLAYPLACE
1 : 50

YELLOW LOGO WITH INDIVIDUAL POLYCARBONATE LETTERING FIXED TO FRAME. INTERNALLY ILLUMINATED. WHITE LETTERS.



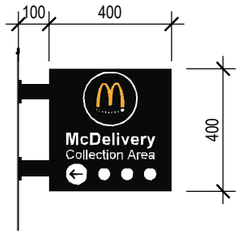
S5 WALL SIGN
1 : 50

INDIVIDUAL HALO ILLUMINATED REVERSE PAN FABRICATED ALUMINIUM CHANNEL LETTERS. BRUSHED ALUMINIUM FINISH.



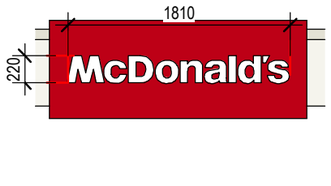
S3 WALL SIGN
1 : 50

YELLOW FLAT FACE POLYCARBONATE LOGO. INTERNALLY ILLUMINATED. YELLOW LOGO



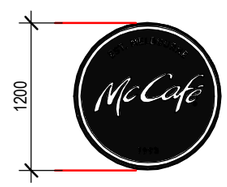
S6 McDELIVERY WALL SIGN
1 : 20

FABRICATED METAL SIGN. OPAL FACES WITH BLACK VINYL GRAPHICS. LED ILLUMINATION.



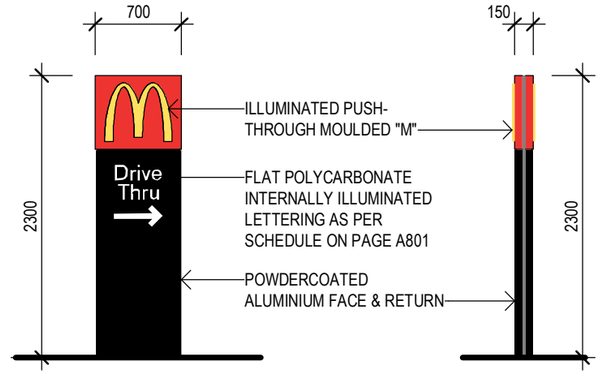
S4 CLIP SIGN
1 : 50

LED ILLUMINATED WORDMARK ONLY. RED CLIP TO BE CONSTRUCTED BY THE BUILDER..



S5 McCAFE WALL BUTTON SIGN
1 : 50

FABRICATED METAL BUTTON SIGN. OPAL FACES WITH BLACK VINYL GRAPHICS. LED ILLUMINATION.



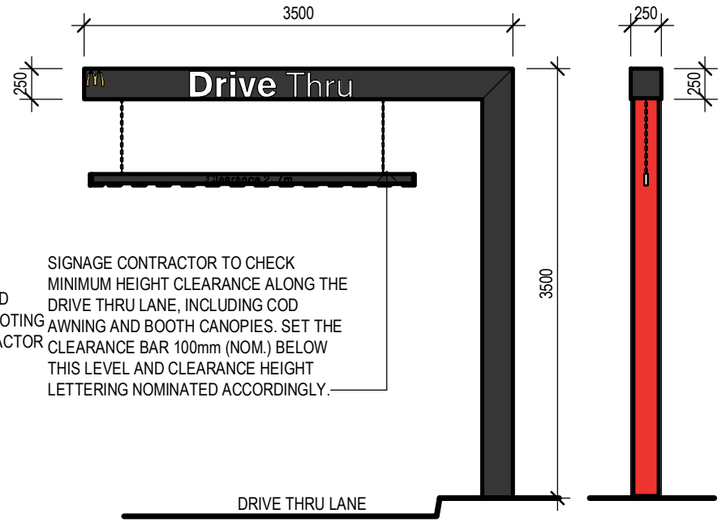
FRONT **SIDE**

ALTERNATIVE WORDING

(ALL IN TITLE CASE):

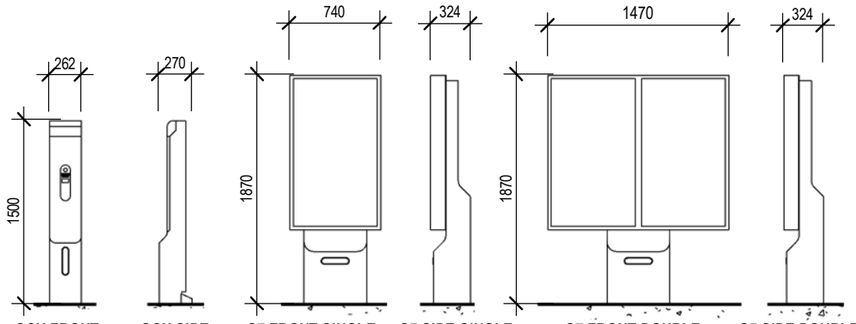
S8A	"ENTRY / ENTRY" (DOUBLE SIDED) W/- ARROWS"	**S8C**	"ANY LANE, ANY TIME" (SINGLE SIDED)
S8B	"DRIVE THRU / DRIVE THRU" (DOUBLE SIDED)	**S8D**	"THANK YOU / NO ENTRY" (DOUBLE SIDED)
		S8E	"THANK YOU / ENTRY" (DOUBLE SIDED)

DIRECTIONAL SIGNAGES8
1 : 50



FRONT **SIDE**

S6 HEIGHT CLEARANCE GANTRY
1 : 50



OCU FRONT | OCU SIDE | S7 FRONT SINGLE | S7 SIDE SINGLE | S7 FRONT DOUBLE | S7 SIDE DOUBLE

DEVELOPMENT APPLICATION

Revisions					General Notes	Drawing Notes
0	AMENDED DA AS CLOUDED	AUGUST 2024	AJJ	NR	Do not scale this drawing. The drawing shows design intent only. All dimensions to be checked on site prior to construction or production. Construction details to be confirmed by contractor/manufacturer. This is a computer generated drawing. Do not amend by hand. Figure dimensions are to be used. Contact architect for clarification if dimensions are not clear. All dimensions are in millimeters. All discrepancies and omissions on site must be reported to the architect for their comments or approval prior to commencing work.	
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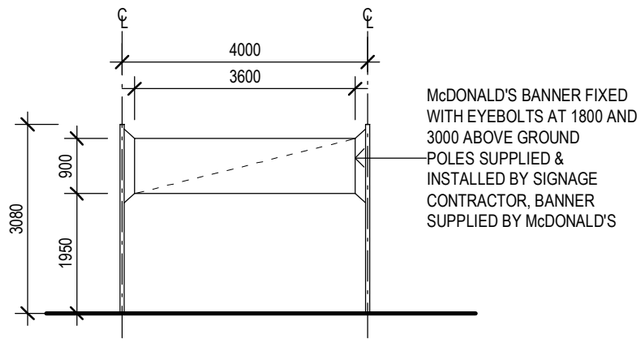
PO Box 199 Nedlands WA 6909
08 9386 6699
www.hindley.com.au

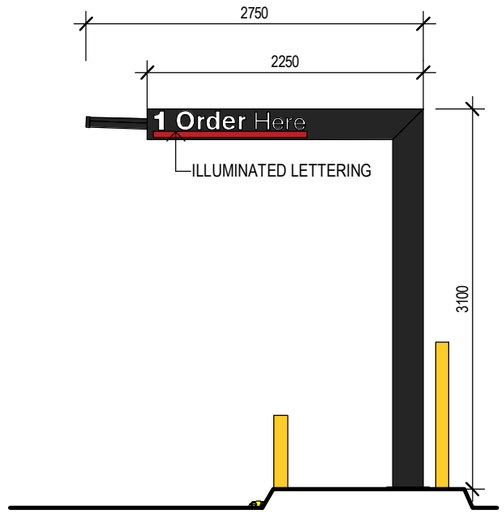
Project: NEW McDONALDS RESTAURANT
Location: PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale: As indicated @ A3
Series: BIO MOD 380
Drawing: SIGNAGE DETAILS
Project Number: 0890
Drawing Number: DA11
Issue: 0

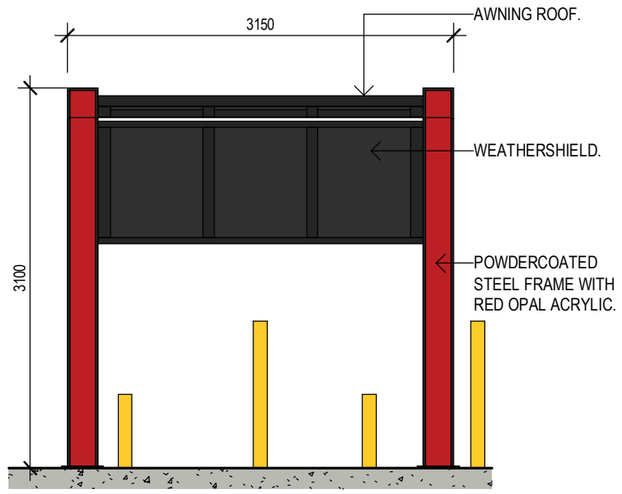
File Name: D:\Documents\0890_South Baldivis_McDONALDS-BIOMOD-380_R23_nicole\WMET6.rvt



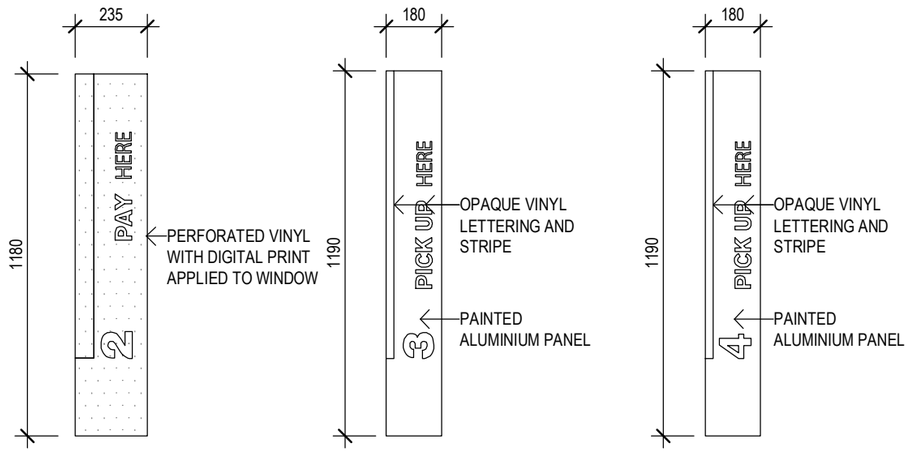
S14 - BANNERS
1 : 100



S10 ORDER CANOPY SIDE
1 : 50



S10 ORDER CANOPY ELEVATION
1 : 50



S13 DRIVE THRU INFORMATION SIGNS
1 : 20

Revisions

Issue	Description	Date	Chk	Int
0	AMENDED DA AS CLOUDED	AUGUST 2024	AJJ	NR

General Notes

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Drawing Notes

DEVELOPMENT APPLICATION

Client
McDonald's Australia Limited
ABN. 43 008 496 928
☎ 02 9875 6666

Project Manager

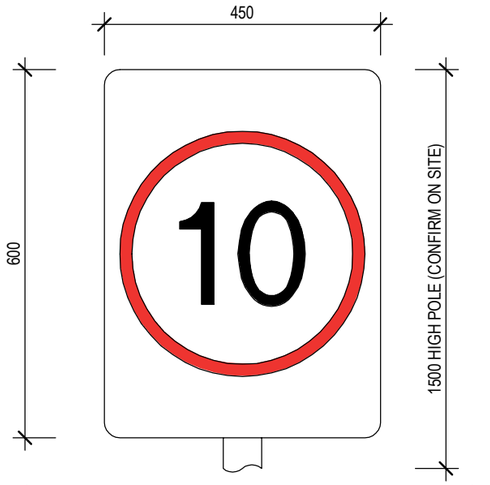
Architect
Hindley and Associates Pty Ltd
Building Designers
Unit 4/166 Stirling Highway
Nedlands WA 6009
PO Box 199 Nedlands WA 6909
08 9386 6699
www.hindley.com.au

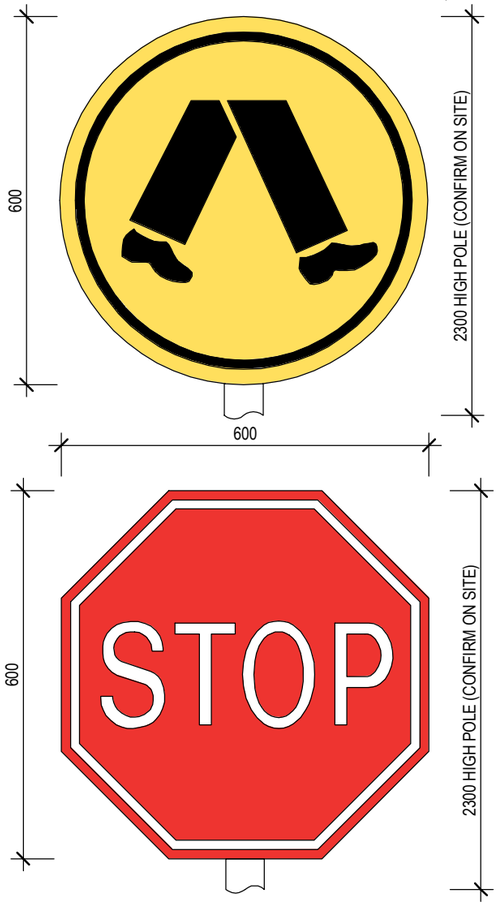
Project
NEW McDONALDS RESTAURANT

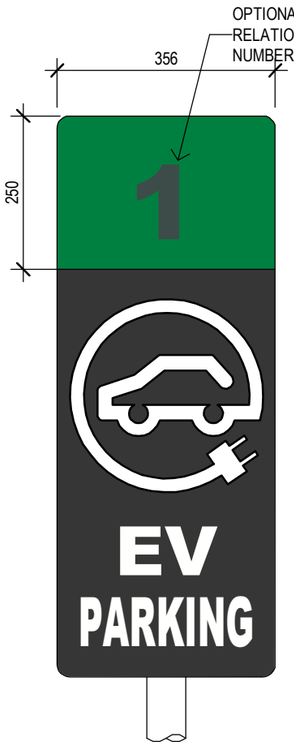
Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale: As indicated @ A3
Series: BIO MOD 380
Drawing: SIGNAGE DETAILS
Project Number: 0890
Drawing Number: DA12
Issue: 0

File Name: D:\Documents\0890_South Baldivis_McDONALDS-BIOMOD-380_R23_nicoleWMET6.rvt







S11 CAR PARK SIGNAGE

DEPENDING ON LOCATION WITHIN SITE, S11 SIGNAGE SHOULD BE SET A MINIMUM OF 2m ABOVE TOP OF KERB TO PREVENT OBSTRUCTION TO OCCASIONAL PEDESTRIANS, OR TO REDUCE INTERFERENCE FROM PARKED VEHICLES. IF THIS DOESN'T APPLY, SIGNAGE HEIGHTS SHALL BE SET AS NOTED.

McDONALD's Signage Colours

McDonalds Gold	McDonalds Red	Green	Charcoal	Light Grey	Black	Reflex Blue
PMS 1235 C 122 U	PMS 2035 C	PMS 350 C	PMS Cool Gray 11C	PMS Cool Gray 1C	PMS Black 6 C	PMS Reflex Blue
CMYK 0.29.96.0	CMYK 0.100.95.0	CMYK 80.43.86.42	CMYK 0.0.0.80	CMYK 0.0.0.8	CMYK 82.71.59.75	CMYK 100.96.13.9
RGB 255.188.13	RGB 219.0.7	RGB 43.82.51	RGB 45.45.45	RGB 247.247.247	RGB 16.24.32	RGB 0.22.137
HEX FFBC0D	HEX DB0007	HEX 2B5233	HEX 2D2D2D	HEX B69A81	HEX 101820	HEX ~~001689~~

DEVELOPMENT APPLICATION

Revisions

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ABN. 43 008 496 928
☎ 02 9875 6666
Project Manager

Architect
Hindley and Associates Pty Ltd
Building Designers
Unit 4/166 Stirling Highway
Nedlands WA 6009
PO Box 199 Nedlands WA 6909
08 9386 6699
www.hindley.com.au

Project
NEW McDONALDS RESTAURANT

Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale
1 : 10 @ A3

Series
BIO MOD 380

Drawing
SIGNAGE DETAILS

Project Number
0890

Drawing Number
DA13

Issue
0

File Name D:\Documents\0890_South Baldivis_McDONALDS-BIOMOD-380_R23_nicole\WMET6.rvt

ALUMINIUM DECORATIVE SCREEN.

LOW HIGH FEATURE WALLS.

DEVELOPMENT APPLICATION

Revisions					
Issue	Description	Date	Chk	Int	
0	AMENDED DA AS CLOUDED	AUGUST 2024	AJJ	NR	

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Drawing Notes

Client
McDonald's Australia Limited
ABN. 43 008 496 928
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Project Manager
NATIONAL DEVELOPMENT GROUP

Architect
Hindley and Associates Pty Ltd
Building Designers
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Project
NEW McDONALDS RESTAURANT

Location
PART LOT 9018 NAIRN DRIVE, BALDIVIS.

Scale: @ A3
Series: BIO MOD 380
Drawing: PERSPECTIVE VIEWS
Project Number: 0890
Drawing Number: DA14
Issue: 0

File Name D:\Documents\0890_South Baldivis_McDONALDS-BIOMOD-380_R23_nicole\WMET6.rvt

Appendix B – Influencing Factor Calculation

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

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

where:

$\%\ \text{Type A}_{100}$ = the percentage of industrial land within a100m radius of the premises receiving the noise

$\%\text{TypeA}_{450}$ = the percentage of industrial land within a 450m radius of the premises receiving the noise

$\%\ \text{Type B}_{100}$ = the percentage of commercial land within a100m radius of the premises receiving the noise

$\%\text{TypeB}_{450}$ = the percentage of commercial land within a 450m radius of the premises receiving the noise

+ Transport Factor (maximum of 6 dB)

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

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

= 6 for a major road within 100m

The nearest noise sensitive premises are identified within the new precinct plan to the north, east and south.

Table B-1 shows the percentage of industrial and commercial land within the inner (100 metre radius) and outer (450 metre radius) circles of this noise sensitive premise with reference to the Town Scheme.

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

Receiver	Land Type	Within 100m	Within 450m
Typical Future Residential (north)	Type A - Industrial and Utility	0	0
	Type B – Commercial	24	12

Table B-2 combines the percentage land types and Transport Factor to calculate the influencing factor. There are no major roads within 450m nor secondary roads within 100m.

Table B-2: Influencing Factor Calculation, dB

Receiver	Industrial Land	Commercial Land	Transport Factor	Total
Nearest Residences	0	1.8	0	**2**

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

Appendix C – Terminology

The following is an explanation of the terminology used throughout this report:

- **Decibel (dB)**

The decibel is the unit that describes the sound pressure levels of a noise source. It is a logarithmic scale referenced to the threshold of hearing.

- **A-Weighting**

An A-weighted noise level has been filtered in such a way as to represent the way in which the human ear perceives sound. This weighting reflects the fact that the human ear is not as sensitive to lower frequencies as it is to higher frequencies. An A-weighted sound level is described as L_A, dB.

- **Sound Power Level (L_w)**

Under normal conditions, a given sound source will radiate the same amount of energy, irrespective of its surroundings, being the sound power level. This is similar to a 1kW electric heater always radiating 1kW of heat. The sound power level of a noise source cannot be directly measured using a sound level meter but is calculated based on measured sound pressure level at known distances. Noise modelling incorporates source sound power levels as part of the input data.

- **Sound Pressure Level (L_p)**

The sound pressure level of a noise source is dependent upon its surroundings, being influenced by distance, ground absorption, topography, meteorological conditions etc. and is what the human ear actually hears. Using the electric heater analogy above, the heat will vary depending upon where the heater is located, just as the sound pressure level will vary depending on the surroundings. Noise modelling predicts the sound pressure level from the sound power levels taking into account ground absorption, barrier effects, distance etc.

- **L_{ASlow}**

This is the noise level in decibels, obtained using the A-frequency weighting and the S (slow) time weighting. Unless assessing modulation, all measurements use the slow time weighting characteristic.

- **L_{AFast}**

This is the noise level in decibels, obtained using the A-frequency weighting and the F (fast) time weighting. This is used when assessing the presence of modulation.

- **L_{APeak}**

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

- **L_{Amax}**

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

- **L_{A1}**

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

- **L_{A10}**

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

- **L_{A90}**

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

- **L_{Aeq}**

The equivalent steady state A-weighted sound level ("equal energy") in decibels which, in a specified time period, contains the same acoustic energy as the time-varying level during the same period. It is considered to represent the "average" noise level.

- **One-Third-Octave Band**

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

- **Representative Assessment Period**

Means a period of time not less than 15 minutes, and not exceeding four hours, determined by an inspector or authorised person to be appropriate for the assessment of a noise emission, having regard to the type and nature of the noise emission.

- **L_{Amax} assigned level**

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

- **L_{A1} assigned level**

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

- **L_{A10} assigned level**

Means an assigned level, which, measured as a L_{ASlow} value, is not to be exceeded for more than 10 percent of the representative assessment period.

- **Tonal Noise**

A tonal noise source can be described as a source that has a distinctive noise emission in one or more frequencies. An example would be whining or droning. The quantitative definition of tonality is:

– the presence in the noise emission of tonal characteristics where the difference between -

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

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

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

This is relatively common in most noise sources.

- **Modulating Noise**

A modulating source is regular, cyclic and audible and is present for at least 10% of the measurement period. The quantitative definition of modulation is:

– a variation in the emission of noise that —

(a) is more than 3 dB $L_{A\ Fast}$ or is more than 3 dB $L_{A\ Fast}$ in any one-third octave band; and

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

(c) is regular, cyclic and audible.

- **Impulsive Noise**

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

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

- **Major Road**

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

- **Secondary / Minor Road**

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

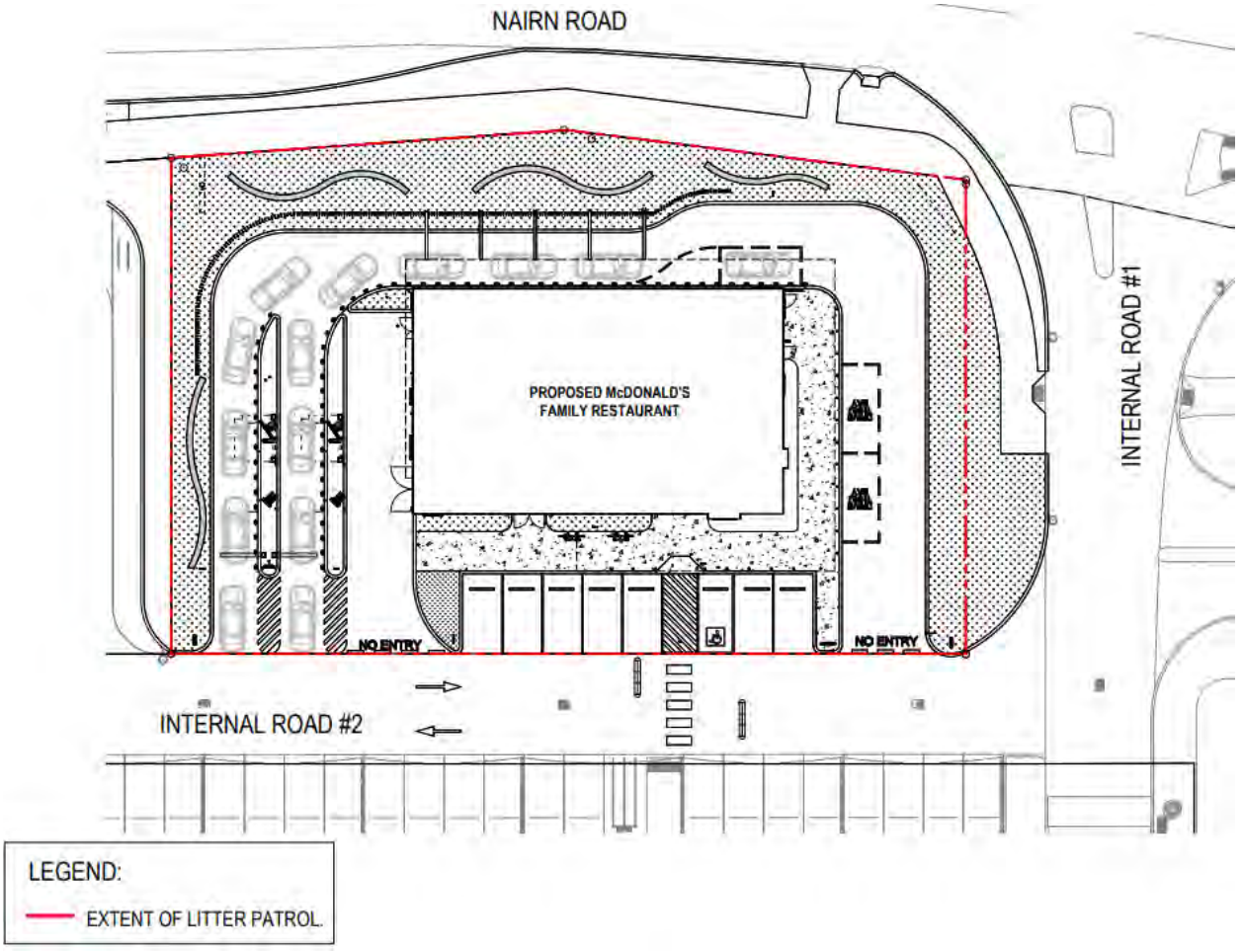
- **Chart of Noise Level Descriptors**
- **Austroads Vehicle Class**
- **Typical Noise Levels**

Appendix 6:
Waste Management Plan

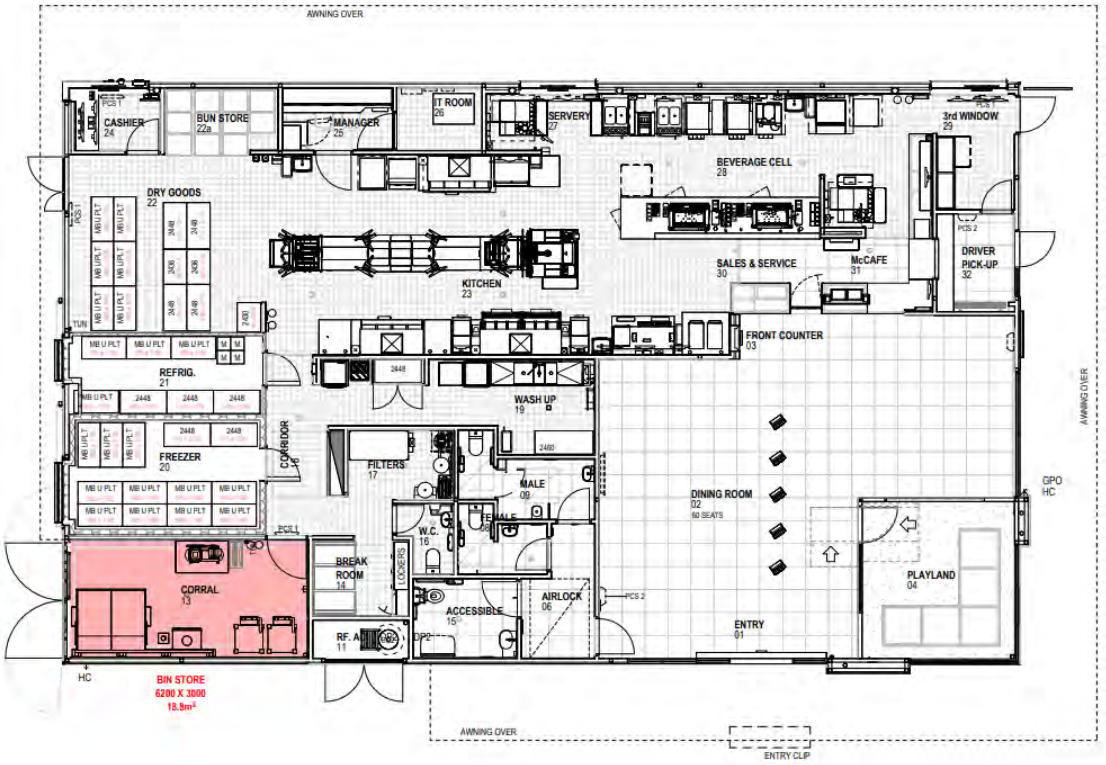
McDONALD'S SOUTH BALDIVIS
WASTE MANAGEMENT PLAN

1. General waste produced will be placed in garbage bags, sealed and deposited in an 1100L bin for general rubbish.
2. Boxes and/or recycling waste will be deposited in an 1100L bin marked as recycling only.
3. All staff bins are in the corral (bin room) at the rear of the restaurant. There is a roof over the bin store area protecting it from additional stormwater.
4. Bins will typically be emptied two times per week by *SUEZ*. The cleaning of the 1100L bins is a process completed by *SUEZ*.
5. The concrete bin room floor is graded to a floor waste connected to sewer and contains a tap for cleaning spills. The bin room is cleaned, and pressure washed twice a week. Spot checks are completed throughout the day, and additional sweeping and hosing down of the floor is completed in the event of a spillage.
6. All waste collections will be conducted between the hours of 7.00am to 7.00pm.
7. Waste cooking oil is stored in sealed containers and will be collected by an accredited contractor and disposed of in an appropriate manner each month.
8. Eight (8) waste bins are provided in appropriate locations to control litter both inside and outside the restaurant. These waste bins will be checked and emptied on a regular basis by our staff into the main bin.
9. The main bin utilizes vehicular collection during prescribed hours. The procedure involved is specific collection times agreed with the nominated waste contractor. The collection times are programmed to occur at 11.00am weekdays and will always be within the prescribed times imposed by the permit; namely between not before 7.00am and not after 7.00pm.
10. The times of collection are dependent upon the trading patterns of the restaurant, as are the numbers of collections required, and will be set once the restaurant is trading to ensure minimum disruption. The driver of the waste management vehicle (WMV) contacts the restaurant to alert them that the WMV is in proximity prior to entering the site. As the WMV enters the site, our staff open the corral gates and prepare to manoeuvre the bin into the loading bay. The WMV then lifts and empties the bin, which is maneuvered back to the corral by our staff as the WMV leaves the site. It is expected the collection will take less than 90 seconds. The operation is always supervised by our staff.
11. McDonald's standard operating procedures continually strive to reduce waste and maximise the use of recyclable materials. Food products, general rubbish, paper, and cardboard is compacted and collated separately from the waste.
12. No recycling bins are available for customers within the dining area. McDonald's have trialed these, however they proved ineffective as customers would mix general waste into recycling.
13. All dining room bins are cleaned daily.
14. Litter patrols will be completed around the site (within the boundaries of the lot) daily between 6am and 6pm by the McDonald's Shift Manager. The maintenance contractor will also perform perimeter litter patrols every Monday and Friday morning.

Site Plan



Floor Plan



Appendix 7:
Civil Design

NAIRN ROAD

ALUMINIUM DECORATIVE SCREEN TIMBER BATTENS.

McDONALD'S PYLON.

BLACK POWDERCOATED POSTS REFER TO ELEVATION FOR MORE DETAILS.

LOW CURVE FEATURE WALLS 800mm HIGH.

CONCRETE FOOTPATH

26.83m

27.15m

33.52m

32.00m

CASHIER

SERVERY

3RD WINDOW

CONCRETE

PROPOSED McDONALD'S RESTAURANT

1,405.07 sq m

BIO MOD 380

FFL = 16.80

LOADING BAY

DRIVE THRU BAY

CORRAL

PLAYPLACE

CONCRETE

NO ENTRY

NO ENTRY

53.70m

CENTTRE PYLON 9m HIGH.

ACCESSIBLE PARKING BAY TO AS2890.6 AND AS1428.1.

INTERNAL ROAD #16

Geology Mapping

Based on the environmental geology series of the Geological Survey of Western Australia (1983), 1:50,000 scale Rockingham map sheet, the natural material underlying the current development is anticipated to be SAND derived from Tamala Limestone (geological unit S7).

Groundwater

Based on the findings of SKM (2009), along with the natural surface contours and extrapolation of the maximum groundwater table contours from the Perth Groundwater Atlas (1997), an indicative groundwater table of about 3 m AHD can be inferred for the current site. This indicative groundwater level is more than 10 m below the existing ground surface level at the time of the investigation.

As groundwater levels are expected to be well below the zone of influence of the development, groundwater is not expected to affect the development and dewatering at the site is unlikely to be required.

Infiltration

Based on the geotechnical investigation undertaken by FSG Geotechnics + Foundations, an infiltration rate of 8.0 m/day for soakwells is permissible.

LEGEND:

- CONCRETE EXPOSED AGGREGATE FOOTPATH AS SPECIFIED. REFER STRUCT. ENG'S DWGS FOR DETAILS.
- NEW LANDSCAPING BEDS.
- WS — RUBBER WHEELSTOPS AS SPECIFIED. QTY: 8.
- SELECTED TREES REFER LANDSCAPING PLAN.

Stormwater Calculations in accordance with City of Rockingham and UWMP

100 ARI (1% AEP) of critical duration (35 minutes)

Stormwater Generated
= CIA/3600
= 0.95 x 59.4 x 1,406 / 3600
= 22.05 L/s
= 46.31 m3 over 35 minutes.

Provided Storage - Soakwells

Volume of a dia 1200mm x 1200mm deep soakwell = 1.357m3

Infiltration of a dia 1200mm x 1200mm deep soakwell
= πr2 + 2πrh@25%
= πx0.6x0.6 + 2πx0.6x1.2x0.25
= 1.131 + 1.131
= 2.262m2 of permeability area

Infiltration achieved for one soakwell
= 2.262 m2 @ 8m/day
= 0.440 m3 of infiltration over 35 minutes

Soakwell capacity over 35 minutes
= volume + infiltration
= 2.262 + 0.440 m3
= 2.702 m3

Number of Soakwells provided
= 7 x 2.702 m3
= 18.914 m3 of stormwater detained and infiltrated via Soakwells

Provided Storage - GRAF

Volume of a GRAF Cell = 0.223m3

Infiltration of a GRAF cell
= 0.8 x 0.8
= 0.64m2 of permeability area

Infiltration achieved for one GRAF cell
= 0.64 m2 @ 8m/day
= 0.124 m3 of infiltration over 35 minutes

GRAF capacity over 90 minutes
= volume + infiltration
= 0.223 + 0.124 m3
= 0.347 m3

Number of GRAF provided
= 100 x 0.347 m3
= 34.700 m3 of stormwater detained and infiltrated via GRAF cells

Total Stormwater Capacity (Detaining + Infiltration)
= Soakwells + GRAF Cells
= 18.914 + 34.700
= 53.614 m3 of capacity provided which exceeds the volume of stormwater generated.

Total Stormwater Capacity (Volume)
= Soakwells + GRAF Cells
= 9.499 + 22.300
= 31.799 m3 of capacity provided, equivalent to 22.617 mm per square metre.

PRITCHARD FRANCIS CIVIL DA CONCEPT SHALL BE VERIFIED AND CERTIFIED BY PRITCHARD FRANCIS FOR BUILDING PERMIT APPLICATION.

Client:	McDonalds Australia
Project:	McDonald's South Baldivis
Drawing Set:	24182-C8-DG-02
Revision:	A
Date:	28 August 2024

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Level 1, 430 Roberts Road
Subiaco WA 6008
PO Box 2150
Subiaco WA 6904
Telephone: (08) 9382 5111
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DEVELOPMENT APPLICATION

North

Client: McDonald's Australia Limited
ABN. 43 008 496 928
☎ 02 9875 6666
Project Manager

Architect: Hindley and Associates Pty Ltd
Building Designers
Unit 4/166 Stirling Highway
Nedlands WA 6009
PO Box 199 Nedlands WA 6909
08 9386 6699
www.hindley.com.au

Project: NEW McDONALDS RESTAURANT
Location: LOT 9014 SIXTY EIGHT ROAD, BALDIVIS

Scale	Series
1 : 250 @ A3	BIO MOD 380
Drawing: SITE PLAN	
Project Number	Drawing Number	Issue
0890	DA03	0

File Name: D:\Documents\0890_South Baldivis_McDONALDS-BIOMOD-380_R23_nicole@WMET6.rvt

NAIRN ROAD

ALUMINIUM DECORATIVE SCREEN TIMBER BATTENS.

McDONALD'S PYLON.

BLACK POWDERCOATED POSTS REFER TO ELEVATION FOR MORE DETAILS.

LOW CURVE FEATURE WALLS 800mm HIGH.

CENTTRE PYLON 9m HIGH.

CONCRETE FOOTPATH

CONCRETE

CASHIER

SERVERY

3RD WINDOW

CONTRACTOR TO INSTALL 90MM HIGH KERB ADJACENT TO THE EGRESS DOOR AND TRANSITION TO A 150MM KERB OVER 3M.

PROPOSED McDONALD'S RESTAURANT

BIOMOD 380

FFL 16.800

CORRAL

PLAYPLACE

DRIVE THRU BAY

LOADING BAY

CONTRACTOR TO INSTALL KERB RAMP AND ACCESSIBLE CAR BAY.

CONCRETE

ENTRY

ENTRY

33.52m

32.00m

27.15m

53.70m

5400

2700

DUAL LANE DRIVE-THRU 14DT CAR STACK.

ACCESSIBLE PARKING BAY TO AS2890.6 AND AS1428.1.

PEDESTRIAN CROSSING

INTERNAL ROAD #2

INTERNAL ROAD #16

SITE AREA SCHEDULE

IDENTITY	AREA m2
McDONALD;S PAD SITE	1831 m2

PARKING SUMMARY

TYPE	NO
ACCESSIBLE BAY	1
STANDARD BAYS	7
WAITING BAY	2

LEGEND:

CONCRETE EXPOSED AGGREGATE FOOTPATH AS SPECIFIED. REFER STRUCT. ENG'S DWGS FOR DETAILS.

NEW LANDSCAPING BEDS.

WS RUBBER WHEELSTOPS AS SPECIFIED. QTY: 8.

SELECTED TREES REFER LANDSCAPING PLAN.

PRITCHARD FRANCIS CIVIL DA CONCEPT SHALL BE VERIFIED AND CERTIFIED BY PRITCHARD FRANCIS FOR BUILDING PERMIT APPLICATION.

Client: McDonalds Australia
Project: McDonald's South Baldivis
Drawing Set: 24182-C8-DG-02
Revision: A
Date: 28 August 2024

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Revisions

Issue	Description	Date	Chk	Int
0	AMENDED DA AS CLOUDED	AUGUST 2024	AJJ	NR

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ABN: 43 008 496 928
☎ 02 9875 6666
Project Manager

Architect: Hindley and Associates Pty Ltd
Building Designers
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Nedlands WA 6009
PO Box 199 Nedlands WA 6909
08 9386 6699
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Project: NEW McDONALDS RESTAURANT
Location: LOT 9014 SIXTY EIGHT ROAD, BALDIVIS

DEVELOPMENT APPLICATION

Scale	Series
1 : 250 @ A3	BIO MOD 380
Drawing: SITE PLAN	
Project Number	Drawing Number	Issue
0890	DA03	0

File Name: D:\Documents\0890_South Baldivis_McDONALDS-BIOMOD-380_R23_revitVM16.rvt

NAIRN ROAD

ALUMINIUM DECORATIVE SCREEN TIMBER BATTENS.

McDONALD'S PYLON.

BLACK POWDERCOATED POSTS REFER TO ELEVATION FOR MORE DETAILS.

LOW CURVE FEATURE WALLS 800mm HIGH.

CONCRETE FOOTPATH

26.83m

27.15m

GSW dia 1200 x 1200

GSW dia 1200 x 1200

GSW dia 1200 x 1200

GSW dia 1200 x 1200

GSW dia 1200 x 1200

GSW dia 1200 x 1200

GSW dia 1200 x 1200

CENTTRE PYLON 9m HIGH.

33.52m

32.00m

3000 1500 3000 1500

CASHIER

SERVERY

3RD WINDOW

CONCRETE

PROPOSED McDONALD'S RESTAURANT

BIOMOD 380

FFL = 16.800

LOADING BAY

CORRAL

PLAYPLACE

DRIVE THRU BAY

DRIVE THRU BAY

CONCRETE

5400

NO ENTRY

NO ENTRY

50 x 2 = 100 GRAF Cells

2700

53.70m

DUAL LANE DRIVE-THRU 14DT CAR STACK.

PEDESTRIAN CROSSING

ACCESSIBLE PARKING BAY TO AS2890.6 AND

STORMWATER IN EXCESS OF THE 100 ARI (1% AEP) CRITICAL STORM DURATION TO OVERTOP TO THE LOT CONNECTION.

US 15.43
Dia 150 / 89
L 10.6m
DS 15.31

INTERNAL ROAD #2

INTERNAL ROAD #16

SITE AREA SCHEDULE

IDENTITY	AREA m2
McDONALD;S PAD SITE	1831 m2

PARKING SUMMARY

TYPE	NO
ACCESSIBLE BAY	1
STANDARD BAYS	7
WAITING BAY	2

LEGEND:

CONCRETE EXPOSED AGGREGATE FOOTPATH AS SPECIFIED. REFER STRUCT. ENG'S DWGS FOR DETAILS.

NEW LANDSCAPING BEDS.

WS RUBBER WHEELSTOPS AS SPECIFIED. QTY: 8.

SELECTED TREES REFER LANDSCAPING PLAN.

PRITCHARD FRANCIS CIVIL DA CONCEPT SHALL BE VERIFIED AND CERTIFIED BY PRITCHARD FRANCIS FOR BUILDING PERMIT APPLICATION.

Client:	McDonalds Australia
Project:	McDonald's South Baldivis
Drawing Set:	24182-C8-DG-02
Revision:	A
Date:	28 August 2024

pritchard francis
civil and structural engineering consultants
Level 1, 430 Roberts Road
Subiaco WA 6008
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Subiaco WA 6904
Telephone: (08) 9382 5111
admin@pfeng.com.au

DEVELOPMENT APPLICATION

Revisions

Issue	Description	Date	Chk	Int
0	AMENDED DA AS CLOUDED	AUGUST 2024	AJJ	NR

General Notes

Do not scale this drawing. The drawing shows design intent only. All dimensions to be checked on site prior to construction or production. Construction details to be confirmed by contractor/manufacturer. This is a computer generated drawing. Do not amend by hand. Figure dimensions are to be used. Contact architect for clarification if dimensions are not clear. All dimensions are in millimeters. All discrepancies and omissions on site must be reported to the architect for their comments or approval prior to commencing work.

Drawing Notes

North

Client: McDonald's Australia Limited ABN. 43 008 496 828 ☎ 02 9875 6666
Project Manager

Architect: Hindley and Associates Pty Ltd
Building Designers
Unit 4/166 Stirling Highway
Nedlands WA 6009
PO Box 199 Nedlands WA 6909
08 9386 6699
www.hindley.com.au

Project: NEW McDONALDS RESTAURANT

Location: LOT 9014 SIXTY EIGHT ROAD, BALDIVIS

Scale: 1 : 250 @ A3

Series: BIO MOD 380

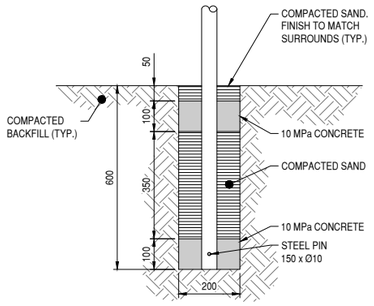
Drawing: SITE PLAN

Project Number: 0890

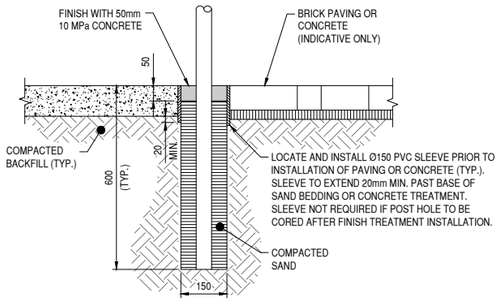
Drawing Number: DA03

Issue: 0

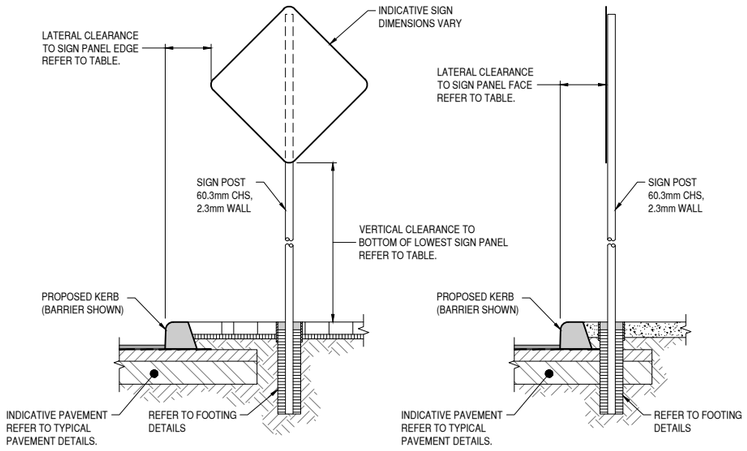
File Name: D:\Documents\0890_South Baldivis_McDONALDS-BIOMOD-380_R23_nicole\WMET6.rvt



FOOTING DETAIL
GENERAL / VERGE



FOOTING DETAIL
TRAFFIC ISLAND, PATH OR OTHER PAVED / SURFACED AREA



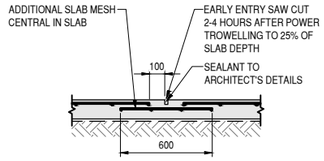
TYPICAL ROAD SIGN CLEARANCE AND FOOTING DETAILS

SCALE 1:10 0m 200mm 400mm

NOTES
1. LOCAL AUTHORITY OR CLIENT SPECIFICATIONS AND DETAILS TAKE PRECEDENCE.
2. DETAIL FOR USE IN WIND REGIONS 'A' AND 'B' ONLY. FOOTINGS FOR WIND REGIONS 'C' AND 'D' SHALL BE STRUCTURALLY ENGINEERED.
3. SIGN INSTALLATION SHALL COMPLY WITH AS2890 SERIES AND AS1742 SERIES
4. IF LOCATED WITHIN ROAD RESERVE, SIGN INSTALLATION SHALL COMPLY WITH MAIN ROADS W.A. SPECIFICATIONS AND DETAILS.

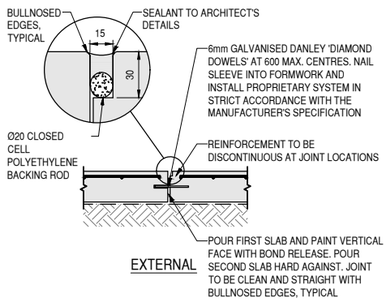
SIGN PANEL LATERAL CLEARANCE	
KERB TYPE	MIN. CLEARANCE (mm)
BARRIER KERB	300
SEMI-MOUNTABLE KERB	500
MOUNTABLE KERB	500
UNKERBED	2000

SIGN PANEL VERTICAL CLEARANCE	
DESIGN SCENARIO	MIN. CLEARANCE (mm)
LOCATED IN UNPAVED VERGE - FROM VERGE LEVEL - FROM PAVEMENT LEVEL	 2000 2200
WHEN OVER HANGING OR LOCATED WITHIN FOOTWAY	2500



TYPICAL EXTERNAL SAW CUT JOINT DETAIL (S.J.)

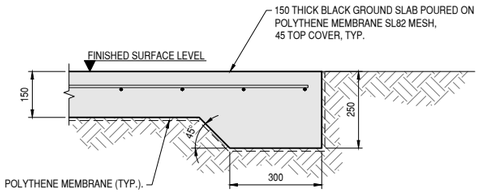
SCALE 1:20 0m 400mm 800mm



EXTERNAL

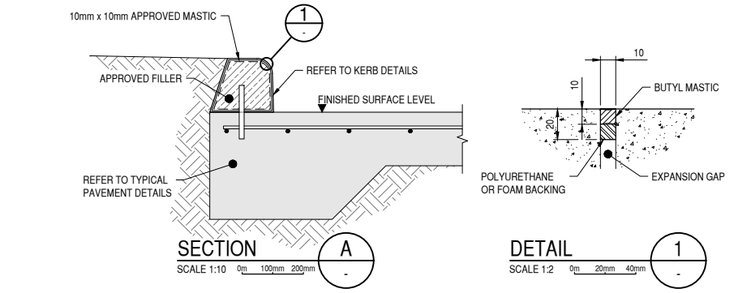
TYPICAL DOWEL CONTROL JOINT DETAIL (C.J.)

SCALE 1:20 0m 400mm 800mm



TYPICAL CONCRETE AND SLAB EDGE DETAIL

SCALE 1:10 0m 200mm 400mm

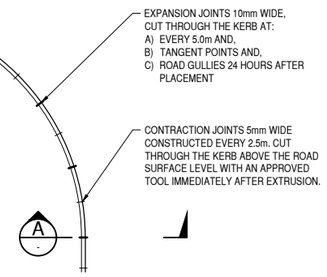


SECTION A
SCALE 1:10 0m 100mm 200mm

DETAIL 1
SCALE 1:2 0m 20mm 40mm

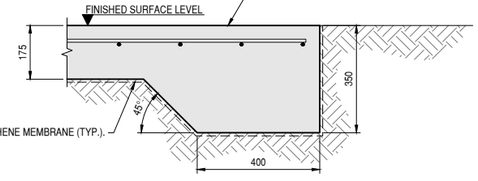
KERB EXPANSION JOINT NOTES

1. EXPANSION AND CONTRACTION JOINTS SHALL BE IN ACCORDANCE WITH THE SPECIFICATION.
2. KEYS SHALL BE INSTALLED FOR ALL RADII LESS THAN OR EQUAL TO 40m
3. KERBING ALONG WITH EXPANSION AND CONTRACTION JOINTS SHALL BE CONSTRUCTED PRIOR TO LAYING OF ANY BRICK PAVING.
4. BACKFILL BEHIND KERB SHALL BE COMPACTED TO 90% M.M.D.D. IN ACCORDANCE WITH THE SPECIFICATION
5. WHERE PATHS ARE CONSTRUCTED DIRECTLY BEHIND THE KERB, EXPANSION AND CONTRACTION JOINTS IN THE PATH AND KERB SHALL BE ALIGNED



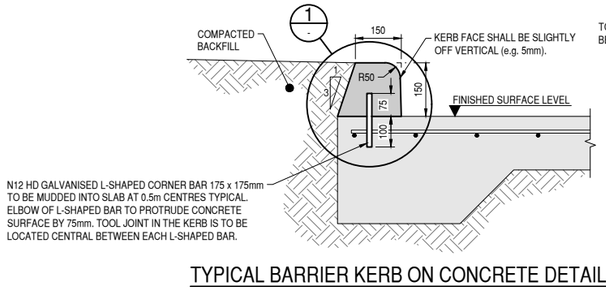
KERB EXPANSION JOINT AND CRACK CONTROL DETAILS

SCALE 1:200 0m 4m 8m



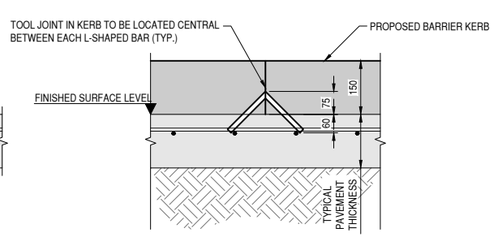
TYPICAL HEAVY DUTY CONCRETE AND SLAB EDGE DETAIL

SCALE 1:10 0m 200mm 400mm



TYPICAL BARRIER KERB ON CONCRETE DETAIL

SCALE 1:10 0m 200mm 400mm



FACE VIEW 1
SCALE 1:10 0m 100mm 200mm

BEFORE YOU DIG www.byda.com.au Zero Damage - Zero Harm

NOMINATED DETAILS LIKELY TO APPLY TO THE PROJECT, HOWEVER TO BE CONFIRMED DURING DETAILED DESIGN PRIOR TO BUILDING PERMIT APPLICATION.

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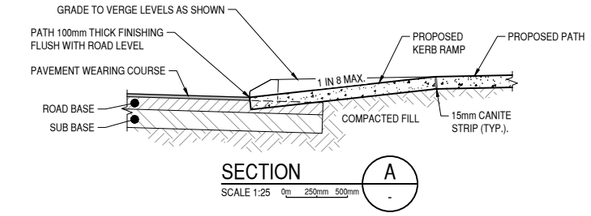
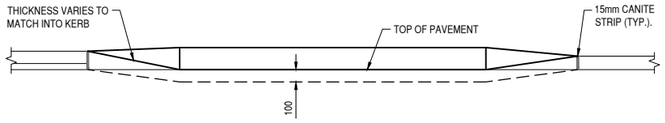


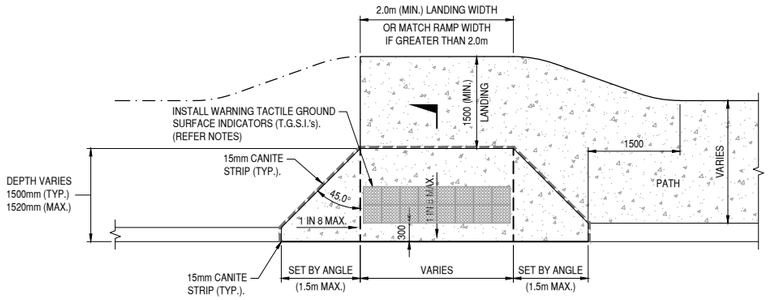
SECTION A

SCALE 1:25 0m 250mm 500mm



FRONT ELEVATION

SCALE 1:25 0m 0.5m 1.0m



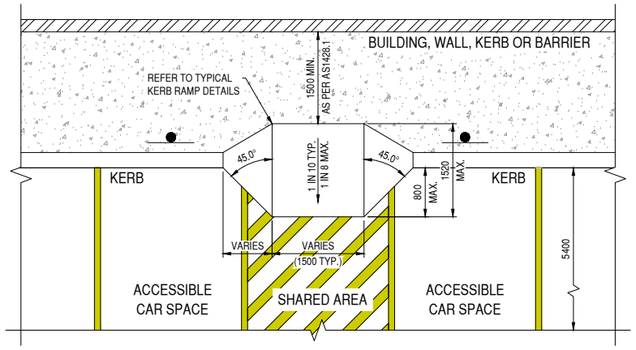
PLAN

NOTES

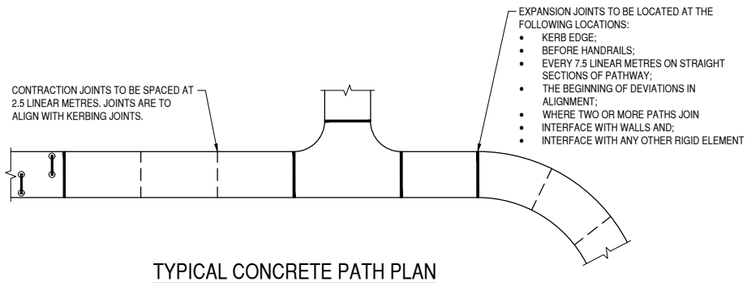
1. ALL CONCRETE TO BE A MINIMUM OF 25MPa, 20mm AGGREGATE AND A MAXIMUM SLUMP OF 80mm, FROM AN APPROVED PRE-MIX BATCH PLANT
2. MINIMUM THICKNESS - 100mm.
3. BEDDING - SAND, 50mm MINIMUM.
4. FINISH - BROOMED TO NON-SKID FINISH PARALLEL TO LINE OF KERB WITH TOOLED EDGES
5. EXPANSION JOINTS - APPROVED MATERIAL SHALL BE EXPANDITE-FLEXICELL.
6. TACTILE GROUND SURFACE INDICATORS (T.G.S.I.'s) SHALL BE IN ACCORDANCE WITH AS1428.1 AND AS1428.4.
7. CONTRACTOR TO INSTALL STAINLESS STEEL WARNING T.G.S.I.'s FOR FULL WIDTH OF CONCRETE KERB RAMP. REFER TO ARCHITECTURAL FINISHES SCHEDULE FOR DETAILS.
8. WARNING TGSI's ARE NOT TO BE CUT. CONTRACTOR SHALL SELECT SUITABLE SIZE TO EXTEND ACROSS FULL WIDTH OF KERB RAMP (EXCLUDING SPLAYS).
9. WHERE THE KERB RAMP IS CONSTRUCTED USING BLOCK PAVERS, THE CONTRACTOR SHALL INSTALL TGSI PAVERS IN A CONTRASTING COLOUR CONFORMING WITH AS1428.4 LUMINANCE REQUIREMENTS.

TYPICAL KERB RAMP DETAIL

SCALE 1:50 0m 1m 2m

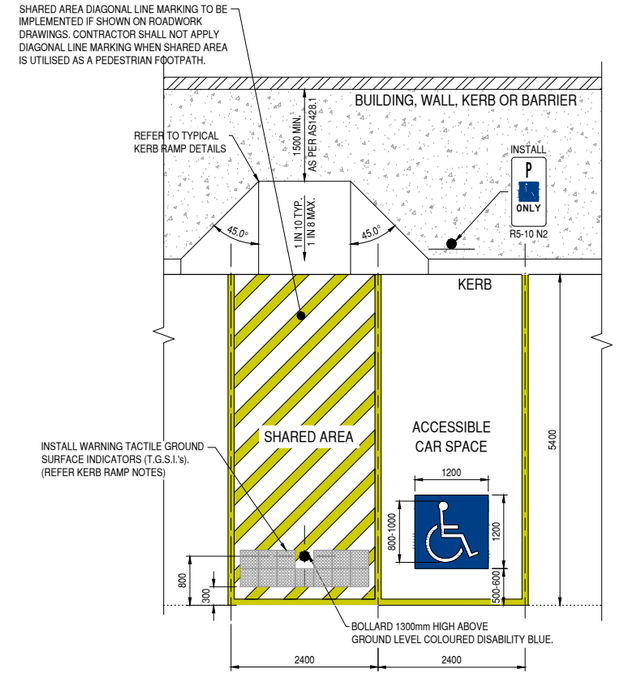


ALTERNATIVE KERB RAMP ARRANGEMENT



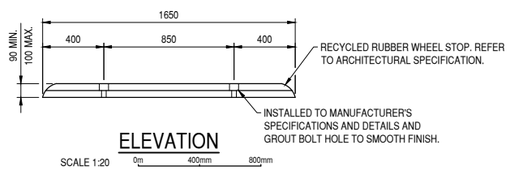
TYPICAL CONCRETE PATH PLAN

SCALE 1:100 0m 2m 4m



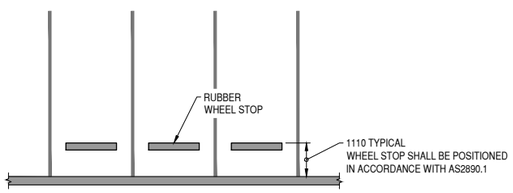
PERPENDICULAR ACCESSIBLE CAR PARKING SPACES

SCALE 1:50 0m 1m 2m



ELEVATION

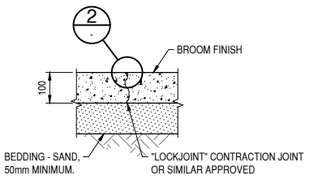
SCALE 1:20 0m 400mm 800mm



PLAN VIEW

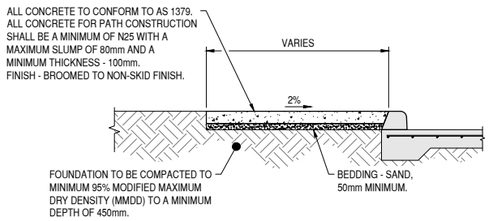
TYPICAL RECYCLED RUBBER WHEEL STOP DETAIL

SCALE 1:100 0m 2m 4m



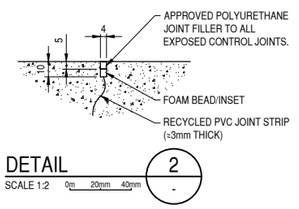
CONCRETE PATH CONTRACTION JOINT

SCALE 1:10 0m 200mm 400mm



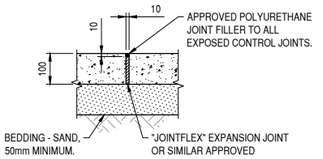
CONCRETE PATH SECTION

SCALE 1:25 0m 0.5m 1.0m



DETAIL 2

SCALE 1:2 0m 20mm 40mm



CONCRETE PATH EXPANSION JOINT

SCALE 1:10 0m 200mm 400mm

ACCESIBLE PARKING SPACE NOTES

SPACE IDENTIFICATION

EACH DEDICATED SPACE SHALL BE IDENTIFIED BY MEANS OF A WHITE SYMBOL OF ACCESS IN ACCORDANCE WITH AS1428.1 BETWEEN 800mm AND 1000mm HIGH PLACED ON A BLUE RECTANGLE WITH NO SIDE MORE THAN 1200mm, PLACED AS A PAVEMENT MARKING IN THE CENTRE OF THE SPACE BETWEEN 500mm AND 600mm FROM ITS ENTRY POINT AS ILLUSTRATED.

SPACE DELINEATION

PAVEMENT MARKINGS SPECIFIED IN ITEMS (A) AND (B) OF THIS CLAUSE SHALL BE YELLOW AND SHALL HAVE A SLIP RESISTANT SURFACE. RAISED PAVEMENT MARKERS SHALL NOT BE USED FOR SPACE DELINEATION.

PAVEMENT MARKINGS SHALL BE PROVIDED AS FOLLOWS:

1. LINEMARKING:
   - 1.1. DEDICATED PARKING SPACES SHALL BE OUTLINED WITH UNBROKEN LINES 80 TO 100mm WIDE ON ALL SIDES EXCEPTING ANY SIDE DELINEATED BY A KERB, BARRIER OR WALL.
2. SHARED AREAS SHALL BE MARKED AS FOLLOWS:
   - 2.1. WALKWAYS WITHIN OR PARTLY WITHIN A SHARED AREA SHALL BE MARKED WITH UNBROKEN LONGITUDINAL LINES ON BOTH SIDES OF THE WALKWAY EXCEPTING ANY SIDE DELINEATED BY A KERB, BARRIER OR WALL.
   - 2.2. OTHER VACANT NON-TRAFFICKED AREAS, WHICH MAY BE INTENTIONALLY OR UNINTENTIONALLY OBSTRUCTED (E.G. BY UNINTENDED PARKING), SHALL BE OUTLINED WITH UNBROKEN LINES 80mm TO 100mm WIDE ON ALL SIDES EXCEPTING ANY SIDE DELINEATED BY A KERB, BARRIER OR WALL, AND MARKED WITH DIAGONAL STRIPES 150mm WIDE WITH SPACES 300mm BETWEEN STRIPES. THE STRIPES SHALL BE AT AN ANGLE OF 45° TO THE SIDE OF THE SPACE.
   - 2.3. NO SHARED AREA MARKINGS SHALL BE PLACED IN TRAFFICKED AREAS.
   - 2.4. ALL LINEMARKING MUST BE NON SLIP.
3. BOLLARDS:
   - 3.1. MINIMUM HEIGHT 1300mm.
   - 3.2. RECOMMENDED COLOUR BLUE TO CONTRAST AGAINST YELLOW LINE MARKING.

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Client:	McDonalds Australia
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Schedule of Submissions - Proposed Fast Food Outlet - Parkland Heights Neighbourhood Centre - Lot 9018 Nairn Drive, Baldivis - 20.2024.271.1

PUBLIC SCHEDULE OF SUBMISSIONS			
No.	**Name**	**Address**	**Comment**
1	Mr Jonathan Sheldrick	COTTESLOE WA 6011	It is great to see the proposed Parkland Heights Shopping Centre project and the proposed surrounding retail premises along Nairn Drive starting to seek their approvals. It has been a long-awaited project that will add significantly to the Parkland Heights estate community and their access to similar retail offerings already provided at the District Centre (which can often be quite crowded and not easy to access / exit via vehicle).
2	Mr Matt Drage	BALDIVIS WA 6171	We don't need ANOTHER MCDONALDS. We have 4 in close proximity as it is. Bloody hell, let some other chain get a chance. I'd rather a Jesters Pies than another bloddy MacDonalds's.
3	Mrs Jill Rice	BALDIVIS WA 6171	Against this proposal, there are plenty of fast foods in the area. This is not a good location for it directly opposite a school.
4	Mr Ryan Adams	BALDIVIS WA 6171	Appreciate the opportunity for feedback not in favour of another fast food outlet would support a local smaller restaurant chain. I do think it would conflict with proximity to local schools and sporting grounds. Also likely anti social behaviour with a 24/7 outlet be something that would close later at night.
5	Ms Jackie Gill	BALDIVIS WA 6171	A fast food outlet is not needed or wanted so close to residential homes. The noise of constant traffic and customers would be problematic. I suggest a restaurant or cafe ie Catalano or Brother of Mine, something that helps these small local businesses grow. Oh and to have a post office would be fantastic as we only have 1 in Baldivis and there's no where to park.
6	Mrs Teija Eastwood	BALDIVIS WA 6171	I'm strongly against having a fast food outlet across the road from a primary school. We already have enough fast food restaurants in Baldivis and don't need another one.
7	Mr Russell Sofield	BALDIVIS WA 6171	McDonald's doesn't need to be directly opposite a primary school. There are already 4 other McDonald's restaurants within the suburb of Baldivis. A smaller restaurant/cafe would be far better for the local community, similar to the restaurants at the IGA complex in Makybe Rise. McDonald's here would create unwanted trouble throughout the whole 24 hour period the restaurant opens. The writing is surely clearly on the wall, with the current McDonald's at Stocklands and the continual issues they have there with youths causing trouble.
8	Mr Glenn Griffen	BALDIVIS WA 6171	Please no more fast food. Especially across the road from a primary school. Independent restaurant would be way better.
9	Mr Nathan Hutchison	BALDIVIS WA 6171	We have just brought our house here and to find out they are considering building ANOTHER fast food outlet practically next door to me is extremely disappointing. Put the community, the health of children and a chance for a local cafe/food outlet to thrive without the need for more unhealthy fast food in a up and coming estate.
10	Mrs Casey Hobbs	BALDIVIS WA 6171	Against the decision due to location right across from a primary school. Increased traffic at the Nairn drive/furnival intersection which is already difficult for students to cross. Detracts business from any potential cafes/restaurants/family owned businesses that will establish in the shopping centre
11	Miss Michaella Parkinson	BALDIVIS WA 6171	I dont think it would be necessary to put a fast food outlet here! we have more than enough 4 min down the road. Family run cafe's, restaurants or a bar should be able to open up here.. parkland heights is a beautiful, well kept area of Baldivis which doesn't need to be trashed with fast food outlets, littering the area, bringing more rodents & smell. Allow family businesses to open up & compliment the area, making it an area for families to get together for special occasions or a nice meal. Difference is good, especially for those planning on living here for many yrs.

No.	Name	Address	Comment
11	Cont…		There is so many people in Baldivis, that ANY other family run cafe / restaurant/ bar would ALWAYS do well here. It is not needed! If we want fast food we can travel the 3-4min to the 6-7 fast food outlets. Don't ruin this estate please!! It really would be a shame to ruin this beautiful part of Baldivis.
12	Ms Amy Moore	BALDIVIS WA 6171	Another fast food outlet is not needed in Baldivis.
13	Ms Andrea Simons	BALDIVIS WA 6171	Do not want a fast food store in our private estate.
14	Mr Anton Fonken	BALDIVIS WA 6171	As there are already enough fast food restaurants in Baldivis, it would benefit our community better if there were small local restaurants. They will help to strengthen the local community. A McDonalds at this location will only increase traffic without any benefit for the local community.
15	Ms Laura Cox	BALDIVIS WA 6171	Please don't let this stupid idea go ahead in what is our beautiful estate!! The smell, the trouble of it in the estate. When building 11 years ago we were told there would be a Dome, never was a maccas mentioned. Way to bring down the estate!! Shame on anyone who lets this go ahead
16	Mr David Thorpe	SAFETY BAY WA 6169	We are against the proposed food outlet, it will create large flow of traffic which creates an unsafe use of road for children travelling to the local school. Surrounding residents will be dealing with rubbish, hoons, the stench that fatty foods throw off and it has the possibility of becoming a "hang out" spot for teenagers and we all know it will only bring fights, spray painting and general trouble.
17	Ms Michelle Quinn	BALDIVIS WA 6171	I am against another fast food service to be built on Nairn drive. Not only do we have 4 McDonald's in baldivis already. There is no need for another. I live off Nairn drive I don't want my washing and house stinking of greasy foods. Not only are McDonald's a hang out for teenagers they will bring trouble to a lovely quiet area.
18	Mr Matthiam Badenhorst	BALDIVIS WA 6171	Please not another fast food outlet! We already have so much, maybe a local Irish pub or a similar chain to brother of mine. This creates a sense of community and fast foos places generally have rubbish littered all over the place. There are already a .million other fast food options in aldivis, please reconsider fast food!
19	Mrs Kelsey Hollands	BALDIVIS WA 6171	I own a house in the area. I don't want a fast food outlet near my house as I feel it can attract a bad crowd. I bought in this area because it felt safe, I don't believe having a fast food outlet will keep it feeling safe.
20	Ms Cherri-lee Van Rensburg	BALDIVIS WA 6171	I think that having fast food outlets in this location would not be great as the primary school is near by. I think it would be better to find restaurants or places like catalano or Brother of mine to go in this space
21	Mr Peter Rowe	BALDIVIS WA 6171	No, no no - we already have enough junk food outlets and do not need any opposite schools. Look for tenders from local retailers, cafes etc
22	Mrs Amanda Brady	BALDIVIS WA 6171	Baldivis does not need another fast food outlet particulary directly across the road from a primary school.
23	Mrs Karen Plany-Smith	BALDIVIS WA 6171	I am against the idea of a fast food outlet in this location. It is a horrible idea as there is a primary school directly across the road. It sends a negative message, as families and schools work hard to encourage and instill healthy eating habits in children; this will completely undermine it. Not only that, the current fast food outlets in Baldivis are plentiful. Adding more in this area will negatively impact the area by attracting the antisocial behaviour that is already happening in Central Baldivis, down to the southern areas. Parkland Heights does not need to be subjected to it.
24	Ms Jessica Finch	BALDIVIS WA 6171	Fast food outlets bring all sorts of trouble, there is too many already in baldivis. An independent small business would be a much better option.

No.	Name	Address	Comment
25	Ms Carly Harris	BALDIVIS WA 6171	I live on Hampshire way my kitchen view it this new proposed fast food out let. Please do not put a fast food venue here! The one up at Baldivis Stockland attracts so much negative between all the tweens/teens and we do not want that in our beautiful quiet area! Especially across from a primary school! This is a bad idea and not needed we have more than a enough fast food a few min drive away
26	Mrs Moetu Vellere	BALDIVIS WA 6171	We do not need another fast food restaurant in our area next to a school, attracting the same as what the big maccas attracts no Thankyou.
27	Mrs Maureen Burke	BALDIVIS WA 6171	Fast food outlets are shite and not welcomed in our pristine estate; they devalue our properties and create a haven for the unwelcomed who don't appreciate what we have struggled for! Food venues of quality I support and are encouraged. Please listen to us who have lived a lot longer than you, and know a whole lot more!
28	Mr Neil Connor	BALDIVIS WA 6171	Totally opposed to having any fast food outlets near school or close to housing. Why the hell do we need another MacDonalds when there's one 2 minutes down the road.
29	Mrs Julia Connor	BALDIVIS WA 6171	Oppose this idea.
30	Mrs Alix Ulbricht	BALDIVIS WA 6171	Against
31	Mrs Elaine Hautau	BALDIVIS WA 6171	We have lived in Parkland Heights for the last 10 years, and have anxiously awaited the shopping centre being built. I was surprised to find that yet another McDonald's was going to be built in Baldivis (seriously do we need 3 (or 5 if you include the ones on the freeway)). It is going to make the area even more messier and busy. And having it built so close to a primary school will be a problem with traffic, noise, litter and will encourage unhealthy eating practices. We love the area that we live in and I think having yet another fast food outlet is a bad choice for stores that could be put there. Can you please reconsider especially in light of the primary school location and given that this area is predominantly residential. The traffic and litter that will come from this McDonald's will be bad for the area. Thank you
32	Mrs Leanne Rowe	BALDIVIS WA 6171	NO MCDONALDS - Please no deep fried take away. It stinks, the rubbish is bad and its right across from a primary school. Replace with cafe, or subway or mexican something healthier, less mess and not a teen hang out.
33	Mr David Sherriff	BALDIVIS WA 6171	Good morning. I would like to oppose the development of any fast food outlets in this are for the following reasons. 1. Having a 24 hour fast food outlet across from a primary school is immoral, unhealthy and sends the wrong message to young children. 2. There are already fast food outlets at the Stocklands shopping centre, less than 5 minutes drive away. 3. Most people now order food online through 3rd party apps, such as Uber Eats. 4. Ruins trading for independent food businesses. 5. Litter. Restaurants should be welcomed into the region, but should also retain the aesthetics and culture of the area, Baldivis square captures this well with the restaurants in that shopping centre, Brother of Mine, Catalano, etc
34	Mr Hodges	No address provided	As a nearby resident to this development, my opinion is that to place a large fast food chain outlet directly adjacent to a public school is appalling and not in the best interests of the community or local residents. There are already a number of McDonalds outlets in Baldivis. We do NOT need another one in the heart of our suburb. Priority should be given to independent local businesses. Examples are Brother of Mine and Catalanos in the Makybe area of Baldivis. These locally owned businesses have become thriving community hubs and firm favourites of many local residents that promote good community engagement, in contrast to the issues we see with anti-social behaviour and litter/waste management surrounding McDonalds and similar outlets. The majority of local residents and community members that I have spoken to are opposed to yet another fast food chain outlet in our suburbs.

No.	Name	Address	Comment
35	Mrs Emma Blacklock	BALDIVIS WA 6171	Against. There are enough fast food outlets at Stockland. We need more local outlets - a locally owned Cafe or restaurant would be perfect! Somewhere that mum's can gather after school drop off, or we can take a family walk to grab a coffee and treat. We do not have enough of these kinds of outlets in Baldivis.
36	Mr Rick Raizis	BALDIVIS WA 6171	My opinion is that independent restaurants should be given the chance in the inner suburbs, look at BoM or Catalano, they are community hubs and work well within the area. There are enough fast food outlets at Stocklands. Having a McDonalds or any fast food across from a primary school is atrocious.
37	Ms Gemma Dix	BALDIVIS WA 6171	I am writing to express my significant concerns regarding the proposed development of a fast-food chain in the residential area of Parkland Heights, Baldivis. While I understand the importance of economic development and providing convenient services to the community, I believe that this particular proposal may have several negative impacts on the quality of life for current and future residents. Traffic Congestion and Safety Concerns A fast-food restaurant in this location is likely to increase traffic volumes significantly, particularly during peak hours. This could exacerbate traffic congestion and pose safety risks, especially for pedestrians and children who walk in the neighbourhood. The addition of a drive-thru could further increase the potential for accidents, as well as create significant bottlenecks that affect the flow of traffic. There is a primary school within meters of the proposed location and the risks for children being able to walk to school safely are huge. The road is already incredibly busy and unsafe to cross. Noise and Environmental Impact The operation of a fast-food chain, particularly one with late-night hours, could introduce significant noise pollution from car engines, drive-thru speakers, and customers. Additionally, the waste generated by the restaurant, including food wrappers, packaging, and other trash, could become an ongoing issue, negatively impacting the aesthetics and cleanliness of the area. Decreased Property Values The presence of a fast-food chain in a residential area could negatively affect property values. Many families live in this residential neighbourhood for the peaceful and quiet environment, and the addition of a commercial fast-food establishment could diminish the appeal of the neighbourhood, especially if it disrupts the overall residential character. Health and Community Impact While convenience may be a key factor for many residents, the proliferation of fast-food establishments near to residential areas can encourage unhealthy eating habits, particularly for children. The long-term health effects could contribute to broader societal concerns, such as rising obesity rates and related medical conditions. Additionally, I worry that the commercial nature of such a development might undermine the sense of community that many of us currently enjoy in this neighbourhood. With this site again so close to multiple primary and secondary schools, this is a huge concern. Alternatives and Suggestions I respectfully ask that you reconsider the placement of this fast-food chain in this residential zone. There are already MANY fast-food options less than 3km away from the proposed location. Another one is not required. It is insane to build another one. Perhaps a more appropriate location could be found that does not disrupt the residential nature of the area. Alternatively, it may be worthwhile to consider a development that is more aligned with the character and needs of the community, such as a small café or restaurant. I appreciate your attention to these concerns and hope that you will take them into consideration as you move forward with your plans. Thank you for your time and understanding. I look forward to hearing from you and am happy to engage further in discussion if needed.
38	Ms Marianne Hesselman	BALDIVIS WA 6171	Against it.
39	Mrs Stacey Rainger	BALDIVIS WA 6171	There are several fast food chains in Baldivis. A lot of which attract trouble with teenagers hanging out there. I would love to see a restaurant there instead like steel tree, catalanos etc.

No.	Name	Address	Comment
40	Ms Dominique Griffiths	ROCKINGHAM WA 6168	I would not support this project as fast food is affecting the community's health and costing us all dearly as a result.
41	Ms Kelly Tartano	PIARA WATERS WA 6112	I am a home owner in this area and I am against having a McDonalds fast food service at this location. I believe the one in Stocklands, a 2 minute drive is enough and concerned of having this right near the primary school.
42	Mrs Nicola Edmondson	BALDIVIS WA 6171	Already enough fast food restaurants in Baldivis. A community cafe will be better.
43	Mr David Cook	BALDIVIS WA 6171	I stand against this proposal. There are already a high number of fast food outlets in the baldivis area. Is there a petition I can sign to formalise my stance?
44	Mrs Rebecca Reid	BALDIVIS WA 6171	Is this a joke? This will be the 5th McDonald's in Baldivis! We live in a world where childhood obesity is an epidemic, people live with chronic disease due to the highly processed foods and chemicals they consume on a daily basis and you're proposing for a 5th McDonald's to be built in the one suburb! How about doing something to help make the world a healthier, happier place, reduce the amount of temptation and encourage healthier habits? The lack of infrastructure and family friendly activities in Baldivis is a joke given the amount of young families who live here. Do better.
45	Mrs Julie Hayward	BALDIVIS WA 6171	We do not need any macdonalds store in this location. There is enough trouble in Baldivis as it is with out adding more places for teens to hang out without correct supervision. Baldivis was a fun family open space community it is now a night mare. We who live here don't need to be scared any more.
46	Ma Amie Daetz	BALDIVIS WA 6171	I believe it is preposterous to be considering another McDonald's in Baldivis! The shire should be prioritising health and wellness of its citizens over another place to buy unhealthy food from. We do not need 5 McDonald's in this area.
47	Ms Tammie Tingley	BALDIVIS WA 6171	I do not support the proposal to build a fifth McDonald's in our suburb. While I recognize that such businesses bring in revenue and job opportunities, I am concerned about the potential impact on the health and habits of our youth. With fast food being so readily accessible, it can encourage unhealthy eating patterns, particularly among young people who may be more influenced by the marketing and convenience of fast food options. Instead, I believe we should focus on promoting establishments that contribute positively to the health and well-being of our community. I encourage consideration of alternative developments that align more closely with these values.”
48	Ms Nikki Bailey	BALDIVIS WA 6171	No, another McDonald's in the Baldivis region is NOT needed! Ridiculous proposal!
49	Ms Hayley Baskerville	BALDIVIS WA 6171	Another McDonald's in the area is not necessary. Chicken Treat would be great for better variety in the area or even a HJs over McDonald's. This would still Provide jobs for the juniors in the area but bring about better variety for the community.
50	Ms Natalie Hunter	BALDIVIS WA 6171	Totally against it. The space could be better utilised for other businesses. I think we have enough fast food joints locally.
51	Mrs Natalie Goddard	BALDIVIS WA 6171	Fast food opposite a school in the middle of a family development is shocking. As a Paediatric Community nurse I feel this will be detrimental to children's health.
52	Ms Katrina Fisher	BALDIVIS WA 6171	Don't you think Baldivis already has enough fast food outlets like McDonald's and others? It's disappointing that we're trying to promote healthy eating for our youth, yet there's a proposal to open another fast food restaurant right across from a primary school. This is concerning and should be reassessed to provide healthier options for our families and young people. I do not support this proposal and believe it should be reconsidered.

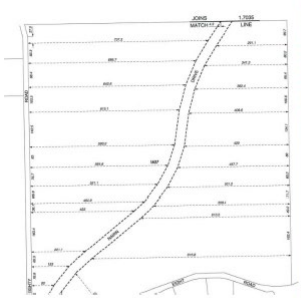
No.	Name	Address	Comment
53	Jawaahir Alim Cancer Council WA	SUBIACO WA 6008	Cancer Council Western Australia (Cancer Council WA) welcomes the opportunity to comment on the above proposal and urges the City of Rockingham to recommend the Metro Outer Development Assessment Panel to refuse this development application for a drive-through McDonald's. As the peak non-government cancer control organisation in Western Australia, Cancer Council WA advises government and other bodies on practices and policies to help prevent, detect and treat cancer. We develop, promote and contribute to policy and initiatives to reduce the impact of cancer on the Australian community. Our interest in the application Cancer Council WA objects to the land use for drive-through fast-food outlets in circumstances where they pose significant risk to community and public health. This is in areas where there would be significant impact to the quality of the existing food environment, such as worsening of existing high density fast-food outlets in neighbourhoods and where proposed developments are in close proximity to homes, schools and children's community infrastructure. The development proposal for a drive-through McDonald's as part of the promising Parkland Heights Neighbourhood Centre in Baldivis will have a detrimental impact on the health and wellbeing of the community due to its proximity to schools and homes. The Application We are deeply concerned about the proposed development of a drive-through McDonald's as part of the Parkland Heights Neighbourhood Centre, centrally located within the Parkland Heights Estate. In August 2022, Cancer Council WA submitted an objection to the revised Local Development Plan for the Parkland Heights Neighbourhood Centre, specifically regarding the inclusion of 'pad sites' designated for drive-through fast-food outlets. We are disappointed to see that this progressed and a development application for a drive-through McDonald's is now proposed. This undermines the potential for neighbourhood centre to positively influence community health such as through providing local access to healthy, affordable food outlets and decreasing access to unhealthy food outlets. The development of a McDonald's drive-through will only serve to increase the daily exposure and accessibility of unhealthy fast-food to families and children, right in the middle of a residential area. Pine View Primary School is located directly opposite the proposed McDonald's and will be visible by students at school. Perth research has shown that almost half (40 per cent) of Perth secondary school children purchase unhealthy foods from outlets near their school at least weekly and five per cent purchased them daily. Whilst Pine View is a primary school, it is highly likely that there will be an increased intake of fast-food upon completion of the development. Furthermore, the Parkland Heights Neighbourhood Centre is a key hub within the Parkland Heights Estate, designed to facilitate movement within the community and connect to main roads leading to other schools in the area, including Tranby College and Mother Teresa Catholic College. This development proposal is particularly concerning given the already existing poor health outcomes in the City of Rockingham. According to the 2023 Health and Wellbeing Profile, 33 per cent of local residents consume fast-food on a weekly basis, and 82 per cent of residents are living with overweight or obesityi. The City of Rockingham also has a SEIFA score of 962, indicating a significant level of socio-economic disadvantage, which increases the likelihood of poor dietary habits due to greater exposure to fast-food outlets.

No.	Name	Address	Comment
53	Cont…		The WA Food Atlas team led by Dr Gina Trapp from Edith Cowan University maps food retail and food service outlets in all Perth metropolitan local governments. In the City of Rockingham, 52 per cent of food retail outlets are fast-food outlets which is a serious public health concern as this is above the average for the rest of Perth. We strongly urge the City of Rockingham and the Metro Outer Development Assessment Panel to champion community health over the interests of the fast-food industry and land developers. The Baldivis community deserves a neighbourhood centre that is not undermined by drive-through fast-food outlets. It risks normalising the presence of fast-food outlets near homes and children's community infrastructure, thereby compromising public health efforts. **Conclusion and recommendation** Cancer Council WA supports measures that promote vibrant, liveable neighbourhoods. The health and wellbeing of community must be supported by health promoting environments to prevent behaviours associated with chronic diseases including cancer. Approving the application for a drive-through McDonald's undermines parents and public health agencies who are trying to support community to live a healthier life. We commend the work Western Australian local governments are already doing to support the health of their residents. Cancer Council WA continues to work with local governments to achieve our vision of a cancer free future for our community. Our guide Local Governments, public health, and cancer prevention. Taking action to improve the health and wellbeing of our local communities provides an introduction to our capacity to work with WA local governments. Cancer Council WA urges the City of Rockingham to appeal to the Metro Outer Development Assessment Panel to refuse the development application for a drive-through McDonald's. If you have any questions about this submission, we welcome further discussion on this issue.
54	Mrs Aneldi Pride	BALDIVIS WA 6171	Please don't put another McDonald's there. Add variety in Baldivis.
55	Miss Natalhia McCleery	BALDIVIS WA 6171	Baldivis does not need another Mcdonalds. It seems excessive and is encouraging poor lifestyle choices.
56	Mrs Kayla Burnett	BALDIVIS WA 6171	Please do something other than a MacDonalds. Build a Guzman and Gomez, something healthier as this building is right near schools and we have enough maccas in the suburb.
57	Mrs Linzi Bridger	BALDIVIS WA 6171	There's already 4 MacDonalds in Baldivis. It does NOT need a 5th one. How about supporting small businesses, a Tony Ales type store?
58	Mrs Franziska-Serra Jowle	BALDIVIS WA 6171	I don't think we need another fast food joint. We already have so many fast food options in Baldivis, and there's already so many McDonald's. It should be an IGA or an independent Cafe instead.
59	Ms Rebecca Kelleher	BALDIVIS WA 6171	It is disappointing to see another McDonald's proposed for the new shopping centre in south Baldivis. This doesn't feel in line with the community that should be developing here. Encouraging fast food usage when there is already an obesity problem in Australia. Not only this but this McDonald's will be the 5th one in this local area. This is insane!!! The only healthy alternatives in this area is 2 subways and one zambero. Please consider a healthier option or a small food business - bakery or café.
60	Ms Jennifer Neilson	BALDIVIS WA 6171	I do not support adding a 5th McDonalds to Baldivis. 1. Lack of variety in food options in the suburb. We do not need another of the same outlet. 2. Proximity to a primary school promotes poor health in young people and families. 3. Waste of real estate that can be put to better use.

No.	Name	Address	Comment
61	Ms Jasmine Moignard	BALDIVIS WA 6171	Baldivis does not need another MacDonalds! We already have four in the suburb. They are already places where there is a lot of trouble with teenagers and they don't need another place to hang out. This area is full of young families who don't need the influence of a fast food giant on every corner.
62	Ms Rachel Scott	BALDIVIS WA 6171	Outrageous. Why does Baldivis need another Macdonald's? As a resident of parkland heights, I feel a Macdonald's situated on Nairn drive opposite a school is beyond comprehension. It will be detrimental to health of our children and will cause chaos travelling to and from school. Not necessary and highly immoral. I completely disagree with this outrageous proposal.
63	Miss Sophie Shaw	BALDIVIS WA 6171	We need less fast food, more health focus! A cafe, swimming pool, soup/salad bar, fresh produce grocer ANYTHING other than another fast food outlet.. let alone McDonald's considering there's already two in the area. Our children need to be surrounded by positive influences, not drowning in fast food outlets.
64	Mr Christopher Macleod	BALDIVIS WA 6171	No more fast food. Baldivis has 4 Macdonalds and an abundance of fast food outlets. I find it absolutely destructive to the community and to the health of school children to propose a fith Macdonald's directly opposite a school. Why would you subject primary children to this? What other Suburb has a Macdonald's opposite a primary school? Unfair, unjust and unnecessary. Where is the care and sense of community? Think of our children. This will cause chaos. Bewildered as to why you would consider ruining a beautiful area by putting a terrible fast food outlet. How can the schools and parks survive this. Ridiculous. Absolutely opposed.
65	Miss Gemma Kinzett	BALDIVIS WA 6171	I'm against this proposal, anther McDonald's is not needed, there is one very close already and fast/junk food outlet is not needed.
66	Ms Andrea Mercer	BALDIVIS WA 6171	Please accept this as my written response to your letter dated 25th October 2024, regarding the proposed Development Approval for McDonalds in the Parkland Heights Neighbourhood Centre. My objections to this proposal are as follow: 1. There are already a substantial number of fast food outlets within a very short distance. Within 4kms of this proposed development, there is already a fully functioning McDonalds 24/7 establishment within the Baldivis Shopping centre; 2. From this proposed site, within a 13km radius and all open 24/7 are the following established McDonalds establishments: i. Baldivis North (6kms), ii. Baldivis Freeway North (6kms) iii. Baldivis Freeway South (6kms), iv. Warnbro (11kms), v. Woodbridge (11kms) and vi. Rockingham (13kms). There are possibly more and this does not include such establishments as KFC, Hungry Jack, Red Rooster etc, etc. 3. In keeping with the current aesthetics of the area, how about you establish a 'green' area, with BBQ's and play equipment; 4. Due to the current overweight/obese issues with our population, I feel this would only be encouraging this problem to increase, 5. This would be yet another 'fast food' establishment within extremely close proximity of multiple schools in the area;

No.	Name	Address	Comment
66	Cont…		6. I perceived this area to be classed as Residential when purchased. Mcdonalds should not be allowed in such a heavily residentially area; 7. I have concerns of the following potential 'pollution' issues: a. Rubbish, b. Noise, c. Light, d. Smell from cooking orders & e. Additional traffic 8. The area is currently not a main thoroughfare, making it an 'out of the way' establishment to be accessed In its place, I would like to submit the following suggestions: 1. Due to the current issues and delays in being able to access Medical Services, how about a local clinic; 2. With the increase in young families in the area, how about a local day care centre or playgroup/creche; 3. In keeping with the current aesthetics of the area, how about you establish a 'green' area, with BBQ's and play equipment; 4. Or how about a centre for activities promoting community and health such as: a. Gym; b. Activities/classes; c. Library etc. I realise that I am only one person, one voice in the area, however I do hope this objection is mirrored by others and this development is opposed in your upcoming DAP Meeting. Please do not hesitate to contact me should you require anything further from me. I thank you for the opportunity to submit my concerns and suggestions at this time.
67	Mr Craig Lang	Not provided	That will be McDonalds number 5 for Baldivis How about hungry jacks instead.
68	Mr Arron Platt	BALDIVIS WA 6171	I feel that there definitely is no need for another MacDonalds required in Baldivis and the city needs to look at other retailers to fill this position on Nairn drive
69	Mrs Michelle Cawse	BALDIVIS WA 6171	Baldivis does not need another McDonald's we have four in the area we are getting over run with fast food outlets.
70	Mrs Carol Young	BALDIVIS WA 6171	Absolutely disgusting for the council to even consider this as there are already too many fast food outlets in Baldivis . I have witnessed children eating McDonald fries at 8.30 am on their way to school. Shame on rockingham for even contemplating this very angry
71	Ms Carla Avendano	WAIKIKI WA 6169	McDonald's in Baldivis
72	Miss Channelle Otto	BALDIVIS WA 6171	There's far too many fast food chains and petrol stations already. How about a small shopping village with Cole's/woolies with a nice cafe and bakery down the south side of Baldivis near 68 Road/nairn drive? A recreation centre like Cockburn Arc would be great too. What about a cinema, holy moly, bowling alley, skating rink??? Baldivis is big enough surely we can get some of those? Or is Baldivis just the black hole of suburbs???
73	Mr Dyani Kaplun	PORT KENNEDY WA 6172	No more McDonald's! Or fast food give the kids at the school opposite something healthy

SERVICING AUTHORITY SCHEDULE OF SUBMISSIONS			
No.	**Name**	**Address**	**Comment**
1	Ms Sharnie Stuart Department of Education	151 Royal Street EAST PERTH WA 6004	Thank you for your email dated 25 October 2024 providing the Department of Education with the opportunity to comment on the proposed Fast Food Outlet development application (DA), to be determined by the Metro Outer Development Assessment Panel. The Department has reviewed the information accompanying the DA, and notes that Pine View Primary School is located approximately 110m east from the subject site, separated by a major road (Nairn Drive). Given that the proposed fast food outlet is in close proximity to the primary school, the Department needs to have due regard to the Western Australian Planning Commission's Operational Policy – Planning for school sites (OP 2.4). As stated in section 3.6.2 of OP 2.4, schools are deemed sensitive land uses, and it is imperative to ensure that school sites are located amongst or adjacent to compatible land uses to support education, health, and wellbeing outcomes of students. Whilst it is acknowledged that the subject site is contained within a 'Commercial' zoned land, the proposal needs to consider the potential impact it may have on nearby sensitive land uses. The proposed fast food outlet is not considered compatible given its close proximity to the school site. The Department does not support fast food outlets near public school sites as these food outlets may cause unhealthy diets and obesity which are the leading risk factors for death, disease, and disability in Western Australia. Refer to Attachment 1 – an 'Evidence brief: food, built environments and obesity, page 1 of 8, published by the Department of Health. Findings from the WA Government's Sustainable Health Review, April 2019, has recognised this and recommended 'changes to planning laws to limit unhealthy food outlets and to support access to healthy food options, including near schools'.1 In June 2024, a parliamentary report was published outlining the challenges and recommendations for managing diabetes in Australia. The report emphasises the need for coordinated action across all levels of government. Two recommendations (5 and 7) are particularly relevant to this proposal: regulating the marketing and advertising of unhealthy food to children and addressing obesogenic environments through better urban planning.2 The Department is advised that Pine View Primary School did not receive any consultation letter on the proposal from the City. The Principal of the Primary School has raised significant concerns and does not support the proposal, having regard to the following: • The subject site is approximately 100 metres from the primary school. Such establishments promote unhealthy eating habits, undermining the health education provided at the school and contributing to obesity and other health concerns. • Most of the upper primary students who walk or ride to school are anticipated to travel past the subject site and therefore, there is a high possibility for these students to meet at the proposed fast food outlet, with or without parental consent. • If approved, this would be the fifth McDonalds outlet in the locality; thus, the proposal is deemed unwarranted given its proximity to other outlets. In view of the above the Department strongly objects to the proposed fast food outlet on the subject site. The Department's position on the proposal is to reinforce that student health is a priority and it does not support incompatible land uses in close proximity to school sites, particularly fast food outlets in this instance.

No.	Name	Address	Comment
2	Amneet Malhi Department of Planning, Lands and Heritage	Locked Bag 2506 PERTH WA 6001	I refer to your correspondence dated 24 October 2024 regarding the above application. In accordance with the Western Australian Planning Commission's (WAPC) Notice of Delegation dated 18 January 2022, the following updated comments are provided with respect to this proposal, which seeks approval for the development of a fast-food outlet (McDonalds' family restaurant) at Parkland Heights Neighbourhood Centre. **Land Requirements** Lot 9018 abuts Nairn Drive which is reserved as an Other Regional Road (ORR) in the Metropolitan Region Scheme (MRS) and Category 3 per WAPC Plan Number SP 694/6. Lot 9018 is not affected by the ORR reservation per Land Requirement Plan No. 1.2907/4. **Access** Access to the site is proposed to be obtained via a right in / left in / left out (RILILO) driveway crossover on Nairn Drive. It is noted that RILILO functionality is endorsed and consistent with the Parkland Heights Neighbourhood Centre Local Development Plan 1. **Traffic Impact Assessment (TIA)** A Traffic Impact Assessment (TIA) has been prepared by *Transcore* to support the application. The TIA anticipates the proposed development to generate a total of approximately 226 vehicle trips (113 in / 113 out) during the Saturday peak hour period. A passing trade factor of one-third has been incorporated into this estimate. The largest vehicle expected to use the site is a 12.5m service vehicle. SIDRA intersection analysis for the RILILO driveway crossover has been undertaken, depicting a Level of Service (LOS) A, B & C for post-development and 10 year horizon scenarios. Right turning inbound movements from Nairn Drive experience a LOS C for the 2036 Weekday PM peak scenario, with 95% queue length of 2.3 vehicles, which can be accommodated within the right turn lane at the median. **Recommendation** The Department has no objection to the proposal on ORR planning grounds, and provides the following comments: • a directional split of vehicle movements should be provided for the fast-food restaurant and its integration with traffic volumes from the neighbourhood centre; • vehicle swept paths to confirm the non-manoeuvrability of vehicles which may inadvertently undertake right turning movements into Nairn Drive southbound from the access crossover, creating a safety hazard.  Land Requirement Plan 1.2907/4 MRS

Part B – Item 3.2 – LOT 9021 FURNIVALL PARADE, BALDIVIS – PROPOSED SERVICE STATION

Form 1 - Responsible Authority Report
(Regulation 12)

DAP Name:	Metro Outer Development Assessment Panel	
Local Government Area:	City of Rockingham	
Applicant:	CLE Town Planning + Design	
Owner:	Rockingham Park Pty Ltd	
Value of Development:	$2.2 million	
Responsible Authority:	City of Rockingham	
Authorising Officer:	Mr Brett Ashby, A/Director Planning and Development Services	
LG Reference:	DD020.2024.00000286.001	
DAP File No:	DAP/24/02768	
Application Received Date:	16 September 2024	
Report Due Date:	24 December 2024	
Application Statutory Process Timeframe:	90 Days	
Attachment(s):	1. Development Plans 2. Original Application 3. Additional Information Received 4. Emissions Impact Assessment - Peer Review 5. Schedule of Submissions	
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 Development Assessment Panel (**MODAP**) resolves to:

APPROVE DAP Application reference DAP/24/02768 and accompanying plans in accordance with Clause 68 of the *Planning and Development (Local Planning Schemes) Regulations 2015* and the provisions of clause 68(2)(b) of the deemed provisions of the City of Rockingham Town Planning Scheme No.2, subject to conditions as follows:

Conditions

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

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

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

4. Earthworks over the site associated with the development must be stabilised to prevent sand or dust blowing off the site, and appropriate measures must be implemented within the time and in the manner directed by the City of Rockingham in the event that sand or dust is blown from the site.

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

6. Prior to applying for a Building Permit, revised plans shall be provided, demonstrating that the Furnivall Parade Monolith Sign has been removed.

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

    (i) Detail the combined noise levels received by the nearest 'noise sensitive premises' for all sources operating during the day, evening and night time assigned levels of the Regulations;

    (ii) Include details of any proposed acoustic treatments, including specification and construction methods, locations and materiality;

    (iii) Detail mechanical plant elements, including tonality characteristics and any attenuation measures required;

    (iv) Detail any proposed mitigations or management controls for car parking areas; and

    (v) Detail any proposed mitigations or management controls for noise emissions from activities on the premises.

8. Prior to applying for a Building Permit, an updated 'Parkland Heights Neighbourhood Centre' Landscape Plan must be prepared, resultant from the development and is to include the following detail to the satisfaction of the City of Rockingham:

    (i) The location, number and type of existing and proposed trees and shrubs (including street trees, shade trees within the car parking areas,

and planting within verge areas), including calculations for the landscaping area;

(ii) Any lawns to be established and areas to be mulched;

(iii) Those areas to be reticulated or irrigated;

(iv) Any natural areas landscape areas to be retained;

(v) Proposed upgrading to landscaping, paving, and reticulation of the street setback area and all verges;

(vi) Provision of minimum (3) shade trees within the car parking area; and

(vii) Provision of replacement carpark tree species for Ficus hillii and Platanus.

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

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

10. Engineering drawings and specifications are to be submitted, approved and works undertaken for the construction of the left in only driveway crossover on Nairn Drive and full movement crossover on Furnivall Parade. Construction works must be completed prior to occupation of the development, at the landowners cost to the satisfaction of the City of Rockingham.

11. The proposed footpath and pram ramp adjustments within road reserve(s) are to be designed in accordance with the City of Rockingham engineering standards and constructed to the satisfaction of the City of Rockingham.

12. All driveways, car parking and manoeuvring area(s) which form part of this development approval shall be sealed, drained, paved and line marked in accordance with the approved plans prior to the first occupation of the development and maintained thereafter by the owner/occupier to the satisfaction of the City of Rockingham.

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

14. Prior to occupation of the development, written confirmation from the builder shall be provided that demonstrates that all requirements indicated in the approved Acoustic Report have been incorporated into the development.

15. Any existing street trees adjacent to the development site must be protected throughout the course of the project in accordance with Australian Standard AS 4970-2009 Protection of Trees on Development Sites.

16. All plant and roof equipment and other external fixtures must be designed to be located away from public view/or screened for the life of the development, to the satisfaction of the City of Rockingham.

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

18. The Waste Management Plan, prepared by Talis Consultants - Reference WMP24070 must be implemented and maintained at all times, for duration of development to the satisfaction of the City of Rockingham.

19. The proposed Service Station must incorporate Stage 1 and Stage 2 (VR1 and VR2) Vapour Recovery Systems which are to be installed and functioning from the commencement of operation of the Service Station, and for the duration of its operation.

20. An Operational Management Plan being prepared for the Service Station for the approval of the City, prior to the issue of a Building Permit, demonstrating how the dispenser hose for Stage 2 (VR2) Vapour Recovery System will be tested for leaks upon commissioning and a program which includes on-going monitoring of the performance of the VR2 system.

Advice Notes

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

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

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

4. The detailed drainage design in the Stormwater Management Plan should be consistent with City's *Local Planning Policy No. 3.4.3 - Urban Water Management* and the approved LWMS addendum (Mortons Urban Solutions, 2018).

5. The applicant is responsible for protecting any existing City streetscape assets along Furnivall Parade and Nairn Drive during the course of the project. This includes any existing streetscape lighting, grated gully pits, side entry pits, kerbing, footpaths, trees, turf etc. It is recommended that a photographic dilapidation report is undertaken by the applicant, to record the current condition of these assets.

Background:

Historical Context

- In February 2013, the Parkland Heights Local Structure Plan (**PHLSP**) was originally approved by the Western Australian Planning Commission (**WAPC**). The PHLSP has been amended on five occasions since and provides for the development of a 'Neighbourhood Centre' at the core of the Parkland Heights estate.

- In April 2023, the MODAP granted Development Approval for a Neighbourhood Centre on the subject land that included:

  - An 'L' shaped 'Main Street' running through the centre of the site, accessed from Furnivall Parade and Nairn Drive;
  - Two 'Supermarkets' (a 'major' and 'minor'), a 'Liquor Store' and 'Speciality' tenancies at the southern end of the internal Main Street;
  - 'Food and Beverage' tenancies along the western side of the 'Main Street', with car parking beyond to the west.
  - Car parking abutting the eastern side of the 'Main Street', some of which in the longer term will be replaced by built form to eventually frame up the eastern side of the 'Main Street'; and
  - Indicative pad site locations for two (2) 'Fast Food'; a 'Specialty' tenancy and a future 'Service Station' abutting Nairn Drive on the eastern portion of the site, for which approval was not sought at that time.

- In June 2024, the City of Rockingham (**City**) approved the current Local Development Plan (**LDP**) for the PHNC. The LDP sets out the key design parameters to inform development within the PHNC.

- In August 2024, approval was granted by the City to amend the Development Approval granted by the MODAP that included:

  - Modifying the 'Food and Beverage' precinct layout to provide for a Family Restaurant;
  - Consequential modifications to the western car park;
  - Straightening the north-facing façade of the 'Food and Beverage' tenancy on the north side of the Town Square;
  - Modifying the northern facing 'Specialty' retail tenancies abutting the main supermarket; and
  - Removing shade sails from the central car parking aisle within the eastern car park and replacing with trees.

- The most recent approved site plan is depicted in the Figure 3.

- In September 2024, an application was submitted to the MODAP for approval of a Fast Food Outlet (McDonald's) development. The application is the subject of a separate report in this agenda.

Site and Context

The PHNC comprises of two land portions separated by Nairn Drive, including:

- a 5.1ha portion on the western side of Nairn Drive zoned 'Commercial' in the PHLSP (Figure 1); and

- a 1.3ha portion on the eastern side zoned ‘Special Use’ in the PHLSP.

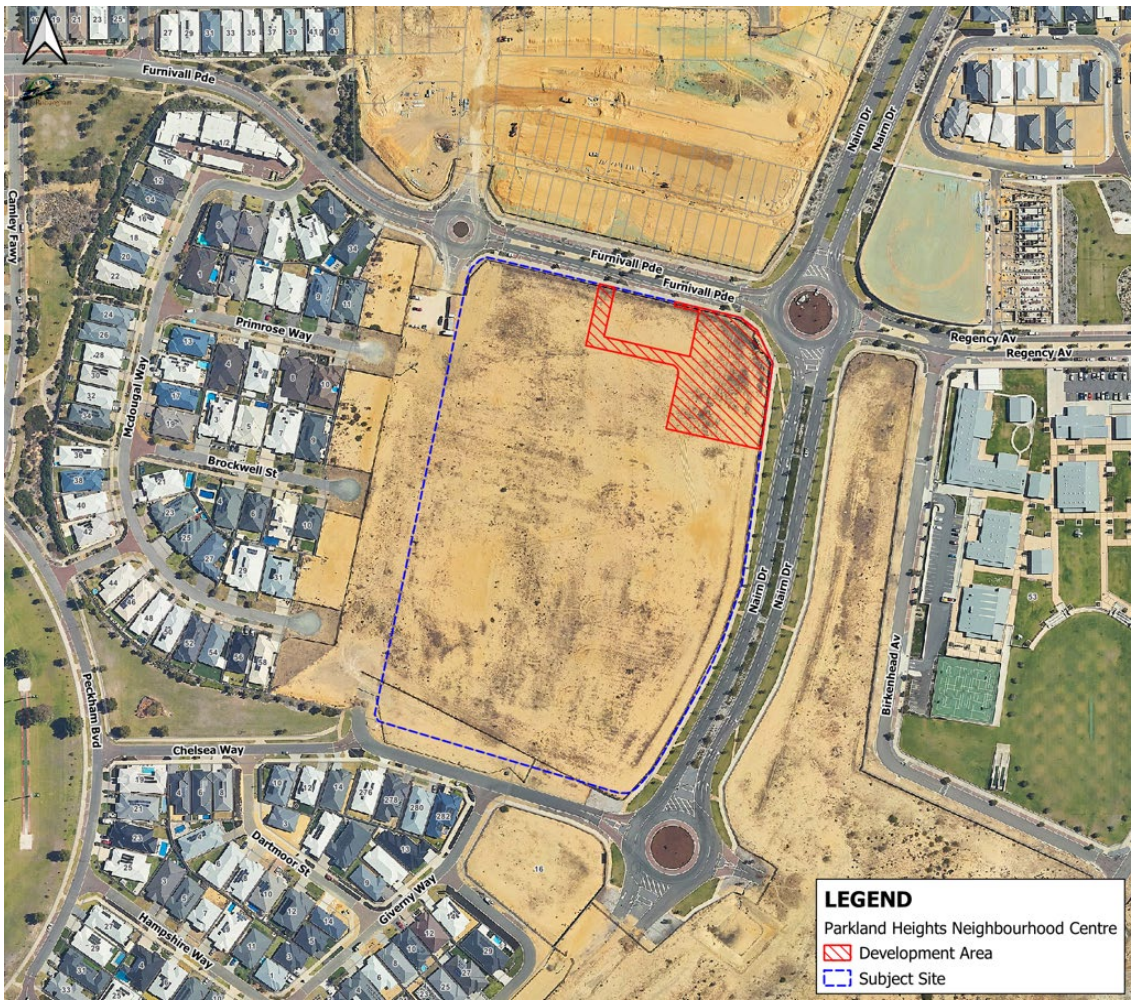
The PHNC site been cleared in readiness for construction to commence.

Furnivall Parade and Arpenteur Drive frame the site to the north, west and south respectively.

While residential development is progressing around the PHNC in a staged manner, there are pockets of undeveloped residential land that are immediately adjacent to the north, west and south of the PHNC.

The Pine View Primary School is approximately 100m east of the subject site.

1. Parkland Heights Local Structure Plan Map Extract



2. Aerial Photography

3. PHNC Approved Site Plan

Details: outline of development application

Region Scheme	Metropolitan Region Scheme
Region Scheme Zone	Urban
Local Planning Scheme	Town Planning Scheme No.2
Local Planning Scheme Zone	Development
Structure Plan	Parkland Heights Local Structure Plan
Structure Plan - Land Use Designation	Commercial
Use Class and permissibility:	Service Station Discretionary 'D'
Lot Size:	5.4ha
Existing Land Use:	Vacant land
State Heritage Register	No
Local Heritage	☒ N/A ☐ Heritage List ☐ Heritage Area
Design Review	☒ N/A ☐ Local Design Review Panel ☐ State Design Review Panel ☐ Other
Bushfire Prone Area	No
Swan River Trust Area	No

Details of the proposal are summarised as follows:

- A 200sqm '7-Eleven' Service Station and convenience store building, located on the corner of Nairn Drive and Furnivall Parade;
- Associated canopy structure with three bowser tanks comprising six refuelling outlets as well as underground tanks and filling point;
- Various signage including two 7m high 'monolith' signs, adjacent to Furnivall Parade and Nairn Drive;
- 21 on-site car parking spaces, comprising one (1) accessible bay and adjacent shared bay, 14 standard spaces and six (6) refuelling/service bays;
- An 'left-in' slip lane from Nairn Drive into the Service Station development;
- Full access movement into the development from Furnivall Parade;
- Stairs and footpath connection to the development from the corner of Nairn Drive and Furnivall Parade with an additional ramped connection to Furnivall Parade between the Service Station and future pad site to the west;
- Operating hours for the service station will be 24 hours, seven (7) days a week; and
- Up to three (3) staff members on-site at any one time.

The development is proposed to sit approximately 1.5m below the street level in response to the natural slope of the land from north to south.

The proposal includes approval for both Stage 1 (**VR1**) and Stage 2 (**VR2**) fuel vapour reduction systems, which is described in the 'Planning Assessment' section of this Report.

The following Reports and supporting material accompany the application:

- Transport Impact Assessment and Technical Note;
- Detailed Interaction Designs and Swept Path Diagrams;
- Environmental Noise Impact Assessment;
- Waste Management Plan; and
- Emissions Impact Assessment.

Legislation and Policy:

Legislation

- Planning and Development Act 2005;
- Planning and Development (Development Assessment Panels) Regulations 2011;
- Planning and Development (Local Planning Schemes) Regulations 2015;
- Metropolitan Region Scheme
- City of Rockingham Town Planning Scheme; and
- Environmental Protection (Noise) Regulations 1997.

State Government Policies

- State Planning Policy 4.2 - Activity Centres;
- State Planning Policy 7.0 - Design of the Built Environment; and
- Separation Distances Between Industrial and Sensitive Land Uses - Guidance Statement No.3 (Environmental Protection Authority).

Structure Plan

- Parkland Heights Local Structure Plan.

Local Development Plan

- Parkland Heights Local Development Plan.

Local Policies

- Local Planning Policy 3.1.2 - Local Commercial Strategy;
- Local Planning Policy 3.3.1 - Control of Advertisements; and
- Local Planning Policy 3.3.27 - Community Consultation for Development Applications.

Consultation:

Public Consultation

This 'Complex Application' was advertised for public comment for a period of 28 days, between 14 October and 11 November 2024, in accordance with Clause 64, Schedule 2 of the *Planning and Development (Local Planning Schemes) Regulations 2015*, and *Local Planning Policy No.3.3.27 - Community Consultation for Development Applications*.

Advertising was carried out as follows:

- All owners and occupiers identified in the Consultation Plan (Figure 4) located within 250m of the development site were notified in writing of the proposed development, noting that a significant portion of the surrounding land remains under the ownership of the same entity responsible for the development on which the proposal is situated;

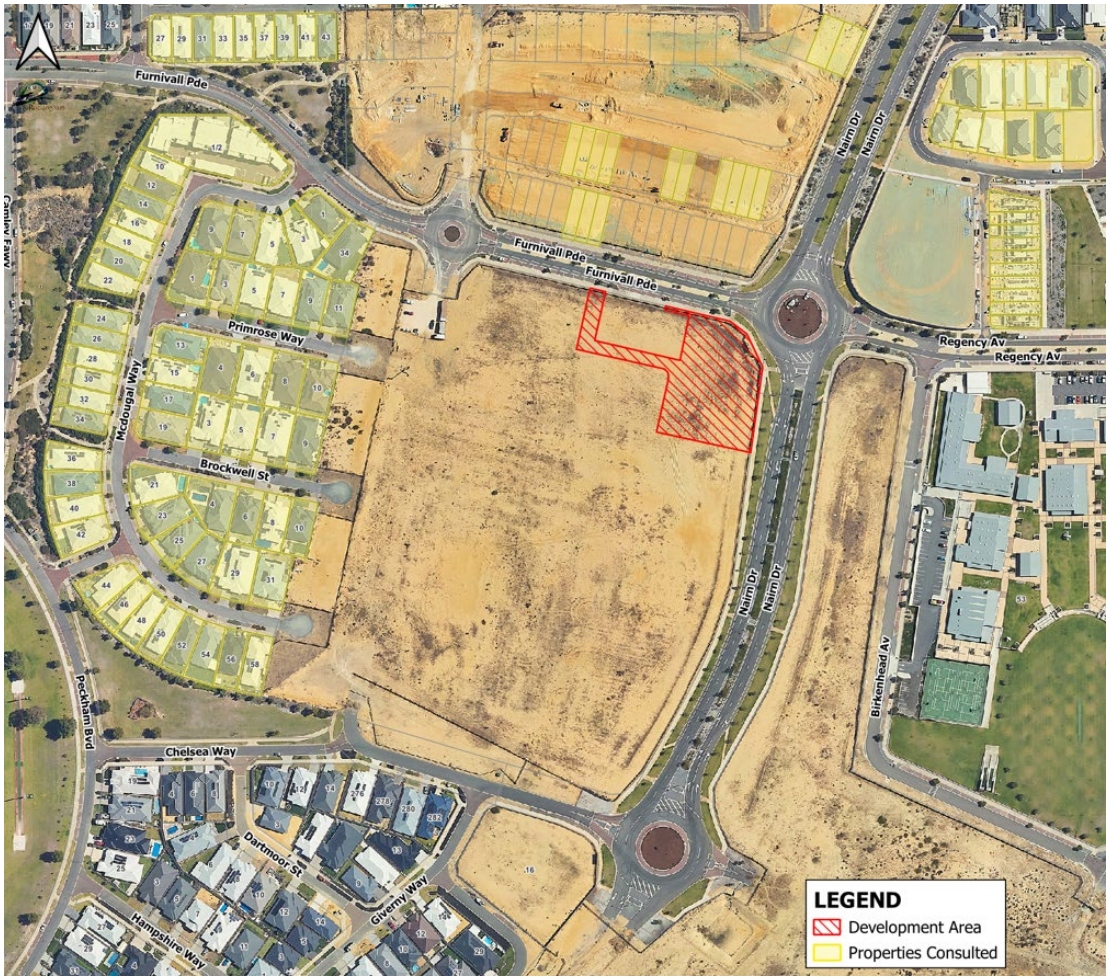
- To perspective landowners who are under contract to purchase land at the commencement of advertising, on the northern side of Furnivall Parade;

- Two signs were erected on the development site abutting Nairn Drive and Furnivall Parade, outlining the proposal and inviting public comment; and

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

At the close of the public consultation period, a total of six (6) public submissions were received, comprised of:

- Two (2) submissions supporting the proposal; and
- Four (4) submissions objecting the proposal.



4. Consultation Plan

The location of the submissioners commenting on the proposal is not captured on the Consultation Plan, as the submissioners are either located out of the immediate locality or have not provided their property details.

The objections have been summarised in the Table below, including the applicant's and the City's responses to the matters raised.

Need
Submission: **The need for a Service Station was questioned by submissioners given that there is an existing service station approximately 500m to the north, on Nairn Drive.**
Applicant's Response: *"The number of existing service stations is not a relevant planning consideration.* *The proposal will improve access to services and increase competition, benefiting customers and motorists in the area."*
City's Comment: The City agrees that the number of existing Service Stations is not a relevant planning consideration.

Need (cont…)
The application, however, has been considered in accordance with City's Town Planning Scheme No.2 (**TPS2**) and applicable planning policies, as outlined further below.
Traffic
Submission: **A comment was made that Nairn Drive will not connect to Mundijong Road (to the north) for a number of years, thus traffic will not flow until Nairn Drive has been extended.**
Applicant's Response: *"The proposal is not reliant nor premised upon the extension of Nairn Drive."*
City's Comment: The proposed development is not depended upon the connection of Nairn Drive to Mundijong Road, based on the applicant's Transport Impact Assessment and Technical Note. The current road network has capacity to cater for the proposed development together with the approved PHNC.

A copy of the public submission responses are included in Attachment 5 to this Report.

Referrals/consultation with Government/Service Agencies

The following Agencies were consulted:

- Department of Planning, Lands and Heritage (**DPLH**);
- Department of Education (**DoE**);
- Department of Health (**DoH**); and
- Department of Water and Environmental Regulation (**DWER**).

The comments received from each Agency, are summarised as follows:

1. DoE
Submission: *"Pine View Primary School is located approximately 110m east from the subject site, separated by Nairn Drive and therefore, the Department shall due regard to provisions of the Western Australian Planning Commission Operation Policy 2.4 - Planning for school sites when assessing the proposal.* *As stated in clause 3.6.2 of the Operational Policy, schools are deemed sensitive land uses and it is imperative to ensure that school sites are located amongst or adjacent to compatible land uses to support education, health, and wellbeing outcomes of students. Whilst it is acknowledged that the subject site is contained within a Commercial zone, the proposed development needs to consider the potential impact it may have on nearby sensitive land uses. The proposed service station is not considered compatible to the school site.*

1. DoE (cont…)
Under the provisions of the Environmental Protection Authority's Separation Distances between industrial and sensitive land uses, a 200m buffer distance is required from a 24-hour service station to sensitive land uses. Service stations by their operational nature may generate a range of emissions of pollutants and safety risks, which if not carefully managed, may adversely impact the health, amenity and wellbeing of occupants of schools. *In view of the above, the Department strongly objects to the proposal on the subject site. The Department's position on the proposal is to reinforce that student health and safety is a priority and it does not support incompatible land uses, particularly service stations in this instance."*
Applicant's Response: *"The planning for the PHNC site has been considered through various planning stages including the PHLSP structure planning and local development plan process. The suitability of commercial land uses in proximity to the school has therefore been appropriately considered thought the overall planning process.* *The application and associated technical reports demonstrate that the proposed development has considered and addressed operational matters including traffic, parking, noise, emissions and odour to manage any potential amenity and health related impacts to surrounding sensitive land uses.* *Section 3.6 of Operational Policy 2.4 - Planning for school sites states that it is preferable for school sites to be surrounded by a combination of roads, public open space or other community, cultural recreation and sporting facilities. The existing primary school is separated from the proposed service station and PHNC by both Birkenhead Avenue and Nairn Drive as well as commercial zoned land located on the eastern side of Nairn Drive. Therefore, the development is consistent with the intent of section 3.6 given appropriate separation is provided.* *As provided in the EPA Guidance Statement, a site specific, Emissions Impact Assessment (**EIA**) has been undertaken with regard to potential odour/gaseous impacts, The assessment demonstrates that through the implementation of vapour recovery VR1 and VR2, vapours from the service station will not negatively impact the health of the nearest sensitive existing sensitive receptors, or future land uses within the locality.* *In addition to the above, Pine View Primary School is in operation during daytime hours on weekdays only and therefore the 24/7 operation of service station is not a relevant consideration in terms of quantifying potential impacts. It is therefore reasonable to apply the 50m separation distance to the school as per the EPA Guidance Statement. The proposed service station is located approximately 120m from the primary school and therefore exceeds this distance significantly."*
City's Comment: The proposed development is part of a 'Neighbourhood Centre' with a designated 'Commercial' zoning, where the proposed use is permissible under TPS2, and commonly provided within Centres of this nature. Accordingly, the proposed land use can be supported within this 'Neighbourhood Centre' location. The City notes that although the proposal is 'physically separated' from Pine View Primary School, it will remain 'visually connected' until the land on the eastern side of Nairn Drive is developed.

The health related implications resultant from gaseous emissions are outlined in detail in the 'Planning Assessment' section of this Report.

2. DWER

Submission:

"The Department would advise that it does not have a regulatory role, policy position or guidance statement for fuel stations. Due to uncertainties within air dispersion modelling for this land use, resulting from an absence of standard methodology and validated data, adherence to separation distances within Guidance Statement 3 Separation Distances between Industrial and Sensitive Land Uses (GS 3) (EPA, 2005), is generally recommended to inform planning decisions.

The Department notes the proposed approach by the proponent to employ both stage 1 and stage 2 vapor recovery systems (VR1 and VR2) and the inclusion of an emissions impact assessment. Although these additional emission controls would reduce the emissions, owing to the uncertainties in emission estimations there is limited ability to assess if these additional emissions controls are required or, if installed, would result in acceptable risk of impacts.

The use of technical studies, such as modelling and monitoring of air pollutants, can inform possible incompatibility between land uses. However, it should not be used as the only input for planning decision-making as there can be significant uncertainty in the accuracy of such studies and cannot determine if impacts may or may not occur. Notwithstanding, there is no post development regulatory mechanism that can be employed."

Applicant's Response:

"The proposal has been assessed against relevant policies and guidance statements applicable to service stations. The DoH 'Position statement: Service stations and sensitive land uses' states that - "vapour recovery systems have been designed to limit the emissions of VOC's VOCs during the refilling of storage tanks (Stage 1 vapour recovery – VR1) and refuelling from bowsers (Stage 2 vapour recovery – VR2). In most jurisdictions, including Western Australia, VR1 systems are mandated. Stage 2 VR regulations are less common and are not a requirement for petrol stations in WA". It also states that if VR2 is implemented it may be considered a mitigating feature in relation to any application for a reduced separation distance of 100m to 50m for 24 hour service stations. The proposed development includes use of both VR1 and VR2, consistent with the DoH's position statement, with the application including an EIA to demonstrate that the proposal's location will not impact surrounding sensitive land uses.

In order to guarantee the use of VR1 and VR2 technology as part of the development, a condition of approval may be imposed requiring the implementation of this technology.

The proposal has undergone a thorough and extensive modelling and assessment process, ensuring the findings are as accurate as can reasonably be expected."

City's Comment:

The gap between planning and environmental guidance in this regard via a regulatory or policy capacity from the State Government confuses the issue, considering the GS3 requires an EIA to be provided in support of a proposal where it encroaches on sensitive receptors.

As odour emission modelling (relevant to the proposal) is outside of the expertise of the City, DoH and DWER, the City engaged the services of an independent qualified Consultant to undertake a review of the applicant's submitted EIA.

The City has relied upon the advice of the EIA Peer Review to give due consideration to the matter, details of which are discussed in the 'Planning Assessment' section of this Report.
3. DoH
Submission: *"The proponent, Rockingham Park Pty Ltd, has commissioned a substantial piece of work to demonstrate that the public is not at risk from service station fuel emissions in the form of the Emissions Impact Assessment of Proposed 24Hr Fuel Service Station - Parkland Heights Shopping Centre Report November 2023 by EAQ Consulting. Based on air modelling calculations, EAQ concludes that "the predicted ground level concentrations using VR1 and VR2, vapors from the Site will not negatively impact the health of the nearest sensitive urban receptors, the Pine View Primary School, or sensitive land uses within the Locality.* *DoH is not confident in these findings for the reasons as outlined below. Some of these reasons derive from the review DoH has undertaken on separation distances for service stations, which has provided the basis of the DoH Position statement - Service stations and sensitive land uses - 2024. This Statement post-dates the EAQ Report.* *DoH does not accept per se the results of air modelling to demonstrate that fuel emissions from service stations do not pose an unacceptable public health risk. This is because DoH considers the modelling not sufficiently reliable using currently available methodologies.* *It is also important to note from the Statement that DoH "continues to support the use of minimum separation distances of: 50 metres for service stations operating during normal business hours, and 100 metres for 24-hour service stations". The Rockingham Park service station is proposed for 24-hour operation.* *It is not clear from the EAQ Report what are the natures of the nearest sensitive sites identified and their distances from the service station. A minimum of 70-80 metres is mentioned in relation to existing or future houses.* *A further important point in this regard is that separation distances are normally based on measurements of boundary to boundary, and this is also not specified in the EAQ report.* *The DoH Statement indicates that the use of VR2 (vapour recovery from bowsers) is an important consideration in reducing service station fuel emissions and managing public risk. Although it is proposed that the Rockingham Park service station will employ VR2, and this is partly the basis of the modelling results, DoH does not know how VR2 use can be guaranteed, or what would happen to emission levels if it were faulty.* *Consequently, DoH is not supportive of the proposed service station development until such time as it adequately addresses the above issues, including satisfying the requirements of the DoH Position Statement."*
Applicant's Response: *"The submitted EIA prepared in support of this application demonstrates the ability for emissions to be managed appropriately.* *While the DoH's position statement sets out a minimum 100m separation distance for 24 hour service stations as a default, the position statement goes on to state that if VR2 is applied, it may be considered a mitigating feature in reducing the separation distance from 100m to 50m. As the proposal incorporates VR2 technology, a reduced buffer distance of 50m is warranted.*

The EIA provides further discussion on the assessment of potential impacts, drawing from other standards within Australia, such as the Victorian EPA Guidelines which have been subject to more rigorous review. *An additional figure 1-4 has been added to EIA clarifying the location of the sensitive receptors. The receptors are labelled, which correlates to the data presented at Table 2-10. As the location of the potential source of the emissions (fuel bowsers and filling point) are known at this stage of the proposal, it is appropriate to determine separation distances from the source of the emission, not the boundary. The source of the emissions are specific and isolated, and are not associated with the broader operations of the site.* *In order to guarantee the use of VR1 and VR2 technology as part of the development, a condition of approval may be imposed requiring the implementation of this technology."*
City's Comment: DoH and applicant responses to the matter are noted and discussed below.

A copy of the Agency responses is also included in Attachment 5 to this Report.

Design Review Panel Advice

Not applicable.

Swan Valley Planning

Not applicable.

Other Advice

Not applicable.

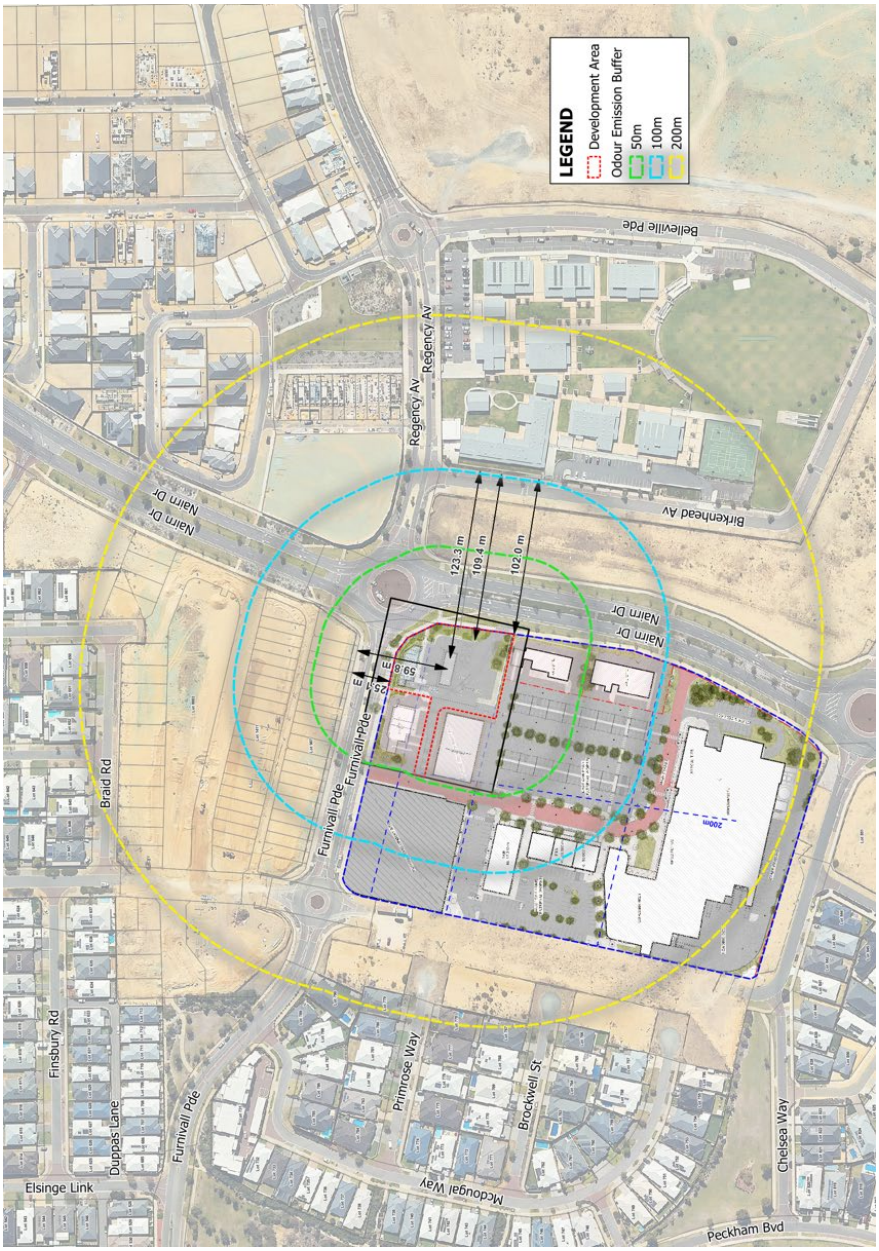
Planning Assessment:

This proposal has been assessed against the relevant legislative requirements of the Scheme, State and Local Planning Policies, as outlined in the 'Legislation and Policy' section of this Report. The relevant matters are discussed in detail below.

Separation Distances Between Industrial and Sensitive Land Uses - Guidance Statement No.3 (**GS3**) (Environmental Protection Authority)

GS3 provides advice on the use of generic separation distances between industrial and sensitive uses, and to avoid conflicts between incompatible land uses. GS3 applies to the subject application as industrial uses include 'Service Stations' and 'sensitive uses' include residential dwellings and schools.

For developments of this kind, the EPA recommends a 200m (boundary to boundary) separation distance to all 24 hour Service Station operations from sensitive land uses because of gaseous, noise, odour and risk associated implications. It should be noted that the separation distance recommended by the GS3 is not absolute but instead are default distances providing general guidance in the absence of a site-specific technical study. Where proposals vary from this separation distance, site specific technical analysis is required. The Applicant has addressed this requirement by providing an Emissions Impact Assessment (**EIA**) for the proposal.



5. Odour Emission Buffer

Figure 5 above, depicts various separation distances (from the boundary of the development area) as well as from the emission source from the site. Notably, within the generic 200m separation distance, a total of two sensitive land uses were identified, comprising of:

1. Approximately 70 established and planned residential dwellings; and

2. The Pine View Primary School.

The vacant land west of the primary school is designated 'Special Use' under the PHLSP and by virtue permits sensitive uses to occur, such as Grouped Dwellings, Multiple Dwellings and Child Care Premises. Uses not classed as 'sensitive', such as Health Studio, Medical Centre, Office, Restaurant, and Veterinary Clinic are also permissible on the site. No development has been proposed on this land to date.

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

1. The refilling of the underground fuel storage tanks south of the canopy and associated vent pipes connected to the underground tanks proposed to be located adjacent to Nairn Drive; and

2. The refuelling of vehicles beneath the fuel canopy, isolated to the petrol bowsers and nozzle.

Having regard to above, the submitted EIA addresses modelling for fuel vapour emissions from the proposed Service Station (specifically benzene), which was independently peer reviewed for the City.

Benzene levels were identified in the modelling as being significantly below the prescribed acceptable national air quality level, for short term one (1) hour impacts as well as annual average concentrations, providing VR1 and VR2 fuel vapour recovery systems were installed.

Note: VR1 captures displaced vapours from storage tanks and associated infrastructure when a tanker delivers petrol to a Service Station, and VR2 captures displaced vapours at the bowser while a motorist refuels.

It is understood VR1 captures up to 95% of all vapour during the refuelling process, while VR2 recovers at least 85% of the displaced vapour during the customer refuelling process.

The EIA concluded that predicted concentrations of benzene at sensitive land use receptors in proximity to the Service Station (being future housing and Pine View Primary School) would not present unacceptable risk.

The City's peer review notes that:

- The maximum predicted emissions to air of volatile organic compounds (**VOCs**) such as 'Benzene' at the nearest sensitive receptors are predicted to comply with relevant air quality criteria, including:

  - The *National Environment Protection (Air Toxics) Measure* (**NEPM**), which only lists an annual average criterion for benzene and due to its relative carcinogenic potential, typically has the most stringent ambient air quality criteria for VOCs; and
  - The *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales,* which sources an additional short term (1-hour average) criterion.

- The assessment demonstrates that conservatism was built into the model (particularly for short-term impacts) and that emissions to air from the proposal are predicted to result in a low risk of adverse health impact at the nearest sensitive receptors as the modelling assessment demonstrates that emissions to air from the proposal are likely to comply with the air quality standards.

- The modelling assessment is acceptable to justify the proposed separation distance to sensitive land uses, within the 200m separation as outlined in GS3.

On balance, whilst it is acknowledged that air quality dispersion modelling has a number of areas of uncertainty, the combined feedback points to the risk of benzene exposure from the Service Station in this location to be low.

The proposed development is therefore considered acceptable with respect to the separation distances to sensitive land uses, based on the peer review outcomes.

The City has proposed suitable conditions of approval to address concerns raised by DoH and DWER regarding the implementation, management, and potential risks associated with VR1 and VR2 technology.

Local Planning Policy 3.1.2 - Local Commercial Strategy (**PP 3.1.2**)

PP3.1.2 provides holistic guidance regarding Local Commercial and Activity Centres within the City of Rockingham and its relationship with relevant State Planning Policies.

The proposal is considered to comply with the requirements of the PP3.1.2.

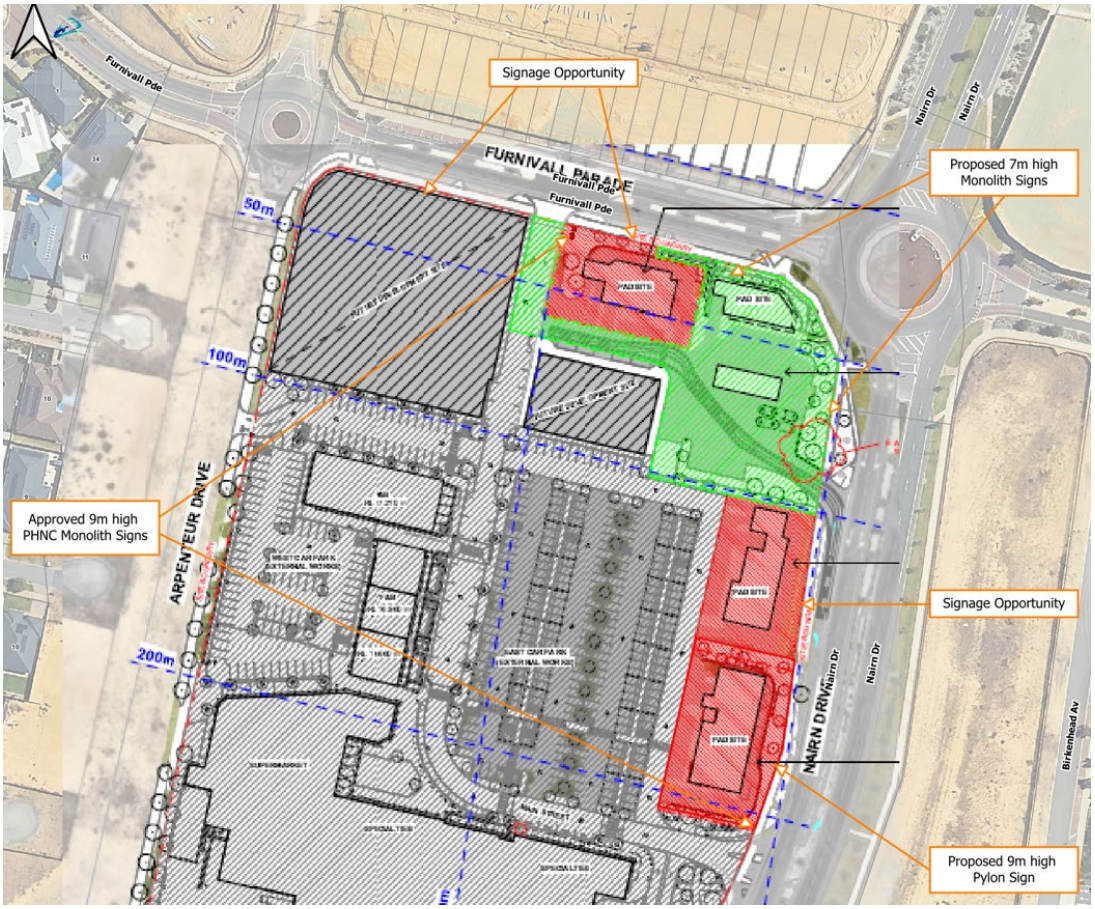
Local Planning Policy 3.3.1 - Control of Advertisements (**PP3.3.1**)

PP3.3.1 provides guidance as to when Development Approval is and is not required and includes guidelines for assessment when Development Approval is required.

The application includes two (2) 7m high 'Monolith Signs' (along Nairn Drive and Furnivall Parade) which require Development Approval, as the subject signage does not meet the exemption criteria within Table 3.3.1 applicable to monolith signs, as the signs:

- Exceed 6m in height;
- Monolith signs are limited to one per street boundary; and
- Furnivall Parade sign is located within 1.5m of the street boundary.

Note: Relevant sign type definitions under PP3.3.1:
Monolith Sign: An advertisement structure that is solid with in-filled panels that may advertise more than one business.
Pylon Sign: An advertisement structure supported by one or more piers and not attached to a building and includes a detached sign framework supported on one or more piers to which sign panels may be added.



6. Nairn Drive and Furnivall Parade Monolith/Pylon Signage

Currently, there is no comparable signage in this locality, however, the approved 'signage strategy' for PHNC development includes two 9m high monolith signs, with each sign positioned along Nairn Drive and Furnivall Parade street frontage. This proposal includes two additional 7m high monolith signs, while the previously referenced proposed Fast Food Outlet (McDonald's) application includes a 9m high pylon sign along Nairn Drive. Furthermore, with three additional pad sites available for development, it is likely that further monolith or pylon signs will be proposed to align the intended commercial (or other) uses along Nairn Drive and Furnivall Parade.
The objectives of the Policy are to:

"(i) Ensure advertising is good quality, proportionate to the site it is located on and complements the character and amenity of the locality and the public realm;

(ii) Minimise clutter of advertising and avoid a proliferation of signs;

(iii) Ensure advertising is well situated to avoid hazards, confusion and direction to road users;

(iv) To ensure outdoor advertising complements the overall amenity of the locality and is commensurate to the locality in relation to context, quality, size, visual impact and content;

(v) Ensure that advertising relates to the business, goods, services and products available on the lot that the advertisement is located;

(vi) Protect the streetscape and the amenity of adjoining and nearby residents by minimising the visual impact of signs;

(vii) Ensure that advertising is not a dominant feature in the urban environment and rural landscape.

Having regard to above objectives, the City provides the following comments with respect to the proposed monolith signs:

- The proposed Nairn Drive monolith sign is already situated at a prominent corner intersection and is clearly visible on westbound, northbound and southbound approach. The City does not object to the height of this monolith sign.

- The proposed Furnivall Parade sign increases the clutter of advertising and adds to the proliferation of large signage adjacent to future houses on the opposite side of the road.

- The proposed Furnivall Parade monolith sign is not effective in its placement (with regard to description and display of price for each fuel) for motorist east bound along Furnivall Parade, as the sign is placed approximately 58m beyond the access point into the PHNC and is placed on the opposite side of the road.

- Westbound vehicles exiting the intersection roundabout on Furnivall Parade will naturally be accelerating and would then need to break abruptly to view the display board. The City considers this an unsafe manoeuvre due to the limited distance from the intersection and the visual obstruction caused by verge trees and on-street parking along this approach.

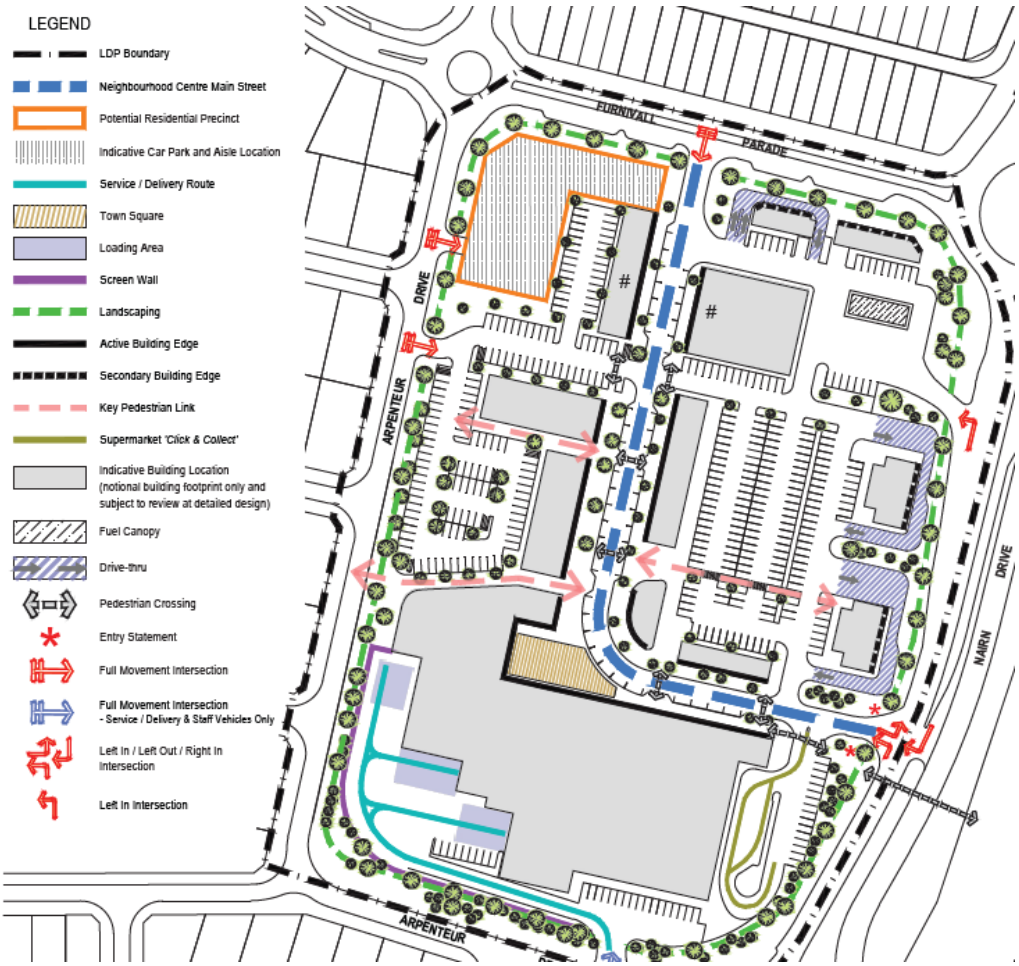
- A 7m high sign positioned immediately adjacent to a footpath is also unsuitable, as it may negatively impact the pedestrian experience and poses a potential safety hazard for both pedestrians and cyclists.

- Further to the above point and having regard to general site planning and layout of the development, the sign's position is not proportionate to the site and this is apparent as it would not be able to serve its purpose if it was to be stepped away from the street boundary as required (i.e. setback 1.5m).

The City acknowledges the importance of wayfinding and notifying the public of goods and services available, however, the size, scale and location of advertisements needs to be balanced to ensure the signage complements the surrounding environment. The City considers that the proposed monolith sign along Furnivall Parade is not necessary, presents as a potential safety hazard and should be removed to limit over-proliferation of signage at the PHNC.

<u>Local Development Plan - Parkland Heights Neighbourhood Centre</u>

As a requirement of the PHLSP, a LDP was prepared in September 2019, with the latest version approved by the City in June 2024.



7. Local Development Plan Map Extract

The table below provides an assessment of the proposal against the relevant LDP requirements only.

Local Development Plan		
Provision	**Development Standard**	**Design Compliance Response**
<u>Main Street</u>		
No.3	The main street shall be designed for a high-level of pedestrian amenity and incorporate features such as street furniture, low planting, street trees and lighting where practicable and safe.	The service station development is located away from the main street, which ensures access and vehicle movements associated with the development does not conflict with the pedestrian-oriented elements of the PHNC.

Local Development Plan		
Provision	**Development Standard**	**Design Compliance Response**
Other Building Facades		
No.9	With the exception of 'Active Building Edges' and walls adjoining loading areas, building facades should avoid blank walls to enhance visual presentation through the use of features such as glazing, alternative colours, finishes and textures and/or intrusions and extrusions in the wall.	Blank walls have been avoided through incorporation of façade treatments such as glazing, decorative grooves and a painted finish.
Vehicle Access		
No.11	Intersection treatments for vehicle access points into the PHNC are to be provided in accordance with the LDP.	Proposed intersection treatments are generally consistent with the approved LDP.
Landscaping		
No.15	Landscaping strips a minimum of 2.0m are to be provided within the property boundary in the locations depicted on the LDP.	The development provides landscape strips in excess of 2.0m along the edges of property boundary fronting Nairn Drive and Furnivall Parade.
No.18	Car parking areas are to include shade trees at a minimum rate of 1 tree per 6 bays.	Based on one (1) accessible bay and 14 standard spaces, a minimum of three (3) shade trees are required to be provided as part of the development. The City recommends inclusion of a minimum of three (3) shade trees for the proposed car parking areas as a condition of Development Approval.

The proposal is compliant with the requirements of the approved LDP.

City of Rockingham Town Planning Scheme No.2 (TPS2)

Clause 3.2 - Zoning Table

The land is zoned 'Development' and falls within Development Area No.19 (**DA19**) under TPS2.

In accordance with the requirements of DA19, the PHLSP has been approved over the land to guide subdivision and development.

The PHLSP designates a 'Commercial' zoning to accommodate its intended purposes as an activity centre. Pursuant to Clause 4.1 of the PHLSP, land use permissibility is in accordance with the 'Commercial' zone under TPS2.

The proposed use of 'Service Station' is a use that is not permitted ('D'), unless the Council has exercised its discretion by granting Development Approval.

Clause 4.6.1 - Objective of Commercial zone

"The objective of the Commercial zone is to provide for the development of District, Neighbourhood and Local shopping facilities to cater for the present and future residents of the Local Government consistent with the Local Government's Local Commercial Strategy and supported by any other Plan or Policy that the Local Government from time to time may adopt as a guide for the future development within the zone".

The locality is a developing residential area and as such, the proposed Service Station development will provide a service to the existing and future residents of the locality.

Clause 4.6.2 - Form of Development

"In considering applications for Development Approval in the Commercial zone, the Local Government shall ensure that site planning, scale, built-form, elevations and landscaping of development positively contribute to the streetscape, appearance and amenity of the locality.

The development provides a suitable built form interface to the northern and eastern street boundaries and includes vegetation to form an effective green buffer from north and east. As discussed earlier in the Report, the development satisfactorily addresses the LDP built form, landscaping and site planning requirements.

The built form is single-storey which is consistent with the prevailing low-rise character of the surrounding area.

The development will form part of the PHNC which has been designated a 'Commercial' zoning via the PHLSP. Whilst there is likely to be a change to the amenity of the immediate locality through the broader development of the PHNC, the City is satisfied that amenity related impacts have been adequately addressed by the proposal, subject to removal of the Furnivall Parade monolith sign via a condition of Development Approval.

Clause 4.6.3 - Parking

TPS2 requires the provision of on-site parking for vehicles for development on 'Commercial' zoned land in accordance with the provisions of Clause 4.15 and Table No.4.

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

Table No.4 - Car parking table

Use	Ratio	Area/Number	Parking Requirement	Parking Proposed
Service Station	1 bay per service bay	6 service bays	6 bays	6 bays
	1 bay per employee	3 employees	3 bays	3 bays
	6 bays per 100m^2 of NLA	200m^2 NLA	12 bays	12 bays
Total			**21 bays**	**21 bays**

Parking provision for this development is compliant with TPS2.

Environmental Protection (Noise) Regulations 1997

Following the assessment of the applicant's Environmental Noise Impact Assessment, it is considered that the development can maintain compliance with the *Environmental Protection (Noise) Regulations 1997.* Compliance, however, is contingent on recommended (precautionary) conditions of Development Approval, which will need to be implemented at all times during operation of the development.

Conclusion:

The proposed application for the Service Station has been the subject of thorough assessment in accordance with TPS2, approved LDP and the State and local planning framework, having regard to the comments received from the community and State Government agencies, and its emission expert, during the processing of the application.

The primary issue of concern relating to public health risk resulting from the development of a Service Station in proximately to sensitive land uses has been thoroughly investigated.

The proposal is likely to comply with the accepted air quality standards and criteria in this regard. These standards provide a contemporary and common standard to best protect human health and wellbeing from the adverse impacts of air pollution associated with benzene emissions from Service Stations.

Conditional approval of the application is recommended.

PARKLAND HEIGHTS NEIGHBOURHOOD SHOPPING CENTRE

SERVICE STATION PAD SITE DEVELOPMENT APPLICATION

INDICATIVE VIEW FROM CORNER OF FURNIVALL PARADE AND NAIRN DRIVE

DRAWING LIST

NO	NAME
SD-3-00	COVER SHEET
SD-3-01	PERSPECTIVES
SD-3-02	SURVEY PLAN
SD-3-03	SITE PLAN
SD-3-04	PROPOSED GROUND FLOOR PLAN
SD-3-05	PROPOSED ELEVATIONS & SECTION

PARKLAND HEIGHTS

COVER SHEET
PARKLAND HEIGHTS SHOPPING CENTRE

Status: DEVELOPMENT APPLICATION

Scale: NTS

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Project Number: 44857
Drawing Number: SD-3-00
Revision: B
Date: 19/06/24

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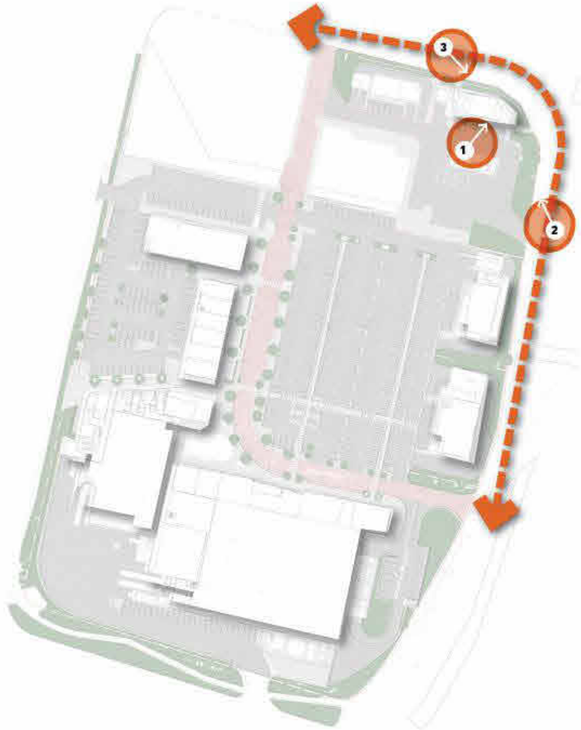
ARTIST IMPRESSION ONLY

1



2

3

PARKLAND HEIGHTS

PERSPECTIVES

PARKLAND HEIGHTS SHOPPING CENTRE

Status: DEVELOPMENT APPLICATION

Scale: NTS

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Drawing Number:	**SD-3-01**
Revision:	B
Date:	19/06/24

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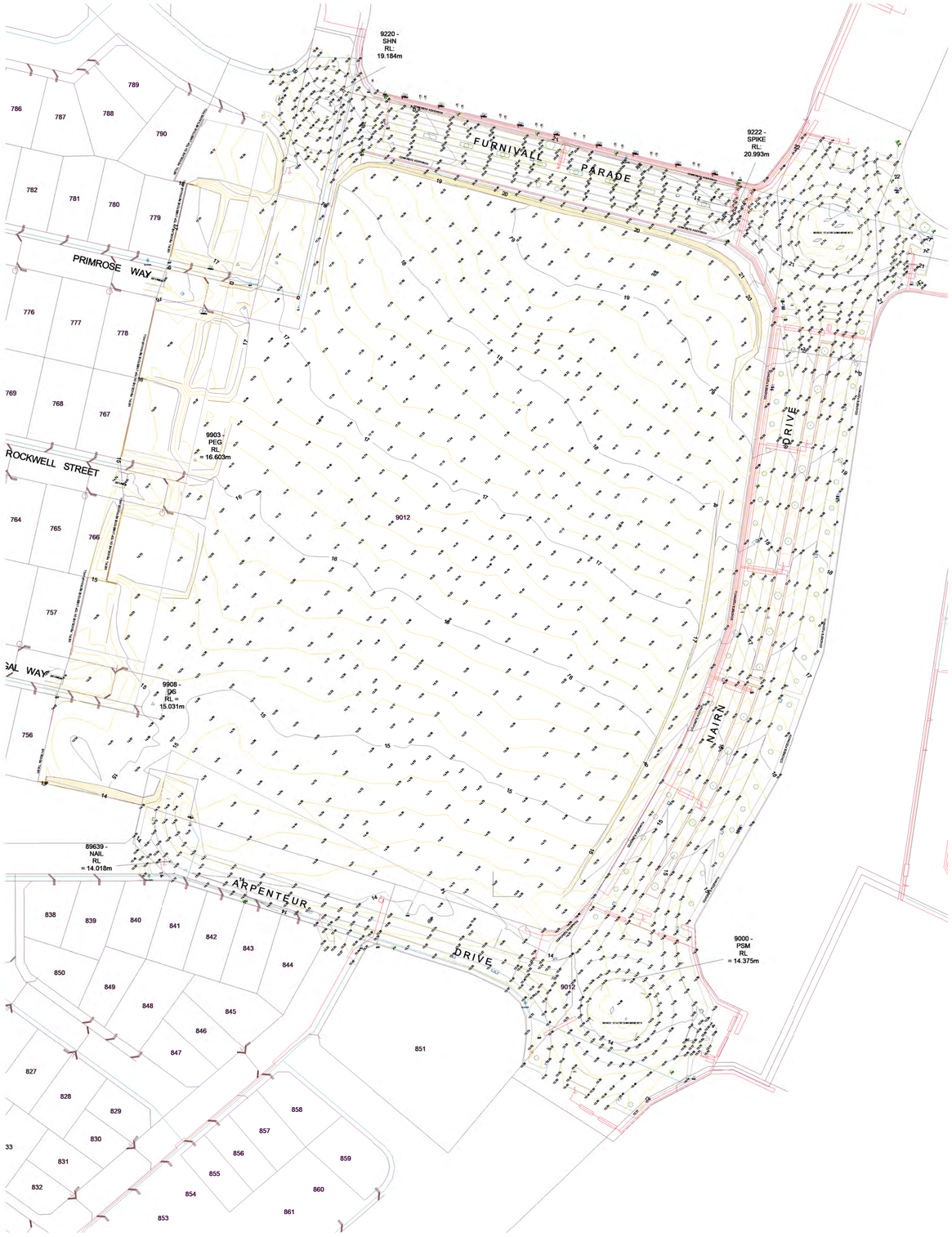

1 EXISTING FEATURE SURVEY
1 : 1000

SURVEY LEGEND

ROAD FEATURES
- Traffic Junction Box
- Traffic Signals - 1 Aspect
- Traffic Signals - 2 Aspect
- Traffic Signals - 3 Aspect
- Traffic Signals - 4 Aspect
- Pedestrian Signals
- Signs On One Pole
- Sign Multiple Poles
- Overhead Sign
- Traffic Controller Box
- Finger Sign
- Traffic Earth Pit
- Police Traffic Camera
- Guide Post
- Km Marker
- Traffic Count

ELECTRICAL
- Earth Pit
- Electricol Pillar
- Electrical Dome
- Light Pole - Directional
- Power Pole
- Transformer Single Pole
- Stay Pole
- Steel Wire Anchor
- High Mast Lighting
- Electrical Cable Marker
- MRWA Cable Marker
- MRWA Electrical Cable Box
- Electricol Cable Pillbox
- MRWA Distribution Board
- High Tension Power Pole
- Electricol Supply Pole
- Ground Floodlight
- MRWA Electrical Manhole
- Meter Box
- Power Meter Box
- Electrical Transformer
- MRWA Light Pole
- MRWA Multiple Light Pole

COMMUNICATION
- Telstra Pit
- Telstra Pillar
- Telstra Marker
- Telstra Pole
- Telephone Booth
- Emergency Phone
- Antenna
- Telstra Elevated Joint
- Cable Marker (Optus)
- Telstra Tower
- Communication Manhole

WATER
- Water Meter
- Water Stop Valve
- Hydrant (Ground Level)
- Hydrant (Pillar)
- Water Bore
- Stand Pipe
- Reticulation Sprinkler
- Reticulation Control Valve
- Well
- Water Main Marker
- Water Tap
- Flushing Point
- Air Valve
- Purpometer
- Hydrant Bowster Box

GAS
- Gas Marker
- Gas Valve
- Gas Test Valve
- LPG Tank
- Gas Test Pit
- Gas Manhole

DRAINAGE
- Invert Level
- Dish Level
- Flood Level
- Water Line
- Flood Level Indicator
- Storm Water Grate
- Drainage Gully
- Drainage Manhole
- Drainage Headwall

SEWER
- Sewer Vent
- Sewer Line Marker
- Sewer Inspection Shaft
- Sewer Inspection Opening
- Sewer Manhole

RAIL
- Rail Traffic Signals
- Rail Traffic Control Box
- Rail Telephone Box
- Rail Cable Pit
- Rail Cable Marker
- Rail SLK Post
- Marmale - Rail Cable

STRUCTURE
- Deck Level
- Face Level
- Column Centre

GENERAL
- Clothes Hoist
- Air Conditioner
- Market Unit/Undefined
- Undefined Manhole
- Control Of Access Sign
- Count Station
- Advertising Sign
- Windmill
- Stock Trough
- Litter Bin
- Mail Box
- Parking Meter
- Bus Stop
- Ticket Machine
- Borehole
- Flag Pole
- Bollard
- Fuel Bowser
- Underground Filler
- Diesel Tank
- Oil Main Marker
- Security Post
- Tank

GROUND FEATURES
- Natural Surface
- Aerial Survey Marker

VEGETATION
- Tree Details - Canopy & Trunk
- Tree 0.1m>0.3m Trunk Diameter
- Tree 0.3m>0.5m Trunk Diameter
- Tree 0.5m>1.0m Trunk Diameter
- Tree > 1.0m Trunk Diameter
- Bush
- Dia Back Area - Marker
- Nesting Tree
- Tree Trunk / Stump
- Grass Tree

SURVEY CONTROL
- Star Iron Picket
- Trig Point
- SSM
- Bench Mark
- Photo Point
- Cadastral Peg/Post
- Reference Peg
- Alignment Control
- Spring Head Nail
- Spike
- TBM
- Peg Placed / Found

ROAD FEATURES
- Edge Of Bitumen
- Road Shoulder
- Edge Of Unsealed Road
- Ctr Road
- Centre Of Road
- Kerb Top
- Kerb Bottom
- Cattle Grid
- Centre Of Driveway
- Edge Of Driveway
- Pedestrian Ramp
- Pedestrian Crosswalk
- Track
- Parking Bay
- Line Markings 1m Line & 1m Gap
- Line Markings 1m Line & 3m Gap
- Line Markings 3m Line & 9m Gap
- Lane Marking (dm*3m GAP)
- Lane Markings - Audible
- Shared Pathway - Guide Line 500mm*300mm GAP
- Footpath/Shared Path - Give Way 200mm*200mm GAP
- Giveway/Hold/Turn Lines 600mm*600mm GAP
- Double Barrier Line
- Overtaking Lane Left
- Overtaking Lane Right
- Single Solid Line
- Arrow Straight
- Arrow Straight/Left
- Arrow Straight/Right
- Arrow Left
- Arrow Right
- Arrow 3 Way
- Arrow Right & Left
- Arrow U-Turn
- Arrow Merge
- Painted Lettering On Seal
- Painted Bicycle Traffic Signal Decaltor
- Guardrail - W Beam
- Guardrail - Thrie
- Barrier Concrete
- Barrier Steel Rope
- Barrier - Single Rail
- Barrier - Double Rail
- Barrier Triple Rail
- Bridge Barrier - (All Types)
- Bridge Expansion Joints
- Bridge - Outside Of Deck
- Soffit String

STRUCTURE
- Bridge
- Abutment
- Culvert
- Piers
- Underpass
- Ramp
- Steps/Stairs
- Edge Of Concrete
- Bus Shelter
- Memorial
- Ruin
- Building / Structure
- Awning
- Shed
- Verandah
- Door Opening
- Window
- Roof Gutter Line
- Roof Ridge Line
- Top Of Wall
- Brick Wall
- Concrete Wall
- Livestock Grid

GENERAL
- Swimming Pool
- Tank Perimeter
- Mine Shaft
- Mine Workings
- Krasso Logging Fence
- Fence/Gate
- Wall
- Top Of Barrier / Wall etc
- Retaining Wall
- Boundary Line
- Footpath
- Gas Cylinder/Tank
- Brick Paving
- Bike Rack
- Bench Seating
- Hatchtail

GROUND FEATURE
- 10 Major Contour
- Minor Contour
- Bank Bottom
- Bank Top
- End Of Levels
- Levee Top
- Levee Bottom
- Back Outcrop
- Ridge Line
- Bonnie Pit
- Earthworks Area
- Ground Subsidence
- Rock Pitching

VEGETATION
- Tree Line/Canopy
- Bush Line
- Hedge
- Garden Bed
- Lawn Area
- Vineyard
- Plantation
- Orchard
- Nursery
- Market Garden
- Recreational Area
- Trunk Circumference Circle
- Tree-line Face Of Trunks

CADASTRAL
- VNG Precal/Re Established
- SCDB) - State Cadastral Data Base
- Cadastre By Others

ELECTRICAL
- Varible Message Sign
- Electrical Structure Sking
- Overhead Powerlines - Null Height
- Overhead Powerlines - True Height
- High Tension Power Lines - Null Height
- High Tension Power Lines - Trunl Height

COMMUNICATION
- Unidentified Service Pit
- Telstra Cable
- Aircom-Cable

WATER
- Water Pipe

GAS
- Gas Line

DRAINAGE
- Drainage Pipe
- Drainage Culvert
- Floodway
- Drain
- Edge Of Drain
- Sump
- Waters Edge
- Swamp
- Dam
- Edge Of Creek/Water
- Centre Of Channio
- Wet Area
- Flood Level Line
- Waterways Cross Section

SEWER
- Sewer Pressure Main
- Sewer Pipe

RAIL
- Railway Platform
- On Rail
- Rail Boom Gate
- Rail Underground Cable
- Dual Gauge Rail
- Narrow Gauge Rail
- Cross Sekon - Rail
- Standard Gauge Rail
- Rail U/G Cable

UNDERGROUND SERVICES

UNDERGROUND SERVICES - DIRECT MEASUREMENT - CLASS A
- (PGX) Underground Arcoon/Voicus Cable
- (PGD) Underground Drainage Pipe
- (PGE) Underground Electrical Cable
- (PGP) Underground Western Power Comms
- (PGG) Underground Gas Line
- (PGM) Underground MRWA Comms
- (PGA) Underground MRWA Power
- (PGJ) Underground NBN Comms
- (PGH) Underground TPG Pipe Networks
- (PGC) Underground Nbn Gen Comms
- (PGO) Underground Optus Fibre_Optic
- (PGT) Underground Optus Copper
- (PGR) Underground Rail Services
- (PGS) Underground Sewer Pipe
- (PGY) Underground Telstra Copper
- (PGU) Underground Unknown Service
- (PGV) Underground Telstra Optic_Fibre
- (PGW) Underground Water Pipe
- (PGZ) Underground Reticulation Pipe

MAIN ROADS - SURFACE LOCATION - CLASS B
POINT MEASURED AT GROUND LEVEL DIRECTLY ABOVE TRACED SERVICE
- (AAC) (GAC) AMCOM/VOCUS Cable - Surface Location
- (ABC) (GBC) Drainage Pipe / Stormwater - Surface Location
- (AEC) (GEC) Electrical Cable - Surface Location
- (AEP) (GEP) Western Power Communication - Surface Location
- (AGC) (GGC) Gas Line - Surface Location
- (AMC) (GMC) MRWA Communication - Surface Location
- (AMP) (GMP) MRWA Power - Surface Location
- (ANC) (GNC) Underground NBN Fibre - Surface Location
- (APC) (GPC) Underground TPG/Pipe Networks Surface Location
- (ANG) (GNG) Nbn/ Gen Communication - Surface Location
- (ASC) (GSC) Sewer Pipe - Surface Location
- (ATC) (GTC) Telstra Copper - Surface Location
- (AUC) (GUC) Unknown Service - Surface Location
- (AVC) (GVC) Telstra Optic_Fibre - Surface Location
- (AWC) (GWC) Water Pipe - Surface Location
- (AZC) (GZC) Reticulation - Surface Location
- (PUS) Located Point Using Indirect Measure

MAIN ROADS - UNVERIFIED, NO MEASUREMENT (SKYD COMPILED - CLASS C AND D)
- (QA) AMCOM/VOCUS Cable - Unverified, No Measurement
- (QD) Drainage Pipe / Stormwater - Unverified, No Measurement
- (QE) Electrical Cable - Unverified, No Measurement
- (QP) Western Power Communication - Unverified, No Measurement
- (QG) Gas Line - Unverified, No Measurement
- (QM) MRWA Communication - Unverified, No Measurement
- (QA) MRWA Power- Unverified, No Measurement
- (QN) Underground NBN Comms - Unverified, No Measurement
- (QH) Underground TPG/Pipe Networks - Unverified, No Measurement
- Nbn/ Gen Communication - Unverified, No Measurement
- (QO) Optus Optic_Fibre - Unverified, No Measurement
- (QT) Optus Copper - Unverified, No Measurement
- (QY) Telstra Copper - Unverified, No Measurement
- (QV) Telstra Optic_Fibre - Unverified, No Measurement
- (QR) Rail Services - Unverified, No Measurement
- (QS) Sewer Pipe - Unverified, No Measurement
- Unknown Service - Unverified, No Measurement
- (QW) Water Pipe - Unverified, No Measurement
- Reticulation - Unverified, No Measurement

PARKLAND HEIGHTS

SURVEY PLAN
PARKLAND HEIGHTS SHOPPING CENTRE

Status: DEVELOPMENT APPLICATION

Scale: 1:1000 @ A1
0 80
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North:

Project Number:	**44857**
Drawing Number:	**SD-3-02**
Revision:	A
Date:	17/05/2024

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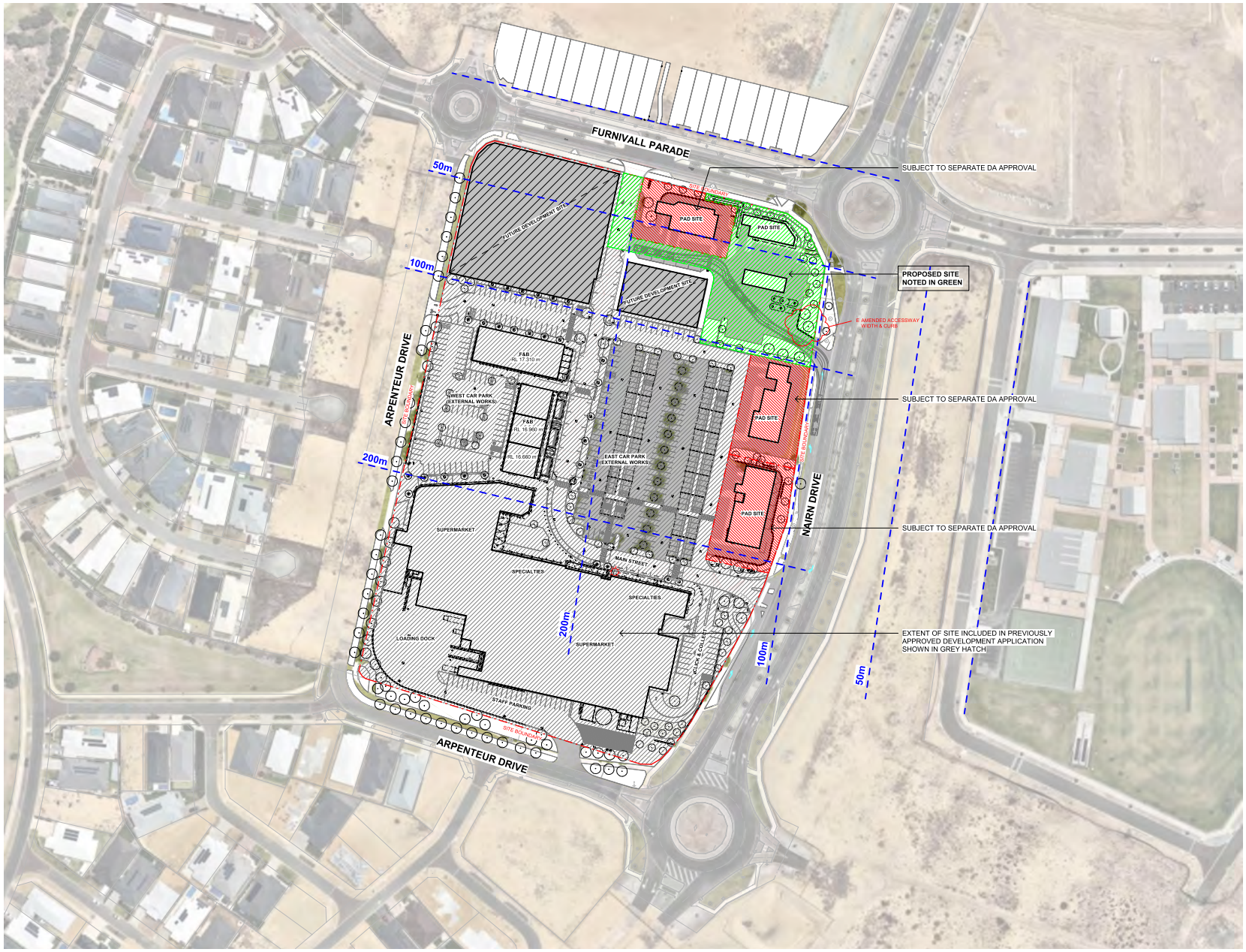

DEVELOPMENT SUMMARY

RETAIL AREA	**200m²**
SERVICE STATION	200m²

CAR PARKING

NEW BAYS PROVIDED	**21 BAYS**
STANDARD BAYS	15
QUEUEUING BAYS	6

PARKLAND HEIGHTS

SITE PLAN

PARKLAND HEIGHTS SHOPPING CENTRE

Status: DEVELOPMENT APPLICATION

Scale: 1:1000 @ A1

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Project Number: 44857
Drawing Number: SD-3-03
Revision: E
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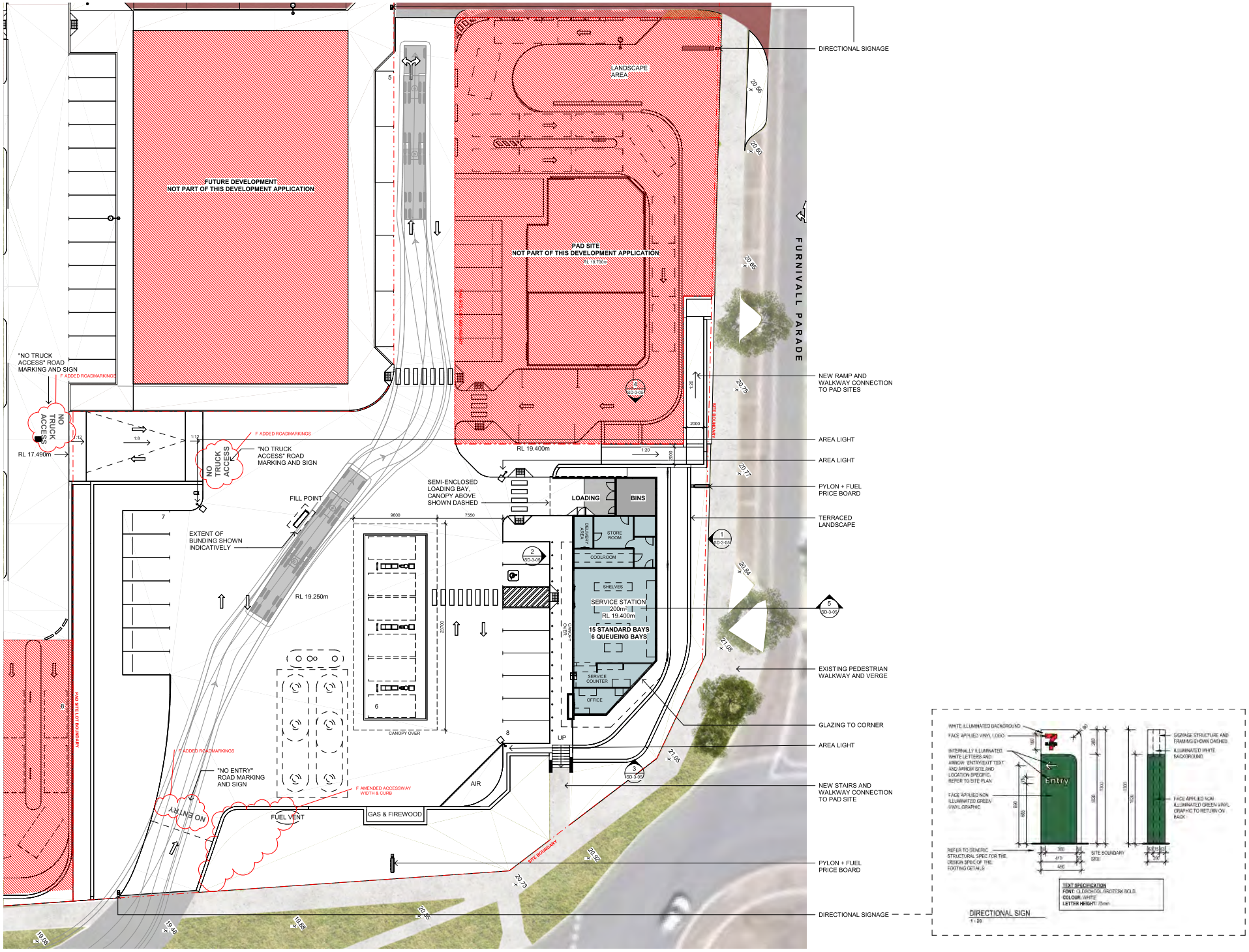

PARKLAND HEIGHTS

PROPOSED GROUND FLOOR PLAN

PARKLAND HEIGHTS SHOPPING CENTRE

Status: DEVELOPMENT APPLICATION

Scale: 1:200 @ A1

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North:

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Revision: F
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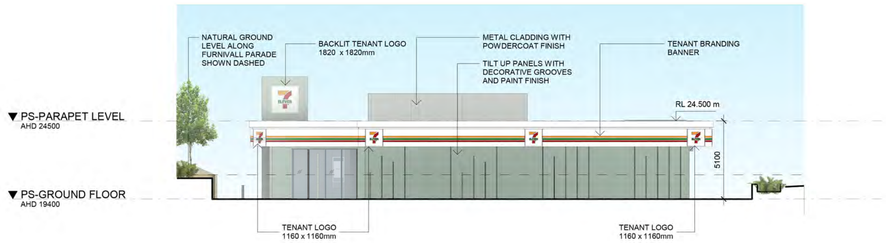

1 NORTH ELEVATION
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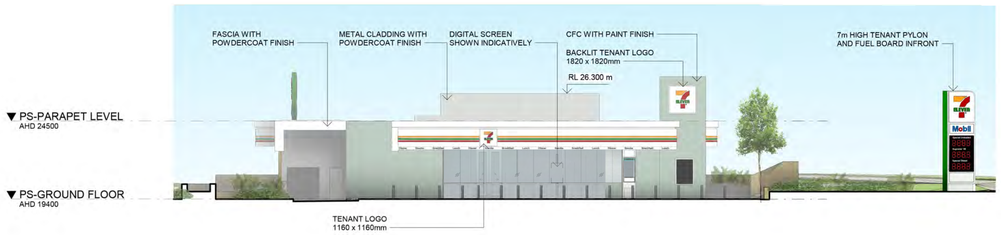
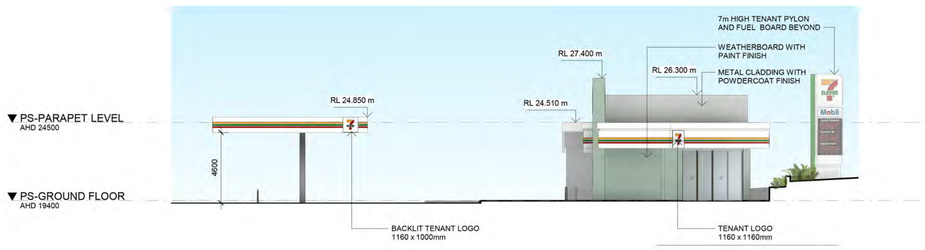
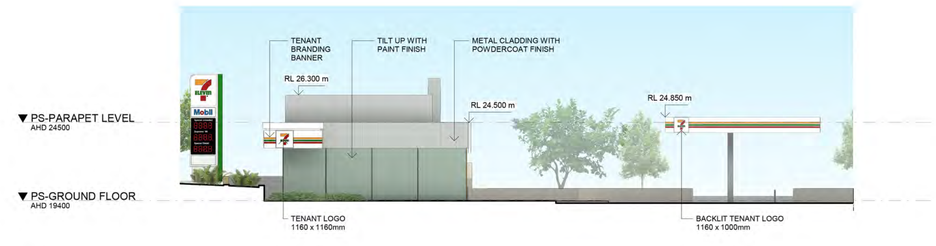


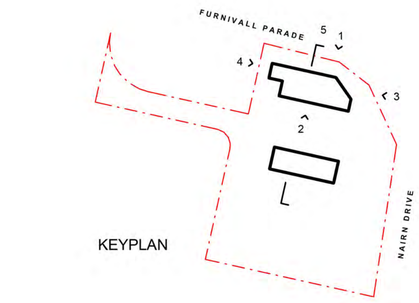
2 SOUTH ELEVATION
1 : 200



3 EAST ELEVATION
1 : 200



4 WEST ELEVATION
1 : 200

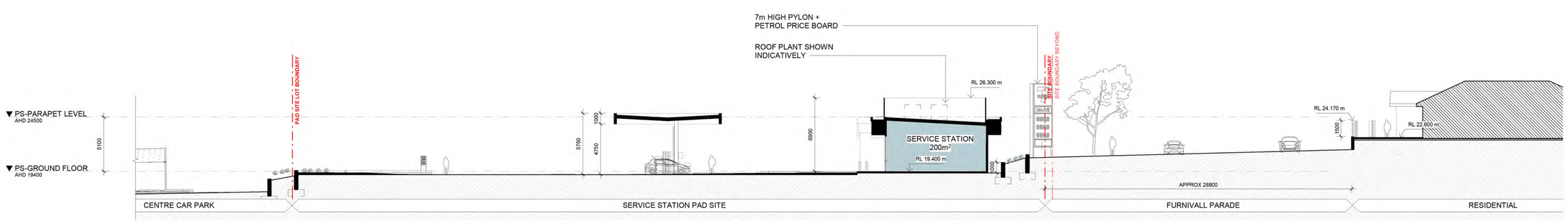


KEYPLAN

METAL CLADDING WITH POWDERCOAT FINISH

TILT-UP PANELS WITH DECORATIVE GROOVES AND PAINT FINISH

CFC WITH SAGE MONICA PAINT FINISH



5 PAD SITE - SITE SECTION
1 : 200

PARKLAND HEIGHTS

PROPOSED ELEVATIONS & SECTION

PARKLAND HEIGHTS SHOPPING CENTRE

Status: DEVELOPMENT APPLICATION

Scale: 1:200 @ A1

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Drawing Number: SD-3-05
Revision: E
Date: 26/08/2024

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CLE Town Planning + Design

Development Application - Service Station

Parkland Heights Neighbourhood Centre

SEPTEMBER 2024

CLE Town Planning + Design

Title	Development Application - Service Station Parkland Heights Neighbourhood Centre
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Executive Summary

This development application seeks approval for a 7-Eleven service station and convenience store within the Parkland Heights Neighbourhood Centre (PHNC) in southern Baldivis. Situated at the northeastern corner of the PHNC, the proposal is consistent with the approved Parkland Heights Local Development Plan 1 and integrates seamlessly with the previously-approved Stage 1 development, which includes a full-line supermarket, specialty shops, and a food and beverage precinct.

The application also proposes an additional 'left in' intersection from Nairn Drive into the service station, improving the overall accessibility and movement for visitors and fuel tankers.

The service station will provide an essential service for residents and travellers in a location that is easily accessible, coordinated within a broader activity centre and where potential off site impacts can be suitably managed.

Above: Artistic Renders of the Service Station (Source: Hames Sharley)

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1. Project Overview & Background

The subject site forms part of the Parkland Heights Neighbourhood Centre (PHNC) at the southern end of Baldivis. The proposal includes a 24/7 service station and convenience store development located on the northeastern pad site as identified within the approved Parkland Heights Neighbourhood Centre Local Development Plan 1.

A development application for Stage 1 of the PHNC was approved by the Metro Outer Joint Development Assessment Panel (JDAP) in April 2023 and incorporated a portion of the future service station carpark and circulation area. The Stage 1 approval included a full line supermarket supported by a range of specialty shops, a food and beverage precinct as well as a secondary supermarket. Whilst the approved Stage 1 development plans depicted a service station in the northeast corner of the site for the purpose of coordinating parking, movement and land uses across the PHNC, it was excluded from the application and subject to a separate approval process.

An amendment to the JDAP approval was granted in June 2024 which sought modifications to the Stage 1 development that were unrelated to the service station pad site. Specifically, the amended approval primarily addressed a modified 'food and beverage' precinct layout and associated reconfiguration of the western carpark as well as other incidental updates. A copy of the latest approved Stage 1 site plan is included at **Figure 1** – Stage 1 Approved Site Plan.

The Stage 1 approval depicts a slightly different orientation of the service station and convenience store to the proposal the subject of this application. As outlined above, Local Development Plan 1 was amended to coordinate the proposed layout with the broader PHNC. The proposed development is consistent with the current Local Development Plan (LDP) and aligns with the existing approval over the site. The LDP is depicted at **Figure 2** below.

Figure 1: *Stage 1 Approved Site Plan (Source: Hames Sharley)*

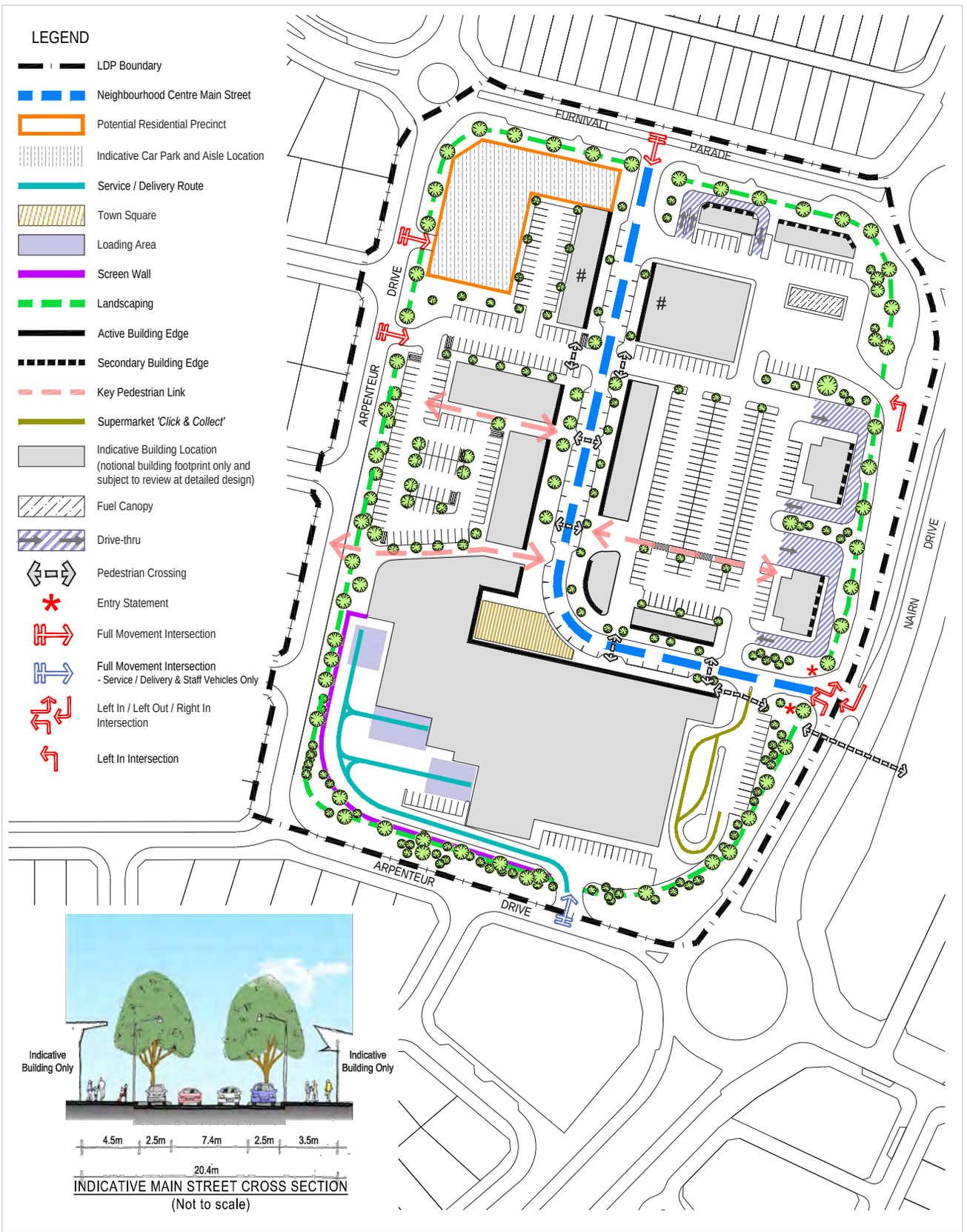

Figure 2: *Approved Local Development Plan*

1.1 Proposed Development

Development approval is sought for a 7 Eleven service station and convenience store, associated parking, access, signage and landscaping at the northeast corner of the PHNC (**Attachment 1** – Development Plans). The development is proposed to operate 24/7 and will comprise the following elements:

- 200sqm convenience store, situated on the northern portion of the development site;
- 5.75m high fuel canopy area with 3 fuel bowsers comprising 6 refuelling/service bays;
- Bin storage and loading area;
- New stairs and footpath connection to the convenience store from the corner of Nairn Drive and Furnivall Parade with an additional ramped connection to Furnivall Parade between the convenience store and future pad site to the west;
- 21 parking bays comprising of 1 accessible bay and adjacent shared space, 14 standard bays and 6 refuelling/service bays;
- Underground tanks and associated refilling points;
- Framing landscaping consistent with the overarching Landscape Plan approved with the Stage 1 development application; and
- Two pylon and fuel price boards, one on Furnivall Parade and one on Nain Drive.

The proposed development has been designed in accordance with the local planning framework and responds to the natural topography of the site. The development sits approximately 1.5m below street level to address the natural slope of the land from north to south. The siting of the development and external façade treatment responds sympathetically to the future residential land to the north.

The design response in accordance with the LDP is discussed at section 3.3 of this report.

1.2 Pre-lodgement Consultation

The City of Rockingham (the City) has been extensively consulted regarding the overall layout and design of the PHNC. This is reflected in the current LDP layout approved by the City on 21 June 2024 which depicts reconfigured pad sites, including the service station and convenience store.

Further engagement was undertaken with the City regarding the technical reports needed to accompany lodgement of the service station DA and the need to coordinate this with the previous reporting and approvals for the PHNC. The information package lodged with this development application is consistent with the outcomes of this engagement.

2. Site Description & Context

2.1 Location

The subject site is located within the PHNC which is located central to the Parkland Heights estate, abutting the western side of Nairn Drive at the southern end of Baldivis. The proposed development site is located at the northeastern corner of the PHNC at the intersection of Nairn Drive and Furnivall Parade.

The land to the north on the opposite side of Furnivall Parade is planned for future residential and is currently undeveloped. The proponent for the PHNC and this development application – Rockingham Park – is the also the landowner and developer of the future residential land to the north. In order to manage adjoining landowner expectation and perception, the future residential lots to the north will only be titled and sold once the service station has been developed and is operating, ensuring that purchasers are aware of the land use context. This approach has also been implemented with the residential lots to the west of the PHNC which will remain untitled until Stage 1 has been developed.

The land directly to the east on the opposite side of Nairn Drive is similarly undeveloped but is planned to accommodate complementary commercial uses.

2.2 Legal Description & Ownership

The PHNC is on balance title 9014 which is owned by the proponent for this application, Rockingham Park Pty Ltd. Rockingham Park also own the untitled land to the west and north, the future commercial site to the east of Nairn Drive and the grouped housing site (Lot 851) to the south. A copy of the Certificate of Title is included as **Attachment 2**.

3. Zoning & Planning Framework

3.1 Zoning

The land is zoned 'Urban' under the Metropolitan Region Scheme (MRS) (refer **Figure 3** below) and 'Development' under the City of Rockingham 's Local Planning Scheme No. 2 (LPS 2) (refer **Figure 4** below).

The PHNC directly abuts an 'Other Regional Road' (ORR) reserve under the MRS in the form of Nairn Drive. The Department of Planning, Lands and Heritage reviewed and commented on the approved LDP with regard to the ORR, confirming they have no objection to the proposed access from Nairn Drive, which includes the left in access for this proposal.

Pursuant to clause 4.2.2 of LPS 2 applicable to 'Development' zones, the Parkland Heights Local Structure Plan has been prepared and approved to coordinate subdivision, land use and development of the land, inclusive of the subject site.

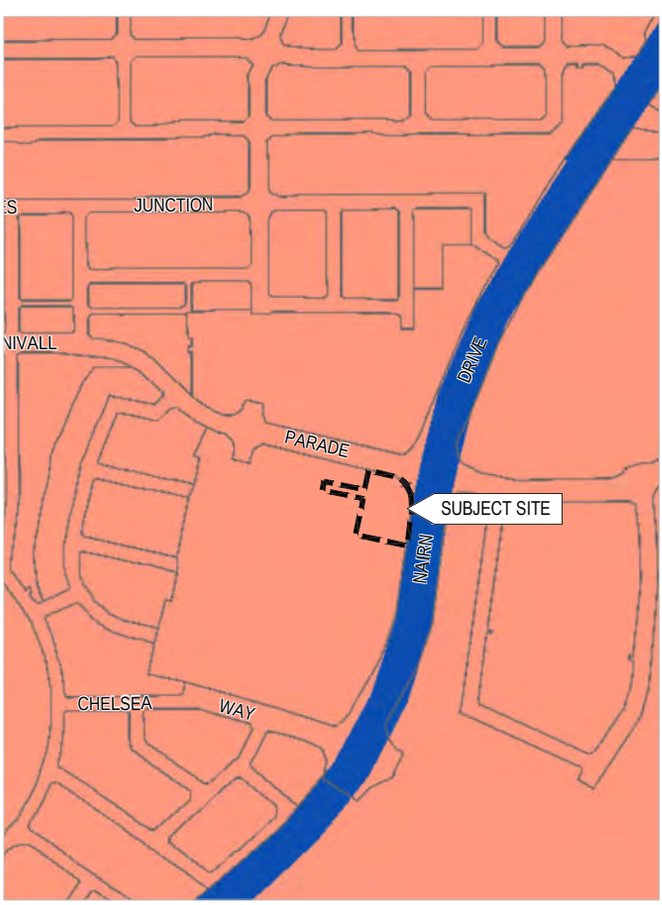

Figure 3: *Metropolitan Region Scheme (Source: DHPL)*

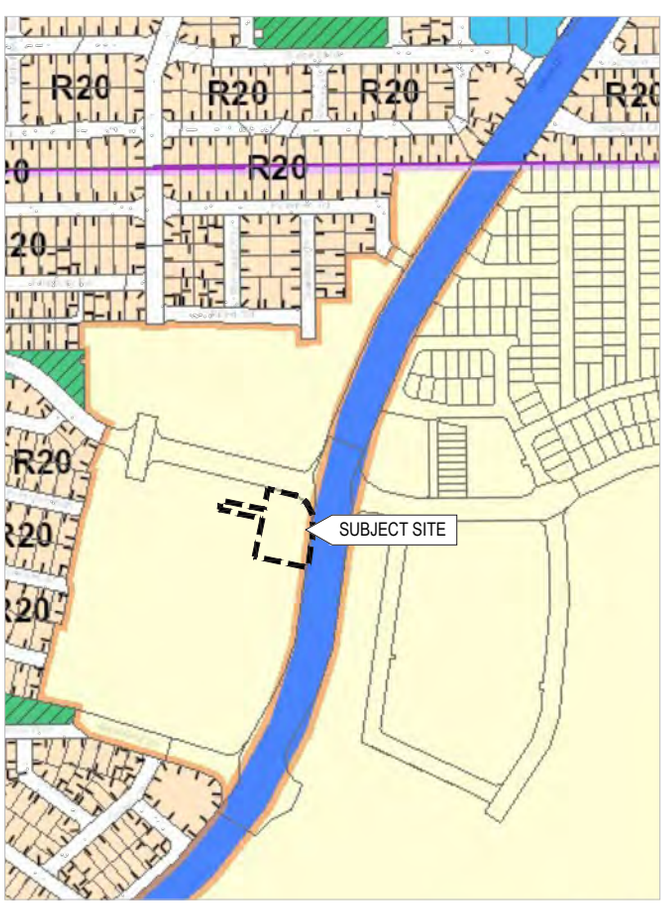

Figure 4: *Local Planning Scheme No.2 (Source: DPLH)*

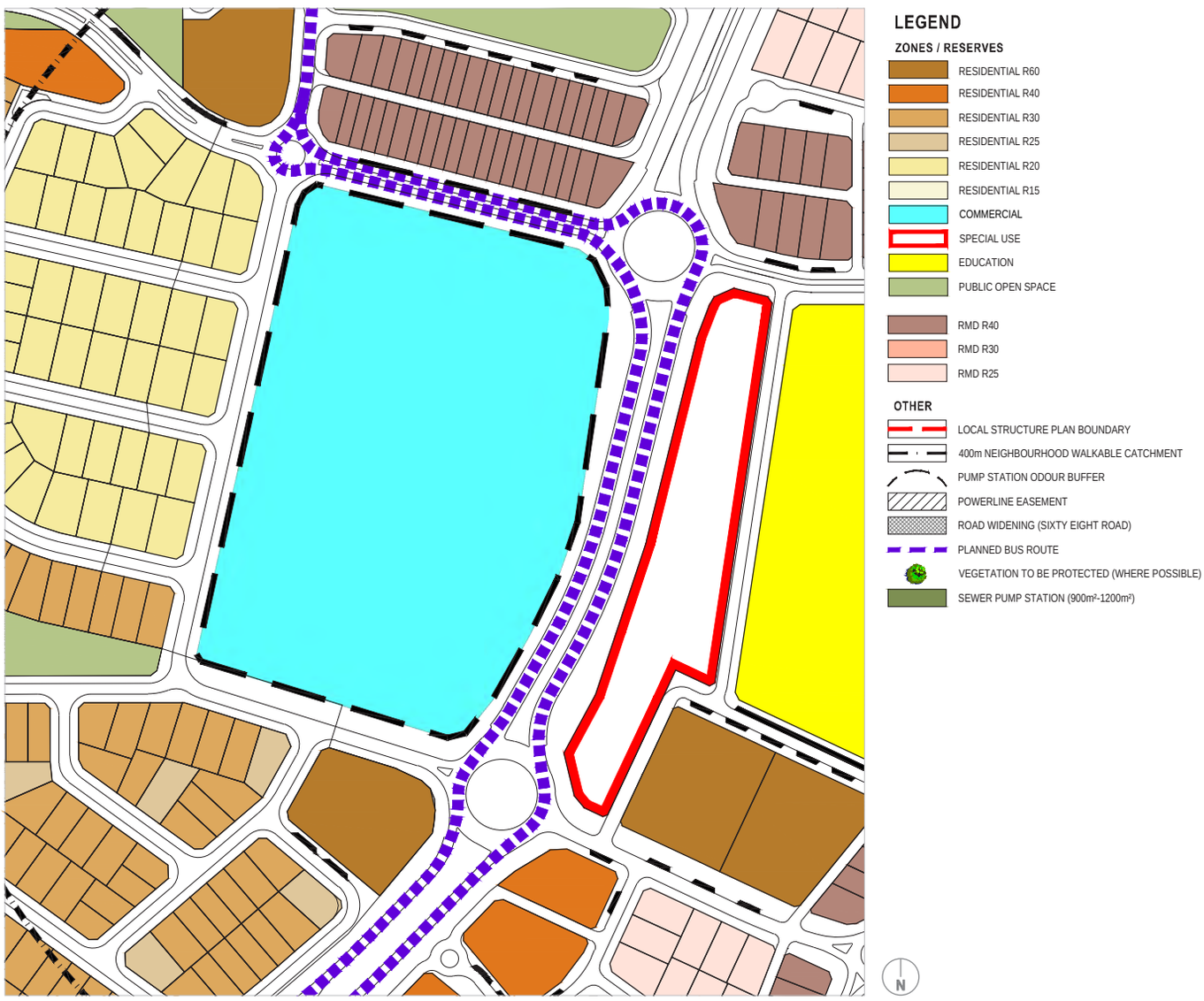

Figure 5: *Parkland Heights Local Structure Plan Map*

3.2 Parkland Heights Local Structure Plan

The Parkland Heights Local Structure Plan (LSP) coordinates the subdivision and development of the estate, zoning the PHNC site 'Commercial' to accommodate its intended purpose as an activity centre (Refer **Figure 5**). Pursuant to clause 4.1 of the LSP, land use permissibility is in accordance with the 'Commercial' zone under LPS 2.

3.3 Parkland Heights Neighbourhood Centre Local Development Plan 1

Clause 5.2 of the LSP requires the preparation and approval of an LDP prior to the subdivision and development of the 'Commercial' zoned land. Accordingly, LDP 1 for the PHNC was approved by the City of Rockingham in September 2019.

An amendment to the LDP was approved by the City on 21 June 2024, which incorporated modifications to the general layout of the Centre and the inclusion of an additional left turning pocket from Nairn Drive.

The Local Development Plan is the primary planning instrument that applies to the development of the site and comprises two key elements as follows:

1. The LDP map, which provides a spatial depiction of the general site layout. The LDP coordinates the distribution and location of key elements of the PHNC including the main street, building locations, car park locations, access points, loading docks, landscaping and pedestrian connectivity. The LDP responds to the sites context and manages the interface with both established and future residential uses. A copy of the LDP is provided at **Figure 2** above.

2. A list of development standards that prescribe built-form outcomes to be demonstrated at the development application stage.

Compliance with the LDP is set out in further detail under the 'Planning Assessment' heading below.

4. Planing Assessment

4.1 Land Use Permissibility

The subject site is identified within the City's Commercial Zone as per the applicable PHNC LSP.

LPS 2 sets out the following objective for the Commercial Zone;

> *The objective of the Commercial Zone is to provide for the development of District, Neighbourhood and Local shopping facilities to cater for the present and future residents of the Local Government consistent with the Local Government's Local Commercial Strategy and supported by any other Plan or Policy that the Local Government from time to time may adopt as a guide for the future development within the zone.*

The proposed development is defined as a 'Service Station' under LPS 2. A 'Service Station' is listed as a 'D' use within the Commercial zone.

In accordance with clause 3.2.2 of LPS 2, a 'D' use *"means that the use is not permitted unless the local government has exercised its discretion by granting approval."*

The proposed service station is consistent with the objective for the Commercial zone as will provide an essential service in a suitable location. The exercise of discretion is warranted as the proposed use is compatible with and complementary to the other land uses planned and approved for the PHNC.

The location of the service station is coordinated to ensure that service station traffic does not rely on the main street, with separate access to and from Nairn Drive and Furnivall Parade. It will encourage multi-purpose trips and offer an improved level of service for visitors and the community.

4.2 Parkland Heights Neighbourhood Centre Local Development Plan 1

Table 1 below provides an assessment against the relevant LDP development standards.

Number	Development Standard	Design Compliance Response
1 - 3	Main Street	· The proposal does not abut the main street and seamlessly integrates with previous approvals for the main street and abutting buildings. · Access and vehicle movement associated with the proposed development is designed to avoid interaction with the main street to mitigate additional vehicle movements through pedestrian-oriented elements of the PHNC.
4 - 8	Active Building Edges	· The LDP does not designate any 'Active Building Edges' for the development. · A 'Secondary Building Edge' is identified facing Furnivall Parade and as such, has been designed to provide visual relief through a site responsive design, as discussed below.
9	Other Building Facades	· The floor level of the convenience store will be below the adjoining street level in response to the sloping topography of the site. · The PHNC is a 'main street' activity centre and as such, the LDP coordinates and focuses on land uses and built form that will activate the main street. The peripheral pad sites are not expected nor intended to activate the external edges of the PHNC rather, the LDP seeks to ensure that the street presentation is of a suitable standard and avoids outcomes such as blank walls. · In response to building interface requirements of the LDP, the visual presentation of the convenience store is enhanced, and blank walls avoided through the use of decorative grooves and a painted finish. In addition, the northern elevation includes clear glazing to break up the façade and provide some activation and surveillance to Furnivall Parade.
10 - 11	Vehicle access	· All intersection locations and treatments are consistent with the LDP.
12 - 13	Pedestrian access	· The proposed development does not abut the main street, however connections to the footpath within the adjoining verge is provided from the corner of Furnivall Parade and Nairn Drive. Additional pedestrian access from Furnivall Parade is provided via a ramp between the future pad site to the west. Pedestrian movement within the PHNC will be coordinated by the LDP and delivered as part of the staged development of future pad sites.
14 - 17	Landscaping	A comprehensive Landscape Plan was lodged with Stage 1 which demonstrates the following in accordance with the LDP: · >2m wide landscape buffers framing the proposed development. · A combination of trees, shrubs and ground cover is proposed adjoining all car park areas. · Approximately 4,730m² of landscaping is proposed within the site inclusive of Stage 1, equating to 9.3% of the total site. This excludes future landscaping within subsequent stages which once included, will easily satisfy the minimum 10% requirement. · An updated landscaping plan is expected as a condition of approval to ensure the landscaping design is updated to reflect the final street interface consistent with the LDP and principles established by the overarching landscape plan (refer **Attachment 3**).
18 - 20	Potential Residential Precinct	No development is proposed within the 'Potential Residential Precinct'. This area will form part of a future stage and will be subject to a separate development application.
21 - 22	Noise Management	An Acoustic Assessment accompanies this application and is discussed in further detail under the corresponding heading below.
23	Staging	The proposed staging is consistent with the LDP.
Notes	LDP Map	· The spatial layout and configuration of the proposed service station are entirely consistent with the LDP. · The location and sizing of the car parks is also consistent with the LDP.
	Main Street cross-section	The proposal does not abuts the main street rendering this development standard irrelevant.
	Visual sightlines	Clear sightlines are maintained at the corners of intersecting carriageways in accordance with the LDP.
	Parking	The site plan confirms the numbers of parking bays, with 21 bays proposed. Parking is discussed in further detail under the respective heading below.
	Stormwater	Stormwater will be managed in accordance with the addendum to the Parkland Heights LWMS specifically, underground storage cells will be installed within carparks and landscaped areas. Adequate unencumbered space exists on the site to accommodate the necessary underground drainage infrastructure. Specific details regarding the sizing and location of underground cells will be detailed as part of the building permit process.
	Intersection treatments	All intersections treatments are consistent with the LDP. Detailed designs for left in access from Nairn Drive is provided as part of this application (Refer **Attachment 4**).
	Landscaping and trees	A comprehensive Landscape Plan was lodged with Stage 1 which incorporated the landscaping of the north-east corner. This will be updated as a condition of approval to ensure that the proposed landscaping meets the City's requirements and reflects the current site layout.

***Table 1**: Local Development Plan Key Development Standards*

4.3 Transport & Movement

A consolidated Traffic Impact Assessment (TIA) was prepared by Transcore for the Stage 1 development application (Refer **Attachment 5**). For completeness, the previous TIA considered traffic generation, movement and parking for the pad sites, notwithstanding the fact that the Stage 1 application did not seek approval for them. This ensured a holistic, robust approach to the traffic analysis and accounted for the potential traffic impact of the pad sites.

To supplement the extensive traffic analysis already undertaken, a technical note has been prepared by Transcore to reflect the latest layout, land uses and traffic forecasts (Refer **Attachment 6**).

As outlined above, the previous TIA included the proposed service station land use, and the technical note is prepared as an update, rather than addressing an entirely new proposal. The technical note addresses the following updates:

- Revised trip generation based on the latest floor space figures.
- The inclusion of a drive-thru for the pad site at the northern end of the main street (not part of this development application but included in the holistic traffic analysis).
- The left in driveway from Nairn Drive.
- Modelling of the 'ultimate build out' scenario depicted on the LDP. The DPLH requested that this be provided at the development application stage as part of their submission on the LDP proposal to obtain 'left in' access from Nairn Drive.
- Updated SIDRA analysis based on the above.

The proposed development incorporates an additional access point with a 75m long left turn deceleration lane to allow a left turn in only driveway from Nairn Drive. This will provide direct and improved access to the service station, particularly for fuel tankers delivering to the site.

Overall, the traffic analysis indicates that all key intersections and driveways around the site will operate satisfactorily under the projected future traffic flows with full development of the PHNC.

4.4 Parking

Table 2 below provides a breakdown of the parking requirements under LPS 2, demonstrating compliance with the relevant standards.

Use	Ratio	Area / Number	Parking Requirement	Parking Proposed
Service Station	1 bay per service bay	6 service bays	6 bays	6 service bays
	1 bay per employee	3 employees	3 bays	3 employee bays
	6 bays per 100m² of NLA	200m² NLA	12 bays	11 standard bays + 1 ACROD bay
Total			**21 bays required**	**21 bays provided**

***Table 2**: Parking Assessment*

4.5 Noise

An Environmental Noise Impact Assessment has been prepared by Reverberate Consulting which covers the entire PHNC and was approved as part of the amended JDAP application for Stage 1 (Refer **Attachment 8**). This report was updated to include the potential noise emissions from the proposed 24/7 service station and demonstrates that the development is capable of being managed to comply with the *Environmental Protection (Noise) Regulations 1997* subject to the following mitigation measures:

- Service Station Loading Dock deliveries permitted 24/7. Shielding is required of these loading dock activities with an acoustically lined and covered dock.
- Fuel tanker and other general deliveries permitted between 7am – 7pm Monday to Saturday, and 9am – 7pm on Sundays and Public Holidays.
- Reversing trucks to be minimised to avoid the unnecessary activation of the reversing beeper.
- Refuse collection is to be carried out in the quietest reasonable and practicable manner.
- Equipment used for refuse collection is the quietest reasonably available.
- Collection of refuse to occur between 7am and 7pm Monday to Saturday, unless the contractor has a Noise Management Plan approved by Council.

Noise mitigation measures specific to the loading dock are as follows:

- Loading dock to have 3 solid sides, walls to be built from minimum 9 mm CF acoustic equivalent. Walls and roof to extend a minimum of 4.5m to cover the front half of the delivery truck, including the refrigeration unit.
- Refrigeration Unit can be left operating during deliveries.
- Roof to be a minimum of 0.6mm BMT corrugated weather resistant steel sheeting.
- All gaps and in walls, roof and junctions to be sealed air-tight.
- Acoustic lining required internally on the ceiling and the walls of the loading dock. Lining to be weather resistant, minimum NRC 0.90 acoustic rating.
- Perforated steel, 0.4mm BMT with minimum 11% open area may be used to gave the acoustic insulation for protection.
- Commercially available alternative acoustic lining materials include Reapor, Stratocell, Whisper and Acoustisor.

The proposed drawings that accompany the development application include a three-walled loading dock in accordance with the required mitigation measures, with the required building materials to be demonstrated at the Building Permit stage. All other potential noise associated with delivery vehicles and the loading dock will be managed in accordance with the requirements of the Environmental Noise Impact Assessment.

4.6 Waste Management

A Waste Management Plan has been prepared by Talis consultants to accompany the development application (Refer **Attachment 9**). This demonstrates that the proposal provides a sufficiently sized bin storage area for storage of refuse and recyclables based on the estimated waste generation and volumes for the proposed use. In summary, the proposal will require:

- Two 660L refuse bins, collected once each week; and
- Two 660L recycling bins, collected once each per week.

Waste is proposed to be collected by a private contractor via the loading bay, adjacent to the bin storage area. Other relevant waste management measures will be managed in accordance with the Waste Management Plan when in operation.

4.7 Emissions / Odour / Air Quality Assessment

An Emissions Impact Assessment has been prepared by EAQ Consulting to accompany the development application (Refer **Attachment 10**), demonstrating that the proposed location of the fuel bowsers will not have an impact on surrounding existing and future sensitive receptors. The report includes an assessment of toxic emissions and associated vapour emissions for the proposed land use. Vapour emission rates were assessed in accordance with the Brisbane City Council methodology levels which determined that with the utilisation of Vapour Recovery Phase 1 & 2 technologies, the assessed pollutants are below the guideline exposure standards at the nearest sensitive receptors. As a result, the Phase 2 vapour recovery technology that will be implemented in the operation of the proposed service station will mitigate against potential health impacts on existing and future sensitive receptors or sensitive land uses.

5. State Planning and Environmental Policies

5.1 State Planning Policy 4.2 – Activity Centres for Perth and Peel (SPP 4.2)

SPP 4.2 is primarily concerned with the establishment of an activity centre hierarchy to guide long-term planning, promote investment and ensure the community has access to services and amenities commensurate with typical shopper behaviour. It also provides high-level guidance for the planning and design both within and around activity centres.

The designation of Parkland Heights as a circa 10,000m² Neighbourhood Centre within the broader activity centre hierarchy is resolved by the City's 'Local Commercial Strategy' and the Parkland Heights LSP. Under this framework, the Parkland Heights role and function is planned as a large Neighbourhood Centre servicing the daily and weekly shopping needs of the community.

The spatial layout of the Centre and the design response to prevailing neighbourhood context is coordinated by the LDP as outlined above, which provides the primary planning instrument for assessment of the development application.

The objectives and provisions of SPP 4.2 are reflected in the discreet planning framework for the site which has been progressively developed in proper sequence - Local Commercial Strategy Amendment, LSP Amendment followed by preparation and approval of the LDP and approved Stage 1 development application for the majority of the PHNC.

5.2 Environment Protection Agency 'Guidance Statement for Separation Distances between Industrial and Sensitive Land Uses' (EPA Guidance Statement)

The EPA's Guidance Statement sets out generic separation distances between industrial and sensitive land uses to avoid the potential for land use conflict. A service station use is considered an industrial land use under the EPA Guidance Statement and is therefore required to be separated from sensitive land uses to reduce potential amenity impacts such as gaseous and particulate emissions, noise and odour.

Appendix 1 of the EPA Guidance Statement sets out a 50m generic buffer distance from sensitive land uses for service stations operating during normal hours (7.00am – 7.00pm) and a 200m generic buffer distance for a 24-hour service station. As all gaseous and odour impacts remain consistent when hours of operation increase, noise impacts are considered the trigger for the generic increase from 50m to 200m. The buffer distances are generic distances that may be applied as a guide in the absence of site-specific technical assessments.

Whilst the proposal does not meet the 200m generic buffer distance, a site specific, technical assessment has been undertaken with regard to potential noise, odour/gaseous and traffic impacts. These investigations demonstrate that the development has been appropriately designed and sited to mitigate any potential impacts on surrounding sensitive land uses. Accordingly, a lesser separation distance is acceptable.

5.3 State Planning Policy 7.0 – Design of the Built Environment (SPP 7.0)

Table 3 provides an assessment against the ten design principles of SPP 7.0:

Number	Design Principles	Response
1	Context & Character	· The proposed development will provide the surrounding residential community with a required service within a planned activity centre in an accessible location. · The floor level of the convenience store will be below the adjoining street level in response to the sloping topography, therefore responding to the context of the site. · The development responds to the relevant PHNC LDP which focuses land uses and built form activation to the main street. As a result, the development responds well to the street without taking activation away from the Main Street.
2	Landscape Quality	· The development includes landscaping surrounding the proposed development in accordance with the applicable LDP. · The proposed landscaping will integrate with the broader landscape plan for the PHNC, softening the building and enhancing the external presentation.
3	Built Form and Scale	· The built form, scale and height of the proposed development is consistent with the requirements of the LDP and is sympathetic to future land use context and the balance of the PHNC.
4	Functionality and Built Quality	· The development has been designed to provide user convenience with a left turn directly into the site from Nairn Drive. · The access into the site allows for the efficient movement of fuel tankers delivering to the fuel station. · The development incorporates a loading bay to ensure appropriate delivery of products for the convenience store and waste pickup.
5	Sustainability	· The proposal includes Vapour Recovery Phase 1 and 2 to reduce overall vapour emissions from the site.
6	Amenity	· The proposal includes technical reporting to demonstrate that the use will not impact upon the amenity of the locality in terms of noise, odour and emission impacts.
7	Legibility	· The development has been designed to provide good legibility with a left turn in from Nairn Drive directly into the site. · There is adequate space within the site for fuel trucks and vehicle manoeuvring.
8	Safety	· The 24/7 nature of the service station will maximise opportunities for casual surveillance over the site. · Appropriate lighting and CCTV will also be installed across the site as required to ensure safety of service station users.
9	Community	· The service station will provide a necessary service to the surrounding local community. · The associated convenience store will provide access to convenience goods at all hours, consistent with contemporary expectations.
10	Aesthetics	· The proposed development is designed in accordance with standard 7 Eleven developments which will provide quality building materials and features. · The proposed landscaping will also result in an attractive setting for the development.

***Table 3**: Design Principles*

6. Local Planning Policies

6.1 Planning Policy 3.1.2 – Local Commercial Strategy (PP 3.1.2)

PP 3.1.2 identifies Parkland Heights as a 'Neighbourhood Activity Centre'. Neighbourhood Centres are planned to service an approximate catchment of 5,000 to 20,000 residents with a typical floorspace provision of 4,500m² to 10,000m². The Parkland Heights Neighbourhood Centre's size and layout is resolved via the LSP and LDP which have informed the detailed design proposed by this development application.

6.2 Planning Policy 3.3.1 - Control of Advertisements (PP 3.3.1)

The proposed development incorporates two 7m high monolith signs to display fuel price information adjacent to both Nairn Drive and Furnivall Parade. Two monolith signs are critical for the successful operation of the service station given it's corner location and access from two separate street frontages. Both Furnivall Parade and Nairn Drive are higher order roads carrying through traffic, and signage to each will facilitate easier wayfinding and inform passing traffic of fuel prices.

PP 3.3.1 sets out development controls for advertisements and signage within the City and is therefore applicable to the proposal. The proposed signage does not meet the exemption criteria within **Table 1** of PP 3.3.1 applicable to monolith signs as it exceeds 6m in height as well as a Pylon sign already being approved for the PHNC along Nairn Avenue and therefore the signs require approval. Section 4.3 of PP 3.3.1 sets out assessment criteria for proposed advertisements/signage. An assessment against this criteria is provided within **Table 4** which demonstrates the proposed monolith signs adequately address the advertising controls of PP 3.3.1 and should therefore be supported as part of the overall 7 Eleven development.

PP 3.3.1 Advertising Controls	Proposed Signage
Advertisements is not to be, in the opinion of the Local Government, objectionable, dangerous or offensive.	· The signage is for the display of fuel prices, which is a standard delivery as part of a service station development. · The signage is not objectionable, dangerous or offensive.
Advertisements are to be appropriate to the locality in terms of the number of advertisements, size, prominence, visual impact, colour, content and relevance to the property upon which it is located.	· The signs are proposed along both street frontages where the service station development is located. · The signage relates to the proposed service station use on the site and are consistent with the colours of the proposed building and standard 7 Eleven signage. · The signage is not considered to have an undue impact on the amenity of the locality and will be complementary to the existing approved signage for the overall PHNC. · The signs are designed in a way that ensures vehicles are able to read the content of the sign panels without any visual impact to the surrounding amenity, traffic circulation or pedestrian safety.
Advertisements shall be commensurate to the size of the buildings/ structures on the lot and in the immediate locality and be complementary to its surrounds.	· The signage is 7m tall which is standard height for this form of signage. · The structures sit slightly above the height of the proposed convenience store given the site levels at the site. · Despite this the signage is complementary to the surrounds with the signs not exceeding the size of the main neighbourhood centre access centre pylon signs as approved within the relevant signage strategy for the PHNC.
High-quality third-party advertising will only be supported where the advertisement: a) Relates to Government, sporting or community organisations; b) Provides direction to a location that the local government deem is necessary or appropriate to have off site directional signage; or c) Is part of a contractual arrangement with the City and in accordance with an adopted Strategy, such as an illuminated sign, bin or bus shelter.	· No third-party advertising proposed as part of the application.
Illuminated advertising shall be designed to comply with the relevant Australian Standard regarding the control of the obtrusive effects of outdoor lighting and designated to minimise light overspill and impacts of lighting particularly to nearby residential properties.	· The signage will be illuminated as is standard for service station signage. · All signage will be in accordance with the Australian Standards to ensure there is no glare or light spill that will adversely impact the nearby future sensitive land uses. This can be controlled via a condition of approval.
If deemed required by the Local Government, digital signage shall be accompanied by a lighting impact assessment and road safety assessment and such reports given due consideration in determining the application to ensure that amenity and traffic safety is not adversely impacted.	· A lighting impact assessment is not considered necessary given the light impact will be contained within the road reserve and development site and therefore will have minimal impact on surrounding residential land uses.
Where the advertisement is located on a heritage protected place, the applicant is to demonstrate that the advertisement does not unreasonably detract from the architectural and setting characteristics of the heritage protected place.	· The signage is not located on a heritage protected place.
Signage shall not have undue adverse impact on: · The amenity of the locality, including residential and/or rural amenity; · The visual amenity and/or character of the locality; · Other advertisements; · Pedestrian or vehicle safety; or · Other land uses.	· The signage responds well to the surrounding site with signage along the two street frontages, providing ease of viewing from vehicles along both streets. · The signage will not impact upon pedestrian or vehicle safety or other advertisements or signage within the neighbourhood centre. · The signage is relative to the scale of the neighbourhood centre and the proposed service station and is not considered to have an undue visual impact on the surrounding locality. · The signage is located on high traffic roads within a commercial zone where amenity impacts are proliferated. The signage is therefore not considered to have an increased amenity impact on surrounding future and existing land uses.

***Table 4**: Assessment Against PP 3.3.1*

7. Conclusion

This application seeks development approval for a proposed 7 Eleven Service Station at the PHNC. The application comprehensively addresses the applicable planning framework, demonstrating compliance with the relevant development controls and consistency with broader strategic objectives. Operational matters such a traffic, parking, noise and emission/odour have been addressed within the design of the development in order to manage any potential impacts to surrounding sensitive land uses. The proposal will provide an essential service for the surrounding community in a location that is easily accessible and well coordinated within the PHNC.

Attachments

Attachment 1: Development Plans

Attachment 2: Certificate of Title

Attachment 3: Overall Landscape Plan

Attachment 4: Detailed Intersection Designs

Attachment 5: Transport Impact Assessment

Attachment 6: Transport Impact Assessment Technical Note

Attachment 7: Swept Path Diagrams

Attachment 8: Environmental Noise Impact Assessment

Attachment 9: Waste Management Plan

Attachment 10: Emissions Impact Assessment

Attachment 1

Development Plans

PARKLAND HEIGHTS NEIGHBOURHOOD SHOPPING CENTRE

SERVICE STATION PAD SITE DEVELOPMENT APPLICATION

INDICATIVE VIEW FROM CORNER OF FURNIVALL PARADE AND NAIRN DRIVE

DRAWING LIST

NO	NAME
SD-3-00	COVER SHEET
SD-3-01	PERSPECTIVES
SD-3-02	SURVEY PLAN
SD-3-03	SITE PLAN
SD-3-04	PROPOSED GROUND FLOOR PLAN
SD-3-05	PROPOSED ELEVATIONS & SECTION

PARKLAND HEIGHTS

COVER SHEET
PARKLAND HEIGHTS SHOPPING CENTRE

Status: DEVELOPMENT APPLICATION

Scale: NTS

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Project Number: 44857
Drawing Number: SD-3-00
Revision: B
Date: 19/06/24

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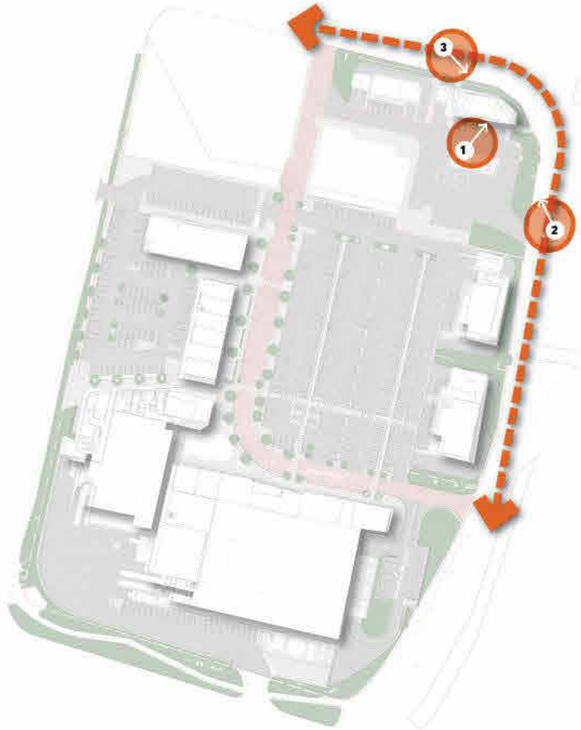
ARTIST IMPRESSION ONLY

1



2

3

PARKLAND HEIGHTS

PERSPECTIVES

PARKLAND HEIGHTS SHOPPING CENTRE

Status: DEVELOPMENT APPLICATION

Scale: NTS

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Project Number:	**44857**
Drawing Number:	**SD-3-01**
Revision:	B
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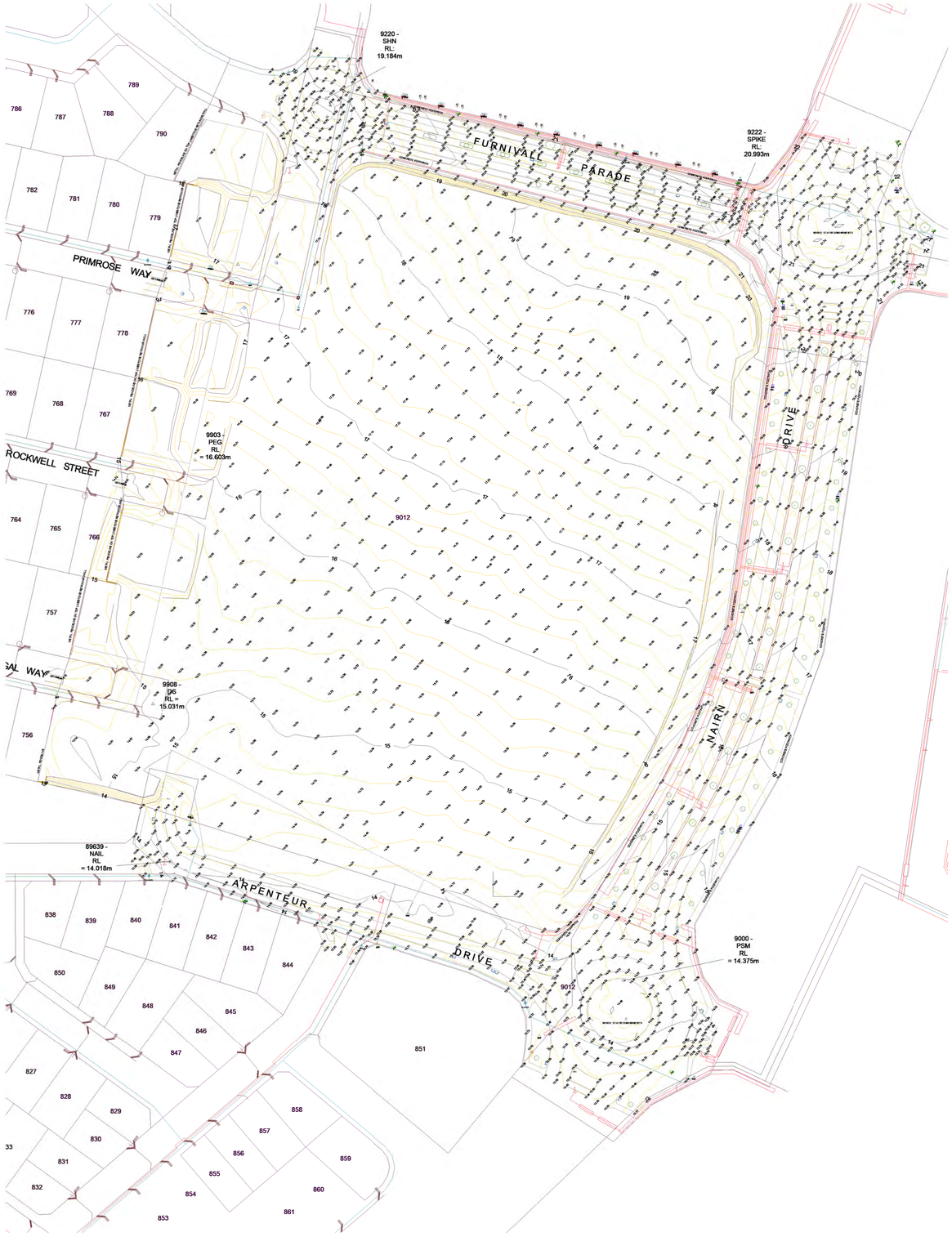

1 EXISTING FEATURE SURVEY
1 : 1000

SURVEY LEGEND

ROAD FEATURES
- Traffic Junction Box
- Traffic Signals - 1 Aspect
- Traffic Signals - 2 Aspect
- Traffic Signals - 3 Aspect
- Traffic Signals - 4 Aspect
- Pedestrian Signals
- Signs On One Pole
- Sign Multiple Poles
- Overhead Sign
- Traffic Controller Box
- Finger Sign
- Traffic Earth Pit
- Police Traffic Camera
- Guide Post
- Km Marker
- Traffic Count

ELECTRICAL
- Earth Pit
- Electricity Pillar
- Electrical Dome
- Light Pole - Directional
- Power Pole
- Transformer Single Pole
- Stay Pole
- Steel Wire Anchor
- High Mast Lighting
- Electrical Cable Marker
- MRWA Cable Marker
- MRWA Electrical Cable Box
- Electrical Cable Pit/Box
- MRWA Distribution Board
- High Tension Power Pole
- Electrical Supply Pole
- Ground Floodlight
- MRWA Electrical Manhole
- Meter Box
- Power Meter Box
- Electrical Transformer
- MRWA Light Pole
- MRWA Multiple Light Pole

COMMUNICATION
- Telstra Pit
- Telstra Pillar
- Telstra Marker
- Telstra Pole
- Telephone Booth
- Emergency Phone
- Antenna
- Telstra Elevated Joint
- Cable Marker (Optus)
- Telstra Tower
- Communication Manhole

WATER
- Water Meter
- Water Stop Valve
- Hydrant (Ground Level)
- Hydrant (Pillar)
- Water Bore
- Stand Pipe
- Reticulation Sprinkler
- Reticulation Control Valve
- Well
- Water Main Marker
- Water Tap
- Flushing Point
- Air Valve
- Purpomatic
- Hydrant Booster Box

GAS
- Gas Marker
- Gas Valve
- Gas Test Valve
- LPG Tank
- Gas Test Pit
- Gas Manhole

DRAINAGE
- Invert Level
- Dish Level
- Flood Level
- Water Line
- Flood Level Indicator
- Storm Water Grate
- Drainage Gully
- Drainage Manhole
- Drainage Headwall

SEWER
- Sewer Vent
- Sewer Line Marker
- Sewer Inspection Shaft
- Sewer Inspection Opening
- Sewer Manhole

RAIL
- Rail Traffic Signals
- Rail Traffic Control Box
- Rail Telephone Box
- Rail Cable Pit
- Rail Cable Marker
- Rail SLK Post
- Marmale - Rail Cable

STRUCTURE
- Deck Level
- Face Level
- Column Centre

GENERAL
- Clothes Hoist
- Air Conditioner
- Market Link/Undefined
- Undefined Manhole
- Control Of Access Sign
- Count Station
- Advertising Sign
- Windmill
- Stock Trough
- Litter Bin
- Mail Box
- Parking Meter
- Bus Stop
- Ticket Machine
- Borehole
- Flag Pole
- Bollard
- Fuel Bowser
- Underground Filler
- Diesel Tank
- Oil Main Marker
- Security Post
- Tank

GROUND FEATURES
- Natural Surface
- Aerial Survey Marker

VEGETATION
- Tree Details - Canopy & Trunk
- Tree 0.1m>0.3m Trunk Diameter
- Tree 0.3m>0.5m Trunk Diameter
- Tree 0.5m>1.0m Trunk Diameter
- Tree > 1.0m Trunk Diameter
- Bush
- Dia Back Area - Marker
- Nesting Tree
- Tree Trunk / Stump
- Grass Tree

SURVEY CONTROL
- Star Iron Picket
- Trig Point
- SSM
- Bench Mark
- Photo Point
- Cadastral Peg/Post
- Reference Peg
- Alignment Control
- Spring Head Nail
- Spike
- TBM
- Peg Placed / Found

ROAD FEATURES
- Edge Of Bitumen
- Road Shoulder
- Edge Of Unsealed Road
- Ctn Road
- Centre Of Road
- Kerb Top
- Kerb Bottom
- Cattle Grid
- Centre Of Driveway
- Edge Of Driveway
- Pedestrian Ramp
- Pedestrian Crosswalk
- Track
- Parking Bay
- Line Markings: 1m Line & 1m Gap
- Line Markings: 1m Line & 3m Gap
- Line Markings 3m Line & 9m Gap
- Lane Marking (dim"3m GAP)
- Lane Markings - Audible
- Shared Pathway - Guide Line 500mm*300mm GAP
- Footpath/Shared Path - Give Way 200mm*200mm GAP
- Giveaway/Hold/Turn Lines 600mm*600mm GAP
- Double Barrier Line
- Overtaking Lane Left
- Overtaking Lane Right
- Single Solid Line
- Arrow Straight
- Arrow Straight/Left
- Arrow Straight/Right
- Arrow Left
- Arrow Right
- Arrow 3 Way
- Arrow Right & Left
- Arrow U-Turn
- Arrow Merge
- Painted Lettering On Seal
- Painted Bicycle Traffic Signal Decaltor
- Guardrail - W Beam
- Guardrail - Thrie
- Barrier Concrete
- Barrier Steel Rope
- Barrier - Single Rail
- Barrier - Double Rail
- Barrier Triple Rail
- Bridge Barrier - (All Types)
- Bridge Expansion Joints
- Bridge - Outside Of Deck
- Soffit String

STRUCTURE
- Bridge
- Abutment
- Culvert
- Piers
- Underpass
- Ramp
- Steps/Stairs
- Edge Of Concrete
- Bus Shelter
- Memorial
- Ruin
- Building / Structure
- Awning
- Shed
- Verandah
- Door Opening
- Window
- Roof Gutter Line
- Roof Ridge Line
- Top Of Wall
- Brick Wall
- Concrete Wall
- Livestock Grid

GENERAL
- Swimming Pool
- Tank Perimeter
- Mine Shaft
- Mine Workings
- Krasso Logging Fence
- Fence/Gate
- Wall
- Top Of Barrier / Wall etc
- Retaining Wall
- Boundary Line
- Firetpath
- Gas Cylinder/Tank
- Brick Paving
- Bike Rack
- Bench Seating
- Hatchtail

GROUND FEATURE
- 10 Major Contour
- Minor Contour
- Bank Bottom
- Bank Top
- End Of Levels
- Levee Top
- Levee Bottom
- Back Outcrop
- Ridge Line
- Borrow Pit
- Earthworks Area
- Ground Subsidence
- Rock Pitching

VEGETATION
- Tree Line/Canopy
- Bush Line
- Hedge
- Garden Bed
- Lawn Area
- Vineyard
- Plantation
- Orchard
- Nursery
- Market Garden
- Recreational Area
- Trunk Circumference Circle
- Tree-line Face Of Trunks

CADASTRAL
- VNG Precal/Re Established
- SCDB) - State Cadastral Data Base
- Cadastre By Others

ELECTRICAL
- Varible Message Sign
- Electrical Structure Sking
- Overhead Powerlines - Null Height
- Overhead Powerlines - True Height
- High Tension Power Lines - Null Height
- High Tension Power Lines - Trunl Height

COMMUNICATION
- Unidentified Service Pit
- Telstra Cable
- Aircom-Cable

WATER
- Water Pipe

GAS
- Gas Line

DRAINAGE
- Drainage Pipe
- Drainage Culvert
- Floodway
- Drain
- Edge Of Drain
- Sump
- Waters Edge
- Swamp
- Dam
- Edge Of Creek/Water
- Centre Of Channel
- Wet Area
- Flood Level Line
- Waterways Cross Section

SEWER
- Sewer Pressure Main
- Sewer Pipe

RAIL
- Railway Platform
- On Rail
- Rail Boom Gate
- Rail Underground Cable
- Dual Gauge Rail
- Narrow Gauge Rail
- Cross Sekon - Rail
- Standard Gauge Rail
- Rail U/G Cable

UNDERGROUND SERVICES

UNDERGROUND SERVICES - DIRECT MEASUREMENT - CLASS A
- (PGX) Underground Arcoon/Vocus Cable
- (PGD) Underground Drainage Pipe
- (PDE) Underground Electrical Cable
- (PDP) Underground Western Power Comms
- (PGG) Underground Gas Line
- (PGM) Underground MRWA Comms
- (PGL) Underground MRWA Power
- (PGJ) Underground NBN Comms
- (PGK) Underground TPG /Pipe Networks
- (PGO) Underground Nbn Gen Comms
- (PGO) Underground Optus Fibre_Optic
- (PGT) Underground Optus Copper
- (PGR) Underground Rail Services
- (PGS) Underground Sewer Pipe
- (PGT) Underground Telstra Copper
- (PGU) Underground Unknown Service
- (PGV) Underground Telstra Optic_Fibre
- (PGW) Underground Water Pipe
- (PGZ) Underground Reticulation Pipe

MAIN ROADS - SURFACE LOCATION - CLASS B
POINT MEASURED AT GROUND LEVEL DIRECTLY ABOVE TRACED SERVICE
- (AAC) (AAD) AMCOM/VOCUS Cable - Surface Location
- (ABC) (ABD) Drainage Pipe / Stormwater - Surface Location
- (AEC) (AED) Electrical Cable - Surface Location
- (AFC) (AFD) Western Power Communication - Surface Location
- (AGC) (AGD) Gas Line - Surface Location
- (AMC) (AMD) MRWA Communication - Surface Location
- (ALC) (ALD) MRWA Power - Surface Location
- (ANC) (AND) Underground NBN Fibre - Surface Location
- (APC) (APD) Underground TPG/Pipe Networks Surface Location
- (ARC) (ARD) Nbn/ Gen Communication - Surface Location
- (ASC) (ASD) Optus Optic_Fibre - Surface Location
- (ATC) (ATD) Optus Copper - Surface Location
- (AWC) (AWD) Rail Services - Surface Location
- (AXC) (AXD) Sewer Pipe - Surface Location
- (AYC) (AYD) Telstra Copper - Surface Location
- (AZC) (AZD) Unknown Service - Surface Location
- (BBC) (BBD) Telstra Optic_Fibre - Surface Location
- (BCC) (BCD) Water Pipe - Surface Location
- (BDC) (BDD) Reticulation - Surface Location
- (PUS) Located Point Using Indirect Measure

MAIN ROADS - UNVERIFIED, NO MEASUREMENT (SKYD COMPILED - CLASS C AND D)
- (GA) AMCOM/VOCUS Cable - Unverified, No Measurement
- (GC) Drainage Pipe / Stormwater - Unverified, No Measurement
- (GE) Electrical Cable - Unverified, No Measurement
- (GF) Western Power Communication - Unverified, No Measurement
- (GG) Gas Line - Unverified, No Measurement
- (GM) MRWA Communication - Unverified, No Measurement
- (GL) MRWA Power- Unverified, No Measurement
- (GJ) Underground NBN Comms - Unverified, No Measurement
- (GK) Underground TPG/Pipe Networks - Unverified, No Measurement
- Nnet Gen Communication - Unverified, No Measurement
- (GO) Optus Optic_Fibre - Unverified, No Measurement
- (GP) Optus Copper - Unverified, No Measurement
- (GT) Telstra Copper - Unverified, No Measurement
- (GV) Telstra Optic_Fibre - Unverified, No Measurement
- (GR) Rail Services - Unverified, No Measurement
- (GS) Sewer Pipe - Unverified, No Measurement
- Unknown Service - Unverified, No Measurement
- (GW) Water Pipe - Unverified, No Measurement
- Reticulation - Unverified, No Measurement

PARKLAND HEIGHTS

SURVEY PLAN
PARKLAND HEIGHTS SHOPPING CENTRE

Status: DEVELOPMENT APPLICATION

Scale: 1:1000 @ A1
0 80
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North:

Project Number:	**44857**
Drawing Number:	**SD-3-02**
Revision:	A
Date:	17/05/2024

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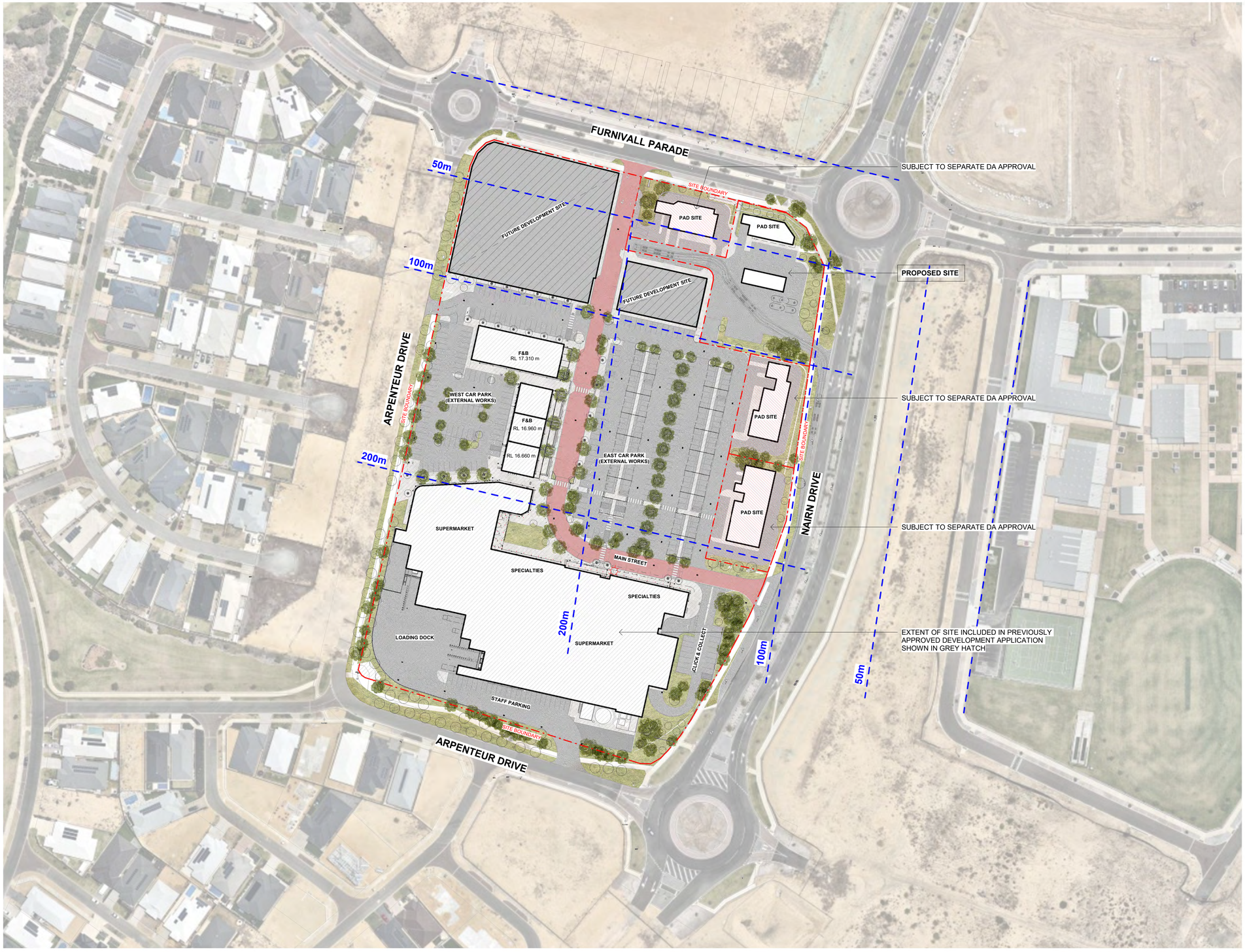

DEVELOPMENT SUMMARY

RETAIL AREA	**200m²**
SERVICE STATION	200m²

CAR PARKING

NEW BAYS PROVIDED	**21 BAYS**
STANDARD BAYS	15
QUEUEUING BAYS	6

PARKLAND HEIGHTS

SITE PLAN

PARKLAND HEIGHTS SHOPPING CENTRE

Status: DEVELOPMENT APPLICATION

Scale: 1:1000 @ A1

0 80

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Drawing Number:	**SD-3-03**
Revision:	B
Date:	11/06/2024

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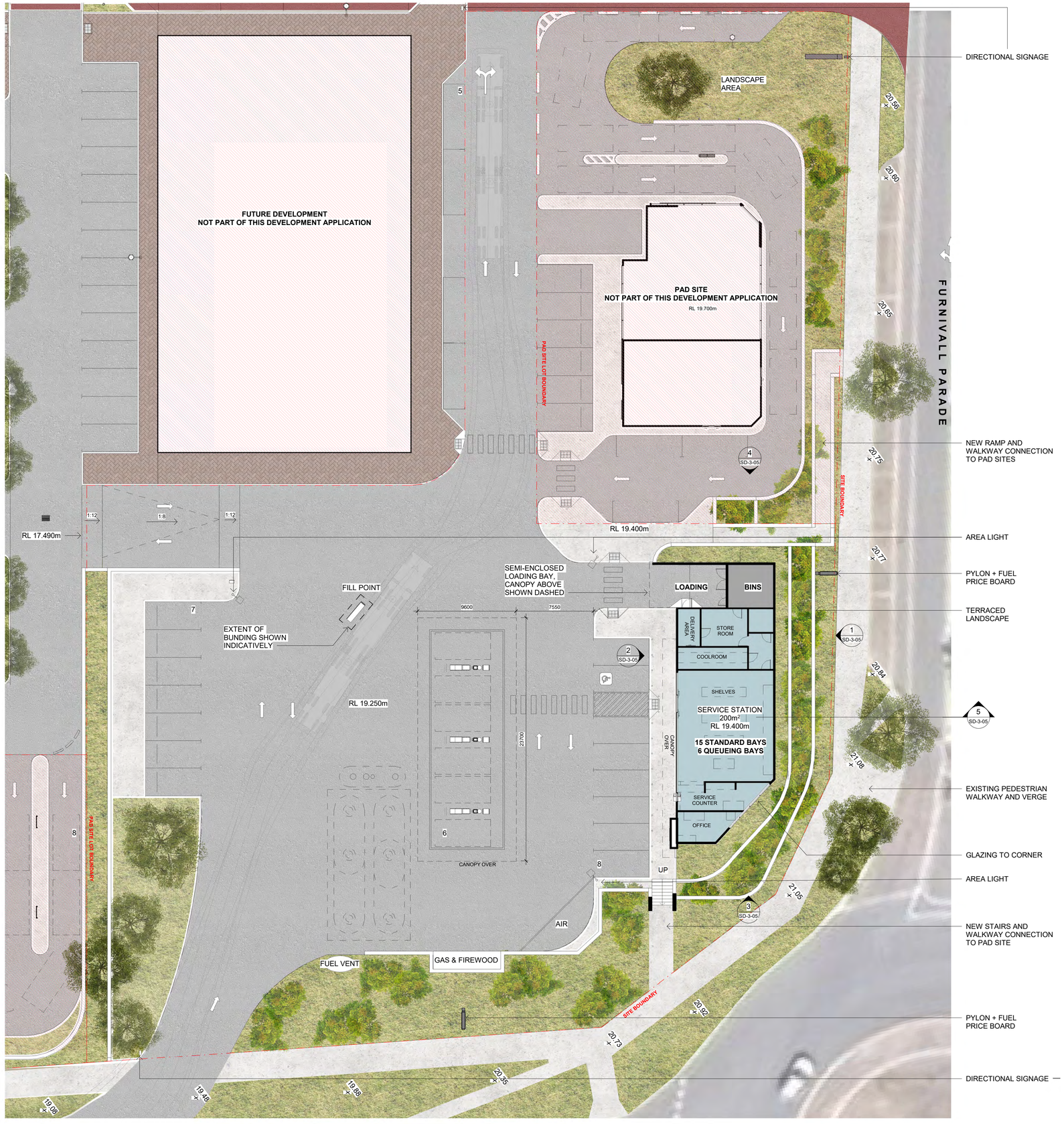

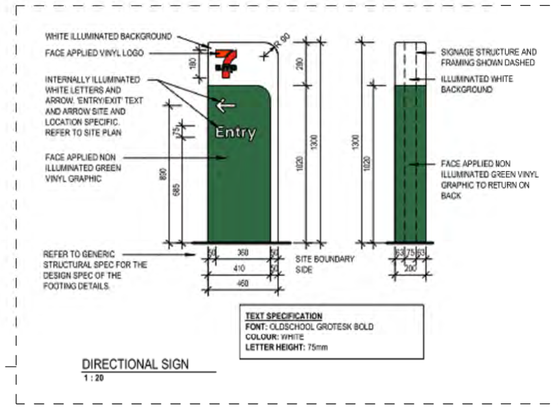

PARKLAND HEIGHTS

PROPOSED GROUND FLOOR PLAN

PARKLAND HEIGHTS SHOPPING CENTRE

Status: DEVELOPMENT APPLICATION

Scale: 1:200 @ A1

0 16

North:

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Project Number: 44857
Drawing Number: SD-3-04
Revision: D
Date: 19/06/24

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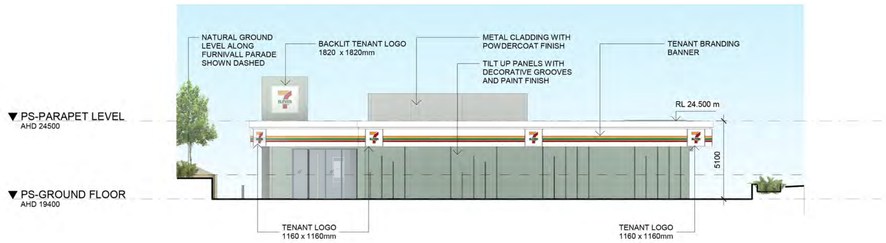
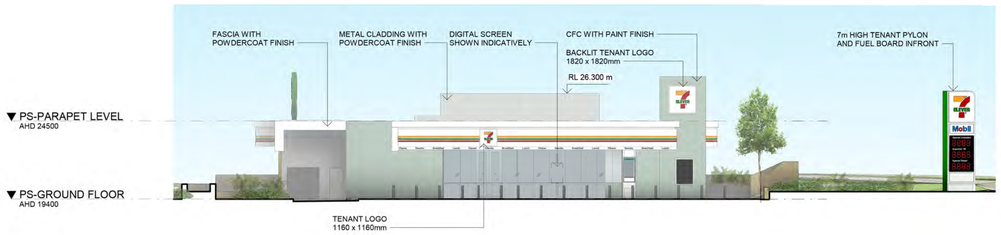
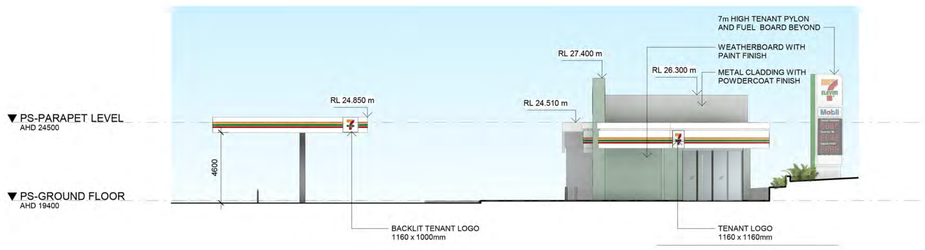


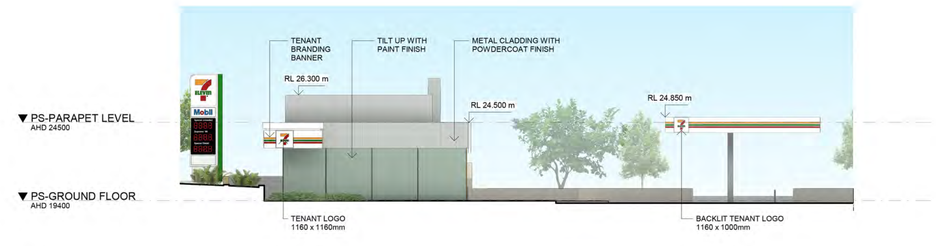
1 NORTH ELEVATION
1 : 200



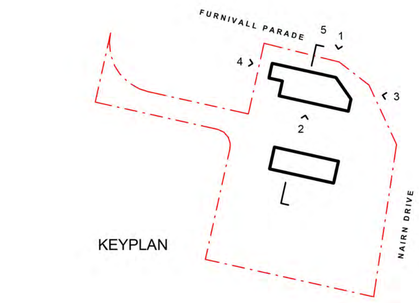
2 SOUTH ELEVATION
1 : 200



3 EAST ELEVATION
1 : 200



4 WEST ELEVATION
1 : 200

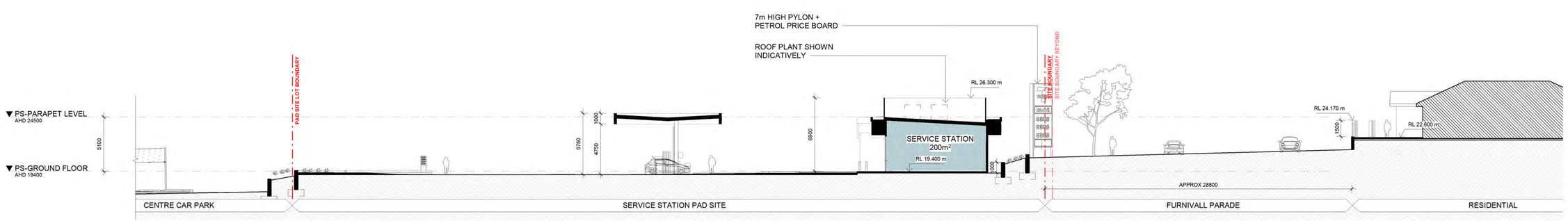


KEYPLAN

METAL CLADDING WITH POWDERCOAT FINISH

TILT-UP PANELS WITH DECORATIVE GROOVES AND PAINT FINISH

CFC WITH SAGE MONICA PAINT FINISH



5 PAD SITE - SITE SECTION
1 : 200

PARKLAND HEIGHTS

PROPOSED ELEVATIONS & SECTION

PARKLAND HEIGHTS SHOPPING CENTRE

Status: DEVELOPMENT APPLICATION

Scale: 1:200 @ A1

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Project Number: 44857
Drawing Number: SD-3-05
Revision: E
Date: 26/08/2024

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Attachment 2

Certificate of Title

WESTERN AUSTRALIA

TITLE NUMBER	
Volume	Folio
4043	**987**

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

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

BGRoberts

REGISTRAR OF TITLES

REGISTRAR OF TITLES WESTERN AUSTRALIA

LAND DESCRIPTION:

LOT 9018 ON DEPOSITED PLAN 426041

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

ROCKINGHAM PARK PTY LTD OF 242 LEACH HIGHWAY MYAREE WA 6154
(AF P772485) REGISTERED 1/11/2023

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

1. L866767 EASEMENT TO ELECTRICITY NETWORKS CORPORATION FOR ELECTRICITY PURPOSES - SEE DEPOSITED PLAN 426041 REGISTERED 24/2/2012.
2. EASEMENT BURDEN CREATED UNDER SECTION 167 P. & D. ACT FOR ELECTRICITY SUPPLY PURPOSES TO ELECTRICITY NETWORKS CORPORATION - SEE DEPOSITED PLAN 426041 AS CREATED ON DEPOSITED PLAN 74698
3. EASEMENT BURDEN CREATED UNDER SECTION 167 P. & D. ACT TO NBN CO LIMITED FOR TELECOMMUNICATIONS SUPPLY SERVICES - SEE DEPOSITED PLAN 426041 AS CREATED ON DEPOSITED PLAN 74698
4. EASEMENT BURDEN CREATED UNDER SECTION 167 P. & D. ACT FOR DRAINAGE/IRRIGATION/WATER SUPPLY/SEWERAGE PURPOSES TO WATER CORPORATION - SEE DEPOSITED PLAN 426041 AS CREATED ON DEPOSITED PLAN 400283
5. EASEMENT BURDEN CREATED UNDER SECTION 167 P. & D. ACT FOR DRAINAGE/SEWERAGE PURPOSES TO LOCAL AUTHORITY - SEE DEPOSITED PLAN 426041 AS CREATED ON 406822
6. EASEMENT BURDEN CREATED UNDER SECTION 167 P. & D. ACT FOR DRAINAGE/IRRIGATION/WATER SUPPLY/SEWERAGE PURPOSES TO WATER CORPORATION - SEE DEPOSITED PLAN 426041 AS CREATED ON DEPOSITED PLAN 406822
7. EASEMENT BURDEN CREATED UNDER SECTION 167 P. & D. ACT FOR ELECTRICITY SUPPLY PURPOSES TO ELECTRICITY NETWORKS CORPORATION - SEE DEPOSITED PLAN 426041 AS CREATED ON DEPOSITED PLAN 406822
8. EASEMENT BURDEN CREATED UNDER SECTION 167 P. & D. ACT FOR DRAINAGE/IRRIGATION/WATER SUPPLY/SEWERAGE PURPOSES TO WATER CORPORATION - SEE DEPOSITED PLAN 426041 AS CREATED ON DEPOSITED PLAN 417866
9. EASEMENT BURDEN CREATED UNDER SECTION 167 P. & D. ACT FOR ELECTRICITY SUPPLY PURPOSES TO ELECTRICITY NETWORKS CORPORATION - SEE DEPOSITED PLAN 426041 AS CREATED ON DEPOSITED PLAN 417866

END OF PAGE 1 - CONTINUED OVER

LANDGATE COPY OF ORIGINAL NOT TO SCALE 30/04/2024 09:34 AM Request number: 66529608

Landgate
www.landgate.wa.gov.au

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

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

STATEMENTS:

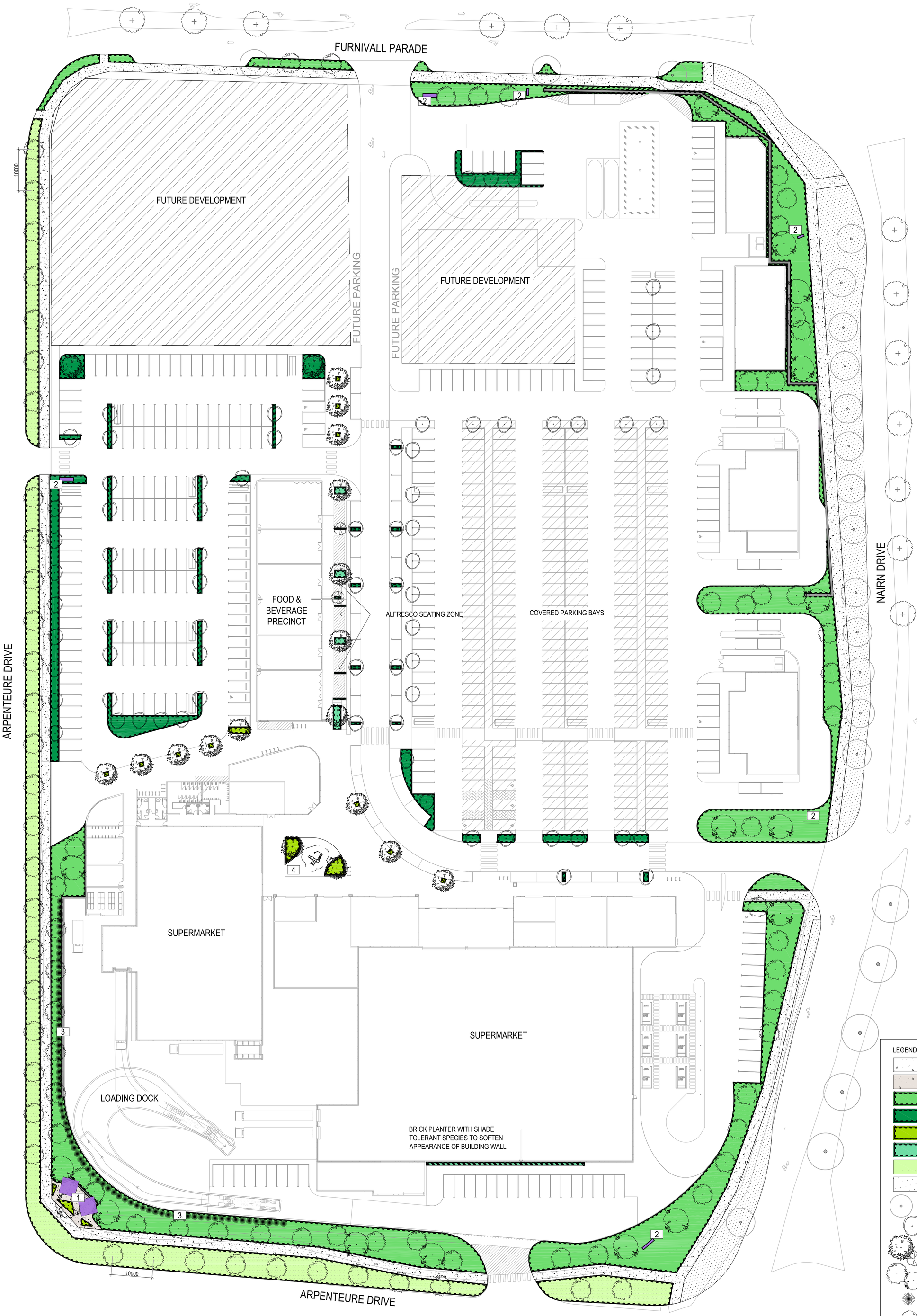
The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND:	DP426041
PREVIOUS TITLE:	4042-921
PROPERTY STREET ADDRESS:	NO STREET ADDRESS INFORMATION AVAILABLE.
LOCAL GOVERNMENT AUTHORITY:	CITY OF ROCKINGHAM

NOTE 1: P958819 DEPOSITED PLAN 427796 LODGED
NOTE 2: P959300 DEPOSITED PLAN 427841 LODGED

Attachment 3

Overall Landscape Plan



LEGEND:

- EXTERNAL FOOTPATH
- FEATURE CONCRETE
- VERGE PLANTING MIX
- CARPARK PLANTING MIX
- FEATURE PLANTING MIX
- RAISED PLANTER MIX
- PROPOSED TURF TO VERGE
- EXISTING NAIRN DRIVE TURF - TO BE REINSTATED WHERE REQUIRED
- EXISTING TREE TO REMAIN WHERE POSSIBLE
- PROPOSED CARPARK TREES
- PROPOSED FEATURE TREES
- PROPOSED VERGE TREES
- PROPOSED SCREENING TREES/SHRUBS
- PROPOSED MEDIAN TREES

NOT FOR CONSTRUCTION

1	PROPOSED PICNIC NODE WITH SHELTERS, SEATING WALL AND FEATURE PLANTING
2	VARIOUS CENTRE SIGNAGE PYLONS
3	BUND AND SCREENING PLANTING / TREES TO LOADING DOCK FENCE
4	TOWN SQUARE WITH PROPOSED PLAY NODE. COMBINATION PLAY UNIT & ITEMS AIMED AT TODDLERS. RAISED PLANTERS, SEATING WALLS SURROUNDING AND BIKE PARKING.

NOTES:

- PROPOSED LANDSCAPE DESIGN IS IN COMPLIANCE WITH THE LDP
- NAIRN DRIVE & FURNIVALL PARADE TREE SPECIES TO BE RETAINED WHERE POSSIBLE
- TURF TO VERGES TO MATCH EXISTING NAIRN DRIVE LANDSCAPING
- VERGE SPECIES TO BE A MINIMUM 10m APART
- MINIMUM 1 TREE PER 6 CAR BAYS

PLANT SELECTION:

- TREE AND SHRUB SPECIES TO TIE IN WITH EXISTING VERGE LANDSCAPING. TREE SPECIES ARE KEEPING WITH THE ESTATE STMP
- SHRUBS AND GROUNDCOVERS TO BE LOW MAINTENANCE, NATIVE, HARDY, WATERWISE SPECIES THAT ARE WELL USED WITHIN THE AREA.
- VARIOUS SPECIES CHOSEN FOR AESTHETIC APPEARANCE TO PROVIDE VARIANCE IN COLOUR AND TEXTURE. PREDOMINATELY FOR FEATURE PLANTING AREAS

IRRIGATION:

- SOURCE TBC
- POP-UP SPRAYS TO GARDEN BEDS & TURF AREAS, FLOOD BUBBLERS TO TREES.
- VERGE IRRIGATION TO BE TO CITY OF ROCKINGHAM SPECIFICATION

TREES

EXISTING:
ARAUCARIA HETEROPHYLLA
EUCALYPTUS GOMPHOCEPHALA
EUCALYPTUS LEUCOXYLON
EUCALYPTUS SIDEROXYLON 'ROSEA'

MEDIAN SPECIES:
ARAUCARIA HETEROPHYLLA
PLATANUS ORIENTALIS DIGITATA

CARPARK SPECIES:
CORYMBIA CITRIODORA 'SCENTUOUS'
FICUS MICROCARPA 'HILLII'
PLATANUS ACERIFOLIA

FEATURE TREES:
PYRUS CALLERYANA 'BRADFORD'
JACARANDA MIMISIFOLIA
ULMUS PARVIFOLIA

VERGE SPECIES:
CORYMBIA CITRIODORA 'SCENTUOUS'
EUCALYPTUS GOPHOCEPHALA
EUCALYPTUS LEUCOXYLON
EUCALYPTUS SIDEROXYLON 'ROSEA'
SAPIUM SEBIFERUM

SCREENING SPECIES:
CUPANIOPSIS ANACARDIODES
MAGNOLIA GRANDIFOLIA 'TEDDY BEAR'
MURRAYA PANICULATA
RHAPHIOLEPSIS INDICA ORIENTAL PEARL

SHRUBS AND GROUNDCOVERS	DENSITY
VERGE PLANTING MIX: ACACIA SALIGNA PROSTRATE DIANELLA REVOLUTA EREMOPHILA GLABRA GREVILLEA GINGIN GEM LOMANDRA LONGIFOLIA MYOPORUM PARVIFOLIUM WESTRINGIA FRUTICOSA	3 per m2
CARPARK PLANTING MIX: ACACIA SALIGNA PROSTRATE DIANELLA REVOLUTA / LITTLE REV LEUCOPHYTA SILVER NUGGET LOMANDRA LONGIFOLIA / LIME TUFF SCAEVOLA CRASSIFOLIA	3 per m2
FEATURE PLANTING MIX: ACACIA COGNATA LIMELIGHT ANIGOZANTHOS FLAVIDUS RED BANKSIA NIVEA CONOSTYLIS CANDICANS LOMANDRA CONFERTIFOLIA / LITTLE CON	3 per m2
RAISED PLANTER MIX: CONOSTYLIS CANDICANS DICHONDRA SILVER FALLS FESTUCA GLAUCA LOMANDRA SEASCAPE PIMELEA MAGENTA MIST	3 per m2

LANDSCAPE SCHEDULE

PERIMETER FOOTPATH AREAS	2,225m2
PROPOSED PLANTING AREAS	4,385m2
PROPOSED TURF AREA *INCLUDES EXISTING NAIRN DRIVE	3,365m2
PROPOSED PLAY NODE	85m2
TOTAL LANDSCAPING AREAS	**10,060m2**

*QUANTITIES ARE INDICATIVE ONLY AND BASED OFF CURRENT CENTRE FOOTPRINT

REV	DATE	DWN	DESCRIPTION
A	12/09/2022	JC	CONCEPT ISSUE FOR REVIEW
B	04/10/2022	JC	CONCEPT ISSUE FOR REVIEW
C	24/10/2022	JC	REVISED BASE PLAN

LD TOTAL
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PROJECT:
Parkland Heights Neighbourhood Centre

CLIENT:
BLUEPORT

TITLE
LANDSCAPE CONCEPT PLAN

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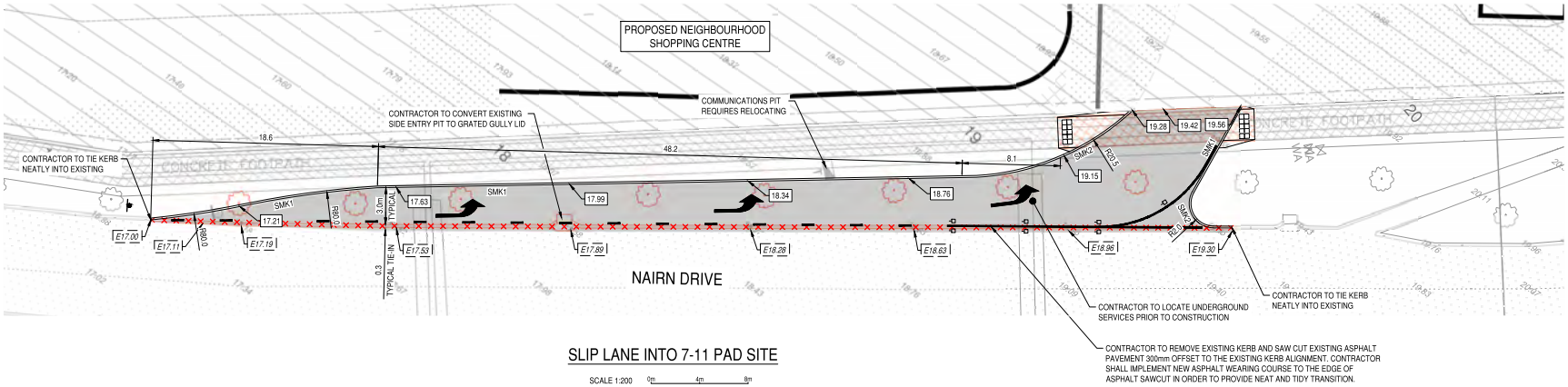
PROJECT NO	DRAWN BY:	APPROVED BY:	REV:
10.7106	JC	NZ	C
SCALE: 1:500	SHEET NO -	SHEET SIZE A1	

5m 0m 5m 10m 25m
SCALE: 1:500

Attachment 4

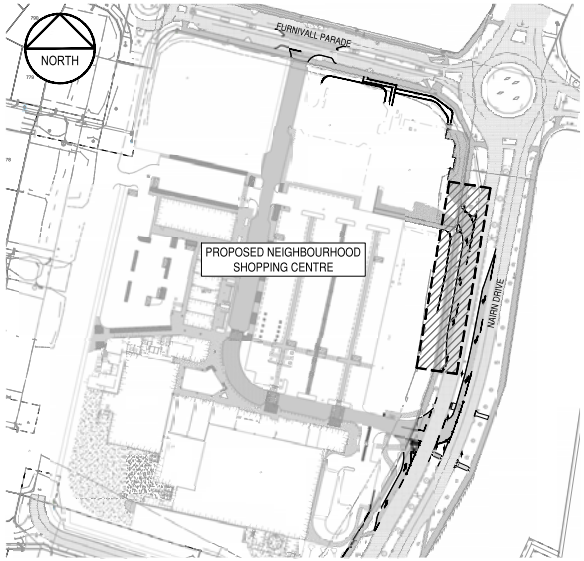
Detailed Intersection Designs



SLIP LANE INTO 7-11 PAD SITE

SCALE 1:200 0m 4m 8m

SITE PLAN:



SCALE 1:200 0m 4m 8m

BEFORE YOU DIG www.byda.com.au Zero Damage - Zero Harm

REV	DATE	DESCRIPTION	BY	CHKR
A	22/07/24	ISSUE FOR PLANNING PURPOSES	YK	MRI

PARKLAND HEIGHTS

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DRAWING STATUS: NOT FOR CONSTRUCTION

DATE: JULY 2024 | GRID: PCG94 | DATUM: AHD

DESIGNED: BN | DRAWN: YK | CHECKED: MRI | APPROVED: MRI

W.A.P.C.: N/A | SCALE U.N.O.: AS SHOWN @ | SHEET SIZE: A1

CLIENT & JOB: ROCKINGHAM PARK PTY LTD
NEIGHBOURHOOD CENTRE - FORWARD WORKS

TITLE: ROAD LAYOUT PLAN
NAIRN DRIVE

DRG No.: 23354-C9-SK-11

REVISION: A

Attachment 5

Transport Impact Assessment

transcore
20 years anniversary

transport planning
traffic engineering
modelling

Parkland Heights, Baldivis - Neighbourhood Centre Stage 1 Development

Transport Impact Assessment

PREPARED FOR:
Rockingham Park Pty Ltd

November 2022

Document history and status

Author	Revision	Approved by	Date approved	Revision type
R White	r02	B Bordbar	1/04/2022	
R White	r02a	B Bordbar	10/09/2022	Final
R White	r02b	B Bordbar	31/10/2022	Revised
R White	r02c	B Bordbar	17/11/2022	Minor revision

File name: t16337-rw-r02c.docx

Author: R White

Project manager: Behnam Bordbar

Client: Rockingham Park Pty Ltd

Project: Parkland Heights Neighbourhood Centre

Document revision: r02c

Project number: t16.337

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1 Introduction

This Transport Impact Assessment (TIA) relates to a proposed development application for Stage 1 of the Parkland Heights Neighbourhood Centre in Baldivis, in the City of Rockingham.

The subject site is located on the western side of Nairn Drive between Furnivall Parade and Chelsea Way / Arpenteur Drive, as shown in **Figure 1.**

Figure 1: Location of the subject site

As part of the development, it is proposed to provide a right in / left in / left out (RILILO) crossover on Nairn Drive on the eastern side of the site, a full movement driveway on Furnivall Parade on the northern side of the site and full movement driveway crossovers on Arpenteur Drive on the western and southern sides of the site.

This TIA will estimate the trip generation and distribution of the proposed development and will assess the impact of the proposed development traffic on the surrounding roads.

The key issues that will be addressed in this report include the traffic generation of the proposed development, establishing the resultant traffic pattern on the surrounding road network and capacity analysis of the proposed development's crossovers and the existing roundabouts on Nairn Drive adjacent to the subject site.

2 Existing Situation

2.1 Existing Land Use

The subject site is currently vacant land located near the centre of the Baldivis Heights Local Structure Plan (LSP). Subdivisional development has commenced in the northwest quarter of this LSP area abutting Eighty Road. The LSP area is abutted on the northern side by the existing subdivision known as "The Ridge" and by "The Dales" and "Avalon at Baldivis" estates to the east, as can be seen in **Figure 1**.

The Pine View Primary School is located about 70m east of Nairn Drive, south of Regency Avenue, within this LSP area. A vacant development site about 40m to 60m wide runs along the eastern side of Nairn Drive south of Regency Avenue, so the school site does not directly abut Nairn Drive, as shown in **Figure 2**.

Figure 2: Existing land use and roads

2.2 Existing Road Network

The existing road network in the surrounding area is illustrated in **Figure 3**, which shows the current classification of roads in the Main Roads WA functional road hierarchy.

Figure 3: Existing road network and road hierarchy

Nairn Drive is constructed as a 4-lane, dual carriageway road with a 6m median and 1.5m on-road cycle lanes. 2.5m shared paths are provided on both sides of the road in the vicinity of the subject site.

Nairn Drive is currently classified as a Local Distributor in the Main Roads WA functional road hierarchy, but is planned as an Integrator Arterial the LSP and is already constructed to Integrator A standard. The default built up area speed limit of 50km/h currently applies on this section of Nairn Drive within the LSP area but on other sections further north (north of the LSP area boundary) a 70km/h posted speed limit applies.

Furnivall Parade is constructed as a 2-lane divided road with a 3m median and 1.5m on-road cycle lanes and parallel parking bays indented in the verge on both sides in this vicinity. 2.5m shared paths are provided on both sides of the road in the vicinity of the subject site.

Furnivall Parade is currently classified as an Access Road in the Main Roads WA functional road hierarchy, but is planned as a Neighbourhood Connector A the LSP and is already constructed to that standard. The default built up area speed limit of 50km/h applies on this road.

Arpenteur Drive is classified as a Local Distributor on the sections that have been constructed north of Furnivall Parade and further north of the LSP area. The section of Arpenteur Drive on the western side of the Subject Site has not yet been constructed but the section abutting the southern boundary of the site is constructed as a single carriageway, 2-lane road with 7.4m width between kerbs. It currently has a 2m path on the southern side only. The default built up area speed limit of 50km/h applies on this road.

2.3 Existing Traffic Volumes

There are currently no traffic counts available on the roads adjacent to the subject site.

The Main Roads WA website provides a 2020/21 traffic count on Eighty Road north of Sixty Eight Road, which recorded average weekday traffic flows of 3,341 vehicles per day with 7.4% heavy vehicles.

2.4 Public Transport Access

The existing bus service in the Baldivis area includes routes 564 and 565 from Warnbro station, as shown in **Figure 4**. Route 564 currently terminates at Ridge Boulevard approximately 450m north of the subject site and route 565 passes to the east of the LSP area on Smirk Road, approximately 750m east of the subject site. Route 565 deviates to Stockland Baldivis Shopping Centre during business hours (typically 9am to 5pm) on all days of the week. Both services operate hourly on all days with higher frequency of service for peak direction travel during weekday peak hours.

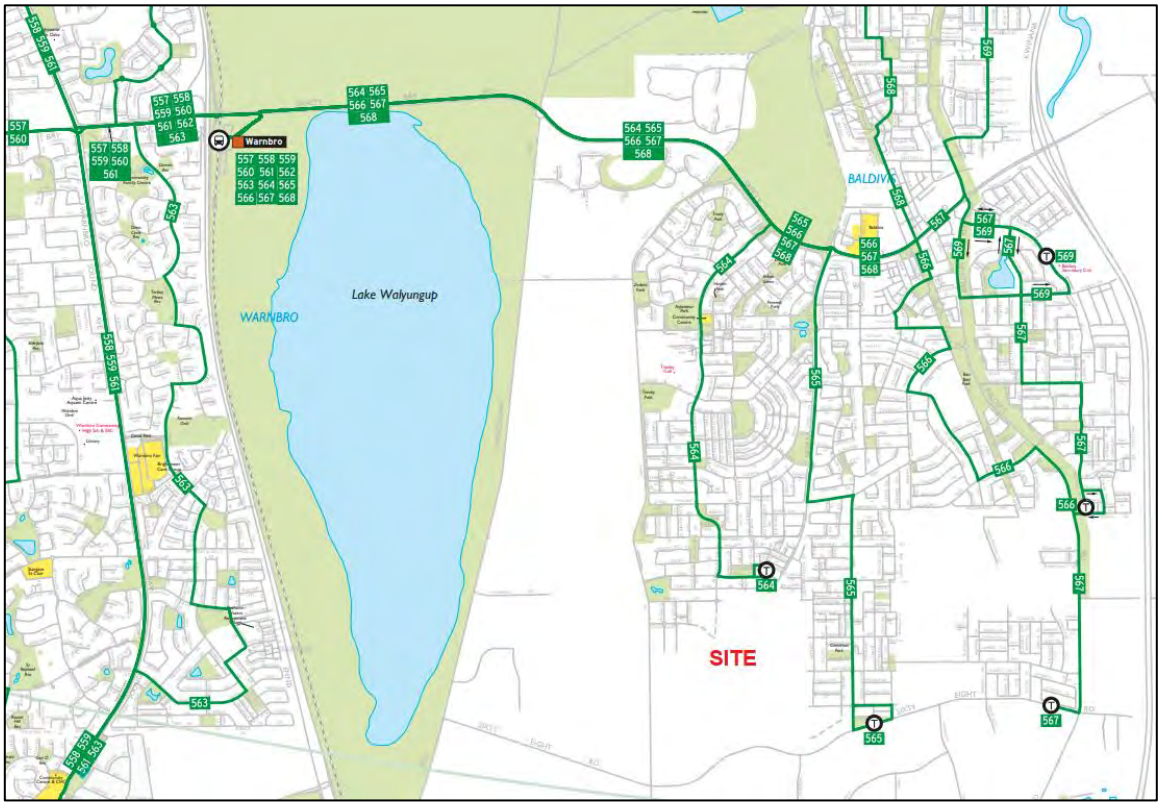

Figure 4. Existing bus routes (source: Transperth)

2.5 Pedestrian and Cyclist Facilities

Shared paths are provided on both sides of Nairn Drive and Furnivall Parade, and on the southern side of Chelsea Way / Arpenteur Drive opposite the southern boundary of the site. Pedestrian crossing opportunities with refuge islands are available at each of the roundabouts at the southeast, northeast and northwest corners of the site and midblock on Nairn Drive adjacent to the subject site, as can be seen in **Figure 2**.

As noted in section 2.2 there are also 1.5m on-road cycle lanes provided on Nairn Drive and Furnivall Parade adjacent to the subject site.

3 Development Proposal

3.1 Proposed Land Use

The proposed development is Stage 1 of the Parkland Heights Neighbourhood Centre. The overall layout of the proposed development is shown on the proposed site plan in **Figure 5** and at **Appendix A**.

Figure 5: Proposed Stage 1 Development

The proposed stage 1 development totals approximately 9,397m^2 floor area. The breakdown of floor areas shown on the site plan are summarised in Table 1.

Table 1: Proposed land use

Land Use	Floor Area
Supermarket	5,255 m^2
Specialty stores	1,306 m^2
Food & Beverage	1,109 m^2
Fast Food	736 m^2
Convenience (petrol station with 6 vehicle fuelling positions)	216 m^2
Liquor	200 m^2
Kiosk	25 m^2
Future expansion	550 m^2
Total	**9397 m^2**

3.2 Proposed Access Arrangements

The proposed access system for the stage 1 development comprises:

- Crossover 1: a right in / left in / left out driveway crossover on Nairn Drive;
- Crossover 2: a full movement driveway crossover on Furnivall Parade;
- Crossover 3: a full movement driveway crossover on Arpenteur Drive on the southern frontage of the subject site used mainly by staff and service vehicles; and
- Crossover 4: a full movement driveway crossover on Arpenteur Drive.

The main circulation roadway through the site forms a L-shape from Crossover 1 at Nairn Drive in the east to Crossover 2 at Furnivall Parade in the north.

4 Changes to Surrounding Transport Networks

Full development of the Parkland Heights LSP area will include construction of Nairn Drive southwards to connect to Eighty Road at the existing Eighty Rd / Sixty Eight Rd intersection. This will complete this arterial road link from Safety Bay Road to Sixty Eight Road and will take over that arterial route function from the corresponding section of Eighty Road.

Eighty Road will be realigned north of Sixty Eight Road to connect at right angles to Nairn Drive about 200m north of Sixty Eight Road and the current alignment immediately north of Sixty Eight Road will be closed off. This will reinforce the arterial route function of Nairn Drive northwards through Baldivis past the planned Parkland Heights Neighbourhood Centre.

5 Integration with Surrounding Area

The Parkland Heights Neighbourhood Centre is an integral component of the surrounding Parkland Heights Local Structure Plan. It is appropriately located adjacent to the main arterial route (Nairn Drive) through this precinct and well located to serve the local catchment area in this southwestern portion of Baldivis.

6 Hours of Operation

The proposed development is primarily a neighbourhood shopping centre and, as such, it would be anticipated to be open during normal retail trading hours, 7 days per week.

The two fast food outlets would typically be open until later in the evening than the main shopping centre and the petrol station / convenience store would potentially operate 24 hours per day if warranted by the volume of passing trade on Nairn Drive.

7 Traffic Assessment

7.1 Assessment Period

An assessment year of 2031 has been adopted for this transport impact assessment, which is consistent with the traffic analysis undertaken for the *Parkland Heights Neighbourhood Centre LSP Amendment Transport Impact Assessment* report (December 2018).

The current analysis builds upon the work undertaken for that LSP TIA report and therefore the 2031 weekday AM and PM peak hour operation of key intersections and driveway crossovers along Nairn Drive are assessed in this report. The busiest period for combined road network and development traffic would typically occur during the weekday PM peak period.

7.2 Traffic Generation

The traffic volume anticipated to be generated by the proposed shopping centre has been calculated using formulae provided in the New South Wales *Guide to Traffic Generating Developments* (2002). Those formulae take account of different types of land use within the proposed development (supermarket, specialty stores, office/medical, etc.) to provide a more accurate estimate of traffic generation for the particular mix of land uses that are actually proposed.

The land use components for this calculation are as follows:

- A(S) = slow trade = 0m^2
- A(F) = faster trade = 0m^2
- A(SM) = supermarket = 5255m^2
- A(SS) = specialty shops = 3926m^2
- A(OM) = office / medical = 0m^2

The service station's 216m^2 floor area (convenience store) is not included in these floor areas as the service station traffic generation is calculated separately, as discussed below.

In the following formulae each area is input as per 1000m^2 (i.e. 5255m^2 is input as 5.255 in these calculations).

Thursday PM peak hour traffic generation
= 20A(S) + 51A(F) + 155A(SM) + 46A(SS) + 22A(OM) = 995vph

The NSW guide does not provide AM peak hour traffic formulae for shopping centres but the ITE *Trip Generation Manual* does provide weekday AM and PM peak hour trip rates for shopping centres. The ITE trip rates indicate that shopping centres generate approximately 25% as much traffic during the road network AM peak hour compared

to their traffic generation during the road network PM peak hour. Accordingly, it is anticipated that the proposed stage 1 development will generate approximately 255vph during that AM peak period.

The ITE *Trip Generation Manual* also provides an indication of directional split of this shopping centre traffic generation. It is typically 62% in / 38% out during the AM peak hour but more evenly split during the PM peak hour.

Accordingly, the following traffic generation and directional split are anticipated for the proposed stage 1 development shopping centre (excluding the service station and its convenience store, as discussed below):

- AM Peak Hour: 249vph (154 in / 95 out)
- PM Peak Hour: 995vph (498 in / 497 out)

Fast food outlets are listed as included in the specialty shops component in the NSW formulae but service stations are not specifically mentioned. Accordingly, traffic generation for the service station with convenience store has been calculated separately using trip rates from the ITE Trip Generation Manual (11th Edition, land use 945, convenience store / gas station). It indicates trip rates of 16.06 vph per vehicle fueling position during the road network AM peak and 18.42 during the road network PM peak, with 50/50 directional split during both periods. Therefore, the traffic generation of the service station with 6 vehicle fueling positions would be 96vph during the AM peak and 111vph during the PM peak. However, this does not make any allowance for reciprocity (i.e. a significant number of service station trips will also visit other uses on site such as fast food) and different peak days for the different land uses (service stations peak on Tuesday due to fuel pricing whereas shopping centres peak later in the week). Accordingly, a 50% discount has been applied to take into account reciprocity and the reduced traffic generation of a service station during the shopping centre peak days.

The overall traffic generation for the proposed Stage 1 development (including the service station with convenience store) is as follows:

- AM Peak Hour: 297vph (178 in / 119 out)
- PM Peak Hour: 1050vph (525 in / 525 out)

Approximately 20% of the shopping centre traffic is anticipated to be pass-by trips by vehicles that would normally be travelling past this site on Nairn Drive as part of another journey (eg. a person who visits the shopping centre on their way home from work), based on guidance in the NSW *Guide to Traffic Generating Developments*. The remaining 80% of traffic generated by the shopping centre are referred to as primary trips.

Service stations are more reliant on passing trade. The ITE Trip Generation Handbook (3rd Edition) indicates that typically around 60% of service station traffic generation consists of pass-by trips.

7.3 Traffic Distribution

Traffic distribution was modelled for the overall LSP area and for this Neighbourhood Centre in the *Parkland Heights Neighbourhood Centre LSP Amendment Transport Impact Assessment* report (December 2018). Modelled total daily traffic flows to/from the Neighbourhood Centre were shown in Figure C6 in that report.

Traffic distribution for the primary trips generated by this Neighbourhood Centre has therefore been determined by analysis of the modelled traffic flows in Figure C6 of that report. The anticipated distribution of primary trips is summarised in **Table 2**.

Table 2: Traffic distribution

Approach Road	Percentage of Primary Trips
Nairn Drive north	53.8%
Arpenteur Drive north	6.7%
Furnivall Parade west	1.8%
Chelsea Way west (etc.)	1.9%
Nairn Drive south	15.6%
Chelsea Way east	7.0%
Regency Avenue east	13.2%

Pass-by trips are assumed to be mainly passing the site on Nairn Drive and have been calculated as half coming from northbound and half from southbound Nairn Drive traffic passing the subject site.

Traffic flows generated by the proposed Stage 1 development have been manually assigned on the driveway crossovers and adjacent road network in accordance with the trip distribution discussed above. The resultant AM and PM peak hour traffic flows generated by the proposed Stage 1 development are shown in **Figure 6**.

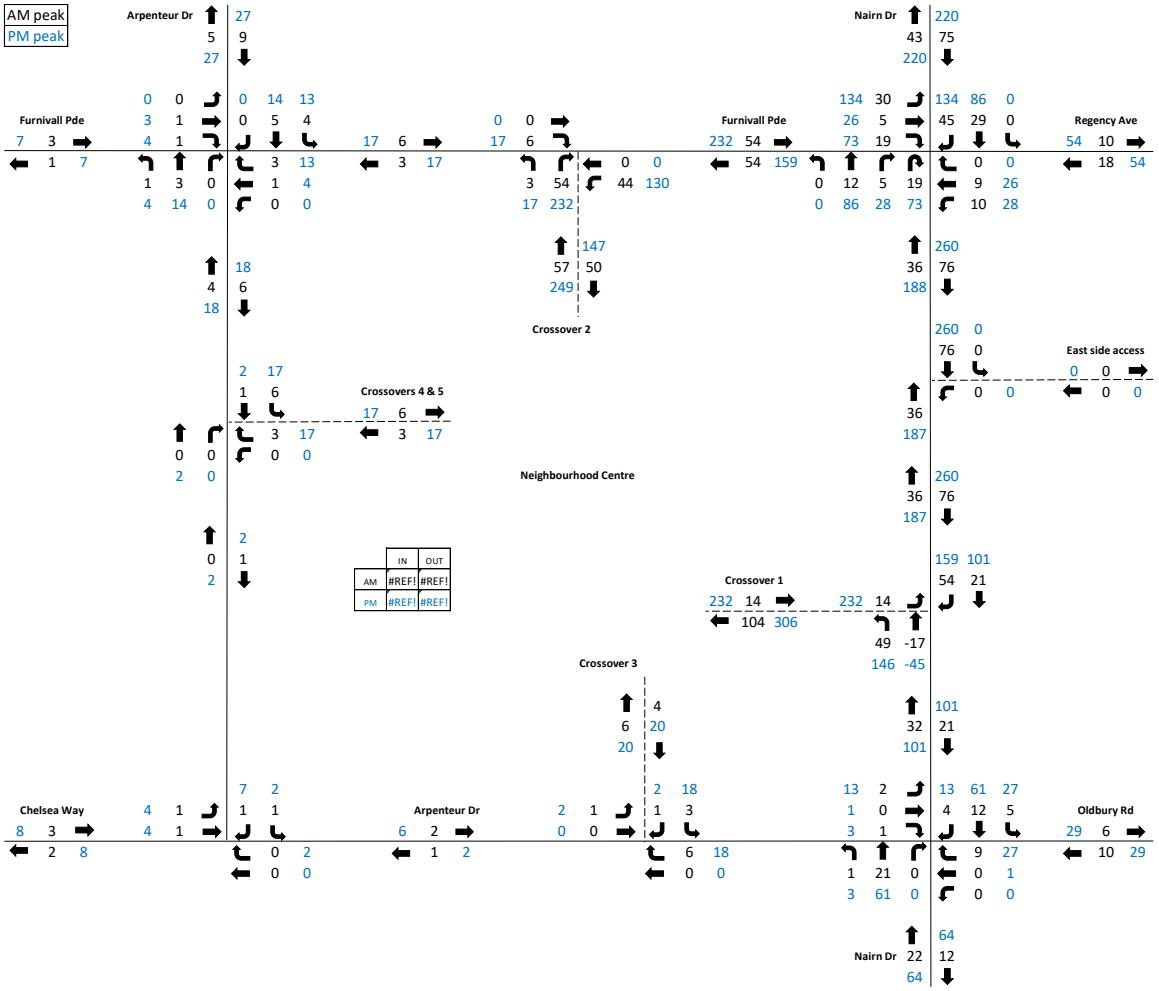

Figure 6: Peak hour traffic flows generated by Neighbourhhod Centre Stage 1

7.4 Total Traffic Flows

Total daily traffic flows on the LSP area road network were documented in the *Parkland Heights Neighbourhood Centre LSP Amendment Transport Impact Assessment* report (December 2018). Those total daily traffic flows were for a full development scenario for the whole of Baldivis, including the Parkland Heights LSP area, and are nominally referred to as 2031 traffic projections although timing of full development of this area cannot be accurately predicted at this stage.

Weekday AM and PM peak hour traffic flows were derived in that report for each of the Nairn Drive intersections from those modelled 2031 daily traffic flows by applying peak hour directional splits. Peak hour traffic to/from Baldivis residential areas was based on the directional splits implied by the residential trip rates in the WAPC *Transport Impact Assessment Guidelines* (AM 25% in / 75% out and PM 62.5% in / 37.5% out) and external through traffic on Nairn Drive was based on observed directional splits on Eighty Road.

Arpenteur Drive daily traffic is significantly less than on Nairn Drive or the eastern end of Furnivall Parade and peak hour traffic flows on this road were not calculated in the LSP TIA report. Development traffic will also be minimal on this road so it has not been assessed further in this TIA report.

The calculated Stage 1 development traffic flows have therefore been manually added to the 2031 base traffic flows to determine 2031 AM and PM peak hour traffic flows for analysis of the Nairn Drive intersections adjacent to the Neighbourhood Centre site and the proposed two main driveway crossovers for this development. The resultant 2031 AM and PM peak hour total traffic flows with the proposed Stage 1 development are shown in **Figure 7.**

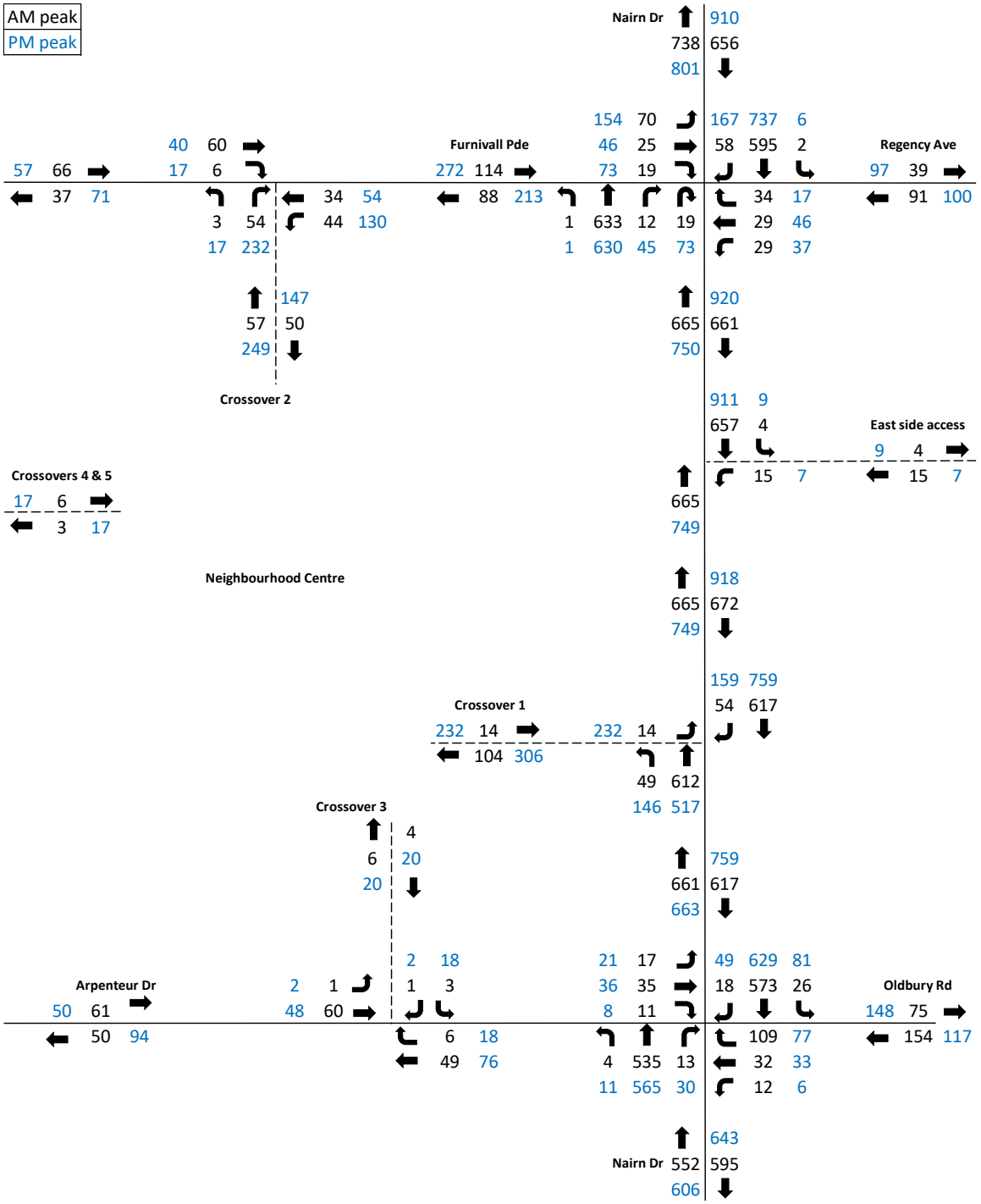

Figure 7: 2031 Peak hour total traffic flows with Neighbourhhod Centre Stage 1

7.5 Intersection Analysis

SIDRA Network analysis has been undertaken for the subject site crossovers on Nairn Drive and Furnivall Parade, the Nairn Dr / Furnivall Pde / Regency Ave roundabout and the Nairn Dr / Arpenteur Dr / Oldbury Rd roundabout to confirm satisfactory intersection operations under the modelled 2031 AM and PM peak hour traffic flows shown in **Figure 7**.

For this assessment, relevant heavy vehicle parameters in SIDRA were updated in accordance with current Main Roads WA guidelines.

The SIDRA package is a commonly used intersection-modelling tool by traffic engineers for all types of intersections. SIDRA outputs are presented in the form of Degree of Saturation, Level of Service, Average Delay and 95% Queue. These items are defined as follows:

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

The results of the SIDRA analysis are summarised in **Appendix B**.

The SIDRA Network layout of the intersections and driveway crossovers that have been analysed is shown in **Figure B1** in **Appendix B**.

It should be noted that this SIDRA Network model also includes a left in / left out driveway crossover on the eastern side of Nairn Drive (labelled as east side access), which is consistent with the access arrangement anticipated on that side of Nairn Drive in the *Parkland Heights Neighbourhood Centre LSP Amendment Transport Impact Assessment* report (December 2018).

The SIDRA results for the Nairn Dr / Furnivall Pde / Regency Ave roundabout are shown in Tables B2a (AM peak) and B2b (PM peak). They indicate that this existing dual-lane roundabout would operate at degree of saturation 0.237 in the AM peak and 0.351 in the PM peak. The overall intersection will be at level of service (LoS) A in both peak periods with all movements at LoS A or B indicating very good operation with minimal traffic delays.

The SIDRA results for the Nairn Dr / Arpenteur Dr / Oldbury Rd roundabout are shown in Tables B5a (AM peak) and B5b (PM peak). They indicate that this existing

dual-lane roundabout would operate at degree of saturation 0.205 in the AM peak and 0.253 in the PM peak. The overall intersection will also be at LoS A in both peak periods with all movements at LoS A or B indicating very good operation with minimal traffic delays.

The Nairn Dr / Crossover 1 driveway crossover is proposed to accommodate right in / left in / left out (RILILO) traffic movements. It will have a right turn lane in the Nairn Drive median to allow right turning vehicles to slow and queue within that right turn lane without impeding southbound through traffic on Nairn Drive. A left turn inbound deceleration lane is also included due to the modelled left turn traffic volume in the PM peak, although this has not been required at most other existing intersections along Nairn Drive.

The SIDRA results for this RILILO driveway crossover are shown in Tables B4a (AM peak) and B4b (PM peak). They indicate that this proposed access arrangement would operate at degree of saturation 0.181 in the AM peak and 0.412 in the PM peak. All movements would be at LoS A or B indicating very good operation with minimal traffic delays. The right turn inbound movement only shows a 95% queue length of 1.8 vehicles in the PM peak hour, so the proposed right turn lane in the median will easily accommodate this movement.

The SIDRA results for the Furnivall Pde / Crossover 2 driveway crossover are shown in Tables B1a (AM peak) and B1b (PM peak). They indicate that this proposed access arrangement would operate at degree of saturation 0.052 in the AM peak and 0.239 in the PM peak. All movements would be at LoS A indicating very good operation with minimal traffic delays and minimal traffic queues.

The SIDRA results for the proposed full movement crossover 3 on Arpenteur Drive are shown in Tables B6a (AM peak) and B6b (PM peak). They indicate that this proposed access arrangement would operate at degree of saturation 0.034 in the AM peak and 0.054 in the PM peak. All movements would be at LoS A indicating very good operation with minimal traffic delays and minimal traffic queues.

7.6 Impact on Surrounding Roads

The WAPC Transport Impact Assessment Guidelines (2016) provides guidance on the assessment of traffic impacts:

"As a general guide, an increase in traffic of less than 10 per cent of capacity would not normally be likely to have a material impact on any particular section of road, but increases over 10 per cent may. All sections of road with an increase greater than 10 per cent of capacity should therefore be included in the analysis. For ease of assessment, an increase of 100 vehicles per hour for any lane can be considered as equating to around 10 per cent of capacity. Therefore, any section of road where the structure plan traffic would increase flows by more than 100 vehicles per hour for any lane should be included in the analysis."

From **Figure 6** it can be seen that development traffic flows are only above this threshold on Nairn Drive adjacent to and north of the site and the eastern end of

Furnivall Parade. Those locations are already included in the traffic analysis in this report. North of Nairn Drive the PM peak hour traffic flows are 220vph each way, which is approximately 110vph per traffic lane on this 4-lane road. That traffic will quickly disperse on the adjacent side roads and drop below that 100vph per lane threshold, so no further intersection analysis is considered to be warranted.

7.7 Impact on Neighbouring Areas

The proposed Neighbourhood Centre is an integral component of this LSP area, so the traffic generated by the proposed development is already factored into the planning for the neighbouring areas in the LSP.

7.8 Traffic Noise and Vibration

It generally requires a doubling of traffic volumes on a road to produce a perceptible 3dB increase in road noise. The proposed development traffic will be less than half of the total future traffic on most roads, including Nairn Drive, so will not have a noticeable effect on traffic noise on those roads.

One of the few places where the Neighbourhood Centre traffic will represent more than half of the total future traffic flows is on the eastern section of Furnivall Parade between Nairn Drive and Crossover 2. On this section there would be a noticeable difference in traffic noise if there was no Neighbourhood Centre traffic there. However, it should be noted that the proposed right turn in from Nairn Drive at Crossover 1 actually reduces the amount of Neighbourhood Centre traffic that would use this section of Furnivall Parade if the right turn in at Crossover 1 was not permitted. Nonetheless, Furnivall Parade is planned as a Neighbourhood Connector A road and is a suitable standard of road for the total traffic flows that will use this road, inclusive of the traffic generated by the proposed Neighbourhood Centre.

8 Parking

The proposed site plan at Appendix A documents the proposed parking provision for this Stage 1 development.

The proposed site plan provides a total of 480 parking bays including 13 disabled bays and 6 online ordering bays for the supermarket. In addition, it indicates the potential for a further 100 bays of "interim parking" to be provided on the future development sites along the northern and eastern sides of the neighbourhood centre main street within the site.

With the Stage 1 development floor area of 9,397m^2 NLA, the proposed parking provision of 480 bays (or interim provision of up to 580 bays) would equate to 5.1 (or 6.2) bays per 100m^2 of floor area.

This parking provision would be consistent with WAPC Statement of Planning Policy 4.2 – Activity Centres, which recommends "As a guide, two bays per 100m^2 for showrooms and offices and 4-5 bays per 100m^2 for shops."

The proposed parking provision is therefore considered sufficient for this proposed development.

9 Public Transport Access

The existing public transport services in the area are described in Section 2.4 of this report. This includes existing bus route 564 on Arpenteur Drive north of the LSP area.

The *Parkland Heights Neighbourhood Centre LSP Amendment Transport Impact Assessment* report (December 2018) provides further information on future bus route planning by the Public Transport Authority including extension of route 564 south from Arpenteur Drive to a new terminus north of Sixty Eight Road.

This bus route will therefore pass adjacent to the subject site (shown dotted on Furnivall Parade and Nairn Drive in **Figure 8**) when that future bus route extension occurs.

10 Pedestrian and Cyclist Access

Existing pedestrian and cyclist facilities are described in Section 2.5 of this report.

The *Parkland Heights Neighbourhood Centre LSP Amendment Transport Impact Assessment* report (December 2018) provides the following diagram of future pedestrian and cyclist facilities, reproduced here in this report as **Figure 8**.

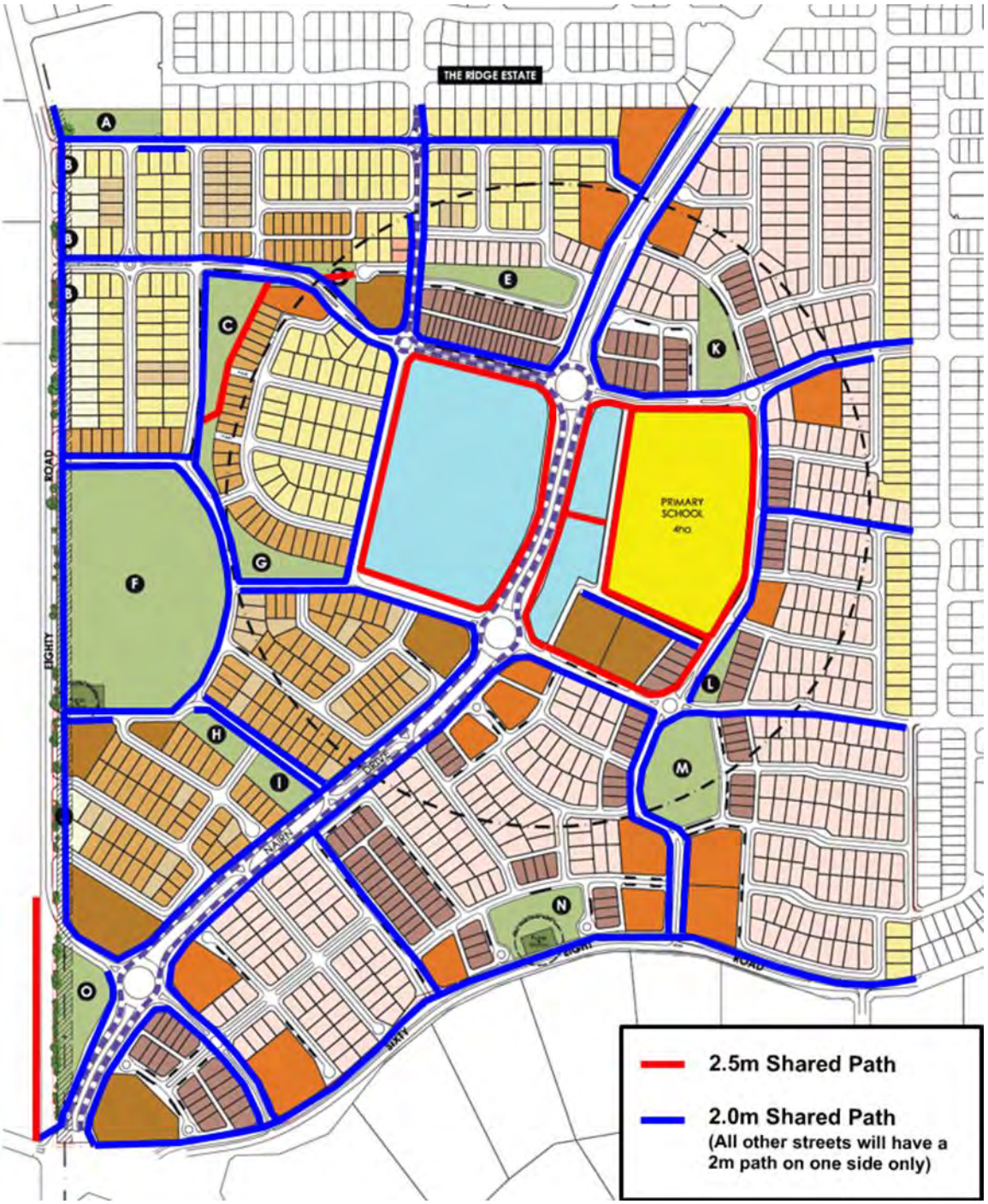

Figure 8: LSP area pedestrian and cyclist facilities

There are currently facilities for pedestrians to cross Nairn Drive at the Nairn Dr / Furnivall Pde / Regency Ave roundabout, at the Nairn Dr / Arpenteur Dr / Chelsea Way roundabout and at a midblock location halfway between those two roundabouts, as can be seen in **Figure 2**.

The proposed right turn lane in the Nairn Drive median will impact upon that midblock pedestrian facility. It would be appropriate to relocate that pedestrian facility to the southern side of the proposed Crossover 1 RILILO driveway crossover, similar to the location of the current pedestrian facility at the Nairn Drive / Pymmes Junction RILILO intersection further north on Nairn Drive, as shown in **Figure 9**.

Figure 9: Pedestrian facilities location at a RILILO intersection

Appropriate bicycle parking facilities for visitors and staff and end-of-trip facilities for staff will need to be provided for the proposed development in accordance with the City of Rockingham requirements.

11 Conclusions

This Transport Impact Assessment (TIA) relates to a proposed development application for Stage 1 of the Parkland Heights Neighbourhood Centre in Baldivis, in the City of Rockingham.

The subject site is located on the western side of Nairn Drive between Furnivall Parade and Chelsea Way / Arpenteur Drive.

The proposed access system for the stage 1 development comprises:

- Crossover 1: a right in / left in / left out driveway crossover on Nairn Drive;
- Crossover 2: a full movement driveway crossover on Furnivall Parade;
- Crossover 3: a full movement driveway crossover on Arpenteur Drive on the southern frontage of the subject site used mainly by staff and service vehicles; and
- Crossover 4: a full movement driveway crossover on Arpenteur Drive.

The main circulation roadway through the site forms a L-shape from Crossover 1 at Nairn Drive in the east to Crossover 2 at Furnivall Parade in the north.

The busiest period for combined road network and development traffic would typically occur during the weekday PM peak period when the proposed development is anticipated to generate approximately 1050vph (approximately 525 in / 525 out).

Traffic analysis has been undertaken for weekday AM and PM peak hours for modelled traffic growth to the year 2031, which is consistent with the traffic analysis undertaken for the previous *Parkland Heights Neighbourhood Centre LSP Amendment Transport Impact Assessment* report (December 2018).

The traffic analysis indicates that all of the key intersections and driveways around this site will all operate satisfactorily under the projected future traffic flows.

Shared paths are already constructed on Nairn Drive and Furnivall Parade adjacent to the subject site and are planned in the Local Structure Plan on Arpenteur Drive on the western and southern sides of the site.

The proposed right turn lane in the median of Nairn Drive at the proposed right in / left in / left out driveway (crossover 1) will require relocation of an existing midblock pedestrian facility on Nairn Drive. This facility should be relocated to the southern side of the proposed driveway crossover, where it will also align better with pedestrian access into the proposed neighbourhood centre.

Appropriate bicycle parking facilities for visitors and staff and end-of-trip facilities for staff will need to be provided for the proposed development in accordance with the City of Rockingham requirements.

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

Appendix A

PROPOSED DEVELOPMENT PLAN

20 years anniversary
transcore
transport planning
traffic engineering
modelling

FURNIVALL PARADE
ARPENTEURE DRIVE
NAIRN DRIVE
SITE BOUNDARY
FUTURE DEVELOPMENT SITE
4805 m²
SUBJECT TO FUTURE DEVELOPMENT APPLICATION
FUTURE DEVELOPMENT SITE
1777 m²
SUBJECT TO FUTURE DEVELOPMENT APPLICATION
57 BAYS
96 BAYS
250 BAYS
35 BAYS
17 BAYS
37 BAYS
13 FAST FOOD BAYS
13 FAST FOOD BAYS
16 BAYS
26 STAFF BAYS
INTERIM PARKING ZONE 100 BAYS
ALFRESCO SEATING ZONES 2 total 108 m²
F & B 901 m²
SUPERMARKET 1855 m²
SPEC 620 m²
KIOSK 25 m²
SPEC 275 m²
LIQUOR 200 m²
SUPERMARKET 3920 m²
LOADING DOCKS
PUMPS AND TANKS
CLICK AND COLLECT
DELIVERIES
SPEC 303 m²
CONV 216 m²
FAST FOOD 366 m²
FAST FOOD 369 m²
TOWN SQUARE
LONG TERM BICYCLE PARKING
RETAINING WALL
PRECAST CONCRETE SCREENING PANELS (3.5m)
LANDSCAPE FEATURE
POTENTIAL LOCATION FOR PUBLIC ART TO BE DEVELOPED IN ACCORDANCE WITH THE PUBLIC ART POLICY
CENTRE SIGNAGE PYLON 9M TALL
FUEL PRICE BOARD
STAFF PARKING
AIR/WATER POINT
TRAFFICABLE APRON
EXISTING MEDIAN MODIFIED
NEW SLIPLANE ADDED
SITE ACCESS
RETAINING WALL
SLOPE 1:20
SLOPE 1:50
SLOPE 1:150
SLOPE 1:100
SLOPE 1:30
SLOPE 1:50
SLOPE 1:20
SLOPE 1:30
SLOPE 1:50
SLOPE 1:100
SLOPE 1:150

Appendix B

SIDRA Intersection Analysis

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.

Not to Scale

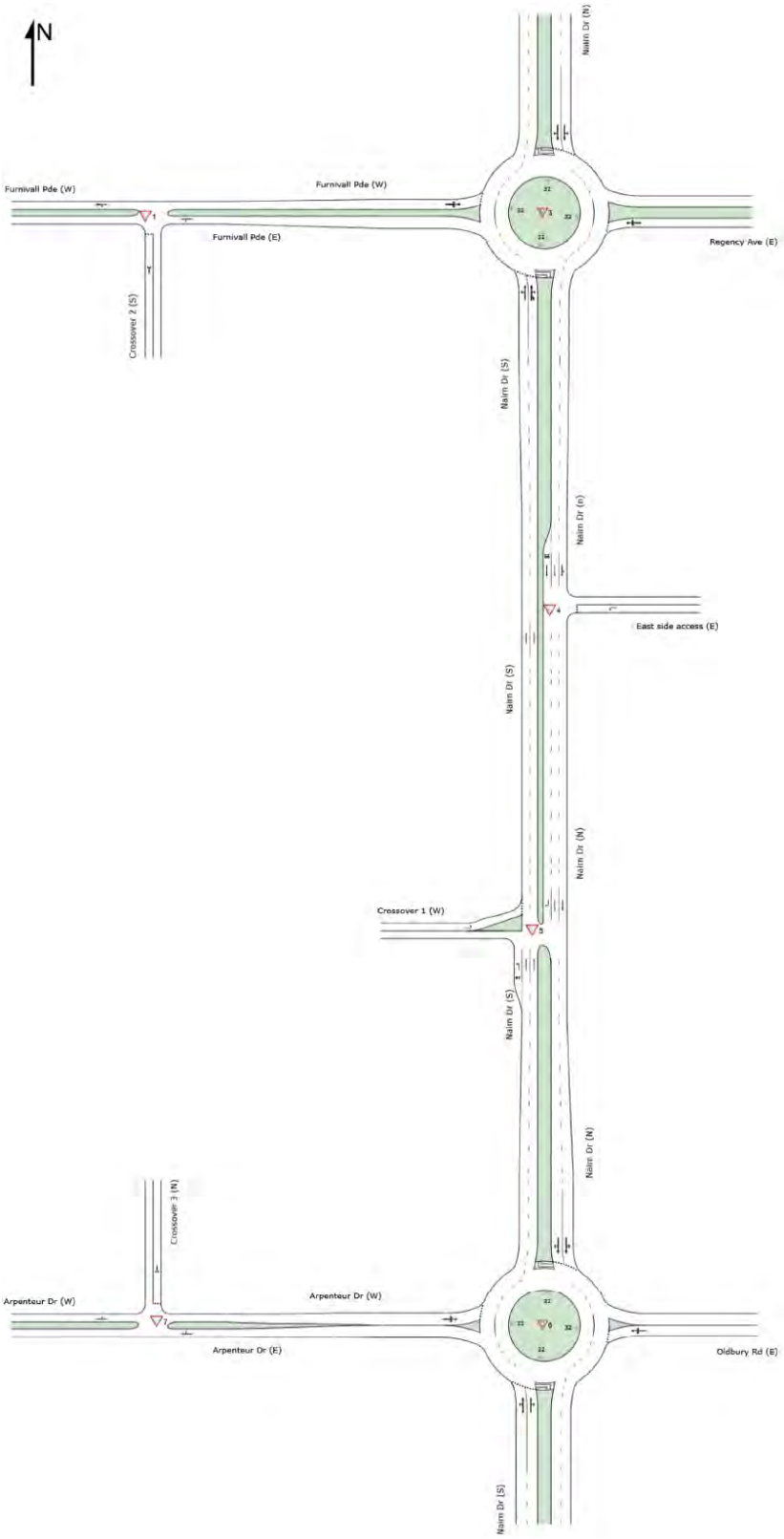

Figure B1: Nairn Drive Intersections and Neighbourhood Centre Driveway Crossovers Analysed in SIDRA Network

Table B1a. SIDRA results – Furnivall Pde / Crossover 2 intersection – 2031 Weekday AM peak (with Stage 1 development)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Crossover 2 (S)														
7	L2	3	3.0	3	3.0	0.052	0.1	LOS A	0.2	1.3	0.19	0.19	0.19	24.0
9	R2	57	3.0	57	3.0	0.052	1.0	LOS A	0.2	1.3	0.19	0.19	0.19	17.7
Approach		60	3.0	60	3.0	0.052	0.9	LOS A	0.2	1.3	0.19	0.19	0.19	18.3
East: Furnivall Pde (E)														
10	L2	46	3.0	46	3.0	0.044	4.6	LOS A	0.0	0.0	0.00	0.31	0.00	35.1
11	T1	36	3.1	36	3.1	0.044	0.0	LOS A	0.0	0.0	0.00	0.31	0.00	41.6
Approach		82	3.0	82	3.0	0.044	2.6	NA	0.0	0.0	0.00	0.31	0.00	38.0
West: Furnivall Pde (W)														
5	T1	63	3.1	63	3.1	0.037	0.0	LOS A	0.0	0.3	0.04	0.05	0.04	45.7
6	R2	6	3.0	6	3.0	0.037	4.8	LOS A	0.0	0.3	0.04	0.05	0.04	37.7
Approach		69	3.1	69	3.1	0.037	0.5	NA	0.0	0.3	0.04	0.05	0.04	44.5
All Vehicles		212	3.0	212	3.0	0.052	1.4	NA	0.2	1.3	0.07	0.19	0.07	34.0

Table B1b. SIDRA results – Furnivall Pde / Crossover 2 intersection – 2031 Weekday PM peak (with Stage 1 development)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Crossover 2 (S)														
7	L2	18	3.0	18	3.0	0.239	0.2	LOS A	0.9	7.0	0.27	0.26	0.27	23.6
9	R2	244	3.0	244	3.0	0.239	1.4	LOS A	0.9	7.0	0.27	0.26	0.27	17.2
Approach		262	3.0	262	3.0	0.239	1.3	LOS A	0.9	7.0	0.27	0.26	0.27	18.0
East: Furnivall Pde (E)														
10	L2	137	3.0	137	3.0	0.105	4.6	LOS A	0.0	0.0	0.00	0.38	0.00	33.6
11	T1	57	3.1	57	3.1	0.105	0.0	LOS A	0.0	0.0	0.00	0.38	0.00	39.9
Approach		194	3.0	194	3.0	0.105	3.3	NA	0.0	0.0	0.00	0.38	0.00	35.5
West: Furnivall Pde (W)														
5	T1	42	3.1	42	3.1	0.034	0.3	LOS A	0.1	0.8	0.19	0.16	0.19	37.2
6	R2	18	3.0	18	3.0	0.034	5.2	LOS A	0.1	0.8	0.19	0.16	0.19	33.4
Approach		60	3.1	60	3.1	0.034	1.7	NA	0.1	0.8	0.19	0.16	0.19	35.6
All Vehicles		516	3.0	516	3.0	0.239	2.1	NA	0.9	7.0	0.16	0.29	0.16	27.6

Table B2a. SIDRA results – Nairn Dr / Furnivall Pde / Regency Ave roundabout – 2031 Weekday AM peak (with Stage 1 development)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Nairn Dr (S)														
1	L2	1	3.1	1	3.1	0.237	5.0	LOS A	1.4	11.1	0.29	0.44	0.29	41.1
2	T1	666	9.1	666	9.1	0.237	5.3	LOS A	1.4	11.1	0.30	0.46	0.30	56.4
3	R2	13	3.1	13	3.1	0.237	11.3	LOS B	1.3	10.8	0.31	0.48	0.31	50.9
3u	U	20	3.1	20	3.1	0.237	14.0	LOS B	1.3	10.8	0.31	0.48	0.31	39.6
Approach		700	8.8	700	8.8	0.237	5.6	LOS A	1.4	11.1	0.30	0.46	0.30	56.1
East: Regency Ave (E)														
4	L2	31	3.1	31	3.1	0.112	3.9	LOS A	0.5	3.4	0.49	0.60	0.49	36.3
5	T1	31	3.1	31	3.1	0.112	4.2	LOS A	0.5	3.4	0.49	0.60	0.49	36.3
6	R2	36	3.1	36	3.1	0.112	9.8	LOS A	0.5	3.4	0.49	0.60	0.49	54.0
Approach		97	3.1	97	3.1	0.112	6.2	LOS A	0.5	3.4	0.49	0.60	0.49	45.9
North: Nairn Dr (N)														
7	L2	2	3.1	2	3.1	0.223	4.9	LOS A	1.2	9.9	0.21	0.41	0.21	55.9
8	T1	626	9.1	626	9.1	0.223	5.2	LOS A	1.2	9.9	0.22	0.44	0.22	56.7
9	R2	61	3.1	61	3.1	0.223	11.1	LOS B	1.2	9.6	0.23	0.48	0.23	55.7
Approach		689	8.6	689	8.6	0.223	5.7	LOS A	1.2	9.9	0.22	0.44	0.22	56.6
West: Furnivall Pde (W)														
10	L2	74	3.1	74	3.1	0.123	3.6	LOS A	0.5	3.9	0.45	0.53	0.45	53.9
11	T1	26	3.1	26	3.1	0.123	3.7	LOS A	0.5	3.9	0.45	0.53	0.45	45.6
12	R2	20	3.1	20	3.1	0.123	9.3	LOS A	0.5	3.9	0.45	0.53	0.45	31.8
Approach		120	3.1	120	3.1	0.123	4.6	LOS A	0.5	3.9	0.45	0.53	0.45	50.9
All Vehicles		1606	7.9	1606	7.9	0.237	5.6	LOS A	1.4	11.1	0.29	0.46	0.29	55.4

Table B2b. SIDRA results – Nairn Dr / Furnivall Pde / Regency Ave roundabout – 2031 Weekday PM peak (with Stage 1 development)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Nairn Dr (S)														
1	L2	1	3.1	1	3.1	0.291	5.4	LOS A	1.8	14.9	0.43	0.49	0.43	38.8
2	T1	663	9.1	663	9.1	0.291	5.8	LOS A	1.8	14.9	0.44	0.53	0.44	54.7
3	R2	47	3.1	47	3.1	0.291	11.9	LOS B	1.8	13.8	0.46	0.60	0.46	47.2
3u	U	77	3.1	77	3.1	0.291	14.6	LOS B	1.8	13.8	0.46	0.60	0.46	35.8
Approach		788	8.1	788	8.1	0.291	7.0	LOS A	1.8	14.9	0.44	0.54	0.44	53.5
East: Regency Ave (E)														
4	L2	39	3.1	39	3.1	0.149	4.8	LOS A	0.7	5.2	0.63	0.65	0.63	36.0
5	T1	48	3.1	48	3.1	0.149	5.3	LOS A	0.7	5.2	0.63	0.65	0.63	36.0
6	R2	18	3.1	18	3.1	0.149	10.9	LOS B	0.7	5.2	0.63	0.65	0.63	54.1
Approach		105	3.1	105	3.1	0.149	6.1	LOS A	0.7	5.2	0.63	0.65	0.63	41.4
North: Nairn Dr (N)														
7	L2	6	3.1	6	3.1	0.351	5.5	LOS A	2.2	18.0	0.44	0.50	0.44	54.1
8	T1	776	9.1	776	9.1	0.351	5.9	LOS A	2.2	18.0	0.45	0.53	0.45	54.1
9	R2	176	3.1	176	3.1	0.351	12.0	LOS B	2.1	16.9	0.47	0.61	0.47	52.4
Approach		958	8.0	958	8.0	0.351	7.0	LOS A	2.2	18.0	0.45	0.55	0.45	53.8
West: Furnivall Pde (W)														
10	L2	162	3.1	162	3.1	0.318	4.1	LOS A	1.6	12.0	0.57	0.65	0.57	52.5
11	T1	48	3.1	48	3.1	0.318	4.2	LOS A	1.6	12.0	0.57	0.65	0.57	43.8
12	R2	77	3.1	77	3.1	0.318	9.8	LOS A	1.6	12.0	0.57	0.65	0.57	30.0
Approach		287	3.1	287	3.1	0.318	5.7	LOS A	1.6	12.0	0.57	0.65	0.57	48.5
All Vehicles		2139	7.1	2139	7.1	0.351	6.8	LOS A	2.2	18.0	0.47	0.56	0.47	52.6

Table B3a. SIDRA results – Nairn Dr / East side access LILO intersection – 2031 Weekday AM peak (with Stage 1 development)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Nairn Dr (S)														
5	T1	700	9.1	700	9.1	0.195	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach		700	9.1	700	9.1	0.195	0.0	NA	0.0	0.0	0.00	0.00	0.00	69.9
East: East side access (E)														
7	L2	16	3.0	16	3.0	0.015	0.9	LOS A	0.1	0.4	0.31	0.17	0.31	17.8
Approach		16	3.0	16	3.0	0.015	0.9	LOS A	0.1	0.4	0.31	0.17	0.31	17.8
North: Nairn Dr (n)														
10	L2	4	3.0	4	3.0	0.129	6.4	LOS A	0.0	0.0	0.00	0.01	0.00	46.0
11	T1	692	9.1	692	9.1	0.129	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.5
Approach		696	9.1	696	9.1	0.129	0.0	NA	0.0	0.0	0.00	0.00	0.00	69.3
All Vehicles		1412	9.0	1412	9.0	0.195	0.0	NA	0.1	0.4	0.00	0.00	0.00	68.2

Table B3b. SIDRA results – Furnivall Pde / East side access LILO intersection – 2031 Weekday PM peak (with Stage 1 development)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Nairn Dr (S)														
5	T1	788	9.1	788	9.1	0.219	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach		788	9.1	788	9.1	0.219	0.0	NA	0.0	0.0	0.00	0.00	0.00	69.9
East: East side access (E)														
7	L2	7	3.0	7	3.0	0.008	1.4	LOS A	0.0	0.2	0.37	0.22	0.37	17.4
Approach		7	3.0	7	3.0	0.008	1.4	LOS A	0.0	0.2	0.37	0.22	0.37	17.4
North: Nairn Dr (n)														
10	L2	9	3.0	9	3.0	0.180	6.4	LOS A	0.0	0.0	0.00	0.02	0.00	45.7
11	T1	959	9.1	959	9.1	0.180	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	69.3
Approach		968	9.0	968	9.0	0.180	0.1	NA	0.0	0.0	0.00	0.01	0.00	68.8
All Vehicles		1764	9.0	1764	9.0	0.219	0.0	NA	0.0	0.2	0.00	0.00	0.00	68.6

Table B4a. SIDRA results – Nairn Dr / Crossover 1 RILILO intersection – 2031 Weekday AM peak (with Stage 1 development)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Nairn Dr (S)														
10	L2	52	3.1	52	3.1	0.028	5.4	LOS A	0.0	0.0	0.00	0.60	0.00	34.0
11	T1	644	9.1	644	9.1	0.179	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach		696	8.7	696	8.7	0.179	0.4	NA	0.0	0.0	0.00	0.04	0.00	63.0
North: Nairn Dr (N)														
5	T1	649	9.1	649	9.1	0.181	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
6	R2	57	3.1	57	3.1	0.142	10.6	LOS B	0.5	3.6	0.64	0.84	0.64	19.5
Approach		706	8.6	706	8.6	0.181	0.9	NA	0.5	3.6	0.05	0.07	0.05	51.7
West: Crossover 1 (W)														
7	L2	57	3.1	57	3.1	0.061	1.6	LOS A	0.2	1.6	0.39	0.29	0.39	17.6
Approach		57	3.1	57	3.1	0.061	1.6	LOS A	0.2	1.6	0.39	0.29	0.39	17.6
All Vehicles		1459	8.4	1459	8.4	0.181	0.7	NA	0.5	3.6	0.04	0.07	0.04	54.4

Table B4b. SIDRA results – Furnivall Pde / Crossover 1 RILILO intersection – 2031 Weekday PM peak (with Stage 1 development)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Nairn Dr (S)														
10	L2	154	3.1	154	3.1	0.085	5.4	LOS A	0.0	0.0	0.00	0.60	0.00	34.0
11	T1	544	9.1	544	9.1	0.151	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach		698	7.8	698	7.8	0.151	1.2	NA	0.0	0.0	0.00	0.13	0.00	53.5
North: Nairn Dr (N)														
5	T1	799	9.1	799	9.1	0.222	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
6	R2	167	3.1	167	3.1	0.412	13.1	LOS B	1.8	14.0	0.72	0.95	0.98	17.1
Approach		966	8.1	966	8.1	0.412	2.3	NA	1.8	14.0	0.12	0.16	0.17	37.9
West: Crossover 1 (W)														
7	L2	244	3.1	244	3.1	0.248	1.5	LOS A	1.0	7.7	0.41	0.32	0.41	17.5
Approach		244	3.1	244	3.1	0.248	1.5	LOS A	1.0	7.7	0.41	0.32	0.41	17.5
All Vehicles		1908	7.3	1908	7.3	0.412	1.8	NA	1.8	14.0	0.12	0.17	0.14	39.0

Table B5a. SIDRA results – Nairn Dr / Arpenteur Dr / Oldbury Rd roundabout – 2031 Weekday AM peak (with Stage 1 development)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Nairn Dr (S)														
1	L2	4	3.1	4	3.1	0.199	5.1	LOS A	1.0	8.3	0.30	0.45	0.30	56.5
2	T1	563	9.1	563	9.1	0.199	5.4	LOS A	1.0	8.3	0.31	0.46	0.31	56.2
3	R2	14	3.1	14	3.1	0.199	11.4	LOS B	1.0	8.0	0.32	0.48	0.32	59.4
Approach		581	8.9	581	8.9	0.199	5.6	LOS A	1.0	8.3	0.31	0.46	0.31	56.3
East: Oldbury Rd (E)														
4	L2	13	3.1	13	3.1	0.158	3.3	LOS A	0.5	4.0	0.41	0.65	0.41	50.6
5	T1	34	3.1	34	3.1	0.158	3.3	LOS A	0.5	4.0	0.41	0.65	0.41	35.3
6	R2	115	3.1	115	3.1	0.158	8.9	LOS A	0.5	4.0	0.41	0.65	0.41	35.3
Approach		161	3.1	161	3.1	0.158	7.3	LOS A	0.5	4.0	0.41	0.65	0.41	37.5
North: Nairn Dr (N)														
7	L2	27	3.1	27	3.1	0.205	3.8	LOS A	1.0	8.0	0.16	0.40	0.16	47.1
8	T1	603	9.1	603	9.1	0.205	4.1	LOS A	1.0	8.0	0.17	0.41	0.17	58.5
9	R2	19	3.1	19	3.1	0.205	10.0	LOS A	1.0	7.9	0.18	0.43	0.18	40.8
Approach		649	8.7	649	8.7	0.205	4.3	LOS A	1.0	8.0	0.17	0.41	0.17	58.0
West: Arpenteur Dr (W)														
10	L2	18	3.1	18	3.1	0.063	2.5	LOS A	0.2	1.5	0.36	0.45	0.36	31.3
11	T1	37	3.1	37	3.1	0.063	2.8	LOS A	0.2	1.5	0.36	0.45	0.36	47.4
12	R2	12	3.1	12	3.1	0.063	8.0	LOS A	0.2	1.5	0.36	0.45	0.36	58.6
Approach		66	3.1	66	3.1	0.063	3.6	LOS A	0.2	1.5	0.36	0.45	0.36	48.5
All Vehicles		1458	7.9	1458	7.9	0.205	5.1	LOS A	1.0	8.3	0.26	0.46	0.26	55.2

Table B5b. SIDRA results – Nairn Dr / Arpenteur Dr / Oldbury Rd roundabout – 2031 Weekday PM peak (with Stage 1 development)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Nairn Dr (S)														
1	L2	12	3.1	12	3.1	0.217	5.1	LOS A	1.1	9.0	0.29	0.45	0.29	56.5
2	T1	595	9.1	595	9.1	0.217	5.4	LOS A	1.1	9.0	0.30	0.47	0.30	56.1
3	R2	32	3.1	32	3.1	0.217	11.4	LOS B	1.1	8.7	0.32	0.49	0.32	59.0
Approach		638	8.7	638	8.7	0.217	5.7	LOS A	1.1	9.0	0.30	0.47	0.30	56.3
East: Oldbury Rd (E)														
4	L2	6	3.1	6	3.1	0.124	3.4	LOS A	0.4	3.1	0.43	0.64	0.43	50.8
5	T1	35	3.1	35	3.1	0.124	3.4	LOS A	0.4	3.1	0.43	0.64	0.43	35.5
6	R2	81	3.1	81	3.1	0.124	9.0	LOS A	0.4	3.1	0.43	0.64	0.43	35.5
Approach		122	3.1	122	3.1	0.124	7.2	LOS A	0.4	3.1	0.43	0.64	0.43	37.0
North: Nairn Dr (N)														
7	L2	85	3.1	85	3.1	0.253	3.9	LOS A	1.3	10.1	0.19	0.42	0.19	46.8
8	T1	662	9.1	662	9.1	0.253	4.2	LOS A	1.3	10.1	0.20	0.44	0.20	58.0
9	R2	52	3.1	52	3.1	0.253	10.0	LOS B	1.2	9.9	0.21	0.46	0.21	39.3
Approach		799	8.1	799	8.1	0.253	4.5	LOS A	1.3	10.1	0.20	0.44	0.20	56.8
West: Arpenteur Dr (W)														
10	L2	22	3.1	22	3.1	0.065	2.6	LOS A	0.2	1.6	0.36	0.44	0.36	31.5
11	T1	38	3.1	38	3.1	0.065	2.8	LOS A	0.2	1.6	0.36	0.44	0.36	47.9
12	R2	8	3.1	8	3.1	0.065	8.0	LOS A	0.2	1.6	0.36	0.44	0.36	59.0
Approach		68	3.1	68	3.1	0.065	3.4	LOS A	0.2	1.6	0.36	0.44	0.36	47.5
All Vehicles		1627	7.7	1627	7.7	0.253	5.2	LOS A	1.3	10.1	0.26	0.47	0.26	55.2

Table B6a. SIDRA results – Arpenteur Dr / Crossover 3 – 2031 Weekday AM peak (with Stage 1 development)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Arpenteur Dr (E)														
5	T1	52	3.1	52	3.1	0.031	0.0	LOS A	0.0	0.3	0.04	0.06	0.04	47.9
6	R2	6	3.0	6	3.0	0.031	4.0	LOS A	0.0	0.3	0.04	0.06	0.04	35.6
Approach		58	3.1	58	3.1	0.031	0.5	NA	0.0	0.3	0.04	0.06	0.04	46.8
North: Crossover 3 (N)														
7	L2	3	3.0	3	3.0	0.003	0.2	LOS A	0.0	0.1	0.14	0.07	0.14	18.7
9	R2	1	3.0	1	3.0	0.003	0.9	LOS A	0.0	0.1	0.14	0.07	0.14	29.8
Approach		4	3.0	4	3.0	0.003	0.4	LOS A	0.0	0.1	0.14	0.07	0.14	23.1
West: Arpenteur Dr (W)														
10	L2	1	3.0	1	3.0	0.034	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	34.3
11	T1	63	3.1	63	3.1	0.034	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.6
Approach		64	3.1	64	3.1	0.034	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.1
All Vehicles		126	3.1	126	3.1	0.034	0.3	NA	0.0	0.3	0.02	0.03	0.02	46.9

Table B6b. SIDRA results – Arpenteur Dr / Crossover 3 – 2031 Weekday PM peak (with Stage 1 development)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Arpenteur Dr (E)														
5	T1	80	3.1	80	3.1	0.054	0.1	LOS A	0.1	0.9	0.07	0.10	0.07	46.4
6	R2	19	3.0	19	3.0	0.054	4.0	LOS A	0.1	0.9	0.07	0.10	0.07	34.2
Approach		99	3.1	99	3.1	0.054	0.8	NA	0.1	0.9	0.07	0.10	0.07	44.5
North: Crossover 3 (N)														
7	L2	19	3.0	19	3.0	0.014	0.2	LOS A	0.1	0.4	0.14	0.06	0.14	18.8
9	R2	2	3.0	2	3.0	0.014	1.1	LOS A	0.1	0.4	0.14	0.06	0.14	29.9
Approach		21	3.0	21	3.0	0.014	0.3	LOS A	0.1	0.4	0.14	0.06	0.14	20.8
West: Arpenteur Dr (W)														
10	L2	1	3.0	1	3.0	0.034	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	34.3
11	T1	63	3.1	63	3.1	0.034	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.6
Approach		64	3.1	64	3.1	0.034	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.1
All Vehicles		184	3.1	184	3.1	0.054	0.5	NA	0.1	0.9	0.05	0.07	0.05	43.1

Attachment 6

Transport Impact Assessment Technical Note

Technical Note: No 2 **Date:** 19/08/2024
Project No: t24.011
Project: Parkland Heights Neighbourhood Centre, Baldivis
Subject: Initial Stages Development Transport Impact Assessment Addendum

1 Introduction

Transcore prepared the *Parkland Heights, Baldivis - Neighbourhood Centre Stage 1 Development Transport Impact Assessment* (February 2023) for the proposed shopping centre at the southwest corner of Nairn Drive and Furnivall Parade in Baldivis, in the City of Rockingham.

It is now proposed to amend the overall development plan that 2023 TIA report was based upon to reconfigure the northeastern corner of the development to include a left in only driveway for the proposed fuel station at the northeast corner of the site, and to accommodate a fast-food outlet with drive through lane south of Furnivall Parade instead of a specialty store west of Nairn Drive, which is displaced by the proposed left in driveway. Other incidental changes are also proposed in the layout of food & beverages tenancies on the west side of the main street and changes to floor areas for various components of the overall neighbourhood centre development.

This Technical Note revises and updates relevant information from the 2023 TIA report and should be read as an Addendum to the 2023 TIA report.

It should be noted that this Technical Note is also prepared to support the development application for the proposed fuel station. In response to preliminary comments from the Department of Planning, Lands and Heritage (DPLH), the traffic analysis in this Technical Note covers the future 'full build out' of all buildings as shown on the Local Development Plan (LDP), to ensure a holistic traffic analysis of the overall neighbourhood centre site.

2 Existing Situation

Refer to section 2 of the 2023 TIA report.

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3 Amended Development Proposal

3.1 Proposed Land Use

The proposed land uses that are covered by this TIA Addendum are the initial stages of development of the Parkland Heights Neighbourhood Centre, as well as the future 'full build out' of all buildings as shown on the LDP.

The 2023 TIA report addressed the proposed shopping centre itself and four pad sites for two fast food outlets, a fuel station and a specialty store along the northeastern frontage of the subject site. They were referred to as Stage 1 development for the purposes of that TIA report (to distinguish it from the overall Local Development Plan for the full site) but the actual staging of development now in use labels the shopping centre itself as Stage 1 and the four pad sites are proposed in development Stages 2, 3 and 4. All of these development Stages 1, 2, 3 and 4 are already covered by the 2023 TIA report and in this Addendum, and will be referred to as the Initial Stages of development in this Addendum.

The overall layout of the proposed amended development is shown on the proposed site plan in **Figure 1** and at **Appendix A**.

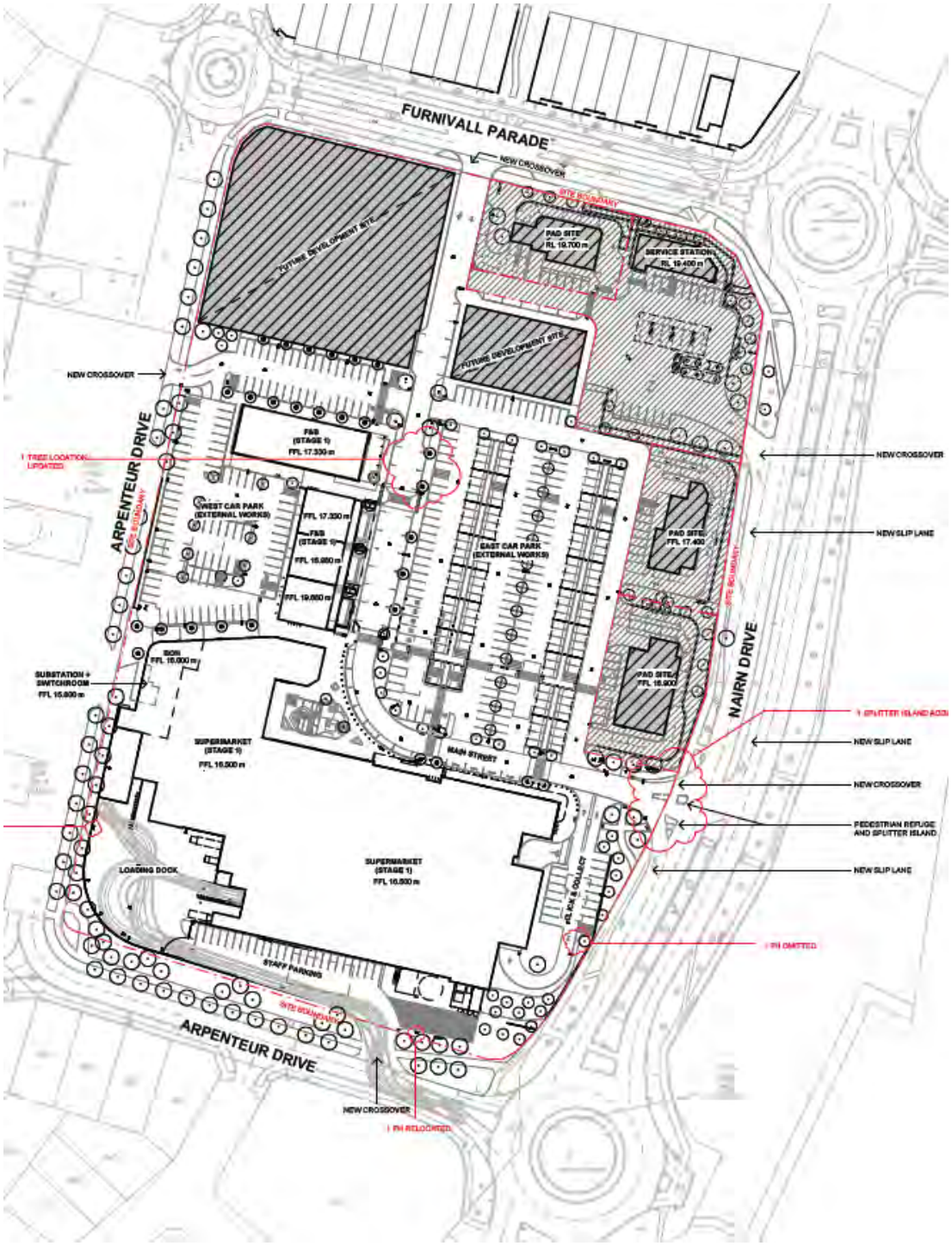


Figure 1: Proposed Amended Initial Stages of Development

The proposed Initial Stages of development totals approximately 9,548m^2 floor area and the future full development in the LDP is anticipated to add a further 3,500m^2 in future. The breakdown of floor areas are summarised in **Table 1**.

Table 1: Proposed amended land uses

Stage	Land Use	Floor Area
Initial Stages	Supermarket	5,255 m^2
	Specialty stores	807 m^2
	Food & Beverage	1,355 m^2
	Fast Food	940 m^2
	Convenience (fuel station with 6 vehicle fuelling positions)	216 m^2
	Liquor	200 m^2
	Kiosk	25 m^2
	Future expansion	750 m^2
	Subtotal Initial Stages	**9,548 m^2**
Future	**Future development**	**Approx. 3,500 m^2**
Total		**Approx. 13,000 m^2**

3.2 Proposed Access Arrangements

The proposed access system for the Initial Stages of development comprises:

- Crossover 1: a right in / left in / left out driveway crossover on Nairn Drive;
- Crossover 2: a full movement driveway crossover on Furnivall Parade;
- Crossover 3: a full movement driveway crossover on Arpenteur Drive on the southern frontage of the subject site used mainly by staff and service vehicles;
- Crossover 4: a full movement driveway crossover on Arpenteur Drive; and
- A new left in only driveway crossover is now proposed on Nairn Drive (south of the Furnivall Parade roundabout) for improved access to the proposed fuel station and adjacent fast food outlets.

The main circulation roadway through the site forms a L-shape from Crossover 1 at Nairn Drive in the east to Crossover 2 at Furnivall Parade in the north.

4 Changes to Surrounding Transport Networks

Refer to section 4 of the 2023 TIA report.

5 Integration with Surrounding Area

Refer to section 5 of the 2023 TIA report.

6 Hours of Operation

Refer to section 6 of the 2023 TIA report.

7 Traffic Assessment

7.1 Assessment Period

The assessment year utilised in the 2023 TIA report was 2031 for consistency with the previous reports. However, preliminary comments from DPLH have requested analysis for 10 years post development in accordance with WAPC TIA Guidelines. The future horizon year used in the previous reports is not really specific to the year 2031 but is based on the assumption of full development of Baldivis by 2031. Nonetheless, to comply with the DPLH request, additional traffic growth will be applied to the modelled through traffic volumes on Nairn Drive at the typical nominal growth rate of 2% per year from 2031 to the revised assessment year of 2036 that will be utilised in this revised assessment.

7.2 Traffic Generation

Traffic generation has been recalculated for the proposed amended development using the same approach as in the 2023 TIA report. The traffic volume anticipated to be generated by the proposed shopping centre has been calculated using formulae provided in the New South Wales *Guide to Traffic Generating Developments* (2002). Those formulae take account of different types of land use within the proposed development (supermarket, specialty stores, office/medical, etc.) to provide a more accurate estimate of traffic generation for the particular mix of land uses that are actually proposed.

The land use components for this calculation are as follows:

- A(S) = slow trade = 0m^2
- A(F) = faster trade = 0m^2
- A(SM) = supermarket = 5255m^2
- A(SS) = specialty shops = 7577m^2
- A(OM) = office / medical = 0m^2

The fuel station's 216m^2 floor area (convenience store) is not included in these floor areas as the fuel station traffic generation is calculated separately, as discussed below.

In the following formulae each area is input as per 1000m^2 (i.e. 5255m^2 is input as 5.255 in these calculations).

Thursday PM peak hour traffic generation
= 20A(S) + 51A(F) + 155A(SM) + 46A(SS) + 22A(OM) = 1163vph

The NSW guide does not provide AM peak hour traffic formulae for shopping centres but the ITE *Trip Generation Manual* does provide weekday AM and PM peak hour trip rates for shopping centres. The ITE trip rates indicate that shopping centres generate approximately 25% as much traffic during the road network AM peak hour compared to their traffic generation during the road network PM peak hour. However, the ITE trip rates indicate that fast food outlets can attract similar traffic flows during AM and PM peak periods, so that has also been factored into the traffic calculations. The net result is that the future full development of the neighbourhood centre (excluding fuel station) will generate approximately 358vph during that AM peak period.

The ITE *Trip Generation Manual* also provides an indication of directional split of this shopping centre traffic generation. It is typically 62% in / 38% out during the AM peak hour but more evenly split during the PM peak hour. Fast food outlet traffic is more evenly split in both peak periods.

Accordingly, the following traffic generation and directional split are anticipated for the future full development of the neighbourhood centre (excluding the fuel station and its convenience store, as discussed below):

- AM Peak Hour: 358vph (188 in / 170 out)
- PM Peak Hour: 1163vph (582 in / 581 out)

Fast food outlets are listed as included in the specialty shops component in the NSW formulae but fuel stations are not specifically mentioned. Accordingly, traffic generation for the fuel station with convenience store has been calculated separately using trip rates from the ITE Trip Generation Manual (11th Edition, land use 945, convenience store / gas station). It indicates trip rates of 16.06 vph per vehicle fueling position during the road network AM peak and 18.42 during the road network PM peak, with 50/50 directional split during both periods. Therefore, the traffic generation of the service station with 6 vehicle fueling positions would be 96vph during the AM peak and 111vph during the PM peak. However, this does not make any allowance for reciprocity (i.e. a significant number of fuel station trips will also visit other uses on site such as fast food) and different peak days for the different land uses (service stations peak on Tuesday due to fuel pricing whereas shopping centres peak later in the week). Accordingly, a 50% discount has been applied to take into account reciprocity and the reduced traffic generation of a fuel station during the shopping centre peak days.

The overall traffic generation for the future full development of the neighbourhood centre (including the fuel station with convenience store) is as follows:

- AM Peak Hour: 406vph (212 in / 194 out)
- PM Peak Hour: 1218vph (609 in / 609 out)

Approximately 20% of the shopping centre traffic is anticipated to be pass-by trips by vehicles that would normally be travelling past this site on Nairn Drive as part of another journey (eg. a person who visits the shopping centre on their way home from work), based on guidance in the NSW *Guide to Traffic Generating Developments*.

Fuel stations and fast food outlets are more reliant on passing trade. The ITE *Trip Generation Handbook* (3rd Edition) indicates that typically around 60% of fuel station traffic generation and 50% of fast food outlet traffic generation consists of pass-by trips.

7.3 Traffic Distribution

Refer to section 7.3 of the 2023 TIA report for details of external traffic distribution.

Traffic flows generated by the future full development of the neighbourhood centre have been assigned on the driveway crossovers (including the proposed new left in only driveway crossover on Nairn Drive) and adjacent road network in accordance with the external trip distribution discussed in the 2023 TIA report. The revised AM and PM peak hour traffic flows generated by the proposed amended Initial Stages of development are shown in **Figure 2**.

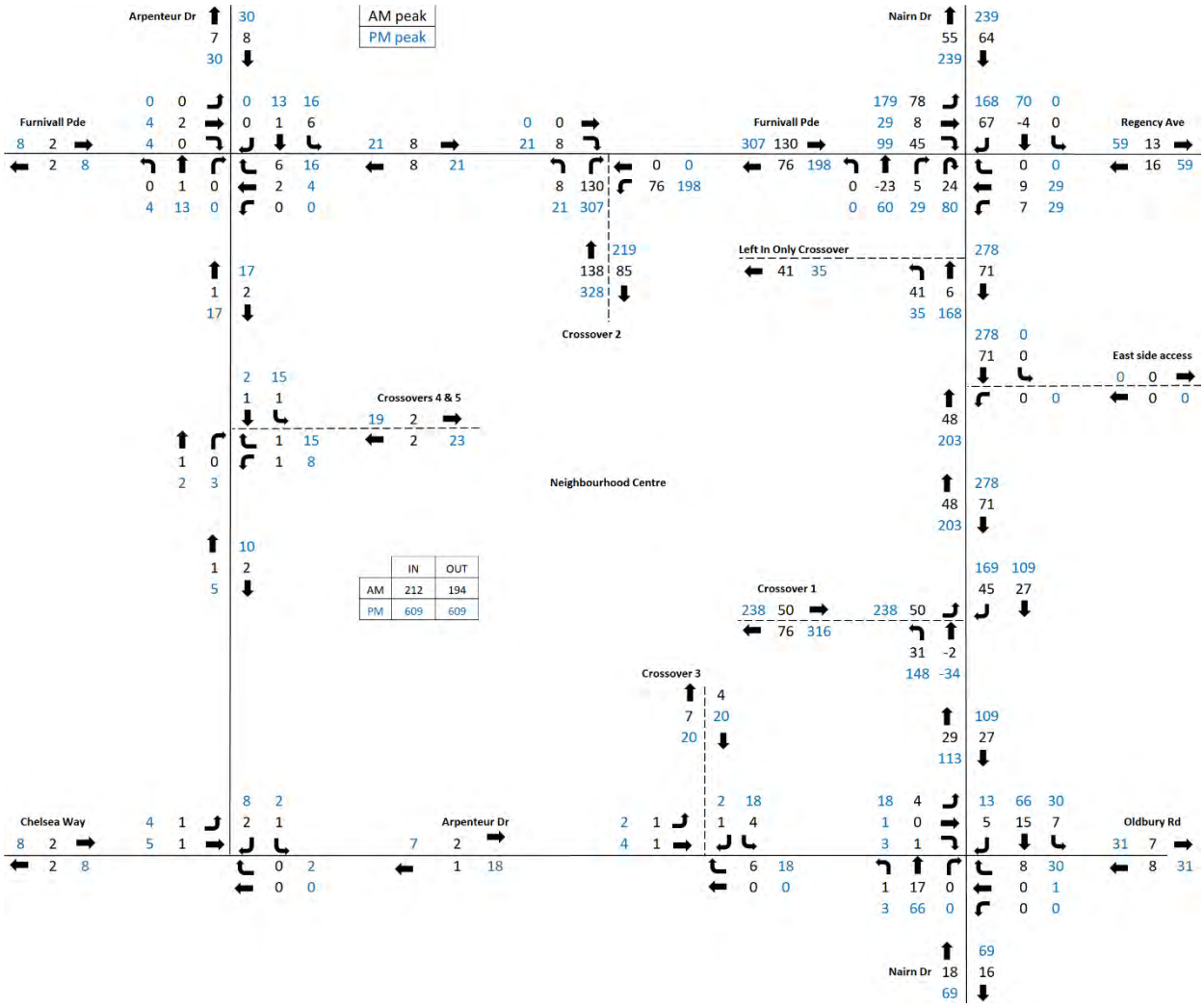


Figure 2: Peak hour traffic flows generated by future full development

7.4 Total Traffic Flows

Refer to section 7.4 of the 2023 TIA report for details of base traffic calculations and section 7.1 of this Technical Note regarding traffic growth to 2036 .

The calculated revised Initial Stages of development traffic flows have been added to the 2036 base traffic flows to determine 2036 AM and PM peak hour traffic flows for analysis of the Nairn Drive intersections adjacent to the Neighbourhood Centre site and the proposed driveway crossovers for this development. The resultant 2036 AM and PM peak hour total traffic flows with the future full development of the neighbourhood centre are shown in **Figure 3**.

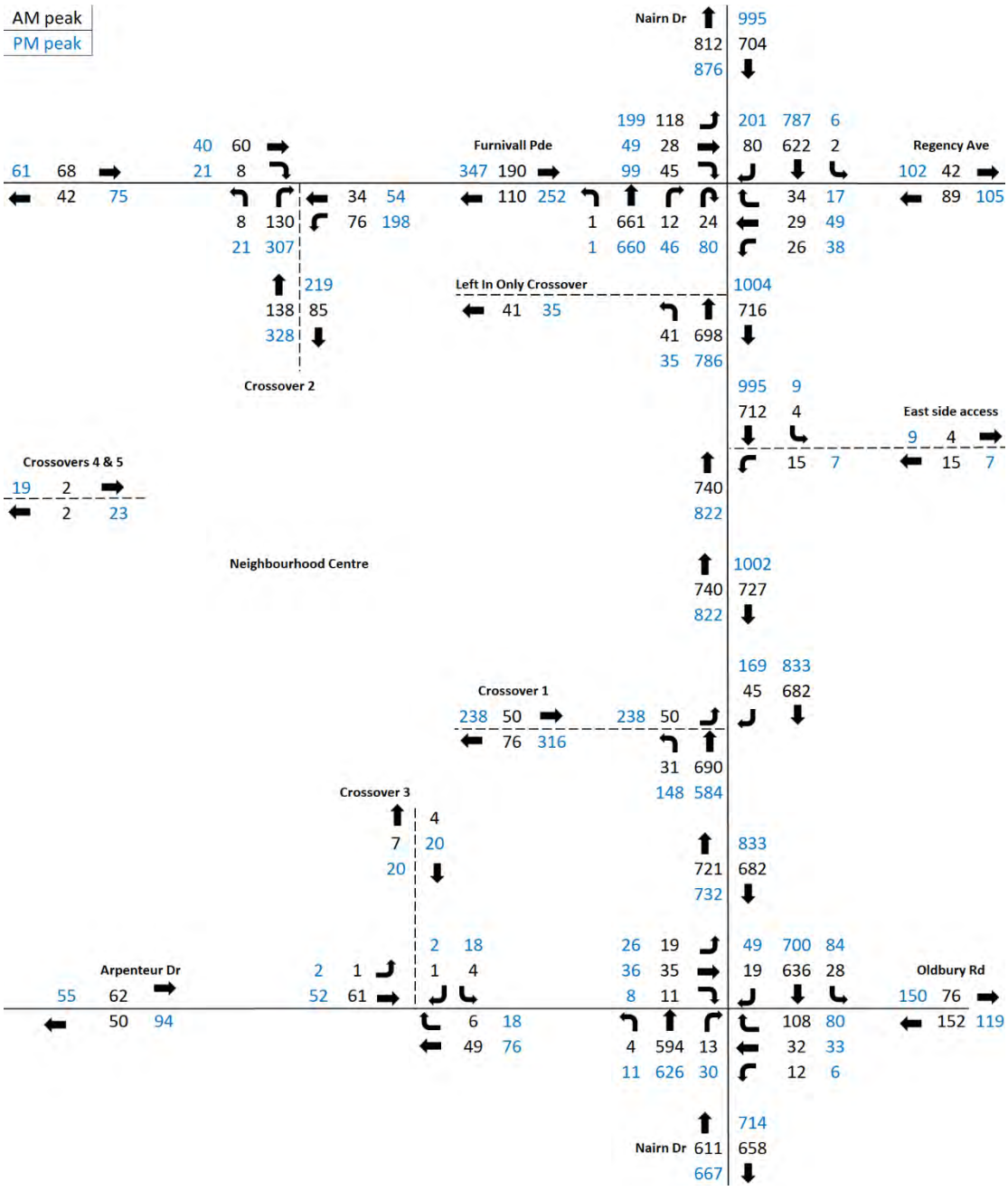


Figure 3: 2036 Peak hour total traffic flows with future full development

7.5 Intersection Analysis

SIDRA Network analysis has been undertaken for the subject site crossovers on Nairn Drive, Furnivall Parade and Arpenteur Drive, the Nairn Dr / Furnivall Pde / Regency Ave roundabout and the Nairn Dr / Arpenteur Dr / Oldbury Rd roundabout to confirm satisfactory intersection operations under the modelled 2036 AM and PM peak hour traffic flows shown in **Figure 3**.

For this assessment, relevant heavy vehicle parameters in SIDRA are in accordance with current Main Roads WA guidelines.

The SIDRA package is a commonly used intersection-modelling tool by traffic engineers for all types of intersections. SIDRA outputs are presented in the form of Degree of Saturation, Level of Service, Average Delay and 95% Queue. These items are defined as follows:

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

The results of the SIDRA analysis are summarised in **Appendix B**.

The SIDRA Network layout of the intersections and driveway crossovers that have been analysed is shown in **Figure B1** in **Appendix B**.

It should be noted that this SIDRA Network model also includes a left in / left out driveway crossover on the eastern side of Nairn Drive (labelled as east side access), which is consistent with the access arrangement anticipated on that side of Nairn Drive in the *Parkland Heights Neighbourhood Centre LSP Amendment Transport Impact Assessment* report (December 2018).

The SIDRA results for the Nairn Dr / Furnivall Pde / Regency Ave roundabout are shown in Tables B2a (AM peak) and B2b (PM peak). They indicate that this existing dual-lane roundabout would operate at degree of saturation 0.254 in the AM peak and 0.417 in the PM peak. The overall intersection will be at level of service (LoS) A in both peak periods with all movements at LoS A or B indicating very good operation with minimal traffic delays.

The SIDRA results for the Nairn Dr / Arpenteur Dr / Oldbury Rd roundabout are shown in Tables B6a (AM peak) and B6b (PM peak). They indicate that this existing dual-lane roundabout would operate at degree of saturation 0.222 in the AM peak and 0.278 in the PM peak. The overall intersection will also be at LoS A in both peak periods with all movements at LoS A or B indicating very good operation with minimal traffic delays.

The Nairn Dr / Crossover 1 driveway crossover is proposed to accommodate right in / left in / left out (RILILO) traffic movements. It will have a right turn lane in the Nairn Drive median to allow right turning vehicles to slow and queue within that right turn lane without impeding southbound through traffic on Nairn Drive. A left turn inbound deceleration lane is also included due to the modelled left turn traffic volume in the PM peak, although this has not been required at most other existing intersections along Nairn Drive.

The SIDRA results for this RILILO driveway crossover are shown in Tables B5a (AM peak) and B5b (PM peak). They indicate that this proposed access arrangement would operate at degree of saturation 0.202 in the AM peak and 0.500 in the PM peak. All movements would be at LoS A, B or C indicating good traffic operation. The right turn inbound movement only shows a 95% queue length of 2.3 vehicles in the PM peak hour, so the proposed right turn lane in the median will easily accommodate this movement.

The SIDRA results for the proposed new left in only driveway crossover on Nairn Drive are shown in Tables B3a (AM peak) and B3b (PM peak). They indicate that this proposed access arrangement would operate at degree of saturation 0.210 in the AM peak and 0.294 in the PM peak. All movements would be at LoS A indicating very good operation with minimal traffic delays and minimal traffic queues.

The SIDRA results for the Furnivall Pde / Crossover 2 driveway crossover are shown in Tables B1a (AM peak) and B1b (PM peak). They indicate that this proposed access arrangement would operate at degree of saturation 0.128 in the AM peak and 0.327 in the PM peak. All movements would be at LoS A indicating very good operation with minimal traffic delays and no significant traffic queues.

The SIDRA results for the proposed full movement crossover 3 on Arpenteur Drive (south) are shown in Tables B7a (AM peak) and B7b (PM peak). They indicate that this proposed access arrangement would operate at degree of saturation 0.034 in the AM peak and 0.054 in the PM peak. All movements would be at LoS A indicating very good operation with minimal traffic delays and minimal traffic queues.

The SIDRA results for the proposed full movement crossover 4 on Arpenteur Drive (west) are shown in Tables B8a (AM peak) and B8b (PM peak) for the initial stages DA (there would be two crossovers here to share the traffic load in the future full development scenario, so the initial stages DA is the appropriate scenario to assess for this crossover). They indicate that this crossover would operate at degree of

saturation 0.057 in the AM peak and 0.065 in the PM peak. All movements would be at LoS A indicating very good operation with minimal traffic delays and minimal traffic queues. As a sensitivity test, an additional analysis has also been undertaken with double the traffic flows turning in and out of crossover 4. This sensitivity test is documented in Table 8c and shows that all movements would still be at LoS A with minimal traffic delays and minimal traffic queues.

7.5.1 Proposed Left In Driveway on Nairn Drive

The proposed left in only driveway on Nairn Drive will significantly improve access to the pad sites (fuel station and fast food outlets) in the northeast corner of the LDP area. In particular, it will greatly simplify the passage of fuel tankers delivering to the fuel station which would otherwise have to enter via Furnivall Parade and turn around on site.

Preliminary discussions with officers of the City of Rockingham raised the issue of the spacing of the proposed driveways along Nairn Drive and the length of left turn deceleration lane appropriate for the proposed new left in only driveway.

The proposed left in driveway will be approximately 50m south of the Nairn Dr / Furnivall Pde / Regency Ave roundabout and approximately 120-130m north of the main driveway crossover (RILILO) for the shopping centre.

The default built up area speed limit of 50km/h currently applies on this section of Nairn Drive within the LSP area but on other sections further north (north of the LSP area boundary) a 70km/h posted speed limit applies. It is therefore anticipated the future speed limit on this section of Nairn Drive will be 70km/h.

Austroads *Guide to Road Design Part 4A: Unsignalised and Signalised Intersections* (2023) Table 5.2 provides guidance on deceleration distances required for cars on a level grade. For a design speed of 70km/h it recommends a deceleration length of 75m at a "comfortable" deceleration rate of 2.5m/s^2 or a minimum distance of 55m at a maximum deceleration rate of 3.5m/s^2. As the entry into the property is not impeded by other traffic flows there does not need to be any added storage space for vehicles to queue within this left turn lane before entering the subject site. Therefore, a left turn lane length of 75m (including the diverge taper at the start of the left turn lane) would be considered desirable for this left in only driveway on Nairn Drive.

Preliminary design investigations undertaken by the project civil engineer demonstrate that a 75m-long left turn lane can be accommodated as recommended above. Detailed drawings demonstrating this will be submitted with the development application for the fuel station.

One of the other issues raised in discussions with the City was whether there would be any confusion caused by vehicles indicating a left turn (for the new left in only driveway) as they pass the main RILILO driveway south of that left turn deceleration lane.

This is not considered to present a safety issue because that main RILILO driveway will also have its own left turn lane in the verge of Nairn Drive. It will therefore be clear to other turning vehicles waiting at the RILILO driveway, that vehicles in that southern left turn lane are turning left into the RILILO driveway and any vehicles in the continuing through traffic lanes on Nairn Drive are continuing past the RILILO driveway, even if they start to indicate a left turn before reaching the left turn lane for the left turn only driveway.

7.6 Impact on Surrounding Roads

Refer to section 7.6 of the 2023 TIA report.

7.7 Impact on Neighbouring Areas

Refer to section 7.7 of the 2023 TIA report.

7.8 Traffic Noise and Vibration

Refer to section 7.8 of the 2023 TIA report.

7.9 Northern Fast Food Outlet Queuing Analysis

The proposed changes to the Initial Stages of development of the subject site include a new northern fast food outlet of approximately 220m^2 floor area, located south of Furnivall Parade and west of the proposed fuel station.

An enlarged section of the site plan showing the proposed fuel station and northern fast food outlet is shown in **Figure 4**.

Figure 4: Proposed service station and northern fast food outlet

The proposed restaurant will include a drive through facility around the northern side of the fast food outlet, with two-lane entry and two Customer Order Booths (COB) at the western side of the fast food outlet. There would be queuing space for 3 cars at each COB (i.e. 6 cars total at COBs), 4 car spaces between the COBs and the service window and overflow queuing space for an additional 3 cars in a separate left turn slip lane off the northern driveway south of Furnivall Parade prior to reaching the COBs (i.e. total queuing capacity of approximately 13 cars).

NSW Guidelines

Section 5.8.1 of the New South Wales *Guide to Traffic Generating Developments* deals with the parking requirements for drive-in, take-away food outlets. This clause states that:

"An exclusive area for queuing of cars for a drive through is required (queue length of 5 to 12 cars measured from pick up point). There should also be a minimum of four car spaces for cars queued from the ordering point."

Accordingly, the proposed drive through facility meets the NSW guide's recommended drive through queuing area provisions.

Drive-through queue length analysis model

The ITE Trip Generation Manual trip rates for fast food outlets with drive through indicate the peak period for this type of land use is the Saturday peak period with a trip rate of 59.5 vph per 100m^2 GFA. Accordingly, a fast food outlet with 220m^2 floor area would potentially generate traffic flows of approximately 131vph (66 in / 65 out) during the Saturday lunchtime peak period.

For a smaller fast food restaurant like this, with less seating available than at a larger restaurant, the breakdown of transaction type is anticipated to comprise 75/25 split of drive-through/ park'n'sit customers, respectively.

Accordingly, it is estimated that the drive-through will accommodate about 50 customers during the Saturday peak period.

It is further assumed that the order-taking cycle would average one minute (60sec) equating to a service rate of 60 customers per hour per COB.

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

The queuing model adopts the following assumptions:

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

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

- There is zero queuing 41% of the time;
- The expected number of vehicles in the system is one or two;
- The expected time in the queue is 73 seconds; and,
- The 95th percentile queue in the system is three vehicles.

The queue length usually adopted for robust analysis is the 95th percentile queue. This queue length will not be exceeded 95% of the time.

Based on the queue analysis model, it is concluded that under typical peak conditions the queue backs from each COB will be comfortably accommodated

within the two-lane ordering facility, with no impact on internal site driveways. The results of the queuing analysis are detailed in **Figure 5**.

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

M/M/s	vph	vps
Arrival rate	50	0.013889
Service rate	60	0.016667
Number of servers	2	2

Utilization	41.67%		41.67%	
P(0), probability that the system is empty	0.4118		0.4118	
Lq, expected queue length	0.1751	(cars)	6.0000	(metres)
L, expected number in system	1.0084	(cars)	12.0000	(metres)
Wq, expected time in queue	0.0035	(hours)	12.6050	(seconds)
W, expected total time in system	0.0202	(hours)	72.6050	(seconds)
Probability that a customer waits	0.2451		0.2451	
95% Queue	3.0000	(cars)	18.0000	(metres)

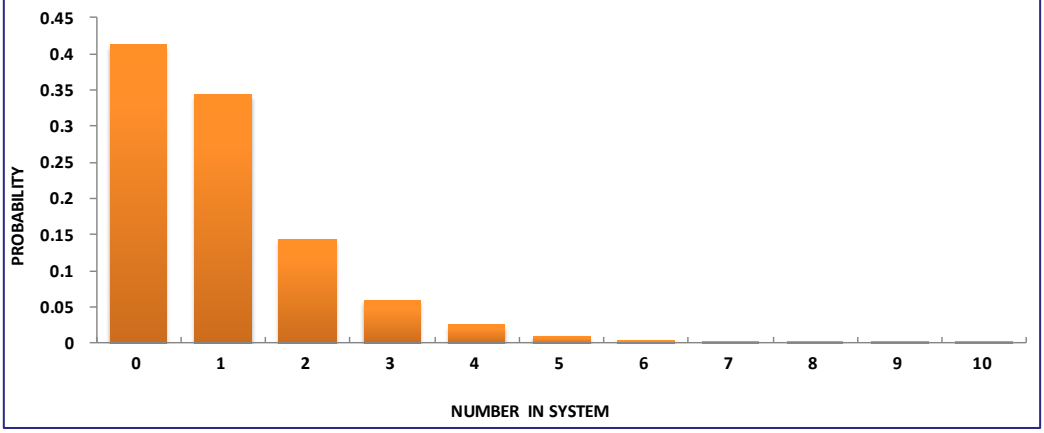


Figure 5. Saturday peak hour queueing analysis

8 Parking

Parking provision has been assessed for the proposed amended development using the same approach as in the 2023 TIA report.

The proposed site plan at **Appendix A** documents the proposed parking provision for the Initial Stages of development.

The site plan parking summary lists 447 parking spaces (including 10 disabled bays and 6 online ordering bays for the supermarket) but that list is only for the Stage 1 development. The four pad sites add another 35 parking spaces including 3 disabled bays.

Therefore, the Initial Stages of development will provide a total of 482 parking bays including 13 disabled bays and 6 online ordering bays for the supermarket.

With the Initial Stages of development floor area of 9,548m^2 NLA, the proposed parking provision of 482 bays would equate to 5.048 bays per 100m^2 of floor area.

WAPC *Statement of Planning Policy 4.2 – Activity Centres* was referenced in the 2023 TIA report, but SPP4.2 has been revised and no longer provides guidance on appropriate parking ratios. As part of the current planning reform process a draft document dated Feb 2023 was released for public comment – "Car parking requirements for non-residential land uses in Perth and Peel – *draft* Interim Guidance document". That interim guidance document recommends minimum and maximum parking ratios for various land uses. For "Shop" it recommends minimum 1 space per 50m^2 FA and maximum 1 space per 20m^2 FA.

The proposed parking provision is therefore considered sufficient for the proposed Initial Stages of development.

9 Public Transport Access

Refer to section 9 of the 2023 TIA report.

10 Pedestrian and Cyclist Access

Refer to section 10 of the 2023 TIA report.

11 Conclusions

This Technical Note relates to proposed changes to the proposed Initial Stages of development of the Parkland Heights Neighbourhood Centre in Baldivis, in the City of Rockingham. This Technical Note is structured as an Addendum to the *Parkland Heights, Baldivis - Neighbourhood Centre Stage 1 Development Transport Impact Assessment* (February 2023).

The subject site is located on the western side of Nairn Drive between Furnivall Parade and Chelsea Way / Arpenteur Drive.

The proposed access system for the Initial Stages of development comprises:

- Crossover 1: a right in / left in / left out driveway crossover on Nairn Drive;
- Crossover 2: a full movement driveway crossover on Furnivall Parade;
- Crossover 3: a full movement driveway crossover on Arpenteur Drive on the southern frontage of the subject site used mainly by staff and service vehicles;
- Crossover 4: a full movement driveway crossover on Arpenteur Drive; and

- A new left in only driveway crossover is now proposed on Nairn Drive (south of the Furnivall Parade roundabout) for improved access to the proposed fuel station and adjacent fast food outlets.

The main circulation roadway through the site forms a L-shape from Crossover 1 at Nairn Drive in the east to Crossover 2 at Furnivall Parade in the north.

The busiest period for combined road network and development traffic would typically occur during the weekday PM peak period when the future full development of the neighbourhood centre is anticipated to generate approximately 1218vph (609 in / 609 out).

Traffic analysis has been updated for weekday AM and PM peak hours for modelled traffic growth to the year 2036, instead of the year 2031 used in the traffic analysis undertaken for the previous *Parkland Heights Neighbourhood Centre LSP Amendment Transport Impact Assessment* report (December 2018) and the 2023 TIA report. This addresses preliminary comments from DPLH which requested analysis for 10 years post development in accordance with WAPC TIA Guidelines.

The traffic analysis indicates that all of the key intersections and driveways around this site will all operate satisfactorily under the projected future traffic flows with full development of the proposed neighbourhood centre.

A 75m long left turn deceleration lane would be appropriate for the proposed new left turn in only driveway on Nairn Drive. Preliminary design investigations undertaken by the project civil engineer confirm that a 75m-long left turn lane can be accommodated at the proposed location. The two driveways on Nairn Drive are both expected to operate satisfactorily.

Queuing analysis for the proposed new northern fast food outlet drive through facility indicates satisfactory queuing capacity within that drive through ordering facility.

Other conclusions of the 2023 Transport Impact Assessment remain valid.

In conclusion, the findings of this Transport Impact Assessment Addendum are supportive of the proposed development. The proposed left in only driveway on Nairn Drive will significantly improve access to the pad sites (fuel station and fast food outlets) in the northeast corner of the subject site. In particular, it will greatly simplify the passage of fuel tankers delivering to the fuel station which would otherwise have to enter via Furnivall Parade and turn around on site. Other changes will not impact the performance of driveway connections to the surrounding road network or internal traffic circulation within the Neighbourhood Centre site.

APPENDIX A

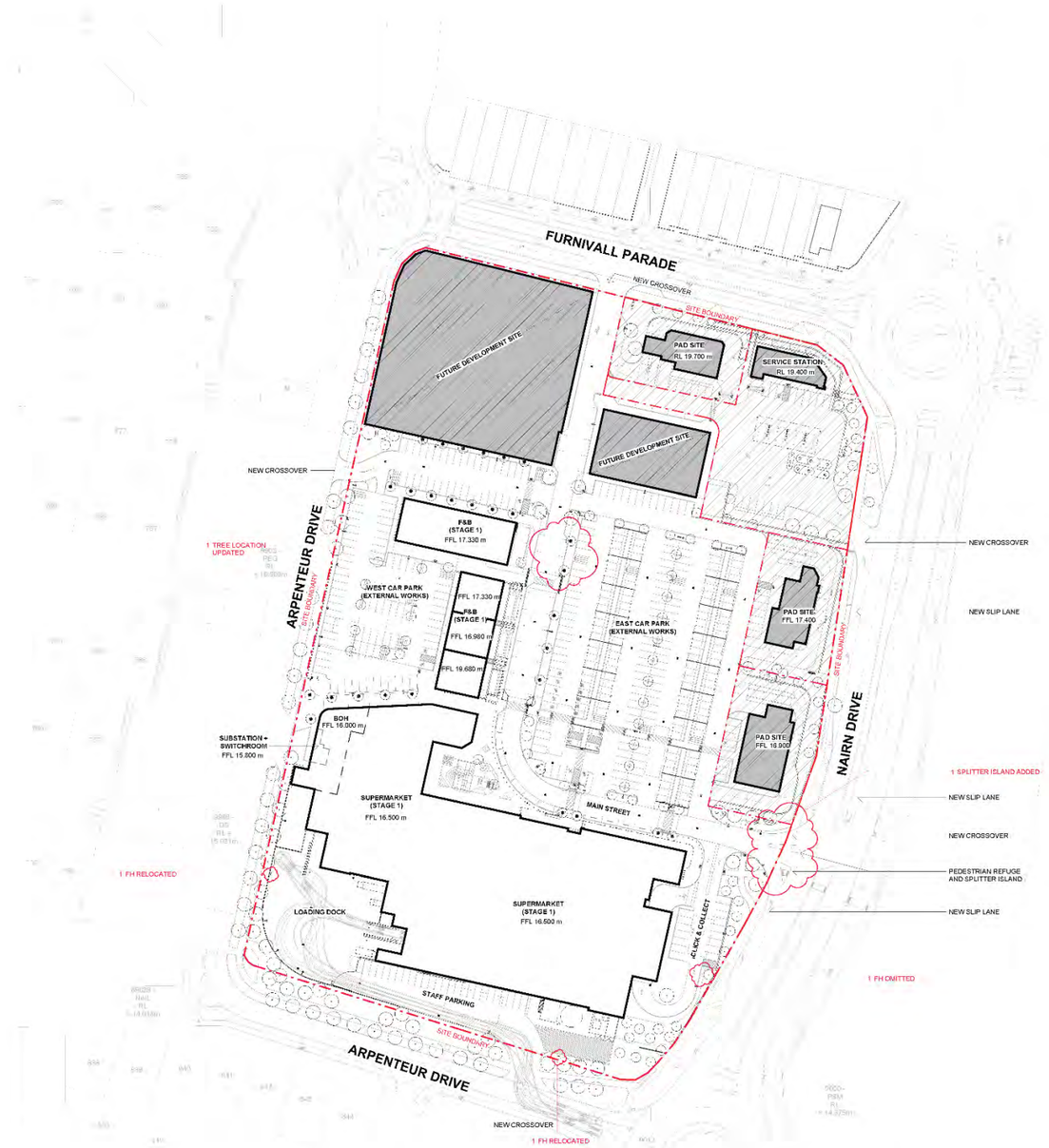
PROPOSED DEVELOPMENT PLANS

© COPYRIGHT
USE FIGURED DIMENSIONS IN PREFERENCE TO SCALED.
ALL DIMENSIONS TO BE VERIFIED AND CHECKED ON SITE.

NORTH

Legend

- FUTURE BUILDINGS (NOT PART OF THIS SCOPE)
- FUTURE PAD SITES (NOT PART OF THIS SCOPE)
- REVERSE CLOUDS INDICATE AREAS IN ABEYANCE
- RED HATCH INDICATE UNRESOLVED AREAS UNDERGOING COORDINATION



PARKING SUMMARY	
CAR BAY TYPE	COUNT
ACROD BAY	10
CLICK & COLLECT	6
PARALLEL BAYS	35
STANDARD CAR BAY	396
Grand total	447

Rev.	Date	Initial	Description
1	09/08/2024	HS	ISSUED FOR TENDER
0	31/05/2024	HS	ISSUED FOR TENDER

Client

PARKLAND HEIGHTS

Hames Sharley
hamessharley.com.au +61 8 9381 0200

Project
PARKLAND HEIGHTS SHOPPING CENTRE
LOT 9014 SIXTY EIGHT ROAD
BALDIVIS WA 6171

Drawing Title
SITE PLAN

Drawn By	Checked By	Scale @ A1
JR	LA	1 : 1000
Project No.	Drawing No.	Revision
44857	A100	1

Status
ISSUED FOR TENDER
85% DESIGN DEVELOPMENT

APPENDIX B

SIDRA INTERSECTION ANALYSIS

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.

Not to Scale

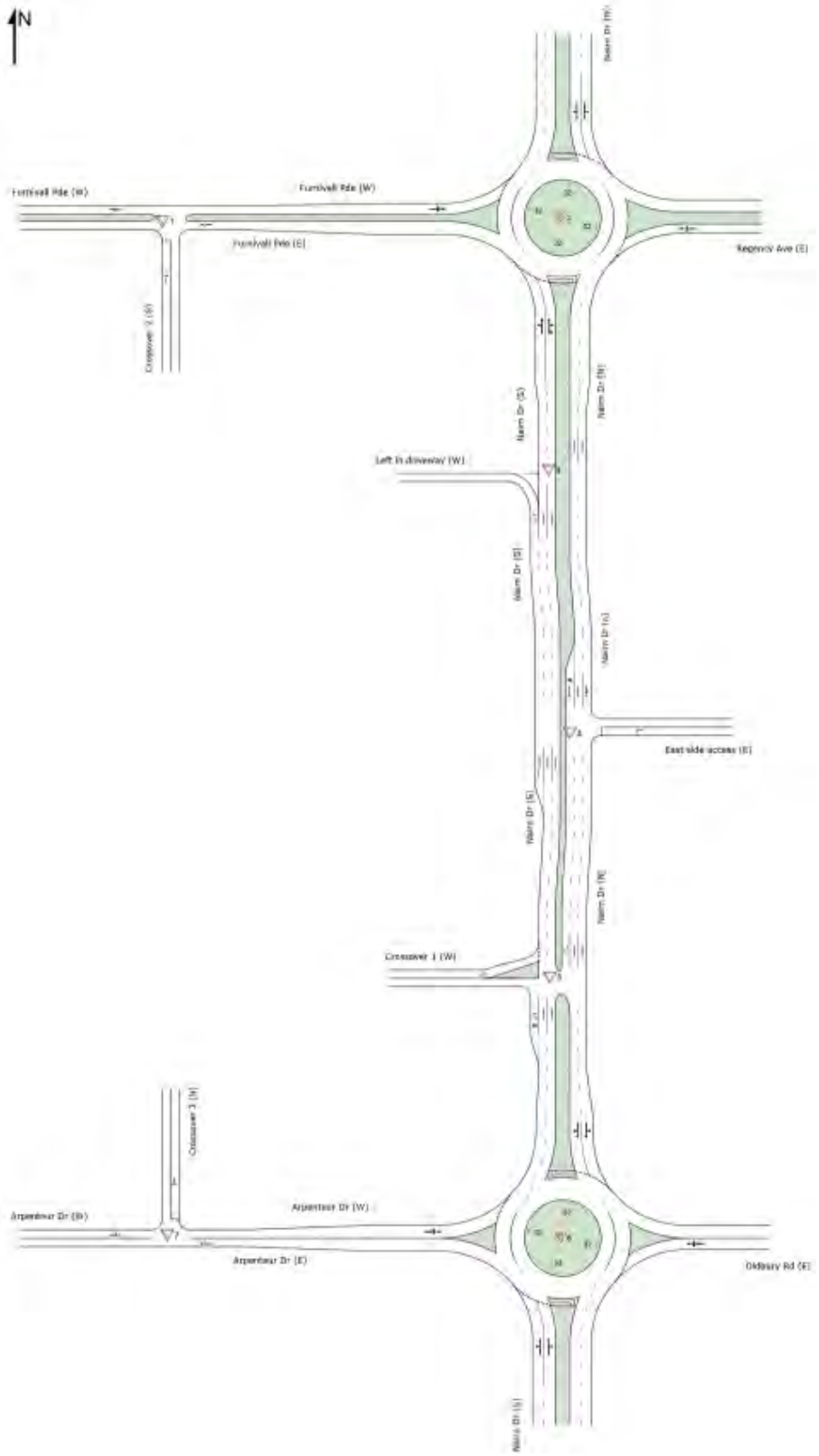


Figure B1: Nairn Drive Intersections and Neighbourhood Centre Driveway Crossovers Analysed in SIDRA Network

Table B1a. SIDRA results – Furnivall Pde / Crossover 2 intersection – 2036 Weekday AM peak (with full LDP development)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Crossover 2 (S)															
7	L2	All MCs	8	3.0	8	3.0	0.128	0.1	LOS A	0.4	3.4	0.22	0.15	0.22	23.0
9	R2	All MCs	137	3.0	137	3.0	0.128	0.8	LOS A	0.4	3.4	0.22	0.15	0.22	18.0
Approach			145	3.0	145	3.0	0.128	0.8	LOS A	0.4	3.4	0.22	0.15	0.22	18.5
East: Furnivall Pde (E)															
10	L2	All MCs	80	3.0	80	3.0	0.063	4.6	LOS A	0.0	0.0	0.00	0.37	0.00	33.8
11	T1	All MCs	36	3.1	36	3.1	0.063	0.0	LOS A	0.0	0.0	0.00	0.37	0.00	40.1
Approach			116	3.0	116	3.0	0.063	3.2	NA	0.0	0.0	0.00	0.37	0.00	35.8
West: Furnivall Pde (W)															
5	T1	All MCs	63	3.1	63	3.1	0.039	0.1	LOS A	0.1	0.4	0.06	0.08	0.06	44.3
6	R2	All MCs	8	3.0	8	3.0	0.039	4.9	LOS A	0.1	0.4	0.06	0.08	0.06	31.9
Approach			72	3.1	72	3.1	0.039	0.6	NA	0.1	0.4	0.06	0.08	0.06	41.7
All Vehicles			333	3.0	333	3.0	0.128	1.6	NA	0.4	3.4	0.11	0.22	0.11	29.6

Table B1b. SIDRA results – Furnivall Pde / Crossover 2 intersection – 2036 Weekday PM peak (with full LDP development)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Crossover 2 (S)															
7	L2	All MCs	22	3.0	22	3.0	0.327	0.2	LOS A	1.4	10.4	0.34	0.25	0.34	22.5
9	R2	All MCs	323	3.0	323	3.0	0.327	1.4	LOS A	1.4	10.4	0.34	0.25	0.34	17.3
Approach			345	3.0	345	3.0	0.327	1.3	LOS A	1.4	10.4	0.34	0.25	0.34	17.9
East: Furnivall Pde (E)															
10	L2	All MCs	208	3.0	208	3.0	0.144	4.6	LOS A	0.0	0.0	0.00	0.42	0.00	32.9
11	T1	All MCs	57	3.1	57	3.1	0.144	0.0	LOS A	0.0	0.0	0.00	0.42	0.00	39.0
Approach			265	3.0	265	3.0	0.144	3.6	NA	0.0	0.0	0.00	0.42	0.00	34.3
West: Furnivall Pde (W)															
5	T1	All MCs	42	3.1	42	3.1	0.039	0.5	LOS A	0.1	1.1	0.26	0.28	0.26	35.2
6	R2	All MCs	22	3.0	22	3.0	0.039	5.5	LOS A	0.1	1.1	0.26	0.28	0.26	28.4
Approach			64	3.1	64	3.1	0.039	2.2	NA	0.1	1.1	0.26	0.28	0.26	31.9
All Vehicles			675	3.0	675	3.0	0.327	2.3	NA	1.4	10.4	0.20	0.32	0.20	26.7

Table B2a. SIDRA results – Nairn Dr / Furnivall Pde / Regency Ave roundabout – 2036 Weekday AM peak (with full LDP development)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Nairn Dr (S)															
1	L2	All MCs	1	3.1	1	3.1	0.254	3.0	LOS A	1.5	12.0	0.32	0.42	0.32	37.3
2	T1	All MCs	696	9.1	696	9.1	0.254	3.7	LOS A	1.5	12.0	0.33	0.44	0.33	54.2
3	R2	All MCs	13	3.1	13	3.1	0.254	9.1	LOS A	1.4	11.6	0.34	0.47	0.34	40.7
3u	U	All MCs	25	3.1	25	3.1	0.254	11.8	LOS B	1.4	11.6	0.34	0.47	0.34	35.2
Approach			735	8.8	735	8.8	0.254	4.0	LOS A	1.5	12.0	0.33	0.44	0.33	53.9
East: Regency Ave (E)															
4	L2	All MCs	27	3.1	27	3.1	0.113	4.0	LOS A	0.5	3.5	0.53	0.61	0.53	35.8
5	T1	All MCs	31	3.1	31	3.1	0.113	4.5	LOS A	0.5	3.5	0.53	0.61	0.53	35.8
6	R2	All MCs	36	3.1	36	3.1	0.113	10.1	LOS B	0.5	3.5	0.53	0.61	0.53	49.5
Approach			94	3.1	94	3.1	0.113	6.5	LOS A	0.5	3.5	0.53	0.61	0.53	43.7
North: Nairn Dr (N)															
7	L2	All MCs	2	3.1	2	3.1	0.248	5.0	LOS A	1.4	11.6	0.27	0.42	0.27	53.7
8	T1	All MCs	655	9.1	655	9.1	0.248	5.3	LOS A	1.4	11.6	0.28	0.45	0.28	56.0
9	R2	All MCs	84	3.1	84	3.1	0.248	11.3	LOS B	1.4	11.1	0.29	0.49	0.29	54.7
Approach			741	8.4	741	8.4	0.248	6.0	LOS A	1.4	11.6	0.28	0.45	0.28	55.8
West: Furnivall Pde (W)															
10	L2	All MCs	124	3.1	124	3.1	0.211	3.8	LOS A	0.9	7.2	0.51	0.56	0.51	51.8
11	T1	All MCs	29	3.1	29	3.1	0.211	3.9	LOS A	0.9	7.2	0.51	0.56	0.51	39.0
12	R2	All MCs	47	3.1	47	3.1	0.211	9.5	LOS A	0.9	7.2	0.51	0.56	0.51	30.8
Approach			201	3.1	201	3.1	0.211	5.2	LOS A	0.9	7.2	0.51	0.56	0.51	48.1
All Vehicles			1771	7.7	1771	7.7	0.254	5.1	LOS A	1.5	12.0	0.34	0.47	0.34	53.5

Table B2b. SIDRA results – Nairn Dr / Furnivall Pde / Regency Ave roundabout – 2036 Weekday PM peak (with full LDP development)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Nairn Dr (S)															
1	L2	All MCs	1	3.1	1	3.1	0.317	3.6	LOS A	2.1	16.8	0.48	0.48	0.48	34.5
2	T1	All MCs	695	9.1	695	9.1	0.317	4.3	LOS A	2.1	16.8	0.49	0.52	0.49	52.7
3	R2	All MCs	48	3.1	48	3.1	0.317	9.8	LOS A	2.0	15.5	0.51	0.59	0.51	38.1
3u	U	All MCs	84	3.1	84	3.1	0.317	12.6	LOS B	2.0	15.5	0.51	0.59	0.51	30.9
Approach			828	8.1	828	8.1	0.317	5.5	LOS A	2.1	16.8	0.49	0.53	0.49	51.2
East: Regency Ave (E)															
4	L2	All MCs	40	3.1	40	3.1	0.168	5.2	LOS A	0.8	6.1	0.69	0.68	0.69	35.4
5	T1	All MCs	52	3.1	52	3.1	0.168	5.8	LOS A	0.8	6.1	0.69	0.68	0.69	35.4
6	R2	All MCs	18	3.1	18	3.1	0.168	11.4	LOS B	0.8	6.1	0.69	0.68	0.69	49.5
Approach			109	3.1	109	3.1	0.168	6.5	LOS A	0.8	6.1	0.69	0.68	0.69	39.7
North: Nairn Dr (N)															
7	L2	All MCs	6	3.1	6	3.1	0.396	5.8	LOS A	2.7	21.7	0.50	0.51	0.50	52.1
8	T1	All MCs	828	9.1	828	9.1	0.396	6.2	LOS A	2.7	21.7	0.51	0.54	0.51	53.5
9	R2	All MCs	212	3.1	212	3.1	0.396	12.3	LOS B	2.6	20.1	0.53	0.60	0.53	51.7
Approach			1046	7.9	1046	7.9	0.396	7.4	LOS A	2.7	21.7	0.51	0.55	0.51	53.1
West: Furnivall Pde (W)															
10	L2	All MCs	209	3.1	209	3.1	0.417	4.6	LOS A	2.3	17.7	0.66	0.65	0.67	50.7
11	T1	All MCs	52	3.1	52	3.1	0.417	4.6	LOS A	2.3	17.7	0.66	0.65	0.67	37.9
12	R2	All MCs	104	3.1	104	3.1	0.417	10.2	LOS B	2.3	17.7	0.66	0.65	0.67	29.1
Approach			365	3.1	365	3.1	0.417	6.2	LOS A	2.3	17.7	0.66	0.65	0.67	46.2
All Vehicles			2349	7.0	2349	7.0	0.417	6.5	LOS A	2.7	21.7	0.54	0.57	0.54	50.9

Table B3a. SIDRA results – Nairn Dr / west side left in only driveway – 2036 Weekday AM peak (with full LDP development)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Nairn Dr (S)															
10	L2	All MCs	43	3.0	43	3.0	0.024	7.2	LOS A	0.0	0.0	0.00	0.67	0.00	31.6
11	T1	All MCs	735	9.1	735	9.1	0.204	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach			778	8.8	778	8.8	0.204	0.4	NA	0.0	0.0	0.00	0.04	0.00	63.1
North: Nairn Dr (N)															
5	T1	All MCs	754	9.1	754	9.1	0.210	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach			754	9.1	754	9.1	0.210	0.0	NA	0.0	0.0	0.00	0.00	0.00	69.9
All Vehicles			1532	8.9	1532	8.9	0.210	0.2	NA	0.0	0.0	0.00	0.02	0.00	65.5

Table B3b. SIDRA results – Furnivall Pde / west side left in only driveway – 2036 Weekday PM peak (with full LDP development)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Nairn Dr (S)															
10	L2	All MCs	37	3.0	37	3.0	0.020	7.2	LOS A	0.0	0.0	0.00	0.67	0.00	31.6
11	T1	All MCs	827	9.1	827	9.1	0.230	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach			864	8.8	864	8.8	0.230	0.3	NA	0.0	0.0	0.00	0.03	0.00	64.5
North: Nairn Dr (N)															
5	T1	All MCs	1057	9.1	1057	9.1	0.294	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.8
Approach			1057	9.1	1057	9.1	0.294	0.0	NA	0.0	0.0	0.00	0.00	0.00	69.8
All Vehicles			1921	9.0	1921	9.0	0.294	0.1	NA	0.0	0.0	0.00	0.01	0.00	66.7

Table B4a. SIDRA results – Nairn Dr / East side access LILO intersection – 2036 Weekday AM peak (with full LDP development)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Nairn Dr (S)															
5	T1	All MCs	779	9.1	779	9.1	0.144	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach			779	9.1	779	9.1	0.144	0.0	NA	0.0	0.0	0.00	0.00	0.00	69.9
East: East side access (E)															
7	L2	All MCs	16	3.0	16	3.0	0.016	1.0	LOS A	0.1	0.4	0.33	0.19	0.33	17.7
Approach			16	3.0	16	3.0	0.016	1.0	LOS A	0.1	0.4	0.33	0.19	0.33	17.7
North: Nairn Dr (n)															
10	L2	All MCs	4	3.0	4	3.0	0.140	5.2	LOS A	0.0	0.0	0.00	0.01	0.00	40.9
11	T1	All MCs	749	9.1	749	9.1	0.140	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.5
Approach			754	9.1	754	9.1	0.140	0.0	NA	0.0	0.0	0.00	0.00	0.00	69.1
All Vehicles			1548	9.0	1548	9.0	0.144	0.0	NA	0.1	0.4	0.00	0.00	0.00	67.9

Table B4b. SIDRA results – Furnivall Pde / East side access LILO intersection – 2036 Weekday PM peak (with full LDP development)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Nairn Dr (S)															
5	T1	All MCs	865	9.1	865	9.1	0.160	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach			865	9.1	865	9.1	0.160	0.0	NA	0.0	0.0	0.00	0.00	0.00	69.9
East: East side access (E)															
7	L2	All MCs	7	3.0	7	3.0	0.008	1.6	LOS A	0.0	0.2	0.39	0.24	0.39	17.3
Approach			7	3.0	7	3.0	0.008	1.6	LOS A	0.0	0.2	0.39	0.24	0.39	17.3
North: Nairn Dr (n)															
10	L2	All MCs	9	3.0	9	3.0	0.196	5.2	LOS A	0.0	0.0	0.00	0.02	0.00	40.7
11	T1	All MCs	1047	9.1	1047	9.1	0.196	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	69.2
Approach			1057	9.0	1057	9.0	0.196	0.1	NA	0.0	0.0	0.00	0.01	0.00	68.6
All Vehicles			1929	9.0	1929	9.0	0.196	0.0	NA	0.0	0.2	0.00	0.00	0.00	68.4

Table B5a. SIDRA results – Nairn Dr / Crossover 1 RILILO intersection – 2036 Weekday AM peak (with full LDP development)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Nairn Dr (S)															
10	L2	All MCs	33	3.1	33	3.1	0.018	5.4	LOS A	0.0	0.0	0.00	0.60	0.00	34.0
11	T1	All MCs	726	9.1	726	9.1	0.202	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach			759	8.8	759	8.8	0.202	0.2	NA	0.0	0.0	0.00	0.03	0.00	65.6
North: Nairn Dr (N)															
5	T1	All MCs	718	9.1	718	9.1	0.200	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
6	R2	All MCs	47	3.1	47	3.1	0.135	12.1	LOS B	0.4	3.2	0.68	0.86	0.68	16.2
Approach			765	8.7	765	8.7	0.200	0.8	NA	0.4	3.2	0.04	0.05	0.04	51.5
West: Crossover 1 (W)															
7	L2	All MCs	53	3.1	53	3.1	0.060	1.8	LOS A	0.2	1.6	0.42	0.32	0.42	17.2
Approach			53	3.1	53	3.1	0.060	1.8	LOS A	0.2	1.6	0.42	0.32	0.42	17.2
All Vehicles			1577	8.6	1577	8.6	0.202	0.5	NA	0.4	3.2	0.03	0.05	0.03	56.0

Table B5b. SIDRA results – Furnivall Pde / Crossover 1 RILILO intersection – 2036 Weekday PM peak (with full LDP development)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Nairn Dr (S)															
10	L2	All MCs	156	3.1	156	3.1	0.086	5.4	LOS A	0.0	0.0	0.00	0.60	0.00	34.0
11	T1	All MCs	615	9.1	615	9.1	0.171	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach			771	7.9	771	7.9	0.171	1.1	NA	0.0	0.0	0.00	0.12	0.00	54.4
North: Nairn Dr (N)															
5	T1	All MCs	877	9.1	877	9.1	0.244	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.8
6	R2	All MCs	178	3.1	178	3.1	0.500	16.4	LOS C	2.3	17.8	0.78	1.01	1.18	13.6
Approach			1055	8.1	1055	8.1	0.500	2.8	NA	2.3	17.8	0.13	0.17	0.20	33.0
West: Crossover 1 (W)															
7	L2	All MCs	251	3.1	251	3.1	0.266	1.8	LOS A	1.1	8.2	0.44	0.35	0.44	17.2
Approach			251	3.1	251	3.1	0.266	1.8	LOS A	1.1	8.2	0.44	0.35	0.44	17.2
All Vehicles			2076	7.4	2076	7.4	0.500	2.0	NA	2.3	17.8	0.12	0.17	0.15	37.1

Table B6a. SIDRA results – Nairn Dr / Arpenteur Dr / Oldbury Rd roundabout – 2036 Weekday AM peak (with full LDP development)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Nairn Dr (S)															
1	L2	All MCs	4	3.1	4	3.1	0.220	5.1	LOS A	1.2	9.5	0.30	0.44	0.30	56.4
2	T1	All MCs	625	9.1	625	9.1	0.220	5.5	LOS A	1.2	9.5	0.31	0.45	0.31	56.2
3	R2	All MCs	14	3.1	14	3.1	0.220	11.4	LOS B	1.1	9.1	0.33	0.46	0.33	52.5
Approach			643	8.9	643	8.9	0.220	5.6	LOS A	1.2	9.5	0.31	0.45	0.31	56.0
East: Oldbury Rd (E)															
4	L2	All MCs	13	3.1	13	3.1	0.161	3.5	LOS A	0.5	4.1	0.44	0.63	0.44	49.5
5	T1	All MCs	34	3.1	34	3.1	0.161	3.5	LOS A	0.5	4.1	0.44	0.63	0.44	35.1
6	R2	All MCs	114	3.1	114	3.1	0.161	9.1	LOS A	0.5	4.1	0.44	0.63	0.44	35.1
Approach			160	3.1	160	3.1	0.161	7.5	LOS A	0.5	4.1	0.44	0.63	0.44	37.3
North: Nairn Dr (N)															
7	L2	All MCs	29	3.1	29	3.1	0.227	3.9	LOS A	1.1	9.2	0.17	0.40	0.17	44.3
8	T1	All MCs	669	9.1	669	9.1	0.227	4.1	LOS A	1.1	9.2	0.17	0.41	0.17	54.7
9	R2	All MCs	20	3.1	20	3.1	0.227	10.0	LOS A	1.1	9.0	0.18	0.42	0.18	40.7
Approach			719	8.7	719	8.7	0.227	4.3	LOS A	1.1	9.2	0.17	0.41	0.17	54.3
West: Arpenteur Dr (W)															
10	L2	All MCs	20	3.1	20	3.1	0.067	2.6	LOS A	0.2	1.6	0.39	0.47	0.39	30.8
11	T1	All MCs	37	3.1	37	3.1	0.067	2.9	LOS A	0.2	1.6	0.39	0.47	0.39	40.2
12	R2	All MCs	12	3.1	12	3.1	0.067	8.1	LOS A	0.2	1.6	0.39	0.47	0.39	52.5
Approach			68	3.1	68	3.1	0.067	3.7	LOS A	0.2	1.6	0.39	0.47	0.39	42.4
All Vehicles			1591	8.0	1591	8.0	0.227	5.1	LOS A	1.2	9.5	0.27	0.45	0.27	53.3

Table B6b. SIDRA results – Nairn Dr / Arpenteur Dr / Oldbury Rd roundabout – 2036 Weekday PM peak (with full LDP development)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Nairn Dr (S)															
1	L2	All MCs	12	3.1	12	3.1	0.240	5.1	LOS A	1.3	10.3	0.31	0.44	0.31	56.4
2	T1	All MCs	659	9.1	659	9.1	0.240	5.5	LOS A	1.3	10.3	0.31	0.46	0.31	56.0
3	R2	All MCs	32	3.1	32	3.1	0.240	11.4	LOS B	1.2	9.9	0.33	0.48	0.33	52.2
Approach			702	8.7	702	8.7	0.240	5.7	LOS A	1.3	10.3	0.32	0.46	0.32	55.8
East: Oldbury Rd (E)															
4	L2	All MCs	6	3.1	6	3.1	0.130	3.5	LOS A	0.4	3.3	0.46	0.64	0.46	49.6
5	T1	All MCs	35	3.1	35	3.1	0.130	3.6	LOS A	0.4	3.3	0.46	0.64	0.46	35.3
6	R2	All MCs	84	3.1	84	3.1	0.130	9.2	LOS A	0.4	3.3	0.46	0.64	0.46	35.3
Approach			125	3.1	125	3.1	0.130	7.3	LOS A	0.4	3.3	0.46	0.64	0.46	36.7
North: Nairn Dr (N)															
7	L2	All MCs	88	3.1	88	3.1	0.278	3.9	LOS A	1.4	11.5	0.19	0.41	0.19	44.0
8	T1	All MCs	737	9.1	737	9.1	0.278	4.2	LOS A	1.4	11.5	0.20	0.43	0.20	54.3
9	R2	All MCs	52	3.1	52	3.1	0.278	10.1	LOS B	1.4	11.3	0.21	0.45	0.21	39.3
Approach			877	8.1	877	8.1	0.278	4.5	LOS A	1.4	11.5	0.20	0.43	0.20	53.3
West: Arpenteur Dr (W)															
10	L2	All MCs	27	3.1	27	3.1	0.072	2.7	LOS A	0.2	1.8	0.40	0.46	0.40	30.9
11	T1	All MCs	38	3.1	38	3.1	0.072	3.0	LOS A	0.2	1.8	0.40	0.46	0.40	40.5
12	R2	All MCs	8	3.1	8	3.1	0.072	8.2	LOS A	0.2	1.8	0.40	0.46	0.40	52.8
Approach			74	3.1	74	3.1	0.072	3.5	LOS A	0.2	1.8	0.40	0.46	0.40	41.3
All Vehicles			1778	7.8	1778	7.8	0.278	5.2	LOS A	1.4	11.5	0.27	0.45	0.27	53.1

Table B7a. SIDRA results – Arpenteur Dr / Crossover 3 – 2036 Weekday AM peak (with full LDP development)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Arpenteur Dr (E)															
5	T1	All MCs	52	3.1	52	3.1	0.031	0.0	LOS A	0.0	0.3	0.04	0.07	0.04	47.9
6	R2	All MCs	6	3.0	6	3.0	0.031	4.0	LOS A	0.0	0.3	0.04	0.07	0.04	29.8
Approach			58	3.1	58	3.1	0.031	0.5	NA	0.0	0.3	0.04	0.07	0.04	46.0
North: Crossover 3 (N)															
7	L2	All MCs	4	3.0	4	3.0	0.004	0.2	LOS A	0.0	0.1	0.15	0.06	0.15	18.7
9	R2	All MCs	1	3.0	1	3.0	0.004	0.9	LOS A	0.0	0.1	0.15	0.06	0.15	28.7
Approach			5	3.0	5	3.0	0.004	0.3	LOS A	0.0	0.1	0.15	0.06	0.15	22.0
West: Arpenteur Dr (W)															
10	L2	All MCs	1	3.0	1	3.0	0.034	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	34.3
11	T1	All MCs	64	3.1	64	3.1	0.034	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.6
Approach			65	3.1	65	3.1	0.034	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.1
All Vehicles			128	3.1	128	3.1	0.034	0.3	NA	0.0	0.3	0.02	0.04	0.02	46.2

Table B7b. SIDRA results – Arpenteur Dr / Crossover 3 – 2036 Weekday PM peak (with full LDP development)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Arpenteur Dr (E)															
5	T1	All MCs	80	3.1	80	3.1	0.054	0.0	LOS A	0.1	0.9	0.06	0.12	0.06	46.5
6	R2	All MCs	19	3.0	19	3.0	0.054	4.0	LOS A	0.1	0.9	0.06	0.12	0.06	28.8
Approach			99	3.1	99	3.1	0.054	0.8	NA	0.1	0.9	0.06	0.12	0.06	43.3
North: Crossover 3 (N)															
7	L2	All MCs	19	3.0	19	3.0	0.014	0.2	LOS A	0.1	0.4	0.14	0.05	0.14	18.9
9	R2	All MCs	2	3.0	2	3.0	0.014	1.1	LOS A	0.1	0.4	0.14	0.05	0.14	28.8
Approach			21	3.0	21	3.0	0.014	0.2	LOS A	0.1	0.4	0.14	0.05	0.14	20.7
West: Arpenteur Dr (W)															
10	L2	All MCs	2	3.0	2	3.0	0.030	4.6	LOS A	0.0	0.0	0.00	0.02	0.00	34.1
11	T1	All MCs	55	3.1	55	3.1	0.030	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	49.1
Approach			57	3.1	57	3.1	0.030	0.2	NA	0.0	0.0	0.00	0.02	0.00	48.0
All Vehicles			177	3.1	177	3.1	0.054	0.5	NA	0.1	0.9	0.05	0.08	0.05	41.9

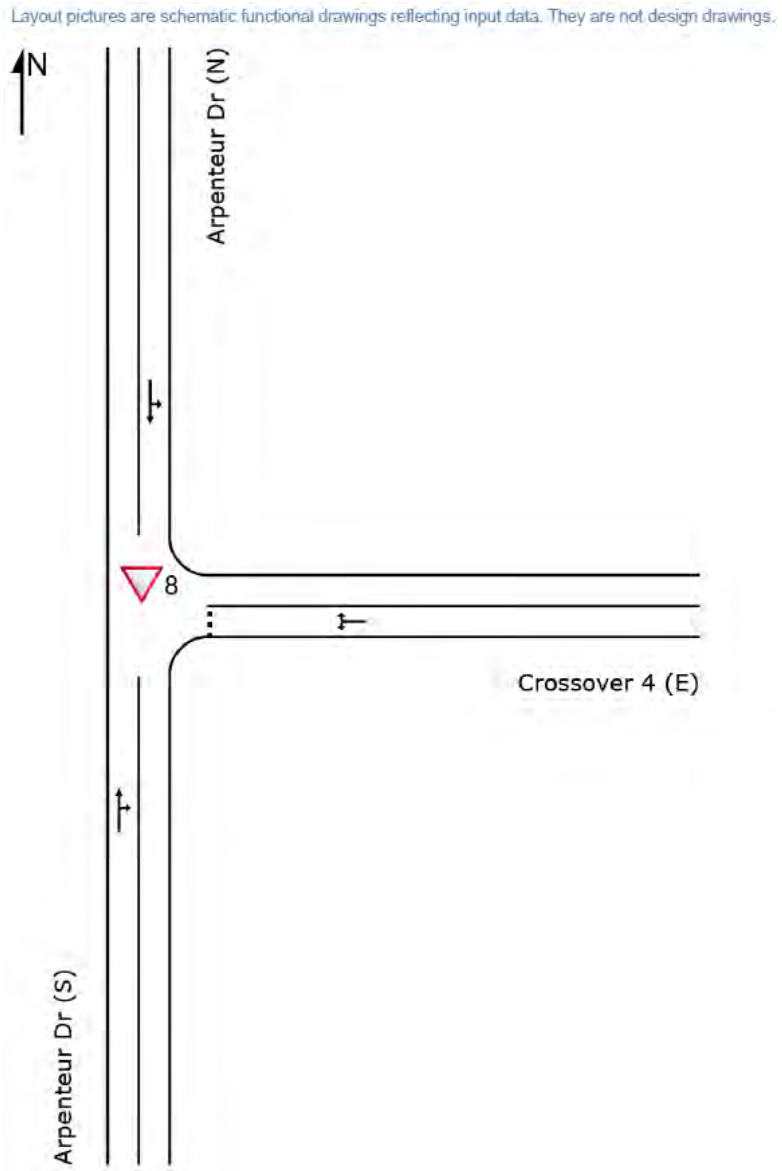


Figure B2: Arpenteur Drive / Crossover 4 layout analysed in SIDRA

Table B8a. SIDRA results – Arpenteur Dr / Crossover 4 – 2036 Weekday AM peak (with Initial Stages of development)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Arpenteur Dr (S)															
5	T1	All MCs	108	3.1	108	3.1	0.057	0.0	LOS A	0.0	0.1	0.00	0.01	0.00	49.9
6	R2	All MCs	1	3.0	1	3.0	0.057	4.6	LOS A	0.0	0.1	0.00	0.01	0.00	36.2
Approach			109	3.1	109	3.1	0.057	0.0	NA	0.0	0.1	0.00	0.01	0.00	49.7
East: Crossover 4 (E)															
7	L2	All MCs	1	3.0	1	3.0	0.002	0.2	LOS A	0.0	0.0	0.19	0.11	0.19	31.1
9	R2	All MCs	1	3.0	1	3.0	0.002	1.1	LOS A	0.0	0.0	0.19	0.11	0.19	25.1
Approach			2	3.0	2	3.0	0.002	0.7	LOS A	0.0	0.0	0.19	0.11	0.19	28.5
North: Arpenteur Dr (N)															
10	L2	All MCs	1	3.0	1	3.0	0.039	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	21.4
11	T1	All MCs	73	3.1	73	3.1	0.039	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.8
Approach			74	3.1	74	3.1	0.039	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.3
All Vehicles			185	3.1	185	3.1	0.057	0.1	NA	0.0	0.1	0.00	0.01	0.00	49.2

Table B8b. SIDRA results – Arpenteur Dr / Crossover 4 – 2036 Weekday PM peak (with Initial Stages of development)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Arpenteur Dr (S)															
5	T1	All MCs	74	3.1	74	3.1	0.041	0.0	LOS A	0.0	0.2	0.02	0.03	0.02	49.4
6	R2	All MCs	3	3.0	3	3.0	0.041	4.8	LOS A	0.0	0.2	0.02	0.03	0.02	36.0
Approach			77	3.1	77	3.1	0.041	0.2	NA	0.0	0.2	0.02	0.03	0.02	48.7
East: Crossover 4 (E)															
7	L2	All MCs	6	3.0	6	3.0	0.016	0.3	LOS A	0.1	0.4	0.23	0.17	0.23	30.9
9	R2	All MCs	13	3.0	13	3.0	0.016	1.2	LOS A	0.1	0.4	0.23	0.17	0.23	24.9
Approach			19	3.0	19	3.0	0.016	0.9	LOS A	0.1	0.4	0.23	0.17	0.23	27.3
North: Arpenteur Dr (N)															
10	L2	All MCs	14	3.0	14	3.0	0.065	4.6	LOS A	0.0	0.0	0.00	0.06	0.00	21.1
11	T1	All MCs	109	3.1	109	3.1	0.065	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	48.8
Approach			123	3.1	123	3.1	0.065	0.5	NA	0.0	0.0	0.00	0.06	0.00	44.9
All Vehicles			219	3.1	219	3.1	0.065	0.4	NA	0.1	0.4	0.03	0.06	0.03	44.4

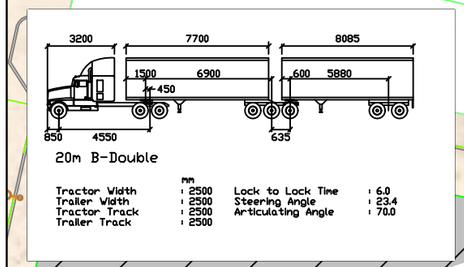
Table B8c. SIDRA results – Arpenteur Dr / Crossover 4 – 2036 Weekday PM peak (with Initial Stages of development) sensitivity test with double traffic volumes on Crossover 4

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Arpenteur Dr (S)															
5	T1	All MCs	74	3.1	74	3.1	0.043	0.0	LOS A	0.0	0.3	0.05	0.06	0.05	48.7
6	R2	All MCs	6	3.0	6	3.0	0.043	5.0	LOS A	0.0	0.3	0.05	0.06	0.05	35.6
Approach			80	3.1	80	3.1	0.043	0.4	NA	0.0	0.3	0.05	0.06	0.05	47.5
East: Crossover 4 (E)															
7	L2	All MCs	13	3.0	13	3.0	0.033	0.3	LOS A	0.1	0.8	0.24	0.18	0.24	30.9
9	R2	All MCs	25	3.0	25	3.0	0.033	1.3	LOS A	0.1	0.8	0.24	0.18	0.24	24.9
Approach			38	3.0	38	3.0	0.033	1.0	LOS A	0.1	0.8	0.24	0.18	0.24	27.3
North: Arpenteur Dr (N)															
10	L2	All MCs	27	3.0	27	3.0	0.072	4.6	LOS A	0.0	0.0	0.00	0.11	0.00	20.8
11	T1	All MCs	109	3.1	109	3.1	0.072	0.0	LOS A	0.0	0.0	0.00	0.11	0.00	47.9
Approach			137	3.1	137	3.1	0.072	0.9	NA	0.0	0.0	0.00	0.11	0.00	41.3
All Vehicles			255	3.1	255	3.1	0.072	0.8	NA	0.1	0.8	0.05	0.11	0.05	40.7

Attachment 7

Swept Path Diagrams



FUTURE DEVELOPMENT SITE

EAST CAR PARK
(EXTERNAL WORKS)

PAD SITE
FFL 17.400

WA
T
WA
WP
WA
WA
T
CONCRETE FOOTPATH
NEW CROSSOV
NEW SLIP LANE
UNDARY

Parkland Heights Neighbourhood Centre, Baldivis

20m B-Double

Fuel-tanker entry

LEGEND

Vehicle Body

Wheel Path

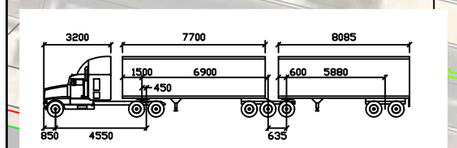
500mm Clearance

t24.011.sk01c

02/09/2024

Scale: 1:400 @ A3

transcore



ALL PARADE

NEW CROSSOVER

CONCRETE FOOTPATH

SITE BOUNDARY

PAD SITE

RL 19.700 m

SERVICE STATION

RL 19.400 m

FUTURE DEVELOPMENT SITE

FUTURE DEVELOPMENT SITE

Parkland Heights Neighbourhood Centre, Baldivis

20m B-Double

Fuel-tanker exit

LEGEND

Vehicle Body

Wheel Path

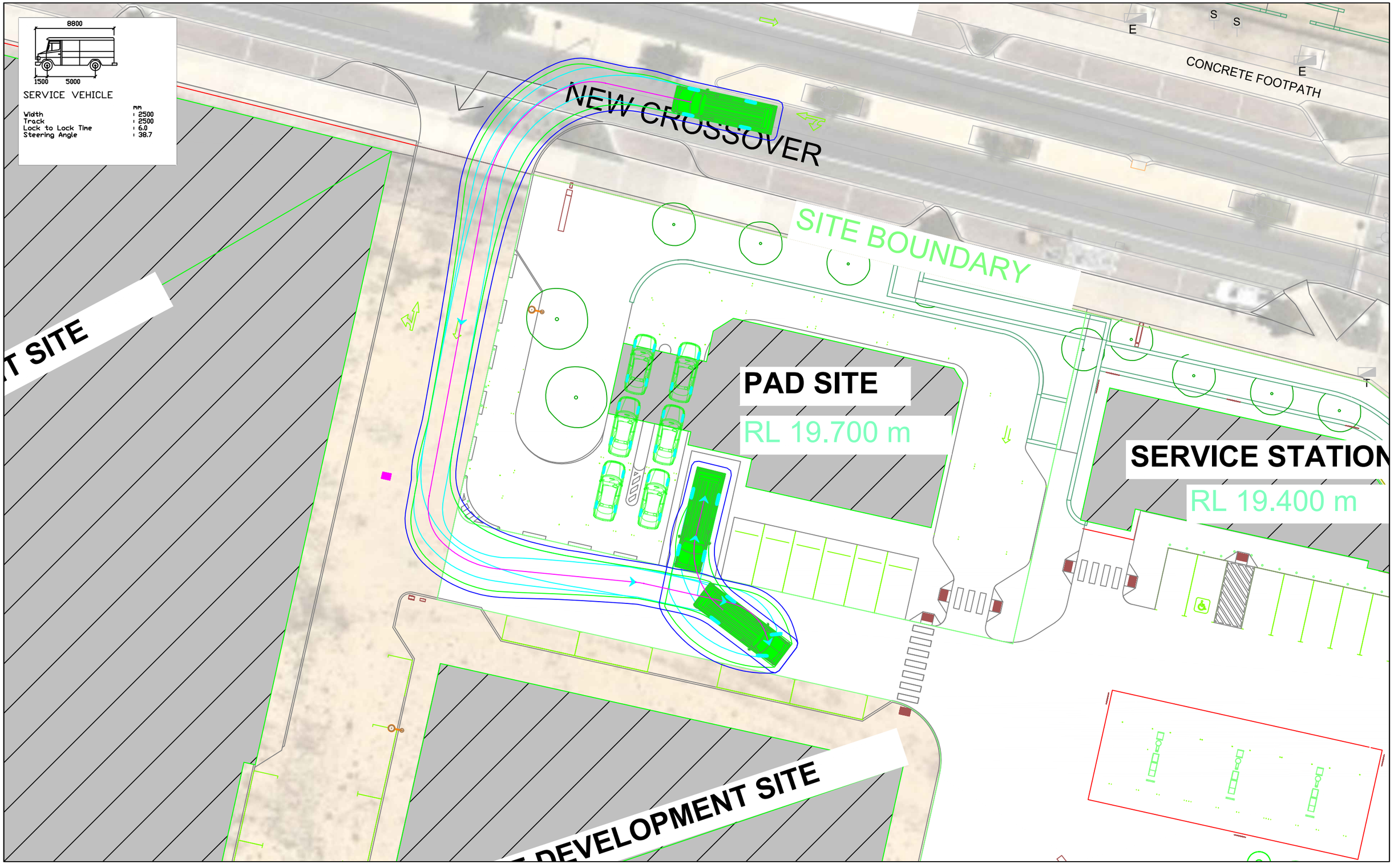
500mm Clearance

t24.011.sk02c

02/09/2024

Scale: 1:400 @ A3

transcore



Parkland Heights Neighbourhood Centre, Baldivis

Austroads 2023: 8.8m Service Vehicle

Service vehicle entry into fast-food outlet

LEGEND

Vehicle Body

Wheel Path

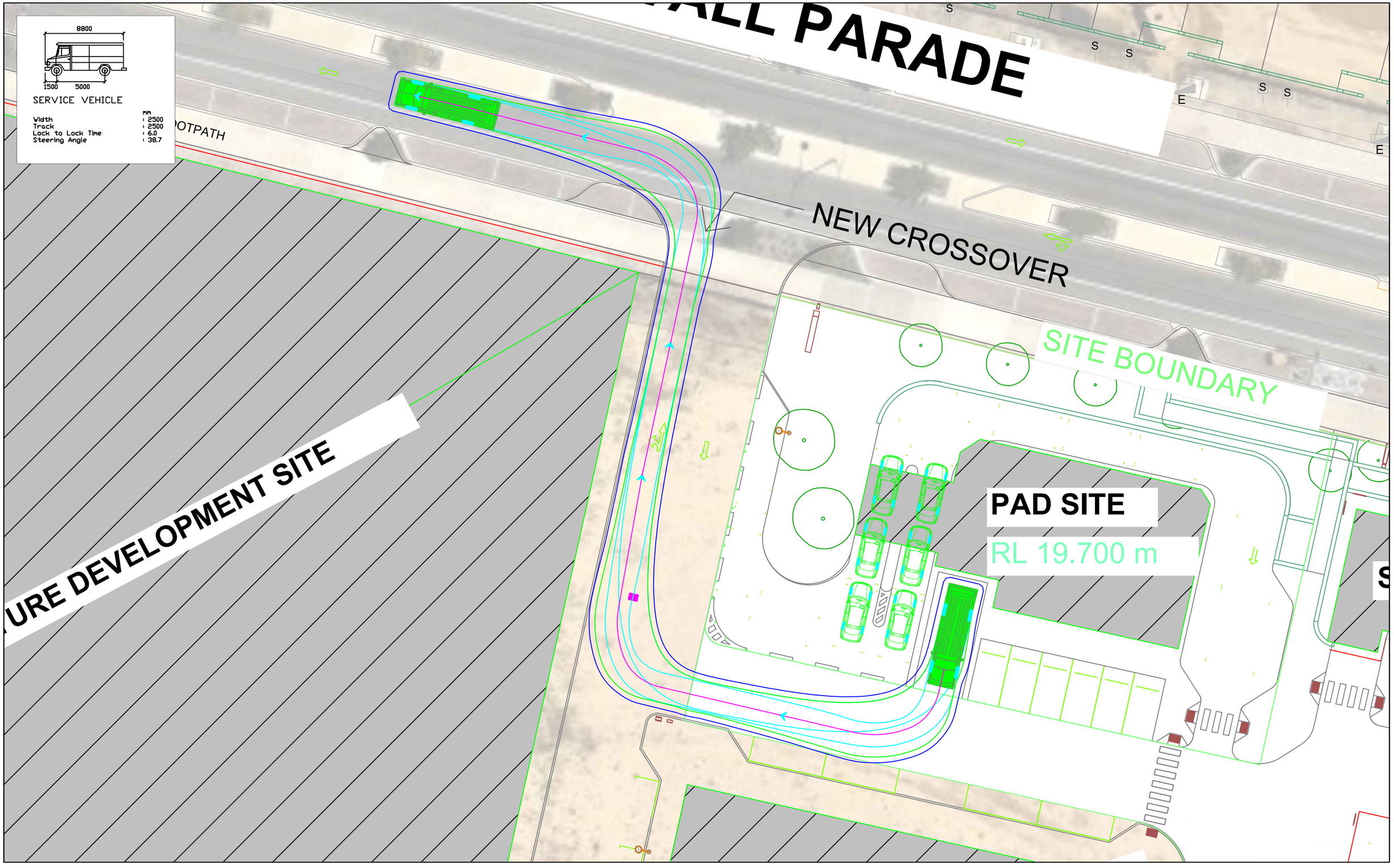
500mm Clearance

t24.011.sk03b

02/09/2024

Scale: 1:300 @ A3

transcore



Parkland Heights Neighbourhood Centre, Baldivis

Austroads 2023: 8.8m Service Vehicle

Service vehicle exit from fast-food outlet

LEGEND

Vehicle Body

Wheel Path

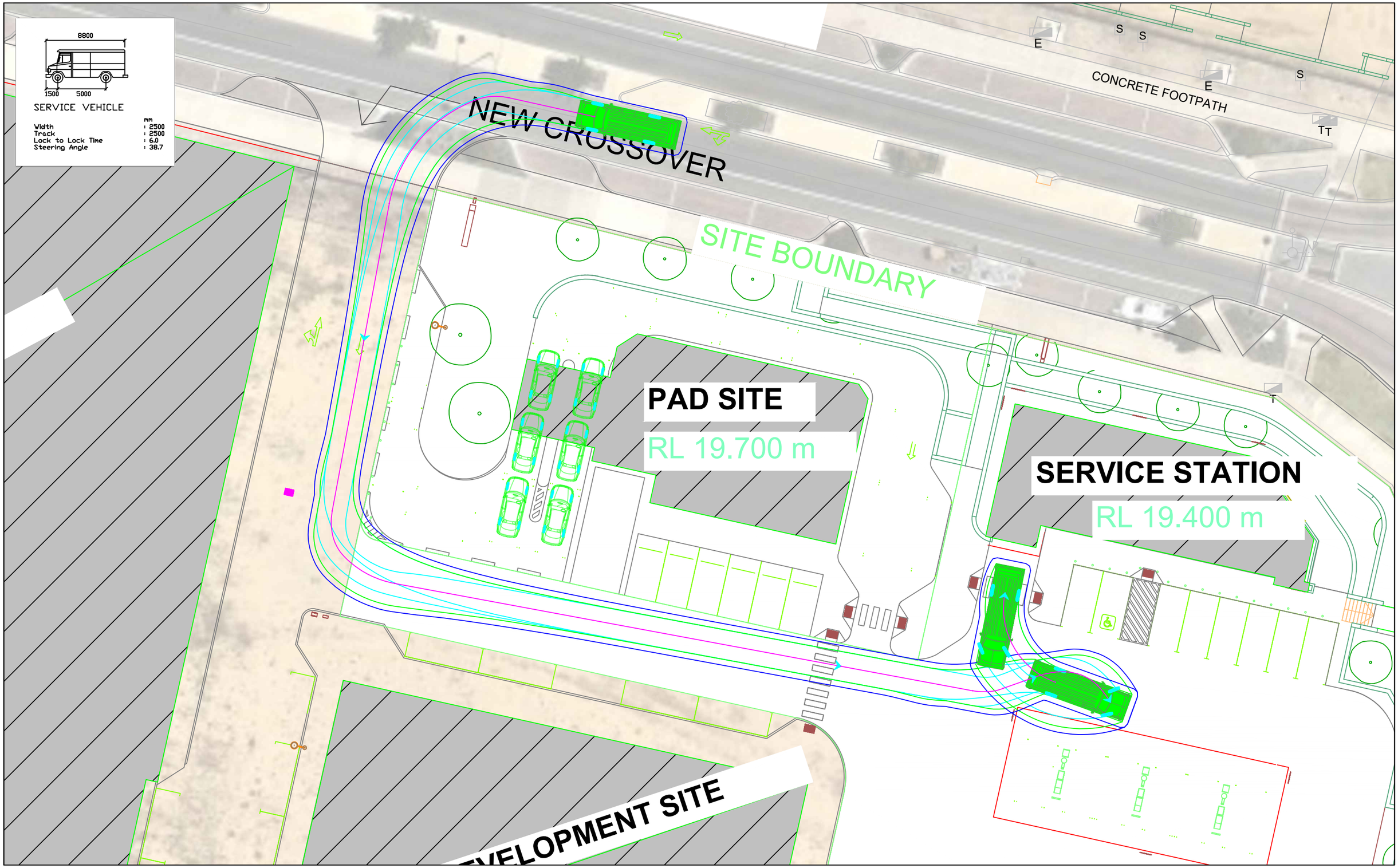
500mm Clearance

t24.011.sk04b

02/09/2024

Scale: 1:300 @ A3

transcore



Parkland Heights Neighbourhood Centre, Baldivis

Austroads 2023: 8.8m Service Vehicle

Service vehicle entry into service station

LEGEND

Vehicle Body

Wheel Path

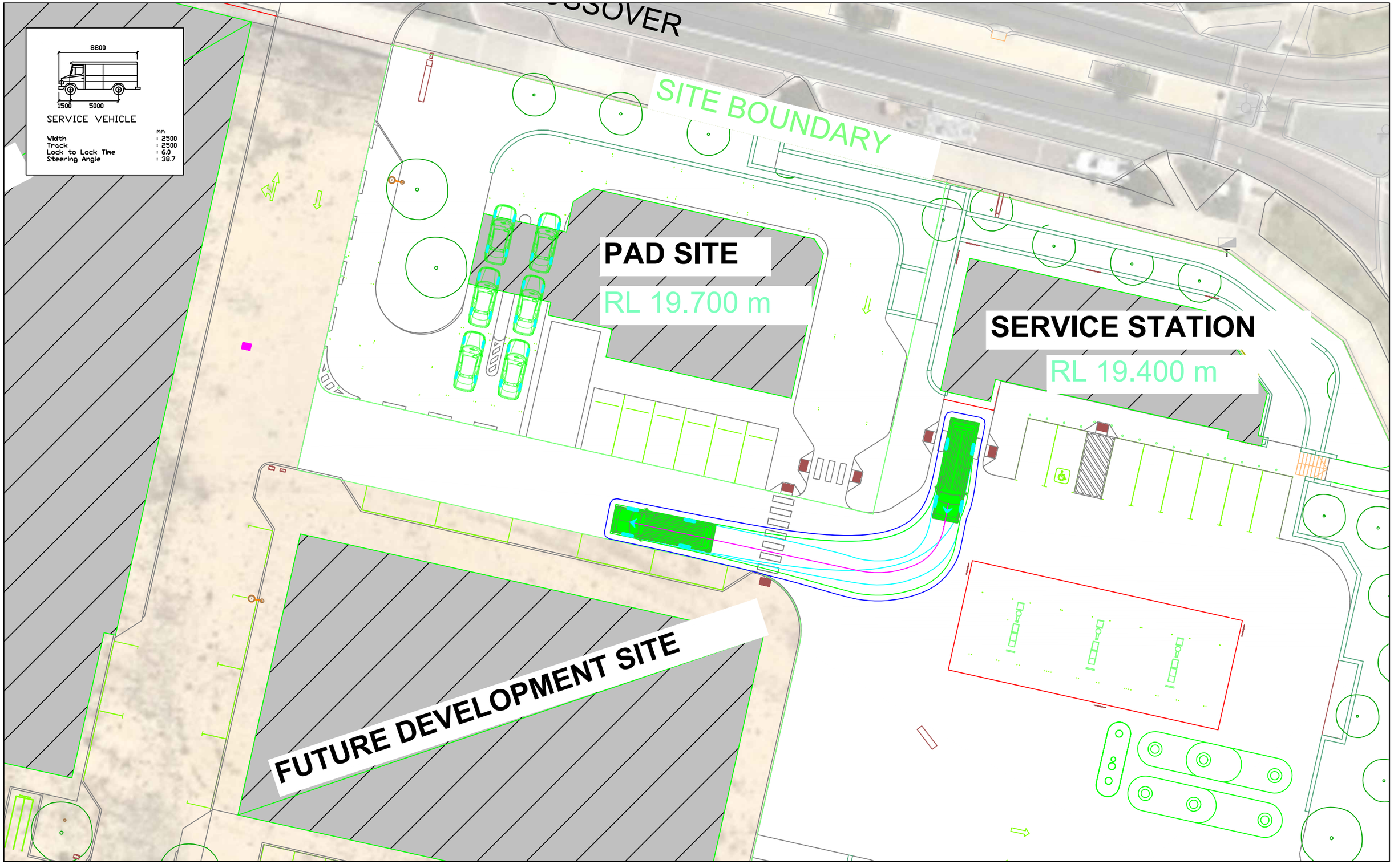
500mm Clearance

t24.011.sk05b

02/09/2024

Scale: 1:300 @ A3

transcore



Parkland Heights Neighbourhood Centre, Baldivis

Austroads 2023: 8.8m Service Vehicle

Service vehicle exit from service station

LEGEND

Vehicle Body

Wheel Path

500mm Clearance

t24.011.sk06b

02/09/2024

Scale: 1:300 @ A3

Attachment 8

Environmental Noise Impact Assessment

REVERBERATE
CONSULTING

Parkland Heights Shopping Centre
Consolidated DA
Environmental Noise Impact Assessment

Reference: P191290RP1

Parkland Heights Shopping Centre –
Baldivis
Environmental Noise Impact Assessment
P191290RP1

Document Information

Project	Parkland Heights Shopping Centre	
Client	Rockingham Park Pty Ltd	
Report title	Consolidated DA - Environmental Noise Impact Assessment	
Project Number	P191290	
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Revision Table

Report revision	Date	Comments
0	22 March, 2024	Draft for client review
1	26 April, 2024	Updated operations
A	4 July 2024	Updated based on feedback

Glossary

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

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1. Introduction

Reverberate Consulting has been engaged by Rockingham Park Pty Ltd to prepare a consolidated environmental noise impact assessment for DA for the proposed Parkland Heights Shopping Centre Development at Baldivis.

A report entitled *Environmental Noise Report (DA Stage) Revision 3 - Parkland Heights Shopping Centre*, dated 8 February 2023 had previously been issued by Gabriels Hearne Farrell. That report [GHF] covered Stage One of the development, which consisted of:

- One 'Coles' type supermarket
- One smaller supermarket
- The associated retail outlets

The GHF report covered the following noise sources:

- Delivery vehicles in the service/loading dock area,
- Mechanical plant at the site.

This report supersedes the GHF assessment as it now considers the combined impact of Stage One, and Stage Two. The introduction of the additional Stage 2 noise sources makes it harder to meet the Assigned Levels. This can be inferred in the more-detailed noise control design, and in the limited maximum permissible noise emission (i.e. sound power levels) documented in this report

Stage Two operations consist of:

- Two fast-food tenancies, similar to McDonalds/KFC
- A service station similar to 7 Eleven
- A food retail tenancy adjoining the 7 Eleven
- An automated carwash

The mechanical plant for the site as well as other detail has been developed further since the GHF report. This current report therefore assesses the following environmental noise impacts:

- Updated mechanical services noise emission from Stage One and Stage Two combined
- A family restaurant activity/operations, including carparking activity
- An automated carwash
- Night-time noise emissions from all sites, as well as activity open at that time
- Updated loading/unloading activity

There remain two undeveloped pad sites on the northern end of the shopping centre site. These are labelled 'Stage 3' in Figure 1.. Those sites, where developed, will require assessment of environmental noise emission in conjunction with the remainder of the site. They can be assessed so that either:

- The stage 3 noise is considered in isolation, and assessed if they 'significantly contribute' , i.e. whether they approach within 5 dB of the assigned level, or
- the noise emissions from Stage 1, Stage 2 & Stage 3 are all considered together and assessed against exceedance of the assigned levels.

It is expected that mechanical and refrigeration plant similar to that on other nearby sites may be installed in Stage 3. In that instance and depending on the operation hours of these sites, similar restrictions and treatments may be expected.

This current consolidated DA assessment is based on specific detail, where available, as well as generic detail where specific detailing is unavailable. On that basis any significant future evolution of the design may require confirmation of the overall noise impact at that time.

The purpose of this current report is to present the findings of potential noise emissions from the Consolidated Stage 1 & Stage 2 shopping centre equipment and activities, as identified at this time.

2. Site and Surrounds

The proposed shopping centre development is located on a parcel of land bounded by Nairn Drive to the east, Furnivall Parade to the north and Arpenteur Parade to the south and west, refer to the Site Plan Figure 1. The nearest potentially affected residential neighbours are marked on the Site Plan and are located on the far side of Furnivall Parade and Arpenteur Drive.

The land to the east of Nairn drive contains a school, as well as a parcel of land between the school and Nairn Drive. This land parcel is zoned "Special Use" in the City of Rockingham's *Parkland Heights Local Structure Plan* (Dec 2018). This zoning allows for commercial, retail, educational, and residential development. However, advice from the developer of this Special Use area indicates that only the following subset of uses is to be developed in this area:

- Consulting rooms
- Health studio
- Medical centre
- Shop
- Veterinary clinic
- office

The various tenancies at the site are shown in the Site Layout in Appendix C. This Appendix C, as well as Figure 1 both show the subdivision of the development site into Stage 1, Stage 2 and Stage 3 operations. We are advised that the current revised DA application has been lodged for Stage 1 operations only. This report, and its noise impact, consider the combined emissions of Stages 1 & 2 together. This involves significantly more operations and activities than the Stage 1 operations alone and results in more-stringent treatments and operational restrictions.

The activities and equipment at these tenancies is proposed to operate during the hours shown overleaf in Table 1. The dominant noisy activity for the site has been identified, and modelled with the following specific configurations:

<u>Daytime</u>
L_{A10} – All mechanical plant at the site

<u>Evening</u>
L_{A10} –

- carwash activity
- family restaurant activities
- Mechanical plant

L_{Amax} –

- Carpark activity near the family restaurant, Fast-food N, service station and northern retail.
- Fast-food N & S, and Northern Retail Drive thru activity
- Loading dock activity

<u>Night Time</u>
L_{A10} –

- Mechanical Plant
- Service Station loading dock activity

L_{Amax} –

- Carpark activity near:
  - the 24/7 fast-food tenancy,
  - service station
  - Northern Retail outlet,
  - Staff carpark (near the loading dock, to the south of Supermarket 1).
- Night-time deliveries to the service station
- Service Station tyre refill beeper

Limitations

In addition to the above activity the following limitations apply;

- Fuel tanker deliveries (service station).
    - Deliveries between 7am to 7pm Monday – Saturday , and 9am to 7pm on Sundays and public holidays.
- General truck deliveries to loading dock –
    - Deliveries between 7am to 10pm Monday – Saturday & 9am – 10 pm on Sunday and public holidays
    - Deliveries during the evening and Sunday/Public holiday to be limited to 1 per 4 hour period on Sunday, or one during the three hour evening period of 7pm to 10pm.
    - Refrigeration units and truck engines to be turned off during unloading
    - Two small bread vans – delivery prior to 7am
- Other truck deliveries to site
    - Service station - typically up to 3 deliveries per 24 hours. May include refrigerated truck deliveries. Deliveries can occur during any night, between 22.00-07.00.
    - T01-T14 and family restaurant – deliveries limited to 7.00 – 19.00 Mon to Sat. Deliveries via Main road.
    - Deliveries to the Northern Retail, Fast-food N and Fast-food S – deliveries limited to 7.00 – 19.00 Mon to Sat.

- Garbage collection – between 7am and 7pm unless the contractor has an approved noise management plan.

Items not covered

No specific detail is currently available for Stage 3 operations, nor for the items labelled 'TBD' in Table 1. Where variations to the assumed activities and equipment is proposed, time restrictions and/or treatments may need to be specifically developed.

Also, some activities, including Stage 3 operations, dock activities for the Northern Retail, and Fast-food N operations, is not well defined. These activities, once finalised by the applicants, may require restrictions in the form of:

- Limited operating hours,
- Limited duration of activity,
- Limited nature of activity
- Installation of acoustic shielding and/or acoustic lining

Such activities would be the subject of a separate application

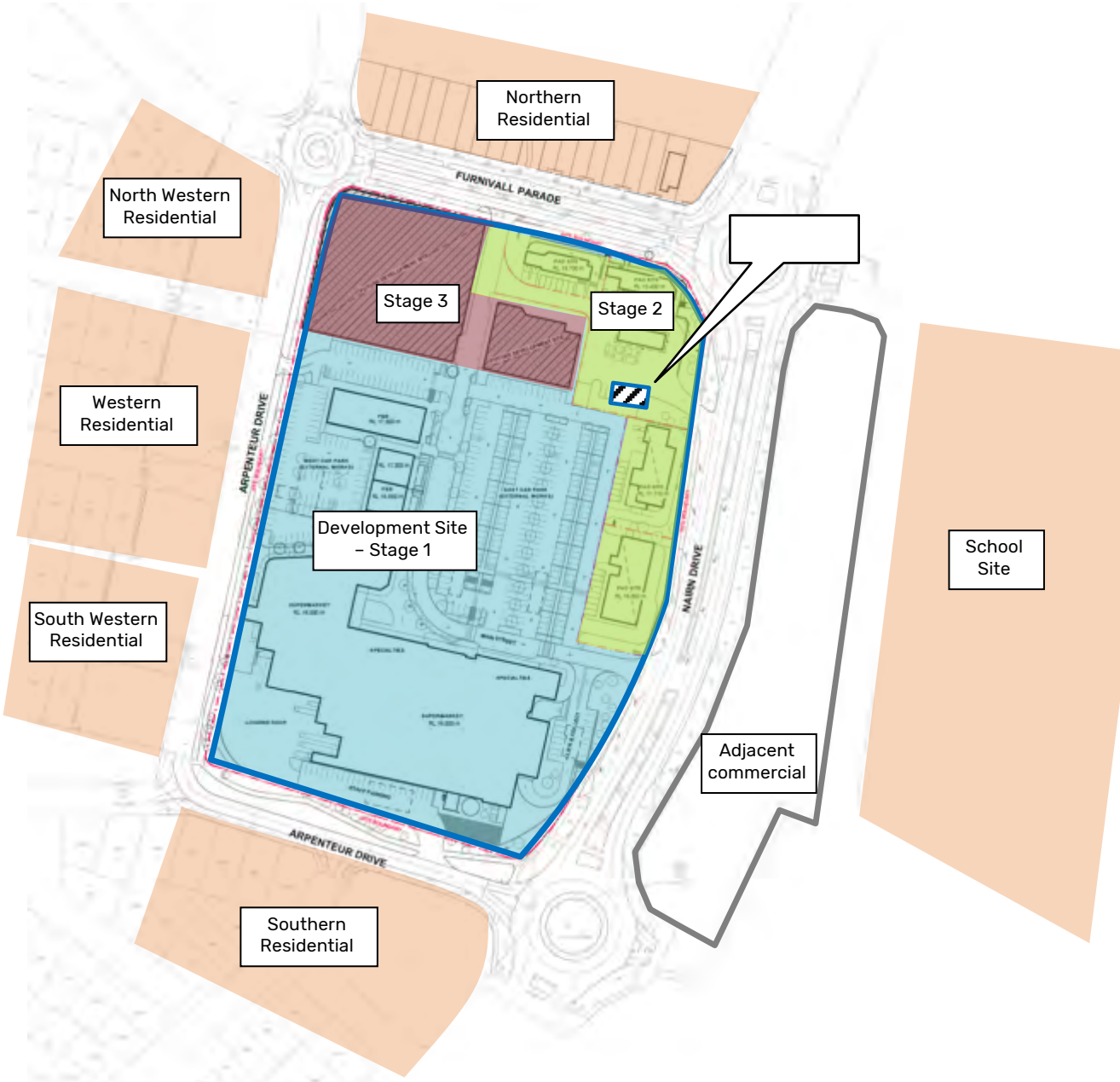


Figure 1 – Site Plan – Parkland Heights

Table 1 – Proposed Operating Hours of Activities

Item	Basis of Design - Suggested Tenancy *	Operating Hours	Classification
STAGE 2			
Fast Food - S	McDonalds & drive thru	24/7	D/E/N
Fast Food - N	KFC & drive thru	10am-10pm	D/E
Service Station	7 Eleven	24/7	D/E/N
	Carwash	7am-10pm M-Sat 9am – 10 pm Sun & PH	D/E
TBD	Northern Retail & drive-thru	24/7	D/E/N
STAGE 1			
Supermarket 1	Coles	8am-9pm	D/E
Supermarket 2	Other (smaller)	8am-9pm	D/E
Smaller Retail Tenancies			
T01	Liquorland	8am-9pm	D/E
T02	TBD	8am-9pm	D/E
T03	Priceline	8am-9pm	D/E
T04	TBD	10am-midnight	D/E/N
T05	F&B	10am-midnight	D/E/N
T06	TBD	10am-midnight	D/E/N
T07	Brumby's bakery	6am-5pm	D/E/N
T08	Coffee Club	7am-10pm	D/E
T09	Subway	7am-10pm	D/E
T10	Dominos/Pizza Hut	10am-midnight	D/E/N
T11	Zambrero	10am-10pm	D/E
T12	Sushi Sushi	10am-10pm	D/E
T13	Pasta Cup/Ice-cream	10am-10pm	D/E
T14	Nandos/Grilled/Betty Burgers	10am-10pm	D/E
Family restaurant	TBD	10am-9pm	D/E
Back of House			
Kiosk Entrance		7am-10pm	D/E
CMO		24/7	D/E/N
Waste Store		24/7	D/E/N
TOILET TEF		24/7	D/E/N
Parent Room AC		7am-10pm	D/E

Note * Final tenant may differ from this table.
Suggested tenancy is used to establish likely plant noise emission

3. Noise Assessment Criteria

3.1 Environmental Protection Act

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

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

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

Reverberate has used the above legislation to assess the noise impact from the site. More particularly, noises which have a distinct character, and are different to the ambient noise environment are assessed under the subsidiary legislation; the Environmental Protection (Noise) Regulations 1997. Such an assessment has been undertaken for noise sources such as carwash, restaurant, drive-thru activity, and mechanical plant / air conditioning as well as carpark activity such as vehicle doors closing

Other types of noises from the site, such as that generated by vehicles driving, or manoeuvring in the carpark, have not been explicitly presented. It is noted that the same vehicles would generate a greater impact when on the roads around the site, and closer to the houses. Reference is drawn to Section 3 (3) (b) of the Act which requires the assessment to have regard to the nature, duration, and time of day of such noise emissions and the frequency of similar noise emissions from the same source.

3.2 Environmental Protection (Noise) Regulations 1997

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

The Assigned Levels have been calculated for all properties using the method shown in Appendix B. The resultant Assigned Levels are presented for a representative neighbour, the dwellings to the north of the site, below in Table 2.

Table 2 – Assigned Levels Residences and school

Receiving Premises	Time of Day	Assigned Level (dB)		
		L_{A10}	L_{A1}	L_{Amax}
Noise Sensitive Premises - Highly Sensitive	0700 to 1900 hours Monday to Saturday	47	57	67
	0900 to 1900 hours Sunday and public holidays	42	52	67
	1900 to 2200 hours all days	42	52	57
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays	37	47	57

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

Different activities are limited to different periods of operation. The specific activities outlined in Section 2 above have been assessed against the assigned level criteria as outlined below.

Daytime (especially Sunday and public holidays)
L_{A10} – 42 dB

Evening
L_{A10} – 42 dB
L_{Amax} – 57 dB

Night Time
L_{A10} – 37 dB
L_{Amax} – 57 dB

4. Noise Assessment

4.1 Noise Sources

A 3-D SoundPLAN noise model was developed for the noise sources, buildings, shielding and ground contours. This model is shown below in Figure 2. This figure has general site details including the locations of the buildings, noise barriers, other site details and the surrounding sensitive receiver and barrier locations.

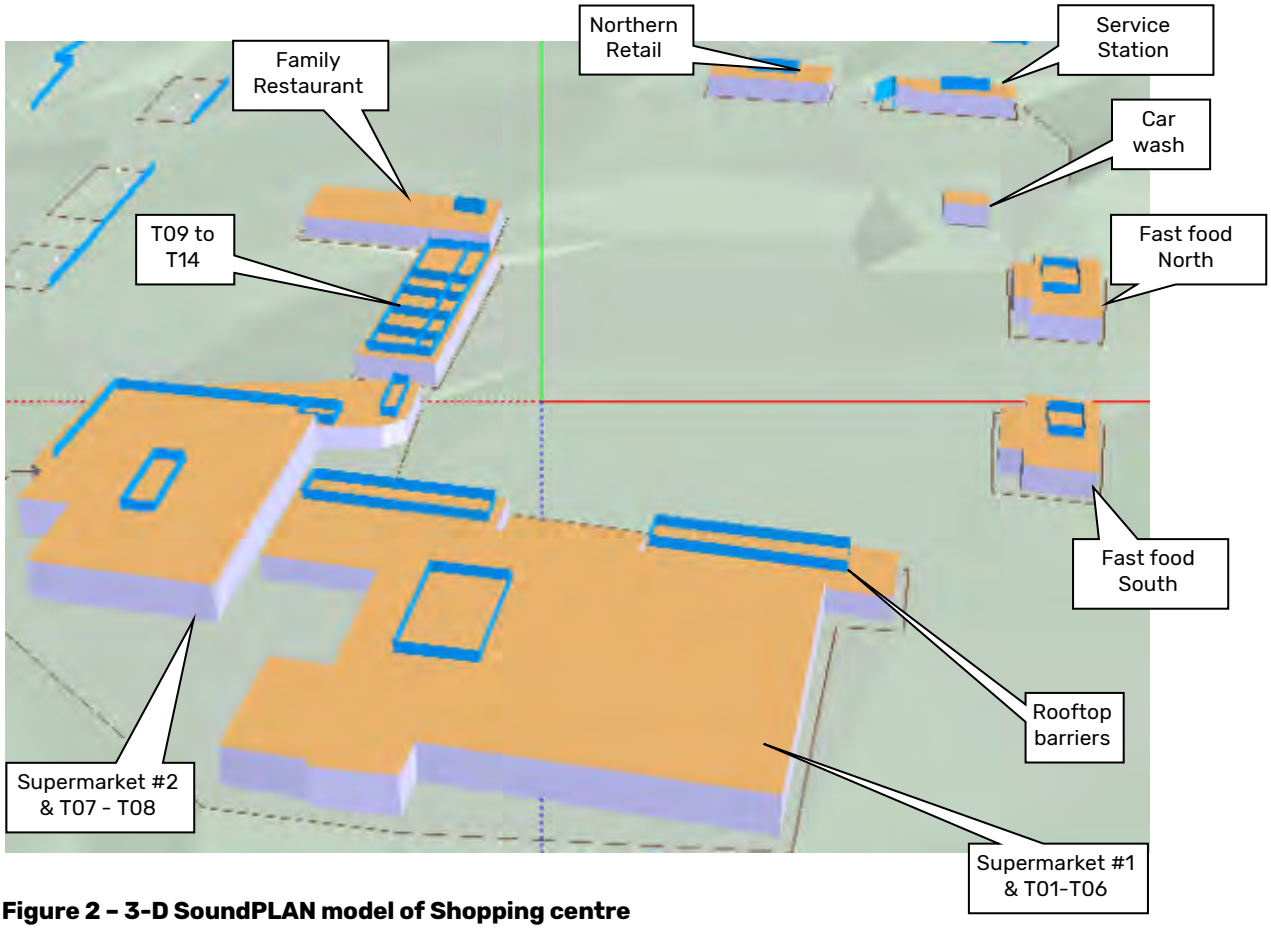


Figure 2 – 3-D SoundPLAN model of Shopping centre

The noise emission levels for general activity are summarised below in Table 3 and for mechanical services in Table 4 overleaf.

Table 3 - Summary of Sound Power Levels

Summary of Sound Power Levels (dB)			
Noise Source	**L_{A10}**	**L_{A1}**	**L_{Amax}**
19m Articulated Truck & Tanker: park brake	-	-	101
19m Articulated Truck & Tanker: idle/moving	-	94	94
19m Articulated Truck & Tanker: engine start	-	-	100
19m Articulated Truck & Tanker: refrigeration plant	-	95	96
Rigid Truck: refrigeration plant	-	95	96
Rigid Truck: park brake	-	-	74
Rigid Truck: engine start	-	-	91
Small Truck: refrigeration plant	-	90	90
Small Truck: Engine Start	-	-	85
General Truck: door close	-	-	93
General Truck: reversing beeper	-	-	94
Delivery Van: Idling/moving	-	85	85
Passenger Car: engine start	-	-	85
Passenger car: door close	-	-	84
Air compressor (silenced)	-	71	72
Tyre Refill Beeper	-	-	88
Air compressor (silenced)	-	71	72
Engine Idling (Drive thru)	-	83	84
Person Talking	-	72	74
Auto Carwash - Blower	94	97	97
Car idling waiting for carwash	83	-	-
Talking - amplified (Drive Thru)	-	-	72
Restaurant 50 ppl outside (Hayes)	93	94	96

Table 4 - Mechanical Services -Maximum Sound Pressure Level @ 3m (Q=1)

Item	Suggested Tenancy - Basis of Design*	Classification	Sound Pressure Level (dBA) - AC Compressors		Sound Pressure Level (dBA) - Fans				Sound Pressure Level (dBA) - Refrig Compressors
			day	Night	Day		Night		day & night
STAGE 2					KEF	Other	KEF	Other	
Fast Food - S	McDonalds + drivethru	D/E/N	56	51	65	55	65	55	54
Fast Food - N	KFC + drivethru	D/E	56	-	65	55	-	55	54
Service Station	7 Eleven	D/E/N	56	51	-	59	-	59	58
TBD	Northern Retail + drivethru	D/E/N	56	51	65	55	-	-	54
STAGE 1									
Supermarket 1		D/E	2 x 63	-	65	55	-	-	2 x 57
Supermarket 2		D/E	1 x 63	-	65	55	-	-	1 x 57
Smaller Retail Tenancies									
T01	Liqourland	D/E	56	-	-	-			54
T02	TBD	D/E	56	-	-	-			-
T03	Priceline	D/E	56	-	-	-			54
T04	TBD	D/E/N	56	51	-	-			54
T05	F&B	D/E/N	56	51	65	55			54
T06	TBD	D/E/N	56	51	-	-			54
T07	Brumby's bakery	D/E/N	56	51	65	55	65	55	54
T08	Coffee Club	D/E	56	-	65	55			54
T09	Subway	D/E	56	-	65	55			54
T10	Dominos/Pizza Hut	D/E/N	56	51	65	55	65	55	54
T11	Zambrero	D/E	56	-	65	55			54
T12	Sushi Sushi	D/E	56	-	65	55			54
T13	Pasta Cup/Icecream	D/E	56	-	65	55			54
T14	Nandos/Grilled/Betty Burgers	D/E	56	-	65	55			54
Family Restaurant		D/E	56	-	65	55	-	-	54
Back of House									
Kiosk Entrance		D/E	56	-	-	-	-	-	-
CMO		D/E/N	51	51	-	-	-	-	-
Waste Store		D/E/N	-	-	-	49	-	49	-
TOILET TEF		D/E/N	-	-	-	55	-	55	-
Parents AC		D/E	43	-	-	-	-	-	-
Note *	Final tenant may differ from this table.								
	Suggested tenancy is used to establish likely plant noise emission								

4.2 Noise Forecast and Impact

Computer noise modelling was used to forecast the noise impacts to locations around the site. The software used was SoundPLAN Version 9.0, with the ISO9613 algorithms selected. These algorithms have been used as they allow for the influence of wind, atmospheric stability, barriers, building shielding and ground absorption. It is appropriate for the current configuration of noise sources and for the nearest receiver locations.

The Input data used in modelling includes

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

The following parameters were used in modelling as required for the operations.

- Pasquil Stability Factor F
- Temperature 15 ^{0}C (night) and 20 ^{0}C (day)
- Wind Speed 3 m/s
- Wind Direction Worst case – i.e. all directions
- Relative Humidity 50%
- Ground Absorption of 0.10 in all areas

The following adjustments were applied for the forecast noise reaching receptor locations:

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

The forecast noise levels at sensitive receivers are summarised in Table 5 to Table 12 below, as well as in Figure 3 to Figure 10. The tables show that the highest forecasts, compared to the Assigned Level criteria, are as follows:

- Night-time L_{A10} noise emission toward the northern residential area (Table 8) – forecast matches Assigned Level
- Evening L_{A1} loading dock activity (refrigeration Units) toward the southern residential area (Table 11) – forecast matches Assigned Level
- Evening L_{Amax} loading dock activity (Park Brakes) toward the southwestern residential area (Table 12) – forecast matches Assigned Level

Other noise sources are typically a minimum of 3 dB below their respective criteria. This is shown for example for L_{A10} daytime noise emission on Sunday toward the southern residential area (Table 5), or L_{A10} evening noise emission toward the southwestern residential area (Table 6).

As outlined above these forecast noise emissions have been conservatively classified as having a characteristic tonality or impulsiveness (refer to the tables). In a good portion of these cases these characteristics would not generally be evident at these neighbours. In addition to this all the noise sources in each table as assumed to simultaneously operate at their rated noise emissions.

Therefore, even using the conservative assumptions outlined for this modelling, the forecast noises in Table 5 to Table 12 are shown to comply and are considered acceptable.

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

	Receiver					
	Northern	North Western	Southern	South Western	Western	Eastern
Noise Source	Residential	Residential	Residential	Residential	Residential	School
BOH Mech*	23	25	20	25	28	25
Northern Retail Mech*	25	19	10	14	23	21
Family Restaurant Mech*	20	29	18	27	25	22
Fastfood N Mech*	26	22	16	16	18	29
Fastfood S Mech*	24	18	23	17	17	26
Service Station Mech*	30	18	13	18	21	27
Supermarket 1 Mech*	28	28	33	28	26	28
Supermarket 2 Mech*	24	27	34	30	28	24
T01 Mech*	20	18	18	15	19	21
T02 Mech*	16	16	16	13	17	20
T03 Mech*	20	17	19	14	17	23
T04 Mech*	20	21	19	18	21	21
T05 Mech*	24	25	23	25	26	28
T06 Mech*	20	20	20	19	21	22
T07 Mech*	23	24	22	26	28	21
T08 Mech*	24	22	22	25	27	23
T09 Mech*	23	26	21	26	27	25
T10 Mech*	21	25	21	25	25	22
T11 Mech*	24	25	21	27	26	25
T12 Mech*	23	25	20	27	27	25
T13 Mech*	24	24	19	29	27	25
T14 Mech*	20	24	20	30	27	25
Total*	**37**	**37**	**39**	**38**	**38**	**38**
Assigned Level	42	42	42	42	42	47**
Compliance	**Achieved**	**Achieved**	**Achieved**	**Achieved**	**Achieved**	**Achieved**

Note * Tonality adjustment applied

** Daytime Mon-Fri Assigned Level used for school

Table 6 Forecast Evening $L_{A10, adj}$ noise emission (dB)

	Receiver				
	Northern	North Western	Southern	South Western	Western
Noise Source	Residential	Residential	Residential	Residential	Residential
BOH Mech*	23	25	20	25	28
Carwash*	31	16	14	13	17
Northern Retail Mech*	25	19	10	14	23
Family Restaurant Mech*	20	29	18	27	25
Family Restaurant outdoor dining	28	37	22	37	36
Fast Food N Mech*	26	22	16	16	18
Fast Food Mech*	24	18	23	17	17
Service Station Mech*	30	18	13	18	21
Supermarket 1 Mech*	28	28	33	28	26
Supermarket 2 Mech*	24	27	34	30	28
T01 Mech*	20	18	18	15	19
T02 Mech*	16	16	18	15	17
T03 Mech*	20	17	19	14	17
T04 Mech*	20	21	19	18	21
T05 Mech*	24	25	23	25	26
T06 Mech*	20	20	20	19	21
T07 Mech*	23	24	22	26	28
T08 Mech*	24	22	22	25	27
T09 Mech*	23	26	21	26	27
T10 Mech*	21	25	21	25	25
T11 Mech*	24	25	21	27	26
T12 Mech*	23	25	20	27	27
T13 Mech*	24	24	19	29	27
T14 Mech*	20	24	20	30	27
Overall	36	38	34	39	37
Assigned Level	42	42	42	42	42
Compliance	**Achieved**	**Achieved**	**Achieved**	**Achieved**	**Achieved**
Note * Tonality adjustment applied					

Table 7 Forecast Evening $L_{Amax, adj}$ noise emission (dB)

	Receiver				
	Northern	North Western	Southern	South Western	Western
Noise Source	Residential	Residential	Residential	Residential	Residential
Car** Northern Retail	38	40	27	32	40
Car** Family Restaurant	31	48	38	51	51
Car** Fastfood N	38	36	24	32	31
Car** Fastfood S	31	37	23	25	27
Car** Service Station	42	36	24	31	36
Northern Retail Drivethru	27	18	6	12	24
Fast Food N Drive Thru	27	18	6	12	24
Fast Food S Drive Thru	18	17	7	5	9
Service Station Delivery Tru	40	44	34	33	43
Service Station Tyre Refill*	25	32	14	22	30
Assigned Level	57	57	57	57	57
Compliance	**Achieved**	**Achieved**	**Achieved**	**Achieved**	**Achieved**
Note ** Impulsive adjustment applied					

Table 8 Forecast Night-time $L_{A10, adj}$ noise emission (dB)

	Receiver				
	Northern	North Western	Southern	South Western	Western
Noise Source	Residential	Residential	Residential	Residential	Residential
BOH Mech*	17	23	18	24	27
Northern Retail Mech*	29	22	15	20	28
Family Restaurant Mech*	8	16	4	15	12
Fastfood N Mech*	15	11	4	4	6
Fastfood S Mech*	23	17	21	16	16
Service Station Mech*	28	17	12	17	21
Service Station Delivery Truck*	30	22	28	28	27
Supermarket 1 Mech*	21	20	27	21	20
Supermarket 2 Mech*	18	20	25	24	21
T01 Mech*	15	14	14	11	16
T03 Mech*	14	13	15	10	13
T04 Mech*	17	18	16	15	18
T05 Mech*	17	17	16	15	17
T06 Mech*	16	17	18	16	18
T07 Mech*	22	23	21	25	27
T08 Mech*	15	13	12	15	19
T09 Mech*	12	18	12	18	19
T10 Mech*	23	25	20	25	26
T11 Mech*	14	18	12	18	18
T12 Mech*	13	17	11	17	18
T13 Mech*	14	19	11	17	18
T14 Mech*	11	18	11	20	18
Total*	37	34	35	36	36
Assigned Level	37	37	37	37	37
Compliance	**Achieved**	**Achieved**	**Achieved**	**Achieved**	**Achieved**
Note * Tonality adjustment applied					

Table 9 Forecast Night-time $L_{Amax, adj}$ noise emission (dB)

	Receiver				
	Northern	North Western	Southern	South Western	Western
Noise Source	Residential	Residential	Residential	Residential	Residential
Car Northern Retail**	37	39	27	32	40
Norther Retail drive thru	27	18	24	27	38
Car Fast Food S**	27	29	24	32	27
Fast Food S Drivethru	18	17	22	25	27
Car Service Station**	42	36	24	30	32
Service Station Delivery Truck*	40	43	24	31	35
Servive st tyre refill beeper*	25	31	24	29	35
Car Staff parking S**	15	21	24	29	36
Assigned Level	57	57	57	57	57
Compliance	**Achieved**	**Achieved**	**Achieved**	**Achieved**	**Achieved**
Note * Tonality adjustment applied					
** Impulsive adjustment applied					

Table 10 Forecast Evening Loading Dock $L_{A10, adj}$ noise emission (dB)

	Receiver				
	Northern	North Western	Southern	South Western	Western
Noise Source	Residential	Residential	Residential	Residential	Residential
Loading Dock activity(combined)	14	20	36	37	29
Assigned Level	42	42	42	42	42
Compliance	**Achieved**	**Achieved**	**Achieved**	**Achieved**	**Achieved**

Table 11 Forecast Evening Loading Dock $L_{A1, adj}$ noise emission (dB)

	Receiver				
	Northern	North Western	Southern	South Western	Western
Noise Source	Residential	Residential	Residential	Residential	Residential
Trucks Idling/moving	18	30	43	38	37
Refrigeration Unit*	26	39	52	47	44
Loading Dock activity	10	18	32	34	26
Assigned Level	52	52	52	52	52
Compliance	**Achieved**	**Achieved**	**Achieved**	**Achieved**	**Achieved**
Note * Tonality adjustment applied					
** Impulsive adjustment applied					

Table 12 Forecast Evening Loading Dock $L_{Amax, adj}$ noise emission (dB)

	Receiver				
	Northern	North Western	Southern	South Western	Western
Noise Source	Residential	Residential	Residential	Residential	Residential
Reversing Beeper*	21	30	46	46	36
Refrigeration Unit*	28	41	54	49	46
Truck Starting	20	36	49	42	42
Door Closing**	27	40	53	51	46
Truck moving/idling	17	30	42	38	34
Park Brake**	35	42	56	57	46
loading dock	9	13	17	22	23
Assigned Level	57	57	57	57	57
Compliance	**Achieved**	**Achieved**	**Achieved**	**Achieved**	**Achieved**
Note * Tonality adjustment applied					
** Impulsive adjustment applied					

Figure 3 – Forecast L_{A10} (Sunday) daytime mechanical plant noise contours
(Assigned Level 42 dB)

Figure 4 – Forecast L_{A10} evening noise contours
(Assigned Level 42)

Figure 5 – Forecast L_{Amax} evening noise contours
(Assigned Level 57)

Figure 6 – Forecast L_{A10} night-time noise contours
(Assigned Level 37)

Figure 7 – Forecast L_{Amax} night-time noise contours
(Assigned Level 57 dB)

Figure 8 – Forecast L_{A10} evening loading dock noise contours
(Assigned Level 42 dB)

Figure 9 – Forecast L_{A1} evening loading dock noise contours
(Assigned Level 52 dB)

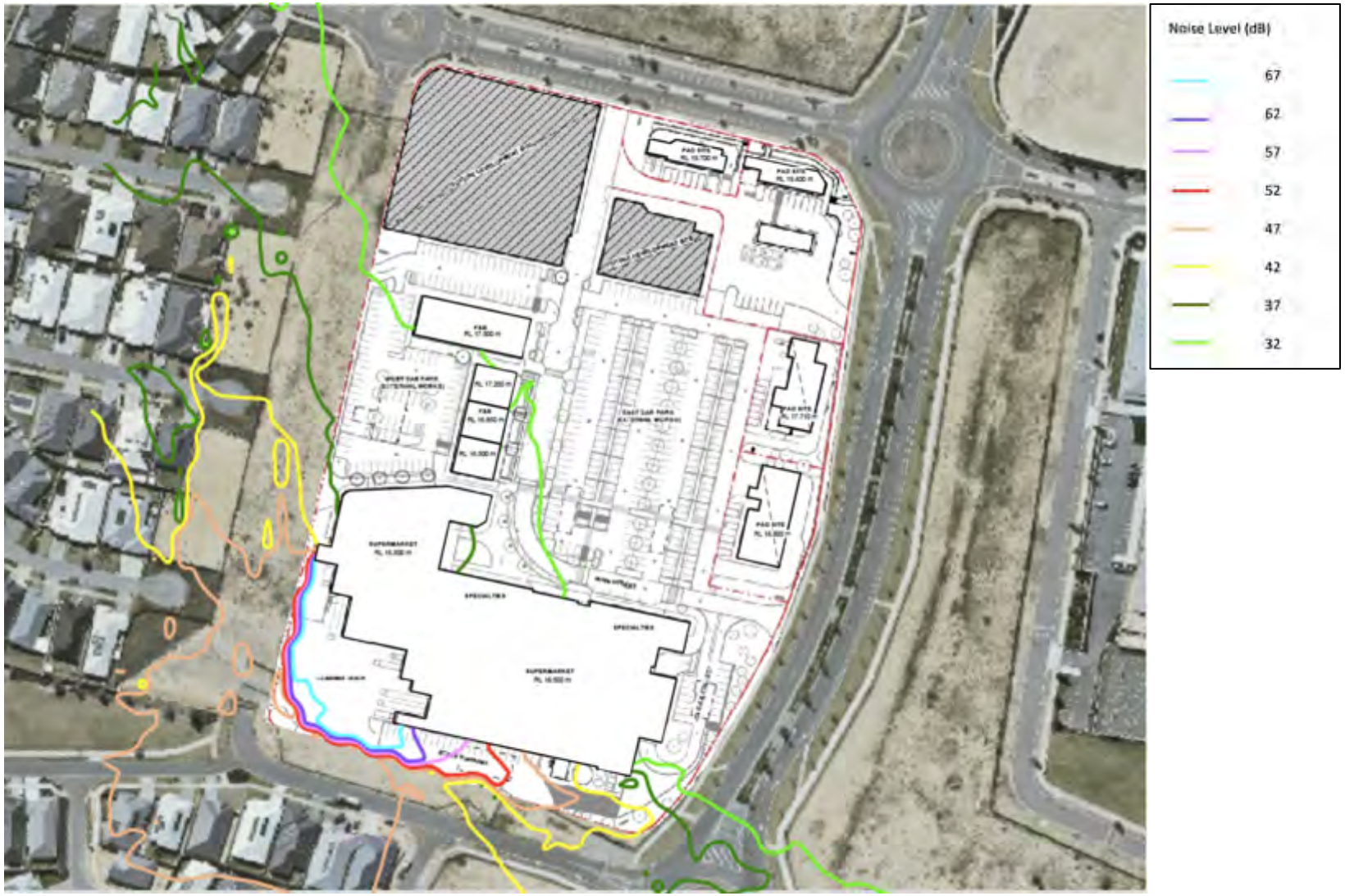


Figure 10 – Forecast L_{Amax} evening loading dock noise contours
(Assigned Level 57 dB)

5. Conclusions

An assessment of environmental noise emission from the Parkland Heights Shopping Centre (Masterplan Stages 1 & 2), Baldivis has been undertaken.

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

On this basis the noise emissions from the site can be controlled to acceptable and Unreasonable Noise, as defined in the Act is unlikely to be generated from site.

Two undeveloped pad sites, several Stage 1 & 2 sites, and some activities/operations at the remaining sites are not well defined. These activities/operations once finalised by the applicants, may require restrictions in the form of:

- Limited operating hours,
- Limited duration of activity,
- Limited nature of activity
- Installation of acoustic shielding and/or acoustic lining

Such activities would be the subject of separate applications.

Appendix A: Noise Management Plan

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

Noise Source or Activity	Requirement
General Deliveries	• Service Station Loading Dock deliveries permitted 24/7. Shielding is required of these loading dock activities with an acoustically lined and covered dock as shown in Appendix C, refer also to the "Service Station Loading Dock" section below • Supermarket Loading dock deliveries permitted between 7am and 10pm Monday to Saturday, and 9am to 10pm on Sundays and public holidays • Supermarket Loading dock deliveries on Sunday and public holidays are limited to one vehicle per four hour period. • Supermarket Loading dock deliveries on Monday – Saturday, between 7pm and 10 pm are limited to one vehicle per evening. • Supermarket Loading Dock deliveries are turn off the truck engine and the refrigeration unit while unloading/loading. Signage in the supermarket loading dock area is to reinforce this requirement. • No forklifts are permitted on site. Unloading activities to be via pallet jacks • Evening and night-time loading dock activities are to minimise general noises including talking while outdoors • Fuel tanker and other general deliveries permitted between 7am – 7pm Monday to Saturday, and 9am - 7pm on Sundays and public holidays. • Reversing of trucks to be minimised to avoid the unnecessary activation of the reversing beeper. • "Broad band", or "white noise" reversing beepers are preferred but not essential for all Delivery trucks at the site
Refuse Collection	• Refuse collection is to be carried out in the quietest reasonable and practicable manner; • Equipment used for refuse collection is the quietest reasonably available • Collection to occur between 7 am and 7 pm Mon-Saturday, unless the contractor has a Noise Management Plan approved by Council.
Carwash	• All openings to the carwash, including car entry/exit, to be sealed during carwash with a minimum 6.38mm sliding glass door. • All walls of the carwash to be a minimum rating of Rw 45. Any glazing to be a minimum 10.38mm glazing fixed • Roof ceiling construction: minimum 0.5mm Klip-Lok
Barriers	• Barriers as shown in Appendix C are recommended for the site. • All barriers are to be built gap-free. • Barriers up to 2.4m high can be built from 0.42mm colorbond sheet steel, or other weather resistant, materials with a minimum mass of 8.5 kg/m2. • Barriers greater than 2.4m are to be a minimum 90mm thick masonry or 9mm CFC, or other material with a minimum surface mass of 10 kg/m2

Noise Source or Activity	Requirement
Grilles, Storm water grates & other metal covers	• To be installed so as to be tight fitting. Where this cannot be achieved, hard rubber or other durable materials are to be used for cushioning such grates/covers
Signage	• To be installed in the carpark near the northern, western, and southern neighbours to remind patrons to keep noise to a minimum due to the proximity of these neighbours
Outdoor Speakers	• No music to be played through any speaker on site without a specific assessment of the noise impact from such speakers. • The use of the speaker for emergency messaging and patron management is accepted
Outdoor Building Services plant	• Maximum permitted Sound Power Levels as shown in Table 4. Barriers are recommended as outlined above and shown in Appendix C • KEF fans may require barriers to be kept within a horizontal distance of 0.2m from the fan outlets
Restaurant	• Limit number of patrons in any western outside area to daytime and evening periods only • Approx. 50 outdoor patrons may be permitted in a shielded, western outdoor area. • Absorptive treatments and shielding as shown in Appendix D is required for the Restaurant • Additional acoustic lining may be required in some indoor areas where windows and doors are to be kept open • Sound rated glazing may be required for evening and Sunday restaurant activity. • The patrons are to be encouraged to not park near the western site boundary, and to leave by 10pm. • No music, apart from low level background music is proposed for the site • The final acoustic design is dependent on the final restaurant configuration, layout, patron numbers, and proposed activities
Other Noisy Plant	• Beepers (for tyre air refill at the service station) and other alert devices on site shall be selected so as to minimise their noise emission and to orient away from the nearest neighbours. Noise emissions not to exceed the values outlined in Table 3

Noise Source or Activity	Requirement
Service Station Loading Dock	• Loading dock to have 3 solid sides, walls to be built from minimum 9 mm CF or acoustic equivalent. Walls and roof to extend a minimum of 4.5 m to cover the front half of the delivery truck, including the refrigeration unit. • Refrigeration Unit can be left operating during deliveries • Roof to be minimum 0.6mm BMT corrugated weather resistant steel sheeting • All gaps in walls, roof, and junctions to be sealed air-tight • Acoustic lining required internally on the ceiling and the walls of loading dock. Lining to be weather resistant, minimum NRC 0.90 acoustic rating. Refer Appendix E • Perforated steel, 0.4mm BMT with minimum 11% open area may be used to face the acoustic insulation for protection • Commercially available alternative acoustic lining materials include Reapor, Stratocell Whisper, and Acoustisorb
Supermarket Loading Dock	• Loading dock to have a perimeter noise barrier, of height and extent as shown in Appendix C. Construction is as outlined above under “barriers” • Acoustic lining is required to a height of 5m on the two walls shown in Appendix C, • Lining to be weather resistant, minimum NRC 0.90 acoustic rating. Refer also to Appendix E • Perforated steel, 0.4mm BMT with minimum 11% open area may be used to face the acoustic insulation for protection • Commercially available alternative acoustic lining materials include Reapor, Stratocell Whisper, and Acoustisorb
Overall	• Noise Emission from all sources not to exceed the levels in Table 3 and Table 4 of this report, for the treatments outlined in this Section to be sufficient • Noise Emission from all sources to meet the time limits outlined in Table 1 • In the event that quieter, or louder equipment/activities is proposed for the site, a review of overall noise emission is required to determine the finalised noise control measures. For example, where equipment is provided which is a minimum of 2 dB louder than that outlined in Table 3 and Table 4, revised noise controls and/or changed operation hours may be required. • Noise control for building services plant to be reviewed at the detailed design stage, after the selection of final mechanical plant, to ensure compliance with the acoustic requirements in this report

Appendix B: Determination of Assigned Level

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

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

The baseline assigned levels from the Regulations are shown below in Table 13.

Table 13 – Baseline Assigned Levels

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

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

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

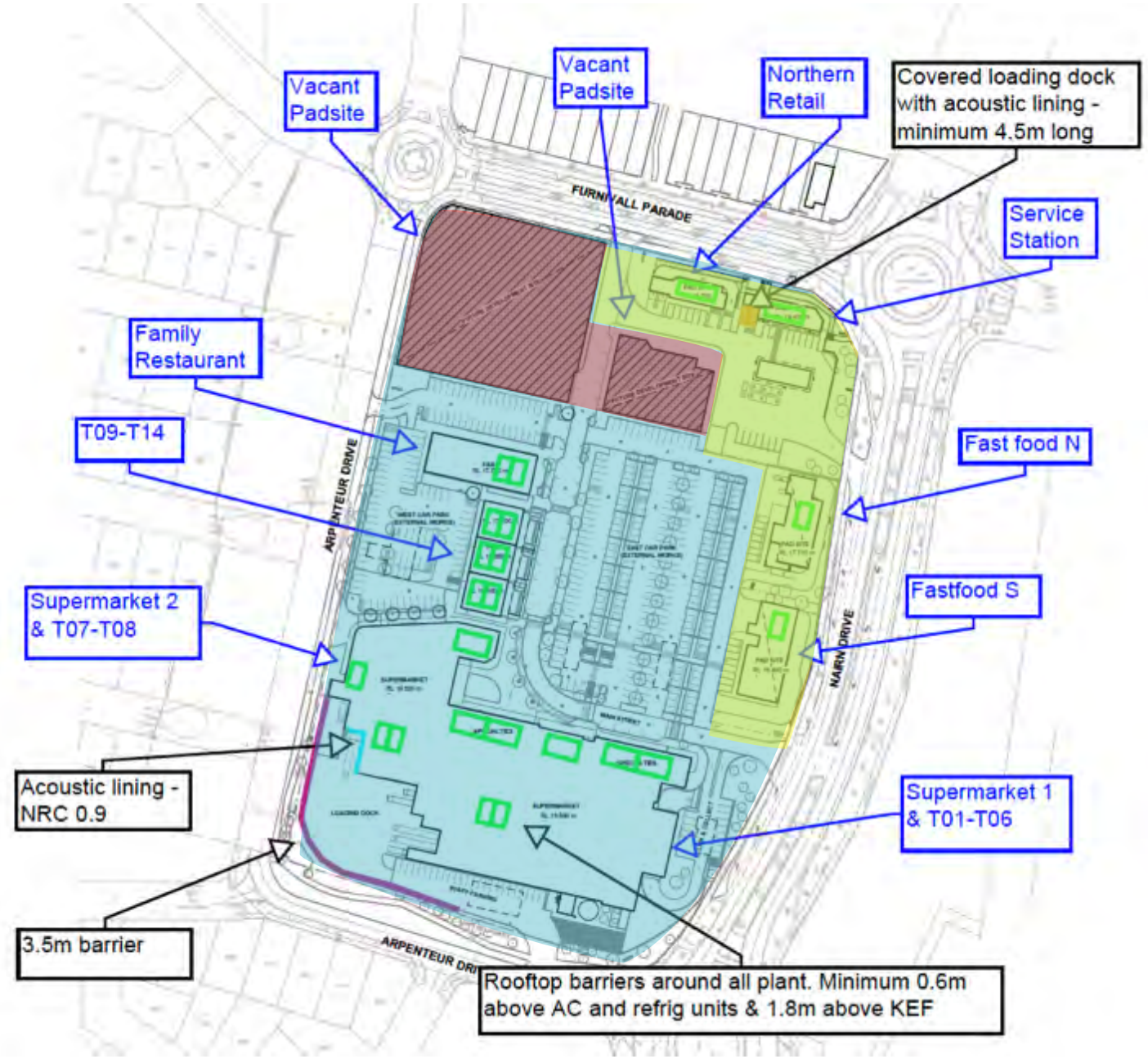
The Influencing Factor IF has been calculated for the applicable noise sensitive receptors in the current study. The percentage of industrial and commercial land within the prescribed circles centred on the noise sensitive premises, and the presence of roads with more than 6000 vehicles per day have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

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

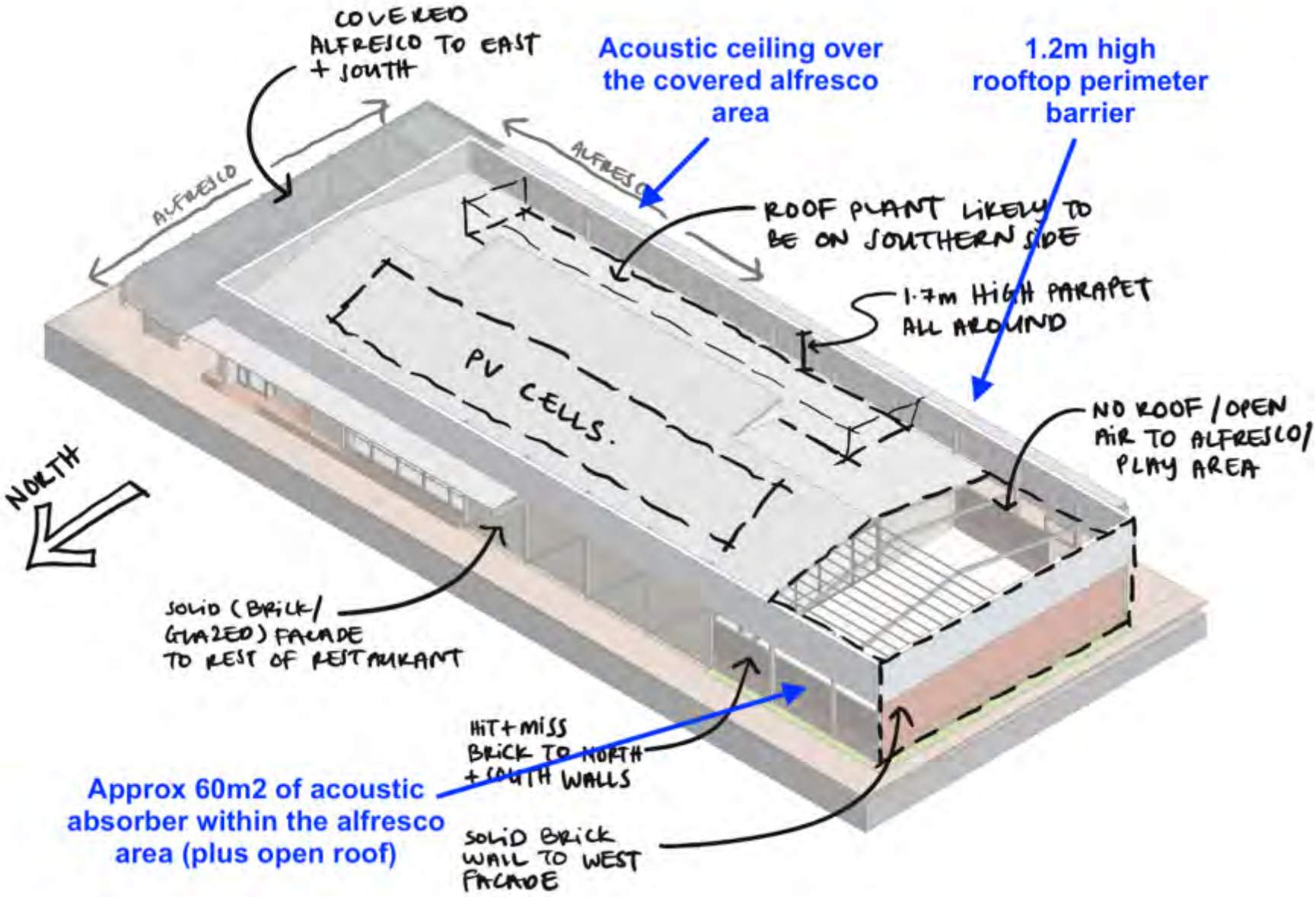
Property = Northern Residences

Type of Land	450m Radius	100m radius	Total	
Industrial Land	0.0%	0.0%	0.0	dB
Commercial Land	12%	24%	1.8	dB
Transportation Factor			0	dB
TOTAL Influencing Factor			**2**	**dB**

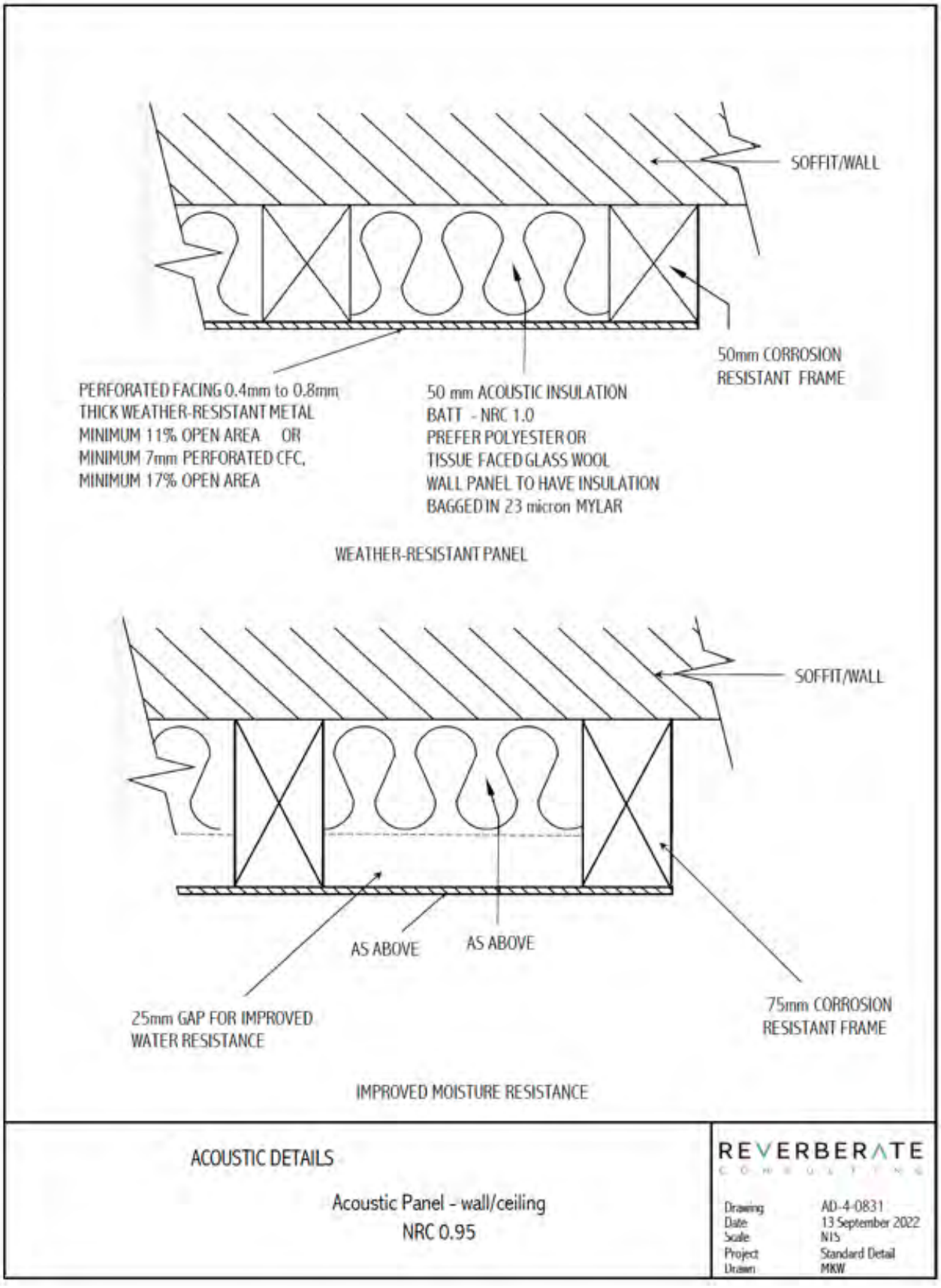
Appendix C: Site Layout incl Barriers


Vacant Padsite
Vacant Padsite
Northern Retail
Covered loading dock with acoustic lining - minimum 4.5m long
FURNIVALL PARADE
Service Station
Family Restaurant
T09-T14
ARPENTEUR DRIVE
Fast food N
Supermarket 2 & T07-T08
Fastfood S
KARRI DRIVE
Acoustic lining - NRC 0.9
Supermarket 1 & T01-T06
3.5m barrier
ARPENTEUR DRIVE
Rooftop barriers around all plant. Minimum 0.6m above AC and refrig units & 1.8m above KEF

Appendix D: Restaurant Treatments


COVERED ALFRESCO TO EAST + SOUTH
Acoustic ceiling over the covered alfresco area
1.2m high rooftop perimeter barrier
ALFRESCO
ALFRESCO
ROOF PLANT LIKELY TO BE ON SOUTHERN SIDE
1.7m HIGH PARAPET ALL AROUND
PV CELLS.
NO ROOF / OPEN AIR TO ALFRESCO/ PLAY AREA
NORTH
SOLID (BRICK/ GLAZED) FACADE TO REST OF RESTAURANT
HIT+MISS BRICK TO NORTH + SOUTH WALLS
Approx 60m2 of acoustic absorber within the alfresco area (plus open roof)
SOLID BRICK WALL TO WEST FACADE

Appendix E: Standard Detail


SOFFIT/WALL
50mm CORROSION RESISTANT FRAME
PERFORATED FACING 0.4mm to 0.8mm THICK WEATHER-RESISTANT METAL MINIMUM 11% OPEN AREA OR MINIMUM 7mm PERFORATED CFC, MINIMUM 17% OPEN AREA
50 mm ACOUSTIC INSULATION BATT - NRC 1.0 PREFER POLYESTER OR TISSUE FACED GLASS WOOL WALL PANEL TO HAVE INSULATION BAGGED IN 23 micron MYLAR
WEATHER-RESISTANT PANEL
SOFFIT/WALL
AS ABOVE
AS ABOVE
25mm GAP FOR IMPROVED WATER RESISTANCE
75mm CORROSION RESISTANT FRAME
IMPROVED MOISTURE RESISTANCE
ACOUSTIC DETAILS
Acoustic Panel - wall/ceiling
NRC 0.95
REVERBERATE CONSULTING
Drawing AD-4-0831
Date 13 September 2022
Scale NTS
Project Standard Detail
Drawn MKW

Attachment 9

Waste Management Plan

Waste Management Plan

Parkland Heights Service Station PAD Site

7-Eleven Service Station Project

Prepared for Rockingham Park Pty Ltd

1 August 2024

Project Number: WMP24070

DOCUMENT CONTROL

Version	Description	Date	Author	Reviewer	Approver
1.0	First Approved Release	1/08/2024	MA	DP	DP

Approval for Release

Name	Position	File Reference
Dilan Patel	Project Manager – Waste Management Consultant	WMP24070-01_Waste Management Plan_1.0
Signature		

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Executive Summary

Rockingham Park Pty Ltd is seeking development approval for the proposed 7-Eleven Service Station Project located at north-east corner of the Parkland Heights Shopping Centre Site (the Proposal).

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

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

Proposed Waste Collection Summary

Waste Type	Generation (L/week)	Bin Size (L)	Number of Bins	Collection Frequency	Collection
Refuse	1,120	660	Two	Once each week	Private Contractor
Recycling	700	660	Two	Once each week	Private Contractor

A private contractor will service the Proposal onsite, directly from the Loading Bay adjacent to the Bin Storage Area. The private contractor's waste collection vehicle will enter and exit the Proposal in forward gear via Nairn Drive.

A site manager will oversee the relevant aspects of waste management at the Proposal.

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1 Introduction

Rockingham Park Pty Ltd is seeking development approval for the proposed 7-Eleven service station located at north-east corner of the Parkland Heights Shopping Centre Site (the Proposal).

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

The Proposal is bordered by future commercial developments/Furnivall Parade to the north, Nairn Drive to the east, commercial developments/Arpenteur Drive to the south and west, as shown in Figure 1.

1.1 Objectives and Scope

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

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

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

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

2 Waste Generation

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

2.1 Proposed Tenancies

The anticipated volume of refuse and recyclables is based on the floor area (m^2) of the service station tenancy at the Proposal – **200m²**.

2.2 Waste Generation Rates

In order to achieve an accurate projection of waste volumes for the Proposal, consideration was given to the City of Melbourne's *Guidelines for Waste Management Plans* (2021) and they contain contemporary estimates of waste generated from convenient store.

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

Table 2-1: Waste Generation Rates

Tenancy Use Type	City of Melbourne Guideline Reference	Refuse Generation Rate	Recycling Generation Rate
7-Eleven Service Station	Convenience Store	80L/100m²/day	50L/100m²/day

2.3 Waste Generation Volumes

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

Waste generation volumes in litres per week (L/week) adopted for this waste assessment is shown in Table 2-2. It is estimated that the Proposal will generate 1,120L of refuse and 700L of recyclables each week.

Table 2-2: Estimated Waste Generation

7-Eleven Service Station	Area (m^2)	Waste Generation Rate (L/100m²/day)	Waste Generation (L/week)
Refuse	200	80	**1,120**
Recycling	200	50	**700**
		Total	**1,820**

3 Waste Storage

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

3.1 Internal Transfer of Waste

To promote positive recycling behaviour and maximise diversion from landfill, internal bins will be available throughout the Proposal for the source separation of refuse and recycling.

These internal bins will be collected by the staff/cleaners and transferred to the Bin Storage Area for consolidation into the appropriate bins.

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

3.2 Bin Sizes

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

Table 3-1: Typical Bin Dimensions

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

Reference: SULO Bin Specification Data Sheets

3.3 Bin Storage Area Size

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

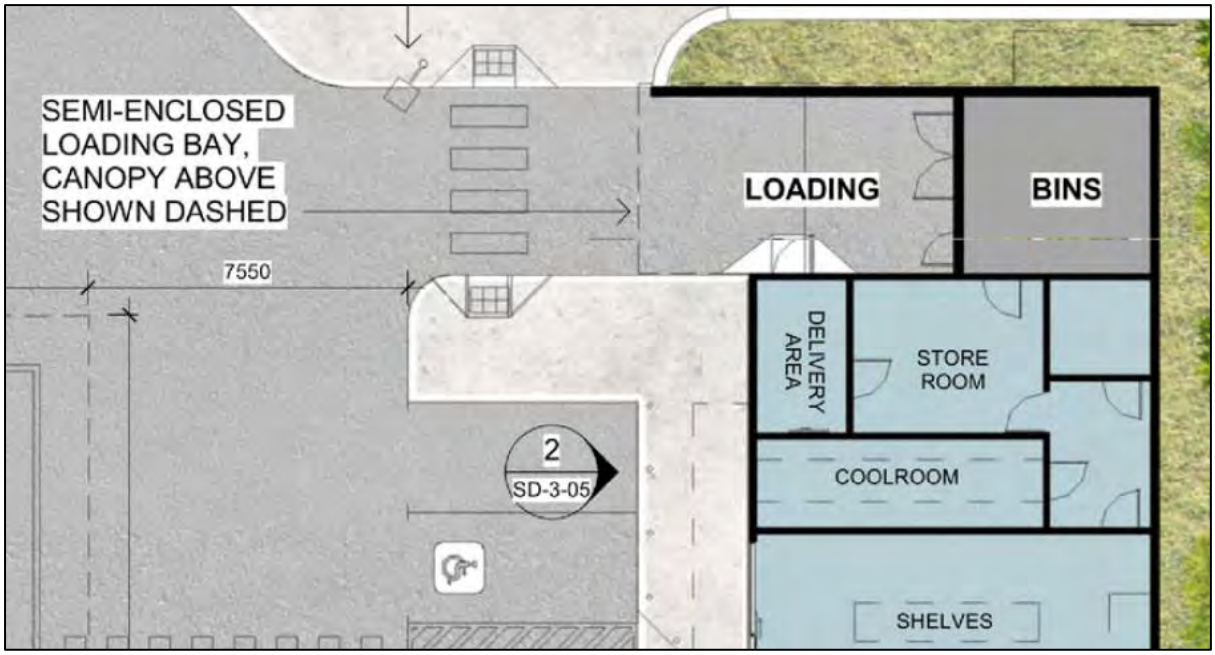
Based on the results shown in Table 3-2 the Bin Storage Area has been sized to accommodate:

- Two 660L refuse bins; and
- Two 660L recycling bins.

Table 3-2: Bin Requirements for Bin Storage Area

Waste Stream	Waste Generation (L/week)	Number of Bins Required		
		240L	660L	1,100L
Refuse	1,120	5	2	2
Recycling	700	3	2	1

Diagram 1: Bin Storage Area



3.4 Bin Storage Area Design

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

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

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

4 Waste Collection

A private waste collection contractor will service the Proposal and provide the Proposal with two 660L bins for refuse and two 660L bins for recyclables.

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

The private contractor's rear loader waste collection vehicle will service the bins onsite, directly from the Loading Bay adjacent to the Bin Storage Area. The private contractor's rear loader waste collection vehicle will travel with right hand lane traffic flow on Nairn Drive and turn into the Proposal in forward gear and pull into the Loading Bay for servicing.

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

Once servicing is complete the private contractor's rear loader waste collection vehicle will exit in a forward motion, turning onto Nairn Drive moving with traffic flow.

4.1 Bulk and Speciality Waste

Bulk and speciality waste materials will be removed from the Proposal as they are generated. Removal of these wastes will be monitored by the site manager who will liaise with staff and cleaners to assist as required.

These may include items such as:

- Refurbishment wastes from fit outs;
- Batteries and E-wastes;
- White goods/appliances;
- Cleaning chemicals; and
- Commercial Light globes.

5 Waste Management

A site manager will be engaged to complete the following tasks:

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

6 Conclusion

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

The above is achieved using:

- Two 660L refuse bins, collected once each week; and
- Two 660L recycling bins, collected once each week.

A private contractor will service the Proposal onsite, directly from the Loading Bay adjacent to the Bin Storage Area. The private contractor's waste collection vehicle will enter and exit the Proposal in forward gear via Nairn Drive.

A site manager will oversee the relevant aspects of waste management at the Proposal.

Figures

Figure 1: Locality Plan

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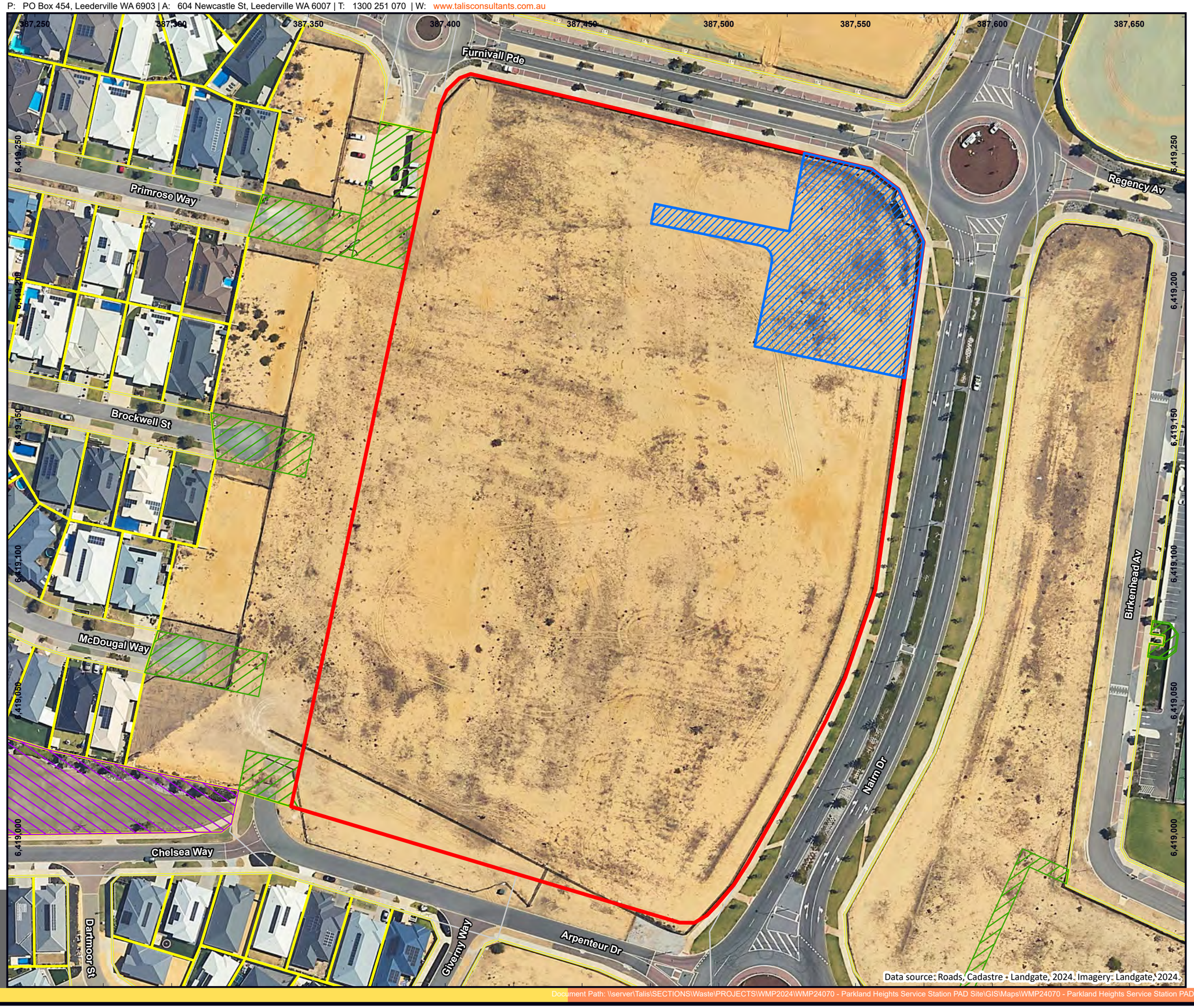

LEGEND

- Site Boundary
- Proposed Site

Cadastre

- Freehold
- Road
- Easement
- Reserve

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LOCALITY

Parkland Heights Shopping Centre
Baldivis WA 6171

Rockingham Park Pty Ltd
(7-Eleven Service Station Project)

N
0 10 20 30 40 50 m

Coordinate System: GDA2020 MGA Zone 50
Scale @ A3: 1:1,300

Prepared:	E Jackson	Date:	25/07/2024
Reviewed:	M Ang	Revision:	A
Project:	WMP24070		

talis consultants

Figure 01

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

Assets | Engineering | Environment | Noise | Spatial | Waste

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Attachment 10

Emissions Impact Assessment

EAQ Consulting

EMISSIONS IMPACT ASSESSMENT OF PROPOSED 24HR FUEL SERVICE STATION

PARKLAND HEIGHTS SHOPPING CENTRE

Emissions Impact Assessment of Proposed 24Hr Fuel Service Station

Parkland Heights Shopping Centre

Prepared for: Rockingham Park Pty Ltd

Project Ref: EAQ-23037

November 2023

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Environment | Air Quality

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Final	Final Report			

Approved for Release		
Name	**Position**	**File Reference**
John Hurley	Principal Consultant	EAQ23037-ParklandHeights+7-Eleven+EmissionsImpactAssessment-v1.0

Signature

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This document presents the outcomes of a Desktop Emissions Modelling Assessment. All emissions inputs into the model were sourced from previous site-specific measurements, from peer reviewed public domain data and/or industry specific emissions' factor publications except where detailed otherwise herein. EAQ has not attempted to verify externally sourced data beyond its use herein. The modelling assessment has been prepared using the best available information provided by the Client and in conjunction with regulatory guidance from the appropriate regulatory jurisdiction(s). EAQ has exercised its diligence and due-care in delivering the outcomes of the assessment according to accepted assessment practices and techniques. EAQ disclaims any and all liability and responsibilities for damages of any nature, to any party, which may be caused from misapplication or misinterpretation by third parties of this assessment

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Executive Summary

Environmental and Air Quality Consulting Pty Ltd undertook an Air Emissions Assessment of a proposed 24-hour Fuel Service Station (the Site) to be located at the corner of Nairn Drive and Furnival Parade in Baldivis Western Australia 6171.

The site-specific scientific study addressed the short-term exposure and long-term health risks associated with vapour emissions from the Fuel Service Station.

The Fuel Service Station (7-Eleven) is within an urban developed area and is part of an overall commercial development site.

The Assessment utilised industry accepted standards for estimating pollutant emission rates of primary airborne pollutants from fuel storage and refuelling activities at the Fuel Service Station and assessed these pollutant emission rates utilising conventional dispersion modelling methods to predict the concentration of primary pollutants at the nearest sensitive receiver within the locality.

The outcomes of the Assessment found that the primary pollutants of Benzene, Toluene, Ethyl benzene, Xylenes, Cyclohexane, *n*-Hexane and Styrene were predicted to have ground level concentrations lower than acceptable exposure limits set by the WA Department of Water and Environmental Regulation, National Environment Protection (Air Toxics) Measure and other relevant jurisdictional recommendations when utilising both Vapour Recovery Phase 1 (mandatory) and Vapour Recovery Phase 2 (proposed).

The predicted ground level concentrations of these primary pollutants, utilising Vapour Recovery Phase 1 & 2 technologies, demonstrated that the proposed Fuel Service Station emissions will not have an unreasonable impact on the health of existing sensitive receptors or sensitive land uses.

1 Background & Scope

Environmental & Air Quality Consulting Pty Ltd (EAQ) was engaged by Rockingham Park Pty Ltd (RP), the proponent, to undertake an Air Emissions' Impact Assessment (the Assessment) of a proposed 24-hour Fuel Service Station (the Site) to be located at the corner of Nairn Drive and Furnival Parade in Baldivis Western Australia 6171.

The Assessment addressed toxic emissions of principal chemical compounds in petrols by undertaking a desktop scientific Assessment into the short and long-term health risks associated with vapour emissions from the Site.

Assessed vapour emission rates assessed were developed from:

- NPI Emission Estimation Technique Manual (NPI, 1999) for Aggregated Emissions from Service Stations (Environment Australia);
- Air Toxics "Hot Spots" Program: Gasoline Service Stations Industry wide Assessment Guidelines – Toxics Committee of the California Air Pollution Control Officers Association (CAPCOA, 1997); and
- Brisbane City Council methodology for service stations (BCC, 2017).

The BCC, 2017 methodology was utilised to represent hourly throughput rates for service stations based on normal and peak traffic flows.

1.1 Assessment Scope

The Assessment was undertaken to determine the extent of offsite pollutant impacts beyond the boundary of the Site and subsequently determining the risk of health and amenity impacts for existing and future sensitive receivers and/or sensitive land uses (receptors).

The Assessment predicted ground level concentrations (GLCs) of various pollutants from vapour losses using regulatory standard dispersion modelling techniques.

The predicted GLCs were compared to the regulatory criteria for each pollutant assessed to determine if those GLCs would cause a health or amenity impact at the nearest receptor.

The model of choice was Aermod and its supporting pre- and post- processors.

1.1.1 Legislative Context

The proposed Site will not be a Prescribed Premise with regard to the WA Department of Water and Environmental Regulation (DWER).

The Western Australia (WA) Environmental Protection Authority (EPA) 2005 Guidance for the Assessment of Environmental Factors document, *Separation Distances between Industrial and Sensitive Land Uses* recommends a buffer separation distance for Service Stations / Convenience Store Fuel Facilities and the nearest sensitive receptor as follows:

Table 1-1: WA EPA Guidance for Separation Distances – Service Station

50 m	Operating during normal business hours of Monday – Saturday from 0700 – 1900 hours
100 m	Freeway service stations
200 m	Service stations in operations for 24 hours daily

The EPA recommended buffers imply that where the separation distance is not met, a further assessment of applicable emissions should be undertaken to support the application and thus inform the risk of health and amenity impacts at the nearest receptor.

"Sensitive land uses include residential development, hospitals, hotels, motels, hostels, caravan parks, schools, nursing homes, childcare facilities, shopping centres, playgrounds and some public buildings. Some commercial, institutional and industrial land uses which require high levels of amenity or are sensitive to particular emissions may also be considered "sensitive land uses". Examples include some retail outlets, offices and training centres, and some types of storage and manufacturing."

Importantly, there have been sweeping changes to the operational hours of service stations and retail businesses in Western Australia i.e., deregulation of hours.

1.1.2 Assessment Substances

The emission sources at the Site comprise the ventilation of the sub-terrain fuel storage tanks, and the refuelling bowsers (3 bowsers, i.e., 6 dispensers). Incidental spills can also be a source of vapour release, albeit minor. Emission sources are primarily passive vapour losses from refilling (storage tanks) and bowser refuelling processes.

Principal chemical compounds (pollutants) typically emitted from service station activities are listed below. These compounds are part of the Total Volatile Organic Compounds (VOCs) emitted, which are assessed in the first instance, and those individual pollutant contributions are then derived based on the percentage contribution of those pollutants within the Total VOC emissions.

Table 1-2: Assessment Substances (pollutants)

Pollutants			
Benzene	Cyclohexane	Ethyl benzene	Styrene
Toluene	*n*-Hexane	Xylenes	

1.2 Guidance for Assessing Impacts

The DWER prescribes maximum ambient concentrations of an array of pollutants and toxic substances. In prescribing these maximum concentrations, the DWER has referred to (among others); The National Environment Protection (Air Toxics) Measure (NEPM). These DWER, NEPM, and other jurisdictional recommendations as per DWER's guidance have been adopted for this Assessment. These maximum ambient concentration exposure limits are listed in **Table 1-3**.

Table 1-3: Assessment Criteria for Toxic Substances

Substance	Averaging Period	Criteria Source	Maximum (ambient) concentration	
			ppm	µg/m³ at 25⁰C
Benzene	1 hour	EPA NSW 2016	0.009	29
	Annual	NEPM 2011	0.003	9.6
Toluene	24 hour		1	3,770
	Annual		0.1	377
Ethyl benzene	1 hour	EPA NSW 2016	1.8	8,000
	Annual	Toxicos 2011	-	270
Xylenes	24 hour	NEPM 2011	0.25	1,080
	Annual		0.2	870
Cyclohexane	1 hour	EPA NSW 2016	5	190
***n*-Hexane**			0.9	3,200
Styrene	1 hour	Dept. of Health WA	70	64

1.3 The Site

The Assessment Site will form part of a commercial site that comprises this service station Site and other consumer amenities such as shops, fast food outlets etc.

The Site is proposed to be located at the corner of Nairn Drive and Furnival Parade This corner is part of a 'roundabout' intersection with residential sites to the immediate north, to the west, and residential and retail/commercial lots, to include the Pine View Primary School to the east of the Site.

The nearest existing and future urban dwellings (house), from the Site's central refuelling bowser location is approximately 70-80 m to the north.

The proposed Site will comprise the following main features:

- 3 bowser ranks comprising a maximum of 6 refuelling outlets at any one time;
- The types of fuels proposed are;
    - Diesel (50 kL),
    - ULP 91 (30 kL),
    - ULP 95 (30 kL),
    - ULP 98 (70 kL),
- Bulk refuelling events will take place up to three times weekly, or every 3 days annually averaged to replenish a maximum volume of 180,000 Litres (180kL);
    - Tanker delivery of typically 1,000 Litres per minute (60,000 Litres per hour).
- The peak flow of vehicles per hour is anticipated at 72 based on a 3-Bowser configuration (i.e., 12 per refilling nozzle); and
- Average refuelling volume daily 46,829 Litres (based on peak flow of 72 cars per hour).

The Locality of the Site and assessed sensitive receptors, the Site design and Model depiction are illustrated in the following **Figures.**

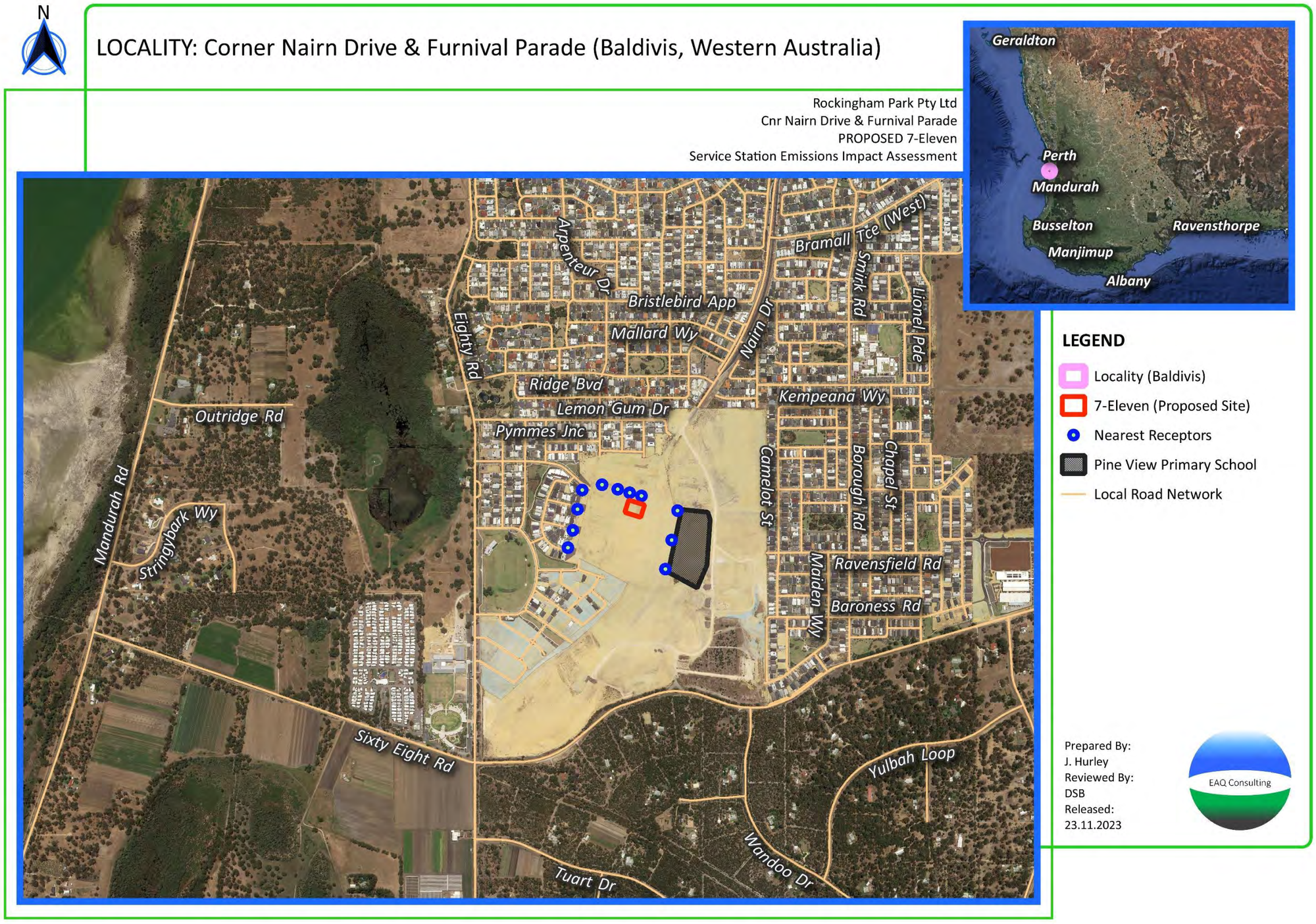

Figure 1-1: Proposed 24-hr Baldivis Service Station (assessed)

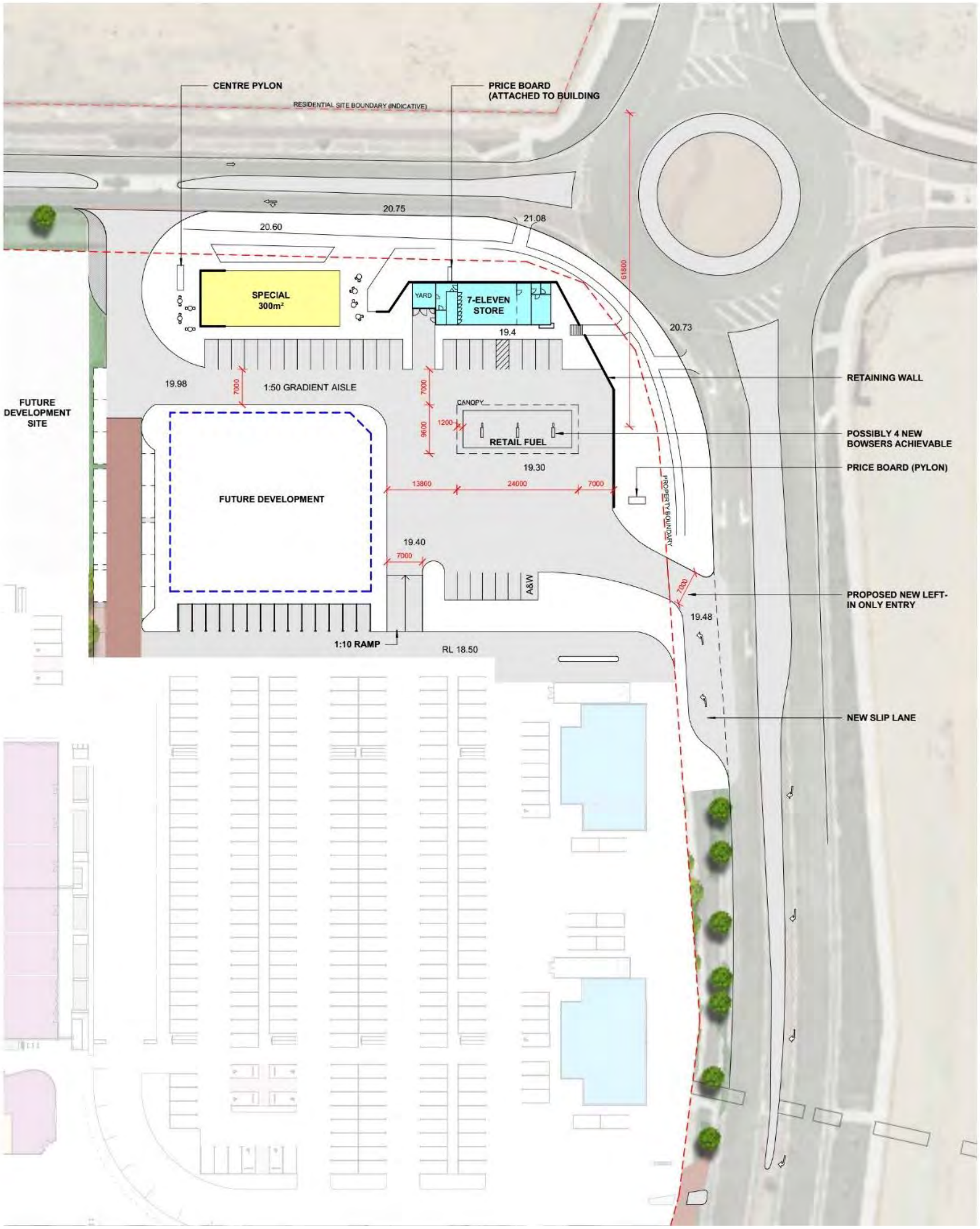

Figure 1-2: Working Design of Proposed Service Station Layout

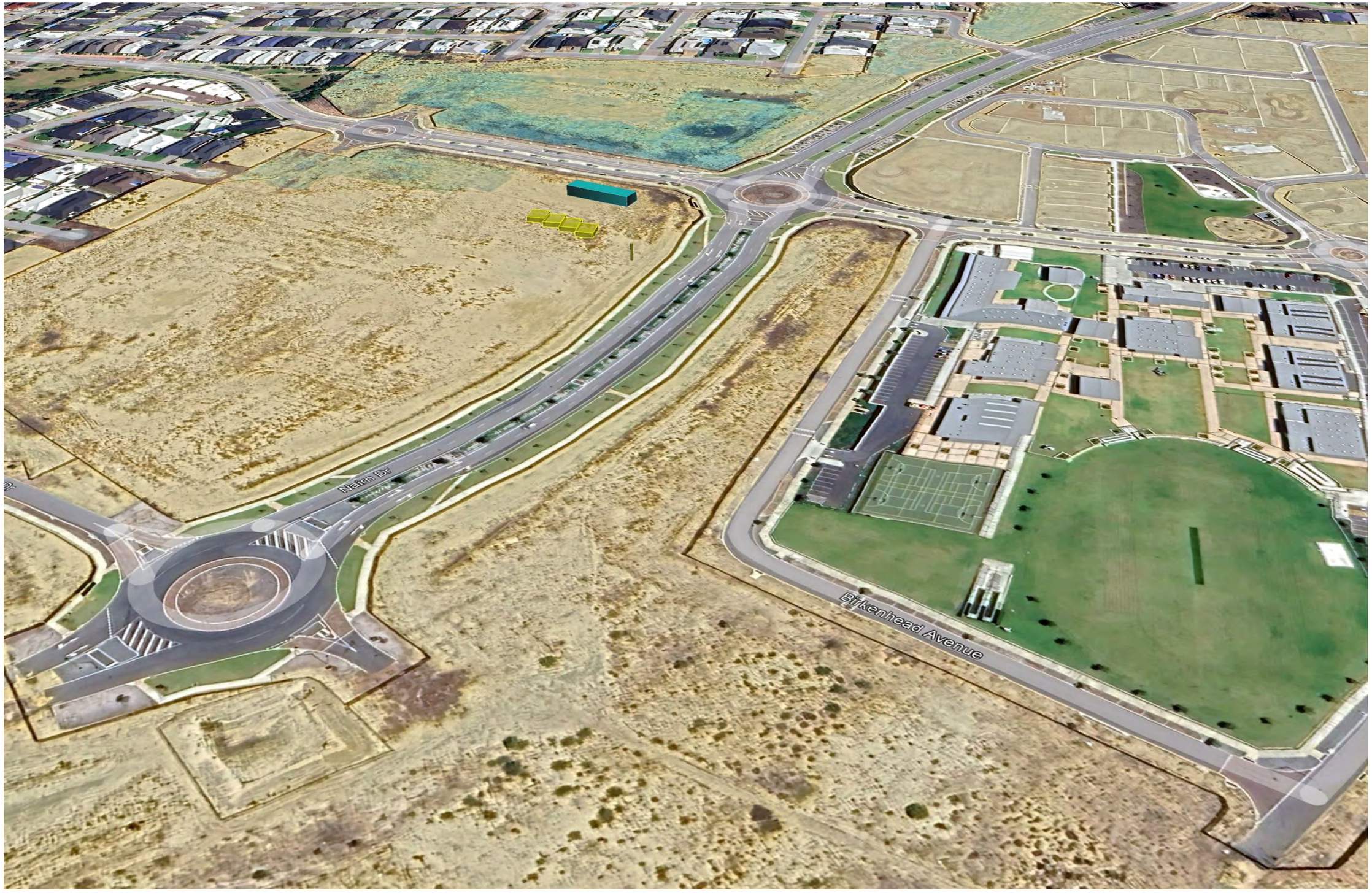

Figure 1-3: Modelling Depiction of Site Layout (Proposed) and nearby receptors

2 Service Station Emissions Estimation

Activities at the Site that will produce emissions are related to losses of fuels through vapourisation or spillage and subsequent vapourisation of the spill(s). These specific activities comprise:

- Submerged filling of underground storage tanks;
- Underground tank breathing losses;
- Vehicle refuelling;
- 'Whoosh' emissions from removal of vehicle fuel cap; and
- Fuel spills, typically at the bowser.

The Site throughputs are estimated based on like-for-like34-bowser service stations' average throughput. The nearby 7-Eleven located to the north in Baldivis has been used to estimate traffic flows and peak rates.

There is a dearth of information within other Australian jurisdictions for estimating hourly throughputs based on typical traffic flows at metropolitan service stations, as a result the widely referenced 2017 Brisbane City Council (BCC) methodology for service stations has been used to estimate hourly emissions at the Site.

Emission estimates based on specific emission compounds **(refer Table 1-2)** were derived using the NPI, 1999 and CAPCOA, 1997 guidelines for emission estimation factors.

2.1 Vapour Recovery

Vapour recovery (VR) at the Site will be in place for submerged underground storage tank(s) referred to as VR1 (mandatory).

VR2 will also be installed at the refuelling bowsers. VR2 can provide at least 85% vapour recovery when refuelling vehicles.

2.2 Bulk Deliveries and Emissions

The estimated total daily sale of fuels, based on the peak traffic flow of 72 cars at peak hour, is 46,829 Litres. As a result, the Site will receive, on average, approximately 2-3 bulk deliveries of fuels per 7 days, between the daily hours of 0700 hrs – 2200hrs.

Importantly, the total fuel volume per week is based on a peak hourly value of cars refuelling. The volumes of fuel dispensed for all other hours outside of the peak hour are therefore derived based on the peak hourly volume.

The actual peak hour volume is likely to be much lower than the 72 cars at peak and therefore the emissions derived for this Assessment will be an overestimate of actual emissions from the Site.

The maximum volume of fuel that can be dispensed into the storage tanks at the Site is approximately 60,000 L/hour.

Although there are up to 3 deliveries per week of 60,000 L or less, the schedule will shift based on fuel volumes dispensed. To account for variability in daily hours where deliveries are made; the delivery of bulk fuels is modelled 1-hourly, for each day and successive hour during those delivery times.

Table 2-1 lists an example of the delivery schedule and subsequent hourly emissions trend for bulk fuel deliveries.

Table 2-1: Example of Bulk Fuel Delivery Schedule (L/hr)

Time (24 hrs)	Monday	Tuesday	Wednesday	Thursday	Friday
0700	60,000				
0800		60,000			
0900			60,000		
1000				60,000	
1100					60,000
1200	60,000				
1300		60,000			
1400			60,000		
1500				60,000	
1600					60,000
1700	60,000				
1800		60,000			
1900			60,000		
2000				60,000	
2100					60,000
2200					

2.3 VOC Emissions

Of the fuel types proposed, ULP emissions represent approximately 72% of total fuel storage with diesel representing approximately 28%. There are no proposed Ethanol blend fuels e.g., E5, E10.

ULP contains the higher volatile fraction compared to diesel, as such all emissions in this Assessment have been assumed as ULP. This approach is conservative.

The vapour composition of primary VOCs in petroleum fuel (NPI, 1999), are listed in **Table 2-2**. The vapour composition of Benzene has been revised in accordance with the Australian Government's Federal Register of Legislation, specifically the current Fuel Quality Standards (Petrol) Determination 2019, which limits the volume of Benzene in petrol to 1% v/v maximum. Assuming a Benzene density value of 0.8765, the petrol vapour Benzene composition (% weight) is listed in **Table 2-3**.

Table 2-2: Composition of Petrol (NPI, 1999)

Species	Petrol Liquid (% weight)	Petrol Vapour (% weight)
Cyclohexane	0.2	0.06370
Ethylbenzene	2.0	0.07910
n-Hexane	3.5	1.730
Styrene	0.1	0.00282
Toluene	10.4	1.080
Xylenes	12.2	0.433

Table 2-3: Composition of Petrol (Fuel Standards, 2019)

Species	Petrol Liquid (% weight)	Petrol Vapour (% weight)
Benzene	1.0	0.374

The composition percentages of the compounds listed in **Table 2-2** and **Table 2-3** were applied to the modelling outcomes of the final time-averaged emission rate GLC estimates (vapour and spill vapour losses) to derive individual pollutant contributions to airborne vapour impacts at the nearest receptor.

2.4 Site Operational Data

Table 2-4: Proposed Site Operating Detail

Parameter	Operational Data
Operating hours	24 hours / 7 days per week
Tanker delivery	Maximum 60,000 L/hour
Peak Daily Refuelling Volume	46,829 L **(VR1)**
Storage Tanks' Vent stack	4.5 m high
Filling Stations/Bowsers	3 x Bowsers / 6 x Grade filling points (located below full canopy) **(VR2)**
Fuel Storage	Diesel 50 kL, ULP 91 30 kL, ULP 95 30 kL, ULP 70 kL.

2.5 Derived Emission Factors

Emissions generated from activities at the Site have been derived based on those vapour losses published by the NPI and CAPCOA guidance. **Table 2-5** lists those emission factors that apply to those processes where vapour losses occur.

Table 2-5: Emissions Factors for Service Stations

Emission Source	NPI, 1999 Mg / L throughput	CAPCOA, 1997 Lbs / 1000 Gallons throughput
Underground Tank Filling	-	-
Submerged Filling	880	8.4
Splash Filling	1380	-
Submerged filling with vapour balance (VR1)	40	**0.42**
Underground tank breathing losses	**120**	0.84
Vehicle Refuelling	-	-
Displacement Losses (uncontrolled)	1320	8.4
Displacement Losses (controlled i.e., VR 2)	132	**0.74**
Spillages	-	-
Uncontrolled	80	**0.61**
Controlled	-	0.41
"Whoosh" Emissions (fuel cap removal)	-	0.26 - **0.66**

The refuelling activities are characterised as volume emission sources. These have been assessed utilising the CAPCOA, 1997 emission factors. Vent emissions from storage tank filling has been assessed using the NPI, 1999 emission factors.

2.5.1 Fuel Throughput Trends

To determine the hourly throughputs of fuel dispensing for service stations in accordance with the BCC, 2017 recommendations, the hourly profile of fuel sales daily is derived using the BCC, 2017 published profiles as listed in **Table 2-6**.

Table 2-6: Representative Fuel Throughputs (BCC, 2017)

Hour	Hourly Profile (%)
1	1.2
2	0.8
3	0.6
4	0.8
5	1.9
6	4.6
7	5.5
8	5.7
9	5.5
10	5.7
11	6.0
12	6.0
13	5.7
14	5.6
15	5.9
16	**6.2**
17	**6.2**
18	5.8
19	5.1
20	4.0
21	3.5
22	3.4
23	2.6
24	1.8

In **Table 2-6** the peak throughput hour begins at 4-5pm (1600 - 1700 hrs).

Applying the Average Daily Refuelling Volume of 46,829 L, the emission factors in **Table 2-5**, and deriving hourly volumes based on **Table 2-6**, the hourly Total VOC mass emission rates in grams per second (g/s) are developed.

These mass emission rates represent the combined (ALL) number of filling points (8) at any one time, and single bowser (SINGLE) operations (VR2) and are listed in **Table 2-7**.

Table 2-7: Factored Total VOC Emission Rates per Hour (VR2)

Hour	Throughput % daily volume/hr	Petrol Throughput (L/hr)	% to Peak Daily Hour	ALL Bowsers Mass Emission Rate (g/s)	SINGLE Bowser Mass Emission Rate (g/s)
1	1.2	562	19.5%	0.226	0.075
2	0.8	375	13.0%	0.150	0.050
3	0.6	281	9.8%	0.113	0.038
4	0.8	375	13.0%	0.150	0.050
5	1.9	890	30.9%	0.357	0.119
6	4.6	2,154	74.8%	0.865	0.288
7	5.5	2,576	89.4%	1.034	0.345
8	5.7	2,669	92.7%	1.071	0.357
9	5.5	2,576	89.4%	1.034	0.345
10	5.7	2,669	92.7%	1.071	0.357
11	6.0	2,810	97.6%	1.128	0.376
12	6.0	2,810	97.6%	1.128	0.376
13	5.7	2,669	92.7%	1.071	0.357
14	5.6	2,622	91.1%	1.053	0.351
15	5.9	2,763	95.9%	1.109	0.370
16	**6.2**	2,880	**100.0%**	**1.156**	**0.385**
17	**6.2**	2,880	**100.0%**	**1.156**	**0.385**
18	5.8	2,716	94.3%	1.090	0.363
19	5.1	2,388	82.9%	0.959	0.320
20	4.0	1,873	65.0%	0.752	0.251
21	3.5	1,639	56.9%	0.658	0.219
22	3.4	1,592	55.3%	0.639	0.213
23	2.6	1,218	42.3%	0.489	0.163
24	1.8	843	29.3%	0.338	0.113

Table 2-8 lists the emission rate for the proposed Site during bulk refuelling activities (VR1).

Table 2-8: Proposed Site's Bulk Storage Emissions during Bulk Refuelling (VR1)

Emission Source	Emission Type	Peak VOC Mass Emission Rate (g/s)	Stack Diameter (m)	Emission Velocity (m/s)
Vent Stack	Bulk Filling (Vapour Balance and Breathing Losses)	0.852	0.1	0.1

Appendix A presents the summary calculations for the derived mass emission rates.

3 Aermod Dispersion Modelling Methods

3.1 Meteorology

A 2-year annual dataset (April-2020-to-April-2022) of meteorology was developed for the locality using surface observations from the Mandurah Bureau of Meteorology (BoM) Automatic Weather Station (AWS) and CSIRO's TAPM prognostic model for upper air characteristics. The Mandurah BoM AWS is approximately 20 kms south, south-west of the Site and representative of the assessment domain given the Site's and AWS's proximity to the coastline and separated by approximately 0.05 decimal degrees of latitude (approx., 4 kms).

3.2 Sensitive Receptors

Discrete sensitive receptors representing commercial, residential, and the local school were placed at locations closest and surrounding the Site (refer **Figure 1-1**). These receptors were assessed against the vapour emissions and compared against regulatory guidelines.

3.3 Building Profile Input Program (BPIP)

Building wake effects occur for those vertical stack emissions, in this case passive ventilation of the storage tank vent. An example of the Aermod Input File is presented in Appendix B.

3.4 Dispersion Modelling Limitations

By definition, air quality models can only approximate atmospheric processes. Many assumptions and simplifications are required to describe real phenomena in mathematical equations. Model uncertainties can result from:

- Simplifications and accuracy limitations related to source data;
- Extrapolation of meteorological data from selected locations to a larger region; and
- Simplifications to model physics to replicate the random nature of atmospheric dispersion processes.

Models are reasonable and reliable in estimating the maximum concentrations occurring on an average basis. That is, the maximum concentration that may occur at a given time somewhere within the model domain, as opposed to the exact concentration at a point at a given time will usually be within the ±10% to +/- 40% range (US EPA, 2003).

Typically, a model is viewed as replicating dispersion processes if it can predict within a factor of two, and if it can replicate the temporal and meteorological variations associated with monitoring data. Model predictions at a specific site and for a specific hour, however, may correlate poorly with the associated observations due to the above-indicated uncertainties. For example, an uncertainty of 5° to 10° in the measured wind direction can result in concentration errors of 20% to 70% for an individual event (US EPA, 2003).

4 Assessment Results & Discussion

The Assessment of the Proposed 7-Eleven Nairn Drive/Furnival Parade (Baldivis) Fuel Service Station has projected ground level concentrations (GLCs) at the nearest sensitive receptors (refer **Figure 1-1**) for assessed pollutants of BTEX (Benzene, Toluene, Ethyl benzene, Xylenes), Cyclohexane, *n*-Hexane and Styrene that are below the guideline exposure standards when employing both VR1 and VR2.

These pollutants were assessed by firstly modelling Total VOCs as a function of emission factors for fuel storage and vehicle dispensing volumes according to those methods in Section 2.

Those Total VOC GLCs projected were then revised to determine the percentage mass emission rate contributions for these pollutants **(refer Table 2-2)**.

Table 4-1 list each predicted pollutant concentration for each averaging period at those assessed sensitive receptors. These pollutant concentrations are revised based on each compounds vapour contribution to petrol VOC emissions. Additionally, these predicted pollutant concentrations reflect both VR1 and VR2 vapour recovery.

Within **Table 4-1** is each pollutants respective assessment criteria, the projected GLCs from the modelling Assessment and the revised projected GLCs at the nearest sensitive receptor (refer **Figure 1-1**) with a Percentage of Exposure Limit Value (%). This value represents the percentage ratio of projected GLCs compared to the assessment criteria for each pollutant.

A % < 100 % shows that the projected concentration at the sensitive receptor location achieves less than the assessment criteria i.e., PASS, whereas % ≥ 100 % shows non-compliance against the assessment criteria i.e., FAIL.

The magnitude of the compliance PASS/FAIL can be readily gauged by the size of the Percentage of Exposure Limit Value (%).

- All GLC values reported for each sensitive receptor are the maximum, Rank 1 values for all averaging periods; and
- All units of concentration are in µg/m^3 unless stated otherwise.

In reviewing the predicted GLCs for those pollutants in **Tables 4-1 and 4-2**, within this Assessment, the pollutant emissions at the nearest sensitive receptors are less than the exposure limits in ambient air when employing VR1 and VR2 vapour recovery.

Based on the predicted ground level concentrations using VR1 and VR2, vapours from the Site will not negatively impact the health of the nearest sensitive urban receptors, the Pine View Primary School, or sensitive land uses within the Locality.

Table 4-1: Proposed Site - Assessment Results for GLC's of Pollutants (VR1 & VR2) @ Nearest Sensitive Receptors

Receptor Location	Pollutant	Averaging Period	Exposure Limit (DWER) µg/m³ at 25°C	Predicted GLC (µg/m³)	% of CF	Pass/Fail	Averaging Period	Exposure Limit (DWER) µg/m³ at 25°C	Predicted GLC (µg/m³)	% of CF	Pass/Fail
1	Benzene	1-hour	29	7.58	26.13%	Pass	Annual	9.6	0.19	2.01%	Pass
2				1.60	5.52%	Pass			0.04	0.43%	Pass
3				1.83	6.30%	Pass			0.04	0.40%	Pass
4				4.47	15.42%	Pass			0.07	0.77%	Pass
5				4.30	14.83%	Pass			0.11	1.13%	Pass
6				1.51	5.20%	Pass			0.04	0.43%	Pass
7				1.53	5.28%	Pass			0.04	0.39%	Pass
8				1.30	4.50%	Pass			0.03	0.28%	Pass
9				5.42	18.71%	Pass			0.11	1.18%	Pass
10				8.42	29.03%	Pass			0.16	1.66%	Pass
11				3.15	10.87%	Pass			0.00	0.00%	Pass
1	Toluene	24-hour	3,770	4.02	0.11%	Pass	Annual	377	0.56	0.15%	Pass
2				0.71	0.02%	Pass			0.12	0.03%	Pass
3				0.66	0.02%	Pass			0.11	0.03%	Pass
4				1.69	0.04%	Pass			0.21	0.06%	Pass
5				1.84	0.05%	Pass			0.31	0.08%	Pass
6				0.67	0.02%	Pass			0.12	0.03%	Pass
7				0.82	0.02%	Pass			0.11	0.03%	Pass
8				0.54	0.01%	Pass			0.08	0.02%	Pass
9				3.04	0.08%	Pass			0.33	0.09%	Pass
10				3.16	0.08%	Pass			0.46	0.12%	Pass
11				1.32	0.04%	Pass			0.00	0.00%	Pass
1	Ethyl benzene	1-hour	8,000	1.60	0.02%	Pass	Annual	270	0.04	0.02%	Pass
2				0.34	0.00%	Pass			0.01	0.00%	Pass
3				0.39	0.00%	Pass			0.01	0.00%	Pass
4				0.95	0.01%	Pass			0.02	0.01%	Pass
5				0.91	0.01%	Pass			0.02	0.01%	Pass
6				0.32	0.00%	Pass			0.01	0.00%	Pass
7				0.32	0.00%	Pass			0.01	0.00%	Pass
8				0.28	0.00%	Pass			0.01	0.00%	Pass
9				1.15	0.01%	Pass			0.02	0.01%	Pass
10				1.78	0.02%	Pass			0.03	0.01%	Pass
11				0.67	0.01%	Pass			0.00	0.00%	Pass
1	Xylenes	24-hour	1,080	1.61	0.15%	Pass	Annual	870	0.22	0.03%	Pass
2				0.28	0.03%	Pass			0.05	0.01%	Pass
3				0.27	0.02%	Pass			0.04	0.01%	Pass
4				0.68	0.06%	Pass			0.09	0.01%	Pass
5				0.74	0.07%	Pass			0.13	0.01%	Pass
6				0.27	0.02%	Pass			0.05	0.01%	Pass
7				0.33	0.03%	Pass			0.04	0.00%	Pass
8				0.22	0.02%	Pass			0.03	0.00%	Pass
9				1.22	0.11%	Pass			0.13	0.02%	Pass
10				1.27	0.12%	Pass			0.18	0.02%	Pass
11				0.53	0.05%	Pass			0.00	0.00%	Pass

Table 4-2: Proposed Site - Assessment Results for GLC's of Pollutants (VR1 & VR2) @ Nearest Sensitive Receptors

Receptor Location	Pollutant	Averaging Period	Exposure Limit (DWER) µg/m³ at 25⁰C	Predicted GLC (µg/m³)	% of CF	Pass/Fail
1	Cyclohexane	1-hour	190	1.29	0.68%	Pass
2				0.27	0.14%	Pass
3				0.31	0.16%	Pass
4				0.76	0.40%	Pass
5				0.73	0.39%	Pass
6				0.26	0.14%	Pass
7				0.26	0.14%	Pass
8				0.22	0.12%	Pass
9				0.92	0.49%	Pass
10				1.43	0.76%	Pass
11				0.54	0.28%	Pass
1	*n*-Hexane	1-hour	3,200	35.08	1.10%	Pass
2				7.41	0.23%	Pass
3				8.45	0.26%	Pass
4				20.70	0.65%	Pass
5				19.90	0.62%	Pass
6				6.98	0.22%	Pass
7				7.08	0.22%	Pass
8				6.04	0.19%	Pass
9				25.11	0.78%	Pass
10				38.96	1.22%	Pass
11				14.60	0.46%	Pass
1	Styrene	1-hour	64	0.06	0.09%	Pass
2				0.01	0.02%	Pass
3				0.01	0.02%	Pass
4				0.03	0.05%	Pass
5				0.03	0.05%	Pass
6				0.01	0.02%	Pass
7				0.01	0.02%	Pass
8				0.01	0.02%	Pass
9				0.04	0.06%	Pass
10				0.06	0.10%	Pass
11				0.02	0.04%	Pass

Appendix A: Emissions Calculations

Bowser	Number of Dispensing Nozzles	**6**	
+VR2	Peak Hourly Volume at Bowsers (transactions x Litres per car)	**2,880**	
	CAPCOA (Lbs/1000gallons to mg/L)	1,445	mg/L
	CAPCOA (Lbs/1000gallons to g/L)	1.445	g/L
	Losses (g/L)	1.445	g/L/hr
	VR2 (10-15% Losses) (g/L)	**1.445**	g/L/hr
	ESTIMATED TOTAL DAILY (24hr) VOLUME (L)	**46,829**	
	E10 Volatilisation	1.5	
	E10 % of T-Volumes	**0%**	
	E10 Fuel Ratio Factor	0	
	% of Other Fuels	100%	
	Fuel Ratio Factor	**1.000**	
Storage Tanks	Total Storage Tank Volumes	180000	L
+VR 1	NPI 1999	**170**	mg/L
		30658845.6	mg/hr
		30658.846	g/hr
		8.516	g/s
	4.5m High Vent Rate	0.00079	m3/s
	VR1 10% losses	0.852	g/s
	Final VR1 Value	**0.852**	**g/s**
	Annually	26860555.28	grams
		26860.55528	kgs
		73.59056242	kgs/day
	Deliveries weekly	5.584	kgs
	Per delivery	3.066	kg/hr
	Cars per Peak Hour	**72**	
	L per car on average	**40**	
	Peak Volumes Dispensed	2880	
	Average # Cars/hour Daily (7 days)	**50**	
	Cars Daily	1182	
	Maximum Tanker Delivery Volume (kL)	180	
	Types of Fuel		
	Fuel Storage (kL)	Diesel	50
		ULP 91	30
		ULP 95	30
		ULP 98	70
	Bulk Deliveries per Week	**1.83**	
	Annual Sales	17,092,683	

hour	% daily sales	% to peak hr	# cars/peak hour	Petrol Throughput (L/hr)	L/s	g/s	**Final g/s**	**FINAL Per Bowser**
1	1.2%	19.51%	15	562	0.156	0.226	0.226	**0.075**
2	0.8%	13.01%	10	375	0.104	0.150	0.150	**0.050**
3	0.6%	9.76%	8	281	0.078	0.113	0.113	**0.038**
4	0.8%	13.01%	10	375	0.104	0.150	0.150	**0.050**
5	1.9%	30.89%	23	890	0.247	0.357	0.357	**0.119**
6	4.6%	74.80%	54	2,154	0.598	0.865	0.865	**0.288**
7	5.5%	89.43%	65	2,576	0.715	1.034	1.034	**0.345**
8	5.7%	92.68%	67	2,669	0.741	1.071	1.071	**0.357**
9	5.5%	89.43%	65	2,576	0.715	1.034	1.034	**0.345**
10	5.7%	92.68%	67	2,669	0.741	1.071	1.071	**0.357**
11	6.0%	97.56%	71	2,810	0.780	1.128	1.128	**0.376**
12	6.0%	97.56%	71	2,810	0.780	1.128	1.128	**0.376**
13	5.7%	92.68%	67	2,669	0.741	1.071	1.071	**0.357**
14	5.6%	91.06%	66	2,622	0.728	1.053	1.053	**0.351**
15	5.9%	95.93%	70	2,763	0.767	1.109	1.109	**0.370**
16	**6.2%**	**100.00%**	**72**	2,880	0.800	1.156	**1.156**	**0.385**
17	**6.2%**	**100.00%**	**72**	2,880	0.800	1.156	**1.156**	**0.385**
18	5.8%	94.31%	68	2,716	0.754	1.090	1.090	**0.363**
19	5.1%	82.93%	60	2,388	0.663	0.959	0.959	**0.320**
20	4.0%	65.04%	47	1,873	0.520	0.752	0.752	**0.251**
21	3.5%	56.91%	41	1,639	0.455	0.658	0.658	**0.219**
22	3.4%	55.28%	40	1,592	0.442	0.639	0.639	**0.213**
23	2.6%	42.28%	31	1,218	0.338	0.489	0.489	**0.163**
24	1.8%	29.27%	22	843	0.234	0.338	0.338	**0.113**
	100.0%		1,182	**46,829**		**Max**	1.156	**0.385**

Emission Source	NPI 1999 mg/L throughput	CAPCOA Lbs/1000 Gallons throughput	CAPCOA mg/L throughput
Underground Tank Filling			
Submerged Filling	880	8.4	1007
Splash Filling	1380		
Submerged filling with vapour balance	40	0.42	**50**
Underground tank breathing losses	**120**	0.84	101
Vehicle Refuelling			
Displacement Losses (uncontrolled)	1320	8.4	1007
Displacement Losses (90% controlled e.g VRU 2)	132	**0.74**	89
Spillages			
Uncontrolled	80	**0.61**	73
Controlled		0.41	49
"Whoosh" Emissions		0.26 - **0.66**	79
"Whoosh" Emissions (averaged)		0.46	79

Appendix B: Example of AERMOD Input File

```
**
**************************************
**
** AERMOD Input Produced by:
** AERMOD View Ver. 12.0.0
** Lakes Environmental Software Inc.
** Date: 27/11/2023
** File: D:\MyAERMOD\23037\3BOWSER\3BOWSER.ADI
**
**************************************
**
**
**************************************
** AERMOD Control Pathway
**************************************
**
**
CO STARTING
   TITLEONE D:\MyAERMOD\21016 - MGP\21016 - MGP.isc
   MODELOPT DFAULT CONC
   AVERTIME 1 24 ANNUAL
   POLLUTID VOC
   RUNORNOT RUN
   ERRORFIL 3BOWSER.err
CO FINISHED
**
**************************************
** AERMOD Source Pathway
**************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION BOWS1        VOLUME     387509.087  6419197.446       39.030
** DESCRSRC Bowser 1
   LOCATION BOWS2        VOLUME     387517.040  6419194.408       38.530
** DESCRSRC Bowser 2
   LOCATION BOWS3        VOLUME     387524.813  6419191.589       38.010
** DESCRSRC Bowser 3
   LOCATION VENT         POINT      387556.536  6419170.950       35.810
** DESCRSRC Tank Breather
** Source Parameters **
   SRCPARAM BOWS1              1.0     1.200     1.744     2.093
   SRCPARAM BOWS2              1.0     1.200     1.744     2.093
   SRCPARAM BOWS3              1.0     1.200     1.744     2.093
   SRCPARAM VENT               1.0     7.000   298.150       0.1       0.1

** Building Downwash **
   BUILDHGT VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDHGT VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDHGT VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDHGT VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDHGT VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDHGT VENT            0.00     0.00     0.00     0.00     0.00     0.00

   BUILDWID VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDWID VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDWID VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDWID VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDWID VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDWID VENT            0.00     0.00     0.00     0.00     0.00     0.00

   BUILDLEN VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDLEN VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDLEN VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDLEN VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDLEN VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDLEN VENT            0.00     0.00     0.00     0.00     0.00     0.00

   XBADJ    VENT            0.00     0.00     0.00     0.00     0.00     0.00
   XBADJ    VENT            0.00     0.00     0.00     0.00     0.00     0.00
   XBADJ    VENT            0.00     0.00     0.00     0.00     0.00     0.00
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   XBADJ    VENT             0.00     0.00     0.00     0.00     0.00     0.00
   XBADJ    VENT             0.00     0.00     0.00     0.00     0.00     0.00
   XBADJ    VENT             0.00     0.00     0.00     0.00     0.00     0.00

   YBADJ    VENT             0.00     0.00     0.00     0.00     0.00     0.00
   YBADJ    VENT             0.00     0.00     0.00     0.00     0.00     0.00
   YBADJ    VENT             0.00     0.00     0.00     0.00     0.00     0.00
   YBADJ    VENT             0.00     0.00     0.00     0.00     0.00     0.00
   YBADJ    VENT             0.00     0.00     0.00     0.00     0.00     0.00
   YBADJ    VENT             0.00     0.00     0.00     0.00     0.00     0.00


** Variable Emissions Type: "By Hour-of-Day (HROFDY)"
** Variable Emission Scenario: "bowsers"
   EMISFACT BOWS1        HROFDY 0.075 0.05 0.038 0.05 0.119 0.288
   EMISFACT BOWS1        HROFDY 0.345 0.357 0.345 0.357 0.376 0.376
   EMISFACT BOWS1        HROFDY 0.357 0.351 0.37 0.385 0.385 0.363
   EMISFACT BOWS1        HROFDY 0.32 0.251 0.219 0.213 0.163 0.113
   EMISFACT BOWS2        HROFDY 0.075 0.05 0.038 0.05 0.119 0.288
   EMISFACT BOWS2        HROFDY 0.345 0.357 0.345 0.357 0.376 0.376
   EMISFACT BOWS2        HROFDY 0.357 0.351 0.37 0.385 0.385 0.363
   EMISFACT BOWS2        HROFDY 0.32 0.251 0.219 0.213 0.163 0.113
   EMISFACT BOWS3        HROFDY 0.075 0.05 0.038 0.05 0.119 0.288
   EMISFACT BOWS3        HROFDY 0.345 0.357 0.345 0.357 0.376 0.376
   EMISFACT BOWS3        HROFDY 0.357 0.351 0.37 0.385 0.385 0.363
   EMISFACT BOWS3        HROFDY 0.32 0.251 0.219 0.213 0.163 0.113

** Variable Emissions Type: "By Hour / Day (HRDOW)"
** Variable Emission Scenario: "vent continuous"
** WeekDays:
   EMISFACT VENT         HRDOW 0.852 0.852 0.852 0.852 0.852 0.852
   EMISFACT VENT         HRDOW 0.852 0.852 0.852 0.852 0.852 0.852
   EMISFACT VENT         HRDOW 0.852 0.852 0.852 0.852 0.852 0.852
   EMISFACT VENT         HRDOW 0.852 0.852 0.852 0.852 0.852 0.852
** Saturday:
   EMISFACT VENT         HRDOW 0.852 0.852 0.852 0.852 0.852 0.852
   EMISFACT VENT         HRDOW 0.852 0.852 0.852 0.852 0.852 0.852
   EMISFACT VENT         HRDOW 0.852 0.852 0.852 0.852 0.852 0.852
   EMISFACT VENT         HRDOW 0.852 0.852 0.852 0.852 0.852 0.852
** Sunday:
   EMISFACT VENT         HRDOW 0.852 0.852 0.852 0.852 0.852 0.852
   EMISFACT VENT         HRDOW 0.852 0.852 0.852 0.852 0.852 0.852
   EMISFACT VENT         HRDOW 0.852 0.852 0.852 0.852 0.852 0.852
   EMISFACT VENT         HRDOW 0.852 0.852 0.852 0.852 0.852 0.852
   SRCGROUP bows     BOWS1 BOWS2 BOWS3
   SRCGROUP vent     VENT
   SRCGROUP ALL
SO FINISHED
**
**************************************
** AERMOD Receptor Pathway
**************************************
**
**
RE STARTING
   INCLUDED 3BOWSER.rou
RE FINISHED
**
**************************************
** AERMOD Meteorology Pathway
**************************************
**
**
ME STARTING
   SURFFILE ..\23037.SFC
   PROFFILE ..\23037.PFL
   SURFDATA 0 2020
   UAIRDATA 0 2020
   SITEDATA 0 2020
   PROFBASE 19.0 METERS
ME FINISHED
**
**************************************
```

```
** AERMOD Output Pathway
**************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST
   RECTABLE 1 1ST
   RECTABLE 24 1ST
** Auto-Generated Plotfiles
   PLOTFILE 1 ALL 1ST 3BOWSER.AD\01H1GALL.PLT 31
   PLOTFILE 24 ALL 1ST 3BOWSER.AD\24H1GALL.PLT 32
   PLOTFILE 1 bows 1ST 3BOWSER.AD\01H1G001.PLT 33
   PLOTFILE 24 bows 1ST 3BOWSER.AD\24H1G001.PLT 34
   PLOTFILE 1 vent 1ST 3BOWSER.AD\01H1G002.PLT 35
   PLOTFILE 24 vent 1ST 3BOWSER.AD\24H1G002.PLT 36
   PLOTFILE ANNUAL ALL 3BOWSER.AD\AN00GALL.PLT 37
   PLOTFILE ANNUAL bows 3BOWSER.AD\AN00G001.PLT 38
   PLOTFILE ANNUAL vent 3BOWSER.AD\AN00G002.PLT 39
   SUMMFILE 3BOWSER.sum
OU FINISHED
**
**************************************
** Project Parameters
**************************************
** PROJCTN  CoordinateSystemUTM
** DESCPTN  UTM: Universal Transverse Mercator
** DATUM    World Geodetic System 1984
** DTMRGN   Global Definition
** UNITS    m
** ZONE     -50
** ZONEINX  0
**

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CLE Town Planning + Design

REQUEST FOR FURTHER INFORMATION

LOT 9018 SIXTY-EIGHT ROAD, BALDIVIS

City of Rockingham Comment	Applicant Response
Acoustic Report	
Influencing factor is different for some northern receivers: 75, 77, 77 and 79 Furnville are only +1dB.	The Environmental Noise Impact Assessment has grouped these houses into the overall Northern residential area and applied the influencing factor generally applicable in this area. Where the specific dwellings along Furnville are considered separately, their LA10 night-time noise level is forecast to be 35 dB, not the 37 dB for the Northern residential area reported in Table 8. This 35 dB complies with the revised Assigned Level of 36 dB at these dwellings. Likewise, the noise impact presented in the other Tables 5, 6, 7, 9, 10, 11 & 12 is also compliant with the revised Assigned Levels.
The forecast levels in tables 5 - 12 are not appropriately reported as they do not consider a 'worst case scenario' for each assigned level (day, evening, night), using combined level of each source that will likely be operating during that period. For example: a) Table 5 – Daytime noise only forecasts mechanical plant. What about other day time noise sources such as cars idling in drive thru, carwash, outdoor restaurant dining, delivery truck, etc.? b) Table 8 – only mechanical plant and delivery truck reported. As per above, what about cars idling in drive thru, other noise sources, etc.? c) Table 7 – incorrectly assesses each source in isolation against $L_{Amax.}$ Only short, impulsive noise source such as car park car door noise and the tyre pressure beeper should be assessed against the L_{Amax}. d) Where a noise source such as refrigerated truck is present for less than 24 minutes of a four hour RAP, it should be assessed against the L_{A1}.	The Environmental Noise Impact Assessment assessed most activity against the specific descriptor (LA10, LA1 or LAmax) and specific time (ie day/evening/night) for which it has the biggest impact, and where there is a potential that the assigned levels would be exceeded. a) These sources were assessed during the evening period, when more stringent Assigned Level criteria apply, compared to the daytime period. Where the operation of these sources during the evening is shown to comply with the assigned levels, their impact during the daytime would be commensurately lower and compliance again would occur. b) The sources presented in the Table were identified as the dominant LA10 emissions from the site. Other sources such as carwash, restaurant dining, etc do not operate at night. Still other sources such as idling cars at drive through were judged to not trigger LA10 at night, sue to the lower number of vehicles. c) All sources listed in Table 7 generate LAmax noise and have been assessed against that Assigned Level. d) Refrigerated trucks are generally turned off while delivering so do not generate LA10 nor LA1 noise. The only exception is for truck deliveries to the service station. These have been adjusted to register on the more stringent LA10 descriptor. Compliance with the LA10 criterion will also mean compliance with the more-lenient LA1 assigned level.
For tables 5, 6 and 8 where an * indicates tonality adjustment has been applied – all sources have an * to indicate the adjustment is applicable however it appears the 5dB is not added for all receivers, e.g. in table 8 southern and south western residential receivers from noise from fast food N mech. plant* = 4dB SPL.	The specific example raised was determined to not require a tonal correction as its tonality would not be evident at the specific receiver. This is due to its very low noise level of 4 dB not being audible in the overall 35-37 dB (adjusted) emissions. It was incorrectly labelled in the table as having a tonal adjustment.

REQUEST FOR FURTHER INFORMATION

LOT 9018 SIXTY-EIGHT ROAD, BALDIVIS

All SPLs should be first listed without the tonality adjustment, then the +5db added to the combined total of SPLs for each receiver.	
Noise sources not captured: a) Fuel tanker deliveries – I note this is mentioned to occur during daytime assigned levels however this still needs to comply and be included. b) General truck deliveries – as above.	a) Tanker noise, like all semi-trailer noise is assessed for evening Sunday, and night-time operations. These assessments are also done where more than one vehicle is likely to use a specific loading dock. We do not, as a rule conduct an assessment of a solo semi-trailer coming less than once a week where is operates during the daytime period. We have judged that such a noise source won't generate "unreasonable noise" as defined in the Environmental Protection Act. b) General truck deliveries relating to future developments/pad sites are unknown at this stage and have therefore cannot be included. This detail will be provided as part of future development applications over these sites.
Tables 10 - 12 should also be incorporated into the 'worst case scenarios' as per point 2 above.	These activities were isolated and assessed separately as it is a specific type of activity which can potentially affect a local area/the residences to the south-west of the site. The tables can be read together with the overall emissions from the site. Amending to incorporate into one table won't change the detail nor outcomes. The resultant noises are still compliant with the assigned levels. In addition, the overall service station noise impacts, which are the basis of the application, are very low in the southwestern sector.
Traffic and Engineering	
Please clarify the scope for access as it is not clear in the application, particularly with respect to construction of the access point with Nairn Drive and Furnivall Parade, as this will need to be constructed prior to occupation of subject development.	Amended plans are provided to address the City's comments which include a revised site boundary, inclusive of both access points to ensure vehicle manoeuvrability through the site.
The City considers greater intervention/remedial measure is necessary to prevent vehicles from entering Nairn Drive by using the proposed Left-in only driveway.	Amended plans are provided to address the City's comments which include a reduced access width consistent with the City's mark up and inclusion of "No Entry" signage facing any traffic heading toward the driveway from within the site. This will address any concern for vehicles trying to exit the site from the Nairn Drive left in access point.

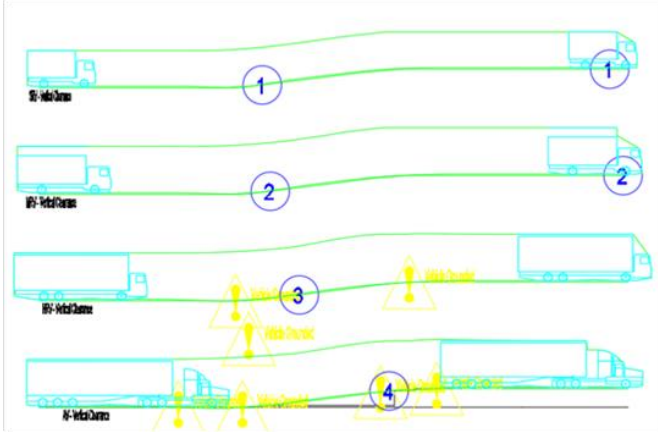
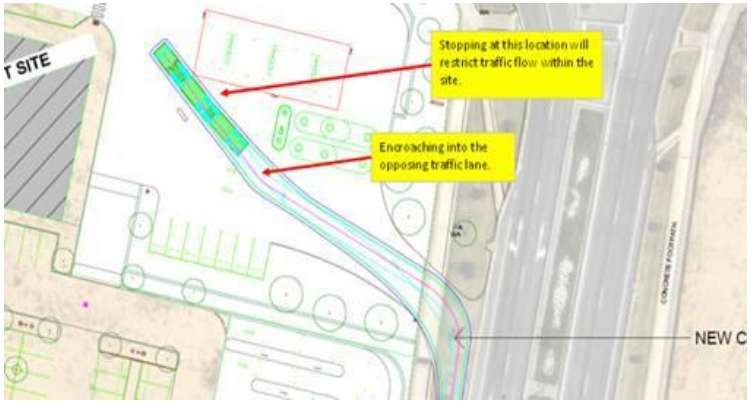
REQUEST FOR FURTHER INFORMATION

LOT 9018 SIXTY-EIGHT ROAD, BALDIVIS

The proposed footpath ramp connecting Furnivall Parade to the Service Station's Convenience Store is to be designed in accordance with AS1428.1 and Austroads' Guide to Road Design Part 6A – Paths for Walking and Cycling.	Amended plans are provided to address the City's comments including demonstrating compliance with AS1428.1.
Additional information is required regarding commercial vehicles that would be using the vehicle ramp located to the south of the service station. Preliminary vertical swept path analysis suggests that it is not suitable for a Heavy Rigid Vehicle or larger.	There is no intention for commercial vehicles to use the vehicle ramp located to the south of the service station. This ramp is intended for patron convenience only for access through the Parkland Heights Centre. In order to ensure commercial vehicles do not use the ramp, the development plans have been amended to include signage that reads "No truck access" in both directions of the ramp.

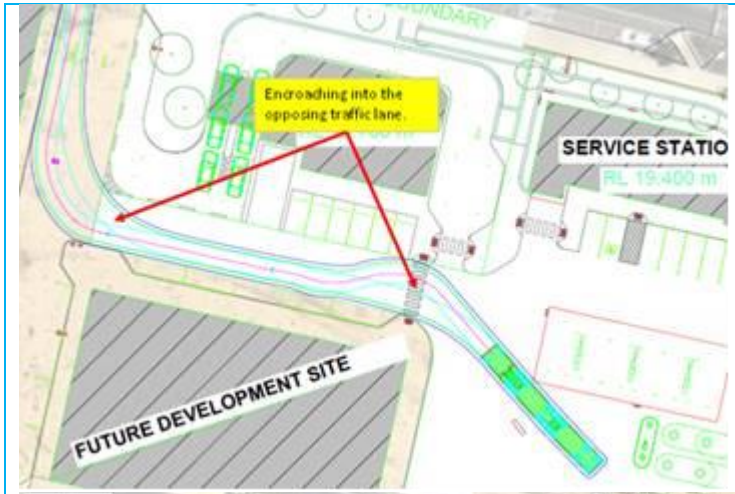
REQUEST FOR FURTHER INFORMATION

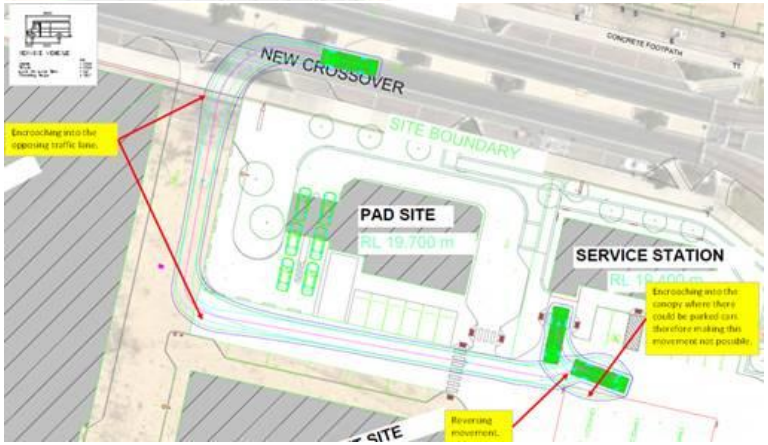
LOT 9018 SIXTY-EIGHT ROAD, BALDIVIS

	
The City has concerns regarding the provided swept path analysis which restrict traffic flow within the site, encroaching and clashing as demonstrated in figures below. 	The fuel tanker delivery position shown is based on internal review by the 7-Eleven project team to ensure it does not create any greater impediment to their customers than necessary. This includes access to the fuel bowsers as well as access to the row of parking bays to the south. . It is appropriate for occasional large commercial vehicle movements to utilise the full with of internal driveways within the site, particularly where the truck would be able to halt before entering the internal intersection or opposing traffic lane and wait until that part of the driveway is clear before proceeding. This is consistent with AS2890.2:2018 (Parking facilities – Part 2: Off-street commercial vehicles facilities) clause 3.2.3.2 which states, "*The swept path of the maximum size design vehicle using the facility may be allowed to occupy the entire width (less specified clearances) of a two-way access driveway when the vehicle is entering or leaving the minor road.*" The entry radius for the Furnivall Parade crossover will be addressed at the detailed design stage to ensure that trucks do not encroach over the centre line of the driveway. This level of detail does not form part of the architectural plans.

REQUEST FOR FURTHER INFORMATION

LOT 9018 SIXTY-EIGHT ROAD, BALDIVIS





Landscaping	
The overall 2022 landscape concept does not reflect the landscaping design as proposed in the updated layout of the proposed service station, how will this be resolved?	It is intended that an updated landscape plan will be required as a condition of approval. The landscape design for the service station will be included as part of the broader landscape plan for the entire Parkland Heights Neighbourhood Centre. This will enable a holistic, coordinated approach to landscape design.

REQUEST FOR FURTHER INFORMATION

LOT 9018 SIXTY-EIGHT ROAD, BALDIVIS

Proposed ground floor plan shows a left-hand turning lane, along with terraced landscaping and an updated footpath layout. Landscape plan should be updated to be in line with the proposed ground floor plan.	An updated landscaping plan for Parkland Heights Neighbourhood Centre inclusive of the service station and revised layout will be submitted for approval by the City as a condition of approval.
Carpark tree species to be revised- Ficus hillii can have a destructive root system and Platanus are on the Polyphagous Shot-hole Borer list of reproductive hosts.	Noted, this can be considered as part of the modified overall landscape plan for Parkland Heights Centre.
Other outstanding matters	
Although the City has not finalised its assessment, please be advised that the City is unlikely two support two monolith signs as part of this application	The Petroleum Products Pricing Regulations 2000 requires fuel retailers within certain town and regional boundaries to display their fuel prices in a suitable position and sufficiently illuminated, if necessary to enable the description and price of each fuel to be clearly legible to passing motorists. Two signs will provide passing motorists along both Nairn Avenue and Furnivall Parade with a clear and legible view of fuel prices. We therefore request that the City support the two signs as proposed based on the above as well the justification lodged with the application.

RESPONSE ON SUBMISSIONS

PARKLAND HEIGHTS NC, ROCKINGHAM PARK

Submission No.	Submitter Comment	Applicant Response
1	I think we have more than enough stations in close proximity as it is and 7 eleven is far from a cheap station either. I'd rather not have another station as it stands and as it stands, the Nairn Drive won't get built to Mundijong for a decade or more at this rate so the traffic isn't going to flow through there until this is built.	The number of existing service stations within the vicinity is not a relevant planning consideration. The proposal will improve access to services and increase competition, benefiting customers and motorists in the area. The proposal is not reliant nor premised upon the extension of Nairn Drive.
2	The proposal to place another service station at the Parkland Heights Shopping Centre Development is ridiculous and redundant considering there is already a service station 400m away along Nairn Drive. This is completely unnecessary.	The number of existing service stations within the vicinity is not a relevant planning consideration. The proposal will improve access to services and increase competition, benefiting customers and motorists in the area.
3	Department of Education	
	Pine View Primary School is located approximately 110m east from the subject site, separated by Nairn Drive and therefore, the Department shall have due regard to the provisions of the Western Australian Planning Commission's Operation Policy 2.4 – Planning for school sites (OP 2.4) when assessing the proposal. As stated in clause 3.6.2 of OP 2.4, schools are deemed sensitive land uses and it is imperative to ensure that school sites are located amongst or adjacent to compatible land uses to support education, health, and wellbeing outcomes of students. Whilst it is acknowledged that the subject site is contained within a 'Commercial' zoned land, the proposed development needs to the consider the potential impact it may have on nearby sensitive land uses. The proposed service station is not considered compatible close to the school site. Such establishments will pose safety and health risks to the school community and compromise the amenity of the school.	The planning for the Parkland Heights Neighbourhood Centre site has been considered through various planning stages including the Parkland Heights Local Structure Plan Structure Planning and Local Development Plan processes. The suitability of commercial land uses in proximity to the school has therefore been appropriately considered throughout the overall planning process. The application and associated technical reports demonstrate that the proposed development has considered and addressed operational matters including traffic, parking, noise, emissions and odour to manage any potential amenity and health impacts to surrounding sensitive land uses. Section 3.6 of Operational Policy 2.4 – Planning for school sites states that it is preferable for school sites to be surrounded by a combination of roads, public open space or other community, cultural recreation and sporting facilities. The existing primary school is separated from the proposed service station and Parkland Heights Neighbourhood Centre by both Birkenhead Avenue and Nairn Drive as well as commercial zoned land located on the eastern side of Nairn Drive. Therefore, the development site is consistent with the intent of section 3.6 given appropriate separation is provided.
	Under the provisions of the Environmental Protection Authority's Separation Distances between Industrial and Sensitive Land Uses, June 2005 (EPA Guidance Statement), a 200m	The Environmental Protection Authority's Separation Distances between Industrial and Sensitive Land Uses (EPA Guidance Statement) has been considered as part of this application. As provided for in the EPA Guidance Statement, a site specific,

PARKLAND HEIGHTS NC, ROCKINGHAM PARK

	buffer distance is required from a 24-hour service station to a sensitive land use site. Service stations by their operational nature may generate a range of emissions of pollutants and safety risks, which if not carefully managed, may adversely impact the health, amenity, and wellbeing of occupants of schools.	'Emissions Impact Assessment' has been undertaken with regard to potential odour/gaseous impacts. The assessment demonstrates that through the implementation of vapour recovery (VR)1 and VR2, vapours from the service station "*will not negatively impact the health of the nearest existing sensitive receptors, or future land uses within the locality.*" In addition to the above, Pine View Primary School is in operation during daytime hours on weekdays only and therefore the 24/7 operation of the service station is not a relevant consideration in terms of quantifying potential impacts. It is therefore reasonable to apply the 50m separation distance to the school as per the EPA Guidance.. The proposed service station is located approximately 120m from the primary school and therefore exceeds this distance significantly.
	In view of the above, the Department strongly objects to the proposed service station on the subject site. The Department's position on the proposal is to reinforce that student health and safety is a priority and it does not support incompatible land uses in close proximity to school sites, particularly service stations in this instance. In addition, the Department notes that there may be other land uses, such as fast food outlets, that could operate within the 'Commercial' zoned land. The operation of these businesses is not supported owing to the health impacts on school students.	The safety and health of the local community is a priority for 7 Eleven. Appropriate technical reporting has been provided to demonstrate the service station will not have an impact on the health and safety of students/staff at Pine View Primary School.
4	Department of Health	
	Water Supply and Wastewater Disposal The development must be connected to drinking water and sewage services provided by a licensed service provider.	The proposed development will be connected to water and sewer as a standard requirement
	Food Act Requirements Any handling of food intended for sale, or sale of food at this facility will need to comply with the Food Act 2008, Food Regulations 2009 and any relevant standards of the Australia New Zealand Food Standards Code. This includes the requirement to notify or register the food business under the Food Act 2008 with the City prior to commencing operating.	Noted. Compliance with the Food Act 2008 is separate consideration to the development approval process.
	Chemical Contamination Issues The proponent, Rockingham Park Pty Ltd, has commissioned a substantial piece of work to demonstrate that the public is not at risk	The submitted Emissions Impact Assessment prepared in support of this application demonstrates the ability for emissions to be managed appropriately.

	from service station fuel emissions in the form of the Emissions Impact Assessment of Proposed 24Hr Fuel Service Station - Parkland Heights Shopping Centre Report November 2023 by EAQ Consulting. Based on air modelling calculations, EAQ concludes that "the predicted ground level concentrations using VR1 and VR2, vapors from the Site will not negatively impact the health of the nearest sensitive urban receptors, the Pine View Primary School, or sensitive land uses within the Locality". DoH is not confident in these findings for the reasons as outlined below. Some of these reasons derive from the review DoH has undertaken on separation distances for service stations, which has provided the basis of the DoH Position statement - Service stations and sensitive land uses - 2024. This Statement post-dates the EAQ Report. DoH does not accept per se the results of air modelling to demonstrate that fuel emissions from service stations do not pose an unacceptable public health risk. This is because DoH considers the modelling not sufficiently reliable using currently available methodologies. It is also important to note from the Statement that DoH "continues to support the use of minimum separation distances of: 50 metres for service stations operating during normal business hours, and 100 metres for 24-hour service stations". The Rockingham Park service station is proposed for 24-hour operation. It is not clear from the EAQ Report what are the natures of the nearest sensitive sites identified and their distances from the service station. A minimum of 70-80 metres is mentioned in relation to existing or future houses. A further important point in this regard is that separation distances are normally based on measurements of boundary to boundary, and this is also not specified in the EAQ report. The DoH Statement indicates that the use of VR2 (vapour recovery from bowsers) is an important consideration in reducing service	We understand that the City has commissioned a peer review assessment of the submitted Emissions Impact Assessment, the findings of which generally align with the Emissions Impact Assessment. Whilst the DoH's position statement sets out a minimum 100m separation distance for 24 hour service stations as the default, the position statement goes on to state that if VR2 is applied, it may be considered a mitigating feature in reducing the separation distance from 100m to 50m. As the proposal incorporates VR2 technology, a reduced buffer distance of 50m is warranted. The Emissions Impact Statement provides further discussion on the assessment of potential impacts, drawing from other standards within Australia, such as the Victorian EPA Guidelines which have been subject to more rigorous review. An additional figure 1-4 has been added to Emissions Impact Assessment clarifying the location of the sensitive receptors. The receptors are labelled, which correlates to the data presented at Table 2-10. As the location of the potential source of the emissions (fuel bowsers and filling point) are known at this stage of the proposal, it is appropriate to determine separation distances from the source of the emission, not the boundary. The source of the emissions are specific and isolated, and are not associated with the broader operations of the site. In order to guarantee the use of VR1 and VR2 technology as part of the development, a condition of approval may be imposed requiring the implementation of this technology..

	station fuel emissions and managing public risk. Although it is proposed that the Rockingham Park service station will employ VR2, and this is partly the basis of the modelling results, DoH does not know how VR2 use can be guaranteed, or what would happen to emission levels if it were faulty. Consequently, DoH is not supportive of the proposed service station development until such time as it adequately addresses the above issues, including satisfying the requirements of the DoH Position Statement.	
5	Department of Water and Environmental Regulation	
	Issue - Drainage **Recommendation** A stormwater management plan is to be prepared and approved by the City in accordance with the Stormwater Management Manual for Western Australia (DWER, 2004-2007), Decision process for the stormwater management in Western Australia (DWER, 2017) and Water Quality Protection Note 49: Service Stations (WQPN 49) (DWER, 2013) that demonstrates the appropriate management of small, minor and major rainfall events.	Noted.
	Issue – Air Quality **Recommendation** The Department would advise that it does not have a regulatory role, policy position or guidance statement for fuel stations. Due to uncertainties within air dispersion modelling for this land use, resulting from an absence of standard methodology and validated data, adherence to separation distances within Guidance Statement 3 Separation Distances between Industrial and Sensitive Land Uses (GS 3) (EPA, 2005), is generally recommended to inform planning decisions. The Department notes the proposed approach by the proponent to employ both stage 1 and stage 2 vapor recovery systems (VR1 and VR2) and the inclusion of an emissions impact assessment. Although these additional emission controls would reduce the emissions, owing to the uncertainties in emission estimations there is limited ability to	The proposal has been assessed against relevant policies and guidance statements applicable to service stations. The Department of Health's 'Position statement: Service stations and sensitive land uses' states that - "*vapour recovery systems have been designed to limit the emissions of VOC's VOCs during the refilling of storage tanks (Stage 1 vapour recovery – VR1) and refuelling from bowsers (Stage 2 vapour recovery – VR2). In most jurisdictions, including Western Australia, VR1 systems are mandated. Stage 2 VR regulations are less common and are not a requirement for petrol stations in WA"*. It also states that if VR2 is implemented it may be considered a mitigating feature in relation to any application for a reduced separation distance of 100m to 50m for 24 hour service stations. The proposed development includes use of both VR1 and VR2, consistent with the DoH's position statement, with the application including an Emissions Impact Assessment to demonstrate that the proposal's location will not impact surrounding sensitive land uses.

	assess if these additional emissions controls are required or, if installed, would result in acceptable risk of impacts. The use of technical studies, such as modelling and monitoring of air pollutants, can inform possible incompatibility between land uses. However, it should not be used as the only input for planning decision-making as there can be significant uncertainty in the accuracy of such studies and cannot determine if impacts may or may not occur. Notwithstanding, there is no post development regulatory mechanism that can be employed.	In order to guarantee the use of VR1 and VR2 technology as part of the development, a condition of approval may be imposed requiring the implementation of this technology. We understand that the City has commissioned a peer review assessment of the submitted Emissions Impact Assessment, the findings of which generally align with the Emissions Impact Assessment. The proposal has undergone a thorough and extensive modelling and assessment process, ensuring the findings are as accurate as can reasonably be expected.

EAQ Consulting

EMISSIONS IMPACT ASSESSMENT OF PROPOSED 24HR FUEL SERVICE STATION

PARKLAND HEIGHTS SHOPPING CENTRE

Emissions Impact Assessment of Proposed 24Hr Fuel Service Station

Parkland Heights Shopping Centre

Prepared for: Rockingham Park Pty Ltd

Project Ref: EAQ-23037

November 2024

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This document presents the outcomes of a Desktop Emissions Modelling Assessment. All emissions inputs into the model were sourced from industry specific emissions' factor publications, previous site-specific measurements, and/or from peer reviewed public domain data except where detailed otherwise herein. EAQ has not attempted to verify externally sourced data beyond its use herein. The modelling assessment has been prepared using the best available information provided by the Client and in conjunction with regulatory guidance from the appropriate regulatory jurisdiction(s). EAQ has exercised its diligence and due-care in delivering the outcomes of the assessment according to accepted assessment practices and techniques. EAQ disclaims any and all liability and responsibilities for damages of any nature, to any party, which may be caused from misapplication or misinterpretation by third parties of this assessment

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Executive Summary

Environmental and Air Quality Consulting Pty Ltd undertook an Air Emissions Assessment of a proposed 24-hour Fuel Service Station (the Site) to be located at the corner of Nairn Drive and Furnival Parade in Baldivis Western Australia 6171.

The site-specific scientific study addressed the short-term exposure and long-term health risks associated with vapour emissions from the Fuel Service Station.

The Fuel Service Station (7-Eleven) is within an urban developed area and is part of an overall commercial development site.

The Assessment utilised industry accepted standards for estimating pollutant emission rates of primary airborne pollutants from fuel storage and refuelling activities at the Fuel Service Station and assessed these pollutant emission rates utilising conventional dispersion modelling methods to predict the concentration of primary pollutants at the nearest sensitive receiver within the locality.

The outcomes of the Assessment found that the primary pollutants of Benzene, Toluene, Ethyl benzene, Xylenes, Cyclohexane, *n*-Hexane and Styrene were predicted to have ground level concentrations lower than acceptable exposure limits set by the WA Department of Water and Environmental Regulation, National Environment Protection (Air Toxics) Measure and other relevant jurisdictional recommendations when utilising both Vapour Recovery Phase 1 (mandatory) and Vapour Recovery Phase 2 (proposed).

Given the modelling outputs have low percentages (%) for compliance factors (CFs), any uncertainty in the modelling is balanced by the low impacts predicted, and:

- The Assessment assumes a peak hour scenario that derives fuel sales based on that peak hour,
- The Assessment assumes that peak hour occurs every day, which is largely improbable, and
- The Assessment assumes that bulk fuel delivery vapour emissions (VR1) are constant for every day and hour between the delivery hours of 0700 – 2200 hrs.

Based on the predicted ground level concentrations using VR1 and VR2, vapours from the Station will not negatively impact the health of the nearest existing sensitive receptors, or future sensitive land uses within the locality.

1 Background & Scope

Environmental & Air Quality Consulting Pty Ltd (EAQ) was engaged by Rockingham Park Pty Ltd (RP), the proponent, to undertake an Air Emissions' Impact Assessment (the Assessment) of a proposed 24-hour Fuel Service Station (the Station) to be located at the corner of Nairn Drive and Furnival Parade in Baldivis, Western Australia 6171.

The Station will comprise of 3 individual refueling bowsers, giving a total of 6 refilling positions at any one time under a single refueling canopy.

This Assessment addresses the Stations' toxic principal chemical compounds in petrols by undertaking a desktop scientific Assessment of the short and long-term health risks associated with vapour emissions from the Station.

1.1 Station Assessment Scope

The Assessment of the Station was undertaken to determine the extent of offsite pollutant impacts beyond the boundary of the Site and subsequently determining the risk of health and amenity impacts for existing and future sensitive receivers and/or sensitive land uses (receptors).

The Assessment predicted ground level concentrations (GLCs) of various pollutants from vapour losses using regulatory standard dispersion modelling techniques.

The predicted GLCs were compared to the regulatory criteria for each pollutant assessed to determine if those GLCs would cause a health or amenity impact at the nearest receptor.

The model of choice was Aermod and its supporting pre- and post- processors.

Chemical vapour emission rates from the Station were developed from:

- NPI Emission Estimation Technique Manual (NPI, 1999) for Aggregated Emissions from Service Stations (Environment Australia),
- Air Toxics "Hot Spots" Program: Gasoline Service Stations Industry wide Assessment Guidelines – Toxics Committee of the California Air Pollution Control Officers Association (CAPCOA, 1997), and
- Brisbane City Council methodology for service stations (BCC, 2017).

The BCC, 2017 methodology was utilised to represent hourly throughput rates for service stations based on normal and peak traffic flows.

1.1.1 Assessment Conservatism

The Assessment focused on peak emissions during peak-hour traffic refueling activities, which was then applied across the daily 24-Hour period based on traffic flows either side of that peak-hour traffic flow.

Additionally, the Assessment included a bulk refueling scenario which represents continuous vapour emissions from VR1 for each day of the week (i.e., 7 days) between the delivery hours of 0700 – 2200, rather than assuming these vapour losses only occur during the hour/s of delivery.

1.1.2 Station Legislative Context

The proposed Station will not be a Prescribed Premise with regard to the WA Department of Water and Environmental Regulation (DWER).

The Western Australia (WA) Environmental Protection Authority (EPA) 2005 Guidance for the Assessment of Environmental Factors document, *Separation Distances between Industrial and Sensitive Land Uses* recommends a buffer separation distance for Service Stations / Convenience Store Fuel Facilities and the nearest sensitive receptor as follows:

Table 1-1: WA EPA Guidance for Separation Distances – Service Station

50 m	Operating during normal business hours of Monday – Saturday from 0700 – 1900 hours
100 m	Freeway service stations
200 m	Service stations in operations for 24 hours daily

The EPA recommended buffers imply that where the separation distance is not met, a further scientific assessment of applicable emissions should be undertaken to support the application and thus inform the risk of health and amenity impacts at the nearest receptor.

"Sensitive land uses include residential development, hospitals, hotels, motels, hostels, caravan parks, schools, nursing homes, childcare facilities, shopping centres, playgrounds and some public buildings. Some commercial, institutional and industrial land uses which require high levels of amenity or are sensitive to particular emissions may also be considered "sensitive land uses". Examples include some retail outlets, offices and training centres, and some types of storage and manufacturing."

Importantly, there have been sweeping changes to the operational hours of service stations and retail businesses in Western Australia i.e., deregulation of hours.

1.1.3 Department of Health Consideration

The WA Department of Health (DoH) 2024 Position Statement recommends:

- 100 m separation distance in the absence of complete vapour recovery technology for all 24-Hour service stations, and
- According to the DoH, *"At this time there is insufficient evidence to support the 200m distance for non-Freeway 24-hour service stations".*

Where complete vapour recovery is employed, the DoH's position is that:

- *".....if applied might be considered a mitigating feature in relation to any application for a reduced separation distance of 100m to 50m for 24 hour service stations".*

Interestingly, other Australian jurisdictions take a differing view on the separation distances for service stations. For example, the South Australian Government EPA states that:

- *"recommended evaluation distance (ie buffer distance) for unleaded petrol dispensing (eg from the bowsers) is 50 metres to the nearest sensitive receiver", and*
- *"If sensitive receivers are located closer than 50 metres to the fuel bowsers and the proposal is for a new petrol station, increasing the number of fuel bowsers, or moving bowser closer to sensitive receivers at an existing petrol station which dispenses unleaded fuel, it must be demonstrated that the reduction of the 50-m evaluation distance does not pose an unacceptable risk to human health or amenity (ie odour nuisance). This can be demonstrated by confirming the installation of VR2 (except bowsers dispensing diesel or LPG), air quality modelling, or the provision and explanation of other potential mitigating factors (eg operational limitations such as reduction in maximum petrol delivery rates at the bowsers, etc)".*

1.1.4 Station Assessment Substances

The emission sources at the Station comprise the ventilation of the sub-terrain fuel storage tanks, and the refuelling bowsers (3 bowsers, i.e., 6 dispensers). Incidental spills can also be a source of vapour release, albeit minor. Emission sources are primarily headspace purging vapour losses from refilling (storage tanks) and bowser refuelling processes.

Principal chemical compounds (pollutants) typically emitted from service station activities are listed in Table 1-2. These compounds are part of the Total Volatile Organic Compounds (VOCs) emitted, and those individual pollutant contributions are then derived based on the percentage contribution of those pollutants within the Total VOC emissions.

Table 1-2: Assessment Substances (Pollutants)

Benzene	Cyclohexane	Ethyl benzene	Styrene
Toluene	*n*-Hexane	Xylenes	

The proposed Station will comprise the following main features:

- 3 bowser ranks comprising a maximum of 6 refuelling outlets at any one time under the main refueling canopy for retail sales,
- The types of fuels proposed are;
  - Diesel (50 kL),
  - ULP 91 (30 kL),
  - PULP 95 (30 kL), and
  - ULP 98 (70 kL).
- Bulk refuelling events will take place 3x weekly based on a single B-Double Tanker with a total volume of 55,000 L,
- Tanker deliveries are typically 1,000 Litres per minute,
- The peak flow of vehicles during daily peak hour is estimated at 72 based on the 3-Bowser configuration; and
- Average peak hour refuelling volume daily 46,829 Litres (based on peak hour flow of 12 cars per bowser, per hour i.e., 72 cars per peak hour).

The above refuelling details represent a peak hour approach which is applied across every daily peak period and assumes that vehicles volumes exhibit the same trends daily, whereas it's well understood that peak refuelling periods generally follow weekly fuel price cycles, and that peak flows typically do not occur across weekends.

Additionally, the use of the peak hour refueling scenario assumes that every day has a peak hour period, which again is understood not to occur. On this basis, the Assessment of peak hour trends is highly conservative.

1.1.5 Guidance for Assessing Station Impacts

The DWER prescribes maximum ambient concentrations of an array of pollutants and toxic substances. In prescribing these maximum concentrations, the DWER has referred to (among others); The National Environment Protection (Air Toxics) Measure (NEPM). These DWER, NEPM, and other jurisdictional recommendations have been adopted for this Assessment.

Importantly, the benzene exposure guidelines have been more rigorously reviewed by the Victorian (VIC) EPA and are considered more applicable to Australia-wide service station emissions. Also noting that the EPA NSW, 2016 criteria/was based on the Victorian

The VIC EPA guidelines for benzene are based on an acute minimal risk level to toxic substances and have provided exposure limit recommendations for health effects from short-term exposure based on the Texas Commission on Environmental Quality (TCEQ) Air Monitoring Comparison Values, where; *"If predicted or measured airborne levels of a constituent do not exceed the comparison level, adverse health or welfare effects would not be expected to result. If ambient levels of constituents in air exceed the comparison levels, it does not necessarily indicate a problem, but rather, triggers a more in-depth review."*

These maximum ambient concentration exposure limits are listed in Table 1-3.

Table 1-3: Assessment Criteria for Toxic Substances

Substance	Averaging Period	Criteria Source	Maximum (ambient) concentration	
			ppm	µg/m³ at 25⁰C
Benzene	1 hour	EPA VIC, 2022	0.18	580
		EPA NSW 2016	0.009	29
	24 hours	EPA VIC, 2022	0.009	29
	Annual	NEPM 2011	0.003	9.6
Toluene	24 hours	NEPM 2011	1	3,770
	Annual		0.1	377
Ethyl benzene	1 hour	EPA NSW 2016	1.8	8,000
	Annual	Toxikos 2011		270
Xylenes	24 hours	NEPM 2011	0.25	1,080
	Annual		0.2	870
Cyclohexane	1 hour	EPA NSW 2016	5	190
***n*-Hexane**			0.9	3,200
Styrene	1 hour	Dept. of Health WA	70	64

1.2 The Stations' Site

The Assessment Site will form part of a commercial site that comprises this Station and other consumer amenities such as shops, fast food outlets etc.

The Site is proposed to be located at the corner of Nairn Drive and Furnival Parade This corner is part of a 'roundabout' intersection with residential sites to the immediate north, to the west, and residential and retail/commercial lots, to include the Pine View Primary School to the east of the Site.

The nearest existing and future urban dwellings (house), from the Stations' central refuelling bowser location is approximately 70-80 m to the north.

The Locality of the Stations' Site, Station Site boundary and Model depiction, and assed Sensitive Receptor Locations are illustrated in Figure 1-1, Figure 1-2, Figure 1-3, and Figure 1-4 respectively.

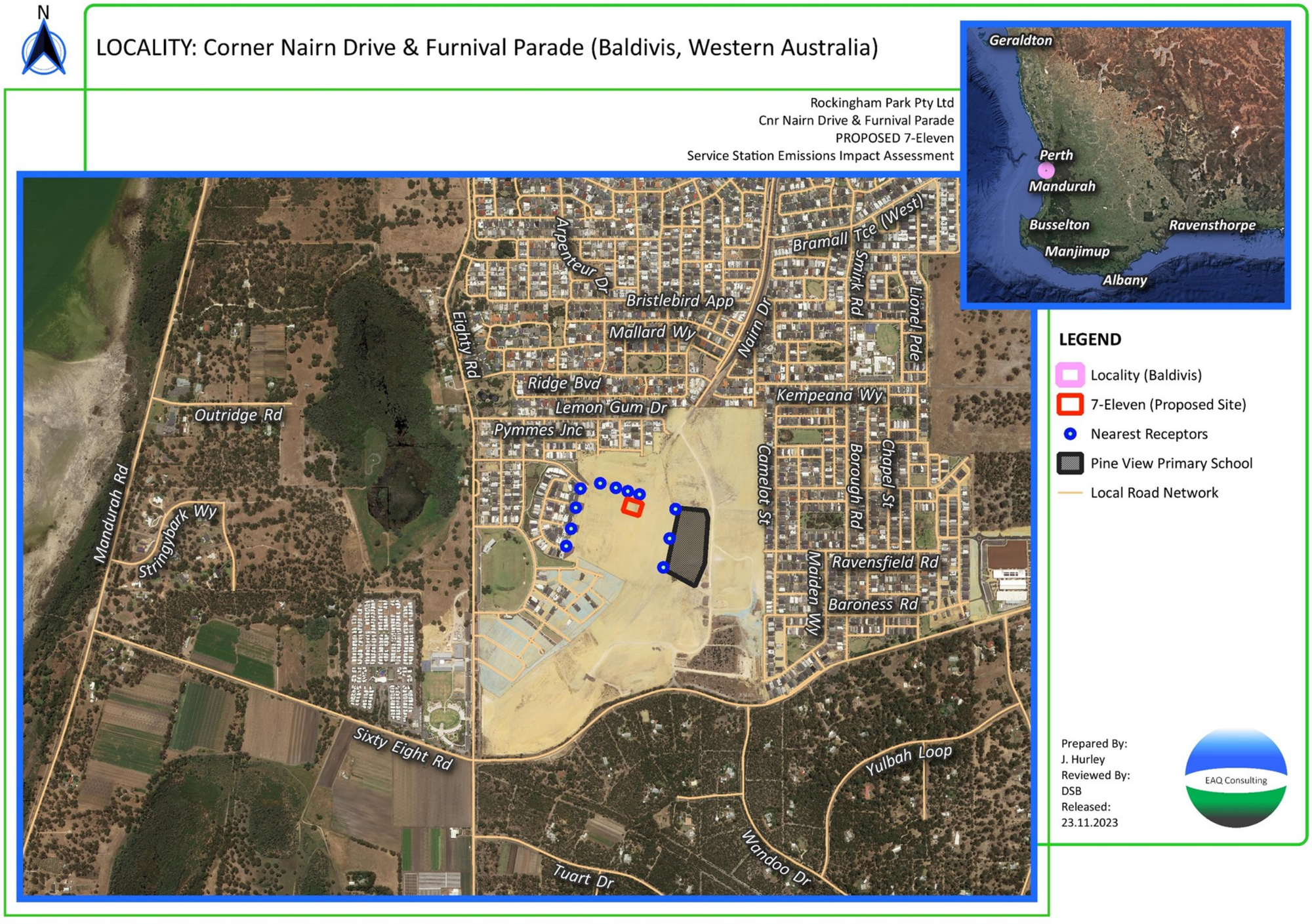

Figure 1-1: Proposed 24-hr Baldivis Service Station Locality (assessed)

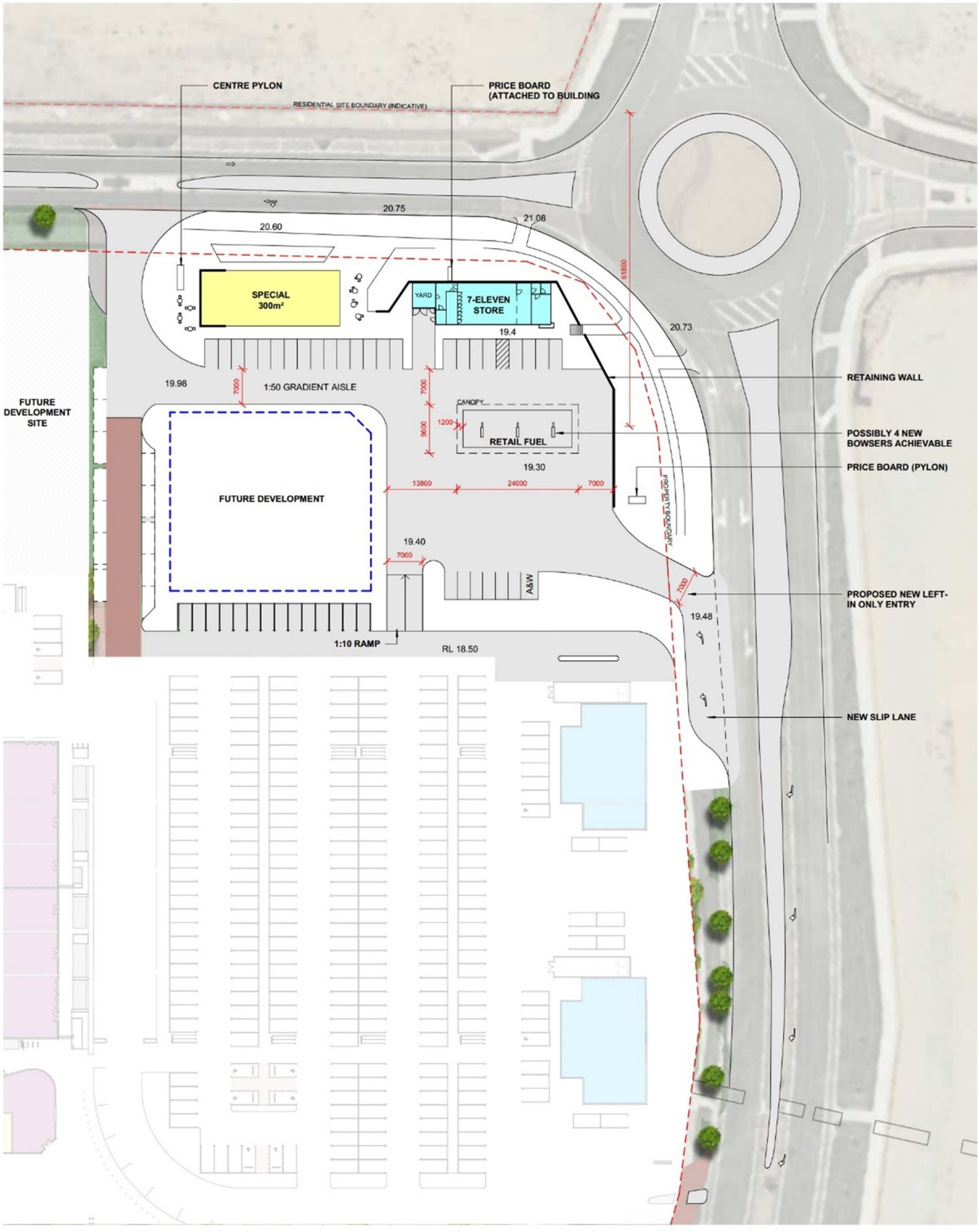

Figure 1-2: Working Design of Proposed Service Station Layout

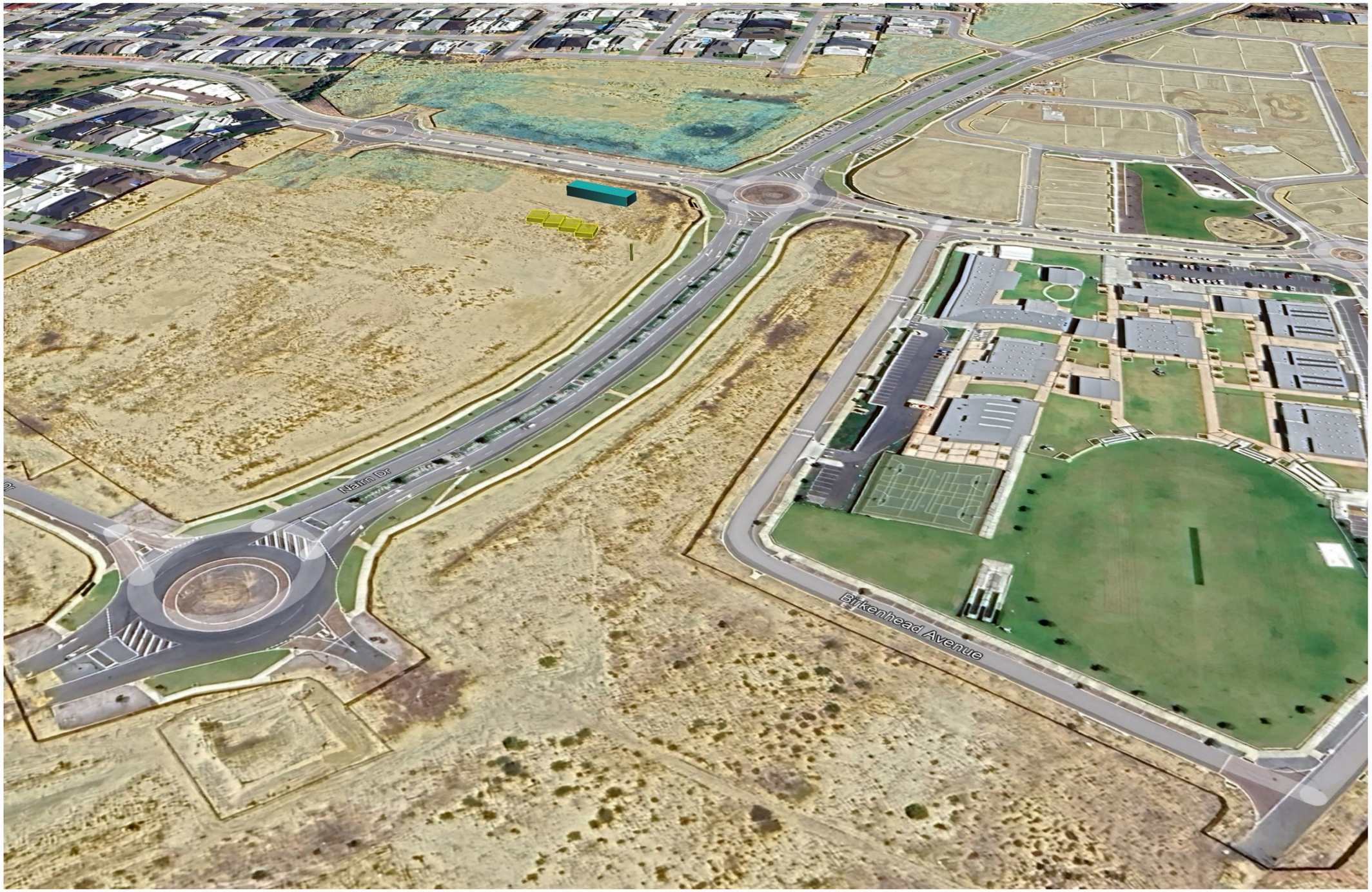

Figure 1-3: Modelling Depiction of Site Layout (Proposed)

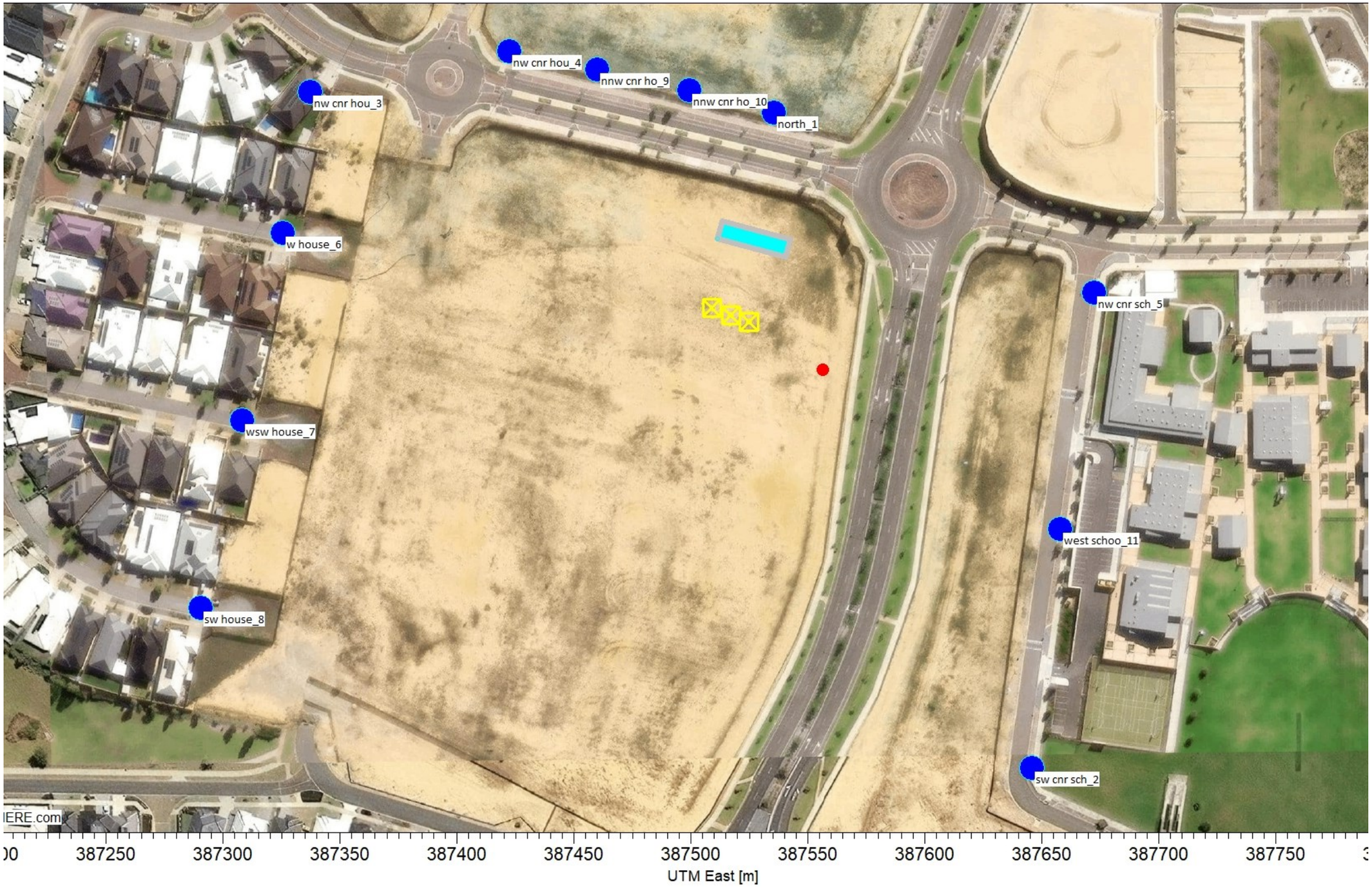

Figure 1-4: Modelling Depiction of Site Layout (Proposed) and assessed Sensitive Receptor Locations

2 Service Station Emissions Assessment

2.1 Station Emissions Estimation

Activities at the Station that will produce emissions are related to losses of fuels through vapourisation or spillage and subsequent vapourisation of the spill(s). These specific activities comprise:

- Submerged filling of underground storage tanks;
- Underground tank breathing losses;
- Vehicle refuelling;
- 'Whoosh' emissions from removal of vehicle fuel cap; and
- Fuel spills, typically at the bowser.

There is a dearth of information within other Australian jurisdictions for estimating hourly throughputs based on typical traffic flows at metropolitan service stations, as a result the widely referenced 2017 Brisbane City Council (BCC) methodology for service stations has been used to estimate hourly emissions at the Site. The BCC methodology has derived traffic flows per hour for a metropolitan service station.

Emission estimates based on specific emission compounds (Table 1-2) were derived using the NPI, 1999 and CAPCOA, 1997 guidelines for emission estimation factors.

2.2 Vapour Recovery

Vapour recovery (VR) at the Site will be in place for submerged underground storage tank(s) referred to as VR1 (mandatory).

VR2 will also be installed at the refuelling bowsers. VR2 can provide at least 85% vapour recovery when refuelling vehicles, where:

- Those bowsers, and/or bowser positions with multiple refueling nozzles that occupy unleaded fuels are those locations where VR2 is installed, and
- Diesel nozzles are not required to have VR2 controls.

2.3 Bulk Deliveries and Emissions

The estimated total daily sale of fuels, based on the peak hour traffic flow of 72 cars at peak hour, is 46,829 Litres. The Site will receive up to 3 bulk deliveries of fuels per 7 days, between the daily hours of 0700 hrs – 2200hrs to replenish all fuels as required.

This delivery schedule is based on the Stations total fuel consumption weekly, and assuming a single B-Double Tanker is used for every delivery with a total volume of 55,000 L.

The total fuel volume per week is based on a peak hourly value of cars refuelling. The volumes of fuel dispensed for all other hours outside of the peak hour are therefore derived based on the peak hourly volume, which is a large conservatism for this Assessment.

The actual peak hour volume is likely to be considerably lower than the 72 cars at peak, unlikely to occur for every weekday, and much less likely to occur over weekends, and emissions derived for this Assessment will be an overestimate of actual emissions from the Station.

The maximum volume of the bulk fuel delivery that can be dispensed into the storage tanks at the Station is approximately 55,000 L based on the B-Double total volume. Although there will be up to 3 deliveries per week, the schedule will shift based on fuel volumes dispensed. As such, the delivery of bulk fuels can be modelled 1-hourly, for each day and successive hour during those delivery times. **Table 2-1** lists an example of the delivery schedule.

Table 2-1: Example of Bulk Fuel Delivery Schedule (L/hr)

Time (24 hrs)	Monday	Tuesday	Wednesday	Thursday	Friday
0700	55,000				
0800		55,000			
0900			55,000		
1000				55,000	
1100					55,000
1200….2200	55,000	55,000	55,000	55,000	55,000

- However, for conservatism, the bulk fuel delivery schedule has been modelled in the Assessment as continuous for every hour during the delivery window of 0700 – 2200 hrs inclusive, and
- The Assessment of vapours from bulk refuelling has also incorporated weekend deliveries which are not expected to occur.

2.4 VOC Emissions

Of the fuel types proposed ULP contains the higher volatile fraction compared to diesel, as such all emissions in this Assessment have been assumed as ULP. This approach is conservative. The vapour composition of VOCs in petroleum fuel (NPI, 1999), are listed in Table 2-2. The vapour composition of Benzene has been revised in accordance with the Australian Government's Federal Register of Legislation, specifically the current Fuel Quality Standards (Petrol) Determination 2019, which limits the volume of Benzene in petrol to 1% v/v maximum. Assuming a Benzene density value of 0.8765, the Benzene vapour composition (% weight) is listed in Table 2-3.

Table 2-2: Composition of Petrol (NPI, 1999)

Species	Petrol Liquid (% weight)	Petrol Vapour (% weight)
Cyclohexane	0.2	0.06370
Ethylbenzene	2.0	0.07910
n-Hexane	3.5	1.730
Styrene	0.1	0.00282
Toluene	10.4	1.080
Xylenes	12.2	0.433

Table 2-3: Composition of Petrol (Fuel Standards, 2019)

Species	Petrol Liquid (% weight)	Petrol Vapour (% weight)
Benzene	1.0	0.374

The composition percentages of the compounds listed in Table 2-2 and Table 2-3 were applied to the modelling outcomes of the final time-averaged emission rate GLC estimates (vapour and spill vapour losses) to derive individual pollutant contributions to airborne vapour impacts at the nearest receptor.

2.5 Station Operational Data

Table 2-4: Proposed Station Operating Detail

Parameter	Operational Data
Operating hours	24 hours / 7 days per week
Single Tanker delivery	55,000 L (B-Double Tanker)
Peak Daily Refueling Volume	46,829 L **(VR1)**
Storage Tanks' Vent stacks	4.5 m high
Filling Stations/Bowsers	3 x Bowsers / 6 x Grade filling points (located below full canopy) **(VR2)**
Fuel Storage Types	Diesel, ULP 91, PULP 95, ULP 98

2.6 Derived Emission Factors

Emissions generated from activities at the Station have been derived based on those vapour losses published by the NPI and CAPCOA guidance. Table 2-5 lists those emission factors that apply to those processes where vapour losses occur.

Table 2-5: Emissions Factors for Service Stations

Emission Source	NPI, 1999 mg / L throughput	CAPCOA, 1997 Lbs / 1000 Gallons throughput
Underground Tank Filling	-	-
Submerged Filling	880	8.4
Splash Filling	1380	-
Submerged filling with vapour balance (VR1)	40	**0.42** (50 mg/L)
Underground tank breathing losses	**120**	0.84
Vehicle Refuelling	-	-
Displacement Losses (uncontrolled)	1320	8.4
Displacement Losses (controlled i.e., VR 2)	132	**0.74**
Spillages	-	-
Uncontrolled	80	**0.61**
Controlled	-	0.41
"Whoosh" Emissions (fuel cap removal)	-	0.26 - **0.66**

The refuelling activities are characterised as volume emission sources. These have been assessed utilising the CAPCOA, 1997 emission factors. Vent emissions from storage tank filling has been assessed using the NPI, 1999 emission factors.

2.6.1 Fuel Throughput Trends

To determine the hourly throughputs of fuel dispensing for service stations in accordance with the BCC, 2017 recommendations, the hourly profile of fuel sales daily is derived using the BCC, 2017 published profiles as listed in Table 2-6.

Table 2-6: Representative Fuel Throughputs (BCC, 2017)

Hour	Hourly Profile (%)
1	1.2
2	0.8
3	0.6
4	0.8
5	1.9
6	4.6
7	5.5
8	5.7
9	5.5
10	5.7
11	6.0
12	6.0
13	5.7
14	5.6
15	5.9
16	**6.2**
17	**6.2**
18	5.8
19	5.1
20	4.0
21	3.5
22	3.4
23	2.6
24	1.8

In Table 2-6 the peak throughput hour begins at 4-5pm (1600 - 1700 hrs).

Applying the Average Daily Refuelling Volume of 46,829 L, the emission factors in Table 2-5, and deriving hourly volumes based on Table 2-6, the hourly Total VOC mass emission rates in grams per second (g/s) are developed.

These mass emission rates represent the combined (ALL) number of filling points (6) at any one time, and single bowser (SINGLE) operations (VR2), and are listed in Table 2-7.

Table 2-7: Factored Total VOC Emission Rates per Hour (VR2)

Hour	Throughput % daily volume/hr	Petrol Throughput (L/hr)	% to Peak Daily Hour	ALL Bowsers Mass Emission Rate (g/s)	SINGLE Bowser Mass Emission Rate (g/s)
1	1.2	562	19.5%	0.226	0.075
2	0.8	375	13.0%	0.150	0.050
3	0.6	281	9.8%	0.113	0.038
4	0.8	375	13.0%	0.150	0.050
5	1.9	890	30.9%	0.357	0.119
6	4.6	2,154	74.8%	0.865	0.288
7	5.5	2,576	89.4%	1.034	0.345
8	5.7	2,669	92.7%	1.071	0.357
9	5.5	2,576	89.4%	1.034	0.345
10	5.7	2,669	92.7%	1.071	0.357
11	6.0	2,810	97.6%	1.128	0.376
12	6.0	2,810	97.6%	1.128	0.376
13	5.7	2,669	92.7%	1.071	0.357
14	5.6	2,622	91.1%	1.053	0.351
15	5.9	2,763	95.9%	1.109	0.370
16	**6.2**	2,880	**100.0%**	**1.156**	**0.385**
17	**6.2**	2,880	**100.0%**	**1.156**	**0.385**
18	5.8	2,716	94.3%	1.090	0.363
19	5.1	2,388	82.9%	0.959	0.320
20	4.0	1,873	65.0%	0.752	0.251
21	3.5	1,639	56.9%	0.658	0.219
22	3.4	1,592	55.3%	0.639	0.213
23	2.6	1,218	42.3%	0.489	0.163
24	1.8	843	29.3%	0.338	0.113

Table 2-8 lists the emission rate for the proposed Station during bulk refuelling activities (VR1) where a single B-Double can deliver 55,000 L per hour.

Table 2-8: Proposed Site's Bulk Storage Emissions during Bulk Refuelling (VR1)

Emission Source	Emission Type	Peak VOC Mass Emission Rate (g/s)	Stack Diameter (m)	Emission Velocity (m/s)
Vent Stack	Bulk Filling (Vapour Balance and Breathing Losses)	2.602	0.1	0.5

Appendix A presents the summary calculations for the derived mass emission rates.

2.7 Aermod Dispersion Modelling Methods

2.7.1 Meteorology

A 2-year annual dataset (April-2020-to-April-2022) of meteorology was developed for the locality using surface observations from the Mandurah Bureau of Meteorology (BoM) Automatic Weather Station (AWS) and CSIRO's TAPM prognostic model for upper air characteristics. The Mandurah BoM AWS is approximately 20 kms south, south-west of the Site and representative of the assessment domain given the Site's and AWS's proximity to the coastline and separated by approximately 0.05 decimal degrees of latitude (approx., 4 kms).

The wind speed and direction relationship is presented in Figure 2-1.

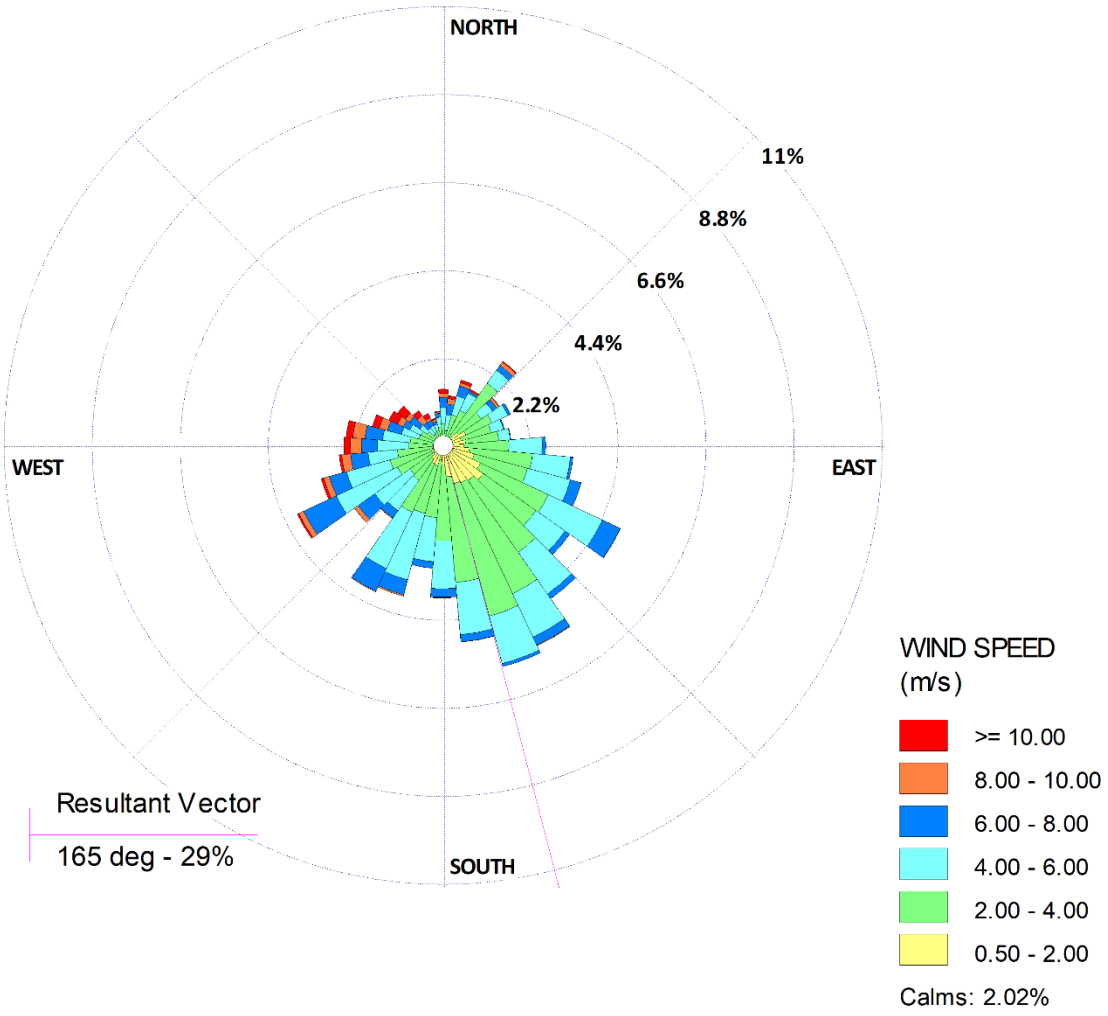

Figure 2-1: Station Locality Wind Speed and Direction Characteristics (2020-2022)

2.7.2 Sensitive Receptors

Discrete sensitive receptors were placed at locations closest and surrounding the Station (refer Figure 1-4). These receptors were assessed against the vapour emissions and compared against regulatory guidelines.

2.7.3 Building Profile Input Program (BPIP)

Building wake effects occur for those vertical stack emissions, in this case passive ventilation of the storage tank vent. An example of the Aermod Input File is presented in Appendix B.

2.7.4 Aersurface Parameters

Albedo, Bowen Ratio and Surface Roughness parameters used in the modelling are listed in Table 2-9.

Table 2-9: Surface Modelling Parameters

Albedo	Bowen Ratio	Surface Roughness (m)
0.18	1.11	**0.271**

2.7.5 Dispersion Modelling Limitations

By definition, air quality models can only approximate atmospheric processes. Many assumptions and simplifications are required to describe real phenomena in mathematical equations. Model uncertainties can result from:

- Simplifications and accuracy limitations related to source data;
- Extrapolation of meteorological data from selected locations to a larger region; and
- Simplifications to model physics to replicate the random nature of atmospheric dispersion processes.

Models are reasonable and reliable in estimating the maximum concentrations occurring on an average basis. That is, the maximum concentration that may occur at a given time somewhere within the model domain, as opposed to the exact concentration at a point at a given time will usually be within the ±10% to +/- 40% range (US EPA, 2003).

Typically, a model is viewed as replicating dispersion processes if it can predict within a factor of two, and if it can replicate the temporal and meteorological variations associated with monitoring data. Model predictions at a specific site and for a specific hour, however, may correlate poorly with the associated observations due to the above-indicated uncertainties. For example, an uncertainty of 5° to 10° in the measured wind direction can result in concentration errors of 20% to 70% for an individual event (US EPA, 2003).

2.8 Station Assessment Results & Discussion

The Assessment of the Proposed 7-Eleven Nairn Drive/Furnival Parade (Baldivis) Fuel Service Station has projected ground level concentrations (GLCs) at the nearest sensitive receptors (refer Figure 1-4) for

assessed pollutants of BTEX (Benzene, Toluene, Ethyl benzene, Xylenes), Cyclohexane, *n*-Hexane and Styrene that are below the guideline exposure standards when employing both VR1 and VR2.

These pollutants were assessed by firstly modelling Total VOCs as a function of emission factors for fuel storage and vehicle dispensing volumes according to those methods in Section 2.

Those Total VOC GLCs projected were then revised to determine the percentage mass emission rate contributions for these pollutants (refer Table 2-2).

Table 2-1010 lists each predicted pollutant concentration for each averaging period at those assessed sensitive receptors (Figure 1-4). These pollutant concentrations are revised based on each compound's vapour contribution to petrol VOC emissions. Additionally, these predicted pollutant concentrations reflect both VR1 and VR2 vapour recovery.

Within Table 2-10 is each pollutant's respective assessment criteria, the projected GLCs from the modelling Assessment and the revised projected GLCs at the nearest sensitive receptor (refer Figure 1-4) with a Percentage of Exposure Limit Value (%). This value represents the percentage ratio of projected GLCs compared to the assessment criteria for each pollutant.

A % < 100 % shows that the projected concentration at the sensitive receptor location achieves less than the assessment criteria i.e., PASS, whereas % ≥ 100 % shows non-compliance against the assessment criteria i.e., FAIL.

The magnitude of the compliance PASS/FAIL can be readily gauged by the size of the Percentage of Exposure Limit Value (%).

- All GLC values reported for each sensitive receptor are the maximum, Rank 1 values for all averaging periods; and
- All units of concentration are in µg/m^3 unless stated otherwise.

In reviewing the predicted GLCs for vapours from toxic chemical pollutants in Table 2-10, the pollutant emissions at the nearest sensitive receptors are less than the exposure limits in ambient air when employing VR1 and VR2 vapour recovery.

Based on the predicted ground level concentrations using VR1 and VR2, vapours from the Site will not negatively impact the health of the nearest sensitive urban receptors, the Pine View Primary School, or sensitive land uses within the Locality.

Given the modelling outputs have low percentages (%) for compliance factors (CFs), any uncertainty in the modelling is balanced by the low impacts predicted, and:

- The Assessment assumes a peak hour scenario that derives fuel sales based on that peak hour,
- The Assessment assumes that peak hour occurs every day, which is largely improbable, and
- The Assessment assumes that bulk fuel delivery vapour emissions (VR1) are constant for every day and hour between the delivery hours of 0700 – 2200 hrs.

Table 2-10: Proposed Service Station - Assessment Results for GLC's of Pollutants (VR1 & VR2) @ Nearest Sensitive Receptors

Receptor Location	Pollutant	Averaging Period	Exposure Limit (µg/m3)	Predicted GLC (µg/m³)	% of CF	Pass/Fail	Pollutant	Averaging Period	Exposure Limit (µg/m3)	Predicted GLC (µg/m³)	% of CF	Pass/Fail
north	Benzene	1-hour (EPA, VIC)	580	19.48	3.36%	Pass	Benzene	1-hour (EPA, NSW)	29	19.48	67.18%	Pass
sw cnr school				7.97	1.37%	Pass				7.97	27.47%	Pass
nw cnr house				8.84	1.52%	Pass				8.84	30.49%	Pass
nw cnr house				22.39	3.86%	Pass				22.39	77.22%	Pass
nw cnr school				18.37	3.17%	Pass				18.37	63.35%	Pass
w house				11.66	2.01%	Pass				11.66	40.22%	Pass
wsw house				9.13	1.57%	Pass				9.13	31.49%	Pass
sw house				9.43	1.63%	Pass				9.43	32.53%	Pass
nnw cnr house				18.96	3.27%	Pass				18.96	65.37%	Pass
nnw cnr house				19.19	3.31%	Pass				19.19	66.16%	Pass
west school				15.37	2.65%	Pass				15.37	52.99%	Pass
north	Benzene	24-hour	29	2.74	9.46%	Pass	Benzene	Annual	9.6	0.37	3.88%	Pass
sw cnr school				0.63	2.18%	Pass				0.04	0.44%	Pass
nw cnr house				0.82	2.84%	Pass				0.08	0.81%	Pass
nw cnr house				1.46	5.04%	Pass				0.18	1.85%	Pass
nw cnr school				2.12	7.32%	Pass				0.19	2.03%	Pass
w house				1.27	4.38%	Pass				0.08	0.80%	Pass
wsw house				1.17	4.02%	Pass				0.06	0.68%	Pass
sw house				0.80	2.76%	Pass				0.05	0.48%	Pass
nnw cnr house				2.42	8.34%	Pass				0.25	2.61%	Pass
nnw cnr house				2.81	9.69%	Pass				0.33	3.48%	Pass
west school				1.26	4.35%	Pass				0.00	0.00%	Pass
north	Toluene	24-hour	3,770	7.93	0.21%	Pass	Toluene	Annual	377	1.08	0.29%	Pass
sw cnr school				1.83	0.05%	Pass				0.12	0.03%	Pass
nw cnr house				2.38	0.06%	Pass				0.22	0.06%	Pass
nw cnr house				4.22	0.11%	Pass				0.51	0.14%	Pass
nw cnr school				6.14	0.16%	Pass				0.56	0.15%	Pass
w house				3.67	0.10%	Pass				0.22	0.06%	Pass
wsw house				3.37	0.09%	Pass				0.19	0.05%	Pass
sw house				2.32	0.06%	Pass				0.13	0.04%	Pass
nnw cnr house				6.99	0.19%	Pass				0.72	0.19%	Pass
nnw cnr house				8.12	0.22%	Pass				0.96	0.26%	Pass
west school				3.64	0.10%	Pass				0.00	0.00%	Pass
north	Ethyl benzene	1-hour	8,000	4.12	0.05%	Pass	Ethyl benzene	Annual	270	0.08	0.03%	Pass
sw cnr school				1.69	0.02%	Pass				0.01	0.00%	Pass
nw cnr house				1.87	0.02%	Pass				0.02	0.01%	Pass
nw cnr house				4.74	0.06%	Pass				0.04	0.01%	Pass
nw cnr school				3.89	0.05%	Pass				0.04	0.02%	Pass
w house				2.47	0.03%	Pass				0.02	0.01%	Pass
wsw house				1.93	0.02%	Pass				0.01	0.01%	Pass
sw house				2.00	0.02%	Pass				0.01	0.00%	Pass
nnw cnr house				4.01	0.05%	Pass				0.05	0.02%	Pass
nnw cnr house				4.06	0.05%	Pass				0.07	0.03%	Pass
west school				3.25	0.04%	Pass				0.00	0.00%	Pass
north	Xylenes	24-hour	1,080	3.18	0.29%	Pass	Xylenes	Annual	870	0.43	0.05%	Pass
sw cnr school				0.73	0.07%	Pass				0.05	0.01%	Pass
nw cnr house				0.95	0.09%	Pass				0.09	0.01%	Pass
nw cnr house				1.69	0.16%	Pass				0.21	0.02%	Pass
nw cnr school				2.46	0.23%	Pass				0.23	0.03%	Pass
w house				1.47	0.14%	Pass				0.09	0.01%	Pass
wsw house				1.35	0.12%	Pass				0.08	0.01%	Pass
sw house				0.93	0.09%	Pass				0.05	0.01%	Pass
nnw cnr house				2.80	0.26%	Pass				0.29	0.03%	Pass
nnw cnr house				3.26	0.30%	Pass				0.39	0.04%	Pass
west school				1.46	0.14%	Pass				0.00	0.00%	Pass
north	Cyclohexane	1-hour	190	3.32	1.75%	Pass	*n*-Hexane	1-hour	3,200	90.18	2.82%	Pass
sw cnr school				1.36	0.71%	Pass				36.87	1.15%	Pass
nw cnr house				1.51	0.79%	Pass				40.92	1.28%	Pass
nw cnr house				3.82	2.01%	Pass				103.66	3.24%	Pass
nw cnr school				3.13	1.65%	Pass				85.04	2.66%	Pass
w house				1.99	1.05%	Pass				53.99	1.69%	Pass
wsw house				1.56	0.82%	Pass				42.27	1.32%	Pass

sw house				1.61	0.85%	Pass				43.66	1.36%	Pass
nnw cnr house				3.23	1.70%	Pass				87.74	2.74%	Pass
nnw cnr house				3.27	1.72%	Pass				88.81	2.78%	Pass
west school				2.62	1.38%	Pass				71.14	2.22%	Pass

Receptor Location	Pollutant	Averaging Period	Exposure Limit (µg/m3)	Predicted GLC (µg/m³)	% of CF	Pass/Fail
north	Styrene	1-hour	64	0.15	0.23%	Pass
sw cnr school				0.06	0.09%	Pass
nw cnr house				0.07	0.10%	Pass
nw cnr house				0.17	0.26%	Pass
nw cnr school				0.14	0.22%	Pass
w house				0.09	0.14%	Pass
wsw house				0.07	0.11%	Pass
sw house				0.07	0.11%	Pass
nnw cnr house				0.14	0.22%	Pass
nnw cnr house				0.14	0.23%	Pass
west school				0.12	0.18%	Pass

Appendix A: Vapour Emissions Calculations

Bowser	Number of Dispensing Nozzles	**6**	
+VR2	Peak Hourly Volume at Bowsers (transactions x Litres per car)	**2,880**	
	CAPCOA (Lbs/1000gallons to mg/L)	1,445	mg/L
	CAPCOA (Lbs/1000gallons to g/L)	1.445	g/L
	Losses (g/L)	1.445	g/L/hr
	VR2 (10-15% Losses) (g/L)	**1.445**	g/L/hr
	ESTIMATED TOTAL DAILY (24hr) VOLUME (L)	**46,829**	
	E10 Volatilisation	1.5	
	E10 % of T-Volumes	**0%**	
	E10 Fuel Ratio Factor	0	
	% of Other Fuels	100%	
	Fuel Ratio Factor	**1.000**	
Storage Tanks	Total Storage Tank Volumes	180,000	L
+VR 1	NPI 1999	**170**	mg/L
		9,367,981	mg/hr
		9,368	g/hr
		2.6	g/s
	4.5m High Vent Rate @ 0.5 m/s exit velocity	0.00393	m3/s
	VR1 10% losses	2.602	g/s
	Final VR1 Value (per Vent)	**2.602**	**g/s**
	Annually	82,073,919	grams
		82,074	kgs
		225	kgs/day
	Deliveries weekly	17.1	kgs
	Per delivery	9.4	kg/hr
	Cars per Peak Hour	**72**	
	L per car on average	**40**	
	Peak Volumes Dispensed	2,880	
	Average # Cars/hour Daily (7 days)	**50**	
	Cars Daily	1,182	
	Maximum Tanker Delivery Volume (L)	55,000	
	No Fuel Storage Vents	4	4
	Types of Fuel - Fuel Storage (kL)	Diesel	50
		ULP 91	30
		ULP 95	30
		ULP 98	70
	Bulk (Single) Tanker Deliveries per Week	1.83	**2**
	Annual Sales	17,092,683	

hour	% daily sales	% to peak hr	# cars/peak hour	Petrol Throughput (L/hr)	L/s	g/s	Final g/s	FINAL Per Bowser
1	1.2%	19.5%	15	562	0.156	0.226	0.226	**0.075**
2	0.8%	13.0%	10	375	0.104	0.150	0.150	**0.050**
3	0.6%	9.8%	8	281	0.078	0.113	0.113	**0.038**
4	0.8%	13.0%	10	375	0.104	0.150	0.150	**0.050**
5	1.9%	30.9%	23	890	0.247	0.357	0.357	**0.119**
6	4.6%	74.8%	54	2,154	0.598	0.865	0.865	**0.288**
7	5.5%	89.4%	65	2,576	0.715	1.034	1.034	**0.345**
8	5.7%	92.7%	67	2,669	0.741	1.071	1.071	**0.357**
9	5.5%	89.4%	65	2,576	0.715	1.034	1.034	**0.345**
10	5.7%	92.7%	67	2,669	0.741	1.071	1.071	**0.357**
11	6.0%	97.6%	71	2,810	0.780	1.128	1.128	**0.376**
12	6.0%	97.6%	71	2,810	0.780	1.128	1.128	**0.376**
13	5.7%	92.7%	67	2,669	0.741	1.071	1.071	**0.357**
14	5.6%	91.1%	66	2,622	0.728	1.053	1.053	**0.351**
15	5.9%	95.9%	70	2,763	0.767	1.109	1.109	**0.370**
16	**6.2%**	**100.0%**	**72**	2,880	0.800	1.156	**1.156**	**0.385**
17	**6.2%**	**100.0%**	**72**	2,880	0.800	1.156	**1.156**	**0.385**
18	5.8%	94.3%	68	2,716	0.754	1.090	1.090	**0.363**
19	5.1%	82.9%	60	2,388	0.663	0.959	0.959	**0.320**
20	4.0%	65.0%	47	1,873	0.520	0.752	0.752	**0.251**
21	3.5%	56.9%	41	1,639	0.455	0.658	0.658	**0.219**
22	3.4%	55.3%	40	1,592	0.442	0.639	0.639	**0.213**
23	2.6%	42.3%	31	1,218	0.338	0.489	0.489	**0.163**
24	1.8%	29.3%	22	843	0.234	0.338	0.338	**0.113**
	100.0%		1,182	**46,829**		**Max**	1.156	**0.385**

Emission Source	NPI 1999 mg/L throughput	CAPCOA Lbs/1000 Gallons throughput	CAPCOA mg/L throughput
Underground Tank Filling			
Submerged Filling	880	8.4	1007
Splash Filling	1380		
Submerged filling with vapour balance	40	0.42	**50**
Underground tank breathing losses	**120**	0.84	101
Vehicle Refuelling			
Displacement Losses (uncontrolled)	1320	8.4	1007
Displacement Losses (90% controlled e.g VRU 2)	132	**0.74**	89
Spillages			
Uncontrolled	80	**0.61**	73
Controlled		0.41	49
"Whoosh" Emissions		0.26 - **0.66**	79
"Whoosh" Emissions (averaged)		0.46	79

Bulk Storage Volumes Relationship Assumptions	
4 Bowser / 8 Nozzles	kL per nozzle
50 kL	6.25
30 kL	3.75
30 kL	3.75
70 kL	8.75

Appendix B: AERMOD Input File

```
**
**************************************
**
** AERMOD Input Produced by:
** AERMOD View Ver. 12.0.0
** Lakes Environmental Software Inc.
** Date: 15/11/2024
** File: S:\EAQ Consulting\PROJECTS\PROJECTS 2023\23037_Parkland Heights (Baldivis 7-Eleven Servo)\Reports\23037.INP
**
**************************************
**
**
**************************************
** AERMOD Control Pathway
**************************************
**
**
CO STARTING
   TITLEONE D:\MyAERMOD\23037
   TITLETWO Parkland Heights
   MODELOPT DFAULT CONC
   AVERTIME 1 24 ANNUAL
   POLLUTID VOC
   RUNORNOT RUN
   ERRORFIL 23037.err
CO FINISHED
**
**************************************
** AERMOD Source Pathway
**************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION BOWS1        VOLUME     387509.087  6419197.446       39.030
** DESCRSRC Bowser 1
   LOCATION BOWS2        VOLUME     387517.040  6419194.408       38.530
** DESCRSRC Bowser 2
   LOCATION BOWS3        VOLUME     387524.813  6419191.589       38.010
** DESCRSRC Bowser 3
   LOCATION VENT         POINT      387556.536  6419170.950       35.810
** DESCRSRC Tank Breather
** Source Parameters **
   SRCPARAM BOWS1              1.0     1.200     1.744     2.093
   SRCPARAM BOWS2              1.0     1.200     1.744     2.093
   SRCPARAM BOWS3              1.0     1.200     1.744     2.093
   SRCPARAM VENT               1.0     7.000   298.150       0.5       0.1

** Building Downwash **
   BUILDHGT VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDHGT VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDHGT VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDHGT VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDHGT VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDHGT VENT            0.00     0.00     0.00     0.00     0.00     0.00

   BUILDWID VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDWID VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDWID VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDWID VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDWID VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDWID VENT            0.00     0.00     0.00     0.00     0.00     0.00

   BUILDLEN VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDLEN VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDLEN VENT            0.00     0.00     0.00     0.00     0.00     0.00
   BUILDLEN VENT            0.00     0.00     0.00     0.00     0.00     0.00
```

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   BUILDLEN VENT             0.00     0.00     0.00     0.00     0.00     0.00
   BUILDLEN VENT             0.00     0.00     0.00     0.00     0.00     0.00

   XBADJ    VENT             0.00     0.00     0.00     0.00     0.00     0.00
   XBADJ    VENT             0.00     0.00     0.00     0.00     0.00     0.00
   XBADJ    VENT             0.00     0.00     0.00     0.00     0.00     0.00
   XBADJ    VENT             0.00     0.00     0.00     0.00     0.00     0.00
   XBADJ    VENT             0.00     0.00     0.00     0.00     0.00     0.00
   XBADJ    VENT             0.00     0.00     0.00     0.00     0.00     0.00

   YBADJ    VENT             0.00     0.00     0.00     0.00     0.00     0.00
   YBADJ    VENT             0.00     0.00     0.00     0.00     0.00     0.00
   YBADJ    VENT             0.00     0.00     0.00     0.00     0.00     0.00
   YBADJ    VENT             0.00     0.00     0.00     0.00     0.00     0.00
   YBADJ    VENT             0.00     0.00     0.00     0.00     0.00     0.00
   YBADJ    VENT             0.00     0.00     0.00     0.00     0.00     0.00


** Variable Emissions Type: "By Hour-of-Day (HROFDY)"
** Variable Emission Scenario: "bowsers"
   EMISFACT BOWS1        HROFDY 0.075 0.05 0.038 0.05 0.119 0.288
   EMISFACT BOWS1        HROFDY 0.345 0.357 0.345 0.357 0.376 0.376
   EMISFACT BOWS1        HROFDY 0.357 0.351 0.37 0.385 0.385 0.363
   EMISFACT BOWS1        HROFDY 0.32 0.251 0.219 0.213 0.163 0.113
   EMISFACT BOWS2        HROFDY 0.075 0.05 0.038 0.05 0.119 0.288
   EMISFACT BOWS2        HROFDY 0.345 0.357 0.345 0.357 0.376 0.376
   EMISFACT BOWS2        HROFDY 0.357 0.351 0.37 0.385 0.385 0.363
   EMISFACT BOWS2        HROFDY 0.32 0.251 0.219 0.213 0.163 0.113
   EMISFACT BOWS3        HROFDY 0.075 0.05 0.038 0.05 0.119 0.288
   EMISFACT BOWS3        HROFDY 0.345 0.357 0.345 0.357 0.376 0.376
   EMISFACT BOWS3        HROFDY 0.357 0.351 0.37 0.385 0.385 0.363
   EMISFACT BOWS3        HROFDY 0.32 0.251 0.219 0.213 0.163 0.113

** Variable Emissions Type: "By Hour / Day (HRDOW)"
** Variable Emission Scenario: "vent continuous"
** WeekDays:
   EMISFACT VENT         HRDOW 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT VENT         HRDOW 2.602 2.602 2.602 2.602 2.602 2.602
   EMISFACT VENT         HRDOW 2.602 2.602 2.602 2.602 2.602 2.602
   EMISFACT VENT         HRDOW 2.602 2.602 0.0 0.0 0.0 0.0
** Saturday:
   EMISFACT VENT         HRDOW 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT VENT         HRDOW 2.602 2.602 2.602 2.602 2.602 2.602
   EMISFACT VENT         HRDOW 2.602 2.602 2.602 2.602 2.602 2.602
   EMISFACT VENT         HRDOW 2.602 2.602 0.0 0.0 0.0 0.0
** Sunday:
   EMISFACT VENT         HRDOW 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT VENT         HRDOW 2.602 2.602 2.602 2.602 2.602 2.602
   EMISFACT VENT         HRDOW 2.602 2.602 2.602 2.602 2.602 2.602
   EMISFACT VENT         HRDOW 2.602 2.602 0.0 0.0 0.0 0.0
   SRCGROUP bows     BOWS1 BOWS2 BOWS3
   SRCGROUP vent     VENT
   SRCGROUP ALL
SO FINISHED
**
****************************************
** AERMOD Receptor Pathway
****************************************
**
**
RE STARTING
   INCLUDED 23037.rou
RE FINISHED
**
****************************************
** AERMOD Meteorology Pathway
****************************************
**
**
```

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ME STARTING
** Surface File Path: D:\MyAERMOD\23037\
   SURFFILE 23037.SFC
** Profile File Path: D:\MyAERMOD\23037\
   PROFFILE 23037.PFL
   SURFDATA 0 2020
   UAIRDATA 0 2020
   SITEDATA 0 2020
   PROFBASE 19.0 METERS
ME FINISHED
**
**************************************
** AERMOD Output Pathway
**************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST
   RECTABLE 1 1ST
   RECTABLE 24 1ST
** Auto-Generated Plotfiles
   PLOTFILE 1 ALL 1ST D:\MyAERMOD\23037\23037.AD\01H1GALL.PLT 31
   PLOTFILE 24 ALL 1ST D:\MyAERMOD\23037\23037.AD\24H1GALL.PLT 32
   PLOTFILE ANNUAL ALL D:\MyAERMOD\23037\23037.AD\AN00GALL.PLT 33
   SUMMFILE D:\MyAERMOD\23037\23037.sum
OU FINISHED
**
**************************************
** Project Parameters
**************************************
** PROJCTN  CoordinateSystemUTM
** DESCPTN  UTM: Universal Transverse Mercator
** DATUM    World Geodetic System 1984
** DTMRGN   Global Definition
** UNITS    m
** ZONE     -50
** ZONEINX  0
**

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**********************************************************
** AERMET - STAGE 3 Input Produced by:
** AERMET View Ver. 12.0.0
** Lakes Environmental Software Inc.
** Date: 2024/11/15
** File: D:\MyAERMOD\23037\23037.IN3
**********************************************************
JOB
   REPORT      23037.RP3
   MESSAGES    23037.MG3

METPREP

   DATA        23037.MRG
   LOCATION    00000000 32.358S    115.805E -8

   MODEL       AERMOD

   OUTPUT      aermet.sfc
   PROFILE     aermet.pfl

   XDATES      2020/04/01 TO 2022/04/30

   METHOD      WIND_DIR  NORAND
   METHOD      STABLEBL  BULKRN
   METHOD      STABLEBL  ADJ_U*
   METHOD      CCVR SUB_CC
   METHOD      TEMP SUB_TT

** Primary Surface Characteristics
   FREQ_SECT   ANNUAL 1
   SECTOR      1   0 360

** Period - Sector - Albedo - Bowen Ratio - Surface Roughness

   SITE_CHAR    1  1   0.1800  1.1100  0.27100

```

SLR Consulting Australia
Level 11, 176 Wellington Parade, East Melbourne VIC 3002, Australia

12 November 2024

SLR Ref No.: 640.031573.00001-L01-v1.0-20241112.docx

Attention: David Banovic
City of Rockingham
Civic Boulevard
Rockingham WA

SLR Project No.: 640.031573.00001

RE: Parkland Heights Shopping Centre
Proposed Service Station Air Quality Assessment Review

1.0 Introduction

SLR Consulting Australia Pty Ltd (SLR) was engaged by City of Rockingham (City) to prepare a peer review of the "*Air Emissions Assessment*" report (the Modelling Assessment) prepared by Environmental and Air Quality Consulting Pty Ltd (EAQ) relating to the proposed operation of a '7-Eleven' service station and convenience store to be located at the corner of Nairn Drive and Furnival Parade in Baldivis Western Australia 6171 (the Proposal).

The Modelling Assessment principally consists of:

- an estimation of emissions to air of volatile organic compounds (VOCs) based on service station operational data (incorporating emissions controls) and published emission factors (**Section 3.1**)
- quantitative plume dispersion modelling to predict VOCs ground level concentrations (GLCs) resulting from the operations at nearby sensitive receptors (**Section 3.2**)
- an assessment of those GLCs against criteria and conclusion as to whether the proposed service station will impact on the health of existing sensitive receptors or sensitive land uses (**Section 3.3**).

Specifically, SLR was requested to review the Modelling Assessment (**Section 4.0**) and assess whether:

1. it appropriately demonstrates that emissions to air from the Proposal are predicted to comply with air quality standards
2. it appropriately demonstrates that emissions to air from the Proposal are predicted to result in a low risk of adverse health impact at the nearest existing and planned residential development, including at the nearby planned Pine View Primary School.
3. it is acceptable to justify the proposed separation distance to sensitive uses, within the 200 m separation distance as outlined in EPA Western Australia document "*Separation Distances between Industrial and Sensitive Land Uses (GS 3)*", June 2005.

2.0 Background

2.1 Separation Distances between Industrial and Sensitive Land Uses (GS 3)

Separation distances are *buffer areas* between industrial uses, e.g., a service station, and sensitive uses, e.g., a residence or childcare centre. The buffers are used to avoid conflicts

between incompatible land uses. EPA recommend that where the separation distance between an industry and a sensitive land use 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 to air quality at the sensitive land.

Such a study for a proposed industry generally incorporates a risk assessment and/or a plume dispersion modelling study, the latter of which predicts the worst-case pollutant concentrations in air at the sensitive land resulting from emissions from the industry. This model accounts for site specific characteristics such as local meteorology (primarily wind speed and direction), background air quality and terrain, and predicts the concentration of pollutants emitted from a source at some downwind distance. These predicted concentrations can then be compared with human health air quality criteria to understand the potential risks to human health.

The generic separation distance for a 24-hour service station under GS 3 is 200 m and because the Proposal is less than this distance from existing and planned residences, and an planned primary school, a site-specific plume dispersion modelling assessment, as presented in the Modelling Assessment is warranted.

SLR reviewed the Modelling Assessment and found it to be generally consistent with what one would expect in assessing an industry/sensitive land use situation of this type and generally consistent with the Department of Water and Environmental Regulation (DWER) draft document "*Guideline: Air Emissions*" (DWER, 2019).[1]

2.2 Air Quality Indicators and Assessment Criteria

The Modelling Assessment appropriately identifies typical pollutant emissions (volatile organic compounds; VOCs) to air from service station operations and nominates appropriate sources of air quality criteria, including from the "*National Environment Protection (Air Toxics) Measure*" (NEPM Air Toxics) (NEPC, 2011), with which to assess concentrations against.

The NEPM Air Toxics only lists an annual average criterion for benzene, which due to its relative carcinogenic potential, typically has the most stringent ambient air quality criteria of VOCs. The Modelling Assessment appropriately sources an additional short term (1-hour average) criterion from the "*Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales*" (NSW EPA, 2016) of 29 µg/m^3. This document has recently been updated (NSW EPA, 2022), however the benzene criterion is unchanged.

SLR notes that NSW EPA (2016) sources this 1-hour average benzene criterion from the now rescinded Victorian "*State Environment Protection Policy (Air Quality Management)*" (Victorian Government, 2001). The criterion originates from the US Agency for Toxic Substance and Disease Registry (ATSDR) acute minimal risk level (MRL) of 0.009 ppm which was derived for acute-duration inhalation exposure periods of less than or equal to 14 days (ATSDR, 2007). EPA Victoria now assign this criterion less conservatively to a 24-hour averaging period (EPAV, 2022), more in keeping with the intent of the MRL exposure period, and adopt a 1-hour average criterion from the Texas Commission on Environmental Quality (TCEQ) Air Monitoring Comparison Values (ACMV) of 180 ppb (TCEQ, 2022) or 580 µg/m^3. It is perhaps worth noting that the AMCVs are based on health effects and "*If predicted or measured airborne levels of a constituent do not exceed the comparison level, adverse health or welfare effects would not be expected to result. If ambient levels of constituents in*

[1] This document has been in draft status for several years. On review, the Modelling Assessment does not deviate significantly from the draft document's prescribed methodology.

air exceed the comparison levels, it does not necessarily indicate a problem, but rather, triggers a more in-depth review."

The Modelling Assessment adopts a criterion of 29 µg/m^3, 20 times lower than the 580 µg/m^3 now adopted by EPA Victoria and in doing so can be considered to present a highly conservative assessment of predicted short-term impacts of benzene.

3.0 Modelling Assessment Components

3.1 Emissions Estimation

The Modelling Assessment estimates emissions of VOCs from various fuel related activities including filling of underground storage tanks (USTs) and vehicle refuelling.

SLR consider the methodology for conservatively estimating the total fuel volume to be delivered to the station based on the peak service station traffic flow to be appropriate as this results in a conservative estimate of potential emissions from the service station.

The Modelling Assessment assumes vapour recovery levels VR 1 and VR 2 are implemented on the UST and bowser refuelling points, imposing a control of 90% reduction in vapour (VOC) emissions.

Bulk Deliveries to UST Emissions

SLR do not find the methodology of representing the fuel delivery to the USTs to be appropriate in that it does not adequately cover all modelled meteorological hours. Emissions from the bulk deliveries, which may occur anytime between 7:00 am and 10:00 pm are represented by assuming the delivery occurs during 3 of the possible 15 hours per day, and incrementally changing those hours day by day (refer **Figure 1**). As a result, the number of meteorological conditions under which this emission is modelled will be 20% of the possible combinations (3 of a possible 15) that *should* be modelled. This will likely underrepresent the contribution of the UST filling emissions to the predicted 1-hour average GLCs. SLR has noted this shortcoming for a previous assessment by EAQ for City (SLR, 2023).

Figure 1 Modelling Assessment Table 2-1

Table 2-1: Example of Bulk Fuel Delivery Schedule (L/hr)

Time (24 hrs)	Monday	Tuesday	Wednesday	Thursday	Friday
0700	60,000				
0800		60,000			
0900			60,000		
1000				60,000	
1100					60,000
1200	60,000				
1300		60,000			
1400			60,000		
1500				60,000	
1600					60,000
1700	60,000				
1800		60,000			
1900			60,000		
2000				60,000	
2100					60,000
2200					

Furthermore, while deliveries may only be expect to occur on weekdays, it is not appropriate to exclude Saturday and Sundays from the modelling. The metrological conditions represented in the model can be considered to exhibit some diurnal (hourly) pattern, but are entirely independent of the day of the week. Excluding Saturdays and Sundays (104 days of a modelled year), as indicated by Table 2-1, is entirely inappropriate from a modelling perspective, compromising the robustness of the assessment.

Table 2-7 and Table 2-8 of the Modelling Assessment indicate that the hourly VOC emission rate from the UST vent stack (0.852 g/s) is comparable to that of the *All Bowsers* emission rates, which range between 0.658 g/s (9:00 pm) and 1.156 g/s (4:00 pm). The UST emissions can therefore be considered to constitute a significant proportion of the hourly emissions and by excluding them from many of the modelled hours, the maximum predicted 1-hour average GLC (i.e., for assessing benzene) may be under predicted by a factor of 2 or more [i.e., (0.852+0.658) / 0.658 = 2.3].

3.2 Modelling Methodology

The Modelling Assessment uses the American Meteorological Society (AMS)/USEPA Regulatory Model, AERMOD steady-state plume modelling system with which to predict maximum pollutant GLCs resulting from the Proposal emissions to air. AERMOD is widely used in Australia and internationally, for the prediction of the GLCs of air pollutants emitted from industrial sources.

SLR considers the use of TAPM appropriate to generate a 2-year meteorological dataset (17,000 meteorological hours) for use with AERMOD, however no discussion of surface characteristics (albedo, Bowen ratio and surface roughness) is provided. The choice of surface roughness especially can affect the degree of dispersion predicted, directly influencing the resulting predicted GLCs. SLR would characterise the Proposal area as *low-intensity residential* and assume a surface roughness of 0.3 m as recommended by EPAV (2013). Using an inappropriately high surface roughness to represent the area may lead to over-prediction of the dispersion and therefore under-prediction of the resulting GLCs. The surface roughness is therefore an important consideration.

3.3 Assessment

Maximum 1-hour, 24-hour and annual average GLCs at the 11 nearest sensitive receptors are provided for each pollutant according to their assessment criteria averaging periods. As expected, only the maximum 1-hour average benzene GLC is predicted to be some significant fraction (29%) of its criterion at a sensitive receptor, but nonetheless, well below the criterion.

4.0 Review Conclusions

1. *Does the Modelling Assessment appropriately demonstrate that emissions to air from the Proposal are predicted to comply with air quality standards?*

The maximum predicted GLCs at the nearest sensitive receptors are predicted to comply with relevant air quality criteria, however:

- as discussed in **Section 3.1**, the incorrect exclusion of UST bulk delivery emissions from most of the modelled hours may potentially result in maximum 1-hour average GLCs underpredicted by a factor of approximately 2
- as discussed in **Section 3.2,** the Modelling Assessment is silent on the surface roughness used to represent the Proposal area and therefore this review can not

determine whether this component of the modelling may have resulted in further underprediction of the maximum GLCs.

Notwithstanding the above, there is likely to be sufficient conservatism built into other components of the assessment, including:

- peak service station traffic flow used to estimate total fuel volume per week
- assuming all fuel dispensed is unleaded petrol (greater VOC emissions)
- conservatively low 1-hour average benzene criterion (refer **Section 2.2**)

such that the overall outcome (compliance with all relevant air quality criteria) is likely to be unchanged (refer **Section 4.1**, below).

2. *Does the Modelling Assessment demonstrate that emissions to air from the Proposal are predicted to result in a low risk of adverse health impact at the nearest existing and planned residential development, including at the nearby planned Pine View Primary School?*

Yes, given SLR finds the Modelling Assessment to demonstrate that emissions to air from the Proposal are likely to comply with air quality standards.

3. *Is it acceptable to justify the proposed separation distance to sensitive uses, within the 200 m separation distance as outlined in GS 3?*

Yes, the Modelling Assessment constitutes such a scientific study that, together with the findings of this review, demonstrates that the Proposal will not result in unacceptable impacts to air quality at the sensitive land at the distances of the nearest sensitive receptors, being less than 200 m.

4.1 Closing Recommendation

SLR recommends that City request an addendum to the Modelling Assessment be prepared that demonstrates that the maximum predicted 1-hour average benzene GLCs at the nearest sensitive receptors are less than the criterion assuming:

- that the UST deliveries occur every hour between 7:00 am and 10:00 pm
- a surface roughness of 0.4 m or less is used to represent the model domain.

SLR Consulting Australia

Dr Jason Shepherd, CAQP
Technical Director – Air Quality
jshepherd@slrconsulting.com

5.0 References

ATSDR. (2007). *Toxicological Profile for Benzene.* Atlanta, Georgia: Agency for Toxic Substances and Disease Registry.

DWER. (2019). *Guideline: Air Emissions (Draft).* Perth: Department of Water and Environmental Regulation.

EPAV. (2013, October). *EPA Publication 1550 Construction of input meteorological data files for EPA Victoria's regulatory air pollution model (AERMOD).* Retrieved 04 03, 2017, from EPA Victoria: http://www.epa.vic.gov.au/~/media/Publications/1550.pdf

EPAV. (2022). *Publication 1961 Guideline for assessing and minimising air pollution in Victoria.* Melbourne.

NEPC. (2011). *National Environmental Protection (Air Toxics) Measure.* Canberra: National Environment Protection Council.

NSW EPA. (2016). *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales 2016.* NSW Environment Protection Authority.

NSW EPA. (2022, August). *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales.*

TCEQ. (2022, March 16). *Air Monitoring Comparison Values*. Retrieved from Texas Commission on Environmental Quality: https://www.tceq.texas.gov/cgi-bin/compliance/monops/agc_amcvs.pl

Victorian Government. (2001, December 21). State Environment Protection Policy (Air Quality Management). Melbourne, Vic, Australia: Victoria Government Gazette.

Melinda Wardle

From: Jason Shepherd <jshepherd@slrconsulting.com>
Sent: Monday, 18 November 2024 4:11 PM
To: David Banovic
Subject: RE: Content Manager: RE: Request For Quote - Summary Review/Technical Memorandum of Emission Impact Assessment - Lot 9018 Nairn Drive, Baldivis

CAUTION: This email originated from outside of the City of Rockingham. Do not click links or open attachments unless you recognise the sender and know the content is safe. If you are unsure please contact the Service Desk.

Hello David,

My peer review of the "*Air Emissions Assessment*" report (the Modelling Assessment) prepared by Environmental and Air Quality Consulting Pty Ltd (EAQ) relating to the proposed operation of a '7-Eleven' service station and convenience store to be located at the corner of Nairn Drive and Furnival Parade in Baldivis Western Australia 6171 (the Proposal), SLR document 640.031573.00001-L01-v1.0-20241112 dated 12 November 2024 recommended the following:

- *City request an addendum to the Modelling Assessment be prepared that demonstrates that the maximum predicted 1-hour average benzene ground level concentrations (GLCs) at the nearest sensitive receptors are less than the criterion assuming:*
  - *that the UST deliveries occur every hour between 7:00 am and 10:00 pm*
  - *a surface roughness of 0.4 m or less is used to represent the model domain.*

I can advise that the updated Modelling Assessment report, dated 15 November 2024 has addressed both of these recommendations and demonstrates that the maximum 1-hour average GLCs, though now approximately doubled, are less than the criterion at the nearest sensitive receptors.
I can therefore conclude as follows:

1. *Does the Modelling Assessment appropriately demonstrate that emissions to air from the Proposal are predicted to comply with air quality standards?*

The maximum predicted GLCs at the nearest sensitive receptors are predicted to comply with relevant air quality criteria. Furthermore, there is likely to be sufficient conservatism built into other components of the assessment, including:

- peak service station traffic flow used to estimate total fuel volume per week
- assuming all fuel dispensed is unleaded petrol (greater VOC emissions).

and, unchanged from my initial review:

2. *Does the Modelling Assessment demonstrate that emissions to air from the Proposal are predicted to result in a low risk of adverse health impact at the nearest existing and planned residential development, including at the nearby planned Pine View Primary School?*

Yes, given SLR finds the Modelling Assessment to demonstrate that emissions to air from the Proposal are likely to comply with air quality standards.

3. *Is it acceptable to justify the proposed separation distance to sensitive uses, within the 200 m separation distance as outlined in GS 3?*

Yes, the Modelling Assessment constitutes such a scientific study that, together with the findings of this review, demonstrates that the Proposal will not result in unacceptable impacts to air quality at the sensitive land at the distances of the nearest sensitive receptors, being less than 200 m.

Kind regards

PUBLIC SCHEDULE OF SUBMISSIONS				
No.	Name	Address	Support / Object/Other	Comment
1	Miss Natasha Turfrey	11 Camelot Street BALDIVIS WA 6171	Support	If this is the 7/11 off Nair I will support.
2	Mr Johnathan Sheldrick	319 Marmion Street COTTESLOE WA 6011	Support	It is great to see the proposed Parkland Heights Shopping Centre project and the proposed surrounding retail premises along Nairn Drive / Furnivall Parade starting to seek their approvals from the City. This project has been long-awaited and when complete, i believe it will add significantly to the Parkland Heights estate community and provide easier access to similar retail offerings already provided at the District Centre (which can often be quite crowded and not easy to access / exit via vehicle).
3	Mr Matt Drage	13 Sahara Drive BALDIVIS WA 6171	Object	I think we have more than enough stations in close proximity as it is And 7 eleven is far from a cheap station either I'd rather not have another station and as it stands, the Nairn drive road won't get built to Mundijong for a decade or more at this rate so the traffic isn't goin to flow through there fully till that gets built. How about we focus ON THAT GETTING BUILT FIRST
4	Name not provided	Address not provided	Object	The proposal to place another service station at the Parkland Heights Shopping Development is ridiculous and redundant considering there is already a service station 400 meters away on Nairn drive. This is complete unnecessary.
5	Mrs Franziska-Serra Jowle	12 Bandicoot Ramble BALDIVIS WA 6171	Object	We don't need another fuel station. There is already one not even one minute away from the proposed location. This area should be developed into an IGA or independent cafe.

PUBLIC SCHEDULE OF SUBMISSIONS				
No.	Name	Address	Support / Object/Other	Comment
6	Miss Channelle Otto	9 Barbon Lane BALDIVIS WA 6171	Object	There's far too many fast food chains and petrol stations already. How about a small shopping village with Cole's/woolies with a nice cafe and bakery down the south side of Baldivis near 68 Road/nairn drive? A recreation centre like Cockburn Arc would be great too. What about a cinema, holy moly, bowling alley, skating rink??? Baldivis is big enough surely we can get some of those? Or is Baldivis just the black hole of suburbs???

SERVICING AUTHORITY SCHEDULE OF SUBMISSIONS					
No.	Name	Address	Email	Support / Object/Other	Comment
1	Ms Jane Sturgess Department of Water	PO Box 332 MANDURAH WA 6210	jane.sturgess@dwer.wa.gov.au	Object	Thank you for providing the development application received with correspondence dated 14 October 2024 for the Department of Water and Environmental Regulation (Department) to consider. The Department has identified that the proposed service station has the potential for impact on environment and water resource management. In principle the Department does not object to the proposal however key issues, recommendations and advice are provided below and these matters should be addressed. **Issue** Drainage **Recommendation** A stormwater management plan is to be prepared and approved by the City in accordance with the Stormwater Management Manual for Western Australia (DWER, 2004-2007), Decision process for the stormwater management in Western Australia (DWER, 2017) and Water Quality Protection Note 49: Service Stations (WQPN 49) (DWER, 2013) that demonstrates the appropriate management of small, minor and major rainfall events. **Issue** Air Quality **Recommendation** The Department would advise that it does not have a regulatory role, policy position or guidance statement for fuel stations.

SERVICING AUTHORITY SCHEDULE OF SUBMISSIONS					
No.	Name	Address	Email	Support / Object/Other	Comment
No.1 – cont…					Due to uncertainties within air dispersion modelling for this land use, resulting from an absence of standard methodology and validated data, adherence to separation distances within Guidance Statement 3 Separation Distances between Industrial and Sensitive Land Uses (GS 3) (EPA, 2005), is generally recommended to inform planning decisions. The Department notes the proposed approach by the proponent to employ both stage 1 and stage 2 vapor recovery systems (VR1 and VR2) and the inclusion of an emissions impact assessment. Although these additional emission controls would reduce the emissions, owing to the uncertainties in emission estimations there is limited ability to assess if these additional emissions controls are required or, if installed, would result in acceptable risk of impacts. The use of technical studies, such as modelling and monitoring of air pollutants, can inform possible incompatibility between land uses. However, it should not be used as the only input for planning decision-making as there can be significant uncertainty in the accuracy of such studies and cannot determine if impacts may or may not occur. Notwithstanding, there is no post development regulatory mechanism that can be employed. The management of the residual risk is an important consideration in planning decisions. In the event there are modifications to the proposal that may have implications on aspects of environment and/or water management, the Department should be notified to enable the implications to be assessed.

SERVICING AUTHORITY SCHEDULE OF SUBMISSIONS					
No.	Name	Address	Email	Support / Object/Other	Comment
No.1 – cont…					Should you require any further information on the comments please contact the undersigned on 9550 4228.
2	Ms Rachel Donovan Department of Health	PO Box 8172 PERTH BUSINESS CENTRE WA 6849	EHD.ExecutiveSupport@health.wa.gov.au	Object	Thank you for your email dated 14 October 2024 requesting comment from the Department of Health (DoH) on the above proposal. The DoH provides the following comment: 1. Water Supply and Wastewater Disposal The development must be connected to drinking water and sewage services provided by a licensed service provider. 2. Food Act Requirements Any handling of food intended for sale, or sale of food at this facility will need to comply with the Food Act 2008, Food Regulations 2009 and any relevant standards of the Australia New Zealand Food Standards Code. This includes the requirement to notify or register the food business under the Food Act 2008 with the City prior to commencing operating. More information on starting a food business can be found at https://www.health.wa.gov.au/Articles/S_T/Starting-a-food-business-in-WA 3. Chemical Contamination Issues The proponent, Rockingham Park Pty Ltd, has commissioned a substantial piece of work to demonstrate that the public is not at risk from service station fuel emissions in the form of the Emissions Impact Assessment of Proposed 24Hr Fuel Service Station - Parkland Heights Shopping Centre Report November 2023 by EAQ Consulting.

SERVICING AUTHORITY SCHEDULE OF SUBMISSIONS						
No.	Content Manager File No.	Name	Address	Email	Support / Object/Other	Comment
No.2 – cont…						Based on air modelling calculations, EAQ concludes that "the predicted ground level concentrations using VR1 and VR2, vapours from the Site will not negatively impact the health of the nearest sensitive urban receptors, the Pine View Primary School, or sensitive land uses within the Locality". DoH is not confident in these findings for the reasons as outlined below. Some of these reasons derive from the a review DoH has undertaken on separation distances for service stations, which has provided the basis of the DoH Position statement - Service stations and sensitive land uses - 2024. This Statement post-dates the EAQ Report. DoH does not accept per se the results of air modelling to demonstrate that fuel emissions from service stations do not pose an unacceptable public health risk. This is because DoH considers the modelling not sufficiently reliable using currently available methodologies. It is also important to note from the Statement that DoH "continues to support the use of minimum separation distances of: 50 metres for service stations operating during normal business hours, and 100 metres for 24-hour service stations". The Rockingham Park service station is proposed for 24-hour operation. It is not clear from the EAQ Report what are the natures of the nearest sensitive sites identified and their distances from the service station. A minimum of 70-80 metres is mentioned in relation to existing or future houses. A further important point in this regard is that separation distances are normally based on measurements of boundary to boundary, and this is also not specified in the EAQ report.

SERVICING AUTHORITY SCHEDULE OF SUBMISSIONS						
No.	Content Manager File No.	Name	Address	Email	Support / Object/Other	Comment
No.2 – cont…						The DoH Statement indicates that the use of VR2 (vapour recovery from bowsers) is an important consideration in reducing service station fuel emissions and managing public risk. Although it is proposed that the Rockingham Park service station will employ VR2, and this is partly the basis of the modelling results, DoH does not know how VR2 use can be guaranteed, or what would happen to emission levels if it were faulty. Consequently, DoH is not supportive of the proposed service station development until such time as it adequately addresses the above issues, including satisfying the requirements of the DoH Position Statement. Should you have any queries or require further information please contact System Performance on 9222 2000 or eh.eSubmissions@health.wa.gov.au.
3	D24/251396	Ms Sharnie Stuart Department of Education	151 Royal Street EAST PERTH WA 6004	sharnie.stuart@education.wa.edu.au	Object	Thank you for your email dated 11 October 2024 providing the Department of Education with the opportunity to comment on the development application for a proposed Service Station, to be determined by the Metro Outer Development Assessment Panel. Pine View Primary School is located approximately 110m east from the subject site, separated by Nairn Drive and therefore, the Department shall have due regard to the provisions of the Western Australian Planning Commission's Operation Policy 2.4 – Planning for school sites (OP 2.4) when assessing the proposal. As stated in clause 3.6.2 of OP 2.4, schools are deemed sensitive land uses and it is imperative to ensure that school sites are located amongst or adjacent to compatible land uses to support education, health, and wellbeing outcomes of students.

SERVICING AUTHORITY SCHEDULE OF SUBMISSIONS						
No.	Content Manager File No.	Name	Address	Email	Support / Object/Other	Comment
No.3 – cont…						Whilst it is acknowledged that the subject site is contained within a 'Commercial' zoned land, the proposed development needs to the consider the potential impact it may have on nearby sensitive land uses. The proposed service station is not considered compatible close to the school site. Such establishments will pose safety and health risks to the school community and compromise the amenity of the school. Under the provisions of the Environmental Protection Authority's Separation Distances between Industrial and Sensitive Land Uses, June 2005 (EPA Guidance Statement), a 200m buffer distance is required from a 24-hour service station to a sensitive land use site. Service stations by their operational nature may generate a range of emissions of pollutants and safety risks, which if not carefully managed, may adversely impact the health, amenity, and wellbeing of occupants of schools. In view of the above, the Department strongly objects to the proposed service station on the subject site. The Department's position on the proposal is to reinforce that student health and safety is a priority and it does not support incompatible land uses in close proximity to school sites, particularly service stations in this instance. In addition, the Department notes that there may be other land uses, such as fast food outlets, that could operate within the 'Commercial' zoned land. The operation of these businesses is not supported owing to the health impacts on school students. Should you have any questions in relation to the above, please do not hesitate to contact Sharnie Stuart, Senior Consultant – Land Planning or email sharnie.stuart@education.wa.edu.au.