Shire of Dardanup

APPENDICES

Item 12.2.5B

UNDER SEPARATE ELECTRONIC COVER

ORDINARY COUNCIL MEETING

To Be Held

Wednesday, 28th June 2023
Commencing at 5.00pm

At

Shire of Dardanup
ADMINISTRATION CENTRE EATON
1 Council Drive – EATON

This document is available in alternative formats such as:
~ Large Print
~ Electronic Format [disk or emailed]

KEYPLAN
SCALE: 1 : 5000

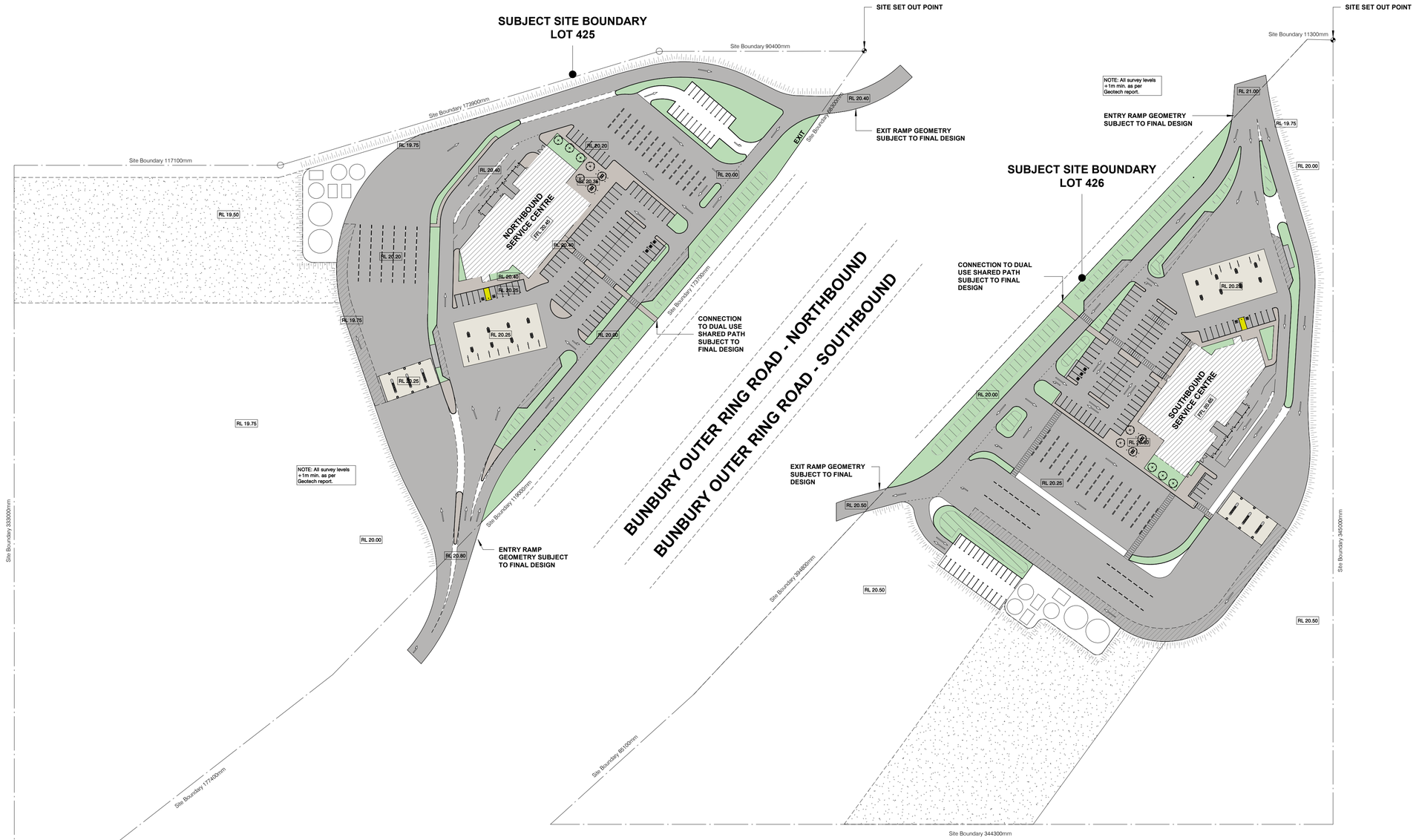
meyer shircore architects

BORR SERVICE CENTRES

LOCATION : LOTS 425 & 426 BUNBURY OUTER RING ROAD, WATERLOO
FOR : SARACEN DEVELOPMENTS PTY LTD

DATE: FEB 2023
REVISION: SK021
SHEET: SK - 1001
SCALE: 1 : 5000 @A1

PROJECT NUMBER
22-9001



LOCATION PLAN

SCALE: 1 : 1000

meyer shircore architects

BORR SERVICE CENTRES

LOCATION : LOTS 425 & 426 BUNBURY OUTER RING ROAD, WATERLOO

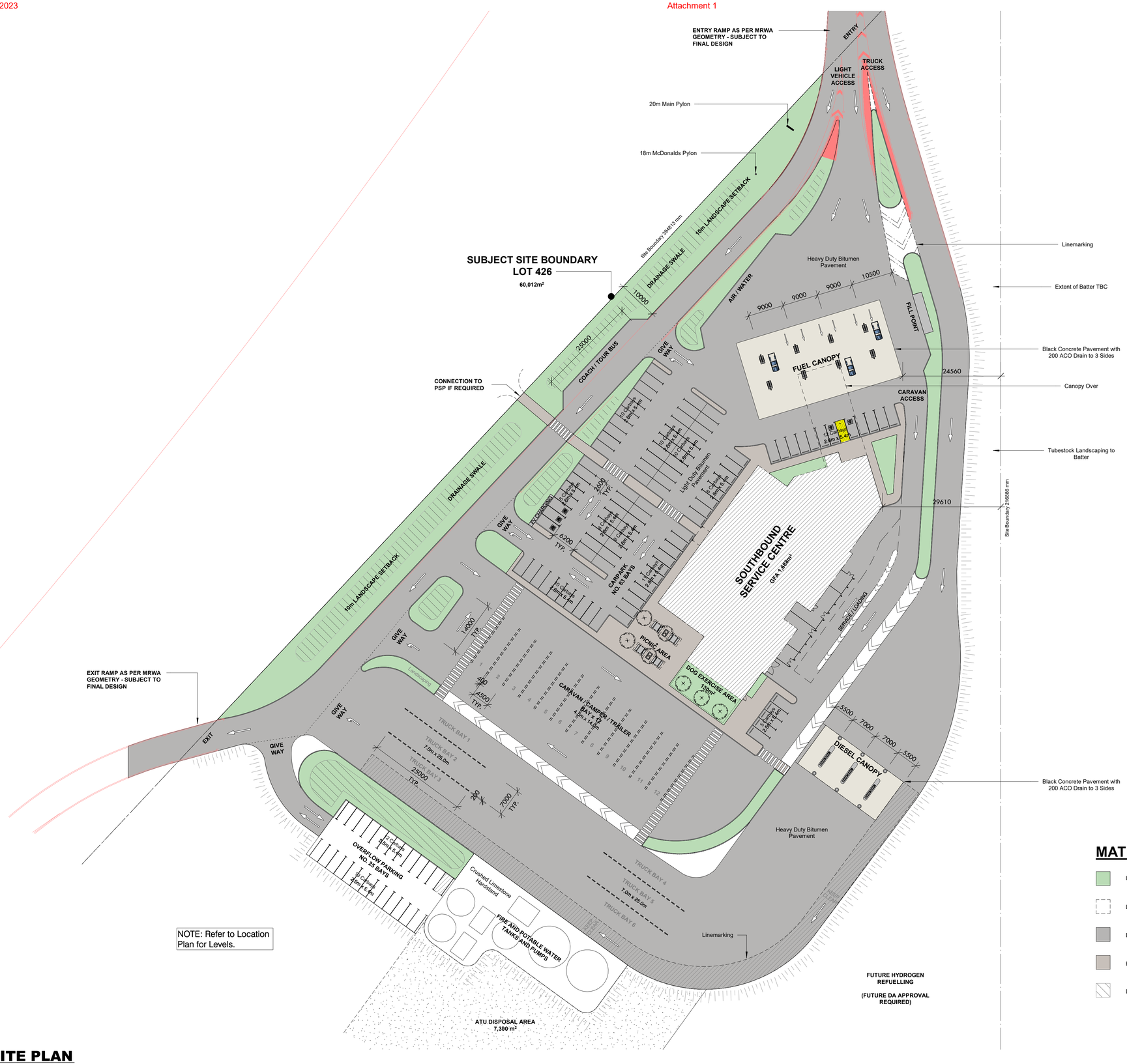
FOR : SARACEN DEVELOPMENTS PTY LTD

0 10 20 30 40 50 100

DATE:	FEB 2023
REVISION:	SK021
SHEET:	SK - 1002
SCALE:	1 : 1000 @A1

PROJECT NUMBER
22-9001

Suite 2, Ground Floor 437 Roberts Road, Subiaco WA 6008
PO Box 1294 Subiaco WA 6904
t: 08 9381 8511 e: msa@meyershircore.com.au



SOUTHBOUND SITE PLAN

SCALE: 1 : 500

MATERIAL LEGEND

- Landscaped Areas
- Linemarking
- Bitumen
- Paving
- Drainage Swale

SITE CRITERIA

1. Landscaped Area

a. Provided	
a. Soft	3,510m²
b. Dog Exercise Area	130m²
Total	**3,540m²**

2. Floor Area (GFA)

a. Tenancy 1	300m²
b. Tenancy 2	160m²
c. Tenancy 3	130m²
d. Tenancy 4	80m²
e. Tenancy 5	50m²
f. Tenancy 6	45m²
g. Other	923m²
Total	**1,688m²**

3. Parking

i. Bays Provided	
a. Carbays	100 Cars
b. Truck Bays	6 Truck
c. Camper/Trailer Bays	12 Camper/Trailer
d. Overflow Parking	25 Cars
e. Coach/Tour Bay	1 Bay
Total	**144**

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BORR SERVICE CENTRES

LOCATION : LOTS 425 & 426 BUNBURY OUTER RING ROAD, WATERLOO

FOR : SARACEN DEVELOPMENTS PTY LTD

0 5 10 15 20 25 50

DATE: FEB 2023
REVISION: SK021
SHEET: SK - 1003
SCALE: As indicated @A1

PROJECT NUMBER
22-9001

NORTHBOUND SITE PLAN

SCALE: 1 : 500

MATERIAL LEGEND

- Landscaped Areas
- Linemarking
- Bitumen
- Paving
- Drainage Swale

SITE CRITERIA

1. Landscaped Area		
i. Provided		
a. Soft		3,781m²
b. Dog Exercise Area		125m²
	Total	**3,906m²**
2. Floor Area (GFA)		
a. Tenancy 1		300m²
b. Tenancy 2		160m²
c. Tenancy 3		130m²
d. Tenancy 4		80m²
e. Tenancy 5		50m²
f. Tenancy 6		45m²
g. Other		916m²
	Total	**1,681m²**
3. Parking		
i. Bays Provided		
a. Carbays		103 Cars
b. Truck Bays		6 Truck
c. Camper/Trailer Bays		12 Camper/Trailer
d. Overflow Parking		20 Cars
e. Coach/Tour Bay		1 Bay
	Total	**142**

meyer shircore architects

BORR SERVICE CENTRES

LOCATION : LOTS 425 & 426 BUNBURY OUTER RING ROAD, WATERLOO

FOR : SARACEN DEVELOPMENTS PTY LTD

0 5 10 15 20 25 50

DATE: FEB 2023
REVISION: SK021
SHEET: SK - 1004
SCALE: As indicated @A1

PROJECT NUMBER
22-9001

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MATERIAL LEGEND

- Landscaped Areas
- Linemarking
- Bitumen
- Paving
- Drainage Swale

SOUTHBOUND SERVICE CENTRE

FFL 20.65

SOUTHBOUND FLOOR PLAN

meyer shircore architects

BORR SERVICE CENTRES

LOCATION : LOTS 425 & 426 BUNBURY OUTER RING ROAD, WATERLOO
FOR : SARACEN DEVELOPMENTS PTY LTD

0 2 4 6 8 10 20

DATE: FEB 2023
REVISION: SK021
SHEET: SK - 2001
SCALE: As indicated @A1

PROJECT NUMBER
22-9001

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PO Box 1294 Subiaco WA 6904
t: 08 9381 8511 e: msa@meyershircore.com.au

MATERIAL LEGEND

- Landscaped Areas
- Linemarking
- Bitumen
- Paving
- Drainage Swale

NORTHBOUND SERVICE CENTRE

FFL 20.45

NORTHBOUND FLOOR PLAN

SCALE: 1 : 200

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BORR SERVICE CENTRES

LOCATION : LOTS 425 & 426 BUNBURY OUTER RING ROAD, WATERLOO

FOR : SARACEN DEVELOPMENTS PTY LTD

0 2 4 6 8 10 20

DATE: FEB 2023
REVISION: SK021
SHEET: SK - 2002
SCALE: As indicated @A1

PROJECT NUMBER
22-9001

Suite 2, Ground Floor 437 Roberts Road, Subiaco WA 6008
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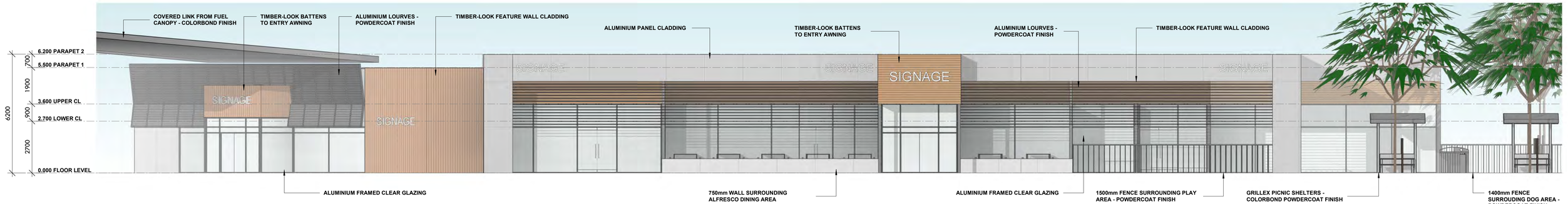
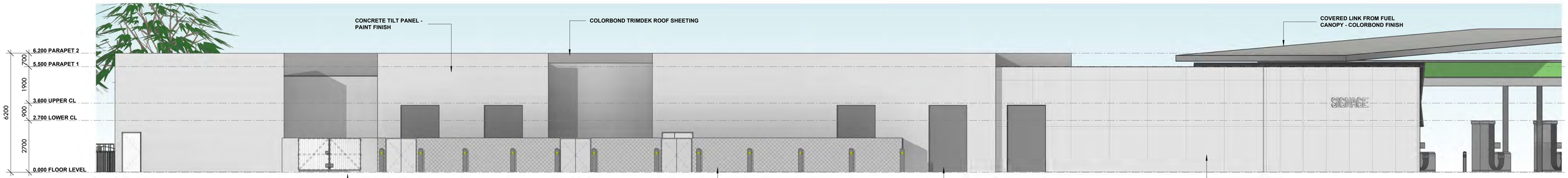


SOUTHBOUND NORTH-WEST

SCALE: 1 : 100

SOUTHBOUND NORTH

SCALE: 1 : 100



SOUTHBOUND SOUTH-EAST

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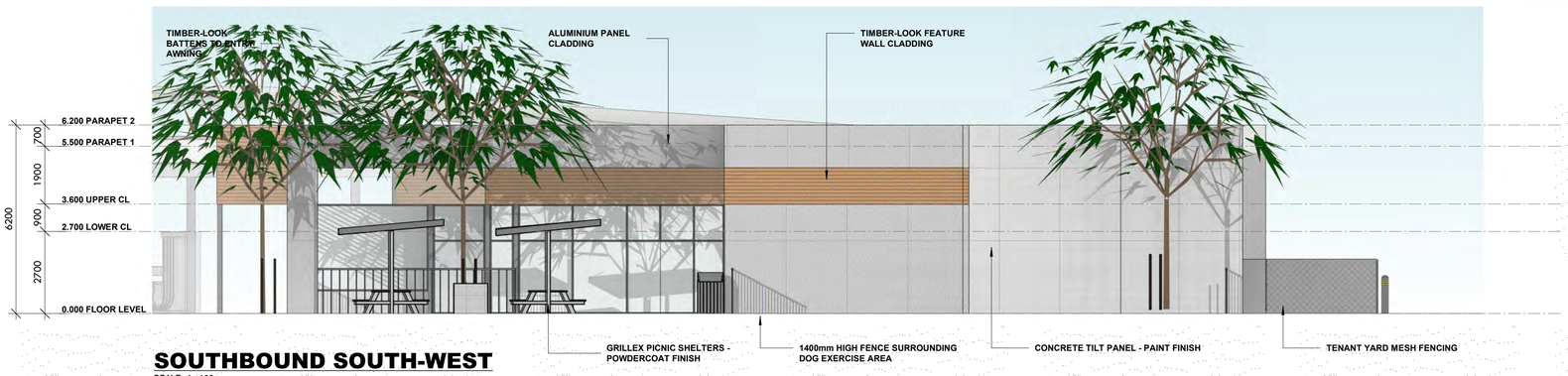

SOUTHBOUND SOUTH-WEST

SCALE: 1 : 100

SIGNAGE LEGEND

- Fuel Brand Signage
- Building Signage

BORR SERVICE CENTRES

LOCATION : LOTS 425 & 426 BUNBURY OUTER RING ROAD, WATERLOO

FOR : SARACEN DEVELOPMENTS PTY LTD

0 1 2 3 4 5 10

DATE: FEB 2023
REVISION: SK021
SHEET: SK - 3001
SCALE: 1 : 100 @A1

PROJECT NUMBER
22-9001

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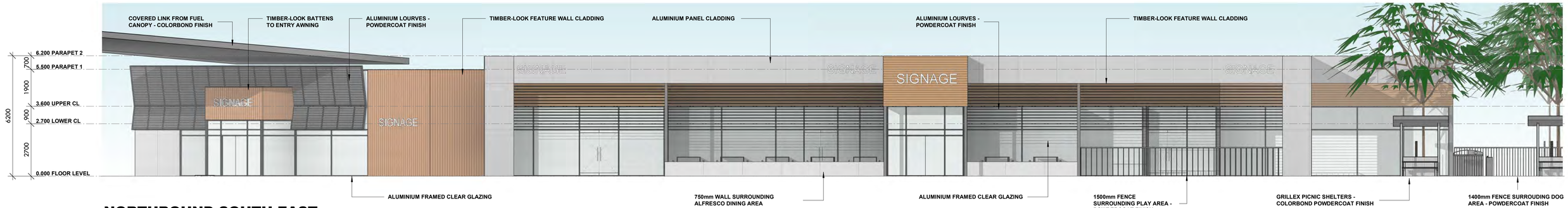
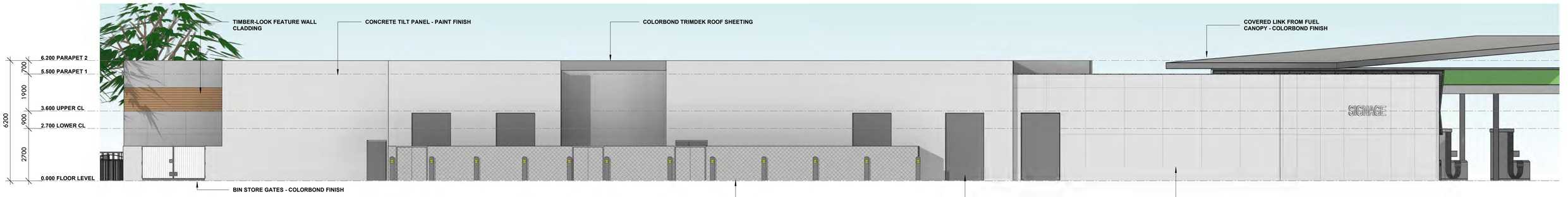


NORTHBOUND SOUTH-EAST

SCALE: 1 : 100

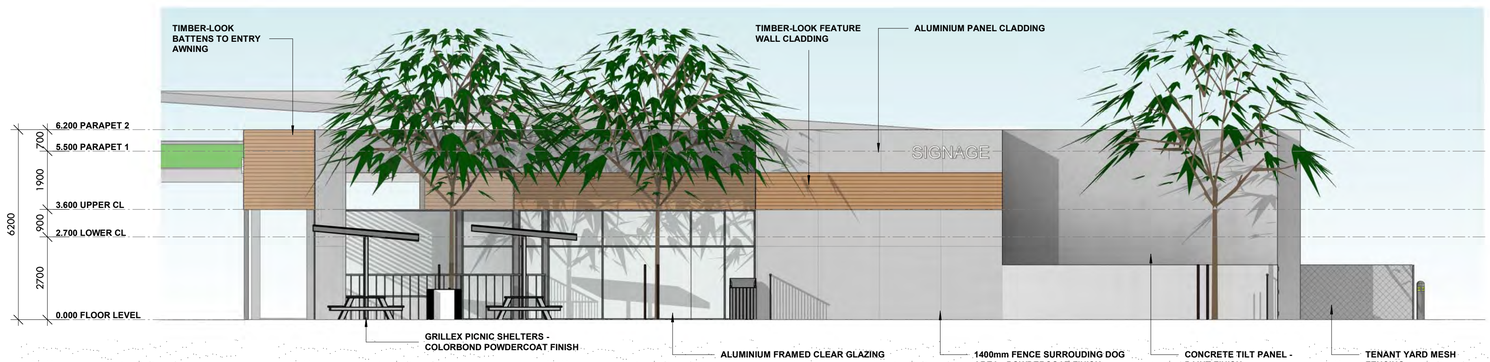
NORTHBOUND SOUTH

SCALE: 1 : 100



NORTHBOUND NORTH-WEST

SCALE: 1 : 100



NORTHBOUND NORTH-EAST

SCALE: 1 : 100

SIGNAGE LEGEND

- Fuel Brand Signage
- Building Signage

meyer shircore architects

BORR SERVICE CENTRES

LOCATION : LOTS 425 & 426 BUNBURY OUTER RING ROAD, WATERLOO

FOR : SARACEN DEVELOPMENTS PTY LTD

0 1 2 3 4 5 10

DATE: FEB 2023
REVISION: SK021
SHEET: SK - 3002
SCALE: 1 : 100 @A1

PROJECT NUMBER
22-9001

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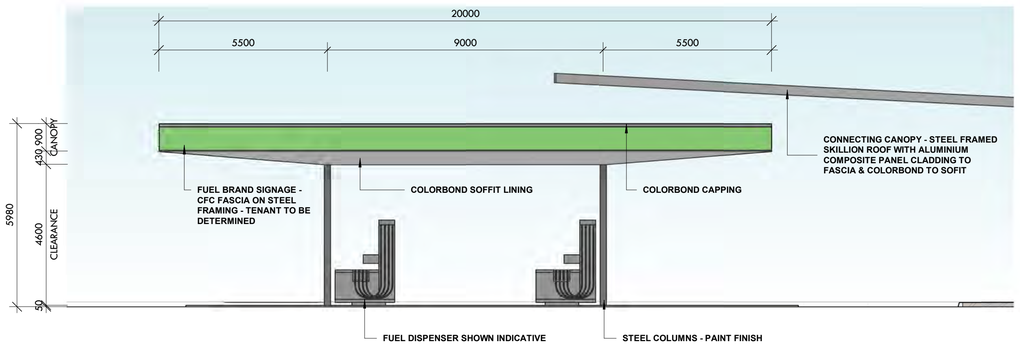
TYPICAL FUEL CANOPY ELEVATION 1

SCALE: 1 : 100



TYPICAL FUEL CANOPY ELEVATION 2

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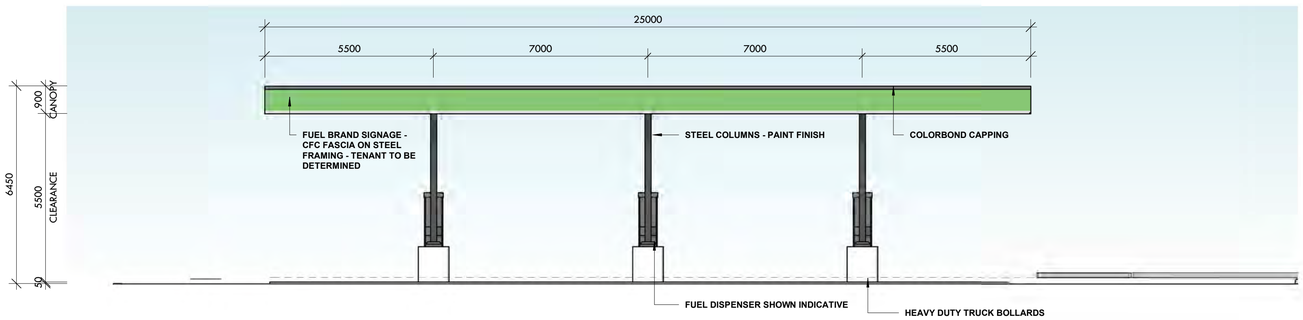

TYPICAL DIESEL CANOPY ELEVATION 1

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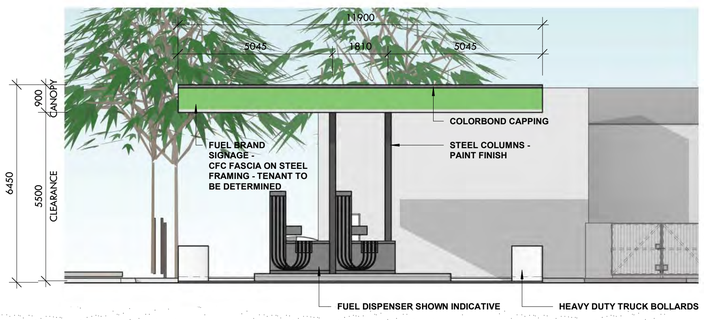
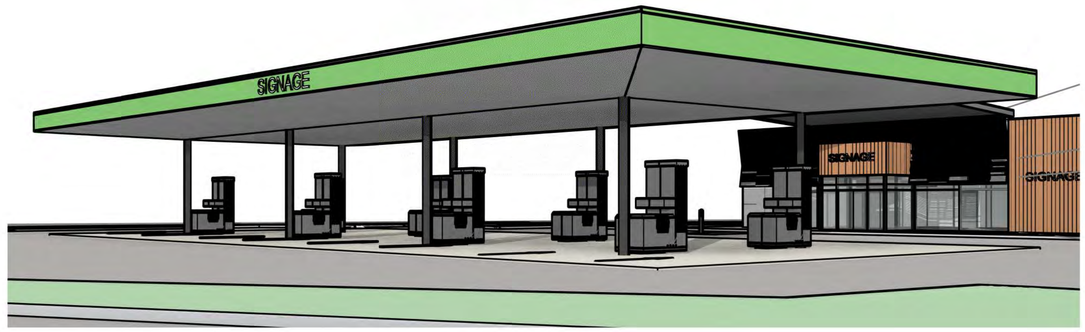


TYPICAL DIESEL CANOPY ELEVATION 2

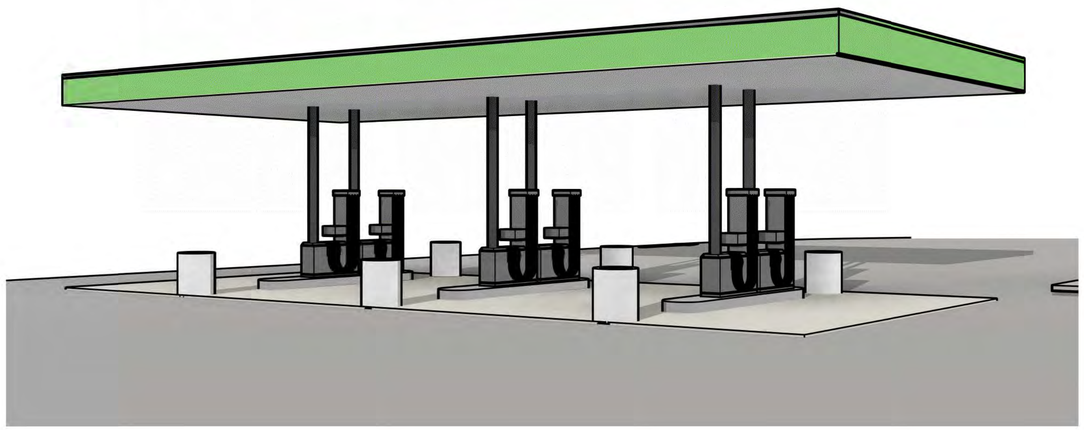
SCALE: 1 : 100

SIGNAGE LEGEND

- Fuel Brand Signage
- Building Signage



FUEL CANOPY VIEW



DIESEL CANOPY VIEW

meyer shircore architects

BORR SERVICE CENTRES

LOCATION : LOTS 425 & 426 BUNBURY OUTER RING ROAD, WATERLOO

FOR : SARACEN DEVELOPMENTS PTY LTD

0 1 2 3 4 5 10

DATE: FEB 2023
REVISION: SK021
SHEET: SK - 3003
SCALE: 1 : 100@A1

PROJECT NUMBER
22-9001

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Harley Dykstra

PLANNING & SURVEY SOLUTIONS

DOCUMENT CONTROL

Control Version	Date	Status	Distribution	Comment
A	17/02/2023	Draft	Client	Draft for Comment and Approval
B	22/02/2023	Draft	Harley Dykstra	Client Review
C	23/02/2023	Final	Local Authority	For Preliminary Consideration
D		Final	JDAP	For Determination
E		Final	JDAP/Local Authority	Updated Report following Agency Referral/Advertising

Prepared for: Saracen Developments Pty Ltd

Prepared by: KS

Reviewed by: MJ / SB

Date: 23nd February 2023

Job No: 22454

Version: C

DISCLAIMER

CONTENTS

FIGURES

TABLES

APPENDICES

1. INTRODUCTION

This submission has been prepared by Harley Dykstra on behalf of Saracen Developments Pty Ltd (the Proponent).

This application seeks development approval for two Service Centres (and associated pylon signage) on the Bunbury Outer Ring Road (BORR), at Waterloo (the 'subject site'). The BORR has been designed to cater for the long-term planning needs of the expected future population of the Greater Bunbury Region, will improve freight efficiency and reduce traffic congestion between the north and south of Bunbury. The 27km, 4 lane highway will link Forrest Highway at Australind to Bussell Highway at Gelorup. Construction of the BORR has commenced with completion expected late in 2024.

This proposal is in direct response to a public invitation by Main Roads of Western Australia (MRWA) for the development of Service Centres on the BORR. On the 25th November 2021, MRWA held an open session titled *BORR - Briefing to Industry* at the MRWA Bunbury offices, where the opportunity for Service Centres on the BORR was announced and the *MRWA Guideline – Bunbury Outer Ring Road Service Centre/s Development* became available and was explained. Subsequently, in May 2022, MRWA advertised a formal invitation to industry. The Proponent and Harley Dykstra immediately responded to the public invitation, indicating to MRWA that it had secured the required land holdings for two BORR Service Centres at Waterloo. Since May 2022, the Proponent's design and development team has continuously engaged in dialogue and design reviews with MRWA. In accordance with the *MRWA Guideline,* the Proponent has achieved preliminary approvals from MRWA for the site location, the concept design of the Access Ramps, and the on-site traffic and parking layout. As part of the Development Approval process the MRWA is a referral authority and will confirm its position directly to the JDAP.

The Proponent is a highly experienced developer with a track record of successful projects, and specifically has experience with the delivery of highway service centres, fuel stations, café, retail and quick serve restaurants. The Proponent was the development partner responsible for the Forrest Highway Service Centres at West Pinjarra. The project architects, Meyer Shircore, undertook the Service Centres at both West Pinjarra and Baldivis. This comprehensive project expertise has provided a series of lessons learned which have been incorporated into the design for the BORR Service Centres at Waterloo.

The proposed Service Centres are located opposite each other, referred to as Northbound and Southbound and they have been designed to encouraged travellers to stop and take a break with refuelling opportunity, a wide range of food options and high-quality respite amenities. Parking areas are provided for passenger vehicles, vehicles with caravans and trailers, tour buses, and trucks as required by the MRWA Guideline. As part of a future-proofing approach the site masterplan includes for; (i) a roll-out of electric vehicle charging and (ii) area allocation for Hydrogen Truck Refuelling - noted as subject to further DA Approval.

The Service Centres core operations will be open 24 hours a day seven days a week, providing continuous access to refuelling, refreshments, and public amenities. The individual food tenancies all have extended trading hours to be determined on an individual basis against customer demand.

Highway Service Centres typically have large pylon signs which create a landmark gateway for the location. The design proposal includes for two pylon signs to each site, comprising a 20m high main pylon sign and an 18m McDonalds pylon sign. The pylon sign designs are included in the DA Drawings set and these are a mandatory requirement for the anchor tenants. In addition, MRWA Service Centre standards include a requirement for 3 large blue and white "Service Centre" notification signs for the road reserve located at 5km, 1km and 500m intervals. All on-site building and identity signage will be controlled and restricted to the areas indicated on the approved DA drawings.

The proposed Service Centre design includes the following:

Table 1 – Tenancy Summary

Refuelling	Food Options	Service Amenities
General Refuelling (under canopy)	Tenancy 1 - Fuel Tenancy Shop	Internal Dining
Fuel Tenancy Paypoint	Tenancy 2 – Food/ Café	Alfresco Dining
Truck Refuelling (under canopy)	Tenancy 3 – Quick Serve Restaurant	Public Toilets & Amenities
	Tenancy 4 - Quick Serve Restaurant	Children's Playground
	Tenancy 5 - Quick Serve Restaurant	Dog Exercise Area
	Tenancy 6 – Kiosk/ Quick Serve Restaurant	Picnic Area
		Truckers Lounge & Amenities
		Electric Vehicle Charging

Detailed Plans of the Service Centre development are attached in **Appendix A**.

It is respectfully requested that the JDAP favourably consider the proposal for two Service Centres on the BORR at Waterloo.

Perspectives of proposed facilities

2. SITE CONTEXT

2.1 PROPERTY DESCRIPTION

The BORR Service Centres are proposed to be located adjacent to the Bunbury Outer Ring Road on a portion of 687 Waterloo Road and 232 St Helena Road, Waterloo. The Proponent purchase agreement for the subject land holdings is conditional upon the receipt of authority approvals required to develop the Service Centres. A separate portion of both properties was recently resumed by Main Roads WA for the purpose of construction the BORR.

It is proposed that a subdivision application be lodged with the Western Australian Planning Commission (WAPC) in due course to excise the portion of land required for the Service Centres from the main parcel of land. While creating separate parcels for the Service Centres, it will enable the current landowner to continue rural activities on the remaining balance of the property. A copy of the proposed subdivision is attached at **Appendix C.**

A summary of the land particulars is provided in **Table 2** below and the Certificates of Title are attached at **Appendix B**.

Table 2 – Summary of Property Details

Lot number:	Deposited plan:	Volume/ Folio:	Lot area:	Registered proprietors:
426	418576	2995/943	42.8236ha	Willoughby Grazing PTY LTD
425	418576	2995/943	40.5640ha	Willoughby Grazing PTY LTD

2.2 SITE LOCATION AND CHARACTERISTICS

The subject site is situated approximately 20km east of the Bunbury City Centre and approximately 7km north of the Dardanup townsite (refer to **Figure 1** below). The Service Centre sites are located on the middle section of the Bunbury Outer Ring Road, which is depicted in **Figure 1**.

The subject land holding contains one dwelling and associated outbuildings, it was historically cleared of bushland, now being open pastureland consistent with its use for low key rural purposes. The southern site contains an existing dwelling and outbuildings.

An Aerial Photograph is included as **Figure 2** below which depicts the nature of existing land use and shows the proposed subdivision of the land creating Lot A (approximately 7ha), the Northbound Service Centre site and Lot B (approximately 6ha), the Southbound Service Centre site.

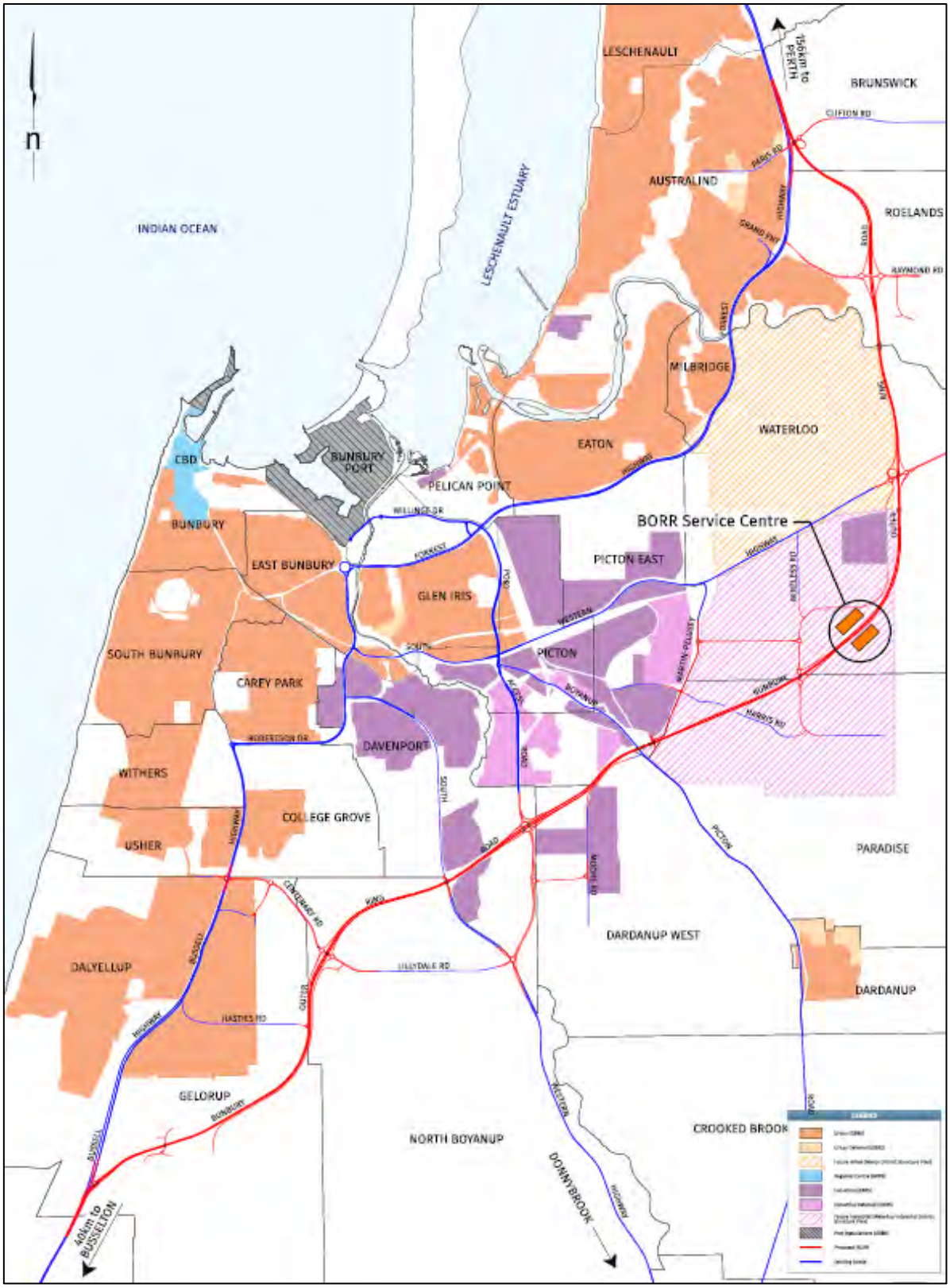


Figure 1 – Location Plan (subject site outlined in red)

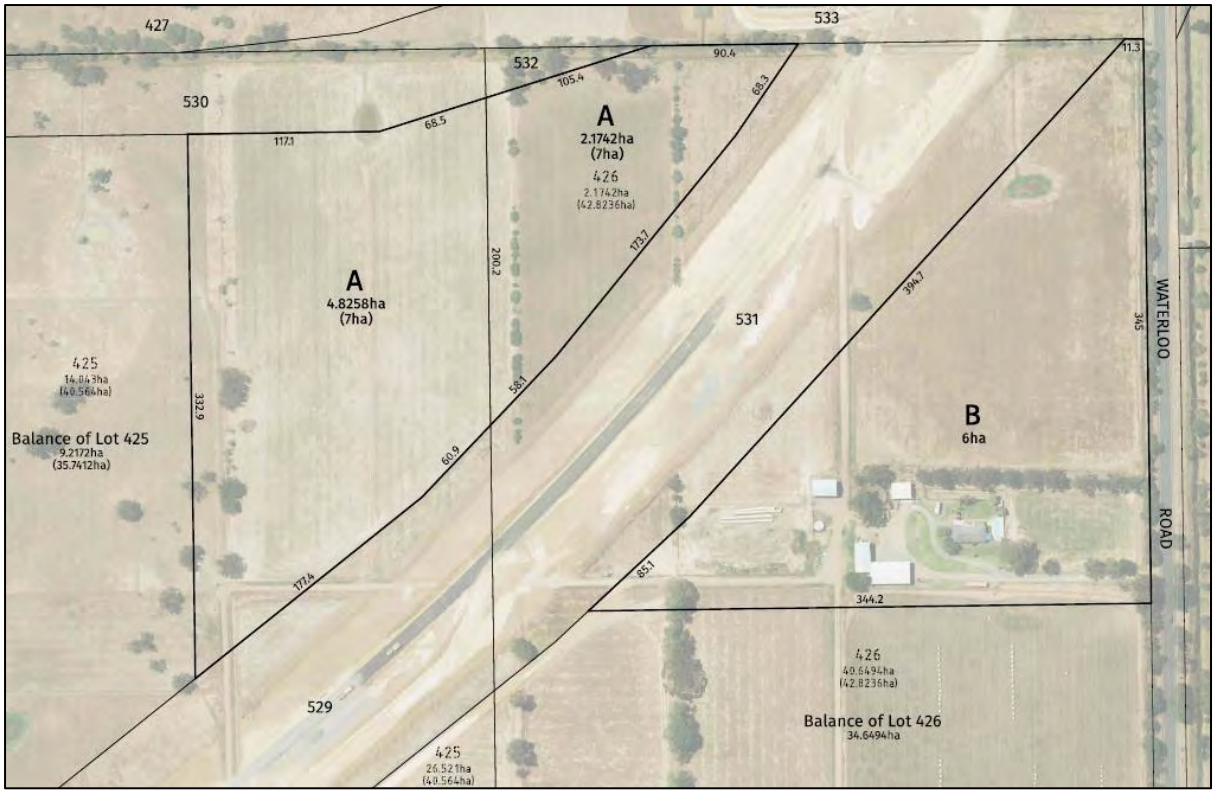


Figure 2 – Aerial Photograph and Proposed Subdivision

2.3 LANDFORM, SOILS AND HYDROLOGY

The subject site is relatively flat, ranging in height of approximately 20m AHD in the south- eastern corner to 18m AHD in the north-western corner. A Feature Survey of the subject site is included as **Appendix D.**

WML Consulting Engineers have undertaken a series of technical investigations over the subject sites. A geotechnical investigation has confirmed that the land is capable of development and a Site and Soil Evaluation (SSE) was prepared in accordance with the Government Sewerage Policy 2019 (GSP19) and Australian Standards AS1547:2012 'On-Site domestic-wastewater management'. A copy of the resultant Geotechnical Report is included at **Appendix E**.

The Geotechnical Report investigates the suitability of the site to support the proposed development in terms of the geotechnical matters including:

- Assessment of the existing subsurface soil and groundwater conditions across the site,
- Preliminary site classification(s).
- Bearing capacity and settlement recommendations for a range of footings.
- Geotechnical design parameters
- Recommendations and geotechnical design parameters for earth retaining structures,
- Recommend appropriate site preparation procedures, including compaction criteria,
- Advice on the re-use of in situ soils as fill,
- Design infiltration rates for stormwater drainage design, and
- Provide a subgrade California bearing ratio (CBR) value for pavement design.

Fieldwork and testing of the site conditions was undertaken in late winter 2022.

The report concludes the site is geotechnically suitable for development as proposed with remediation of the ground and a sand pad of free draining granular fill to raise the development in the order of 1m beneath buildings and pavement.

2.4 BIODIVERSITY, VEGETATION AND FAUNA

Previous studies undertaken of the Wanju and Waterloo areas indicate that as the land has been historically used as cleared farmland, with area offering little in terms of biodiversity and natural assets. There are no Ramsar listed sites or wetlands of national importance within the site or immediate surrounds.

The area is considered to have wetland characteristics which is supported by the Geomorphic Wetland Database identifying the area as a Multiple Use Wetland.

2.5 BUSHFIRE HAZARD

The subject land is not designated as bushfire prone by the Fire and Emergency Services Commissioner as illustrated on the Department of Fire and Emergency Services mapping at **Figure 3** below. No further studies are considered to be required in this regard. Regardless of bushfire requirements the site management will include an Emergency Egress Plan.

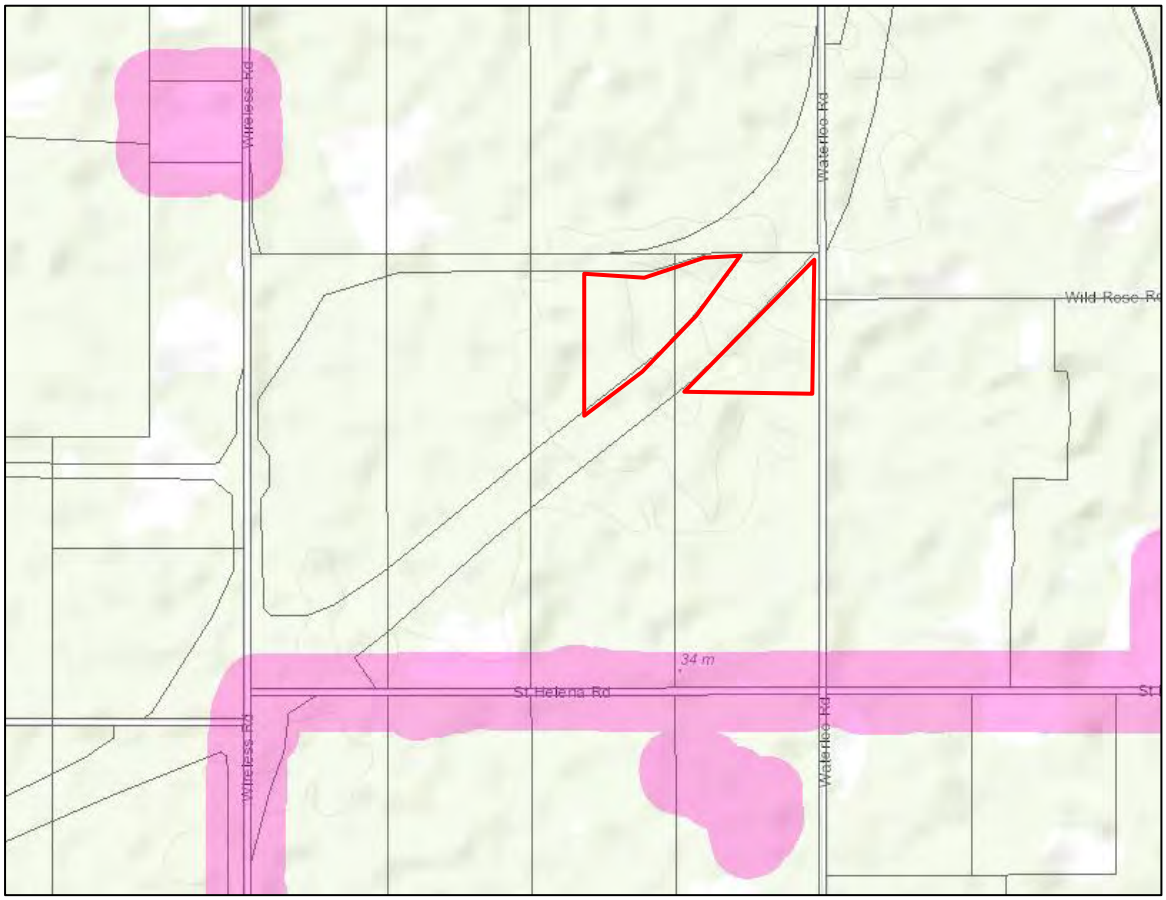


Figure 3 – Bushfire Prone Areas Mapping (subject area outlined in red)

2.6 ABORIGINAL HERITAGE

No Aboriginal sites have been recorded in the subject land area. This has been confirmed by a search of the Department of Planning, Lands and Heritage database.

2.7 EXISTING SERVICES & PROPOSED ON-SITE SERVICES

Existing Servicing Arrangement:

The existing house on the southern portion of the site is currently serviced by overhead power.

The site is currently unserved by reticulated water or sewer with the existing dwelling relying on their own systems to provide potable water and effluent disposal.

The site is serviced through the Harvey Water Irrigation Scheme which delivers untreated water for agricultural purposes. An open channel is situated running along the western side of Waterloo Road.

Proposed Servicing Arrangement:

Incoming Power – a new power network is being installed to the BORR road reserve and the Proponent has made applications to Western Power for incoming power connections and site transformer. It is anticipated that a service easement under the BORR will be required to provide power to both sites, this will require a Western Power easement arrangement with MRWA. A further private easement may be required to connect other services between sites to provide redundancy back-up services such as potable water, communications.

Photovoltaic – provisions for a large roof mounted commercial solar power system is proposed for both sites, with the spatial arrangement to accommodate future battery storage support.

Water – the sites will not be served by scheme water, and will require groundwater bores to be installed under the approval and licencing by the Department of Water and Environment (DWER). The groundwater will be subjected to Reverse Osmosis treatment (RO) to generate a potable water supply. The design will include large treatment and holding tanks to provide a sufficient capacity for the Service Centres year-round. The potable water system will be subject to regular test audits as required by DWER regulations. The design will also include allowance for water-truck fill points to ensure that there is a redundancy option if the storage capacity is lost or insufficient during peak periods.

Stormwater Management – an Urban Water Management Plan (UWMP) will be provided prior to Building Licence for stormwater management during construction. The site's stormwater management design will ensure drainage run-off is contained within the site. Stormwater storage will utilise the large extent of land area available on the lot, optimising the ability to manage overland drainage flows and dispersal. All vehicle hardstand areas will have enviro-traps to prevent contaminated water from discharging to the wider environment. Civil design solutions will ensure risk mitigation principles are incorporated to prevent contamination of adjacent agricultural drains.

On-Site Sewerage System – the Service Centres will be served by a custom designed industry leading on-site alternative effluent disposal system. The proposed Anerobic Treatment Unit (ATU) has sufficient nutrient retention capacity to exceed Department of Health minimum standards and regulations. The treated output disposal area associated with the ATU will be designated on the site,

landscaped and sized to meet design standards. However, the quality of the effluent at tank outlet will not rely on further treatment within the disposal area. The ATU will be a FujiClean Commercial STP CE6000 or similar quality specification.

3. PROPOSED DEVELOPMENT

3.1 DEVELOPMENT SUMMARY

This application seeks Development Approval for both BORR Southbound Service Centre and BORR Northbound Service Centre. The design of the BORR Service Centres are similar in design and identical in features. The design intent is to provide persons travelling on the BORR with safe entry and exit ramps, safe site circulation, high quality amenities, clean convenient respite facilities, and a range of food and refreshment options.

Each Service Centre has the following components:

- Fuel refilling for light vehicles (8 paired bowsers/16 refuelling bays) and associated canopy.
- Fuel refilling for heavy vehicles (3 paired bowers/6 refuelling bays) and associated canopy.
- Tenancy 1 - 300m² Fuel Tenancy Shop, with a retail floor space of 101m², BOH 199 m²
- Tenancy 2 - 160m² Food Retail & Café, with a retail floor space of 140m², BOH 20m²
- Tenancy 3 - 130 m² Quick Service Restaurant.
- Tenancy 4 - 80m² Quick Service Restaurant.
- Tenancy 5 - 50m² Quick Service Restaurant.
- Tenancy 6 - 45m² Kiosk/ Quick Service Restaurant.
- Main Circulation Area 194m² - for general movement, refuse bins, planters and ordering stations.
- Internal Dining Area 166m², with 90 seating provision (1.8 m² per seat).
- Alfresco Dining 123m², with 60 seating provision (1.8 m² per seat +15m² circulation).
- Public Amenities - Male, Female, UAT and Parents Room.
- Truckers Lounge and Amenities, Male and Female with showers, total floor space of 80m²
- Outdoor children's play area of 72m², shaded over.
- Picnic Area
- Dog exercise area of 125m² and 130m², fully fenced and landscaped.
- Carparking provision with 100 bays including disabled bays.
- Parking provision for caravan/trailer parking (12), truck parking (6), tour coach parking (1), air/water station (3).
- Overflow Parking provision with an additional 20 / 25 bays
- Service Delivery Drive-Thru Lane, unloading areas, waste collection, waste yard, common plant area and individual tenancy service yard areas.
- 4 EV charging bays initially, (possibly up to 10 EV bays), with capacity for future expansion.
- Potable Water Storage Tanks with RO Treatment Plant.
- Fire Tanks & Pump Assembly.
- Anerobic Treatment Unit (ATU) with designated effluent disposal area.
- Underground fuel tanks and filling points, with dedicated fuel truck parking bay.
- Landscaping
- Signage, two (2) large pylon signs adjacent to the BORR, Fuel Tenant Branding and Tenant Building Signage.

The siting, layout and design of the Service Centre is illustrated on the Development Plans at **Appendix A**.

Staffing:

It is proposed that the Service Centre will run 24 hours per day, 7 days per week. It is anticipated approximately 13 employees to be on site at any one time during the average trading period. The number of employees will vary depending on the time of day and marginally increases during public holidays and peak periods. A cleaner will work across both sites in shifts, alternating attendance to ensure that the public areas, dining areas, external areas and amenities are kept clean, as well as monitoring the site waste management.

3.2 CONSULTATION

Initial consultation with agencies and Pre-lodgement meetings have been undertaken in relation to the proposed Service Centre. The consultation is summarised in the **Table 3** below:

Table 3 – Summary of Consultation

Agency	Consultation Type	Outcomes
Shire of Dardanup Main Roads WA	Initial Shire meeting Pre-lodgement meeting	An informal initial meeting was held with the Shire conveying the intent to prepare an application for the Service Centres. The proponent (Saracen Properties) and the applicant (Harley Dykstra) outlined the proposal for the Service Centre and noted the similar Service Centres operating at West Pinjarra and Baldivis. Discussion was had relating to the operation of the site, policies to be addressed in the application and access. The Shire officers and Main Roads representative were generally supportive of the proposal pending the demonstration that policy objectives can be met and the formal assessment of the application.
Main Roads WA	Meetings, emails and phone discussions	Following preliminary concepts reviewed by Main Roads WA, review of the design prepared for the exit/entry lanes and internal circulation were agreed upon. MRWA continual engagement regarding meetings and detail design workshops. Support from MRWA in relation to the access and egress ramps and internal circulation.
DPLH	Pre-lodgement meeting	The proponent (Saracen Properties) and the applicant (Harley Dykstra) outlined the proposal for the Service Centre. Discussion related to the procedure for lodgement of the Development Application in terms of the Planning Control Area subject to the BORR and zoning of the site. Confirmation of the procedure for lodging documentation was to be confirmed by officers of DPLH and the applicant advised accordingly.

3.3 TENANCIES

The range of proposed tenancy uses are Fuel/convenience store, Café, Quick Serve Restaurant (QSR) and kiosk. There are no drive through food services as this is not permitted by MRWA policy. There is a maximum total of 150 seats to serve the dining-in patrons, in a variety of configurations available being 90 seats internal and 60 seats alfresco. (Refer to WAPC DC Policy 1.10 – August 2016 – Freeway Service Centres)

Tenancy Patrons

Tenancy Patron behaviour trends observed with comparable Service Centres include:

- A high proportion of visitors stop briefly at the site to only use the amenities.
- A significant proportion of tenancy patrons choose not to use the dine-in facilities, increasing rapid parking turnover.
- QSR Online Apps promote patrons ordering prior to reaching the Service Centre which reduces patron stop time, and further increases parking turnover.
- The dining-in time of tenancy patrons tends to be much less than at a comparable metropolitan QSR.
- The Picnic Area is predominantly used by patrons with caravans and RVs (being self-sufficient for food & beverage).

In summary, the 6 Tenancies net lettable areas are detailed in Table 4 below.

Table 4 – Tenancy Areas

Tenancy No	(NLA)	Tenancy Type
Tenancy No T1	300m²	Fuel Pay Point/ Cafe / Convenience Store (101m² convenience retail area, 199m² BOH)
Tenancy No T2	160m²	Café / Takeaway / Retail / Produce (140m² convenience retail area, 20m² BOH)
Tenancy No T3	130m²	QSR
Tenancy No T4	80m²	QSR
Tenancy No T5	50m²	QSR
Tenancy No T6	45m²	QSR / Kiosk

3.4 AMENITIES

Details of the amenities provided can be found on the site and detail plans at **Appendix A**, and as per the proposed design layout and description below.

Public Amenities

The public amenities are available 24 hours a day, and comprise male, female, UAT and a parent room. The provision of male and female amenities have been split into two areas to facilitate ease of cleaning regime to ensure quality and hygiene standards are optimised at all times. There is an ambulant closet pan in each of the male and female toilet areas. The Parent Room also includes a

closet pan in addition to change table and handbasin. CCTV security monitors the communal corridor which is also visible from the external courtyard.

The National Construction Code (NCC) calculation for amenities provision is exceeded. Based on the 150-seat dining area maximum capacity the amenities provision required under the NCC is:

Male:	1 closet pan, 2 urinals, 2 handbasins
Female:	3 closet pans, 2 handbasins
UAT:	1 closet pan, 1 handbasin

The actual amenities provision proposed for each Service Centre is based on the Proponent's experience drawn from operating comparable Service Centres, as follows:

Male:	4 closet pan, 4 urinals, 4 handbasins
Female:	6 closet pans, 4 handbasins
UAT:	1 closet pan, 1 handbasin
Parent:	1 closet pan, 1 handbasin, 1 change table

Trucker's Lounge

A separate trucker's lounge with dedicated amenities provides a respite area for long haul truck drivers. It has discreet access from the main dining area as well as external access from the truck parking area. The lounge area has a tea / coffee station, meals area and lounge with TV. The trucker's lounge is accessible 24 hours a day. A cleaner's store is included to service all amenities and public areas. CCTV security monitors the lounge area.

The amenity provisions for the Trucker's Amenities exceed the minimum requirements of the NCC, and are based on experience drawn from comparable Service Centres:

Male:	1 closet pan, 2 urinals, 1 handbasins, 1 shower
Female:	1 closet pan, 1 handbasin, 1 shower

Figure 4 - Public Amenities & Trucker's Lounge Design Layout

3.5 BUILDING DESIGN AND SITE LAYOUT

Building functionality has been undertaken to reflect that of other Freeway Service Centres on Forrest Highway and Kwinana Freeway with a local character design. The site layout promotes safe and efficient traffic and pedestrian circulation as well as ingress and egress. The development has been orientated to optimise awareness by passing traffic travelling north and south on the BORR and has also been informed by a Traffic Impact Assessment (included at **Appendix F**). The site will be accessible only from the BORR. MRWA policy does not permit vehicle connection to the local traffic network from Service Centres, therefore traffic from local roads will be unable to access the site.

The site was selected to accommodate the distance separation requirements from grade separated interchanges at Wireless Road and South-Western Highway while addressing the appropriate distance separation from other Service Centres and Roadhouses located between Perth Metro area and Busselton.

The Northbound site has an approximate area of 7ha and the Southbound site and area of 6ha, with these land holdings being adequate to accommodate all the facilities, traffic movements, parking and servicing requirements for a benchmark standard Service Centre. The high-quality clean facilities and range of offering provided at the Service Centres will encourage drivers to avoid fatigue by taking a travel break in pleasant surrounds.

The proposed building evokes a rural character while also expressing a modern clean image, it incorporates extensive front and side glazing, wide verandahs, louvered screens, feature timber look panelling and well designed integrated signage. The building design has a contemporary façade with the use of a natural colour palette to compliment the rural landscape and outdoor spaces. The BORR Service Centres will provide a gateway image for the Ferguson Valley region.

A perspective of the built form is shown below. Further images can be seen in **Appendix A**.

Northbound centre front and side perspective

3.6 SITE SETBACKS

The Service Centres will be setback from the BORR reserve with a 10m landscape buffer, internal accessways and parking. The setbacks provided from lot boundaries are as follows:

<u>Southbound:</u>

- Setback from BORR reserve - 46m to fuel canopy
- Setback from southern boundary - 85m water tanks.
- Setback from eastern boundary (Waterloo Road): 26.5m to truck fuel canopy.

Northbound:

- Setback from BORR reserve – 29.2m to fuel canopy
- Setback from northern boundary – 6.8m to water tanks.
- Setback from western boundary - 129m to water tanks.

Further details of the site setbacks can be found by viewing the site plan in **Appendix A.**

3.7 TRAFFIC AND NOISE

The proposed Service Centre is not in itself a high traffic generating activity. The development would result in relatively low additional traffic generation, where the vehicles attending the site are travelling on the BORR only with access to local roads not permitted. Further, customers attending the site would only do so for a short period of time and would not have a high expectation of acoustic amenity given traffic noise is inherently associated with both the operation of a Service Centre and due to the adjacent BORR.

As the surrounding land is primarily vacant and used for rural purposes and the operation of the BORR will generate traffic and associated noise, site specific acoustic reporting for the Service Centres is not considered to be necessary.

3.8 ACCESS AND CAR PARKING

MRWA Access Ramps

The access ramps to the Southbound and Northbound Freeway Service Centres are specified, controlled and directed by MRWA. The Proponent employs an experienced civil engineering consultant who works in conjunction with MRWA to progress MRWA's initial concept design and through a series of design reviews maintains MRWA approval before completing the documentation for tender and construction. The access ramps have highway standards lighting to the extents required by MRWA policy. The Access Ramps are constructed at the cost risk of the Proponent and upon completion are handed over to MRWA as a State Asset. The Proponent is required to enter into a Deed of Agreement with MRWA which controls all ongoing aspects of compliance, management, and maintenance. Designs of the entry and exit ramps are shown in **Appendix G.**

Traffic Impact Assessment

The site planning of both Service Centres has been conceived with the intensive input of both MRWA and a highly experienced traffic engineer. The overriding design intent of the Service Centre's masterplan has been to provide safe movements for overall traffic flow, pedestrians, carpark, truck movement and truck parking, delivery/ service vehicles and refuelling trucks.

A Traffic Impact Assessment (TIA) has been prepared by Cardno **(Appendix F)** which demonstrates that all forms of traffic can effectively enter, safely circulate within the site, and safely exit back onto the BORR. Sweep path analysis has been undertaken which demonstrate Rav7 (the largest heavy vehicles that will enter the site) can be accommodated as well as all other traffic movements, including trailer/caravan movements, anticipated to occur within the development.

Peak Periods – Through Lane

The masterplan design of both sites is legible and simple, with lane design and directional signage making it very easy for drivers to make choices and navigate the site upon initial arrival. The traffic design layout makes allowances for peak period traffic with clarity of traffic flows, and by including a traffic 'through lane' which directly connects the entry point to the exit lane. This through lane also facilitates the carparking functionality and overall traffic flows by optimising convenience and safety for exiting vehicles. The through lane also has a layover bay for a tour coach bus.

At peak periods, the inclusion of the through lane allows an arriving vehicle to safely bypass the refuelling forecourt and carpark, instead allowing the visitor to depart directly back onto the BORR or alternately reach the overflow carpark via the internal circulation. This is particularly important when there may be long queues forming at the fuel canopy, and the carpark is at full capacity. The Service Centre cannot continue to absorb demand exceeding its service capacity and still provide the optimum visitor experience of convenience and timely service. At peak period demand, it is an operational preference for the visitor to bypass the Centre rather than have a negative experience. The assessment of carparking provision needs to consider that there is no operational benefit for increasing carbays beyond the proposed amount.

Parking Provisions

The car parking requirements for the facility have been considered having regard to Appendix IIA – Car Parking Table of the Shire of Dardanup's Local Planning Scheme (LPS3) No. 3 and Draft Local Planning Scheme No. 9 (LPS9), The *MRWA Guideline – Bunbury Outer Ring Road Service Centre/s Development* and Development Control Policy (DCP) 1.10. The parking requirements in relation to the LPS3 are detailed in Section 4.4 of this report, LPS 9 in section 4.5 the Guidelines in section 4.8 and DCP 1.10 in Section 4.9. Reference should also be made to Item 3.3 Tenancy Patrons in this report which identifies patron behaviour which affects carparking usage patterns.

The proposed car, truck, caravan/ trailer parking arrangements have been considered by Cardno as part of the TIA, which concludes the proposed number of bays is suitable for a development of this type and accordingly, car parking arrangements satisfy the requirements of the Australian Standards, and prescribed relevant policies and MRWA guidelines.

The proposed development provides parking as follows for each site:

Table 5 – Proposed Carparking

Northbound

Carbays	100 including 2 disabled bays & 4 EV
Truck Bays	6
Air / Water Station	3
Camper/Trailer Bays	12
Overflow Parking	20
Coach/Tour Bus Bays	1
Electronic vehicle charging	10 with provision to increase
Vehicle refuelling bays	16 plus queuing positions
Truck Diesel refuelling bays	6 plus queuing positions

Southbound

Carbays	100 including 2 disabled bays & 4 EV
Truck Bays	6
Air / Water Station	3
Camper/trailer Bays	12
Overflow Parking	25
Coach/Tour Bus Bays	1
Electronic vehicle charging	10 with provision to increase
Vehicle refuelling bays	16 plus queuing positions
Truck Diesel refuelling bays	6 plus queuing positions

Bicycles

MRWA controls the implementation of the bike path for the BORR. The Proponent has been advised by MRWA that there is no intention of constructing the bike path at this time. It is also unknown if the future bike path would be provided to both sides of the BORR.

The Service Centres design allows for a future cycle way connection to the future bike path in the BORR road reserve. The design has made space allowance for future installation of bike racks adjacent to the Picnic Area. The public amenities provision caters for future cyclists.

Staff will not cycle to work and therefore end-of-trip facilities are not required.

3.9 EARTHWORKS, LEVELS AND DRAINAGE

All nominated site levels, building pad and floor levels are subject to further technical investigation and verification. The civil drainage general approach is to utilise the greater extents of the overall site area for stormwater disposal rather than rely on just concentrated drainage disposal within the development footprint. Specialist hydrology testing, assessment and the subsequent civil drainage design solution will form part of the Building Permit application.

Nominated site levels, (being subject to further investigation and civil verification), are as follows;

Northbound

Ramp Connection to Site	RL 20.80/ 20.40 (WML to review)
Pavement areas typical	RL 20.80 - 19.90
Pavement at fuel canopy	RL 20.25
Building Perimeter (Paved)	RL 20.35
Building Slab FFL	RL 20.45

Southbound

Ramp Connection to Site	RL 21.00/ 20.50 (WML to review)
Pavement areas typical	RL 21.00 - 20.10
Pavement at fuel canopy	RL 20.45
Building Perimeter (Paved)	RL 20.55
Building Slab FFL	RL 20.65

3.10 SIGNAGE

The signage proposed incorporates high quality integrated illuminated panels that compliments the building design while providing the necessary information to patrons. The signage for the fuel and food service providers will be consistent with national corporate branding standards. The signage has been carefully considered in its form and function. The following signage is proposed as part of the development:

- 20m high Main Pylon Sign showing the fuel provider, tenancies and fuel prices;
- 17.85m high McDonalds Pylon Sign;
- Fuel provider signs located on the bowser canopy;
- Food outlet signage located on the front and side façades; and
- Directional signage and line marking to assist drivers navigate the sites.

The location and details of the signage can be found at **Appendix A** and considered in relation to the relevant planning policies and guidelines in subsequent sections.

Signage proposed to be displayed on building façade (southbound)

Signage proposed to be displayed on the fuel canopy

Proposed Pylon Signs

3.11 WASTE MANAGEMENT

The proposed Service Centres each have a fully screened and gated communal refuse waste yard, 50m² in area. The wash down area within the yard is bunded and connected to the internal plumbing. The yard has sufficient waste and recycling capacity for all 6 tenancies. All waste and recycling bins will be collected regularly as required by a private contractor with frequency increasing during peak periods. On site waste management will be coordinated and monitored.

The tenancies each have a designated service yard at the rear of the building, directly accessible from the back of house areas of each tenancy.

Prior to the issue of the Certificate of Occupancy a Waste Management Plan will be provided to the Shire (as part of the Service Centre's Operations Plan).

3.12 LANDSCAPING

A Landscape Plan will be submitted to the Shire for satisfaction of a landscape development approval condition prior to the issue of a Building Permit. The Landscape Plan will provide detail design on the selection, size and quantity of proposed planting and landscape treatments.

Landscaped areas adjacent to the building include planting beds, free standing planter boxes and trees – all will be served by permanent irrigation. The design intent is to provide a shaded tree canopy to the picnic and dog exercise areas, with green garden beds around the main entry to the Service Centre. Trees will be incorporated where possible to the carpark, while still maintaining visual legibility. The wider areas of landscaping will be planted with mass tube stock and seeding to be served by temporary irrigation until the landscaping reaches establishment phase.

A mandatory 10m wide setback to the BORR will be a key landscaping area as it will include enviro-swales which form part of the drainage protection strategy.

Landscape selections will be predominantly endemic species native to the South-West of Western Australia, and include water wise planting with feature trees for shade and natural cooling effects.

4. PLANNING FRAMEWORK

4.1 GREATER BUNBURY REGION SCHEME

The subject site is zoned 'Industrial Deferred' under the Greater Bunbury Region Scheme (GBRS). Land to the south and west is also zoned 'Industrial Deferred.' Land immediately to the north is zoned 'Rural', with land further to the north zoned 'Industrial.' The South-Western Highway is located further to the north, which is identified as a Primary Regional Road. (Refer to **Figure 5** below). The subject site is located within Planning Control Area No.1 – PCA for the Bunbury Outer Ring Road.

The purpose of Industrial Deferred is to facilitate future industrial development but where there are various planning, servicing and environmental requirements which need to be addressed before industrial development can take place. The proposed Service Centre is consistent with the Industrial Deferred zoning under the GBRS as it is providing a complementary use to the future Primary Regional Road Reserve to be implemented for the Bunbury Outer Ring Road reservation.

Further, land to the north (although not directly abutting the subject site) is zoned industrial. This is defined as:

'This area provides for manufacturing industry, the storage and distribution of goods and associated uses.'

It should also be noted that the development of the Service Centres on the subject sites will not compromise the current or future operations of the rural land adjacent.

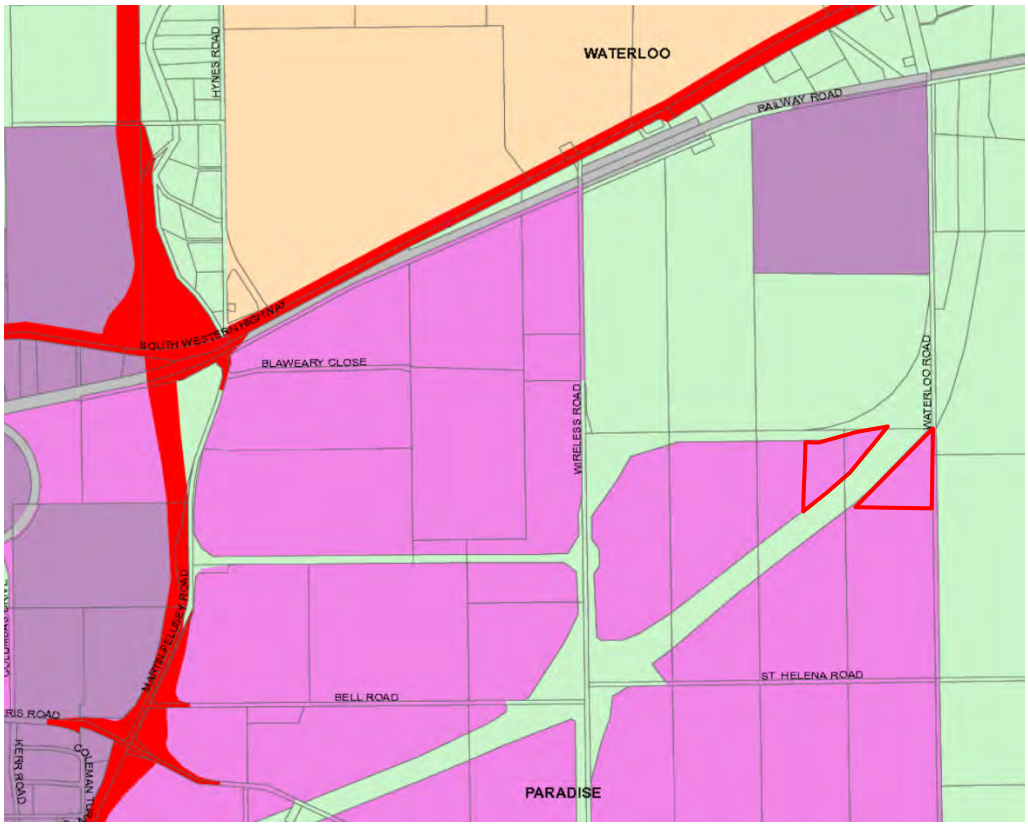


Figure 5 – GBRS zoning (subject site outlined in red)

4.2 DEVELOPMENT CONTROL POLICY 1.2

Development Control Policy 1.2 (DCP 1.2) deals with the planning considerations and general principles used by the WAPC in its determination of applications for approval to commence development on land the subject of the Metropolitan Region Scheme (MRS), Peel Region Scheme (PRS) and Greater Bunbury Region Scheme (GBRS).

This application addresses the Policy objectives and relevant considerations by way of:

- Being consistent with the relevant planning policies, strategies and development control criteria;
- The integration of the site and it's surrounds;
- Transport and traffic impacts;
- Vehicular access, circulation and car parking; and
- The provision of amenity.

A completed GBRS application for planning approval - Form 1 has been submitted with this application for Development. The application also includes relevant descriptive information such as a site plan, building and elevations plans, details of the operation, parking and traffic circulation, specialist studies as outlined in Appendix 2 of DSP 1.2.

4.3 GREATER BUNBURY REGION SCHEME PCA NO. 1

The purpose of the Planning Control Area No.1 (PCA1) is to allow the possible future reservation of the lands for regional road purposes required for the construction of the northern and southern sections of the BORR. The WAPC considers that the PCA1 is required to ensure that no development occurs on this land which may prejudice this purpose until it may be reserved for Primary Regional Roads in the Greater Bunbury Region Scheme. The PCA1 requires approval prior to any development occurring within the areas identified within the PCA.

It should be noted that the resumption of the land requirements for the BORR reserve by Main Roads WA has been undertaken with the majority of land now contained in separate titles. This land coincides with the PCA1 as shown on mapping produced by the WAPC for the purpose of identifying the PCA1.

While the Service Centres structures are outside of the PCA1, the entry and exit lanes extend within the PCA1 area to connect to the BORR carriageways. The developer acknowledges that planning consent is needed prior to any development of the Service Centres being undertaken.

4.4 SHIRE OF DARDANUP LOCAL PLANNING SCHEME NO.3 (LPS3)

The subject site is zoned 'General Farming' under the Shire of Dardanup Planning Scheme No. 3 (LPS 3). **Figure 6** below depicts the General Farming zoning of the site and surrounds under LPS 3.

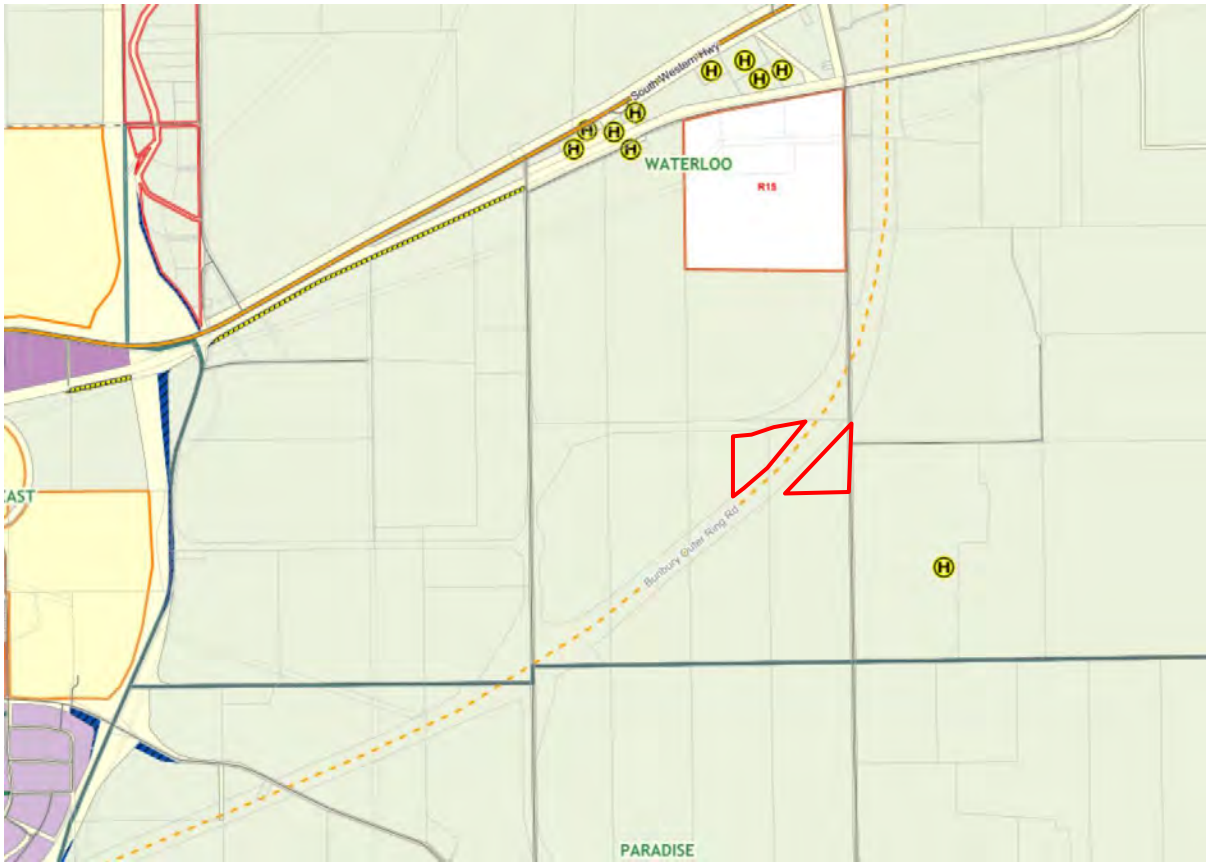


Figure 6 – LPS 8 zoning (subject site outlined in red)

The proposed use of Freeway Service Centre is best described as a 'use not listed' under the Shire of Dardanup Local Planning Scheme 3. The most comparable use in the scheme is Service Station. The rationale for this is that the use is not a small-scale service station given it is it comprises of five retail tenancies, over eight fuel bowers and alfresco dining, including picnic and play areas. Further, the development of the BORR will require a freeway service centre, as opposed to a service station, to accommodate the anticipated vehicle flow.

'Service station' is defined as the following: "a premises used for – (a) the retail sale of petroleum products, motor vehicle accessories and goods of an incidental/convenience retail nature; and (b) the carrying out of greasing, tyre repairs and minor mechanical repairs to motor vehicles, but does not include premises used for a transport depot, panel beating, spray painting, major repairs or wrecking."

As previously mentioned, the subject land is zoned 'General Farming' under LPS 3. The objectives of this zone are as follows:

- To provide for a wide variety of productive farming activities, ranging from broadacre grazing to horticulture, which are compatible with the capability of the land and retain the rural character and amenity of the locality.
- To protect areas of significant agricultural value, particularly those in irrigation districts, from conflicting land uses.
- To facilitate low-key tourist development where it is incidental to the use of the land for farming purposes and where land use conflict can be minimised.

Considering that the BORR is under construction through the general farming area, the addition of a freeway service centre will not result in any additional impact on the capability of the surrounding land to continue its agricultural activities. Therefore, the proposal can be approved at the subject site as 'use not listed' (freeway service centre).

Further Development Control Policy 1.10 allows for the consideration of the development of rural land for the purpose of a freeway service centre.

In relation to the provision of carparking, although a Service Centre is a use not listed in LPS 3, carparking has been calculated for individual uses and shown in Table 6 below.

Table 6 - Car Parking Table – LPS 3

PROPOSED CAR PARKING		
	Maximum Dining Seating permitted is 150 seats. Picnic Area (16 seats) is used predominantly by caravan/ RV visitors. Dining & retail duration periods are significantly less for Service Centres, there is a rapid turnover of carbays compared with normal urban uses.	**Proposed Service Centre Areas** *Amenities areas are excluded Fuel Store T1 300m² (101 m² retail area) Tenancy T2 160m² (140 m² retail area) Tenancy T3 130m² Tenancy T4 80m² Tenancy T5 50m² Tenancy T6 45m² Circulation 194m² Dining 166m² (90 seats @1.8 m²) Alfresco 123m² (60 seats @1.8 m²) **TOTAL 1248m²**
LAND USE CLASSES	**MINIMUM CAR PARKING REQUIREMENTS**	**CAR PARKING CALCULATION - LPS 3**
Road house - No freeway service centre listed in LPS 3	• 4 bays per workshop and/or service bay, plus 1 bay per employee. • In addition to the service station use, car parking bays are to be provided for each additional land use (e.g. convenience store, fast food outlet, lunch bar, restaurant / café and short-term accommodation uses) in accordance with the Car Parking Table.	No workshop or service bays will be provided. Employees to be on site = 13 PTE 13 carbays
Convenience Store Retail NLA	1 space per 15 square metres of NLA , plus service station requirements.	T1 = 101m² /15 = 7 carbays T2 = 140m² /15 = 9 carbays
Restaurant / Café	1 bay per 15 square metres of NLA.	T3, T4, T5, T6 305m² / 15 = 20 carbays
Communal Dining Areas	1 bay per 15 square metres of NLA.	289 m² / 15 = 19 carbays
		LPS 3 Total required = 68 carbays
		PROPOSED Total Carparking: **Northbound = 139 carbays** **Southbound = 144 carbays**

4.5 SHIRE OF DARDANUP DRAFT LOCAL PLANNING SCHEME NO.9 (LPS9)

The Shire of Dardanup recently released Draft Local Planning Scheme No. 9 (LPS 9) for advertising. LPS9 will be advertised until 23rd May 2023 and during this time, the Shire has invited submissions relating to the scheme to be made to the Chief Executive Officer.

On review of the advertised scheme, the subject land is proposed to remain as rural. However, form discussions with the Shire's planning staff, a scheme amendment is anticipated to be initiated for the area identified within the Waterloo Industrial Park District Structure Plan on finalisation to the scheme to amend the area to 'Industrial Development' or a similar zoning.

The BORR reserve and connector roads are also identified as Primary Distributor Road under LPS 9.

As expected, the new scheme complies with the model scheme template which was introduced to assist local government planners and industry in the preparation, review or amendment of local planning schemes to align with the Model Provisions (Schedule 1) of the Regulations.

The proposal complies with the definition of a Freeway Service Centre, which is defined under the LPS 9 as:

"means premises that has direct access to a freeway and which provides all the following services or facilities and may provide other associated facilities or services but does not provide bulk fuel service-

(a) service station facilities;

(b) emergency breakdown repair for vehicles;

(c) charging points for electric vehicles;

(d) facilities for cyclists;

(e) restaurant, cafe or fast food services;

(f) take-away food retailing;

(g) public ablution facilities, including provision for disabled access and infant changing rooms;

(h) parking for passenger and freight vehicles;

(i) outdoor rest stop facilities such as picnic tables and shade areas."

The range of facilities and services which shall be provided demonstrate that the proposed use clearly falls into the category of a Freeway Service centre. Further, the use is suitable for this location considering its close proximity to the BORR and the current zoning.

Further, the Freeway Service Centre is shown as a 'A' land use in the rural zone in Table 3 - Zoning Table. An 'A' symbol has the following meaning:

"means that the use is not permitted unless the local government has exercised its discretion by granting development approval after advertising the application in accordance with clause 64 of the deemed provisions"

Schedule 9 – Parking within LPS 9 defines the parking requirements for each landuse. Calculation of the parking requirements as described in LPS 9 are as follows:

Table 7 - Car Parking Table – Draft LPS 9

Proposed Service Centre	**No. of employees / Area**	**Notes**	
Number of employees	13	Based on expected average maximum	
Fast Food Outlet (1 carbay/ 4 m²)	289m²	Dining Area (166m²) & Alfresco Area (123m²)	
Convenience Store (1 carbay/20 m²)	241m²	Tenancy 1 (101m²) & Tenancy 2 (140m²) Retail Area	
Car Parking Calculation – LPS9			
Freeway Service Centre - 1 per employee plus parking spaces for each separate uses (e.g. service station, fast food outlet, restaurant / café etc.)			
Use Class	**Carbays (LPS 9)**	**Motorcycle/scooter**	**Bicycle***
Freeway Service Centre	13		
Fast Food Outlet	72	4	6
Convenience Store	12	3	2
Total required (per site)	**97 carbays**	**7**	**10***
PROPOSED Total Carparking **Northbound = 139 carbays** **Southbound = 144 carbays**	**+ 42 carbays (North)** **+ 47 carbays (South)**	**Included.**	**See note**

***Note: MRWA have removed the cycleway from the current design and construction contact for the BORR. Although Service Centre has allowed for a future connection should a cycleway be installed in the future, it is not considered necessary at this point to include bicycle parking at the Service Centre.

Patrons are likely to use multiple facilities at the centre, therefore reciprocal parking associated with the uses withing the centre are to be considered. The calculation to address the requirements in the new scheme are for individual uses, this does not represent the practical patronage of service centres where patrons in the most part stay for a short period of time and utilise multiple facilities.

It is considered the parking requirement in DC Policy 1.10 is a more accurate reflection of the actual parking requirements for a Service Centre. The parking proposed exceeds requirements of DC Policy 1.10. It should also be noted that the parking provided in similar sites at West Pinjarra and Baldivis is adequate and achieves the needs of the landuse.

4.6 SHIRE OF DARDANUP LOCAL PLANNING STRATEGY

The subject site is included within an 'Industrial Expansion' designation under the Shire of Dardanup Local Planning Strategy ('the strategy'). This area, known as the Waterloo Industrial Park has been identified as a future location for industry in the region. The proposed industrial park will be linked to the port via Harris Road and the BORR.

In addition to the Industrial Expansion designation, the Strategy shows the BORR across a portion of the subject site. The location of the BORR will provide greater connection and accessibility within the Shire and to surrounding industrial areas. Further, this road will be utilised by tourists and locals,

providing a link between Forrest Highway and Bussell Highway. As such, a Freeway Service Centre is suitable for approval on Lots 425 and 426 and would not impact on the future industrial uses envisaged by the Strategy.

4.7 WATERLOO INDUSTRIAL PARK DISTRICT STRUCTURE PLAN

The Waterloo Industrial Park District Structure Plan was endorsed by the Western Australian Planning Commission in 2020. It consists of 1350 hectares bounded by the existing Perth-Bunbury railway line to the North, Waterloo Road to the east, Picton Industrial Park to the west and Damiani Italian Road to the south.

The Greater Bunbury sub-regional structure plan identified the Waterloo Area as an industrial expansion area. The intention is that the area will complement existing industrial and business parks in rest of the sub-region while bringing in additional development opportunities. The subject site has been identified as 'Light Industry'. These areas normally provide a range of smaller-scale light and service industries and related enterprise which by their nature will not adversely affect the amenity of the surrounding area.

The proposed BORR is identified to run in a north-east to south-westerly direction through the DSP area, intersecting with the subject site. The BORR will provide excellent vehicle access from the Waterloo Industrial Park to the rest of the Greater Bunbury area, the Southwest and the Perth and Peel region.

4.8 BUNBURY OUTER RING ROAD SERVICE CENTRE/S DEVELOPMENT GUIDELINE

The Bunbury Outer Ring Road Service Centre/s Development Guidelines were introduced to provide developers with an outline of MRWA requirements for Service Centre access from Control of Access routes including from the Primary Regional Road network in the Southwest of Western Australia. The configuration of the BORR has been designed as a Control of Access route including interchange/freeway standard connections.

Compliance with the general requirements of the BORR guidelines are outlined in Table 8.

Table 8 – Requirements of BORR Guidelines Assessment

Policy Measure	Compliance
Location	The proposed service centre/s will service both carriage ways and is located between the interchanges of South Western Highway and Wireless Road being in the preferred location as stipulated by the Guidelines. The distance requirements from both Service Centre locations have been met to allow drivers to enter and exit the Service Centre without movement across the interchange lanes.
Site Requirements	The proposed sites are both approximately 7ha in size meeting the Guideline minimum area of 5ha and are designed to accommodate a good flow of traffic from the access ramp so as not to impede the flow of traffic along the BORR. Further, no access will be permitted to the service centre from local roads. The proposed Service Centres provide parking of 100 bays, 12 caravan trailer bays and 6 truck bays being more than the minimum requirements detailed in the Guidelines. Overflow parking is also provide on each site being 25 (south bound) and 20 (northbound).

Services and Facilities	The proposed service centres will include: under canopy fuel sales area (petrol, diesel and LPG), truck refuelling under canopy, electric vehicle charging bays, food and refreshment facilities, indoor and alfresco dining options, public toilets, truckers lounge, dog exercise area, a children's playground, designated parking for cars, trucks and trailers/caravans. These services will be available 24 hours, 7 days per week.
Access Ramps	Access ramps will be constructed to MRWA freeway standards and designed in accordance with Austroads and MRWA guidelines. The minimum distance has been achieved between the interchanges of Wireless Road and South Western Highway and the Service Centre ramps with no grade movements across the median.
Pedestrian and Cyclists	Adequate provision of Access Paths will be provided to join with any proposed future path along the BORR. Future bike racks will be provided.
Lighting	Access Ramps and access paths within the BORR road reserve will be lit to the MRWA highway standards. Circulation, carparking and outdoor facilities will have flood lighting to ensure safe and visually legible.
Signing and Pavement Marking	All signing and pavement marking within the BORR road reserve will be provided to Australian Standards and MRWA guidelines.
Drainage	All stormwater runoff from the service centre will be disposed of on-site.
Pavement	All pavements within the BORR road reserve shall comply with the Main Roads requirements.
Utilities	All utility services required by the service centre will be sourced without the need for utility infrastructure being placed within the BORR road reserve. If these utilities must be located within the road reserve, they will be located underground.
Landscaping	The pavements will be set back 10m from the BORR road reserve boundary to accommodate a landscape buffer.
Fencing and Walls	All fencing will comply with Main Roads requirements.
Road Safety Barriers	All road safety barriers will comply with Main Roads requirements.

Consultation

Consultation has been on-going with MRWA, South West Branch and the applicant in relation to the location of the site, concept design, on-off ramps and associated matters prior to the preparation of this Development Application.

4.9 DEVELOPMENT CONTROL POLICY 1.10

The WAPC published Development Control Policy 1.10 – *Freeway service centres and roadhouses, including signage* in August 2016. The intent of this policy is to ensure Service Centres provides adequate services for the travelling public as opposed to a collection of separate tenancies and that any centre is appropriately located and sited. The policy also outlines the requirements in terms of safety, impact on the environment and compatibility with adjoining landuses.

The proposal is considered to satisfy all relevant aspects of the Policy including applicable locational, siting and design measures and will function as an 'edge of centre' facility as described by the Policy. The relevant provisions to Freeway Service Centres are outlined in the following table.

Table 9 – Provisions of DCP 1.10

Policy Measure	Comment	Compliance
Location		
	a) Sites must be large enough that their operation will not detract from the amenity of existing or proposed sensitive uses, including residential areas.	a) The proposed service centre will be located in close proximity to Waterloo Road, which provides an access point for local motorists in the area.
	b) Freeway service centres and roadhouses should not detract from existing or planned settlements and employment areas that are identified in local planning strategies and schemes.	b) The proposed service centre is located more than 40km from similar existing facilities. Further, the TIA confirms the site layout will facilitate safe and efficient circulation through the site for all vehicles.
	c) Locations must be consistent with Main Roads WA's program for further freeway extensions (see Appendix 1:	c) All the requirements can be accommodated for on both sides of the freeway.
	d) Proposed 2031 Freeway Network – Perth and Peel Region), and highway realignments or reconfiguration.	d) Noted.
	e) Sites should not be located in environmentally or visually sensitive areas unless potential adverse impacts can be adequately mitigated.	e) The site is not located in an environmentally sensitive area. The land has previously been cleared and used for farming purposes.
	f) Sites should be identified in local planning strategies where possible.	f) The site is located within an Industrial Expansion area within the local planning strategy. The site is not specifically identified for the purpose of a service centre as the BORR is shown on the previous alignment identified by MRWA.
	g) Vehicle access to freeway service centres and roadhouses must not be detrimental to the operation of the freeway or other roads, or pose an increased risk to the safety of road users. This will be determined by the Western Australian Planning Commission on the advice of Main Roads WA.	g) Consultation has been on-going with MRWA in relation to the siting of the Service Centres and the location meets the specifications and criteria in term of distance from interchanges with South Western Highway and Wireless Road. The Service Centres will provide an opportunity for road uses to use the facilities provided by the Service Centres.

	h) Freeway service centres and roadhouses should not generally be located in areas with extreme bushfire hazard level. Bushfire risks should be capable of being managed in accordance with Western Australian Planning Commission policies and guidelines.	h) The site of the proposed Service Centre is in an area **not** identified as Bushfire Prone.
	i) Freeway service centres should be located at interchanges (either one side or both), where they can be directly accessed by both freeway users and local motorists. On proposed freeways where there are long stretches of road with no existing urban areas nearby, freeway service centres may be located between freeway interchanges.	i) The proposed Service Centres are to be located so to be able to be accessed directly by north and south bound traffic.
	j) Freeway service centres should generally be located a minimum of 40 kilometres from similar existing facilities or approved sites on a freeway, subject to network configuration and traffic volume being satisfied.	j) The proposed Service Centres are located approximately 26km from the nearest petrol at (Puma Mylaup) north of the site and 20 km from the station at (Puma Stratham) south of the site. Although these are within the required distance described in the Policy, the other centres are not considered Service Centres with the facilities proposed in this centre.
	k) Where a freeway service centre is to be duplicated on both sides of a freeway, both sites must satisfy all relevant policy measures.	k) All policy measures have been satisfied for both Service Centres.
	l) Freeway service centres should be integrated with existing or proposed rapid transit systems, cycle or pedestrian paths, and major service infrastructure located within the freeway reserve.	l) The proposed Service Centres will accommodate and link to the proposed future cycle network along the BORR.

Site Requirements		
	a) Sites should generally be a minimum of two to five hectares in size, although they may be larger, for example if they need to accommodate freight vehicles, tourist coaches and cars towing caravans etc.	a) Both the northern and southern Service Centres are well above the required minimum of 5ha.
	b) Sites should be of an appropriate size and configuration to provide safe and efficient traffic circulation, easy access to all facilities, and safe pedestrian movement.	b) The site has been designed for safe, efficient and logical circulation of internal traffic, pedestrian movement and crossings.
	c) Where possible, the development should not be visually prominent, such as at the focal point of an important view or at a higher elevation than surroundings.	c) The proposed Service Centre is located on a reasonably straight portion of the BORR with good visual sight lines in both directions.
	d) Sites should be capable of minimising any negative noise, odour, visual and light spill impacts on nearby sensitive land uses including residential and tourist accommodation.	d) The site is located away from residential areas and within an existing rural and proposed light industrial area.
	e) Service centres that do not have access to network sewerage should be sited where effluent can be contained onsite, to protect the quality of surface and ground water.	e) Reticulated sewer is not available in the locality of the Service Centre, however a Site and Soil Evaluation has been undertaken and demonstrates the site capable of on-site effluent disposal.
	f) Freeway service centres located between freeway interchanges must be a safe distance from the closest freeway exit and entry points and only be accessible directly from the freeway, compliant with Main Roads WA's standards.	f) Both the north and south Service Centres are located within the minimum separation distance from the interchanges at South Western Highway and Wireless Road as agreed with Main Roads WA.
	g) Freeway service centres located on or adjacent to a freeway interchange must not negatively impact on the safe and efficient functioning of the interchange.	g) The proposed Service Centres are not located on or adjacent to an interchange.

Design Measures including Signage		
	a) Freeway service centres and roadhouses should either be visible from the adjoining roadway or clearly signposted, but they should not be designed to be so prominent that they may be a hazardous distraction for drivers.	a) The proposed Service Centres will be both clearly visible while travelling on the BORR as well as being clearly signposted.
	b) The design and layout of built facilities and landscape treatment should be of a high standard, although materials used may be inexpensive or recycled. The appearance of structures and the choice of plant species should blend with the local landscape setting, provide adequate sightlines and reflect local character. Aspects to consider include architectural style, the choice and colour of exterior building materials, plant species including their dimension at maturity, and materials used for pavement and edging.	b) The design of built form facilities compliments the landscaping proposed for the Service Centres. The design of the facilities and finishes has been undertaken by Meyer Shircore Architects and feature wide verandas, louvered screens and recycled timber look panels. The designs can be reviewed in **Appendix A.** Landscaping will be dominated by local native and water wise planting with feature trees for shade and natural cooling effects. Paving will be natural tones to compliment the exterior building design and landscaping.
	c) Measures must be taken to address noise, odour, visual and light spill impacts, where required. Measures may include screening of appropriate width, height and materials.	c) Due to the site's location and surrounding landuse, little is required in terms of measures to screen the facility.
	d) To assist with integrating freeway service centres and roadhouses into their landscape setting, landscaped areas should be provided at their fronts and sides. The size of the landscaped areas is to be based on site level visual landscape assessment that includes consideration of screening and safety requirements.	d) The proposed Service Centre comprises extensive landscaping within the development area. Native, waterwise landscaping will be selected appropriate to the locality to create an attractive response. A landscaping plan will be provided later in the development process.
	e) As a pedestrian safety measure, parking and refuelling facilities for cars, coaches and freight vehicles should be segregated.	e) The development has been designed to allow for safe and coordinated internal traffic manoeuvrability. Refuelling of passenger vehicles has been

		separated from trucks and busses. Pedestrian crossing have been provided for the safe movement of pedestrians. Traffic movements have been subject to detailed analysis by Cardno Consulting Engineers and can be found at **Appendix F.**
	f) Service centres should provide shower facilities and dedicated truck driver respite areas.	f) The Service Centre has been designed to include dedicated facilities for truck drivers including a lounge area, showers and toilets.
	Signage	
	a) To avoid visual clutter, there should be a single, multi-tenancy pylon sign that identifies the primary facility and may include individual tenancies. To ensure that the scale of the sign is compatible with the character of the landscape, the overall height of the multi-tenancy pylon sign should be no greater than 12.0m. However, a height up to a maximum of 20.0m may be considered where it can be demonstrated that particular circumstances prevailing at the site, such as visual obstructions caused by vegetation or nearby buildings, warrant an increase.	a) Two pylon signs are proposed to promote the services provided by the Service Centre. The main pylon sign will primarily promote the fuel provider and fuel prices but also food services available. The main pylon sign is proposed to be 20m in height to be visible to travellers at the presumed speed limit of the BORR at this location of 110km/hr. A secondary sign will be to promote McDonalds, the popular fast food retailer, will be 17.85m in height to promote travellers to stop and take a break with food and drinks on offer. This is consistent with other Service Centres and in particular the West Pinjarra site on Forrest Highway.
	b) To reduce visual intrusion into drivers' field of view, the multi-tenancy pylon sign should be located a minimum of 10.0m from the boundary of the road reserve and/or positioned outside the clear zone in accordance with Main Roads guidelines, whichever is the greater.	b) The main pylon sign is located adjacent to the entry road for clear visibility to inform travellers of the fuel, food and beverage providers. The secondary McDonalds pylon is located 10m setback from the site boundary. No visual intrusion is caused by the proposed positioning of signage.
	c) Signage located on individual tenancies should not obscure architectural features of buildings and should not be located on or above rooflines,	c) Signage positioned on the façade of the Service Centre building will be limited to selected locations as to not dominate the design features of

	to reduce the visual dominance of signage.	the building. While it is important to illustrate the tenancies of the Service Centre it is acknowledged that the signage should not detract from the overall architectural features.
	d) Signage should have due regard for the policy and specifications of Main Roads WA and should be generally consistent with the relevant local planning scheme and local planning policies.	d) The proposed signage has been assessed against the relevant State and Local Government Policies and is considered to be generally consistent with these. It is noted that the proposed signage will require a separate application to Main Roads WA.
	e) Freeway service centres should generally be open 24 hours a day.	e) The service centre will be open 24hrs a day, 7 days a week.
	f) Restaurant facilities may accommodate a combined total of up to 150 seated customers and take- away food retailing may be provided contiguously with the service centre. No drive-through facility will be permitted for take-away foods.	f) The café/restaurant/take-away tenancies can accommodate 150 seated customers with additional alfresco and picnic areas available. No drive through facilities for take-away food outlets are proposed.
	g) Convenience shopping may occupy an aggregate retail floor space of up to 300 square metres.	g) The convenience store component is consistent with this provision in that a retail floor space of 300m^2.
	h) Facilities for cyclists should be provided where there is an existing or proposed cycle path in the freeway reserve.	h) A cycle way has been designed in front of the proposed Service Centre which will link to the future cycle path along the BORR.

Further the implementation of Policy 1.10, it should be noted the consideration of the subdivision of rural land for the purpose of the provision of service centres and specifically stated in the policy:

> 4.6 *The subdivision of rural land for developing a freeway service centre or roadhouse may be considered under clause 6(e) of Development Control Policy 3.4 Subdivision of rural land.*

It is proposed a Subdivision Application be submitted to the WAPC following the submission of this Development Application to create separate lots from the existing lots 425 and 426 for the purpose of creating separate lots for the Service Centres. The remaining land will continue to be used for rural pursuits.

4.10 DRAFT STATE PLANNING POLICY 2.9 & GOVERNMENT SEWER POLICY

Draft State Planning Policy 2.9 was released in 2021 and together with the associated guidelines applies to proposals prepared and assessed under the *Planning and Development Act 2005*. The policy once gazetted will replace other water related policies including the Government Sewerage Policy (GSP).

The GSP establishes the Government's position on the provision of sewerage services through the planning and development of land. While the policy promotes the objective of requiring connection to a reticulated sewerage scheme, it is acknowledged that on-site sewerage disposal may be considered when the land is capable of the disposal without endangering public health or the environment and the minimum site requirements for outlined in the policy can be met.

A Site and Soil Evaluation (SSE) has been undertaken for the site with reference to the Government Sewerage Policy 2019 (GSP19) and AS/NZS 1547:2012 'On-site domestic-wastewater management', with the objectives to:

- Assess the sub-surface soil conditions across the site.
- Conduct laboratory testing to determine the geotechnical and geo-environmental properties of the site's soil,
- Assess the suitability of the site for effluent disposal according to Government Sewerage Policy 2019 and AS/NZS 1547:2012.
- Provision of setback distances in accordance with the above policies.
- Recommended wastewater treatment systems and application methods.

While the site is located within the estuary catchment of the Swan Coastal Plain and therefore is defined as a sewerage-sensitive area, the site is not within a public drinking source area or a floodway and flood fringe area.

The SSE proposes effluent disposal areas of 7,300m² for each of the service centres with a minimum 1.5m vertical separation from the groundwater level and a secondary treatment system with nutrient removal. Suitable fill will be imported to the site to improve drainage and achieve the separation to groundwater. A copy of the SSE can be found at **Appendix H.**

4.11 LOCAL PLANNING POLICY – ADVERTISING AND SIGNAGE

The Shire of Dardanup has adopted a Local Planning Policy CP084 – *Advertising Signage*. The purpose of the Policy is to provide guidance on the assessment of advertisement signs within the Shire of Dardanup.

The Service Centre proposes 2 Pylon Signs and signage on the building façade (wall signs) to provide information on the fuel provider and prices as well as food and beverage options.

Further details of the proposed signage for the Service Centres can be found in **Appendix I – Signage Strategy.**

The following is an assessment of the proposed signage against the objectives of CP084:

Table 10 – Assessment Against the Objectives of CP084

OBJECTIVE	***COMPLIANCE***
a) Ensure that advertisement signs are appropriate for their location, relate to the land and/or buildings for which it is placed, and do not adversely impacts the amenity of the surrounding area.	*All advertising relates directly to tenancies within the Service Centres. The Service Centres are not located adjacent to any vulnerable landuses and as such will not impact the amenity of the locality.*
b) Ensure advertising signage is of a scale appropriate to buildings, lot size and lot frontages of the site relevant to the application.	*Signage is appropriately sized to allow a clear view of services from vehicles travelling on the BORR. Signage on the building façade is sized as not to detract from the overall character.*
c) Ensure that advertisement signs only advertise services offered and/or products produced, sold and/or manufactured on the land or building/s related to the approved use/s taking place.	*Pylons signs and building signage will only advertise businesses located within the service centre. Pylon sign will also display fuel price information for motorists.*
d) To ensure advertisement signs do not pose an unnecessary risk to the safety of people and vehicles by virtue of their location, design, use and function.	*Pylon signs are design in a vertical form to minimise the footprint of the structure and are to be located in a position that will not pose a safety hazard.*
e) To ensure that advertising signs are simple, clear, easy to read and maintained to a high standard.	*The proposed signs are an effective display of the services and facilities within the service centre. The signs will be lit during hours of darkness and maintained for easy viewing.*
f) Protect the cultural heritage significance of particular places and/or areas.	*The service centre developer has offered the Shire of Dardanup the opportunity to promote the Shire's attractions and in particular the Ferguson Valley region. Details of displays and signage are to be confirmed at a later date.*
g) To provide for the rationalisation of signage on properties with multiple advertising requirements.	*The main pylon sign will display the business names of tenancies within the service centre with an individual sign by McDonalds.*

The proposed building façade signage meets the criteria outlined in Table 1 of the policy being defined as "*An advertisement sign which is affixed to the external part of a wall of a building, a gable end, or a building façade and no part of which is above the roofline of the building*."

As the current zoning of the site is rural, this signage must be considered as part of this Development Application. It does however meet all of the Development Standards described in Table 1 being:

- not extend laterally beyond either end of the wall or protrude above the top of the wall; and
- not cover more than 10% of the façade for each tenancy within a building and/or development site visible from the public realm; or
- where there is an approved signage strategy, not cover more than 25% of a façade within a building and/or development site visible from the public realm.

Table 2 of the Policy outlines the Development Standards for Signs and Advertisements. Some specific standards for pylon signs are considered in the following table.

Table 11 – Assessment Development Standards in CP084

DEVELOPMENT STANDARD	COMMENT
The maximum sign face area is 10m² per face, for a maximum of two faces; Must not be located less than 1.5m from the front property boundary (including the primary and secondary street frontages of a corner lot), and must not project beyond the alignment of any property boundary; Have a minimum clearance of 2.7m from the natural ground level; Be restricted to a maximum of either one pylon or monolith sign per street frontage, or where a lot has numerous tenancies/units, multiple pylon or monolith signs may be approved where separated by a minimum distance of 50m; Not exceed 2.5m measured horizontally across the face of the sign; Where practical, make provision for infill panels to accommodate the needs of a property containing multiple tenancies/units; Not be more than 6m above natural ground level (including supporting structures),except where: multiple tenancies/units are located on a lot, then the height can be increased to 7m above natural ground level (including supporting structures).	To effectively display to travellers on the BORR, the pylon signs proposed are considerable larger than the Development Standard described by CP084. They are however in accordance with the DC Policy 1.10 – Freeway service centres and roadhouse including signage. The proposed pylon signs provide information on individual fuel, food and beverage providers to encourage travellers to take a break. The signs will be setback from the BORR so as to not cause a visual obstruction to drivers. Details of the proposed signs are shown in the Signage Strategy in Appendix I.

4.12 EPA GUIDANCE NO.3 – SEPARATION DISTANCES BETWEEN INDUSTRIAL AND SENSITIVE USES

EPA Guidance No. 3 recommends generic separation distances between industrial land uses and sensitive land uses. With respect to a Freeway Service Centre with 24 hour operation, a 100m buffer is recommended for sensitive uses. The proposed Service Centre satisfies this recommended buffer distance given there are no sensitive land uses within 100m of Lot 425 and 426.

5. CONCLUSION

Development approval is sought for two Freeway Service Centres (and associated signage) as detailed in this report. The proposed use satisfies the current and future planning framework and is commensurate with the immediate locality.

The proposed development responds to all the relevant planning frameworks and is demonstrated to be in accordance with specific guidelines for Service Centres on the BORR as published by Main Roads WA.

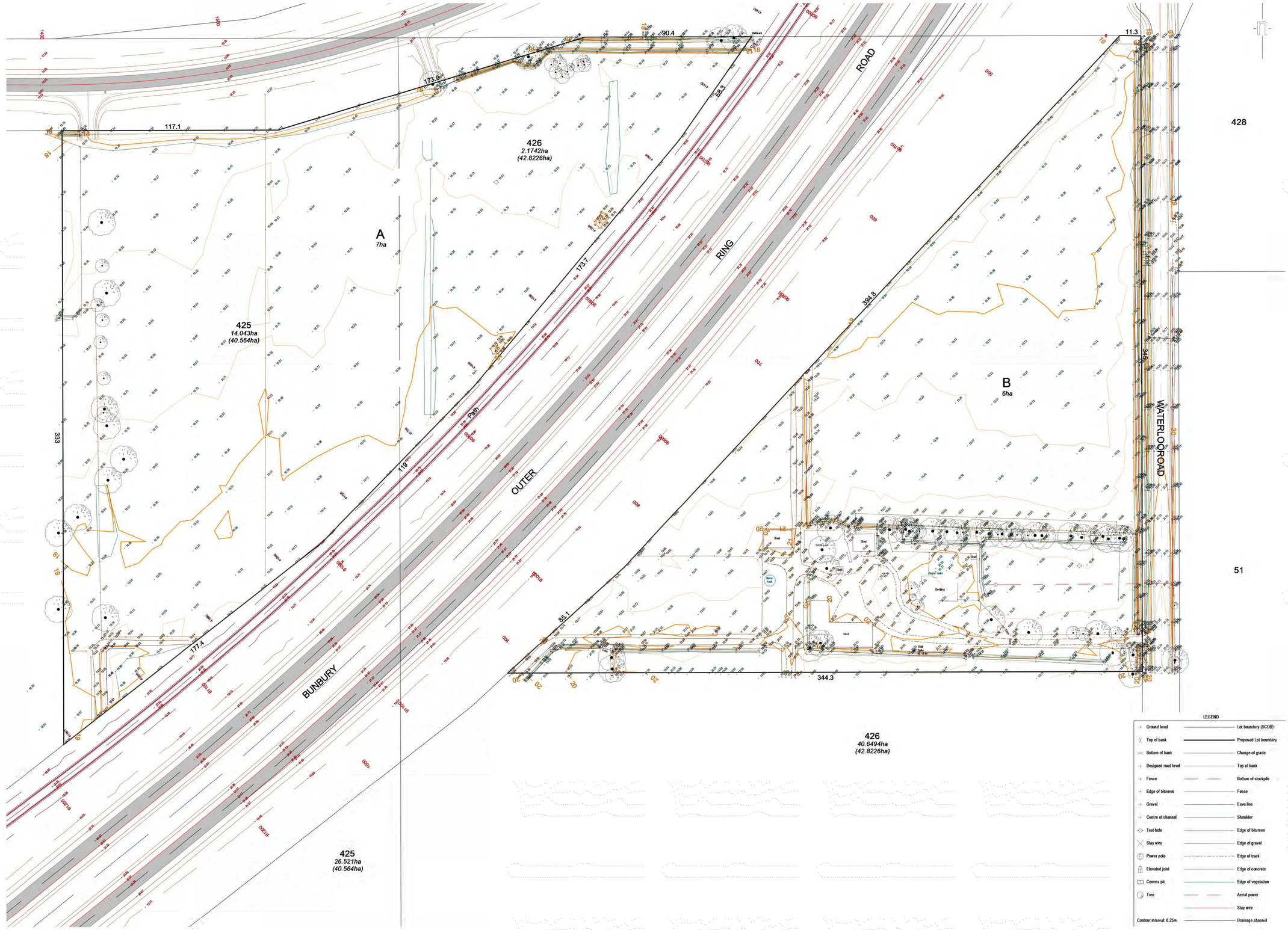
The Service Centres are located appropriately to provide all high quality facilities to drivers while sited to address the required safety regulations.

The site can be provided with suitable traffic and servicing to provide for a sustainable form of development while activating this portion of the BORR to provide a point of interest for travellers.

In view of the details provided in the report, it is respectfully requested that the JDAP approve the Service Centres proposed at Lots 425 and 426 Bunbury Outer Ring Road, Waterloo.

APPENDIX A

Development Plans



SITE SURVEY

SCALE: 1 : 1000

PRELIMINARY

meyer shircore architects

BORR SERVICE CENTRES

LOCATION : LOTS 425 & 426 BUNBURY OUTER RING ROAD, WATERLOO

FOR : SARACEN DEVELOPMENTS PTY LTD

0 10 20 30 40 50 100

DATE: FEB 2023
REVISION: SK021
SHEET: 1000
SCALE: 1 : 1000 @A1

PROJECT NUMBER
22-9001

Suite 2, Ground Floor 437 Roberts Road, Subiaco WA 6008
PO Box 1294 Subiaco WA 6904
t: 08 9381 8511 e: msa@meyershircore.com.au

KEYPLAN
SCALE: 1 : 5000

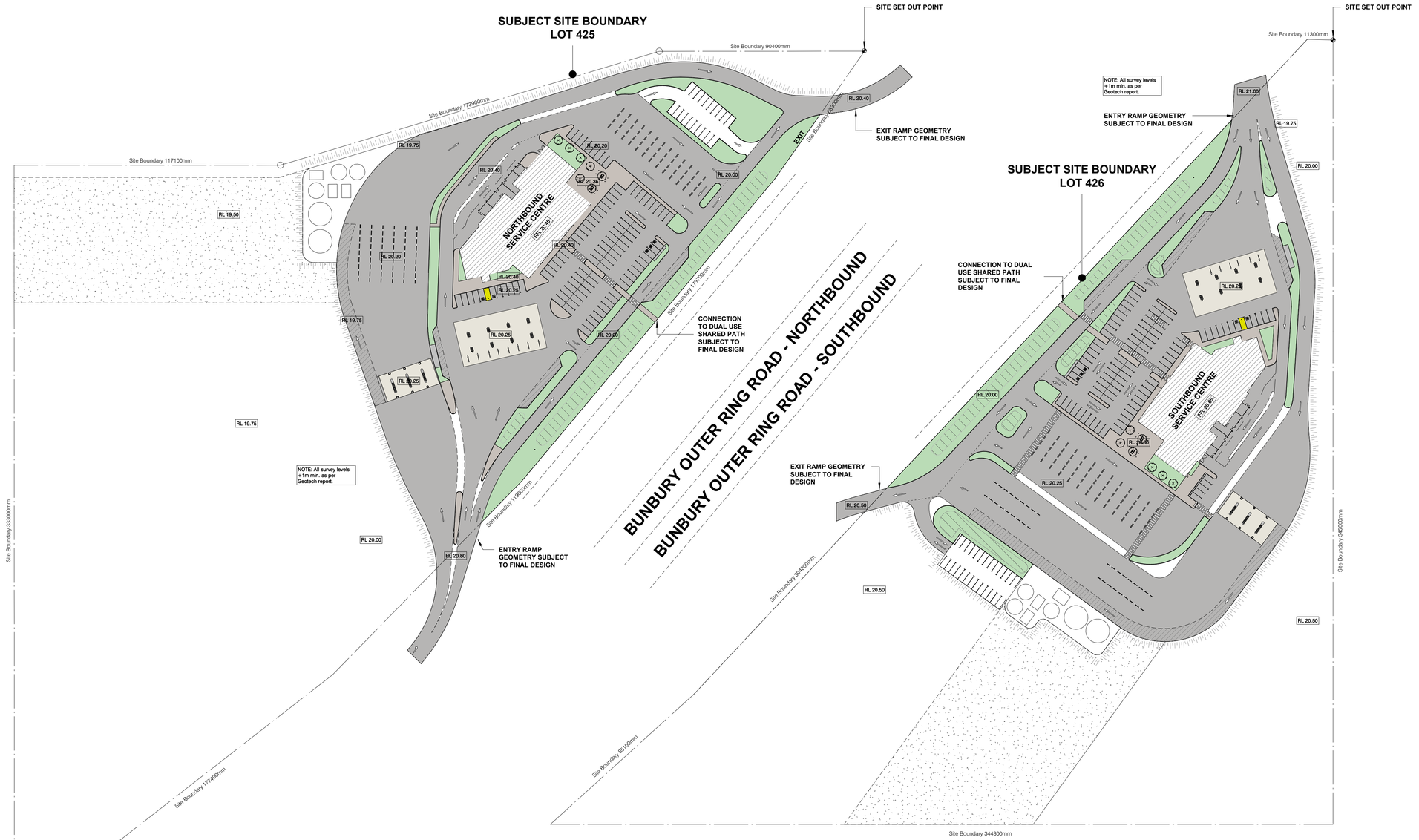
meyer shircore architects

BORR SERVICE CENTRES

LOCATION : LOTS 425 & 426 BUNBURY OUTER RING ROAD, WATERLOO
FOR : SARACEN DEVELOPMENTS PTY LTD

DATE: FEB 2023
REVISION: SK021
SHEET: SK - 1001
SCALE: 1 : 5000 @A1

PROJECT NUMBER
22-9001



LOCATION PLAN

SCALE: 1 : 1000

meyer shircore architects

BORR SERVICE CENTRES

LOCATION : LOTS 425 & 426 BUNBURY OUTER RING ROAD, WATERLOO

FOR : SARACEN DEVELOPMENTS PTY LTD

0 10 20 30 40 50 100

DATE:	FEB 2023
REVISION:	SK021
SHEET:	SK - 1002
SCALE:	1 : 1000 @A1

PROJECT NUMBER
22-9001

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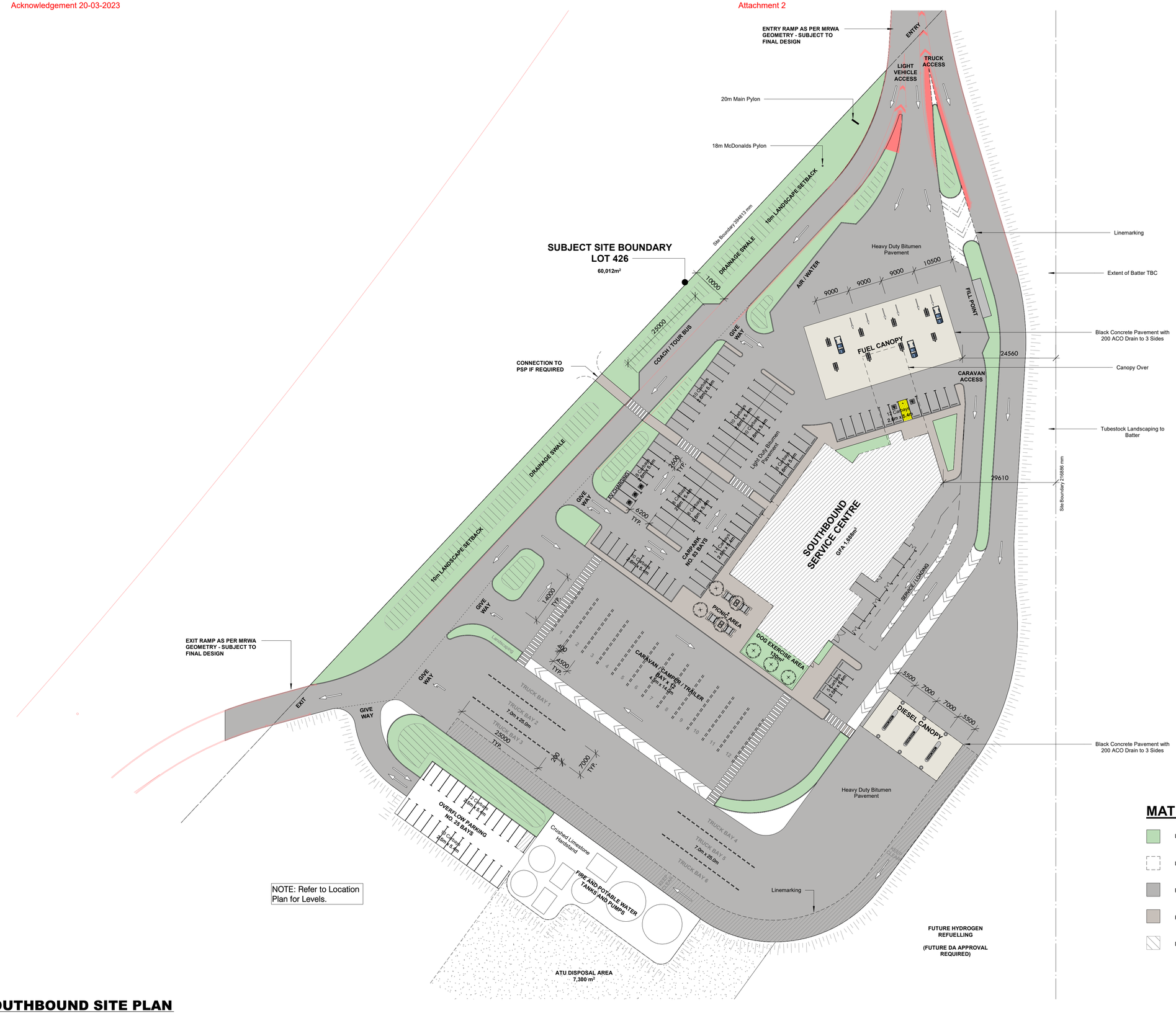

SOUTHBOUND SITE PLAN

SCALE: 1 : 500

MATERIAL LEGEND

- Landscaped Areas
- Linemarking
- Bitumen
- Paving
- Drainage Swale

SITE CRITERIA

1. Landscaped Area

a. Provided	
a. Soft	3,510m²
b. Dog Exercise Area	130m²
Total	**3,540m²**

2. Floor Area (GFA)

a. Tenancy 1	300m²
b. Tenancy 2	160m²
c. Tenancy 3	130m²
d. Tenancy 4	80m²
e. Tenancy 5	50m²
f. Tenancy 6	45m²
g. Other	923m²
Total	**1,688m²**

3. Parking

i. Bays Provided	
a. Carbays	100 Cars
b. Truck Bays	6 Truck
c. Camper/Trailer Bays	12 Camper/Trailer
d. Overflow Parking	25 Cars
e. Coach/Tour Bay	1 Bay
Total	**144**

meyer shircore architects

BORR SERVICE CENTRES

LOCATION : LOTS 425 & 426 BUNBURY OUTER RING ROAD, WATERLOO

FOR : SARACEN DEVELOPMENTS PTY LTD

0 5 10 15 20 25 50

DATE: FEB 2023
REVISION: SK021
SHEET: SK - 1003
SCALE: As indicated @A1

PROJECT NUMBER
22-9001

NORTHBOUND SITE PLAN

SCALE: 1 : 500

MATERIAL LEGEND

- Landscaped Areas
- Linemarking
- Bitumen
- Paving
- Drainage Swale

SITE CRITERIA

1. Landscaped Area

i. Provided

a. Soft	3,781m²
b. Dog Exercise Area	125m²
Total	**3,906m²**

2. Floor Area (GFA)

a. Tenancy 1	300m²
b. Tenancy 2	160m²
c. Tenancy 3	130m²
d. Tenancy 4	80m²
e. Tenancy 5	50m²
f. Tenancy 6	45m²
g. Other	916m²
Total	**1,681m²**

3. Parking

i. Bays Provided

a. Carbays	103 Cars
b. Truck Bays	6 Truck
c. Camper/Trailer Bays	12 Camper/Trailer
d. Overflow Parking	20 Cars
e. Coach/Tour Bay	1 Bay
Total	**142**

meyer shircore architects

BORR SERVICE CENTRES

LOCATION : LOTS 425 & 426 BUNBURY OUTER RING ROAD, WATERLOO

FOR : SARACEN DEVELOPMENTS PTY LTD

0 5 10 15 20 25 50

DATE: FEB 2023
REVISION: SK021
SHEET: SK - 1004
SCALE: As indicated @A1

PROJECT NUMBER
22-9001

Suite 2, Ground Floor 437 Roberts Road, Subiaco WA 6008
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MATERIAL LEGEND

- Landscaped Areas
- Linemarking
- Bitumen
- Paving
- Drainage Swale

SOUTHBOUND SERVICE CENTRE

FFL 20.65

SOUTHBOUND FLOOR PLAN

meyer shircore architects

BORR SERVICE CENTRES

LOCATION : LOTS 425 & 426 BUNBURY OUTER RING ROAD, WATERLOO
FOR : SARACEN DEVELOPMENTS PTY LTD

0 2 4 6 8 10 20

DATE: FEB 2023
REVISION: SK021
SHEET: SK - 2001
SCALE: As indicated @A1

PROJECT NUMBER
22-9001

© Meyer Shircore & Associates ACN 115 189 216
Suite 2, Ground Floor 437 Roberts Road, Subiaco WA 6008
PO Box 1294 Subiaco WA 6904
t: 08 9381 8511 e: msa@meyershircore.com.au

MATERIAL LEGEND

- Landscaped Areas
- Linemarking
- Bitumen
- Paving
- Drainage Swale

NORTHBOUND SERVICE CENTRE

FFL 20.45

NORTHBOUND FLOOR PLAN

SCALE: 1 : 200

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BORR SERVICE CENTRES

LOCATION : LOTS 425 & 426 BUNBURY OUTER RING ROAD, WATERLOO

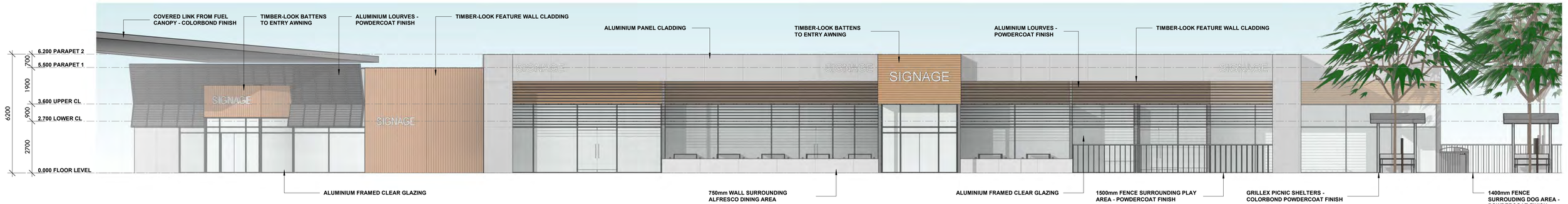
FOR : SARACEN DEVELOPMENTS PTY LTD

0 2 4 6 8 10 20

DATE: FEB 2023
REVISION: SK021
SHEET: SK - 2002
SCALE: As indicated @A1

PROJECT NUMBER
22-9001

Suite 2, Ground Floor 437 Roberts Road, Subiaco WA 6008
PO Box 1294 Subiaco WA 6904
t: 08 9381 8511 e: msa@meyershircore.com.au



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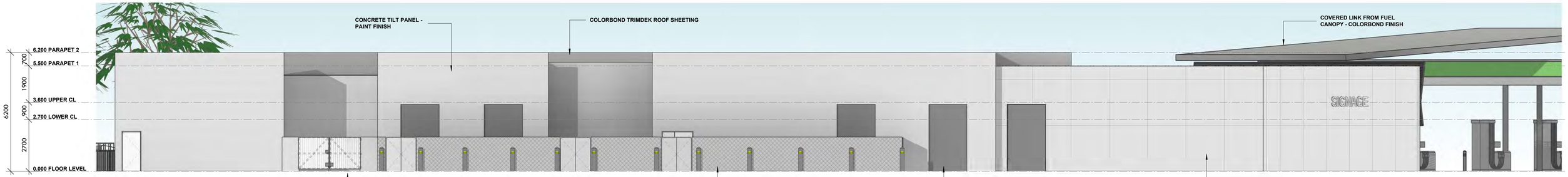
SCALE: 1 : 100

SOUTHBOUND NORTH

SCALE: 1 : 100



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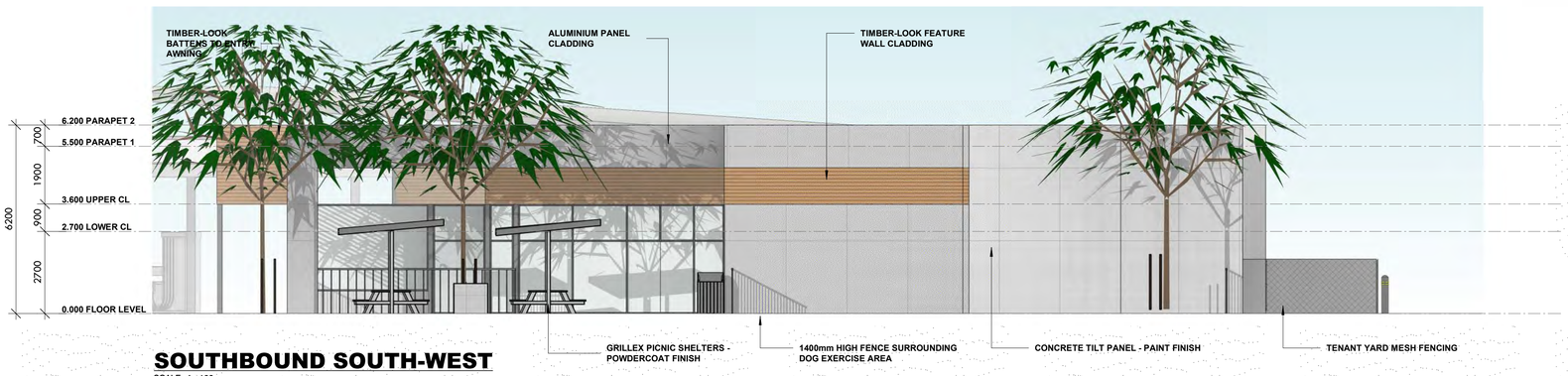

SOUTHBOUND SOUTH-WEST

SCALE: 1 : 100

SIGNAGE LEGEND

- Fuel Brand Signage
- Building Signage

BORR SERVICE CENTRES

LOCATION : LOTS 425 & 426 BUNBURY OUTER RING ROAD, WATERLOO

FOR : SARACEN DEVELOPMENTS PTY LTD

0 1 2 3 4 5 10

DATE: FEB 2023
REVISION: SK021
SHEET: SK - 3001
SCALE: 1 : 100 @A1

PROJECT NUMBER
22-9001

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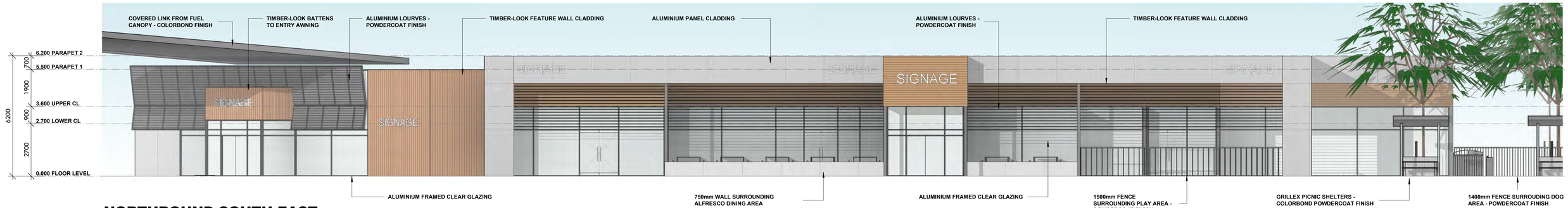
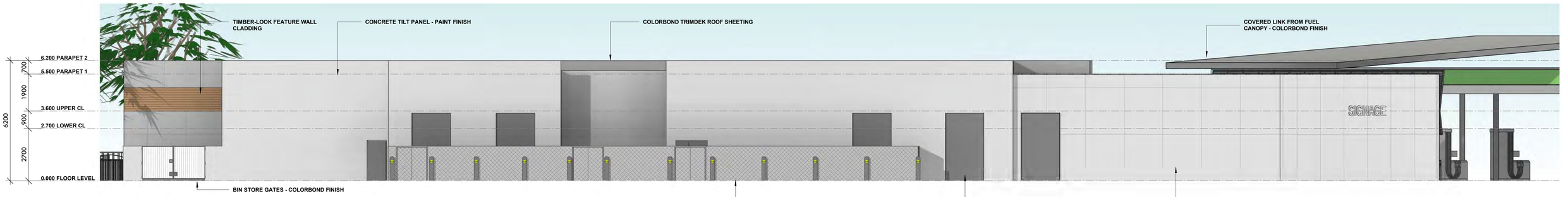


NORTHBOUND SOUTH-EAST

SCALE: 1 : 100

NORTHBOUND SOUTH

SCALE: 1 : 100



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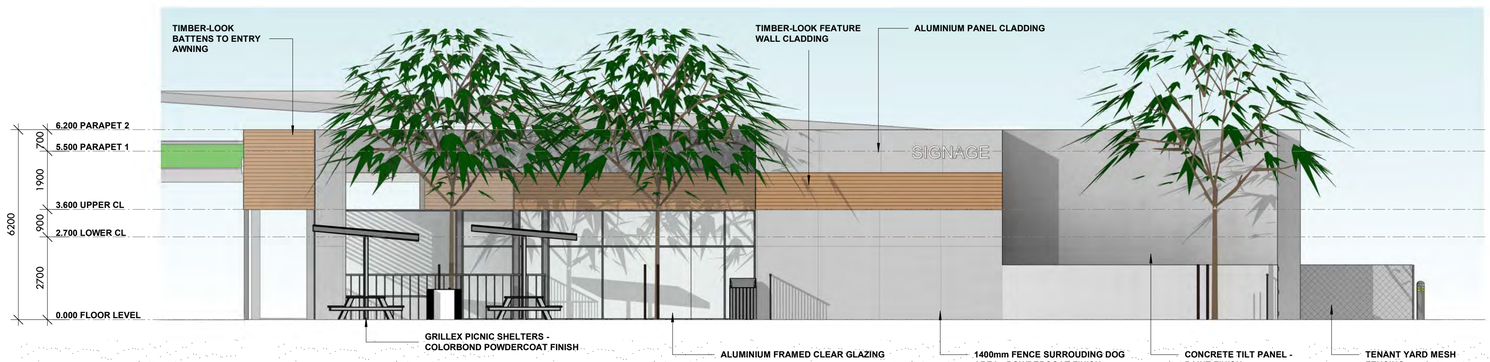

NORTHBOUND NORTH-EAST

SCALE: 1 : 100

SIGNAGE LEGEND

- Fuel Brand Signage
- Building Signage

meyer shircore architects

BORR SERVICE CENTRES

LOCATION : LOTS 425 & 426 BUNBURY OUTER RING ROAD, WATERLOO

FOR : SARACEN DEVELOPMENTS PTY LTD

0 1 2 3 4 5 10

DATE: FEB 2023
REVISION: SK021
SHEET: SK - 3002
SCALE: 1 : 100 @A1

PROJECT NUMBER
22-9001

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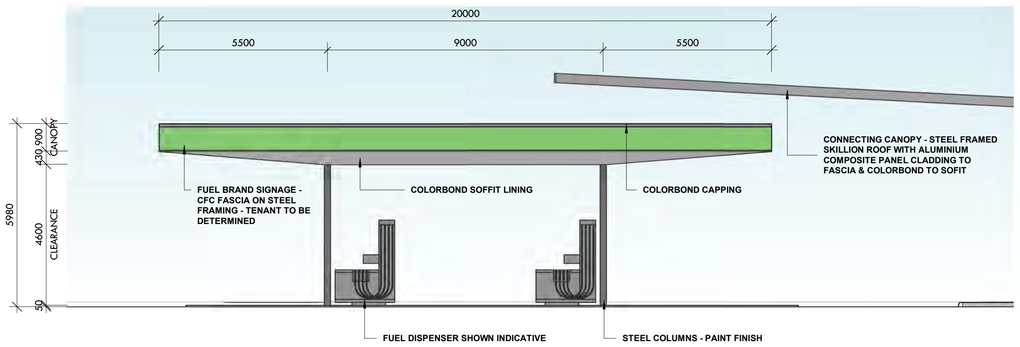
t: 08 9381 8511 e: msa@meyershircore.com.au

TYPICAL FUEL CANOPY ELEVATION 1

SCALE: 1 : 100



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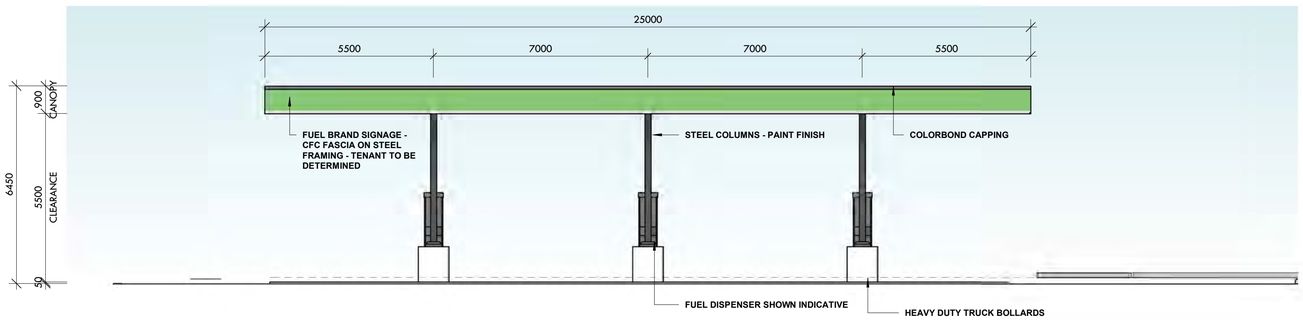

TYPICAL DIESEL CANOPY ELEVATION 1

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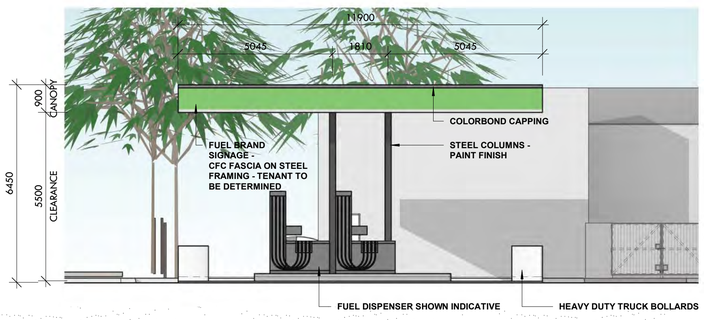
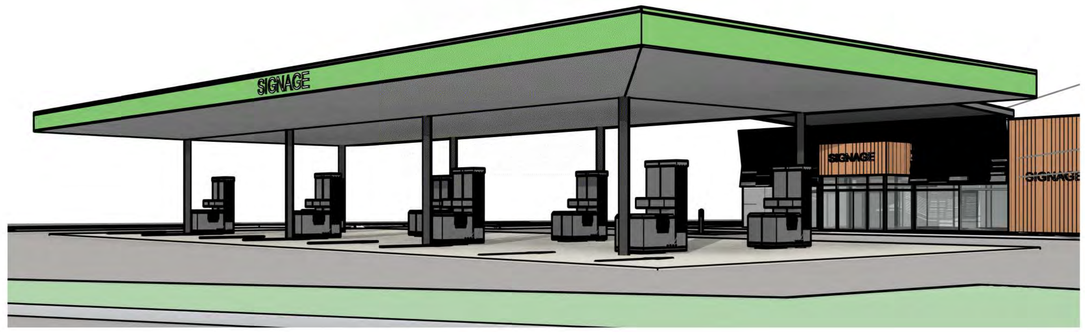


TYPICAL DIESEL CANOPY ELEVATION 2

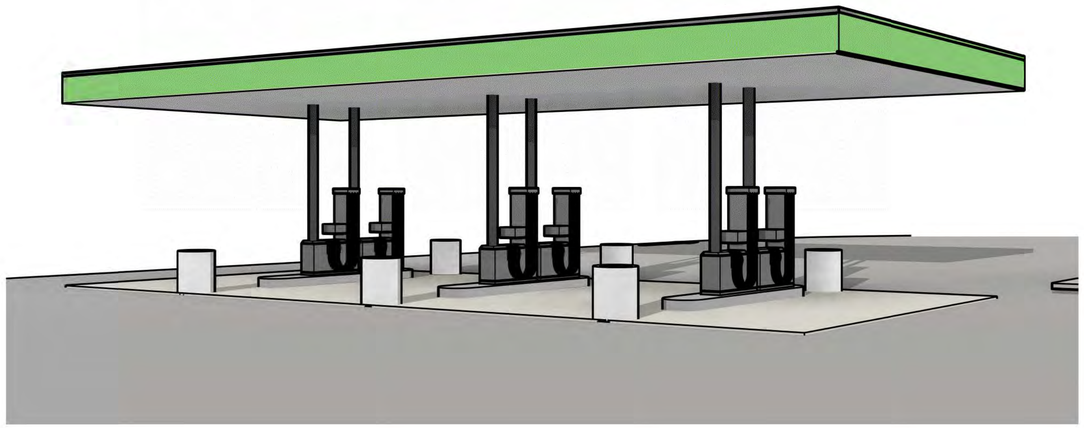
SCALE: 1 : 100

SIGNAGE LEGEND

- Fuel Brand Signage
- Building Signage



FUEL CANOPY VIEW



DIESEL CANOPY VIEW

BORR SERVICE CENTRES

LOCATION : LOTS 425 & 426 BUNBURY OUTER RING ROAD, WATERLOO

FOR : SARACEN DEVELOPMENTS PTY LTD

meyer shircore architects

0 1 2 3 4 5 10

DATE: FEB 2023
REVISION: SK021
SHEET: SK - 3003
SCALE: 1 : 100@A1

PROJECT NUMBER
22-9001

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NORTHBOUND VIEW 1

NORTHBOUND VIEW 2

NORTHBOUND VIEW 3

meyer shircore architects

BORR SERVICE CENTRES

LOCATION : LOTS 425 & 426 BUNBURY OUTER RING ROAD, WATERLOO
FOR : SARACEN DEVELOPMENTS PTY LTD

DATE: FEB 2023
REVISION: SK021
SHEET: SK - 3004
SCALE: @A1

PROJECT NUMBER
22-9001

Suite 2, Ground Floor 437 Roberts Road, Subiaco WA 6008
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SOUTHBOUND VIEW 1

SOUTHBOUND VIEW 2

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BORR SERVICE CENTRES

LOCATION : LOTS 425 & 426 BUNBURY OUTER RING ROAD, WATERLOO
FOR : SARACEN DEVELOPMENTS PTY LTD

DATE: FEB 2023
REVISION: SK021
SHEET: SK - 3005
SCALE: @A1

PROJECT NUMBER
22-9001

Suite 2, Ground Floor 437 Roberts Road, Subiaco WA 6008
PO Box 1294 Subiaco WA 6904
t: 08 9381 8511 e: msa@meyershircore.com.au

APPENDIX B

Certificate of Title

WESTERN AUSTRALIA

REGISTER NUMBER	
N/A	
DUPLICATE EDITION	DATE DUPLICATE ISSUED
N/A	N/A

VOLUME 2995 FOLIO 943

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

THIS IS A MULTI-LOT TITLE

LAND DESCRIPTION:

LOTS 425 & 426 ON DEPOSITED PLAN 418576

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

WILLOUGHBY GRAZING PTY LTD OF CARE OF PP & B EDWARDS "AVELON" WATERLOO
(TO O585573) REGISTERED 14/12/2020

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

1. *P063481 NOTIFICATION CONTAINS FACTORS AFFECTING THE WITHIN LAND. LODGED 4/3/2022.
2. *P199831 CAVEAT BY SARACEN DEVELOPMENTS PTY LTD AS TO PORTION ONLY LODGED 30/6/2022.

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.
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
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:	DP418576
PREVIOUS TITLE:	2995-936, 2995-937
PROPERTY STREET ADDRESS:	232 ST HELENA RD, WATERLOO (425/DP418576). 597 WATERLOO RD, WATERLOO (426/DP418576).
LOCAL GOVERNMENT AUTHORITY:	SHIRE OF DARDANUP

NOTE 1: O585573 THIS LOT/TITLE CREATED AFTER PORTION OF THE LAND TAKEN FROM THE FORMER LOTS WITHOUT PRODUCTION OF THE DUPLICATE TITLE BY TAKING ORDER O585573. CURRENT DUPLICATE FOR THE WITHIN LAND IS STILL VOL1273 FOL524 EDITION 0.

APPENDIX C

Proposed Subdivision Plan

LEGEND

PROPOSAL DETAILS	
Subject Land	
Area of Subject Land	83.3876ha
No of Existing Lots	2
No of Proposed Lots	4
Minimum Lot Size	6ha
Average Lot Size	20.8469ha
Proposed Lot Boundaries	
Lot Boundaries to be Removed	
LAND DETAILS	
Local Government Area	Shire of Dardanup
Zoning	General Farming
Existing Boundaries	
SERVICING INFORMATION (BYDA)	
Overhead Electricity	AE
Reticulated Water	Not Available
Reticulated Sewer	Not Available
Telecommunications	T
Reticulated Gas	Not Available

FREEHOLD SUBDIVISION

Lots 425-426 on DP418576 Bunbury
Outer Ring Road, WATERLOO

Plan No.	22454-11
Date	23/02/23
Drawn	NP
Checked	KS
Revision	A
Scale	1:5000@A3

0 50m 100m 150m

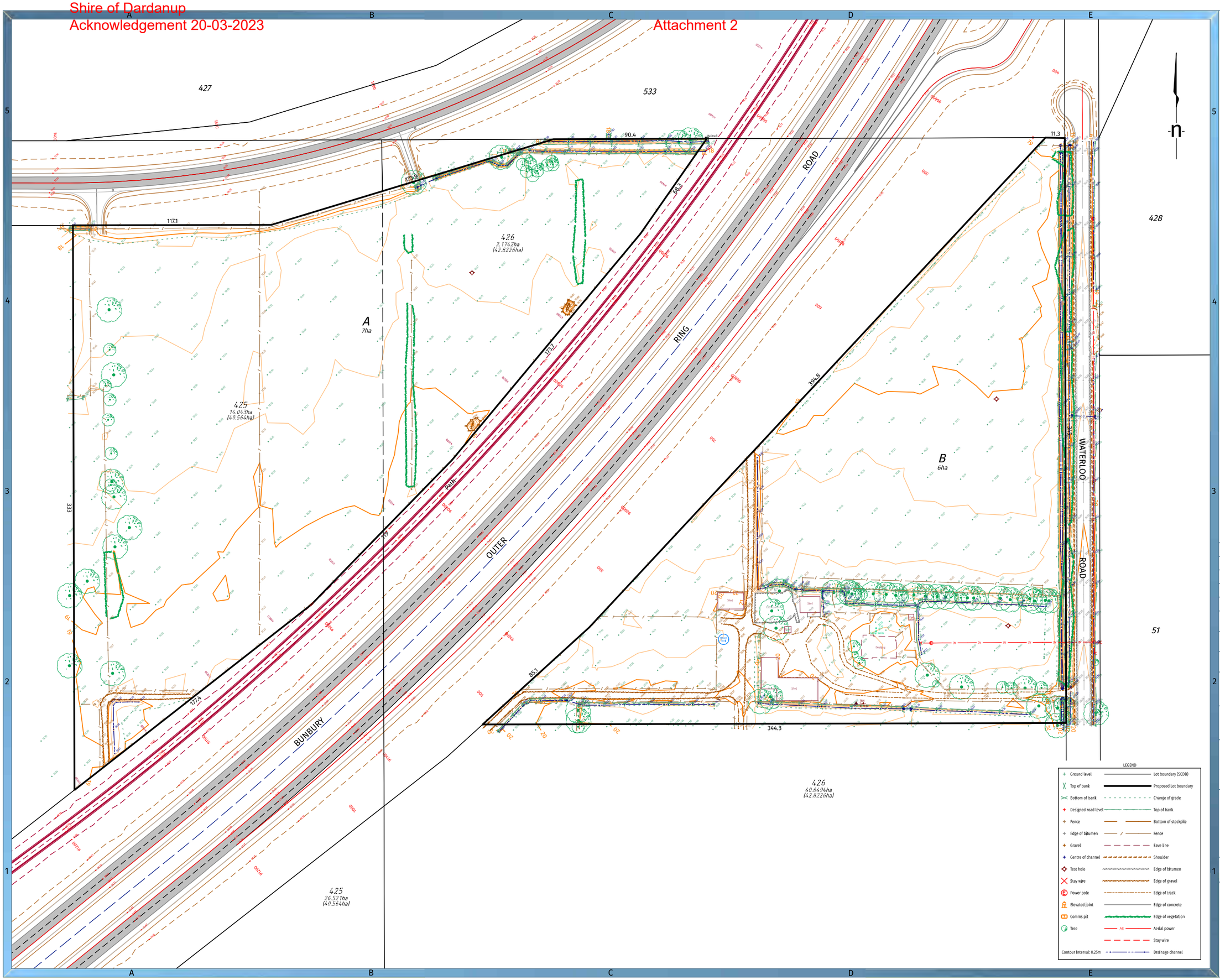
BUNBURY OFFICE:
21 Spencer Street,
BUNBURY WA 6230
T: 08 9792 6000
E: bunbury@harleydykstra.com.au
W: www.harleydykstra.com.au
ALBANY | BUNBURY | BUSSELTON | FORRESTDALE | PERTH

NOTE: This plan has been prepared for planning purposes. Areas, Contours and Dimensions shown are subject to survey

Harley Dykstra
PLANNING & SURVEY SOLUTIONS

APPENDIX D

Feature Survey



Harley Dykstra
PLANNING & SURVEY SOLUTIONS

rev	details	approved	date
A	Original drawing	DJ	06/10/22

survey: DJ 30/09/22	cad file: 22454-09A.dgn
drawn: NP 06/10/22	checked: SB 07/10/22
horiz datum: PCG94	level datum: AHD

scale at A1: 1 : 1000 — all distances are in metres (0 10 20 30 40 50)

plan type: FEATURE & CONTOUR SURVEY

client: Saracen Properties

description: Lots 425-426 on DP418576
Bunbury Outer Ring Road
WATERLOO

drawing no: 22454-09A

BUNBURY OFFICE:
HARLEY DYKSTRA PTY LTD
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APPENDIX E

Geotechnical Assessment

Saracen Development Pty Ltd

BORR WATERLOO SERVICE STATIONS

GEOTECHNICAL REPORT

December 2022
10783-G-R-001-0

WML
Consulting Engineers

Document History and Status				
Revision	**Prepared By**	**Reviewed By**	**Purpose of Issue**	**Date**
0	Ting Zhang	Simon Maris	Final	5/11/2022

Issued to:	Saracen Development Pty Ltd
WML Project Number:	10783
Document Name:	10783-G-R-001-0

WML Consultants Pty Ltd

Ting Zhang
Principal Geotechnical Engineer
Author

Simon Maris
Principal Geotechnical Engineer
Reviewer

For and on behalf of WML Consultants Pty Ltd

CONTENTS

TABLES

FIGURES

APPENDICES

1 INTRODUCTION

Saracen Developments Pty Ltd (Client) engaged WML Consultants (WML) to undertake a geotechnical investigation and the installation of monitoring wells to support future development of service station on the Bunbury Outer Ring Road at Waterloo. This report presents the findings of the geotechnical investigation, including the details of the fieldwork performed, the results of in-situ and laboratory testing, a site classification to AS2870:2017 and recommendations for site preparation.

1.1 Site description

The proposed development is located approximately 12 km east of Bunbury, Western Australia and is located within the Shire of Dardanup. The site has an approximate area of 20 ha and is typically flat and covered with grass. The site consists of some medium trees to the northern edge. In the north western area, there appears to be an existing effluent disposal system which consists of an open pond about 20m in diameter and open trench in the east to west direction.

1.2 Client supplied information

The following information was made available by Saracen Developments Pty Ltd for the purpose of this report.

- 9001-BORRSC_SK012_2022- Sheet - 1001 - KEYPLAN
- 9001-BORRSC_SK012_2022- Sheet - 1002 - LOCATION PLAN
- 9001-BORRSC_SK012_2022- Sheet - 1003 - SOUTHBOUND
- 9001-BORRSC_SK012_2022- Sheet - 1004 - NORTHBOUND

1.3 Objectives of this report

The objectives for the geotechnical component of the subdivision were:

- Assessment of the existing subsurface soil and groundwater conditions across the site,
- Preliminary site classification(s).
- Bearing capacity and settlement recommendations for a range of footings.
- Geotechnical design parameters
- Recommendations and geotechnical design parameters for earth retaining structures,
- Recommend appropriate site preparation procedures, including compaction criteria,
- Advice on the re-use of in situ soils as fill,
- Design infiltration rates for stormwater drainage design, and
- Provide a subgrade California bearing ratio (CBR) value for pavement design.

2 FIELD PROGRAMME

2.1 Fieldwork

Fieldwork was carried out on the 16th and 17th of September 2022, by two qualified WML geotechnical engineers and comprised:

- A site walkover to observe existing site features and to take record photographs.
- Twelve (12) solid auger boreholes using a Ute-mounted mechanical auger drill rig, extending to depths of 2.6-7.5 m, designated BH1 to BH12.
- Ten (10) Dynamic cone penetrometer (DCP) tests adjacent to each borehole except BH2 and BH6.
- Installation of four (4) groundwater monitoring wells, located at BH5, BH6, BH7 and BH8.
- Hand shear vane tests were undertaken within the cohesive soils.
- Collection of representative soil samples from boreholes for laboratory testing.

The site investigation was undertaken in general accordance with Australian Standard AS 1726:2017 '*Geotechnical Site Investigations*'. Two qualified geotechnical engineers from WML completed the fieldwork, logged the materials encountered in the boreholes, carried out in-situ testing, collected soil samples, and took record photographs. All boreholes were backfilled as close to the original conditions as possible. The approximate test locations are presented on the site map, 10783-G-001, and the soil logs are presented in Appendix A.

Each location for intrusive ground investigation was checked for underground services against Dial-Before-You-Dig plans, prior to any excavations works.

Table 1: Summary of fieldwork

Location ID	Coordinates (MGA94 Zone 50)		Fieldwork	Termination Depth (m)	Groundwater (m)
	Latitude	Longitude			
BH1	-33.34543960	115.76967950	16/09/2022	2.65	GNE
BH2	-33.34505980	115.77012910	16/09/2022	2.65	GNE
BH3	-33.34521750	115.77057440	16/09/2022	2.65	GNE
BH4	-33.34467200	115.77063600	17/09/2022	2.65	GNE
BH5	-33.34487970	115.77084120	17/09/2022	7.00	1.70*
BH6	-33.34605200	115.77072400	17/09/2022	2.65	1.75
BH7	-33.34398300	115.76846400	17/09/2022	7.50	1.60
BH8	-33.34423400	115.76555200	17/09/2022	2.64	1.00
BH9	-33.34471300	115.76664800	17/09/2022	2.65	GNE
BH10	-33.34487190	115.76735140	17/09/2022	2.65	GNE
BH11	-33.34400980	115.76790150	17/09/2022	2.65	GNE
BH12	-33.34424560	115.76710790	17/09/2022	2.65	GNE

Notes:
All depths are relative to the ground surface at the time of the investigation unless specified otherwise
GNE – Groundwater not encountered
**During the actual fieldwork, GW was encountered at the depth of 7m. On 27/10/2022, the monitoring well was rechecked, and GW was found at 1.7m*

Table 2: Summary of monitoring well construction

Location ID	Monitoring well depth (m bgl)	Monitoring Well Construction			Backfill	
		Slotted	Solid	Stick up	Gravel response zone	Bentonite plug
BH5 (MW1)	7.0	7.0 – 4.5 m	4.5 – 0.0 m	+0.6 m	7.0 – 4.0 m	4.0 – 0.0 m
BH6 (MW2)	2.4	2.4 – 1.4 m	1.4 – 0.0 m	+0.7 m	2.4 – 1.0 m	1.0 – 0.0 m
BH7 (MW3)	6.6	6.6 – 4.1 m	4.1 – 0.0 m	+0.5 m	6.6 – 3.5 m	3.5 – 0.0 m
BH8 (MW4)	2.1	2.1 – 1.1 m	1.1 – 0.0 m	+0.6 m	2.1 – 0.6 m	0.6 – 0.0 m

Notes: All depths are relative to the existing ground surface
MW = Monitoring well

2.2 In-situ permeability tests

An in-situ permeability tests was undertaken adjacent to BH1 using the constant head Talsma-Hallam method in accordance with AS/NZS 1547:2012. A borehole 110 mm in diameter and 700 mm deep was excavated and filled with water to saturate the surrounding soil. A constant head of water was then applied, and a known volume of water was timed to dissipate.

A test zone 250 mm from the base of the hand-augured borehole was applied and measurements were taken at regular time intervals to aim for a consistent flow rate, however, the dissipation rate was extremely slow in the clay and no observable movement in the water level could be observed over a 4-hour period.

The in-situ clay ground materials should be considered as impermeable.

2.3 Dynamic cone penetrometer (DCP)

The Dynamic Cone Penetrometer (DCP) test is an in-situ, manual penetration test that measures the penetration resistance of the soil. The test is conducted by driving a cone-tipped rod into the ground surface using a 9kg weight dropped from a standard height. The number of drops (called blows) is recorded for each 150mm depth, and the process continued till the target depth is achieved.

A total of 10 DCP tests were conducted, one adjacent to each borehole (excluding BH2 and BH6). The DCP tests were completed in accordance with AS 1289.6.3.3-1997. DCP blow counts are included on the borehole log profiles, presented in Appendix A and a summary of the results is presented in Table 3 below.

Table 3: Summary of DCP results

Depth (m below existing ground level)	DCP1	DCP3	DCP 4	DCP5	DCP7	DCP8	DCP9	DCP10	DCP11	DCP12
0.00 - 0.15	1	1	1	1	2	2	2	1	1	1
0.15 - 0.30	4	4	2	2	2	2	2	3	2	2
0.30 - 0.45	3	4	3	2	1	3	3	4	2	2
0.45 - 0.60	2	3	4	3	4	4	1	6	2	4
0.60 - 0.75	4	4	6	4	4	3	2	8	2	3
0.75 - 0.90	4	3	11	7	4	3	5	12	3	4
0.90 - 1.05	7	10	17	12	5	3	8	15	5	7
1.05 - 1.20	15	12	19	21	8	6	12	19	7	11
1.20 - 1.35	23	19	20	23	11	8	14	24	13	9
1.35 - 1.50	30	23	22	27	13	8	16	18	15	12
1.50 - 1.65	47	27	29	33	13	16	24	23	11	15
1.65 - 1.80	51	35	34	-	13	24	33	19	15	18
1.80 - 1.95	-	-	-	-	13	26	18	25	19	22

3 LABORATORY TESTING

To assist in the evaluation of geotechnical design parameters and for confirmation of the visual classification of the soils, representative soil samples were sent to NATA accredited laboratories Western Geotechnics (WGLS) and MPL laboratory for laboratory testing. The testing comprised the following:

- Particle size distribution on 2 samples (AS 1289 3.6.1)
- Atterberg limits and linear shrinkage on 2 samples (AS 1289 3.1.2, 3.2.1, 3.3.1, 3.4.1)
- Acid Soil Sulphate (ASS) field tests, including pH_f and pH_{fox} on 22 samples
- Phosphorous Retention Index (PRI) on 4 samples
- Emersion Class Numbers on 4 samples (AS 1289.3.8.1)

Table 4: Summary of soil classification testing

Location ID	Depth (m)	PSD			Atterberg Limits			
		Fines (%)	Sand (%)	Gravel (%)	LL (%)	PL (%)	PI (%)	LS (%)
BH1	1.2 - 1.5	67	33	0	38	19	19	8
BH7	0.6 - 0.9	64	35	1	45	19	26	13

Notes:
Terminology - PSD = Particle Size Distribution; LL = Liquid Limit; PL = Plastic Limit; PI = Plasticity Index; LS = Linear Shrinkage

The Phosphorous Retention Index (PRI) is the ratio of phosphorus absorbed to the phosphorus remaining when the soil is left in contact with a standard phosphorus solution under standard conditions. It is generally used to measure a soil's ability to strip an applied effluent of phosphorus and prevent leaching or contamination into the groundwater. Very

strongly absorbing soils include lateritic loams, iron-rich peats, and Karri loams with PRI >70. A negative value indicates the soil can no longer absorb any more phosphorus and would leach through the layer easily

The results indicate the soils on site are very strongly absorbing and therefore soils are suitable for preventing and stripping phosphorous leaching through the soils.

Table 5: Summary of Emersion Class and Phosphorus Retention Index (PRI) tests

Location ID	Depth (m)	PRI	Emersion Class Number
BH1	0.3 - 0.6	>1000	5
BH1	0.6 - 0.9	>1000	5
BH7	0.3 - 0.6	>1000	5
BH7	0.6 - 0.9	>1000	4

Laboratory testing was conducted as a part of a preliminary Acid Sulphate Soils investigation to determine the potential need for further confirmatory testing and subsequent ASS and dewatering management plans. Sampling was conducted at 0.3m intervals from the boreholes, placed in an esky, and delivered to MPL, a NATA accredited laboratory, for acid sulphate field testing. The testing results are presented below, and the laboratory test certificates are attached in Appendix B.

Table 6: Summary of ASS laboratory results

Location ID	Depth (m)	pH_F	pH_{FOX}	ΔpH	Reaction rating
BH1	0.1 - 0.3	6.3	4.4	1.9	High
BH1	0.3 - 0.6	6.6	4.6	2	High
BH1	0.6 - 0.9	6.3	4.2	2.1	Low
BH1	0.9 - 1.2	6.2	4.3	1.9	Low
BH2	0.0 - 0.3	6.8	4.1	2.7	Medium
BH2	0.3 - 0.6	6.7	4.2	2.5	Low
BH2	0.6 - 0.9	5.6	4.9	0.7	Medium
BH2	0.9 - 1.2	5.6	4.2	1.4	Medium
BH2	1.2 - 1.5	5.5	4.0	1.5	Medium
BH2	1.5 - 1.8	5.4	4.2	1.2	Medium
BH2	1.8 - 2.0	5.4	4.2	1.2	Medium
BH7	0.3 - 0.6	6.2	4.6	1.6	Low
BH7	0.6 - 0.9	6.1	4.8	1.3	Medium
BH7	0.9 - 1.2	6.1	4.5	1.6	Medium
BH7	1.2 - 1.5	6.0	4.5	1.5	Low
BH7	1.5 - 1.8	6.6	5.0	1.6	Low
BH8	0.3 - 0.6	6.1	4.5	1.6	Low
BH8	0.6 - 0.9	6.1	4.8	1.3	Low
BH8	0.9 - 1.2	6.6	5.4	1.2	Medium
BH8	1.2 - 1.5	6.6	5.4	1.2	Medium
BH8	1.5 - 1.8	6.6	5.4	1.2	Medium
BH8	1.8 - 2.1	6.9	5.7	1.2	Medium

4 SUBSURFACE CONDITIONS

4.1 Published geology

The 1:250,000 scale Geological Map 'Collie' indicates that the site is underlain by Qpa: Guildford formation, alluvium (clay, loam, sand and gravel) variably lateritised and podsolised.

Figure 1: Extract from the 1:250,000 scale Geological Map "Collie"

4.2 Groundwater

During the site investigation, groundwater was encountered at a depth of 7.0 m within BH5, however was not encountered within any of the other boreholes. WML undertook a groundwater monitoring visit on the 27th September 2022 and a static groundwater level was measured within the 4 installed monitoring wells at a depth between 1.0 m to 1.75 m, the results are presented in Table 9 below.

Table 7: Measured static groundwater levels

Location ID	Groundwater (m bgl)	
	Initial (17/09/2022)	Final (27/09/2022)
BH5	7m	1.70 m
BH6	GNE	1.75 m
BH7	GNE	1.60 m
BH8	GNE	1.00 m

4.3 Interpreted subsurface profile

Based on the encountered sub-surface profile, the site is typically consistent between both proposed Site 1 and Site 2. A generalized sub-surface profile was determined based on the soil logs, general landform and in-situ testing. Table 8 presents the generalized profile.

Table 8: Sub-surface soil profile

Soil/rock layer	Depth (m)	Description
TOPSOIL; CLAY	0.0 – 0.2 m	high plasticity, brown orange; with fine to medium grained sand with fine to medium grained gravel; moist; firm; trace fine to medium roots

CLAY	0.2 – 7.0 m+	high plasticity, brown orange; fine grained sand; dry; stiff to hard;

4.4 Geotechnical design parameters

Based on laboratory test results, in-situ test results and observations made in the field, Table 9 below presents the geotechnical parameters for the soil profile referenced in Section 3.2.

Table 9: Geotechnical design parameters for CLAY.

Parameter	Values
Φ (Internal friction)	26°
Cu (Cohesion)	5 kPa
Su (Undrained shear strength)	75 – 150 kPa
E (Youngs Modulus)	30 MPa
γ (Unit Weight)	17.5 kN / m^3
K (Design permeability)	1 x 10^{-9} m/s

Notes:
Field observations, in-situ tests (DCP and permeameter) and lab testing

4.5 Bearing capacity and settlement analysis

A geotechnical strength reduction factor was chosen in accordance with Section 8 – Retaining Walls and Abutments from Australian Standard 5100.3-2017. Table 8.3.1(A) in the standard provides a range of reduction factors based on the method of assessment of the ultimate geotechnical strength for bearing failure and overturning, sliding and global stability. During the fieldwork, penetrometer testing was undertaken. Based on our experience, a geotechnical strength reduction factor of 0.35 has been adopted for the analysis.

WML have undertaken bearing capacity analysis utilizing the latest GEO5 software for a range of footing sizes and spread footings for the sub-surface profiles. Table 10 below presents the allowable bearing capacity and expected foundation settlement based on the following:

- The footings will be supported on clean granular sand fill (minimum 1 m sand pad) following the topsoil strip to be compacted to a minimum DDR of 95 % MMDD as detailed in Section 7.3.
- A geotechnical strength reduction factor of 0.35 was used in the analysis in accordance with Tables 5.3.3.3 (A) and 5.3.3.3 (B) of AS 5100.3 (2017).
- The Hansen (1961) bearing capacity method was used.

Table 10: Allowable bearing capacity and expected total settlement.

Embedment Depth (m)	Footing Size (m)	Allowable bearing Capacity *(kPa)*	Expected total settlement (mm)
0.3	1 x 1	175	5 - 10
0.3	2 x 2	175	5 - 10
0.3	Strip footing	175	5 - 10

5 PRELIMINARY ASS INVESTIGATION

5.1 Background

Acid Sulfate Soils (ASS) can be described as naturally occurring soils that contain sulphide minerals, commonly pyrite and iron sulphide. These soils form in wet, anaerobic conditions typically associated with wetlands and inundated areas. Where undisturbed, ASS is stable and does not pose an environmental risk. However, following a disturbance (e.g., excavation, dewatering, or installation of underground services), pyrite may oxidise, producing a variety of iron compounds and sulfuric acid.

ASS that has already oxidised, producing acidic conditions, are termed Actual ASS (AASS). ASS that has not oxidised is referred to as Potential ASS (PASS). Undisturbed PASS remaining in anaerobic conditions, for example, below the water table, does not generally pose a risk to the environment, as while they are undisturbed, their potential to generate environmentally hazardous acids is minimised. Non-ASS (NASS) is when actual (previously oxidised) or potential acidity is at concentrations not considered an environmental hazard or which do not require management.

5.2 Assessment criteria

Assessment of ASS in Western Australia is based on the DWER guideline '*Identification and investigation of acid sulphate soils and acidic landscapes*' (2015). The guideline includes acidity-based action criteria for field pH_F and pH_{FOX} testing and laboratory S_{CR} analysis. These guidelines were developed by the Queensland Acid Sulfate Soils Investigation Team (QASSIT) with reference to conditions encountered in Queensland and adapted by the DWER for use in Western Australia.

The field pH_F test measures the existing acidity of the soil sample and therefore provides a preliminary means of identifying ASS. Table 11 provides the parameters that were utilised to interpret pH_F values.

Table 11: Field pH_F test assessment criteria (DWER 2015)

pH Value	Interpretation
$pH_F \leq 4$	Indicates AASS but is not conclusive as it may represent highly organic or fertilised soils
$pH_F \leq 3.7$	Indicates AASS and expected if a sample contains jarosite
$pH_F > 7$	It may be a PASS after oxidisation. Expected in waterlogged conditions

The field pH peroxide test (pH_{FOX}) indicates the presence of iron sulphides or PASS. Where sulphides are present, a reaction will occur whereby the vigour is noted, and subsequently, the pH_{FOX} measurement is recorded. The assessment criteria associated with field pH_{FOX} are provided in Table 12.

Table 12: Field pH_{FOX} test assessment criteria (DWER 2015)

pH Value	Interpretation
Strong reaction	Potential PASS but cannot be used alone as it may also indicate organic matter, coffee rock and manganese in soils
pH_{FOX} value at least one unit below field pH_F and reaction to peroxide	It may indicate PASS but depends on the initial and resultant pH
pH_{FOX} <3, strong reaction with peroxide, and large ΔpH	Strongly indicates PASS
A pH_{FOX} 3-4 and reaction to peroxide	A less positive indication of PASS, further analysis is required
pH_{FOX} 4-5	The test is neither positive nor negative; further analysis is required
pH_{FOX} >5 and little or no drop in pH from pH_F but a reaction to peroxide	Indicates limited net acidifying ability; further analysis is required

In addition, the following general criteria (DWER 2015) were also referred to for the selection of soil samples for S_{CR} analysis:

- Where both pH_F and pH_{FOX} <4.0 (AASS);
- Where pH_F >4.0 and pH_{FOX} <4.0 (PASS);
- Not Acid Sulfate soils (NASS) where both pH_F and pH_{FOX} > 4.0;
- Extreme reactions to hydrogen peroxide;
- Change in pH (pHΔ) >1.0, where pH = pH_F - pH_{FOX}; and
- pH_{FOX} < 5.5.

5.3 Preliminary ASS assessment

The results of the ASS field tests are presented in Section 3 and have been compared against the assessment criteria presented above, which indicate that the potential presence of PASS. Based on this assessment, further confirmatory testing is recommended to determine the potential risk of acid generation due to the oxidisation of the soils. However, it is understood that the service stations are being built up from the existing ground levels and no excavation may take place and therefore no further ASS testing would be required.

If any excavation is undertaken for a volume greater than 100m^3, confirmatory ASS testing should be conducted for the soils at that specific location.

6 SITE SOIL EVALUATION (SSE)

A Site-and-Soil Evaluation (SSE) report was prepared in accordance with the Government Sewerage Policy 2019 and the Australian Standard 1547:2012 “On-site domestic wastewater management”, the report is presented independently to this geotechnical report and is titled 10783-G-R-002-0.

7 FINDINGS & RECOMMENDATION

7.1 Suitability for development

Based on the investigation results, the site, in its existing state, the site geotechnically suitable for supporting the proposed development with the remediation of the ground undertaken. The following Section 6.3 outline the recommended methods for remediation. It is understood that the area can become season inundated with surface water, is expected the civil designer will require a sand pad to raise the development, the following recommendations made in this report assume a sand pad of at least 1m will be required beneath the pavements and proposed buildings.

7.2 Site classification

Based upon the site investigation results, the site may be classified in accordance with AS 2870:2011 - "Residential Slabs and Footings" which requires an estimation of the expected surface movement due to the wetting and drying of a foundation.

Based on the Clay present at the site, a site classification of "**H1**" is deemed suitable, provided the site preparation recommendations are adhered to in Section 6.3 below. It anticipated that a sand pad will be required if a sand pad between greater than 1m is placed a site classification of "**S**" is deemed suitable.

CLASSIFICATION BY CHARACTERISTIC SURFACE MOVEMENT (y_s)

Characteristic surface movement (y_s) mm	Site classification in accordance with Table 2.1
$0 < y_s \leq 20$	S
$20 < y_s \leq 40$	M
$40 < y_s \leq 60$	H1
$60 < y_s \leq 75$	H2
$y_s > 75$	E

Figure 2: Extract from AS2870:2011 (Table 2.3)

Sites with inadequate bearing strength or where ground movement may be significantly affected by factors other than reactive soil movements due to normal moisture conditions shall be classified as Class P. Class P sites include: the site contains uncontrolled or controlled fill as identified in AS 2870 Clause 2.5.3, soft or unstable foundations such as soft clay or silt or loose sands, landslip, mine subsidence, collapsing soils and soils subject to erosion, reactive sites subject to abnormal moisture conditions and sites that cannot be classified in accordance with AS 2870 Clause 2.1.2.

7.3 Earthworks and fill

At the time of preparing this report, limited information regarding the proposed earthworks and the structures was available. The finished site levels are expected to be higher than the current site levels with additional sand fill at least 1m high since clay present at the entire site, and no significant cut/fill earthworks will be required. Once additional information on earthworks and preliminary design are available, the below recommendations must be reviewed and revised to suit the project requirements.

All earthworks for the proposed development must be completed in accordance with AS 3798:2007 – "Earthworks for Residential and Commercial Developments".

7.4 Footing foundations

Based upon the available geotechnical information, shallow pad and strip footings formed within a minimum 1m thick sand pad are considered the most suitable form of construction. An allowable bearing capacity of 175kPa can be adopted for structural designs for strip and pad footings up to 2m wide. With a minimum embedment depth of 300mm. WML should be contacted for the validation of bearing capacity for footings larger than 2m wide or deeper than 1m. Construct footings in accordance with structural engineers' design.

7.5 Pavement

Assuming topsoil stripping recommendations detailed in this section are followed and the subgrade is proof compacted, and compaction tested by a suitable material testing laboratory, then a design subgrade CBR of 12% can be adopted for the imported sandy subgrade materials at the site. Calibrated PSP testing can be undertaken to validate the density of imported sand material.

7.6 Drainage

The in-situ clay materials on site are considered poor-draining materials with very low permeability rate due to the percentage of fines (> 60%). Therefore, groundwater is expected to perch on top of the low permeability clay.

In general, poor drainage conditions are exhibited within the site. It is recommended free draining granular fill is used to raise site levels which are graded to direct stormwater away from the proposed buildings and structures. Drainage around the buildings should be adequate to redirect excess surface water away from the buildings. The areas adjacent to the buildings should slope away from the structures of not less than 1 in 50, then be directed to the stormwater system to prevent ponding of water adjacent to the building.

7.7 Site preparation and remediation

The below construction and site preparation recommendations are considered minimum requirements. This report is not intended for use as a specification for construction. The following preliminary site preparation measures for the building site are recommended:

- Plan the earthworks for summer/dry months to avoid softening/deterioration of the stiff clayey subgrade.
- Any areas of soft soils (such as in ponds, and open drainage channels) or other unstable materials must be removed to expose the stiff clay subgrade (to be approved by a geotechnical engineer) and replaced with approved fill.
- All topsoil and vegetation from the site shall be stripped. A nominal 200mm topsoil strip should be allowed. The topsoil strip should be approved by a geotechnical engineer.
- Demolish all existing structures and earthworks from the proposed building footprint and remove the demolition rubble/spoil from the site.
- Moisture condition (if required) and proof-roll the exposed subgrade compact to achieve a minimum dry density ratio (DDR) of 95% modified maximum dry density (MMDD) at +/- 2% optimum moisture content (OMC) to a depth of at least 300 m below the exposed subgrade.
- The subgrade should be graded so that it may free drain, any depressions, gullies, drainage channels or ponds should be backfilled in compacted layers using material similar to the clayey subgrade.
- All fill materials should be placed and compacted in layers no greater than 300 mm (loose thickness) to achieve a minimum DDR of 95% MMDD at +/-2% OMC. All imported fill materials used must conform to the material requirements of AS3798-2007 “Guidelines for Earthworks for Commercial and Residential Developments”.
- The earthwork pad and road embankment should be constructed form free draining clean Sand with fines <5% and an organic content <2%.

7.8 Compaction

The selected fill materials must be compacted to achieve a dry density ratio specified in Section 6.7 above determined in accordance with AS 1289 5.1.1 (Standard Compaction for Clay) and 5.2.1 (Modified Compaction for granular materials).

Field density tests shall be used to check the compliance of the compacted material. The tests shall be carried out at the frequency detailed in Table 8.1 of AS3798:2007 ***Type 1***.

- Method 5.3.1 of AS 1289 (Sand replacement method using a sand-cone pouring apparatus);
- Method 5.8.1 of AS 1289 (Nuclear surface moisture-density gauge).

Compaction requirements are detailed below:

Table 13: Compaction requirements

Application	Maximum Dry Density Ratio (%)
General fill and supporting foundations	95
Subgrade supporting pavements	98

8 CLOSURE

We trust that the information provided within this report satisfies your present requirements and meets with your approval. Should you have any queries, please do not hesitate to contact the author of this report.

We draw your attention to the attached "*Report Limitations*" included with this report. This information sheet is intended to provide additional information about this report and information included within it. This information is provided not to reduce the level of responsibility accepted by WML but to ensure that all parties that rely on this report, and the information contained herein, are aware of the responsibilities that each assumes in so doing.

9 REFERENCES

1. Geological Series Map 1:50,000 Scale 'Collie'
2. Standards Australia/New Zealand. 2007. *Structural Design Actions Part 4: Earthquake Actions in Australia*. AS 1170.4:2007. SAI Global.
3. Standards Australia. 2017. *Geotechnical Site Investigations*. AS 1726:2017. SAI Global.
4. Standards Australia. 2011. *Residential Slabs and Footings*. AS 2870:2011. SAI Global.
5. Standards Australia. 2007. Earthworks for Residential and Commercial Developments. AS 3798:2007. SAI Global.
6. Standards Australia. 2007. Earth Retaining Structures. AS 4678:2002. SAI Global.
7. Carter M., Bentley S. P., Correlations of Soil Properties, 1991.

LIMITATIONS

WML have undertaken investigations, performed consulting services, and prepared this report based on the Client's specific requirements, documents and information supplied, and previous experience. If changes occur in the nature or design of the project, we should be allowed to review this report and provide additional recommendations, if any. It is the responsibility of the Client to transmit the information and recommendations of this report to the appropriate organisations or people involved in design of the project, including but not limited to developers, owners, buyers, architects, engineers, and designers.

We performed our professional services in accordance with generally accepted geotechnical engineering principles and practices currently employed in the area; no warranty, expressed or implied, is made as to the professional advice included in this report.

Any data provided by third parties including, but not limited to: sub-consultants, published data, and the Client, may not be verified and WML assumes no responsibility for the adequacy, incompleteness, inaccuracies, or reliability of this information. WML does not assume any responsibility for assessments made partly or entirely based on information provided by third parties.

This report has been prepared based on investigation locations which are explicitly representative of the specific sample or test points. Interpretation of conditions between such points cannot be assumed to represent actual subsurface information and there are unknowns or variations in ground conditions between test locations that cannot be inferred or predicted.

This report is based upon field and other conditions encountered at the time of report preparation. If unexpected subsurface conditions are encountered, WML shall be notified immediately to review those conditions and provide additional and/or modified recommendations, as necessary.

Our services did not include any contamination or environmental assessment of the site or adjacent sites. The nature of geotechnical investigation differs from the environmental investigation practice. If you require any environmental considerations to be applied to your project, WML can advise on further steps to be undertaken.

Geotechnical assessments are typically based on judgment of the investigation data and visual observations of the site and materials.

This document must not be subject to unauthorised use that is, reusing without written authorisation of WML. Such authorisation is essential because it requires WML to evaluate the document's applicability given new circumstances, not the least of which is passage of time.

DRAWINGS

10783-G-001

Geotechnical Test Locations - Waterloo Rd

WML accessible expertise

Legend

- Boreholes

BH11
BH7
BH8
BH12
BH9
BH10
BH4
BH5
BH2
BH3
BH1
BH6

Waterloo Rd

Wild R

Waterloo Rd

N

Google Earth

100 m

APPENDIX A

LOGS AND PHOTOGRAPHS

BOREHOLE: BH1

SHEET: 1 OF 1

CLIENT:	Saracen Developments Pty Ltd	HOLE DEPTH:	2.65m	CONTRACTOR:	WML Consultants		
PROJECT:	BORR Waterloo Service Station	COORDINATES:	385515.0 m E, 6309740.5 m N, MGA94 Zone 51	EQUIPMENT:	Mechanical Drill rig		
JOB NO.:	10783			LOGGED:	HK	START DATE:	16/9/2022
LOCATION:	Waterloo	INCLINATION:	-90°	CHECKED:	SM	END DATE:	16/9/2022

Drilling				Field Material Description							
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY	IN SITU TESTING	SAMPLE	DCP TEST Blows per 150 mm (0 8 16 24 32 40)
110 mm augur drilling	Not Encountered	0.0	0.20		CH	**TOPSOIL; CLAY,** high plasticity, brown orange; with fine to medium grained sand, with fine to medium grained gravel; moist; stiff; *trace fm roots*	M	St			
		0.5			CH	**sandy CLAY,** high plasticity, brown orange; fine grained sand; dry; stiff.			FV 0.50 m s_v=55 kPa FV 0.70 m s_v=70 kPa	2D 0.30-0.60 m 2D 0.60-0.90 m 2D 0.90-1.20 m	
		1.0					D	St	FV 1.00 m s_v=100 kPa	D 1.20-1.50 m	
		1.5							FV 1.30 m s_v=120 kPa	D 1.50-1.80 m	>> >>
		2.0	2.00		CH	**Sandy CLAY,** high plasticity, brown orange; sand is fine grained; moist; very stiff.	M	VSt			
		2.5	2.65			Hole Terminated at 2.65 m					

Sketch & Other Observations

BOREHOLE: BH2

SHEET: 1 OF 1

CLIENT:	Saracen Developments Pty Ltd	HOLE DEPTH:	2.65m	CONTRACTOR:	WML Consultants		
PROJECT:	BORR Waterloo Service Station	COORDINATES:	385556.4 m E, 6309783.1 m N, MGA94 Zone 51	EQUIPMENT:	Mechanical Drill rig		
JOB NO.:	10783			LOGGED:	HK	START DATE:	16/9/2022
LOCATION:	Waterloo	INCLINATION:	-90°	CHECKED:	SM	END DATE:	16/9/2022

Drilling				Field Material Description					IN SITU TESTING	SAMPLE	STRUCTURE AND ADDITIONAL OBSERVATIONS
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY			
110 mm augur drilling	Not Encountered	0.0	0.25		CH	**TOPSOIL; CLAY,** high plasticity, brown orange; with fine to medium grained sand, with fine to medium grained gravel; moist; stiff; *trace fm roots*	M	St			0.00: TOPSOIL
		0.5			CH	**sandy CLAY,** high plasticity, brown orange; fine grained sand; dry; stiff to very stiff.			FV 0.65 m s_v=95 kPa		
		1.0									
		1.5					D	H	FV 1.55 m s_v=120 kPa		
		2.0									
		2.5	2.65								
						Hole Terminated at 2.65 m					

Sketch & Other Observations

BOREHOLE: BH3

SHEET: 1 OF 1

CLIENT:	Saracen Developments Pty Ltd	HOLE DEPTH:	2.65m	CONTRACTOR:	WML Consultants		
PROJECT:	BORR Waterloo Service Station	COORDINATES:	385598.0 m E, 6309766.1 m N, MGA94 Zone 51	EQUIPMENT:	Mechanical Drill rig		
JOB NO.:	10783			LOGGED:	HK	START DATE:	16/9/2022
LOCATION:	Waterloo	INCLINATION:	-90°	CHECKED:	SM	END DATE:	16/9/2022

Drilling				Field Material Description					IN SITU TESTING	SAMPLE	DCP TEST Blows per 150 mm
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY			0 8 16 24 32 40
110 mm augur drilling	Not Encountered	0.0			CH	**TOPSOIL; CLAY,** high plasticity, brown orange; with fine to medium grained sand, with fine to medium grained gravel; moist; stiff; *trace fm roots*	M	St			
			0.25		CH	**sandy CLAY,** high plasticity, brown orange; fine grained sand; dry; stiff to very stiff.			FV 0.60 m s_v=90 kPa		
		0.5									
		1.0									
		1.5					D	H			
		2.0									
		2.5									
			2.65			Hole Terminated at 2.65 m					

Sketch & Other Observations

BOREHOLE: BH4

SHEET: 1 OF 1

CLIENT:	Saracen Developments Pty Ltd	HOLE DEPTH:	2.65m	CONTRACTOR:	WML Consultants		
PROJECT:	BORR Waterloo Service Station	COORDINATES:	385603.0 m E, 6309826.6 m N, MGA94 Zone 51	EQUIPMENT:	Mechanical Drill rig		
JOB NO.:	10783			LOGGED:	HK	START DATE:	17/9/2022
LOCATION:	Waterloo	INCLINATION:	-90°	CHECKED:	SM	END DATE:	17/9/2022

Drilling				Field Material Description					IN SITU TESTING	SAMPLE	DCP TEST Blows per 150 mm
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY			0 8 16 24 32 40
110 mm augur drilling	Not Encountered	0.0			CH	**TOPSOIL; CLAY,** high plasticity, brown orange; with fine to medium grained sand, with fine to medium grained gravel; moist; stiff; *trace fm roots*	M	St			
			0.25		CH	**CLAY,** high plasticity, brown orange; fine grained sand; dry; stiff to very stiff.	D	H			
		0.5									
		1.0									
		1.5									
		2.0									
		2.5									
			2.65			Hole Terminated at 2.65 m					

Sketch & Other Observations

BOREHOLE: BH5

SHEET: 1 OF 1

CLIENT:	Saracen Developments Pty Ltd	HOLE DEPTH:	7.00m	CONTRACTOR:	WML Consultants		
PROJECT:	BORR Waterloo Service Station	COORDINATES:	385622.4 m E, 6309803.8 m N, MGA94 Zone 51	EQUIPMENT:	Mechanical Drill rig		
JOB NO.:	10783			LOGGED:	HK	START DATE:	17/9/2022
LOCATION:	Waterloo	INCLINATION:	-90°	CHECKED:	SM	END DATE:	17/9/2022

Drilling				Field Material Description							
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY	IN SITU TESTING	SAMPLE	DCP TEST Blows per 150 mm
110 mm augur drilling	1.7m	0	0.25		CH	**TOPSOIL; CLAY,** high plasticity, brown orange; with fine to medium grained sand, with fine to medium grained gravel; moist; stiff; *trace fm roots*	M	St	FV 0.30 m s_v=85 kPa FV 0.60 m s_v=115 kPa FV 0.90 m s_v=110 kPa FV 1.20 m s_v=216 kPa		0 8 16 24 32 40
		2			CH	**sandy CLAY,** high plasticity, brown orange; fine grained sand; dry; stiff to very stiff.	D	H			
		4									
		6	7.00								
						Hole Terminated at 7.00 m					

Sketch & Other Observations

BOREHOLE: BH6

SHEET: 1 OF 1

CLIENT:	Saracen Developments Pty Ltd	HOLE DEPTH:	2.65m	CONTRACTOR:	WML Consultants		
PROJECT:	BORR Waterloo Service Station	COORDINATES:	385613.0 m E, 6309673.7 m N, MGA94 Zone 51	EQUIPMENT:	Mechanical Drill rig		
JOB NO.:	10783			LOGGED:	HK	START DATE:	17/9/2022
LOCATION:	Waterloo	INCLINATION:	-90°	CHECKED:	SM	END DATE:	17/9/2022

Drilling				Field Material Description					IN SITU TESTING	SAMPLE	STRUCTURE AND ADDITIONAL OBSERVATIONS
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY			
110 mm augur drilling	1.75m	0.0	0.25		CH	**TOPSOIL; CLAY,** high plasticity, brown orange; with fine to medium grained sand, with fine to medium grained gravel; moist; stiff; *trace fm roots*	M	St			0.00: TOPSOIL
		0.5			CH	**sandy CLAY,** high plasticity, brown orange; fine grained sand; dry; stiff to very stiff.	D	H			
		1.0									
		1.5									
		2.0									
		2.5	2.65								
						Hole Terminated at 2.65 m					

Sketch & Other Observations

BOREHOLE: BH7

SHEET: 1 OF 1

CLIENT:	Saracen Developments Pty Ltd	HOLE DEPTH:	7.50m	CONTRACTOR:	WML Consultants		
PROJECT:	BORR Waterloo Service Station	COORDINATES:	385400.0 m E, 6309900.6 m N, MGA94 Zone 51	EQUIPMENT:	Mechanical Drill rig		
JOB NO.:	10783			LOGGED:	HK	START DATE:	17/9/2022
LOCATION:	Waterloo	INCLINATION:	-90°	CHECKED:	SM	END DATE:	17/9/2022

Drilling				Field Material Description							
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY	IN SITU TESTING	SAMPLE	DCP TEST Blows per 150 mm
110 mm augur drilling	1.6m	0	0.25		CH	**TOPSOIL; CLAY,** high plasticity, brown orange; with fine to medium grained sand, with fine to medium grained gravel; moist; stiff; *trace fm roots*	M	St	FV 0.30 m s_v=105 kPa	2D 0.30-0.60 m	0 8 16 24 32 40
					CH	**sandy CLAY,** high plasticity, brown orange; fine grained sand; dry; very stiff.			FV 0.90 m s_v=160 kPa FV 1.20 m s_v=160 kPa FV 1.50 m s_v=190 kPa	2D 0.60-0.90 m 2D 0.90-1.20 m	
		2									
		4					D	VSt			
		6	7.50								
		8				Hole Terminated at 7.50 m					

Sketch & Other Observations

BOREHOLE: BH8

SHEET: 1 OF 1

CLIENT:	Saracen Developments Pty Ltd	HOLE DEPTH:	2.64m	CONTRACTOR:	WML Consultants		
PROJECT:	BORR Waterloo Service Station	COORDINATES:	385129.4 m E, 6309869.6 m N, MGA94 Zone 51	EQUIPMENT:	Mechanical Drill rig		
JOB NO.:	10783			LOGGED:	HK	START DATE:	17/9/2022
LOCATION:	Waterloo	INCLINATION:	-90°	CHECKED:	SM	END DATE:	17/9/2022

Drilling				Field Material Description					IN SITU TESTING	SAMPLE	DCP TEST Blows per 150 mm
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY			0 8 16 24 32 40
110 mm augur drilling	1m	0.0	0.25		CH	**TOPSOIL; CLAY,** high plasticity, brown orange; with fine to medium grained sand, with fine to medium grained gravel; moist; stiff; *trace fm roots*	M	St			
		0.5			CH	**sandy CLAY,** high plasticity, brown orange; fine grained sand; dry; stiff to very stiff.			FV 0.30 m s_v=100 kPa FV 0.60 m s_v=110 kPa		
		1.0							FV 0.90 m s_v=120 kPa		
		1.5					D	H	FV 1.20 m s_v=160 kPa FV 1.50 m s_v=120 kPa		
		2.0									
		2.5	2.64			Hole Terminated at 2.64 m					

Sketch & Other Observations

BOREHOLE: BH9

SHEET: 1 OF 1

CLIENT:	Saracen Developments Pty Ltd	HOLE DEPTH:	2.65m	CONTRACTOR:	WML Consultants		
PROJECT:	BORR Waterloo Service Station	COORDINATES:	385232.0 m E, 6309817.7 m N, MGA94 Zone 51	EQUIPMENT:	Mechanical Drill rig		
JOB NO.:	10783			LOGGED:	HK	START DATE:	17/9/2022
LOCATION:	Waterloo	INCLINATION:	-90°	CHECKED:	SM	END DATE:	17/9/2022

Drilling				Field Material Description							
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY	IN SITU TESTING	SAMPLE	DCP TEST Blows per 150 mm
110 mm augur drilling	Not Encountered	0.0			CH	**TOPSOIL; CLAY,** high plasticity, brown orange; with fine to medium grained sand, with fine to medium grained gravel; moist; stiff; *trace fm roots*	M	St			0 8 16 24 32 40
			0.25		CH	**sandy CLAY,** high plasticity, brown orange; fine grained sand; dry; stiff.	D	St			
		0.5									
		1.0									
		1.5	1.50		CH	**Sandy CLAY,** high plasticity, orange; sand is fine to coarse grained, rounded to subrounded; moist; stiff to very stiff.	M	H			
			1.90		CH	**sandy CLAY,** high plasticity, brown orange; fine grained sand, dry; very stiff.	D	VSt			
		2.0									
		2.5	2.65			Hole Terminated at 2.65 m					

Sketch & Other Observations

BOREHOLE: BH10

SHEET: 1 OF 1

CLIENT:	Saracen Developments Pty Ltd	HOLE DEPTH:	2.65m	CONTRACTOR:	WML Consultants		
PROJECT:	BORR Waterloo Service Station	COORDINATES:	385297.6 m E, 6309800.8 m N, MGA94 Zone 51	EQUIPMENT:	Mechanical Drill rig		
JOB NO.:	10783			LOGGED:	HK	START DATE:	17/9/2022
LOCATION:	Waterloo	INCLINATION:	-90°	CHECKED:	SM	END DATE:	17/9/2022

Drilling				Field Material Description							
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY	IN SITU TESTING	SAMPLE	DCP TEST Blows per 150 mm
110 mm augur drilling	Not Encountered	0.0	0.25		CH	**TOPSOIL; CLAY,** high plasticity, brown orange; with fine to medium grained sand, with fine to medium grained gravel; moist; stiff; *trace fm roots*	M	St			
		0.5			CH	**sandy CLAY,** high plasticity, brown orange; fine grained sand; dry; stiff to very stiff; *with sand from 1.8 to 2.3*	D	H			
		1.0									
		1.5									
		2.0									
		2.5	2.65			Hole Terminated at 2.65 m					

DCP TEST Blows per 150 mm: 0 8 16 24 32 40

Sketch & Other Observations

BOREHOLE: BH11

SHEET: 1 OF 1

CLIENT:	Saracen Developments Pty Ltd	HOLE DEPTH:	2.65m	CONTRACTOR:	WML Consultants		
PROJECT:	BORR Waterloo Service Station	COORDINATES:	385347.7 m E, 6309897.0 m N, MGA94 Zone 51	EQUIPMENT:	Mechanical Drill rig		
JOB NO.:	10783			LOGGED:	HK	START DATE:	17/9/2022
LOCATION:	Waterloo	INCLINATION:	-90°	CHECKED:	SM	END DATE:	17/9/2022

Drilling				Field Material Description					IN SITU TESTING	SAMPLE	DCP TEST Blows per 150 mm
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY			0 8 16 24 32 40
110 mm augur drilling	Not Encountered	0.0	0.25		CH	**TOPSOIL; CLAY,** high plasticity, brown orange; with fine to medium grained sand, with fine to medium grained gravel; moist; stiff; *trace fm roots*	M	St			
		0.5			CH	**sandy CLAY,** high plasticity, brown orange; fine grained sand; dry; stiff to very stiff.	D	H			
		1.0									
		1.5									
		2.0									
		2.5	2.65			Hole Terminated at 2.65 m					

Sketch & Other Observations

BOREHOLE: BH12

SHEET: 1 OF 1

CLIENT:	Saracen Developments Pty Ltd	HOLE DEPTH:	2.65m	CONTRACTOR:	WML Consultants		
PROJECT:	BORR Waterloo Service Station	COORDINATES:	385274.2 m E, 6309870.0 m N, MGA94 Zone 51	EQUIPMENT:	Mechanical Drill rig		
JOB NO.:	10783			LOGGED:	HK	START DATE:	17/9/2022
LOCATION:	Waterloo	INCLINATION:	-90°	CHECKED:	SM	END DATE:	17/9/2022

Drilling				Field Material Description					IN SITU TESTING	SAMPLE	DCP TEST Blows per 150 mm
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY			0 8 16 24 32 40
110 mm augur drilling	Not Encountered	0.0	0.25		CH	**TOPSOIL; CLAY,** high plasticity, brown orange; with fine to medium grained sand, with fine to medium grained gravel; moist; stiff; *trace fm roots*	M	St			
		0.5			CH	**sandy CLAY,** high plasticity, brown orange; fine grained sand; dry; stiff to very stiff.	D	H			
		1.0									
		1.5									
		2.0									
		2.5	2.65			Hole Terminated at 2.65 m					

Sketch & Other Observations

APPENDIX B

LABORATORY TESTING

Envirolab Services (WA) Pty Ltd trading as MPL Laboratories
ABN 53 140 099 207
16-18 Hayden Court Myaree WA 6154
ph +61 8 9317 2505 fax +61 8 9317 4163
lab@mpl.com.au
www.mpl.com.au

Certificate of Analysis PDI1180

Client Details

Client	WML Consultants
Contact	Hajran Khatim
Address	1st Floor, 62 Wittencom Street PO Box 2023, BUNBURY, WA, 6230

Sample Details

Your Reference	Waterloo Service Station
Number of Samples	22 Soil
Date Samples Received	20/09/2022
Date Samples Registered	20/09/2022

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date Results Requested by	29/09/2022
Date of Issue	28/09/2022

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Accredited for compliance with ISO/IEC 17025. Tests not covered by NATA are denoted with *.

Authorisation Details

Results Approved By	Stacey Hawkins, ASS/AMD Supervisor
Laboratory Manager	Michael Kubiak

Samples in this Report

Envirolab ID	Sample ID	Depth	Matrix	Date Sampled	Date Received
PDI1180-01	HA1	0.10-0.30	Soil	16/09/2022	20/09/2022
PDI1180-02	HA1	0.30-0.60	Soil	16/09/2022	20/09/2022
PDI1180-03	HA1	0.60-0.90	Soil	16/09/2022	20/09/2022
PDI1180-04	HA1	0.90-1.20	Soil	16/09/2022	20/09/2022
PDI1180-05	HA2	0.00-0.30	Soil	16/09/2022	20/09/2022
PDI1180-06	HA2	0.30-0.60	Soil	16/09/2022	20/09/2022
PDI1180-07	HA2	0.60-0.90	Soil	16/09/2022	20/09/2022
PDI1180-08	HA2	0.90-1.20	Soil	16/09/2022	20/09/2022
PDI1180-09	HA2	1.20-1.50	Soil	16/09/2022	20/09/2022
PDI1180-10	HA2	1.50-1.80	Soil	16/09/2022	20/09/2022
PDI1180-11	HA2	1.80-2.00	Soil	16/09/2022	20/09/2022
PDI1180-12	HA7	0.30-0.60	Soil	16/09/2022	20/09/2022
PDI1180-13	HA7	0.60-0.90	Soil	16/09/2022	20/09/2022
PDI1180-14	HA7	0.90-1.20	Soil	16/09/2022	20/09/2022
PDI1180-15	HA7	1.20-1.50	Soil	16/09/2022	20/09/2022
PDI1180-16	HA7	1.50-1.80	Soil	16/09/2022	20/09/2022
PDI1180-17	HA8	0.30-0.60	Soil	16/09/2022	20/09/2022
PDI1180-18	HA8	0.60-0.90	Soil	16/09/2022	20/09/2022
PDI1180-19	HA8	0.90-1.20	Soil	16/09/2022	20/09/2022
PDI1180-20	HA8	1.20-1.50	Soil	16/09/2022	20/09/2022
PDI1180-21	HA8	1.50-1.80	Soil	16/09/2022	20/09/2022
PDI1180-22	HA8	1.80-2.10	Soil	16/09/2022	20/09/2022

Acid Sulfate Soils (Soil)

Envirolab ID	Units	PQL	PDI1180-01	PDI1180-02	PDI1180-03	PDI1180-04	PDI1180-05
Your Reference			HA1	HA1	HA1	HA1	HA2
Date Sampled			16/09/2022	16/09/2022	16/09/2022	16/09/2022	16/09/2022
Depth			0.10-0.30	0.30-0.60	0.60-0.90	0.90-1.20	0.00-0.30
pHF (field pH test)*	pH units		6.3	6.6	6.3	6.2	6.8
pHFOX (field peroxide test)*	pH units		4.4	4.6	4.2	4.3	4.1
Reaction Rate*	-		High	High	Low	Low	Medium

Envirolab ID	Units	PQL	PDI1180-06	PDI1180-07	PDI1180-08	PDI1180-09	PDI1180-10
Your Reference			HA2	HA2	HA2	HA2	HA2
Date Sampled			16/09/2022	16/09/2022	16/09/2022	16/09/2022	16/09/2022
Depth			0.30-0.60	0.60-0.90	0.90-1.20	1.20-1.50	1.50-1.80
pHF (field pH test)*	pH units		6.7	5.6	5.6	5.5	5.4
pHFOX (field peroxide test)*	pH units		4.2	4.1	4.2	4.0	4.2
Reaction Rate*	-		Low	Medium	Medium	Medium	Medium

Envirolab ID	Units	PQL	PDI1180-11	PDI1180-12	PDI1180-13	PDI1180-14	PDI1180-15
Your Reference			HA2	HA7	HA7	HA7	HA7
Date Sampled			16/09/2022	16/09/2022	16/09/2022	16/09/2022	16/09/2022
Depth			1.80-2.00	0.30-0.60	0.60-0.90	0.90-1.20	1.20-1.50
pHF (field pH test)*	pH units		5.4	6.2	6.1	6.1	6.0
pHFOX (field peroxide test)*	pH units		4.2	4.6	4.8	4.5	4.5
Reaction Rate*	-		Medium	Low	Medium	Medium	Low

Envirolab ID	Units	PQL	PDI1180-16	PDI1180-17	PDI1180-18	PDI1180-19	PDI1180-20
Your Reference			HA7	HA8	HA8	HA8	HA8
Date Sampled			16/09/2022	16/09/2022	16/09/2022	16/09/2022	16/09/2022
Depth			1.50-1.80	0.30-0.60	0.60-0.90	0.90-1.20	1.20-1.50
pHF (field pH test)*	pH units		6.6	6.1	6.1	6.1	6.6
pHFOX (field peroxide test)*	pH units		5.0	4.5	4.8	4.8	5.4
Reaction Rate*	-		Low	Low	Low	Low	Medium

Envirolab ID	Units	PQL	PDI1180-21	PDI1180-22
Your Reference			HA8	HA8
Date Sampled			16/09/2022	16/09/2022
Depth			1.50-1.80	1.80-2.10
pHF (field pH test)*	pH units		6.6	6.9
pHFOX (field peroxide test)*	pH units		5.4	5.7
Reaction Rate*	-		Medium	Medium

Method Summary

Method ID	Methodology Summary
INORG-063	pH- measured using pH meter and electrode. Solids are oxidised with Hydrogen Peroxide or extracted with water. Based on section H, Acid Sulfate Soils Laboratory Methods Guidelines, latest edition. To ensure accurate results these tests are recommended to be done in the field as pH may change with time thus these results may not be representative of true field conditions.

Result Definitions

Identifier	Description
NR	Not reported
NEPM	National Environment Protection Measure
NS	Not specified
LCS	Laboratory Control Sample
RPD	Relative Percent Difference
>	Greater than
<	Less than
PQL	Practical Quantitation Limit
INS	Insufficient sample for this test
NA	Test not required
NT	Not tested
DOL	Samples rejected due to particulate overload (air filters only)
RFD	Samples rejected due to filter damage (air filters only)
RUD	Samples rejected due to uneven deposition (air filters only)

Quality Control Definitions

Blank

This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, and is determined by processing solvents and reagents in exactly the same manner as for samples.

Surrogate Spike

Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

LCS (Laboratory Control Sample)

This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Matrix Spike

A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

Duplicate

This is the complete duplicate analysis of a sample from the process batch. The sample selected should be one where the analyte concentration is easily measurable.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria. Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction. Spikes for Physical and Aggregate Tests are not applicable. For VOCs in water samples, three vials are required for duplicate or spike analysis.

General Acceptance Criteria (GAC) - Analyte specific criteria applies for some analytes and is reflected in QC recovery tables.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% - see ELN-P05 QAQC tables for details (available on request); <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase. Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was typically insufficient in order to satisfy laboratory QA/QC protocols.

Miscellaneous Information

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Two significant figures are reported for the majority of tests and with a high degree of confidence, for results <10*PQL, the second significant figure may be in doubt i.e. has a relatively high degree of uncertainty and is provided for information only.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS where sediment/solids are included by default.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from the latest "Australian Drinking Water Guidelines", published by NHMRC & ARMC.

Urine Analysis - recommended maximums are taken from the BEI's as published by ACGIH (where available).

Air volume measurements are not covered by Envirolab's NATA accreditation.

Data Quality Assessment Summary PDI1180

Client Details

Client	WML Consultants
Your Reference	Waterloo Service Station
Date Issued	28/09/2022

Recommended Holding Time Compliance

Recommended holding time exceedances exist - See detailed list below

Quality Control and QC Frequency

QC Type	Compliant	Details
Blank	Yes	No Outliers
LCS	Yes	No Outliers
Duplicates	Yes	No Outliers
Matrix Spike	Yes	No Outliers
Surrogates / Extracted Internal Standards	Yes	No Outliers
QC Frequency	Yes	No Outliers

Surrogates/Extracted Internal Standards, Duplicates and/or Matrix Spikes are not always relevant/applicable to certain analyses and matrices. Therefore, said QC measures are deemed compliant in these situations by default. See Laboratory Acceptance Criteria for more information

Data Quality Assessment Summary PDI1180

Recommended Holding Time Compliance

Analysis	Sample Number(s)	Date Sampled	Date Extracted	Date Analysed	Compliant
pH F | Soil	1-22	16/09/2022	20/09/2022	23/09/2022	No
pH FOX | Soil	1-22	16/09/2022	20/09/2022	23/09/2022	No
Reaction Rate | Soil	1-19, 21-22	16/09/2022	20/09/2022	23/09/2022	Yes
	20	16/09/2022	23/09/2022	23/09/2022	Yes

Quality Control PDI1180

INORG-063|Acid Sulfate Soils (Soil) | Batch BDI2562

Analyte	Units	PQL	Blank	DUP1 PDI1180-01 Samp | QC | RPD %	DUP2 PDI1180-11 Samp | QC | RPD %	LCS %
pHF (field pH test)	pH units			6.3 | 6.3 | 0.793	5.4 | 5.5 | 1.65	100
pHFOX (field peroxide test)	pH units			4.4 | 4.3 | 1.15	4.2 | 4.2 | 0.240	100
Reaction Rate	-			High | High | [NA]	Low | Low | [NA]	[NA]

INORG-063|Acid Sulfate Soils (Soil) | Batch BDI2563

Analyte	Units	PQL	Blank	DUP1 PDI1180-21 Samp | QC | RPD %	LCS %
pHF (field pH test)	pH units			6.6 | 6.4 | 2.63	100
pHFOX (field peroxide test)	pH units			5.4 | 5.4 | 1.48	100
Reaction Rate	-			Medium | Medium | [NA]	[NA]

WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.3.8.1

Client:	WML Consultants	*Ticket No.*	S7499
Client Address:	Level 3/1 Prowse St, West Perth WA 6005	*Report No.*	WG22.14510_1_ECN
Project:	BORR Waterloo Service Station Geotech	*Sample No.*	WG22.14510
Location:	Waterloo	*Date Sampled:*	16/09/2022
Sample Identification:	BH1 0.3 - 0.6	*Date Tested:*	1/10/2022

TEST RESULTS - Emerson Class Number

Sampling Method:	**Sampled by Client, Tested as Received**
Source of Material:	**Not Specified**
Soil Description:	**Silty Clay**
Water Used:	**Distilled**

EMERSON CLASS NUMBER	**5**

Comments:

Approved Signatory:

Name: Cody O'Neill

Date: 06/October/2022

NATA WORLD RECOGNISED ACCREDITATION

Accreditation No. 20599
Accredited for compliance with ISO/IEC 17025 - Testing

WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.3.8.1

Client:	WML Consultants	*Ticket No.*	S7499
Client Address:	Level 3/1 Prowse St, West Perth WA 6005	*Report No.*	WG22.14511_1_ECN
Project:	BORR Waterloo Service Station Geotech	*Sample No.*	WG22.14511
Location:	Waterloo	*Date Sampled:*	16/09/2022
Sample Identification:	BH1 0.6 - 0.9	*Date Tested:*	1/10/2022

TEST RESULTS - Emerson Class Number

Sampling Method:	**Sampled by Client, Tested as Received**
Source of Material:	**Not Specified**
Soil Description:	**Silty Clay**
Water Used:	**Distilled**

EMERSON CLASS NUMBER	**5**

Comments:

Approved Signatory:

Name: Cody O'Neill

Date: 06/October/2022

NATA WORLD RECOGNISED ACCREDITATION

Accreditation No. 20599
Accredited for compliance with ISO/IEC 17025 - Testing

WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.3.1.2, 3.2.1, 3.3.1 & 3.4.1

Client:	WML Consultants	*Ticket No.*	S7499
Client Address:	Level 3/1 Prowse St, West Perth WA 6005	*Report No.*	WG22.14512_1_PI
Project:	BORR Waterloo Service Station Geotech	*Sample No.*	WG22.14512
Location:	Waterloo	*Date Sampled:*	16-09-2022
Sample Identification:	BH1 1.2 - 1.5	*Date Tested:*	4-10-2022

TEST RESULTS - Consistency Limits (Casagrande)

Sampling Method:	**Sampled by Client, Tested as Received**
History of Sample:	**Oven Dried <50°C**
Method of Preparation:	**Dry Sieved**

AS 1289.3.1.2	**Liquid Limit (%)**	**38**
AS 1289.3.2.1	**Plastic Limit (%)**	**19**
AS 1289.3.3.1	**Plasticity Index (%)**	**19**
AS 1289.3.4.1	**Linear Shrinkage (%)**	**8.0**
AS 1289.3.4.1	**Length of Mould (mm)**	**125**
AS 1289.3.4.1	**Condition of Dry Specimen**	**Curled**

Comments:

Approved Signatory:

Name: Cody O'Neill

Date: 05-October-2022

NATA WORLD RECOGNISED ACCREDITATION

Accreditation No. 20599
Accredited for compliance with ISO/IEC 17025 - Testing

WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

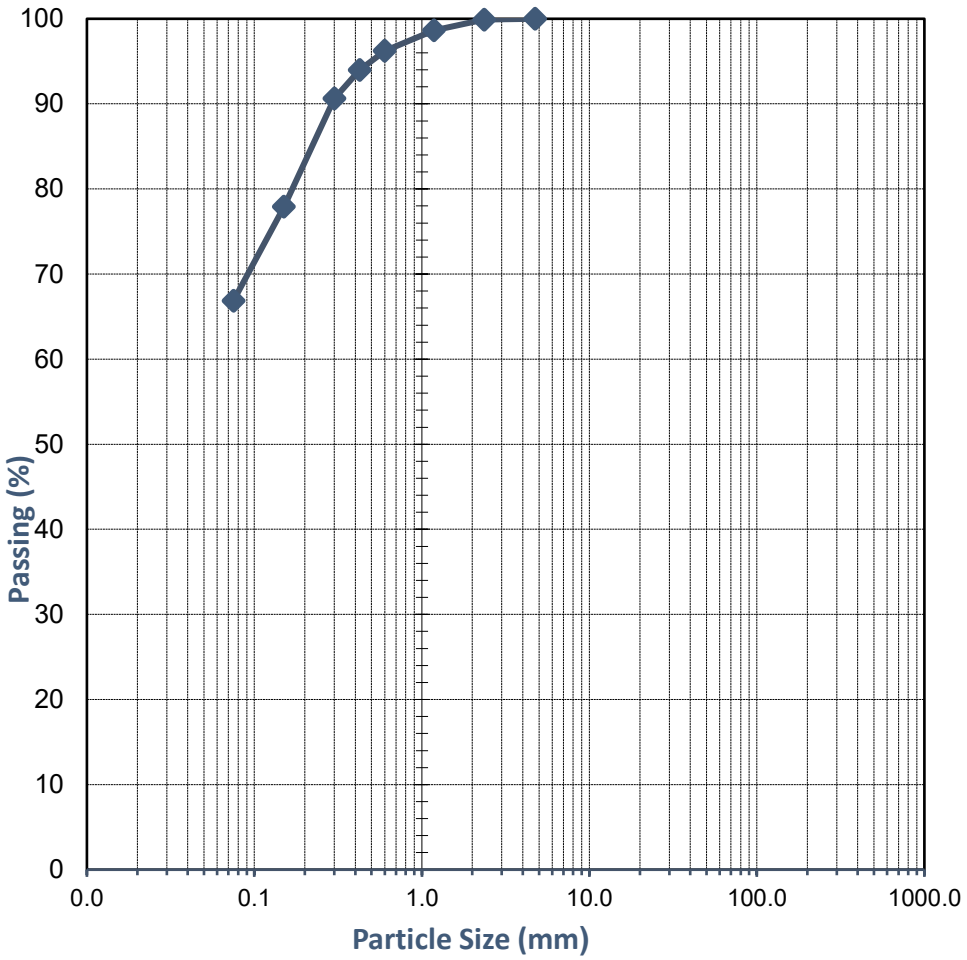
TEST REPORT - AS 1289.3.6.1

Client:	WML Consultants	*Ticket No.*	S7499
Client Address:	Level 3/1 Prowse St, West Perth WA 6005	*Report No.*	WG22.14512_1_PSD
Project:	BORR Waterloo Service Station Geotech	*Sample No.*	WG22.14512
Location:	Waterloo	*Date Sampled:*	16/09/2022
Sample Identification:	BH1 1.2 - 1.5	*Date Tested:*	30/09 - 03/10/2022

TEST RESULTS - Particle Size Distribution of Soil

Sampling Method: Sampled by Client, Tested as Received

Sieve Size (mm)	Percent Passing Sieve (%)
150.0	
100.0	
75.0	
37.5	
19.0	
9.5	
4.75	100
2.36	100
1.18	99
0.600	96
0.425	94
0.300	91
0.150	78
0.075	67



Comments:

Approved Signatory:

Name: Natasha Bielawski
Date: 03/October/2022

NATA WORLD RECOGNISED ACCREDITATION

Accreditation No. 20599
Accredited for compliance with ISO/IEC 17025 - Testing

WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.3.8.1

Client:	WML Consultants	*Ticket No.*	S7499
Client Address:	Level 3/1 Prowse St, West Perth WA 6005	*Report No.*	WG22.14513_1_ECN
Project:	BORR Waterloo Service Station Geotech	*Sample No.*	WG22.14513
Location:	Waterloo	*Date Sampled:*	17/09/2022
Sample Identification:	BH7 0.3 - 0.6	*Date Tested:*	1/10/2022

TEST RESULTS - Emerson Class Number

Sampling Method:	**Sampled by Client, Tested as Received**
Source of Material:	**Not Specified**
Soil Description:	**Silty Clay**
Water Used:	**Distilled**

EMERSON CLASS NUMBER	**5**

Comments:

Approved Signatory:

Name: Cody O'Neill

Date: 06/October/2022

NATA WORLD RECOGNISED ACCREDITATION

Accreditation No. 20599
Accredited for compliance with ISO/IEC 17025 - Testing

WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.3.8.1

Client:	WML Consultants	*Ticket No.*	S7499
Client Address:	Level 3/1 Prowse St, West Perth WA 6005	*Report No.*	WG22.14514_1_ECN
Project:	BORR Waterloo Service Station Geotech	*Sample No.*	WG22.14514
Location:	Waterloo	*Date Sampled:*	17/09/2022
Sample Identification:	BH7 0.6 - 0.9	*Date Tested:*	1/10/2022

TEST RESULTS - Emerson Class Number

Sampling Method:	**Sampled by Client, Tested as Received**
Source of Material:	**Not Specified**
Soil Description:	**Silty Clay**
Water Used:	**Distilled**

EMERSON CLASS NUMBER	**4**

Comments: Gypsum present in sample.

Approved Signatory:

Name: Cody O'Neill

Date: 06/October/2022

NATA WORLD RECOGNISED ACCREDITATION

Accreditation No. 20599
Accredited for compliance with ISO/IEC 17025 - Testing

WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.3.1.2, 3.2.1, 3.3.1 & 3.4.1

Client:	WML Consultants	*Ticket No.*	S7499
Client Address:	Level 3/1 Prowse St, West Perth WA 6005	*Report No.*	WG22.14514_1_PI
Project:	BORR Waterloo Service Station Geotech	*Sample No.*	WG22.14514
Location:	Waterloo	*Date Sampled:*	17/09/2022
Sample Identification:	BH7 0.6 - 0.9	*Date Tested:*	5/10/2022

TEST RESULTS - Consistency Limits (Casagrande)

Sampling Method:	**Sampled by Client, Tested as Received**
History of Sample:	**Oven Dried <50°C**
Method of Preparation:	**Dry Sieved**

AS 1289.3.1.2	**Liquid Limit (%)**	**45**
AS 1289.3.2.1	**Plastic Limit (%)**	**19**
AS 1289.3.3.1	**Plasticity Index (%)**	**26**
AS 1289.3.4.1	**Linear Shrinkage (%)**	**13.0**
AS 1289.3.4.1	**Length of Mould (mm)**	**250**
AS 1289.3.4.1	**Condition of Dry Specimen**	**Curled**

Comments:

Approved Signatory:

Name: Cody O'Neill

Date: 06/October/2022

NATA WORLD RECOGNISED ACCREDITATION

Accreditation No. 20599
Accredited for compliance with ISO/IEC 17025 - Testing

WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

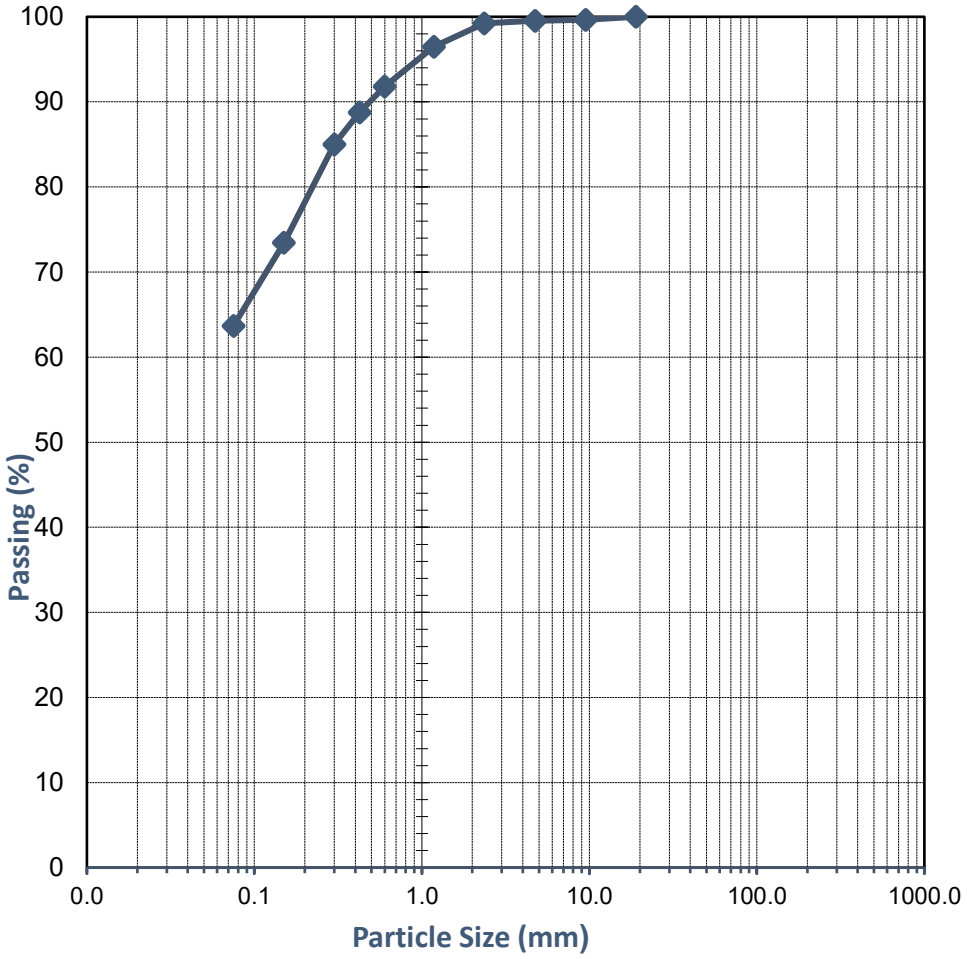
TEST REPORT - AS 1289.3.6.1

Client:	WML Consultants	*Ticket No.*	S7499
Client Address:	Level 3/1 Prowse St, West Perth WA 6005	*Report No.*	WG22.14514_1_PSD
Project:	BORR Waterloo Service Station Geotech	*Sample No.*	WG22.14514
Location:	Waterloo	*Date Sampled:*	17/09/2022
Sample Identification:	BH7 0.6 - 0.9	*Date Tested:*	30/09 - 03/10/2022

TEST RESULTS - Particle Size Distribution of Soil

Sampling Method: Sampled by Client, Tested as Received

Sieve Size (mm)	Percent Passing Sieve (%)
150.0	
100.0	
75.0	
37.5	
19.0	100
9.5	100
4.75	100
2.36	99
1.18	96
0.600	92
0.425	89
0.300	85
0.150	73
0.075	64



Comments:

Approved Signatory:

Name: Natasha Bielawski
Date: 03/October/2022

NATA WORLD RECOGNISED ACCREDITATION

Accreditation No. 20599
Accredited for compliance with ISO/IEC 17025 - Testing

Analysis Results

CSBP Soil and Plant Laboratory

95386
Western Geotechnical & Laboratory Servic

Lab No	9WS22049	9WS22050	9WS22051	9WS22052
Name	BH1 0.3-0.6	BH1 0.6-0.9	BH7 0.3-0.6	BH7 0.6-0.9
Code	WG22.14510	WG22.14511	WG22.14513	WG22.14514
Customer	WGLS	WGLS	WGLS	WGLS
Depth	0-10	0-10	0-10	0-10
Phosphorus Retention Index	> 1000.0	> 1000.0	> 1000.0	> 1000.0

CSBP Lab. Extract Value.

APPENDIX F

Traffic Impact Assessment

Transport Impact Assessment

Bunbury Outer Ring Road Service Centers

27 February 2023

Prepared for:

Saracen Developments

Prepared by:

Stantec WA

Revision	Description	Author		Quality Check		Independent Review	
A	For Issue	Raymond Rachmat	RR	Andreas Wang	AW		

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Prepared by _____
(signature)
Enter Name

Reviewed by _____
(signature)
Enter Name

Approved by _____
(signature)
Enter Name

Table of Contents

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1.0 INTRODUCTION

1.1 BACKGROUND

Cardno now Stantec was commissioned by Saracen Developments to conduct a Transport Impact Assessment (TIA) for the proposed Bunbury Outer Ring Road (BORR) Service Centers (the “Site”), located within Waterloo, Shire of Dardanup. 2 service centers will be provided for the future BORR, one for the northbound traffic and the other for the southbound traffic.

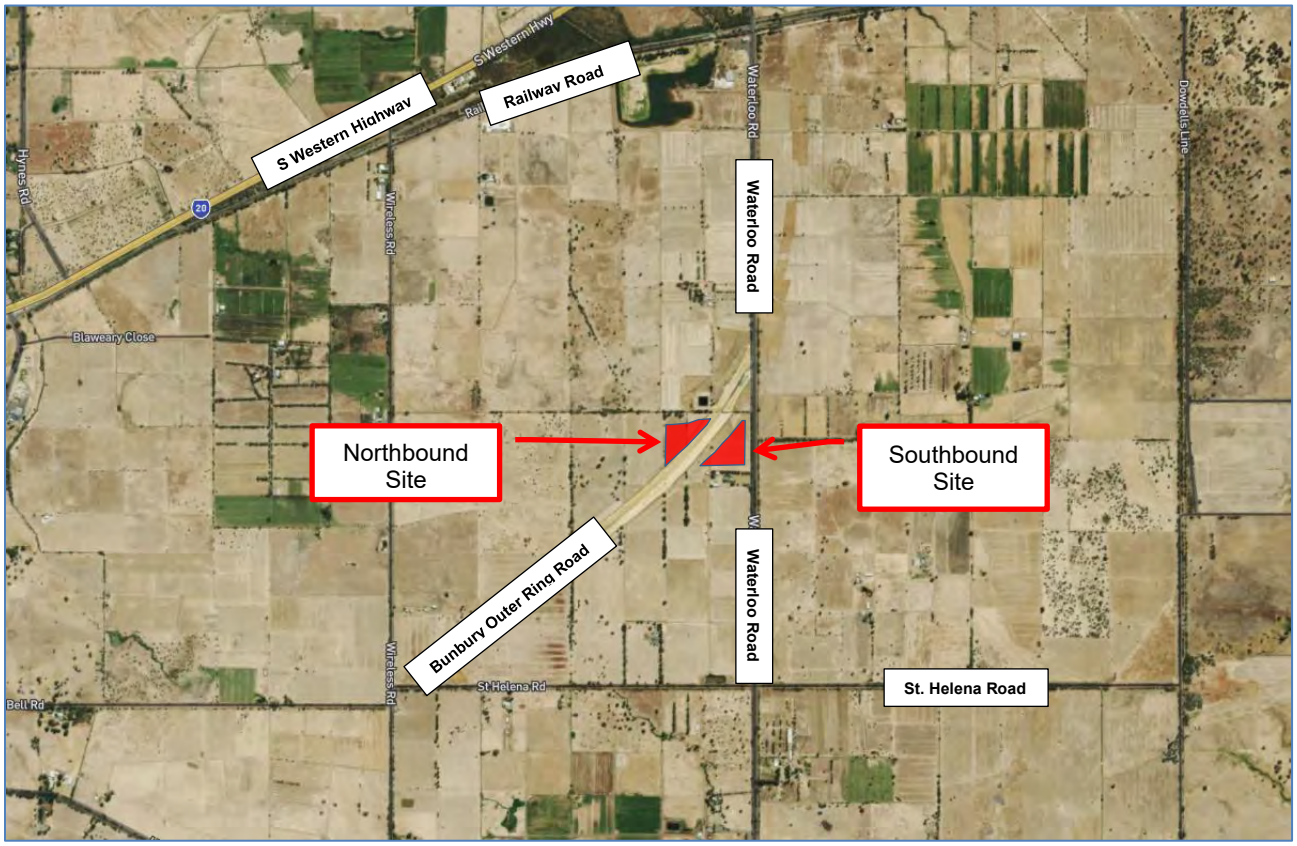
This report aims to assess the impacts of the proposed development upon the adjacent road network, focusing on traffic operations, circulation, and carparking requirements.

This TIA has been prepared in accordance with the Western Australian Planning Commission (WAPC) Transport Impact Assessment Guidelines Volume 4 – Individual Developments and the checklist is included in **Appendix A**.

1.2 SITE LOCATION

The Sites are located at Lots 100 and 101 Bunbury Outer Ring Road, Waterloo, approximately 2.25km south of the Southwestern Highway. **Figure 1-1** shows an aerial image of the Sites.

Figure 1-1 Site Location



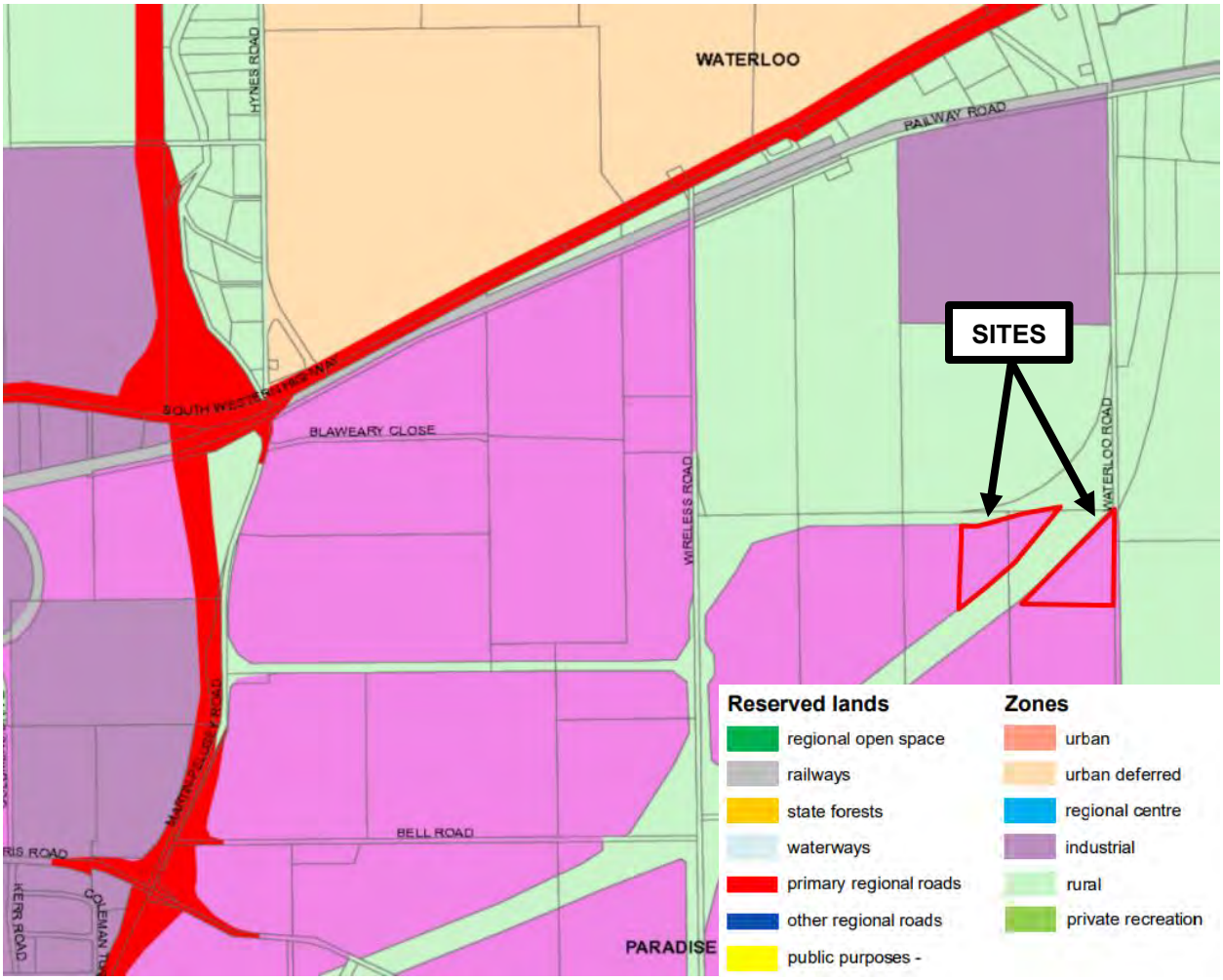
2.0 EXISTING SITUATION

2.1 EXISTING SITE CONTEXT

The northbound site is currently vacant, while the southbound site is currently occupied by a single residential dwelling, with access from Waterloo Road.

As per the Greater Bunbury Region Scheme, the Sites are currently zoned as *'Industrial'* as shown in **Figure 2-1.**

Figure 2-1 Greater Bunbury Region Scheme



Source: Greater Bunbury Region Scheme

2.2 EXISTING ROAD NETWORK

Road classifications are defined in the Main Roads Functional Hierarchy as follows:

- Primary Distributors (light blue): Form the regional and inter-regional grid of MRWA traffic routes and carry large volumes of fast-moving traffic. Some are strategic freight routes, and all are National or State roads. They are managed by Main Roads.
- Regional Distributors (red): Roads that are not Primary Distributors, but which link significant destinations and are designed for efficient movement of people and goods within and beyond regional areas. They are managed by Local Government.
- District Distributor A (green): These carry traffic between industrial, commercial and residential areas and connect to Primary Distributors. These are likely to be truck routes and provide only limited access to adjoining property. They are managed by Local Government.
- District Distributor B (dark blue): Perform a similar function to District Distributor A but with reduced capacity due to flow restrictions from access to and roadside parking alongside adjoining property. These are often older roads with traffic demand in excess of that originally intended. District Distributor A and B roads run between land-use cells and not through them, forming a grid that would ideally be around 1.5 kilometers apart. They are managed by Local Government.
- Local Distributors (orange): Carry traffic within a cell and link District Distributors at the boundary to access roads. The route of the Local Distributor discourages through traffic so that the cell formed by the grid of District Distributors only carries traffic belonging to or serving the area. These roads should accommodate buses but discourage trucks. They are managed by Local government.
- Access Roads (grey): Provide access to abutting properties with amenity, safety and aesthetic aspects having priority over the vehicle movement function. These roads are bicycle and pedestrian friendly. They are managed by Local government.

The surrounding network is further described in **Table 2-1** and shows the hierarchy as per the Main Roads WA Road Information Mapping System, whilst **Figure 2-2** shows the road hierarchy map.

Table 2-1 Road Network Classification

Road Name	Road Hierarchy	Jurisdiction	No. of Lanes	No. of Footpaths	Width (m)	Posted Speed Limit (kph)
Bunbury Outer Ring Road (under construction)	Primary Distributor	MRWA	4 (dual carriageway)	1 (4.6m wide PSP is proposed)	TBC	TBC
Waterloo Road	Regional Distributor	MRWA	2	-	7	100
St. Helena Road	Access Road	Local Government	1	-	7	50
Wireless Road	Access Road	Local Government	1	-	3.5	50

Source: Main Roads WA Road Information Mapping System

Figure 2-2 MRWA Road Network Classification

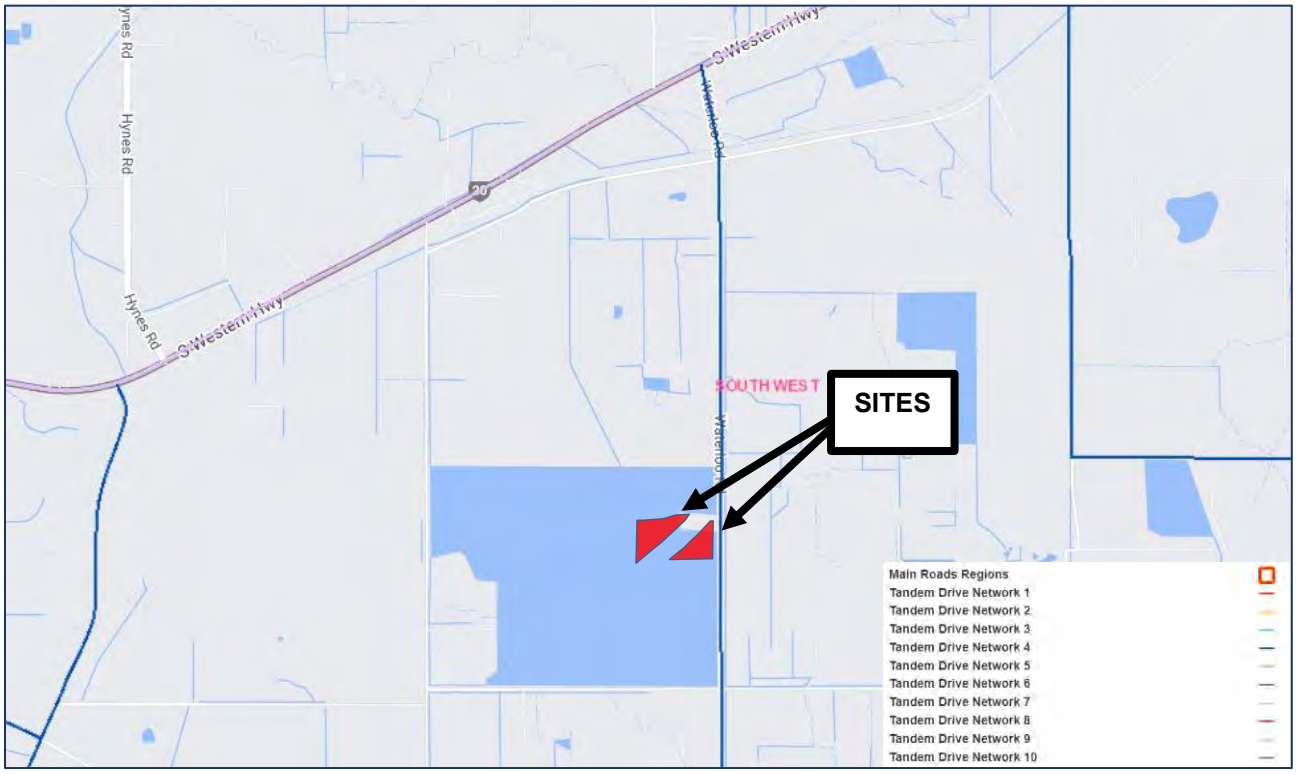
Source: Main Roads WA Road Information Mapping System

2.3 RESTRICTED ACCESS VEHICLES (RAV) NETWORK

The existing RAV network in the vicinity of the Site is shown in **Figure 2-3**. Currently, the Site can be accessed by RAV category 4 along Waterloo Road.

It is understood that the BORR has been designed to accommodate up to RAV category 7 vehicles.

Figure 2-3 RAV Network



2.4 EXISTING TRAFFIC VOLUMES

The nearest traffic volume count is on the intersection of South Western Highway and Waterloo Road intersection which is shown below in **Table 2-2.**

Table 2-2 Traffic Volumes

Location	Year	Two-Way AM Peak (%HV)	Two-Way PM Peak (%HV)	Source
South Western Highway (West of Waterloo Road)	2018	551 (14.2%)	605 (10.1%)	MRWA Traffic Map
South Western Highway (East of Waterloo Road)	2018	582 (16.3%)	647 (10.7%)	
Waterloo Road (South of South Western Highway)	2018	63 (30.2%)	82 (9.8%)	

2.5 EXISTING PUBLIC TRANSPORT FACILITIES

There are currently no public transport facilities existing within the vicinity of the Site.

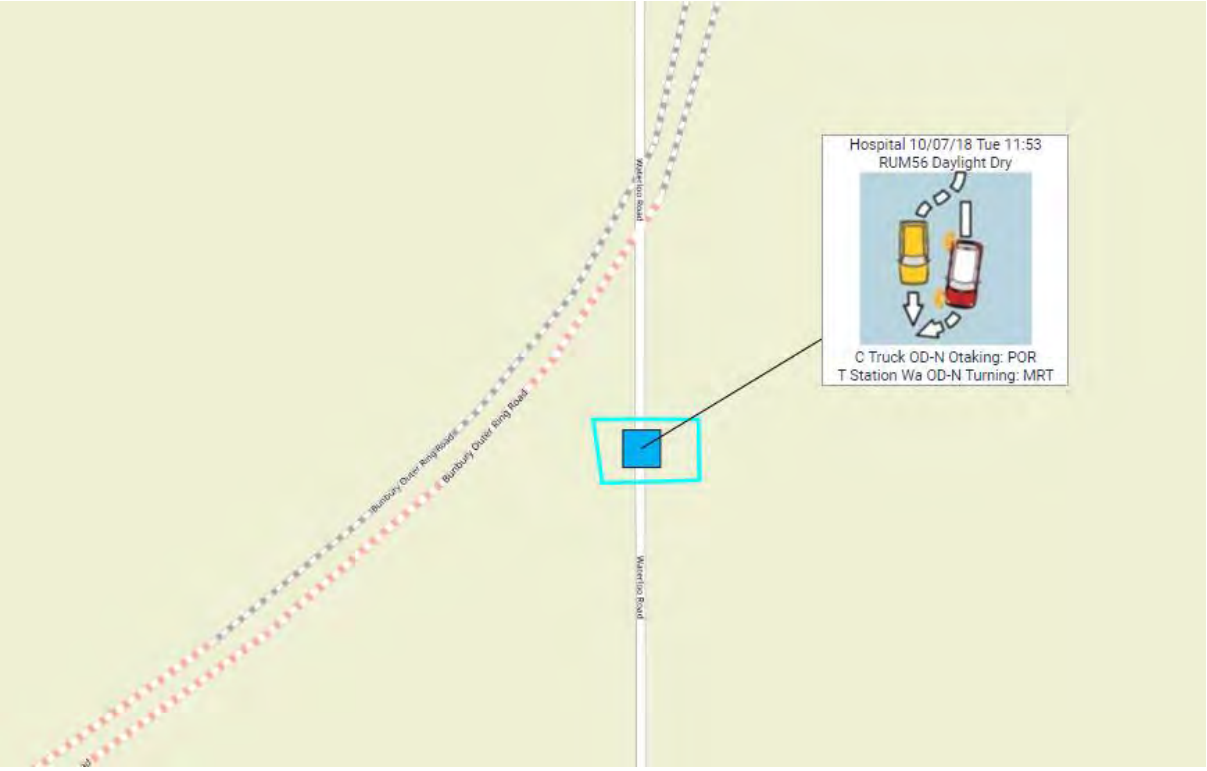
2.6 EXISTING PEDESTRIAN / CYCLE NETWORK FACILITIES

There are currently no pedestrian/cycle network facilities existing within the vicinity of the Site.

2.7 CRASH ASSESSMENT

A crash assessment for the surrounding road network of the subject site has been completed. The assessment covers all the recorded accidents for the 5-year period from 1 January 2017 to 31 December 2021. There was one recorded crash on Waterloo Road near the southbound site that was caused by an overtaking truck that sideswiped a station wagon which resulted to hospitalisation. The location of the incident can be seen in **Figure 2-4**.

Figure 2-4 Crash Location



3.0 PROPOSED DEVELOPMENT

3.1 PROPOSED LAND USE

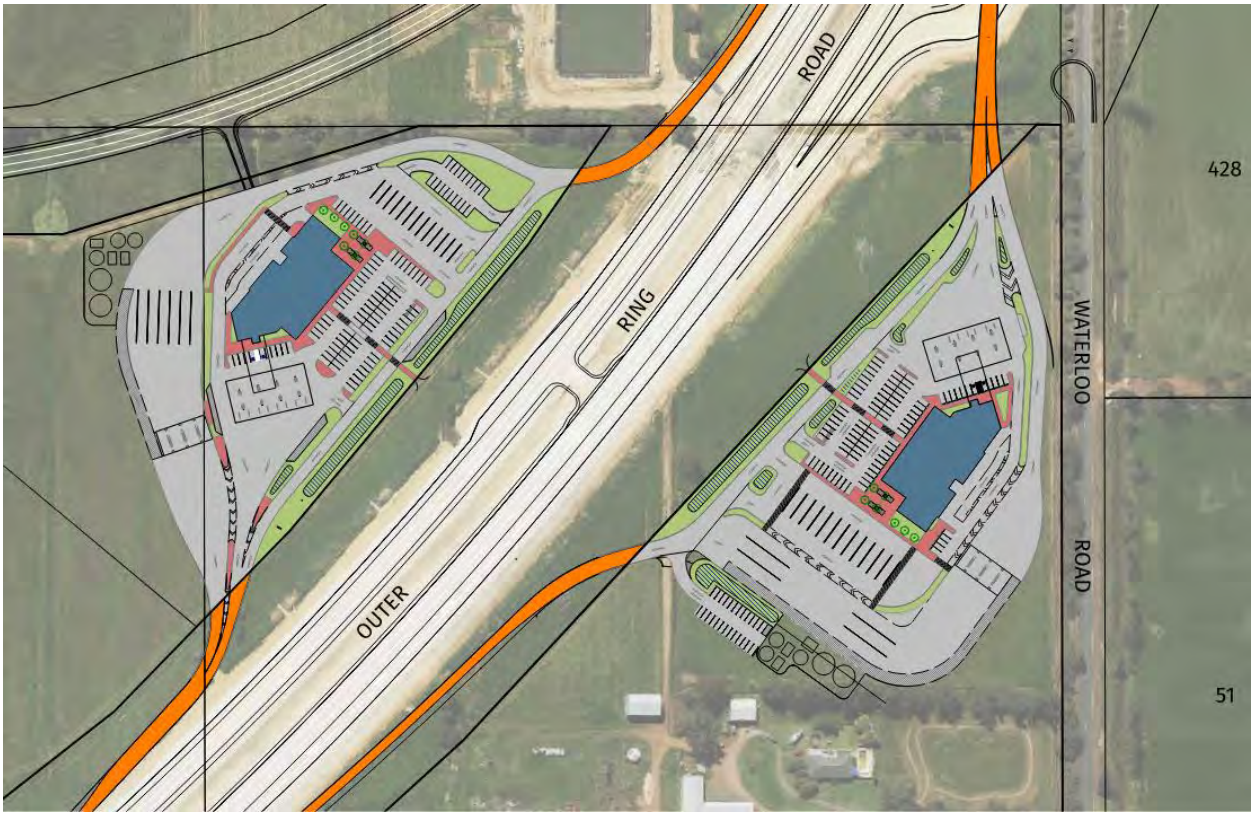
The proposed developments are two service stations located at Lots 100 and 101 of BORR. The development yields are summarised in **Table 3-1.**

The general site plan of the proposed Northern Service Station at the Site is shown in **Figure 3-1**. Detailed site plans are provided in **Appendix B**.

Table 3-1 Proposed Land Use

Site	Land Use	
Lot 100 - Southbound Site Service Station	▪ Fast Food	260 m^2
	▪ Car Fuelling	16 fuelling positions
	▪ Truck Fuelling	6 fuelling positions
	▪ Commercial	505 m^2
	▪ Dining	289 m^2 (150 seats)
	▪ Car Parking	125 car parking bays
	▪ Truck Parking	6 truck bays
	▪ Camper/Trailer Parking	12 bays
	▪ Coach/Tour Bus Parking	1 bay
Lot 101 – Northbound Site Service Station	▪ Fast Food	260 m^2
	▪ Car Fuelling	16 fuelling positions
	▪ Truck Fuelling	6 fuelling positions
	▪ Commercial	505 m^2
	▪ Dining	289 m^2 (150 seats)
	▪ Car Parking	120 car parking bays
	▪ Truck Parking	6 truck bays
	▪ Caravan parking	12 bays
	▪ Coach/Tour Bus Parking	1 bay

Figure 3-1 General Site Plan



Source: Harley Dykstra

3.2 ACCESS ARRANGEMENT

Both Sites are only accessible from the future BORR. A dedicated exit ramp from BORR will be provided into the Sites and ramps into BORR will also be provided. Access arrangement for the Sites is as follow:

- Southbound Site (**Figure 3-2**)
  - Access A – Entry via a dedicated exit ramp from BORR southbound lanes
  - Access A1 – Access for light vehicles heading directly to the car park. Coach and tour bus would also use this access to park at the bus bay.
  - Access A2 – Access for light vehicles into petrol station. The caravan parking is also accessible from here.

  - Access A3 – Access for heavy vehicles fueling and truck bays.
  - Access B – Exit into a dedicated ramp towards BORR southbound.

- Northbound Site (**Figure 3-3**)
  - Access C – Entry via a dedicated exit ramp from BORR northbound lanes
  - Access C1 – Access for light vehicles heading directly to the car park. Coach and tour bus would also use this access to park at the bus bay.
  - Access C2 – Access for light vehicles into petrol station. The caravan parking is also accessible from here.
  - Access C3 – Access for heavy vehicles fueling and truck bays.
  - Access D – Exit into a dedicated ramp towards BORR northbound.

Figure 3-2 Southbound Site Access Arrangement

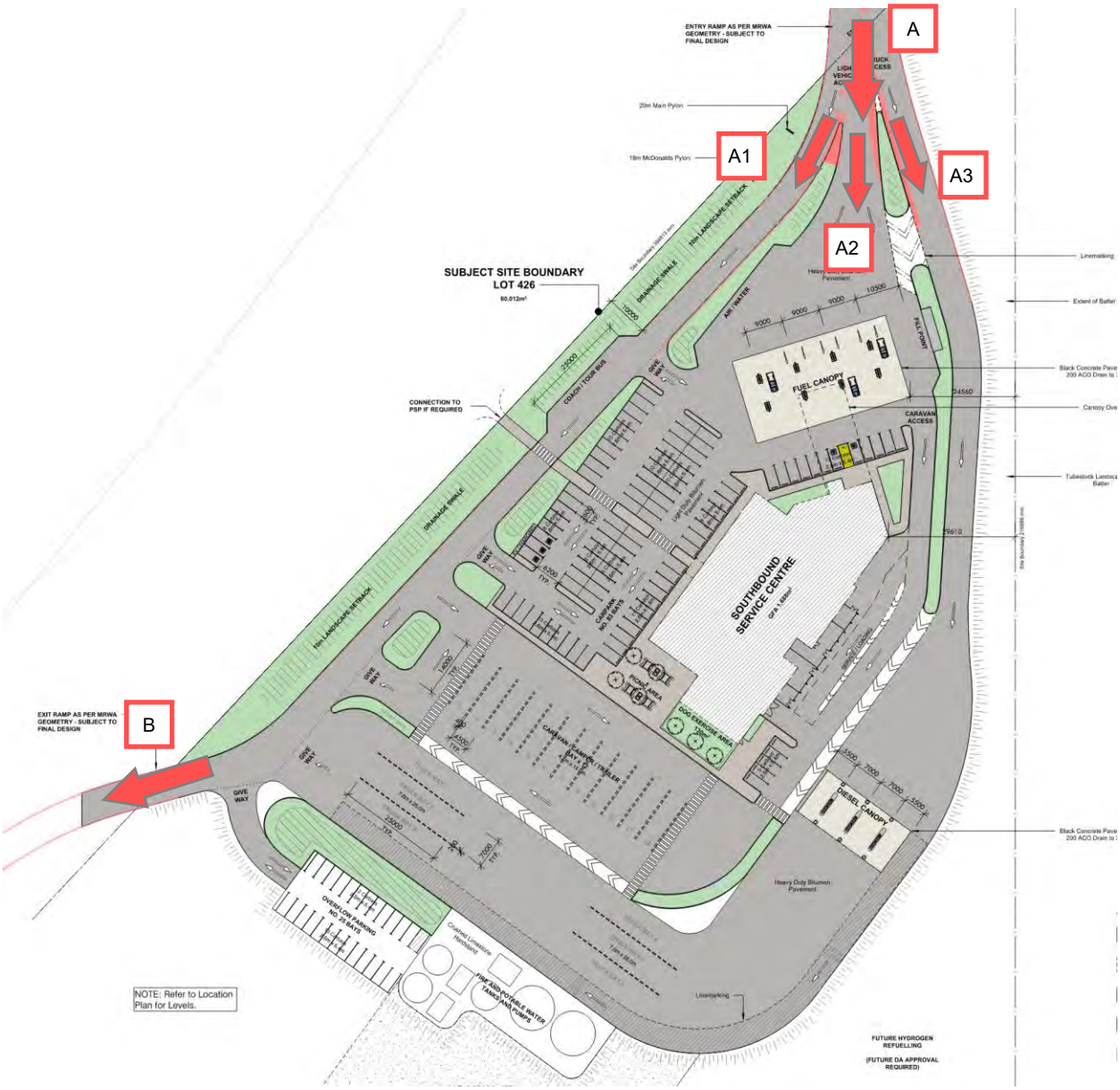
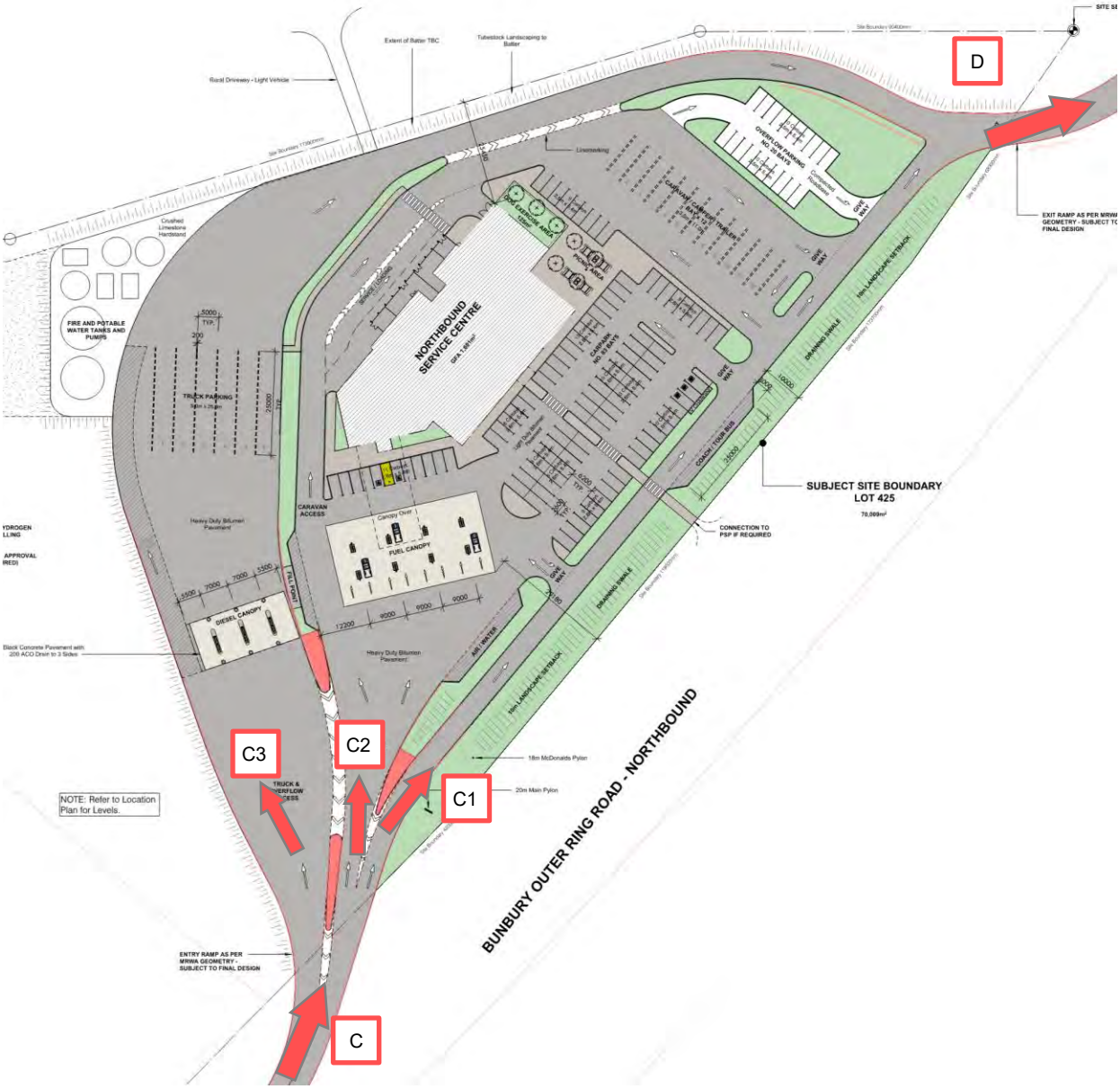


Figure 3-3 Northbound Site Access Arrangement



3.3 SWEPT PATH ANALYSIS

A swept path analysis has been undertaken for the proposed development using the vehicles listed below:

- 36.5m B-triple;
- 27.5m B-double;
- 19m semi-trailer;
- Car towing a caravan; and
- 14m coach.

Swept paths drawings can be found in **Appendix C.** The Site can accommodate all of the design vehicles however, the entry ramp for the northbound Site would need to be widened to accommodate RAV 7.

3.4 CAR PARKING PROVISION

Table 3-2 provides a summary of the parking provision for the northbound and southbound sites. Note that the bold text represents the bays that have been considered in the parking provision.

Table 3-2 Car Parking Provision

Northbound	
Car Bays	***100 including 2 disabled bays & 4 EV***
Truck Bays	***6***
Air / Water Station	3
Camper/Trailer Bays	***12***
Overflow Parking	***20***
Coach/Tour Bus Bays	***1***
Electric vehicle charging	10 with provision to increase
Vehicle refuelling bays	16 plus queuing positions
Truck Diesel refuelling bays	6 plus queuing positions
Total	**139 car bays**
Southbound	
Car Bays	***100 including 2 disabled bays & 4 EV***
Truck Bays	***6***
Air / Water Station	3
Camper/Trailer Bays	***12***
Overflow Parking	***25***
Coach/Tour Bus Bays	***1***
Electric vehicle charging	10 with provision to increase
Vehicle refuelling bays	16 plus queuing positions
Truck Diesel refuelling bays	6 plus queuing positions
Total	**144 car bays**

The car parking provision required for the proposed development is set out in the Shire of Dardanup Local Planning Scheme No. 3. **Table 3-3** below shows the parking requirements applied to the Site.

Table 3-3 Car Parking Requirement (LPS 3)

Proposed Land Use	Car Parking Requirements	Yield	Parking Bays Required	Parking Bays Provided
Roadhouse - No freeway service centre listed in LPS 3	▪ 4 bays per workshop and/or service bay, plus 1 bay per employee. ▪ In addition to the service station use, car parking bays are to be provided for each additional land use (e.g. convenience store, fast food outlet, lunch bar, restaurant /café and short-term accommodation uses) in accordance with the Car Parking Table.	No workshop or service bays will be provided. Employees to be on site = 13 PTE	13	Northbound = 139 car bays Southbound = 144 car bays
Convenience Store	1 space for every 15m2 net lettable area, plus Service Station requirements	241 m^2	16	
Restaurant / Café	1 bay per 15 square metres of NLA.	305 m^2	20	
Communal Dining Areas	1 bay per 15 square metres of NLA.	289 m^2	19	
Total	-	-	**68 bays**	**Northbound = 139 car bays** **Southbound = 144 car bays**

The proposed parking provision for both Sites meet the requirements of the Local Planning Scheme No.3.

Furthermore, the Shire of Dardanup have also released an update to the planning scheme which is currently in draft form. **Table 3-4** provides a summary of the parking requirements based on the Draft Local Planning Scheme No.9.

Table 3-4 Car Parking Requirement (Draft LPS 9)

Proposed Service Centre	No. of employees / Area	Notes	
Number of employees	13	Based on expected average maximum	
Fast Food Outlet (1 car bay/ 4 m²)	289 m^2	Dining Area (166 m^2) & Alfresco Area (123 m^2)	
Convenience Store (1 car bay/20 m²)	241 m^2	Tenancy 1 (101 m^2) & Tenancy 2 (140 m^2) Retail Area	
Car Parking Calculation – LPS9			
Freeway Service Centre - 1 per employee plus parking spaces for each separate uses (e.g. service station, fast food outlet, restaurant / café etc.)			
Use Class	**Car bays (LPS 9)**	**Motorcycle/scooter**	**Bicycle***
Freeway Service Centre			
Fast Food Outlet	13	4	6
Convenience Store	72	3	2
Total required (per site)	**97**	**7**	**10***
PROPOSED Total Carparking **Northbound = 139 car bays** **Southbound = 144 car bays**	**+ 42 car bays (North)** **+ 47 car bays (South)**	**Included**	**See note**

*Note: MRWA have removed the cycleway from the current design and construction contact for the BORR. Although Service Centre has allowed for a future connection should a cycleway be installed in the future, it is not considered necessary at this point to include bicycle parking at the Service Centre.

The proposed parking provision for both Sites meet the requirements of the Draft Local Planning Scheme No.9.

3.5 BICYCLE PARKING PROVISION

The Shire of Dardanup Local Planning Scheme No. 3 does not outline requirements for the provision of bicycle parking.

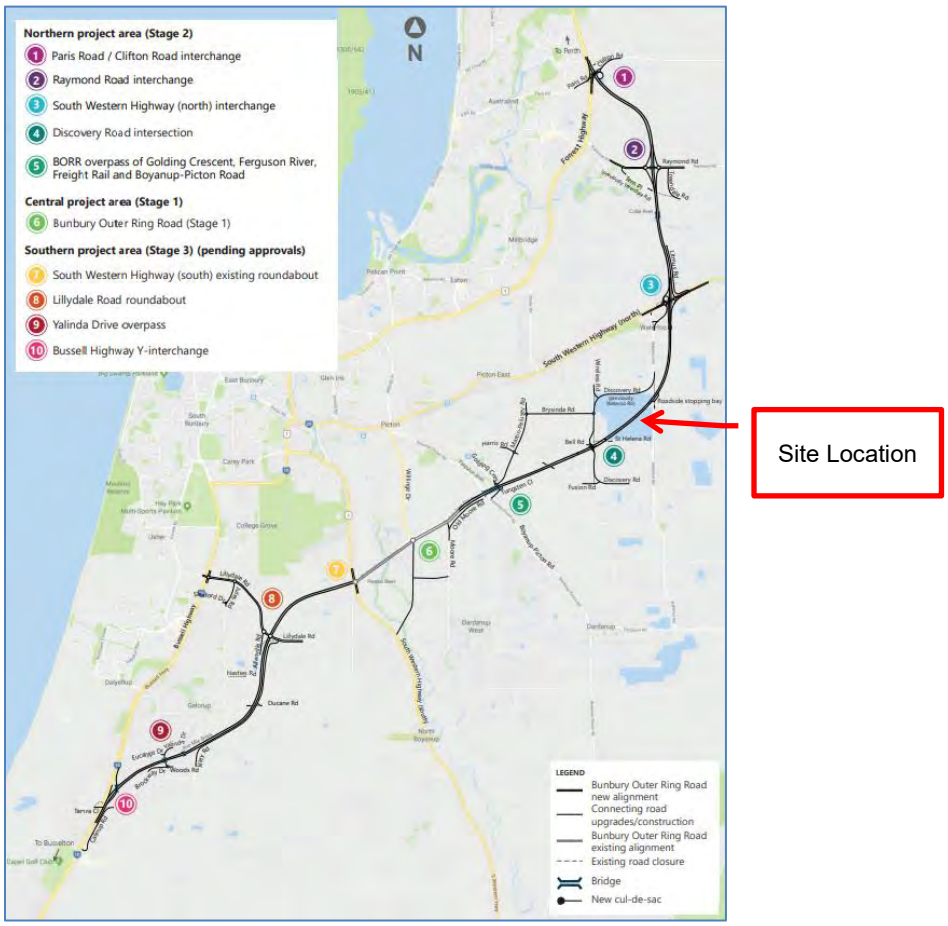
4.0 CHANGES TO SURROUNDING NETWORK

4.1 ROAD NETWORK

The major road network change in the surrounding network is the Bunbury Outer Ring Road (BORR), which is currently under construction. The BORR project map can be seen in **Figure 4-1**.

The Sites are located at the planned Stage 2 or northern project area of the Bunbury Outer Ring Road. The development is proposing entry and exit ramps for the service stations that are subject to the final design of the BORR.

Figure 4-1 BORR Project Map

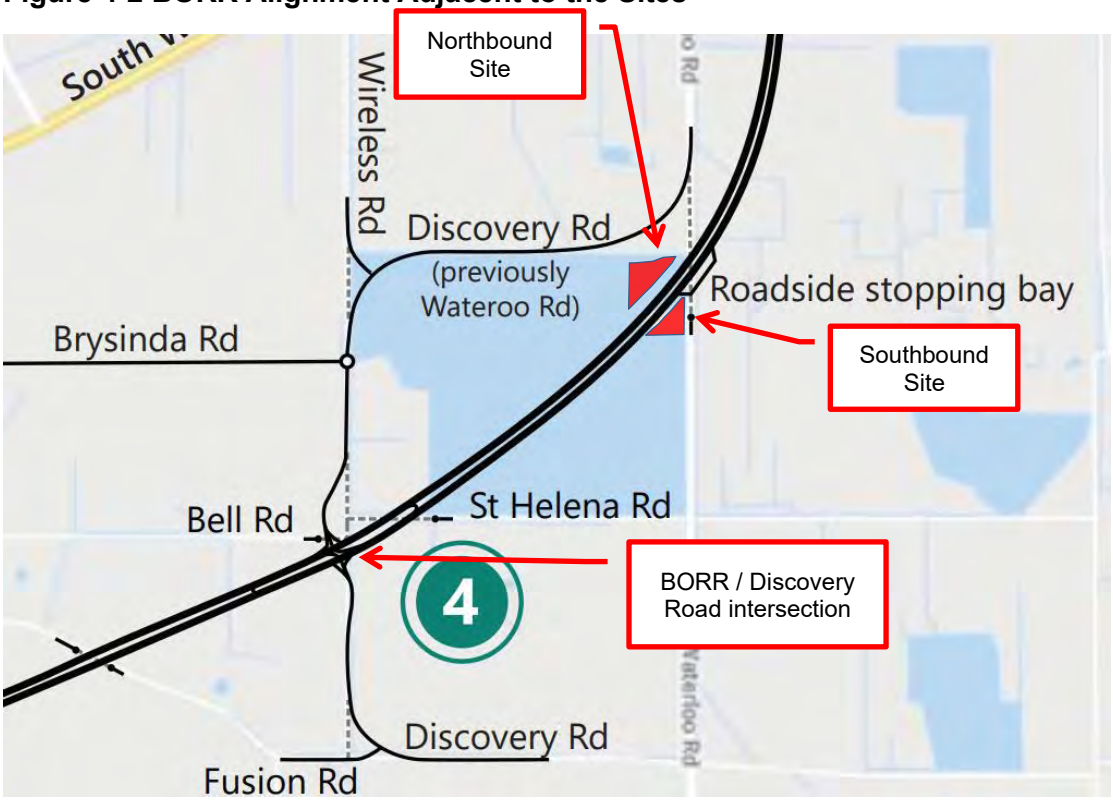


Source: MRWA BORR Project Map (https://www.mainroads.wa.gov.au/projects-initiatives/all-projects/regional/bunbury-outer-ring-road/maps-and-designs/)

Figure 4-2 below shows the proposed BORR alignment adjacent to the surrounding sites. Road network changes in the surrounding area related to BORR includes:

- Construction of BORR, a 27km, 4-lane, dual carriageway road linking Forrest Highway and Bussell Highway
- Waterloo Road will be severed. To the south of BORR Waterloo Road will have cul-de-sac and connection to BORR will be provided via a new road called Discovery Road. To the north of BORR, Waterloo Road will be realigned into Discovery Road.
- St Helena Road / Wireless Road intersection will be removed.
- Bell Road / Wireless Road intersection will be removed.
- BORR / Discovery Road will be first constructed as an at-grade intersection, with future provision for upgrades into grade-separated interchange.

Figure 4-2 BORR Alignment Adjacent to the Sites

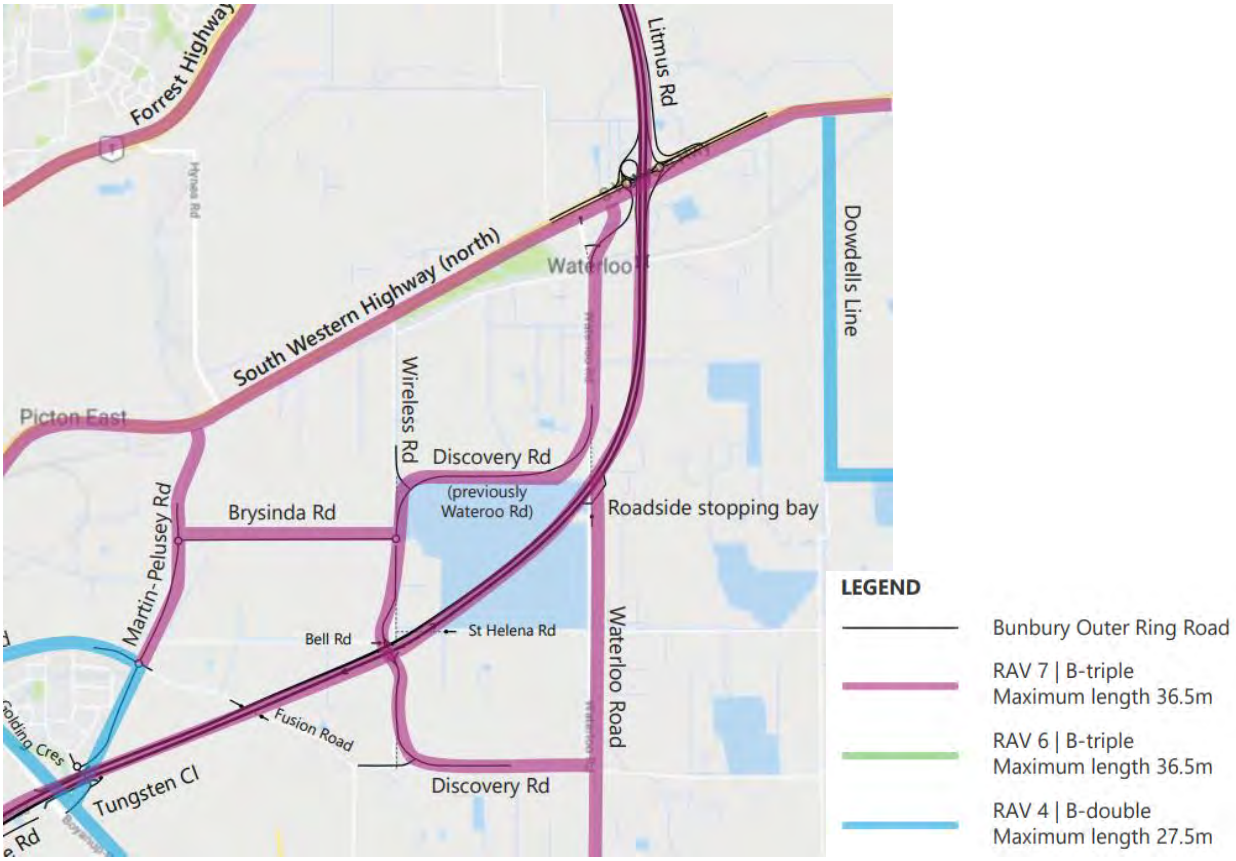


Source: MRWA BORR Project Map

4.2 RESTRICTED ACCESS VEHICLES NETWORK

The RAV network in the surrounding area will be expanded following the completion of BORR as shown in **Figure 4-3**. BORR and the surrounding roads will be included in the RAV 7 network.

Figure 4-3 Future RAV Network



4.3 PEDESTRIAN / CYCLE NETWORKS

As part of BORR, 4.6m wide Principal Shared Path (PSP) is also proposed to be constructed along the length of BORR. Currently the PSP is proposed to be constructed on the western side of the BORR.

4.4 PUBLIC TRANSPORT SERVICES

No changes are proposed to the public transport services in the surrounding area.

5.0 INTEGRATION WITH SURROUNDIGN AREA

5.1 SURROUNDING ATTRACTORS / GENERATORS

The development is located adjacent to BORR in the middle of a rural area, therefore there are no land uses in the surrounding area that be a major trip attractor or generator. The purpose of the development is to cater for drivers travelling along BORR by providing a refueling facility, food retail, as well as a location to rest.

5.2 PROPOSED CHANGES TO SURROUNDING LAND USES

No changes to the surrounding land use in the short term, however, in the long term the area adjacent to BORR is earmarked as an industrial expansion area according to the Greater Bunbury Structure Plan 2013.

5.3 LEVEL OF ACCESSIBILITY

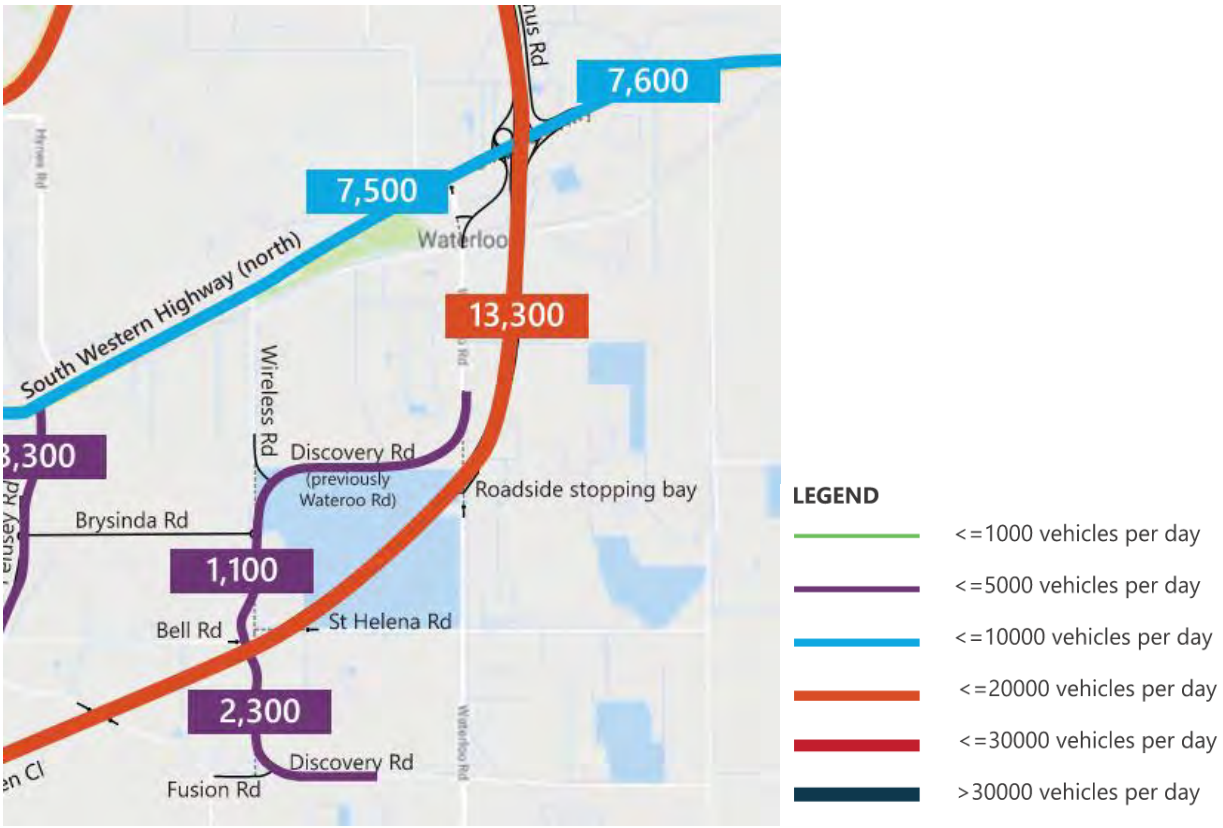
Access to the Site by motor vehicles is strictly from BORR. Access to local road network in the surrounding area will not be available. Public transport is not available in the area and therefore public transport mode share is not expected. Pedestrian and cycling access would be limited. The proposed PSP is currently planned to run along the western side of BORR, and therefore can only be accessed by the Northbound Site.

6.0 ANALYSIS OF TRANSPORT NETWORK

6.1 BACKGROUND TRAFFIC

As per information provided by Main Roads WA, traffic volume on BORR in the vicinity of the Site is estimated to be 13,300vpd at opening year (**Figure 6-1**).

Figure 6-1 BORR Daily Traffic Volume at Opening Year



Source: MRWA

6.2 TRAFFIC GENERATION

Due to the nature of the land use and the location of the development, the Sites will only be generating pass-by trips from the adjacent BORR. Hence, the number of trips entering and exiting the Site will depend on the traffic volume of BORR.

To determine the ratio of the adjacent road traffic and trips entering the Site, existing traffic count at service centers on Forrest Highway in West Pinjarra will be used. The traffic count at the service centers was recorded in 2018 and therefore will be compared with Forrest Highway traffic data from the same year.

The following data will be used for to determine the pass-by trip ratio:

- MRWA Traffic Map 2018/2019 data at Forrest Highway SLK 24.86 (North of Old Bunbury Road.
- Traffic count data from July 2018 at Ampol Service Centers at Forrest Highway SLK 13.61, West Pinjarra.

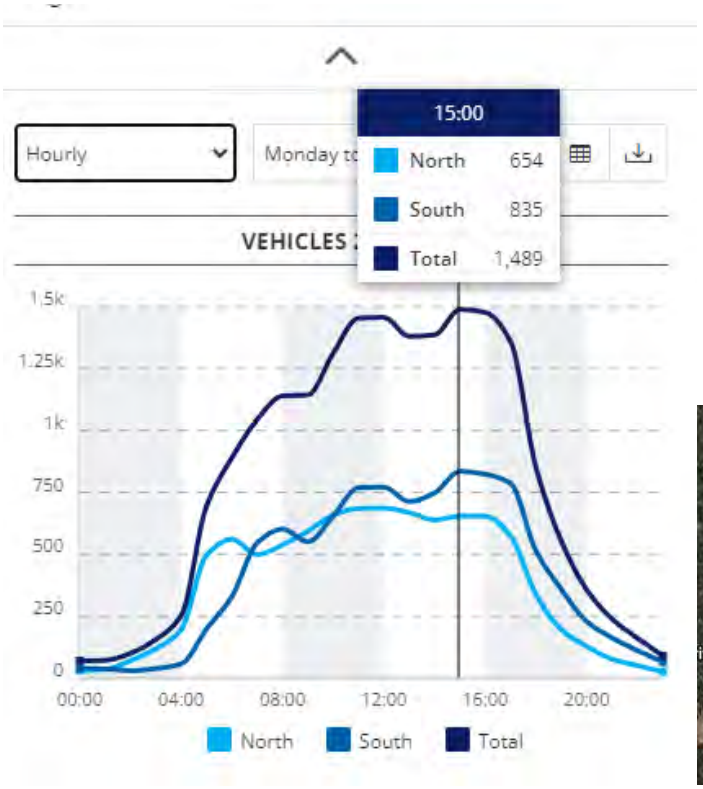
Table 6-1 below shows that the estimated pass by trip ratio for the proposed service centers would be 22% in the northbound direction and 20% in the southbound direction.

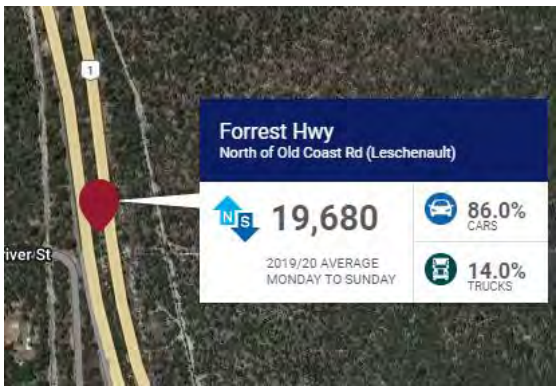
Table 6-1 Estimated Pass-by Trip Ratio

Direction	Forrest Highway Daily Traffic (vpd)	West Pinjarra Ampol Daily Traffic (vpd)	Pass-by Trips Ratio
Southbound	6,831	1,393	20%
Northbound	6,764	1,477	22%

Table 6-2 summarised the estimated pass-by trips that will enter the Site by applying the pass-by trip ratio to the estimated traffic along BORR in **Section 6.1.** No data on BORR peak hour volume, however existing peak hour-to-daily ratio of Forrest Highway, north of the start of BORR will be used to determine the peak hour-to-daily ratio, which is approximately 7.6%.

Figure 6-2 Forrest Highway Traffic Volume Data





Based on the available information, the northbound Site is expected to generate 1330 daily trips and 101 peak hour trips, while the Southbound Site is expected to generate 1463 daily trips and 111 peak hour trips. **Table 6-2** summarises the development trip calculations.

Table 6-2 Estimated Development Traffic

Direction	BORR Traffic Volume		Development Traffic	
	Daily (vpd)	**Peak Hour (vph)**	**Daily (vpd)**	**Peak Hour (vph) (one-way)**
Southbound Site	6650	503	1330	101
Northbound Site	6650	503	1463	111

6.3 INTERNAL QUEUE ANALYSIS

A queue analysis has been undertaken for both sites. The queueing analysis was undertaken in accordance with the M/M/S methodology, which is the most appropriate methodology for considering queueing at a location with multiple service channels.

Input:

- *Arrival Rate (λ) – Based on trip generation number*
- *Service Rate (μ) – filling time per vehicle*
- *Number of Filling Points (s)*

Output:

- *Ratio of traffic intensity:*

$$\rho = \frac{\lambda}{\mu}$$

- *Utilisation Factor*

$$U = \frac{\lambda}{s\mu}$$

- *Probability of there are no vehicles in the system (i.e. both queuing and being served)*

$$P_0 = \left(\sum_{i=0}^{s-1} \frac{\rho^i}{i!} + \frac{\rho^s}{s!} \left(\frac{s\mu}{s\mu - \lambda} \right) \right)^{-1}$$

- *Probability that there are "n" number of vehicles in the queue and being served.*

  The below calculation is repeated for n=0, n=1, and so forth to produce a graph that shows the probability distribution.

$$P_n = \frac{\rho^n}{n!} P_0 \quad for\ n \leq s$$

$$P_n = \frac{\rho^n}{s!\, s^{n-s}} P_0 \quad for\ n > s$$

The analysis will be undertaken for both the light vehicle filling points and the heavy vehicle filling points. To determine the split between the light and heavy vehicles, the existing data on Forrest Highway shown in **Figure 6-2** will be used, which indicates 14% heavy vehicle proportion.

Note that as the arrival rate used in the analysis is based on the trip generation, the queue analysis results will be a conservative assessment as not all trips entering the Site would refuel, i.e., some would only visit the Site only to rest and buy food and drinks.

6.3.1 Southbound Site Queue Analysis

Table 6-3, **Figure 6-3**, and **Figure 6-4** provide the queue analysis results for the southbound Site. Based on the results, the 95th percentile queue would approximately 11 vehicles at the light vehicles filling points and 5 trucks at the heavy vehicles filling points. The Site would more than adequate to contain this level of queuing and therefore queue overspill onto BORR ramps is not expected.

Table 6-3 Southbound Site Queue Analysis Summary

Input	Light Vehicles	Heavy Vehicles
Arrival Rate (λ)	87 vph	14 vph
Assumed Fill Time per Vehicle	5 minutes	8 Minutes
Service Rate (μ)	12 vph	6 vph
Number of Filling Points /positions (s)	16 filling points/positions	4 filling points/positions
Output		
Utilisation Factor (U)	0.452	0.471
Probability of 0 Vehicles in Queue(P0)	0.07%	14.76%
95th Percentile Queue	~11 vehicles	~ 5 vehicles

Figure 6-3 Southbound Light Vehicle Queue Probability

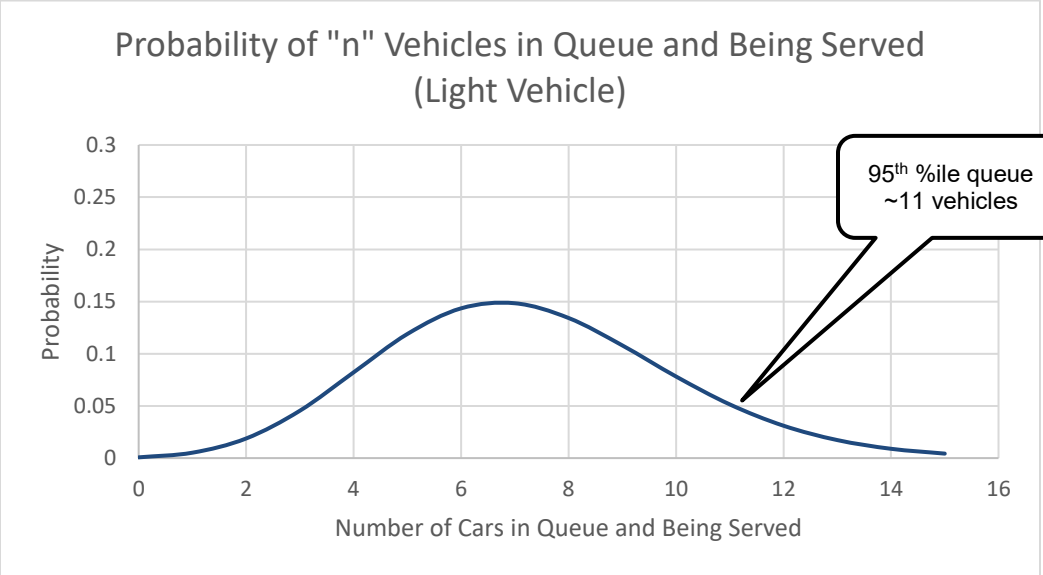
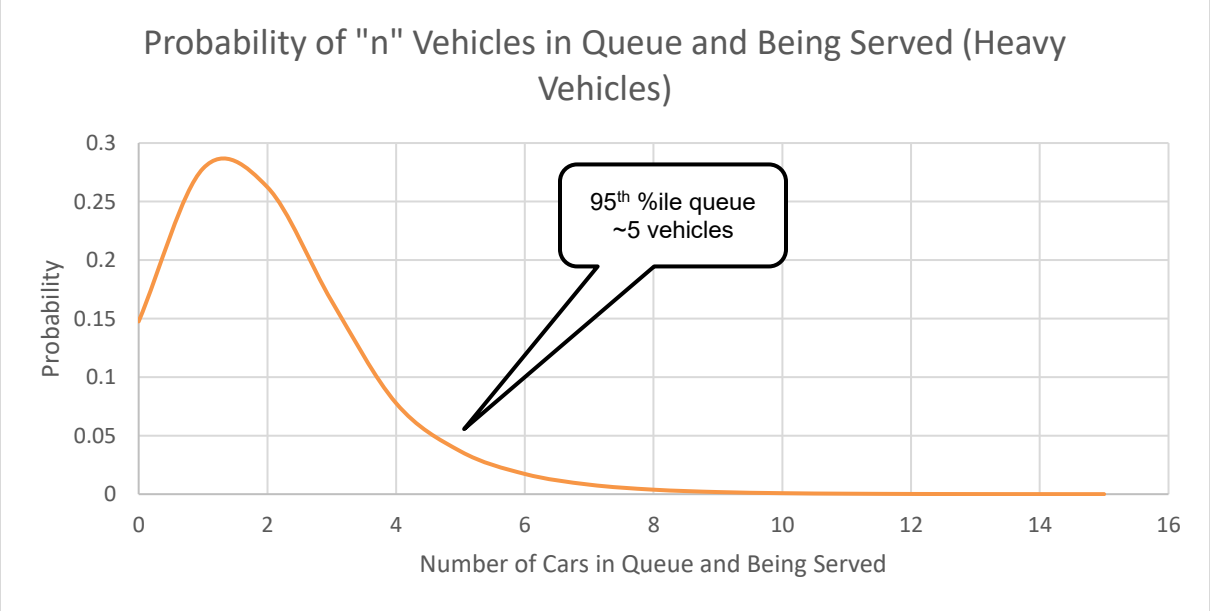


Figure 6-4 Southbound Heavy Vehicle Queue Probability



6.3.2 Northbound Site Queue Analysis

Table 6-4, **Figure 6-5**, and **Figure 6-6** provide the queue analysis results for the northbound Site. Based on the results, the 95th percentile queue would approximately 12 vehicles at the light vehicles filling points and 5 trucks at the heavy vehicles filling points. The Site would more than adequate to contain this level of queuing and therefore queue overspill onto BORR ramps is not expected.

Table 6-4 Northbound Site Queue Analysis Summary

Input	Light Vehicles	Heavy Vehicles
Arrival Rate (λ)	95 vph	16 vph
Assumed Fill Time per Vehicle	5 minutes	8 Minutes
Service Rate (μ)	12 vph	6 vph
Number of Filling Points /positions (s)	16 filling points/positions	4 filling points/positions
Output		
Utilisation Factor (U)	0.497	0.518
Probability of 0 Vehicles in Queue(P0)	0.04%	12.06%
95th Percentile Queue	~12 vehicles	~ 5 vehicles

Figure 6-5 Northbound Light Vehicle Queue Probability

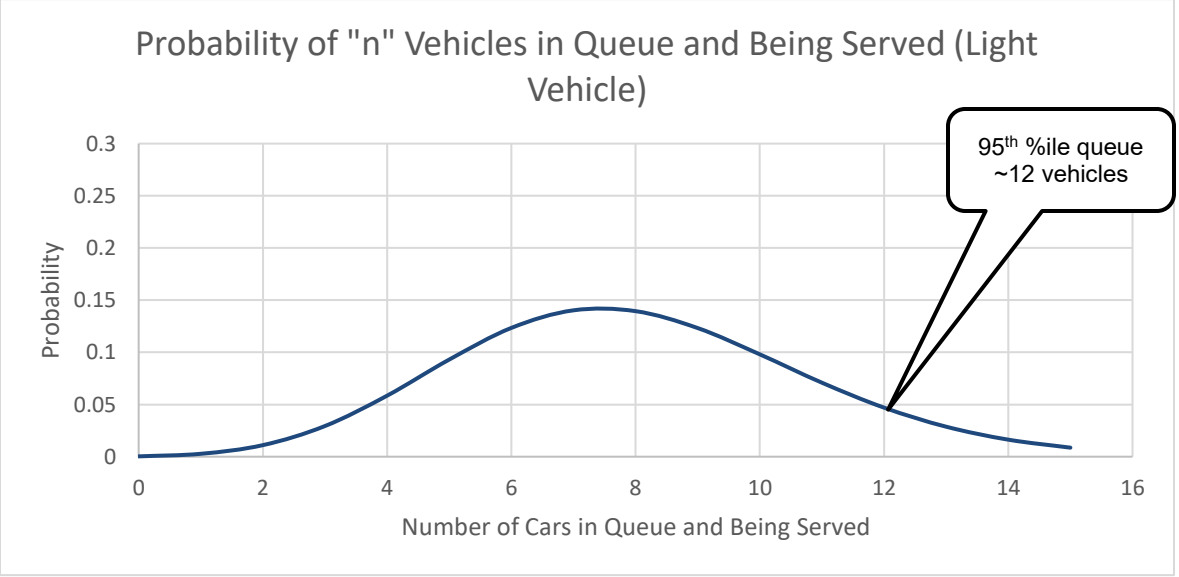
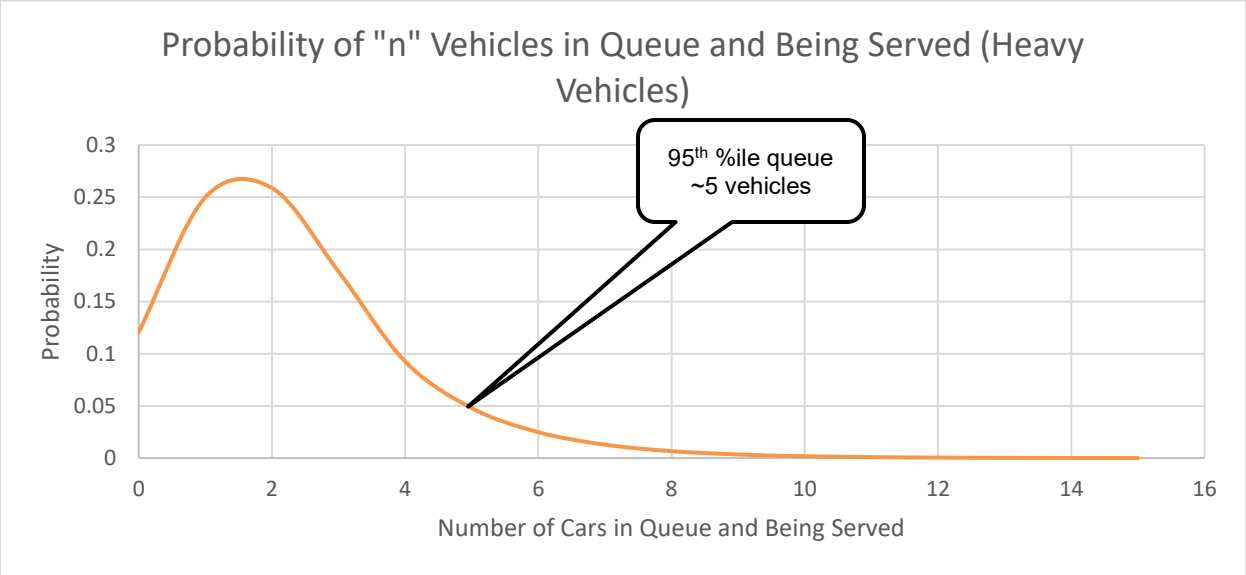


Figure 6-6 Northbound Heavy Vehicle Queue Probability



7.0 SUMMARY

This Transport Impact Statement outlines the transport aspects of the proposed development focusing on traffic operations.

This statement has been prepared in accordance with the WAPC Transport Assessment Guidelines for Developments: Volume 4 – Individual Developments (2016).

The following conclusions have been made with regards to the proposed development:

- The proposed development is for 2 Service Centers, consisting of the following for each site:
  - 16 car fueling positions;
  - 6 truck fueling positions
  - 260 m^2 Fast food
  - 505 m^2 Commercial
  - 289 m^2 Dining (150 seats)
  - Parking
    - Northbound site – 139 bays
    - Southbound site – 144 bays
- The northbound Site is expected to generate 1330 daily trips and 101 peak hour trips, while the Southbound Site is expected to generate 1463 daily trips and 111 peak hour trips. Due to the nature of the land use and the location of the development, the Sites will only be generating pass-by trips from the adjacent BORR.
- The internal queuing analysis shows that both the northbound and southbound sites will have more than adequate space to accommodate queueing (95^{th} percentile).

Overall the proposed development is anticipated to have minimal impact on the surrounding road network.

APPENDIX/DIVIDER TITLE

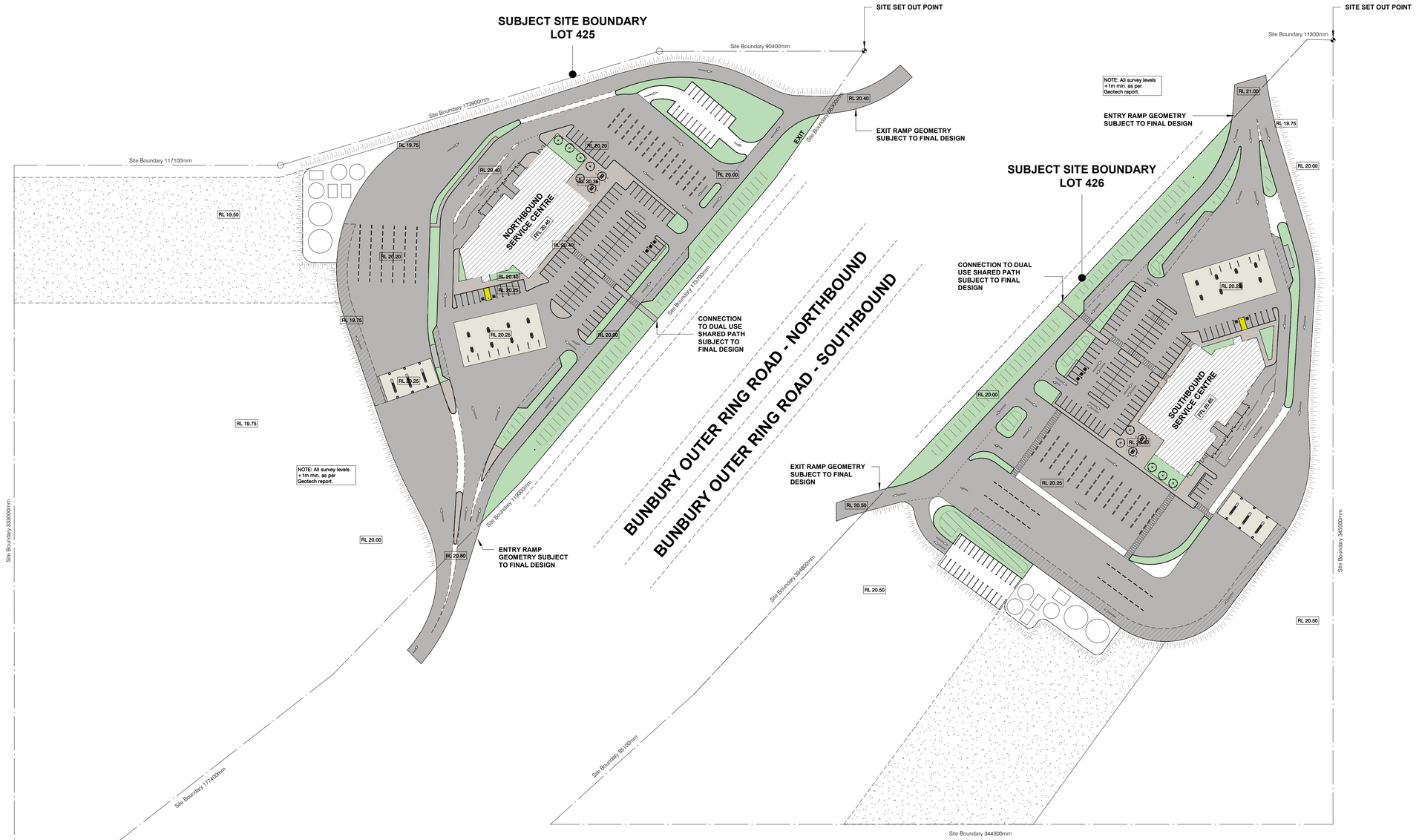
Appendix Subtitle

Appendix A WAPC CHECKLIST

ITEM	PROVIDED	COMMENTS
Summary		
Introduction/Background	Section 1	
name of applicant and consultant	Section 1	
development location and context	Section 1	
brief description of development proposal	Section 1	
key issues	N/A	
background information	Section 2	
Existing situation	Section 2	
existing site uses (if any)	Section 2	
existing parking and demand (if appropriate)	N/A	
existing access arrangements	Section 2	
existing site traffic	Section 2	
surrounding land uses	Section 2	
surrounding road network	Section 2	
traffic management on frontage roads	N/A	
traffic flows on surrounding roads (usually AM and PM peak hours)	Section 2	
traffic flows at major intersections (usually AM and PM peak hours)	N/A	
operation of surrounding intersections	Section 6	
existing pedestrian/cycle networks	Section 2	
existing public transport services surrounding the development	Section 2	
crash data	Section 2	
Development proposal	Section 3	
regional context	Section 3	
proposed land uses	Section 3	
table of land uses and quantities	Section 3	
access arrangements	Section 3	
parking provision	Section 3	
end of trip facilities	N/A	

any specific issues	Section 6	
road network	N/A	
intersection layouts and controls	N/A	
pedestrian/cycle networks and crossing facilities	N/A	
public transport services	N/A	
Integration with surrounding area	Section 5	
surrounding major attractors/ generators	Section 5	
committed developments and transport proposals	N/A	
proposed changes to land uses within 1200 metres	N/A	
travel desire lines from development to these attractors/ generators	N/A	
adequacy of existing transport networks	N/A	
deficiencies in existing transport networks	N/A	
remedial measures to address deficiencies	N/A	
Analysis of internal transport networks	Section 6	
assessment years	Section 6	
time periods	Section 6	
development generated traffic	Section 6	
distribution of generated traffic	Section 6	
parking supply and demand	Section 4	
base and ‘with development’ traffic flows	Section 6	
analysis of development accesses	Section 6	
impact on surrounding roads	Section 6	
impact on intersections	N/A	
impact on neighbouring areas	N/A	
road safety	Section 6	
public transport access	N/A	
pedestrian access/amenity	N/A	
cycle access/amenity	N/A	
analysis of pedestrian/cycle networks	N/A	
safe walk/cycle to school (for residential and school site developments only)	N/A	
traffic management plan (where appropriate)	N/A	
Conclusions	Section 7	

Appendix B SITE PLAN



LOCATION PLAN

SCALE: 1 : 1000

meyer shircore architects

BORR SERVICE CENTRES

LOCATION : LOTS 425 & 426 BUNBURY OUTER RING ROAD, WATERLOO

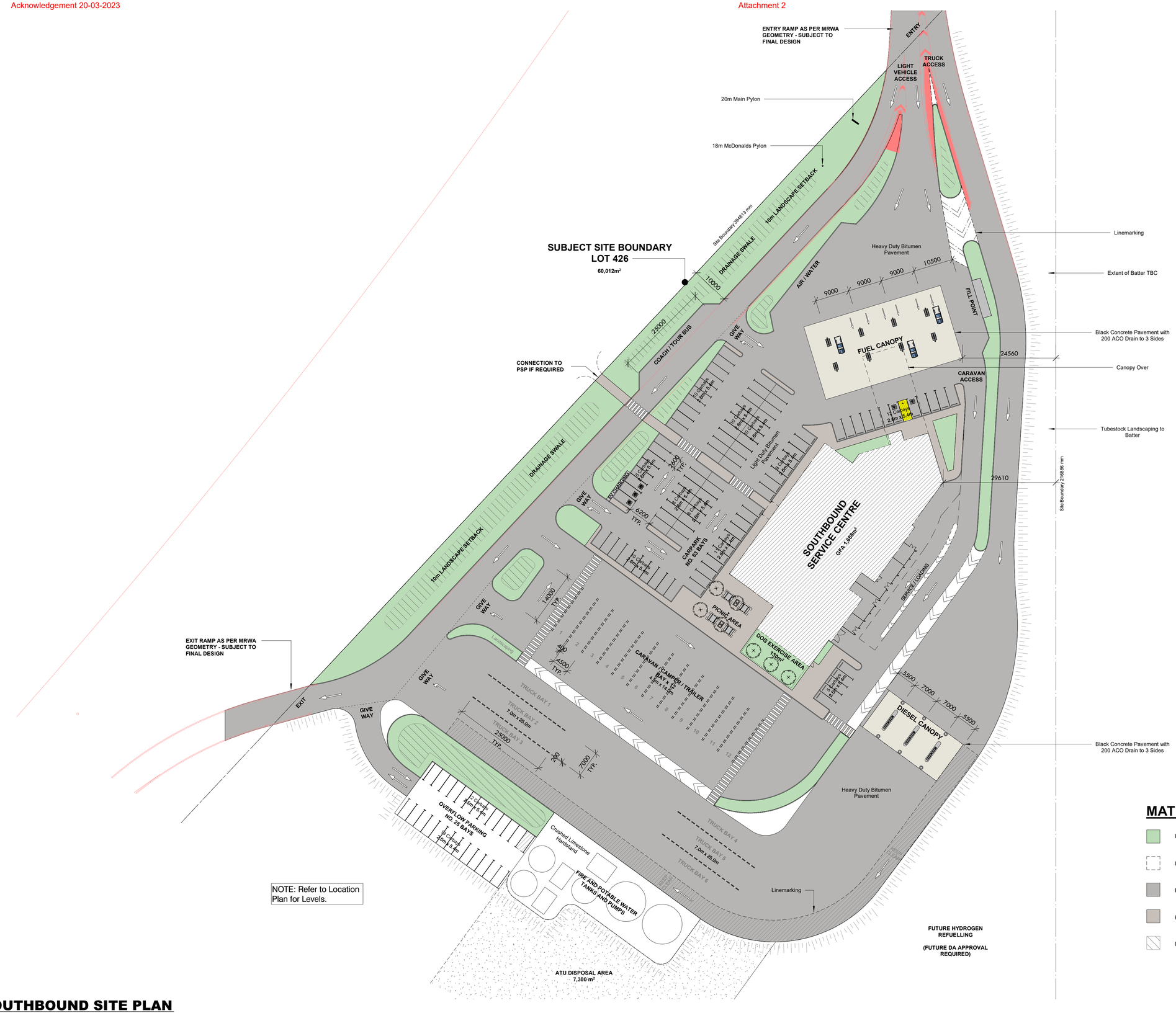
FOR : SARACEN DEVELOPMENTS PTY LTD

0 10 20 30 40 50 100

DATE:	FEB 2023
REVISION:	SK021
SHEET:	SK - 1002
SCALE:	1 : 1000 @A1

PROJECT NUMBER
22-9001

Suite 2, Ground Floor 437 Roberts Road, Subiaco WA 6008
PO Box 1294 Subiaco WA 6904
t: 08 9381 8511 e: msa@meyershircore.com.au



SOUTHBOUND SITE PLAN

SCALE: 1 : 500

MATERIAL LEGEND

- Landscaped Areas
- Linemarking
- Bitumen
- Paving
- Drainage Swale

SITE CRITERIA

1. Landscaped Area

a. Provided	
a. Soft	3,510m²
b. Dog Exercise Area	130m²
Total	**3,540m²**

2. Floor Area (GFA)

a. Tenancy 1	300m²
b. Tenancy 2	160m²
c. Tenancy 3	130m²
d. Tenancy 4	80m²
e. Tenancy 5	50m²
f. Tenancy 6	45m²
g. Other	923m²
Total	**1,688m²**

3. Parking

i. Bays Provided	
a. Carbays	100 Cars
b. Truck Bays	6 Truck
c. Camper/Trailer Bays	12 Camper/Trailer
d. Overflow Parking	25 Cars
e. Coach/Tour Bay	1 Bay
Total	**144**

meyer shircore architects

BORR SERVICE CENTRES

LOCATION : LOTS 425 & 426 BUNBURY OUTER RING ROAD, WATERLOO

FOR : SARACEN DEVELOPMENTS PTY LTD

0 5 10 15 20 25 50

DATE: FEB 2023
REVISION: SK021
SHEET: SK - 1003
SCALE: As indicated @A1

PROJECT NUMBER
22-9001

MATERIAL LEGEND

- Landscaped Areas
- Linemarking
- Bitumen
- Paving
- Drainage Swale

SITE CRITERIA

1. Landscaped Area

i. Provided		
a. Soft		3,781m²
b. Dog Exercise Area		125m²
	Total	**3,906m²**

2. Floor Area (GFA)

a. Tenancy 1		300m²
b. Tenancy 2		160m²
c. Tenancy 3		130m²
d. Tenancy 4		80m²
e. Tenancy 5		50m²
f. Tenancy 6		45m²
g. Other		916m²
	Total	**1,681m²**

3. Parking

i. Bays Provided		
a. Carbays		103 Cars
b. Truck Bays		6 Truck
c. Camper/Trailer Bays		12 Camper/Trailer
d. Overflow Parking		20 Cars
e. Coach/Tour Bay		1 Bay
	Total	**142**

NORTHBOUND SITE PLAN

SCALE: 1 : 500

meyer shircore architects

BORR SERVICE CENTRES

LOCATION : LOTS 425 & 426 BUNBURY OUTER RING ROAD, WATERLOO

FOR : SARACEN DEVELOPMENTS PTY LTD

0 5 10 15 20 25 50

DATE: FEB 2023
REVISION: SK021
SHEET: SK - 1004
SCALE: As indicated @A1

PROJECT NUMBER
22-9001

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t: 08 9381 8511 e: msa@meyershircore.com.au

MATERIAL LEGEND

- Landscaped Areas
- Linemarking
- Bitumen
- Paving
- Drainage Swale

SOUTHBOUND SERVICE CENTRE

FFL 20.65

SOUTHBOUND FLOOR PLAN

meyer shircore architects

BORR SERVICE CENTRES

LOCATION : LOTS 425 & 426 BUNBURY OUTER RING ROAD, WATERLOO
FOR : SARACEN DEVELOPMENTS PTY LTD

0 2 4 6 8 10 20

DATE: FEB 2023
REVISION: SK021
SHEET: SK - 2001
SCALE: As indicated @A1

PROJECT NUMBER
22-9001

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Suite 2, Ground Floor 437 Roberts Road, Subiaco WA 6008
PO Box 1294 Subiaco WA 6904
t: 08 9381 8511 e: msa@meyershircore.com.au

MATERIAL LEGEND

- Landscaped Areas
- Linemarking
- Bitumen
- Paving
- Drainage Swale

NORTHBOUND SERVICE CENTRE

FFL 20.45

NORTHBOUND FLOOR PLAN

SCALE: 1 : 200

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BORR SERVICE CENTRES

LOCATION : LOTS 425 & 426 BUNBURY OUTER RING ROAD, WATERLOO

FOR : SARACEN DEVELOPMENTS PTY LTD

0 2 4 6 8 10 20

DATE: FEB 2023
REVISION: SK021
SHEET: SK - 2002
SCALE: As indicated @A1

PROJECT NUMBER
22-9001

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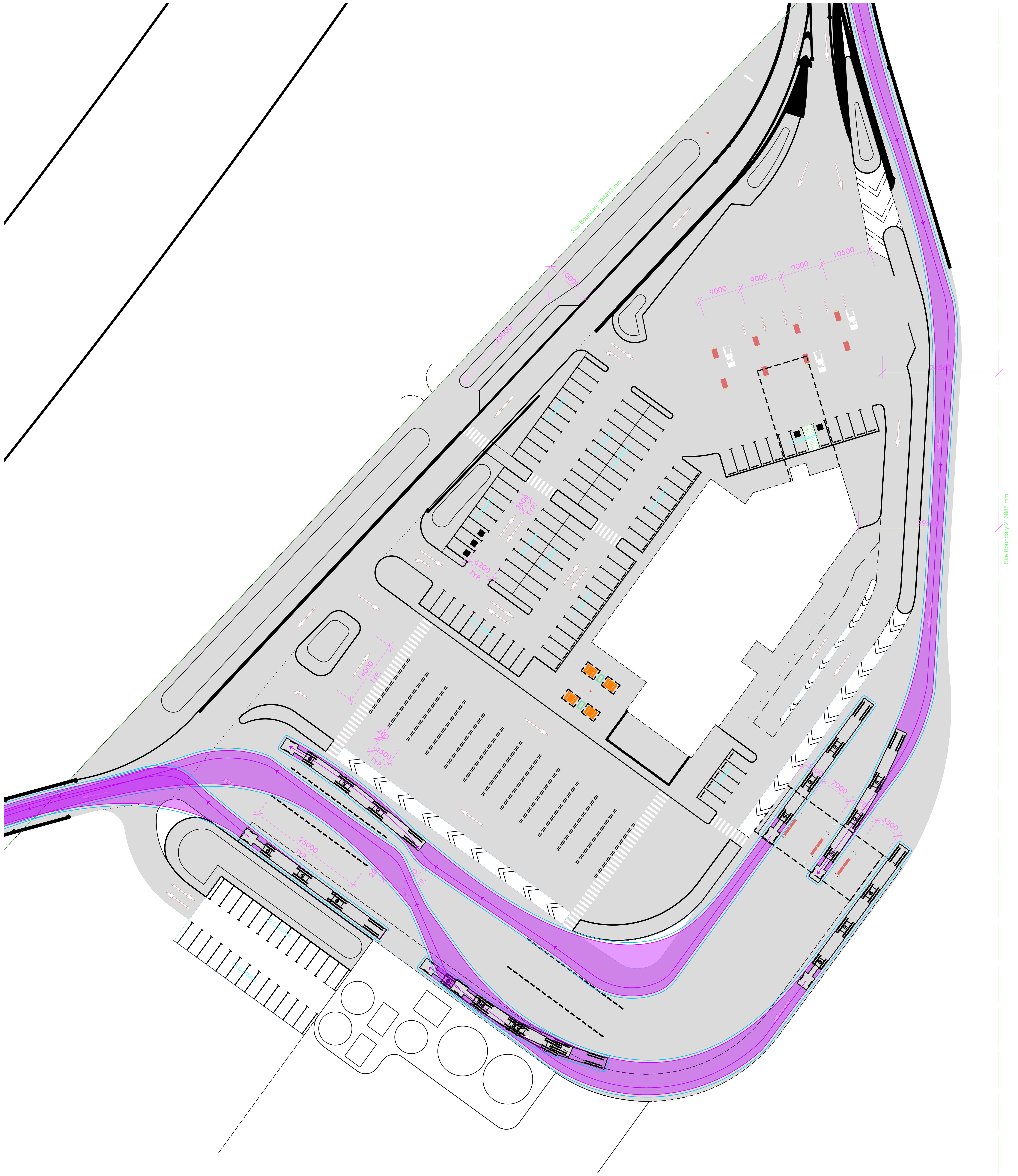
Appendix C SWEPT PATHS

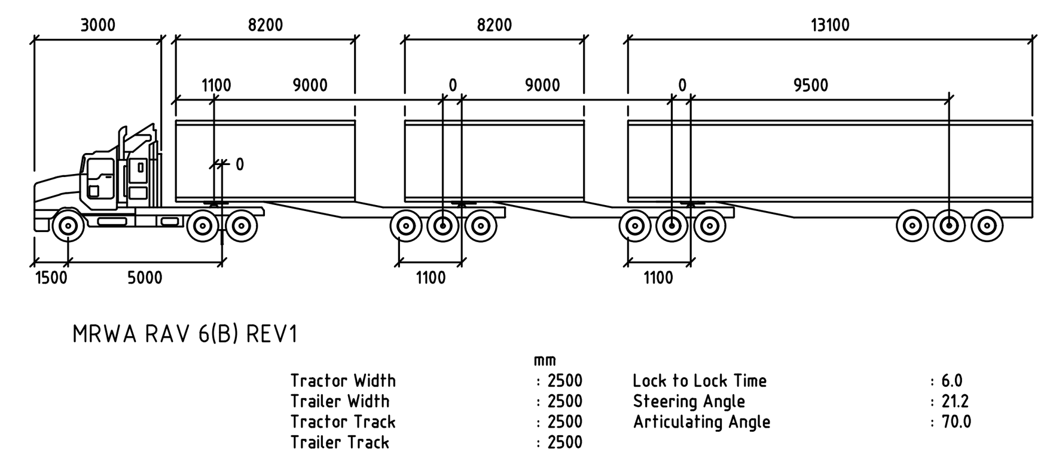
Shire of Dardanup
Acknowledgement 20-03-2023

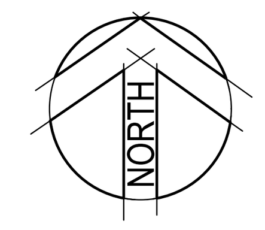
Attachment 2

DATE PLOTTED: 23 February 2023 7:48 PM BY : RAYMOND RACHMAT

36.5m B-TRIPLE (RAV 7) - SOUTHBOUND SITE







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Web: www.stantec.com/au

SARACEN DEVELOPMENTS
LOTS 425-426 BUNBURY OUTER RING ROAD
BORR SERVICE CENTRES

Date	Scale	Size
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Drawing Number	Revision
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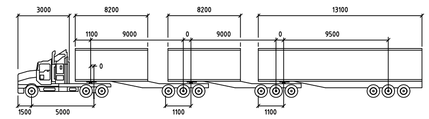
36.5m B-TRIPLE (RAV 7) - NORTHBOUND SITE



MRWA RAV 6(B) REV1

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Trailer Track	: 2500		

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SARACEN DEVELOPMENTS
LOTS 425-426 BUNBURY OUTER RING ROAD
BORR SERVICE CENTRES

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Shire of Dardanup
Acknowledgement 20-03-2023

Attachment 2

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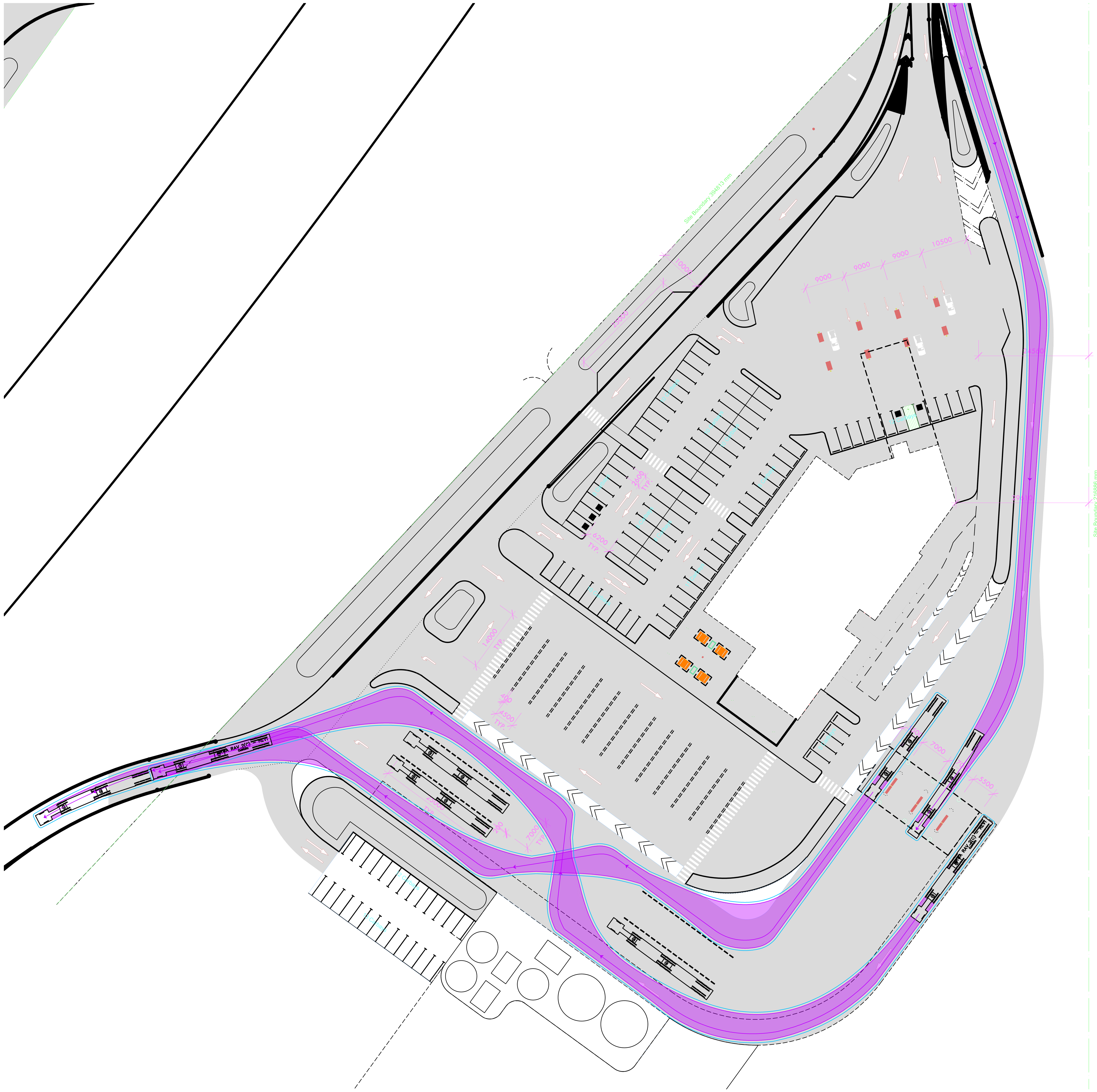
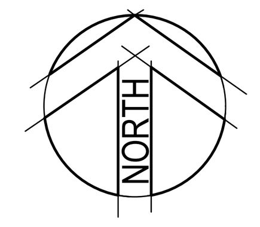
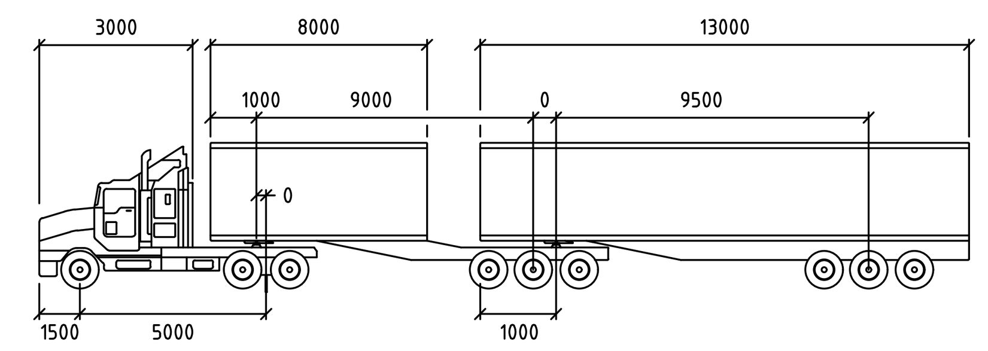
27.5m B-DOUBLE (RAV 4) - SOUTHBOUND SITE







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Trailer Track	: 2500		

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LOTS 425-426 BUNBURY OUTER RING ROAD
BORR SERVICE CENTRES

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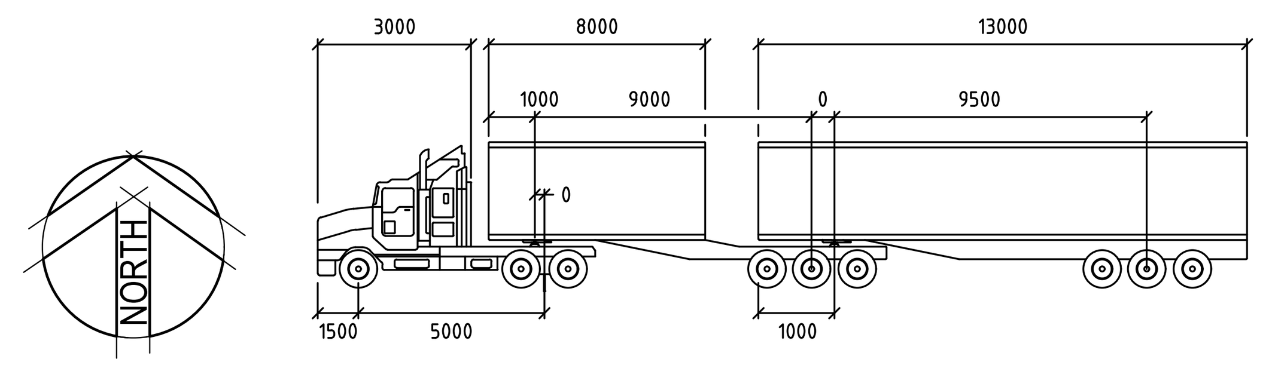
Acknowledgement 20-03-2023

Attachment 2

DATE PLOTTED: 23 February 2023 7:48 PM BY : RAYMOND RACHMAT

27.5m B-DOUBLE (RAV 4) - NORTHBOUND SITE



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SARACEN DEVELOPMENTS
LOTS 425-426 BUNBURY OUTER RING ROAD
BORR SERVICE CENTRES

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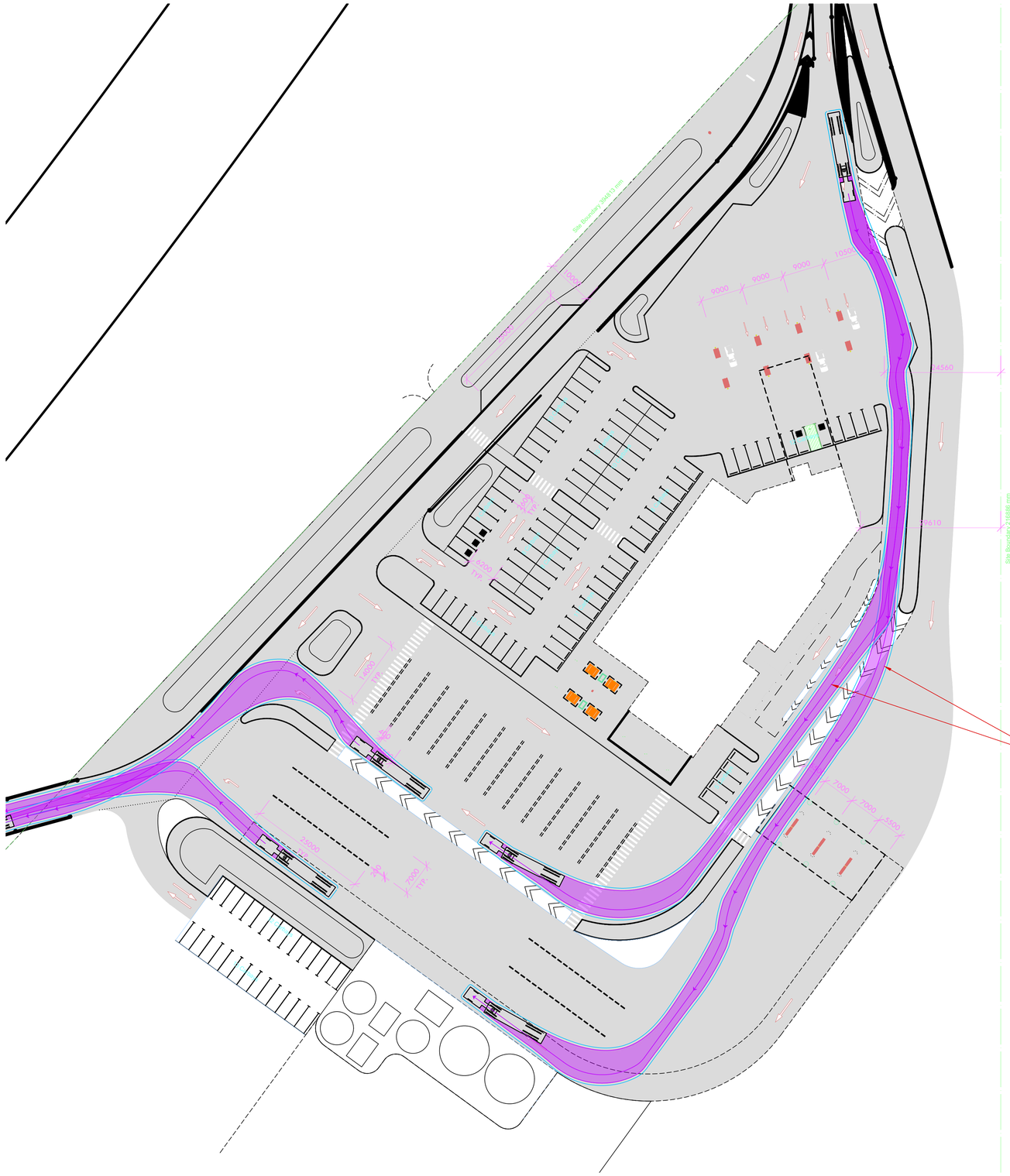
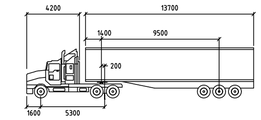
DATE PLOTTED: 23 February 2023 7:48 PM BY: - RAYMOND RACHMAT

19 SEMI TRAILER FILL POINT-SOUTHBOUND SITE





PM S 19M

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Trailer Track	: 2500		

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SARACEN DEVELOPMENTS
LOTS 425-426 BUNBURY OUTER RING ROAD
BORR SERVICE CENTRES

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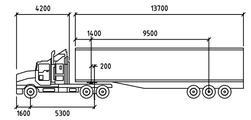
DATE PLOTTED: 23 February 2023 7:48 PM BY: - RAYMOND RACHMAT

19m SEMI TRAILER FILL POINT - NORTHBOUND SITE

SIGNS SHOULD BE PROVIDED TO INFORM TRUCK DRIVERS TO EXIT VIA THE TRUCK LANE AND NOT VIA THE CARAVAN PARKING
(POTENTIAL SIGNS LOCATION INDICATED)



PM S 19M

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Trailer Width	2500	Steering Angle	27.8
Tractor Track	2500	Articulating Angle	70.0
Trailer Track	2500		

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SARACEN DEVELOPMENTS
LOTS 425-426 BUNBURY OUTER RING ROAD
BORR SERVICE CENTRES

Date	Scale	Size
23.02.2023	1:500	A1

Drawing Number	Revision
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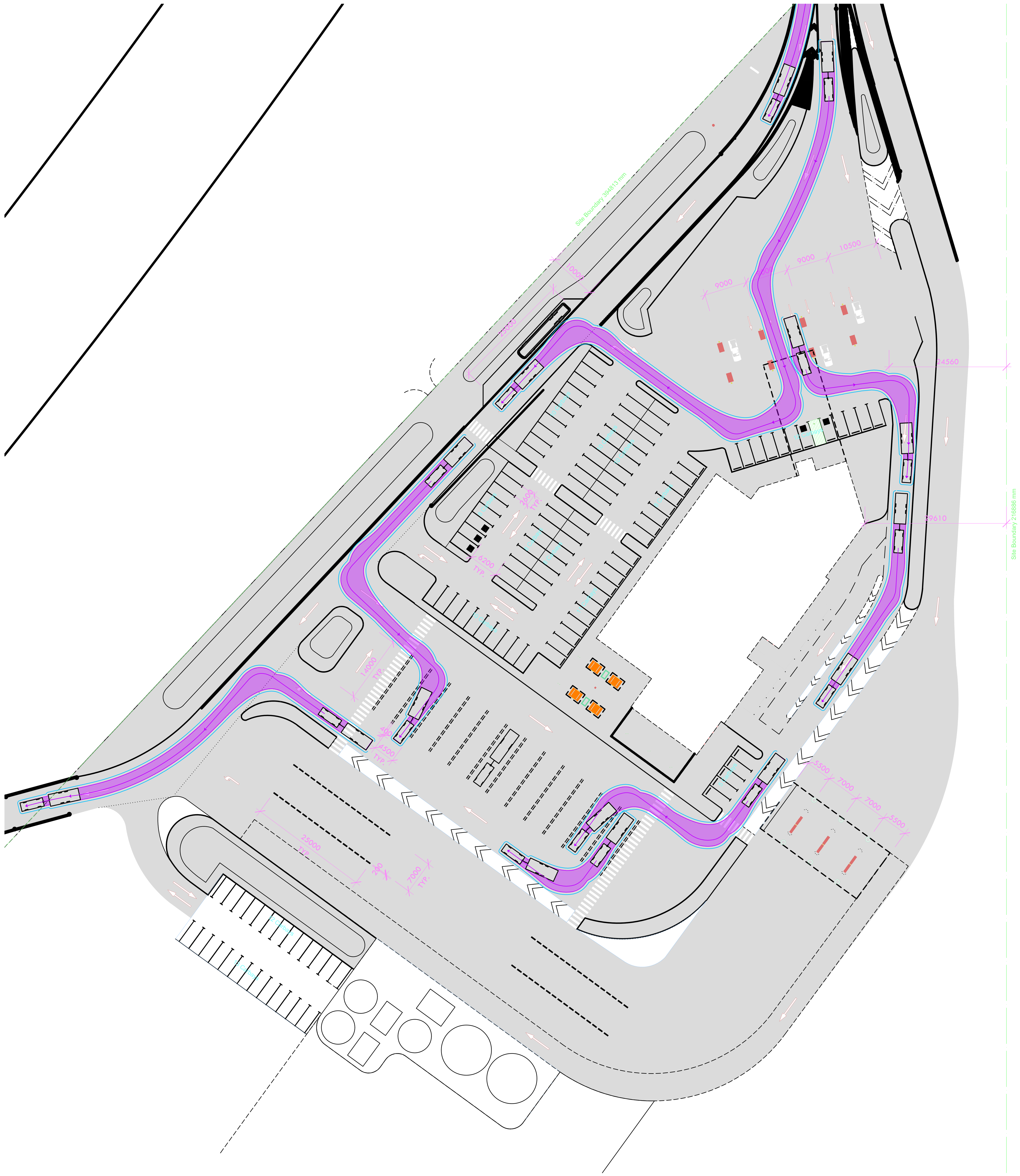
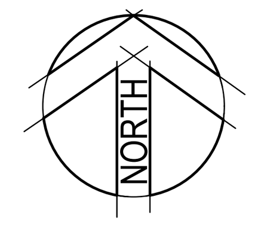
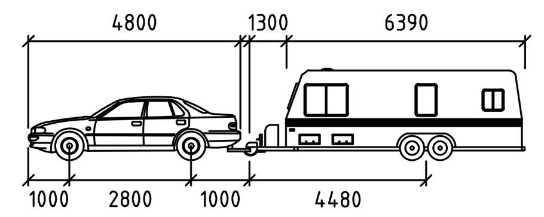
DATE PLOTTED: 23 February 2023 7:48 PM BY : RAYMOND RACHMAT

CARAVAN - SOUTHBOUND SITE







CARAVANE

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Trailer Width	: 2480
Car Track	: 1750
Trailer Track	: 2330
Lock to Lock Time	: 6.0
Steering Angle	: 35.9
Articulating Angle	: 70.0

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SARACEN DEVELOPMENTS
LOTS 425-426 BUNBURY OUTER RING ROAD
BORR SERVICE CENTRES

Date	Scale	Size
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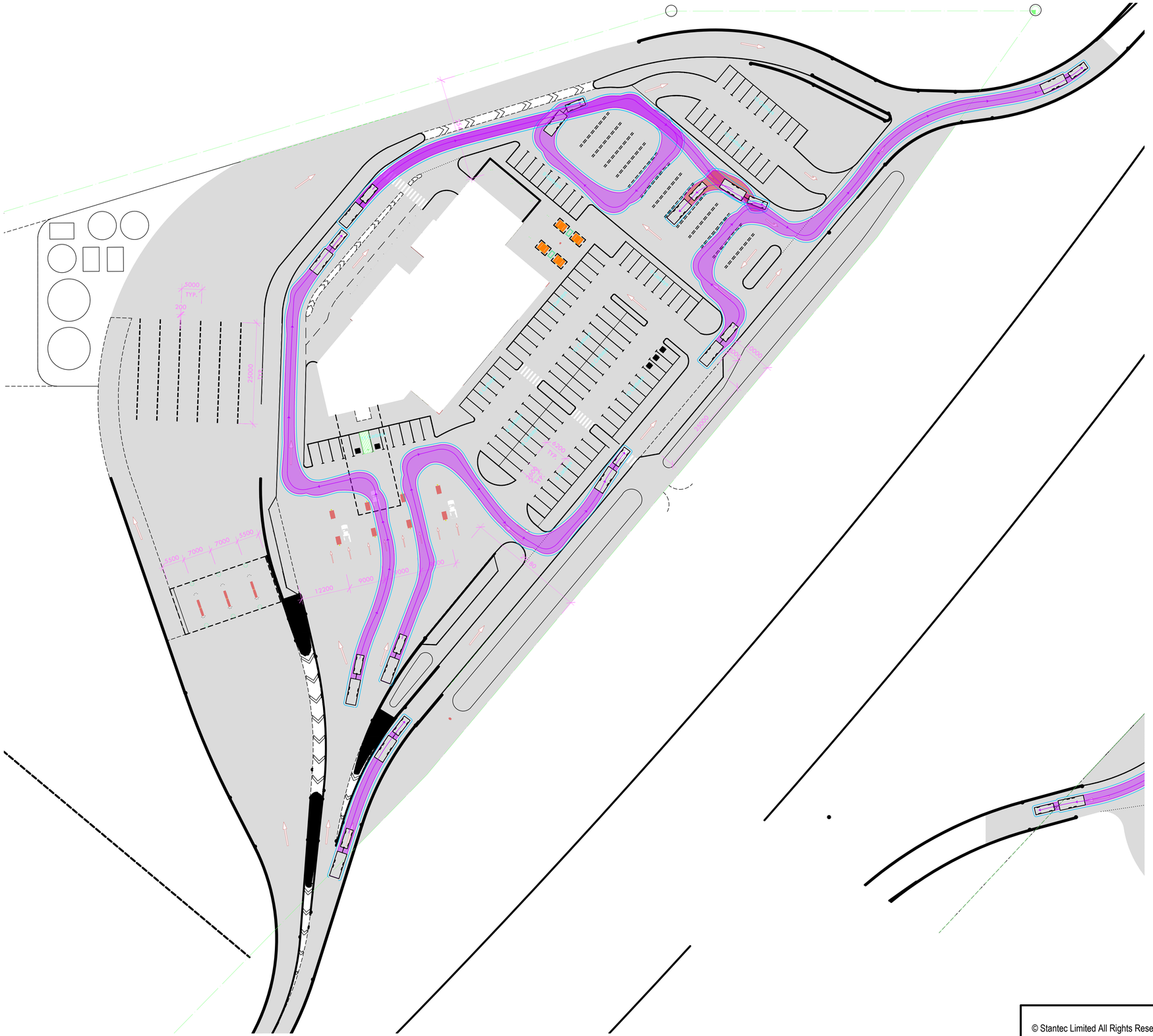
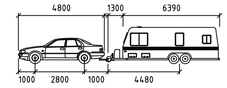
DATE PLOTTED: 23 February 2023 7:48 PM BY: RAYMOND RACHMAT

CARAVAN - NORTHBOUND SITE





CARAVANE

	mm
Car Width	: 1800
Trailer Width	: 2480
Car Track	: 1750
Trailer Track	: 2330
Lock to Lock Time	: 6.0
Steering Angle	: 35.9
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SARACEN DEVELOPMENTS
LOTS 425-426 BUNBURY OUTER RING ROAD
BORR SERVICE CENTRES

Date	Scale	Size
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Revision: A

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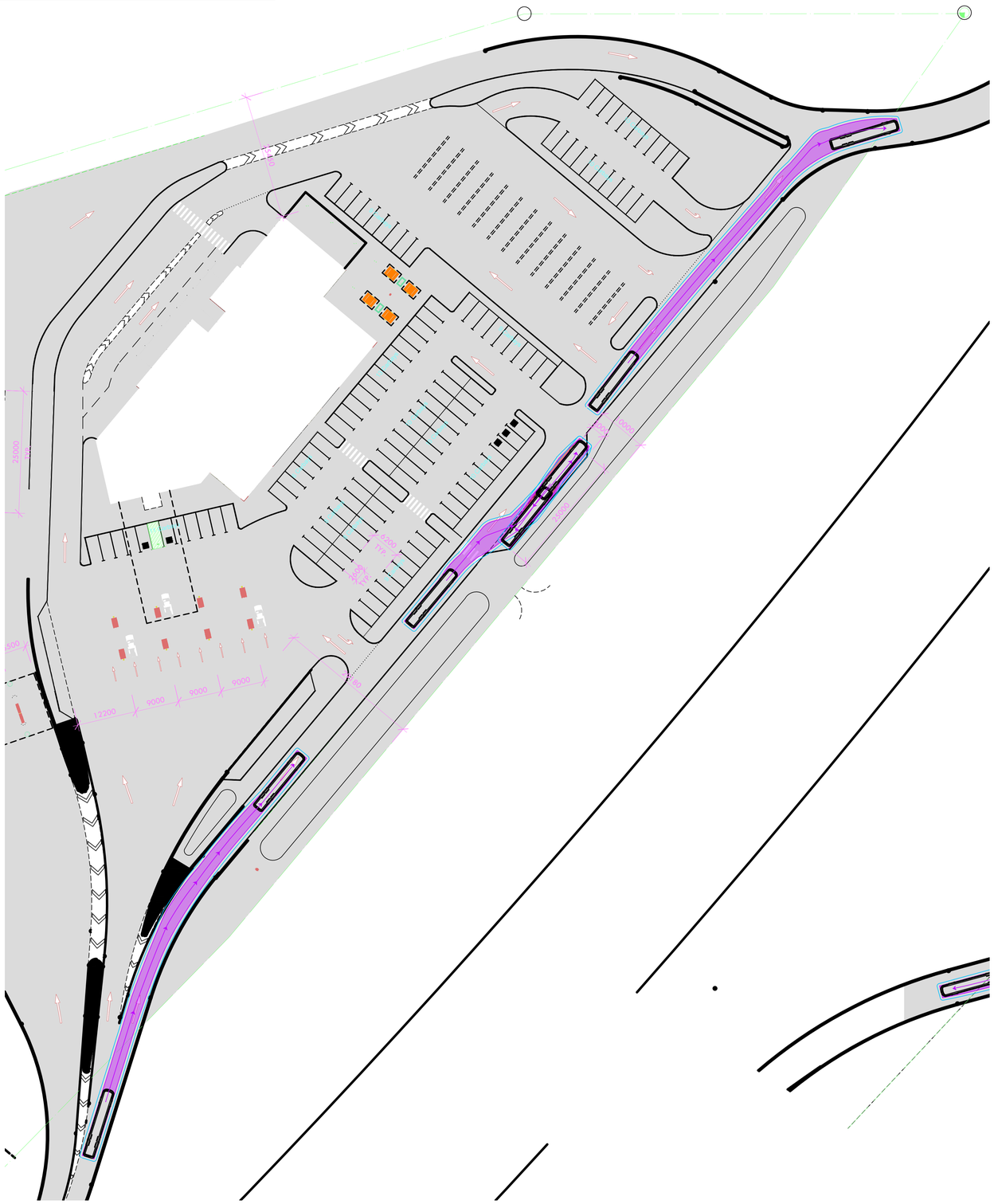
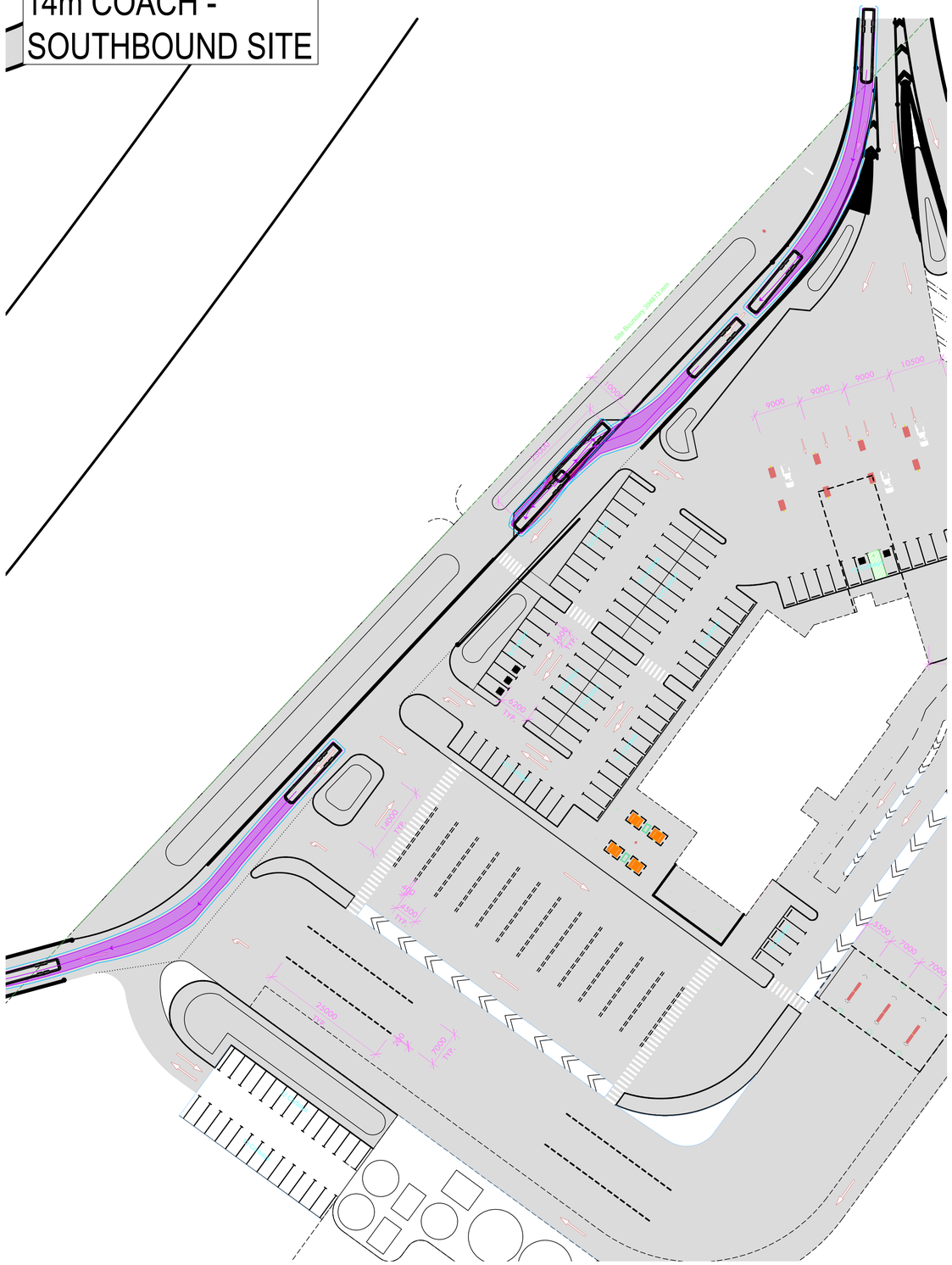
DATE PLOTTED: 23 February 2023 7:48 PM BY: RAYMOND RACHMAT

14m COACH - NORTHBOUND SITE



14m COACH - SOUTHBOUND SITE



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SARACEN DEVELOPMENTS
LOTS 425-426 BUNBURY OUTER RING ROAD
BORR SERVICE CENTRES

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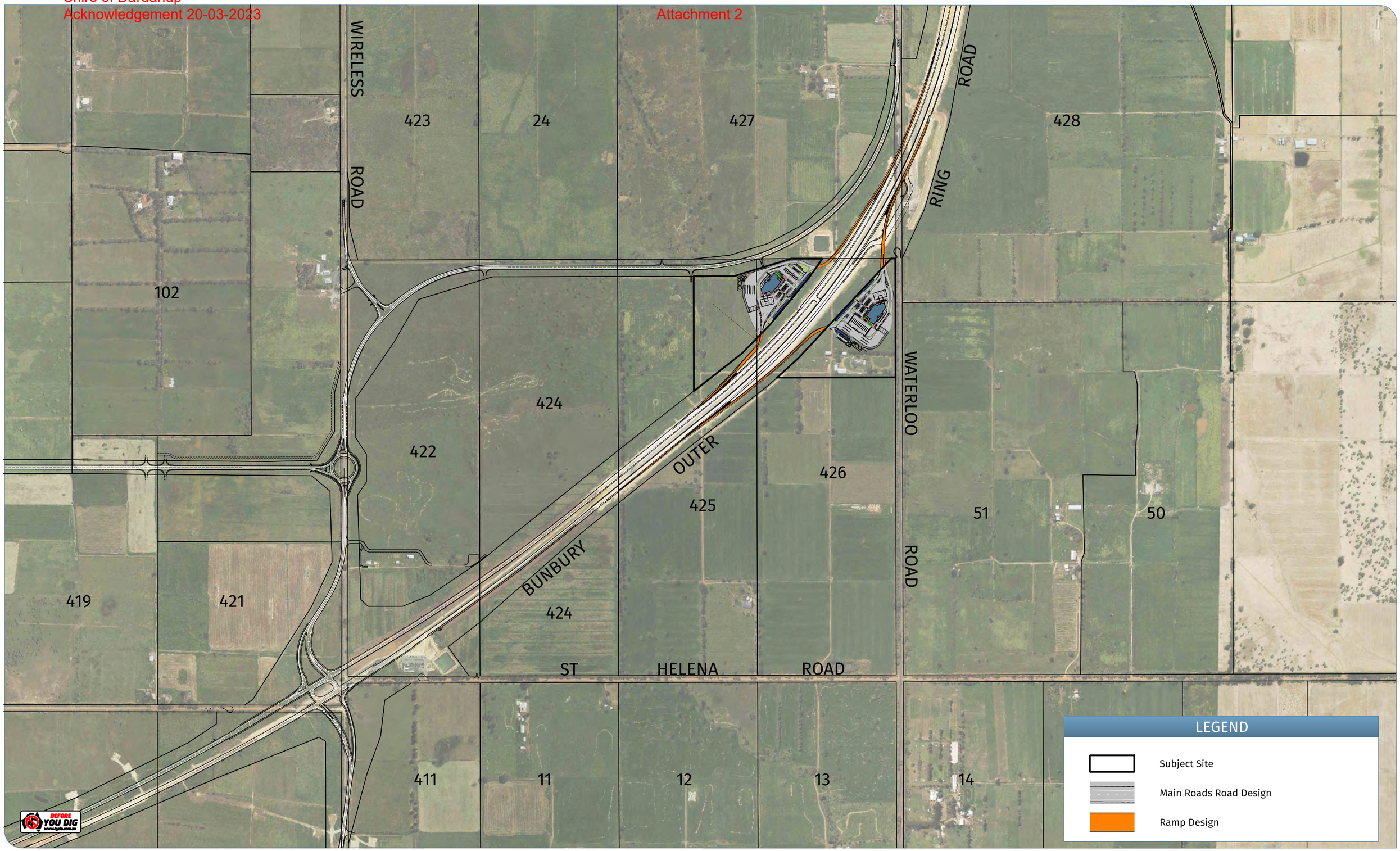
APPENDIX G

Entry and Exit Ramp Design Plans



OVERALL SITE PLAN SHEET 1 OF 2

Lots 425-426 on DP418576 Bunbury Outer Ring Road, WATERLOO

Plan No.	22454-10	
Date	16/02/23	
Drawn	NP	
Checked	KS	
Revision	A	
Scale	1:10000@A3	0 100m 200m 300m

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NOTE: This plan has been prepared for planning purposes. Areas, Contours and Dimensions shown are subject to survey

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LEGEND

- Subject Site
- Main Roads Road Design
- Ramp Design

OVERALL SITE PLAN SHEET 2 OF 2

Lots 425-426 on DP418576 Bunbury Outer Ring Road, WATERLOO

Plan No.	22454-10	
Date	16/02/23	
Drawn	NP	
Checked	KS	
Revision	A	
Scale	1:2000@A3	0 20m 40m 60m

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APPENDIX H

Site and Soil Evaluation

Saracen Development PTY LTD

BORR WATERLOO SERVICE STATIONS

SITE-AND-SOIL EVALUATION (SSE)

December 2022
10783-G-R-002-0

WML
Consulting Engineers

Document History and Status				
Revision	**Prepared By**	**Reviewed By**	**Purpose of Issue**	**Date**
0	A. Hollier	S. Maris	Final	29/11/2022

Issued to:	Saracen Development Pty Ltd
WML Project Number:	10797
Document Name:	10783-G-R-002-0

WML Consultants Pty Ltd

Angus Hollier
Geotechnical Engineer
Author

Simon Maris
Principal Geotechnical Engineer
Reviewer

For and on behalf of WML Consultants Pty Ltd

1 INTRODUCTION

Saracen Developments Pty Ltd (Client) engaged WML Consultants (WML) to undertake to undertake a Site-and-Soil Evaluation (SSE) report to support the future development of the Waterloo Service Station for the Bunbury Outer Ring Road (BORR) project.

This report presents the findings of the Site-and-Soil Evaluation and provides a summary of the works performed on-site, a visual assessment of the sub-surface and surrounding site conditions, and a summary of the geo-environmental laboratory testing together with an assessment of the suitability of the site for on-site effluent disposal. This assessment has been prepared with reference to the Government Sewerage Policy 2019 (GSP19) and AS/NZS 1547:2012 '*On-site domestic-wastewater management.'*

WML have used suitably experienced staff to undertake the field investigation and the preparation of this report.

1.1 Site Description and Proposed Development

The proposed development includes two service stations, dissected by the BORR road alignment. The sites have been labelled as the Northbound and Southbound Stations. Each site will have an independent effluent management and disposal system.

The proposed Service Stations are located approximately 12 km east of Bunbury within the Shire of Dardanup, Western Australia. The site has a total approximate area of 20 ha and is typically flat and covered with grass. The site consists of some medium trees to the northern edge.

An irrigation/drainage channel runs east to west along the northern edge of the Northbound Station and another irrigation/drainage channel runs north to south along the eastern edge of the Southbound station (Shown as blue lines within Figure 1). This irrigation/drainage network eventually discharges into the Collie River.

1.2 Objectives of this Report

The objectives of the SSE were to:

- Assess the sub-surface soil conditions across the site.
- Conduct laboratory testing to determine the geotechnical and geo-environmental properties of the site's soil,
- Assess the suitability of the site for effluent disposal according to Government Sewerage Policy 2019 and AS/NZS 1547:2012.
- Provision of setback distances in accordance with the above policies.
- Recommended wastewater treatment systems and application methods.

2 SITE ASSESSMENT

A desktop study of published and available information was undertaken to identify the site's key features in relation to the effective management of effluent at the site. The results of the study are summarised in Table 1, however, the critical points are provided below:

- The site is located within the estuary catchment of the Swan Coastal Plain and therefore is defined as a sewerage-sensitive area, see Figure 1.
- The site is not located within a public drinking water source area or within 100 m of a public drinking water source area.
- The site is not located within 100 m of any known DWER mapped watercourses or significant wetland. The closest DWER mapped watercourses are a minor perennial water course approximately 2 km to the north which drains to the Collie River, and a significant stream, approximately 4 km to the south which connects to the Ferguson River.
- The proposed effluent disposal area for the **Northbound** station is 7,300 m^2 and is located on the western edge of the development area. There is a man-made irrigation/drainage channel which runs north to south between the proposed service station building and the proposed effluent disposal area. Additionally, the western adjacent lot has a small pond approximately 70 m from the proposed effluent disposal area.
- The proposed effluent disposal area for the **Southbound** station is 7,300 m^2 and is situated in the southeastern corner of the proposed development area, adjacent to an existing residential dwelling.
- The site is not within an Annual Exceedance Probability AEP (1% or 10%) Floodway and Flood Fringe Area.

Figure 1 indicates the location of the site with overlays from the Government Sewerage Policy GSP (2019) showing the sewerage-sensitive designated areas. The blue lines indicate the irrigation/drainage channels.

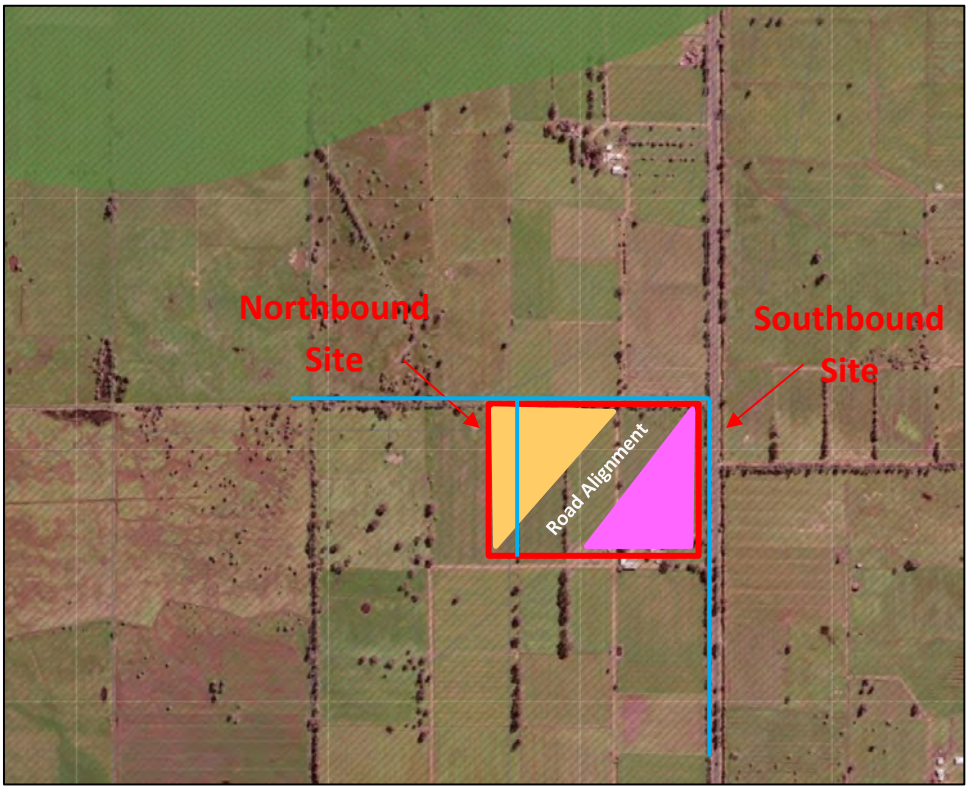

Figure 1: Site is within the estuary catchments of the Swan Coastal Plain.

Table 1: Site Assessment

Feature	Description	Level of Constraint	Mitigation Measures
Sewerage sensitive areas	The entire site is located within the estuary catchment of the Swan Coastal Plain and is therefore defined as a sewerage-sensitive area in accordance with GSP 2019.	High	The constraints within the GSP19 for a sewerage sensitive area apply for both application areas. This requires: 1. 1.5 m vertical setback from groundwater or perched water 2. Secondary Treatment Systems (STS) with nutrient removal.
Climate	Average annual rainfall 728.6 mm (BOM Bunbury Comparison Climate Station No 009965). Estimated average annual pan evaporation 1500 mm (BOM pan evaporation maps)	Low	NN (Not Needed)
Drainage	The site can be generally classified as a CLAY site with very poor in-situ drainage.	High	Perched water is expected on the surface, elevation of the application areas is recommended using a suitable imported fill.
Surface water	**Northbound**: A man-made drainage channel runs north to south, immediately east adjacent to the proposed effluent disposal area. This channel connects to the man-made drain which runs east-west on the northern edge of the site. Perched water is expected near the surface within this area. **Southbound:** No drainage channel is located near the proposed effluent disposal area, however perched water is expected near the surface within this area.	High	Sub-surface application of the effluent is recommended to avoid surface run off.
Exposure & Aspect	Both sites are covered with short grass. The Southbound site contains small to large mature trees surrounding the proposed effluent disposal area.	Low	NN
Groundwater	On the 27th of September 2022, static groundwater levels were measured from the installed monitoring wells. **Northbound:** Groundwater was also encountered in BH7 and BH8 at depths of 1.6 and 1.0m, respectively. **Southbound:** Groundwater was encountered in BH5 and BH6 at depths of 1.7 m and 1.75 m, respectively.	Medium	Groundwater was located within 1.5 m of the surface in the Northbound location.

Imported Fill	No imported fill was noted during the site investigation.	Low	NN
Landform	Both Northbound and Southbound sites are relatively flat	low	NN
Run-on & Run-off	Due to the flat nature of the landform and the relatively impermeable subsoils, no run-on or run-off is expected, however perched water is likely throughout the site.	Low	NN
Slope	The area is relatively flat, with a max gradient of 4%.	Low	NN
Vegetation	Short grass and weeds within both sites.	Low	NN

*Note: *NN: not needed, land application area (LLA)*

2.1 Site Assessment Results

Based on the most constraining site features, sewerage sensitive areas and drainage, the overall land capability of the site to sustainably manage all effluent on-site is constrained, and mitigation measures are required to reduce the potential for environmental contamination. These mitigation measures include:

1. The treatment of the generated effluent from the Northbound and Southbound sites to a secondary level with a Secondary Treatment System (STS) with nutrient removal.
2. Sub-surface application of the effluent utilising either inverted leach drains or sub-surface drip irrigation systems.
3. The site is within the Swan Coastal Plain and is therefore defined as a sewerage-sensitive area and must achieve a minimum of 1.5 m vertical setback to groundwater or perched groundwater. This should be achieved by importing a Loamy SAND fill, which achieves a 10-20% clay content and a PRI greater than 20. The imported fill should be able to be classified as a Category 2 soil in accordance with AS 1547.
4. High nutrient uptake vegetation should be planted around the LAA to increase the evapotranspiration rate.

3 SOIL ASSESSMENT

3.1 Fieldwork summary

Fieldwork was carried out on the 16th and 17th of September 2022, by two qualified WML geotechnical engineers and comprised:

- A site walkover to observe existing site features and to take record photographs.
- Twelve (12) solid auger boreholes were drilled using a Ute-mounted mechanical auger drill rig, extending to depths of 2.6 – 7.5 m, designated BH1 to BH12.
- Installation of four (4) groundwater monitoring wells, located at BH5, BH6, BH7 and BH8.
- Ten (10) Dynamic cone penetrometer (DCP) tests adjacent to each borehole except BH2 and BH6.
- Hand Shear Vane tests were undertaken within the cohesive soils.
- Collection of representative soil samples from boreholes for laboratory testing.

3.1.1 Encountered in-situ sub-surface profile

The 1:250,000 scale Geological Map 'Collie' indicates that the site is underlain by Qpa: Guildford formation, alluvium (clay, loam, sand and gravel) variably lateritised and podsolised. Based on the encountered sub-surface profile, the site is typically consistent with the geological maps and was similar between both proposed Northbound and Southbound Sites. A generalized sub-surface profile was determined based on the soil logs (presented in Appendix A), general landform and in-situ testing. Table 2 presents the generalized soil profile.

Table 2: Sub-surface soil profile

Soil/rock layer	Depth (m)	Description
TOPSOIL; Sandy CLAY	0.0 – 0.2 m	high plasticity, brown orange; with fine to medium grained sand with fine to medium grained gravel; moist; firm; trace fine to medium roots
Sandy CLAY	0.2 – 7.0 m+	high plasticity, brown orange; fine grained sand; dry; stiff to hard;

3.1.2 In-situ Permeability

An in-situ permeability tests was undertaken adjacent to BH1 using the constant head Talsma-Hallam method in accordance with AS/NZS 1547:2012. A borehole 110 mm in diameter and 700 mm deep was excavated and filled with water to saturate the surrounding soil. A constant head of water was then applied, and a known volume of water was timed to dissipate.

A test zone 250 mm from the base of the hand-augured borehole was applied and measurements were taken at regular time intervals to aim for a consistent flow rate, however, the dissipation rate was extremely slow in the clay and no observable movement in the water level could be observed over a 4-hour period.

The in-situ clay ground materials should be considered as essentially impermeable.

3.2 Laboratory soil testing

Samples of representative materials were submitted to Western Geotechnical, Envirolab (MPL) and CSBP soil and plant, NATA accredited laboratories for Particle Size Distribution (PSD), Atterberg limits (PI), Phosphorous Retention Index tests (PRI) and Emerson Class (EC) dispersion tests. The laboratory test results are summarised below, with the certificates presented in Appendix B.

Table 3: Summary of soil classification testing

Location ID	Depth (m)	PSD			Atterberg Limits's				Soil Classification (USCS)
		Fines (%)	Sand (%)	Gravel (%)	LL (%)	PL (%)	PI (%)	LS (%)	
BH1	1.2 - 1.5	67	33	0	38	19	19	8	**Sandy CLAY (CH)**
BH7	0.6 - 0.9	64	35	1	45	19	26	13	**Sandy CLAY (CH)**

Note: PSD – Particle Size Distribution; PI – Plasticity Index; LS – Linear Shrinkage; NP – Non-Plastic

Table 4: Summary of the geo-environmental laboratory testing

Location ID	Depth (m)	PRI	Emerson Class number
BH1	0.5 – 0.7	> 1000.0	5
BH1	0.3 – 0.6	> 1000.0	5
BH7	0.3 – 0.6	> 1000.0	5
BH7	0.6 – 0.9	> 1000.0	4

Note: PRI – Phosphorous Retention Index.

The Phosphorous Retention Index (PRI) can be defined as the ratio of phosphorus absorbed to the phosphorus remaining when the soil is left in contact with a standard phosphorus solution under standard conditions. It is generally used to measure a soil's ability to strip an applied effluent of phosphorus and prevent leaching or contamination into the groundwater. In sandy soils, the Phosphorus Retention Index is usually less than 5. Very strongly absorbing soils include lateritic loams, iron-rich peats, Karri loams with PRI >70. A negative value indicates the soil can no longer absorb any more phosphorus, and as such, would leach through the layer easily. Based on the soil logs and laboratory test results, the soil profile encountered in all tests contains a very high phosphorus retention ability and a low chance of dispersion.

3.3 Summary of the soils

Based on the generalised sub-surface soil profile presented in Section 3.1.1, an assessment on the soils suitability and capability to suitability manage effluent has been undertaken. The assessment is summarised in Table 5 below.

Table 5: Soil assessment of the Northbound and Southbound soils.

Feature	Assessment	Level of Constraint	Mitigation Measures
Phosphorous Retention Index	Sandy CLAY: PRI = >1000.0 The laboratory certificate is presented in Appendix B.	Low	The clay has very high phosphorus absorption capability
Emerson Class	Subsoil: EC = 5 and 4 The subsoil may generally be classified as a low-dispersive soil.	Low	NN
Rock Fragments	No cobble and boulder-sized lateritic rock fragments were noted to the south of the site	Low	NN
Soil depth	Topsoil: <250mm Subsoil: >250mm	Low	NN

Feature	Assessment	Level of Constraint	Mitigation Measures
Soil Category	Sandy CLAY; Moderately structured = Category 5	High	Secondary treatment with nutrient removal is required.
Soil Permeability	Sandy CLAY: Saturated hydraulic conductivity (k_{sat}) = 0.1m/day (based on AS 1547 for a Category 5 soil)	High	Soils have a very low drainage potential. Perched groundwater should be expected near the surface

NN = Not Needed
**Typical soil category based on soil texture and structure in accordance with AS/NZS 1547 Table 5.1*

3.4 Soil assessment results

Based on the soils encountered during the investigation, the overall capability of the soil to suitably manage effluent is constrained and mitigation measures are required. The following mitigation measures are a summary of Table 5 above and are recommended to ensure that the risk of environmental contamination is reduced to a satisfactory level in accordance with the GSP19 and AS/NZS 1547.

- The treatment of the generated effluent from each site to a secondary level with a Secondary Treatment System (STS) with nutrient removal is recommended.
- The in-situ sandy clays have a very low permeability and can be considered to be relatively impermeable. It is recommended that the proposed application areas are elevated to avoid the near surface saturated soils.
- Establish vigorous high nutrient uptake vegetation around the LAA to increase the rate of evapotranspiration.

4 RECOMMENDATIONS

The following sections provide an overview of a suitable on-site wastewater management system. Detailed design for the system should be undertaken at the time of the building application and submitted to the local government.

4.1 Wastewater management system

A detailed design of the wastewater management system for the Northbound and Southbound Stations is beyond the scope of this report. However, based on the results of the SSE investigation, treatment of the generated wastewater to a secondary level with a Secondary Treatment System (STS) with nutrient removal utilising a sub-surface application system can be considered satisfactory if the recommendations presented below are adhered to. The final selection of the system should be undertaken by the client from the list of approved Department of Health Secondary Treatment Systems and should achieve a minimum nutrient output of:

- 20 mg/L of Biochemical Oxygen Demand (BOD)
- 30 mg/L of Total Suspended Soils (TSS)
- 10 cfu/100mL of Escherichia (E) coli
- 1 mg/L of Phosphorus (P)
- 10 mg/L of Nitrogen (N)

It is recommended that the design and installation of the effluent management system are carried out by a suitably qualified, licensed plumber or drainer experienced with on-site wastewater disposal systems and an irrigation expert familiar with effluent irrigation equipment to provide further design advice if required. The irrigation plan must ensure the even application of effluent throughout the entire application area. The primary constraints influencing detailed design being the sewerage sensitive area, very poor in-situ drainage and proximity to irrigation/drainage channels.

The following section provides a further breakdown of the constraints and recommendations for both the northbound and southbound stations which should be taken into consideration during detailed design:

Northbound and Southbound Stations:

- Both stations are located within the Swan Coastal plain and are considered to be within a sewerage sensitive area.
- Irrigation/drainage channels which eventually discharge into the Collie River are located adjacent to each stations proposed effluent disposal area. In accordance with the GSP19, no effluent disposal area can be within 100 m of a drainage system which discharges into a waterway. Therefore, any irrigation/drainage channels within 100 m of the outside edge of the effluent disposal area should either be blocked, re-routed, or converted to a piped system.
- The land application area should be elevated to provide a minimum vertical separation to the top of the clay soils of 1.5 m in accordance with the GSP19. Therefore, the invert levels of the application system must be approximately 1.5 m above existing levels. Any fill material that is imported should be able to be classified as a Category 2 soil in accordance with AS 1547 and achieve a minimum PRI of 20 and a clay content between 10-20%.
- The wastewater load of the site is not known at the time of writing this report, however a land application area can be calculated based off the conversion factors provided in Section 2 of Schedule 2 of the GSP19 based on the in-situ Category 5 soil.

4.2 Setback distances

The setback distances have been based on a mound application system disposing of a primary treated effluent through Category 4 soil.

Table 6: Zone A - Relevant setback distances in accordance with GSP 2019 and AS / NZS 1547:2012

Feature	Setback distance
Private bore for household/drinking water purposes	30 m
A drainage system that discharges directly into a waterway or wetland without treatment	100 m
Waterway/watercourse (measured from the edge of the wetland vegetation)	100 m
Vertical distance to peak groundwater levels	1.5 m
Property boundary	2 m
Buildings/houses	3 m
Surface water	60 m
Recreational areas (children's play areas, swimming pools and so on)	5 m
In-ground water tank	5 m
Retaining wall and embankments, escarpments, cuttings	3 m or 45° angle from the toe of the wall (whichever is greatest)

4.3 Monitoring, Operation and Maintenance

Maintenance is to be carried out in accordance with the DOH Approval of the selected secondary treatment system and manufacturers' recommendations. The treatment system will only function adequately if appropriately and regularly maintained.

To ensure the treatment system functions adequately, residents must:

- Have a suitably qualified maintenance service technician for the secondary treatment system at the frequency required by the manufacturer under the local government permit to use.
- Use household cleaning products that are suitable for septic tanks or ATUs.
- Keep as much fat and oil out of the system as possible; and
- Conserve water (AAA-rated fixtures and appliances are recommended).

To ensure the land application system functions adequately, residents must:

- Regularly harvest/mow vegetation within the application area to maximise the uptake of nutrients.
- Monitor and maintain the application system following the manufacturer's recommendations, including flushing the drainage lines; and
- Regularly clean in-line filters.

5 CLOSURE

We trust that the information provided satisfies your present requirements and meets with your approval. Should you have any queries, please do not hesitate to contact the author.

We draw your attention to the attached "*Report Limitations*" included with this report. This information sheet is intended to provide additional information about this report and information included within it. This information is provided not to reduce the level of responsibility accepted by WML but to ensure that all parties that rely on this report, and the information contained herein, are aware of the responsibilities that each assumes in so doing.

LIMITATIONS

WML have undertaken investigations, performed consulting services, and prepared this report based on the Client's specific requirements, documents and information supplied, and previous experience. If changes occur in the nature or design of the project, we should be allowed to review this report and provide additional recommendations, if any. It is the responsibility of the Client to transmit the information and recommendations of this report to the appropriate organisations or people involved in design of the project, including but not limited to developers, owners, buyers, architects, engineers, and designers.

We performed our professional services in accordance with generally accepted geotechnical engineering principles and practices currently employed in the area; no warranty, expressed or implied, is made as to the professional advice included in this report.

Any data provided by third parties including, but not limited to: sub-consultants, published data, and the Client, may not be verified and WML assumes no responsibility for the adequacy, incompleteness, inaccuracies, or reliability of this information. WML does not assume any responsibility for assessments made partly or entirely based on information provided by third parties.

This report has been prepared based on investigation locations which are explicitly representative of the specific sample or test points. Interpretation of conditions between such points cannot be assumed to represent actual subsurface information and there are unknowns or variations in ground conditions between test locations that cannot be inferred or predicted.

This report is based upon field and other conditions encountered at the time of report preparation. If unexpected subsurface conditions are encountered, WML shall be notified immediately to review those conditions and provide additional and/or modified recommendations, as necessary.

Our services did not include any contamination or environmental assessment of the site or adjacent sites. The nature of geotechnical investigation differs from the environmental investigation practice. If you require any environmental considerations to be applied to your project, WML can advise on further steps to be undertaken.

Geotechnical assessments are typically based on judgment of the investigation data and visual observations of the site and materials.

This document must not be subject to unauthorised use that is, reusing without written authorisation of WML. Such authorisation is essential because it requires WML to evaluate the document's applicability given new circumstances, not the least of which is passage of time.

DRAWINGS

10783-G-001

Geotechnical Test Locations - Waterloo Rd

WML accessible expertise

Legend

- Boreholes

BH11
BH7
BH8
BH12
BH9
BH10
BH4
BH5
BH2
BH3
BH1
BH6

Waterloo Rd

Wild R

Waterloo Rd

N

Google Earth

100 m

APPENDIX A

LOGS

BOREHOLE: BH1

SHEET: 1 OF 1

CLIENT:	Saracen Developments Pty Ltd	HOLE DEPTH:	2.65m	CONTRACTOR:	WML Consultants		
PROJECT:	BORR Waterloo Service Station	COORDINATES:	385515.0 m E, 6309740.5 m N, MGA94 Zone 51	EQUIPMENT:	Mechanical Drill rig		
JOB NO.:	10783			LOGGED:	HK	START DATE:	16/9/2022
LOCATION:	Waterloo	INCLINATION:	-90°	CHECKED:	SM	END DATE:	16/9/2022

Drilling				Field Material Description							
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY	IN SITU TESTING	SAMPLE	DCP TEST Blows per 150 mm (0 8 16 24 32 40)
110 mm augur drilling	Not Encountered	0.0	0.20		CH	**TOPSOIL; CLAY,** high plasticity, brown orange; with fine to medium grained sand, with fine to medium grained gravel; moist; stiff; *trace fm roots*	M	St			
		0.5			CH	**sandy CLAY,** high plasticity, brown orange; fine grained sand; dry; stiff.			FV 0.50 m s_v=55 kPa FV 0.70 m s_v=70 kPa	2D 0.30-0.60 m 2D 0.60-0.90 m 2D 0.90-1.20 m	
		1.0					D	St	FV 1.00 m s_v=100 kPa	D 1.20-1.50 m	
		1.5							FV 1.30 m s_v=120 kPa	D 1.50-1.80 m	>> >>
		2.0	2.00		CH	**Sandy CLAY,** high plasticity, brown orange; sand is fine grained; moist; very stiff.	M	VSt			
		2.5	2.65			Hole Terminated at 2.65 m					

Sketch & Other Observations

BOREHOLE: BH2

SHEET: 1 OF 1

CLIENT:	Saracen Developments Pty Ltd	HOLE DEPTH:	2.65m	CONTRACTOR:	WML Consultants		
PROJECT:	BORR Waterloo Service Station	COORDINATES:	385556.4 m E, 6309783.1 m N, MGA94 Zone 51	EQUIPMENT:	Mechanical Drill rig		
JOB NO.:	10783			LOGGED:	HK	START DATE:	16/9/2022
LOCATION:	Waterloo	INCLINATION:	-90°	CHECKED:	SM	END DATE:	16/9/2022

Drilling				Field Material Description					IN SITU TESTING	SAMPLE	STRUCTURE AND ADDITIONAL OBSERVATIONS
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY			
110 mm augur drilling	Not Encountered	0.0	0.25		CH	**TOPSOIL; CLAY,** high plasticity, brown orange; with fine to medium grained sand, with fine to medium grained gravel; moist; stiff; *trace fm roots*	M	St			0.00: TOPSOIL
		0.5			CH	**sandy CLAY,** high plasticity, brown orange; fine grained sand; dry; stiff to very stiff.			FV 0.65 m s_v=95 kPa		
		1.0									
		1.5					D	H	FV 1.55 m s_v=120 kPa		
		2.0									
		2.5	2.65								
						Hole Terminated at 2.65 m					

Sketch & Other Observations

BOREHOLE: BH3

SHEET: 1 OF 1

CLIENT:	Saracen Developments Pty Ltd	HOLE DEPTH:	2.65m	CONTRACTOR:	WML Consultants		
PROJECT:	BORR Waterloo Service Station	COORDINATES:	385598.0 m E, 6309766.1 m N, MGA94 Zone 51	EQUIPMENT:	Mechanical Drill rig		
JOB NO.:	10783			LOGGED:	HK	START DATE:	16/9/2022
LOCATION:	Waterloo	INCLINATION:	-90°	CHECKED:	SM	END DATE:	16/9/2022

Drilling				Field Material Description					IN SITU TESTING	SAMPLE	DCP TEST Blows per 150 mm
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY			0 8 16 24 32 40
110 mm augur drilling	Not Encountered	0.0			CH	**TOPSOIL; CLAY,** high plasticity, brown orange; with fine to medium grained sand, with fine to medium grained gravel; moist; stiff; *trace fm roots*	M	St			
			0.25		CH	**sandy CLAY,** high plasticity, brown orange; fine grained sand; dry; stiff to very stiff.			FV 0.60 m s_v=90 kPa		
		0.5									
		1.0									
		1.5					D	H			
		2.0									
		2.5									
			2.65			Hole Terminated at 2.65 m					

Sketch & Other Observations

BOREHOLE: BH4

SHEET: 1 OF 1

CLIENT:	Saracen Developments Pty Ltd	HOLE DEPTH:	2.65m	CONTRACTOR:	WML Consultants		
PROJECT:	BORR Waterloo Service Station	COORDINATES:	385603.0 m E, 6309826.6 m N, MGA94 Zone 51	EQUIPMENT:	Mechanical Drill rig		
JOB NO.:	10783			LOGGED:	HK	START DATE:	17/9/2022
LOCATION:	Waterloo	INCLINATION:	-90°	CHECKED:	SM	END DATE:	17/9/2022

Drilling				Field Material Description					IN SITU TESTING	SAMPLE	DCP TEST Blows per 150 mm
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY			0 8 16 24 32 40
110 mm augur drilling	Not Encountered	0.0			CH	**TOPSOIL; CLAY,** high plasticity, brown orange; with fine to medium grained sand, with fine to medium grained gravel; moist; stiff; *trace fm roots*	M	St			
			0.25		CH	**CLAY,** high plasticity, brown orange; fine grained sand; dry; stiff to very stiff.	D	H			
		0.5									
		1.0									
		1.5									
		2.0									
		2.5									
			2.65			Hole Terminated at 2.65 m					

Sketch & Other Observations

BOREHOLE: BH5

SHEET: 1 OF 1

CLIENT:	Saracen Developments Pty Ltd	HOLE DEPTH:	7.00m	CONTRACTOR:	WML Consultants		
PROJECT:	BORR Waterloo Service Station	COORDINATES:	385622.4 m E, 6309803.8 m N, MGA94 Zone 51	EQUIPMENT:	Mechanical Drill rig		
JOB NO.:	10783			LOGGED:	HK	START DATE:	17/9/2022
LOCATION:	Waterloo	INCLINATION:	-90°	CHECKED:	SM	END DATE:	17/9/2022

Drilling				Field Material Description							
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY	IN SITU TESTING	SAMPLE	DCP TEST Blows per 150 mm
110 mm augur drilling	1.7m	0	0.25		CH	**TOPSOIL; CLAY,** high plasticity, brown orange; with fine to medium grained sand, with fine to medium grained gravel; moist; stiff; *trace fm roots*	M	St	FV 0.30 m s_v=85 kPa FV 0.60 m s_v=115 kPa FV 0.90 m s_v=110 kPa FV 1.20 m s_v=216 kPa		0 8 16 24 32 40
		2			CH	**sandy CLAY,** high plasticity, brown orange; fine grained sand; dry; stiff to very stiff.	D	H			
		4									
		6	7.00								
						Hole Terminated at 7.00 m					

Sketch & Other Observations

BOREHOLE: BH6

SHEET: 1 OF 1

CLIENT:	Saracen Developments Pty Ltd	HOLE DEPTH:	2.65m	CONTRACTOR:	WML Consultants		
PROJECT:	BORR Waterloo Service Station	COORDINATES:	385613.0 m E, 6309673.7 m N, MGA94 Zone 51	EQUIPMENT:	Mechanical Drill rig		
JOB NO.:	10783			LOGGED:	HK	START DATE:	17/9/2022
LOCATION:	Waterloo	INCLINATION:	-90°	CHECKED:	SM	END DATE:	17/9/2022

Drilling				Field Material Description					IN SITU TESTING	SAMPLE	STRUCTURE AND ADDITIONAL OBSERVATIONS
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY			
110 mm augur drilling	1.75m	0.0	0.25		CH	**TOPSOIL; CLAY,** high plasticity, brown orange; with fine to medium grained sand, with fine to medium grained gravel; moist; stiff; *trace fm roots*	M	St			0.00: TOPSOIL
		0.5			CH	**sandy CLAY,** high plasticity, brown orange; fine grained sand; dry; stiff to very stiff.	D	H			
		1.0									
		1.5									
		2.0									
		2.5	2.65								
						Hole Terminated at 2.65 m					

Sketch & Other Observations

BOREHOLE: BH7

SHEET: 1 OF 1

CLIENT:	Saracen Developments Pty Ltd	HOLE DEPTH:	7.50m	CONTRACTOR:	WML Consultants		
PROJECT:	BORR Waterloo Service Station	COORDINATES:	385400.0 m E, 6309900.6 m N, MGA94 Zone 51	EQUIPMENT:	Mechanical Drill rig		
JOB NO.:	10783			LOGGED:	HK	START DATE:	17/9/2022
LOCATION:	Waterloo	INCLINATION:	-90°	CHECKED:	SM	END DATE:	17/9/2022

Drilling				Field Material Description							
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY	IN SITU TESTING	SAMPLE	DCP TEST Blows per 150 mm
110 mm augur drilling	1.6m	0	0.25		CH	**TOPSOIL; CLAY,** high plasticity, brown orange; with fine to medium grained sand, with fine to medium grained gravel; moist; stiff; *trace fm roots*	M	St	FV 0.30 m s_v=105 kPa	2D 0.30-0.60 m	0 8 16 24 32 40
					CH	**sandy CLAY,** high plasticity, brown orange; fine grained sand; dry; very stiff.			FV 0.90 m s_v=160 kPa FV 1.20 m s_v=160 kPa FV 1.50 m s_v=190 kPa	2D 0.60-0.90 m 2D 0.90-1.20 m	
		2									
		4					D	VSt			
		6	7.50								
		8				Hole Terminated at 7.50 m					

Sketch & Other Observations

BOREHOLE: BH8

SHEET: 1 OF 1

CLIENT:	Saracen Developments Pty Ltd	HOLE DEPTH:	2.64m	CONTRACTOR:	WML Consultants		
PROJECT:	BORR Waterloo Service Station	COORDINATES:	385129.4 m E, 6309869.6 m N, MGA94 Zone 51	EQUIPMENT:	Mechanical Drill rig		
JOB NO.:	10783			LOGGED:	HK	START DATE:	17/9/2022
LOCATION:	Waterloo	INCLINATION:	-90°	CHECKED:	SM	END DATE:	17/9/2022

Drilling				Field Material Description					IN SITU TESTING	SAMPLE	DCP TEST Blows per 150 mm
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY			0 8 16 24 32 40
110 mm augur drilling	1m	0.0	0.25		CH	**TOPSOIL; CLAY,** high plasticity, brown orange; with fine to medium grained sand, with fine to medium grained gravel; moist; stiff; *trace fm roots*	M	St			
		0.5			CH	**sandy CLAY,** high plasticity, brown orange; fine grained sand; dry; stiff to very stiff.			FV 0.30 m s_v=100 kPa FV 0.60 m s_v=110 kPa		
		1.0							FV 0.90 m s_v=120 kPa		
		1.5					D	H	FV 1.20 m s_v=160 kPa FV 1.50 m s_v=120 kPa		
		2.0									
		2.5	2.64			Hole Terminated at 2.64 m					

Sketch & Other Observations

BOREHOLE: BH9

SHEET: 1 OF 1

CLIENT:	Saracen Developments Pty Ltd	HOLE DEPTH:	2.65m	CONTRACTOR:	WML Consultants		
PROJECT:	BORR Waterloo Service Station	COORDINATES:	385232.0 m E, 6309817.7 m N, MGA94 Zone 51	EQUIPMENT:	Mechanical Drill rig		
JOB NO.:	10783			LOGGED:	HK	START DATE:	17/9/2022
LOCATION:	Waterloo	INCLINATION:	-90°	CHECKED:	SM	END DATE:	17/9/2022

Drilling				Field Material Description							
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY	IN SITU TESTING	SAMPLE	DCP TEST Blows per 150 mm
110 mm augur drilling	Not Encountered	0.0			CH	**TOPSOIL; CLAY,** high plasticity, brown orange; with fine to medium grained sand, with fine to medium grained gravel; moist; stiff; *trace fm roots*	M	St			0 8 16 24 32 40
			0.25		CH	**sandy CLAY,** high plasticity, brown orange; fine grained sand; dry; stiff.	D	St			
		0.5									
		1.0									
		1.5	1.50		CH	**Sandy CLAY,** high plasticity, orange; sand is fine to coarse grained, rounded to subrounded; moist; stiff to very stiff.	M	H			
			1.90		CH	**sandy CLAY,** high plasticity, brown orange; fine grained sand, dry; very stiff.	D	VSt			
		2.0									
		2.5	2.65			Hole Terminated at 2.65 m					

Sketch & Other Observations

BOREHOLE: BH10

SHEET: 1 OF 1

CLIENT:	Saracen Developments Pty Ltd	HOLE DEPTH:	2.65m	CONTRACTOR:	WML Consultants		
PROJECT:	BORR Waterloo Service Station	COORDINATES:	385297.6 m E, 6309800.8 m N, MGA94 Zone 51	EQUIPMENT:	Mechanical Drill rig		
JOB NO.:	10783			LOGGED:	HK	START DATE:	17/9/2022
LOCATION:	Waterloo	INCLINATION:	-90°	CHECKED:	SM	END DATE:	17/9/2022

Drilling				Field Material Description							
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY	IN SITU TESTING	SAMPLE	DCP TEST Blows per 150 mm
110 mm augur drilling	Not Encountered	0.0	0.25		CH	**TOPSOIL; CLAY,** high plasticity, brown orange; with fine to medium grained sand, with fine to medium grained gravel; moist; stiff; *trace fm roots*	M	St			
		0.5			CH	**sandy CLAY,** high plasticity, brown orange; fine grained sand; dry; stiff to very stiff; *with sand from 1.8 to 2.3*	D	H			
		1.0									
		1.5									
		2.0									
		2.5	2.65			Hole Terminated at 2.65 m					

DCP TEST Blows per 150 mm: 0 8 16 24 32 40

Sketch & Other Observations

BOREHOLE: BH11

SHEET: 1 OF 1

CLIENT:	Saracen Developments Pty Ltd	HOLE DEPTH:	2.65m	CONTRACTOR:	WML Consultants		
PROJECT:	BORR Waterloo Service Station	COORDINATES:	385347.7 m E, 6309897.0 m N, MGA94 Zone 51	EQUIPMENT:	Mechanical Drill rig		
JOB NO.:	10783			LOGGED:	HK	START DATE:	17/9/2022
LOCATION:	Waterloo	INCLINATION:	-90°	CHECKED:	SM	END DATE:	17/9/2022

Drilling				Field Material Description					IN SITU TESTING	SAMPLE	DCP TEST Blows per 150 mm
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY			0 8 16 24 32 40
110 mm augur drilling	Not Encountered	0.0	0.25		CH	**TOPSOIL; CLAY,** high plasticity, brown orange; with fine to medium grained sand, with fine to medium grained gravel; moist; stiff; *trace fm roots*	M	St			
		0.5			CH	**sandy CLAY,** high plasticity, brown orange; fine grained sand; dry; stiff to very stiff.	D	H			
		1.0									
		1.5									
		2.0									
		2.5	2.65			Hole Terminated at 2.65 m					

Sketch & Other Observations

BOREHOLE: BH12

SHEET: 1 OF 1

CLIENT:	Saracen Developments Pty Ltd	HOLE DEPTH:	2.65m	CONTRACTOR:	WML Consultants		
PROJECT:	BORR Waterloo Service Station	COORDINATES:	385274.2 m E, 6309870.0 m N, MGA94 Zone 51	EQUIPMENT:	Mechanical Drill rig		
JOB NO.:	10783			LOGGED:	HK	START DATE:	17/9/2022
LOCATION:	Waterloo	INCLINATION:	-90°	CHECKED:	SM	END DATE:	17/9/2022

Drilling				Field Material Description					IN SITU TESTING	SAMPLE	DCP TEST Blows per 150 mm
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY			0 8 16 24 32 40
110 mm augur drilling	Not Encountered	0.0	0.25		CH	**TOPSOIL; CLAY,** high plasticity, brown orange; with fine to medium grained sand, with fine to medium grained gravel; moist; stiff; *trace fm roots*	M	St			
		0.5			CH	**sandy CLAY,** high plasticity, brown orange; fine grained sand; dry; stiff to very stiff.	D	H			
		1.0									
		1.5									
		2.0									
		2.5	2.65			Hole Terminated at 2.65 m					

Sketch & Other Observations

APPENDIX B

LABORATORY TESTING

Envirolab Services (WA) Pty Ltd trading as MPL Laboratories
ABN 53 140 099 207
16-18 Hayden Court Myaree WA 6154
ph +61 8 9317 2505 fax +61 8 9317 4163
lab@mpl.com.au
www.mpl.com.au

Certificate of Analysis PDI1180

Client Details

Client	WML Consultants
Contact	Hajran Khatim
Address	1st Floor, 62 Wittencom Street PO Box 2023, BUNBURY, WA, 6230

Sample Details

Your Reference	Waterloo Service Station
Number of Samples	22 Soil
Date Samples Received	20/09/2022
Date Samples Registered	20/09/2022

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date Results Requested by	29/09/2022
Date of Issue	28/09/2022

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Authorisation Details

Results Approved By	Stacey Hawkins, ASS/AMD Supervisor
Laboratory Manager	Michael Kubiak

Samples in this Report

Envirolab ID	Sample ID	Depth	Matrix	Date Sampled	Date Received
PDI1180-01	HA1	0.10-0.30	Soil	16/09/2022	20/09/2022
PDI1180-02	HA1	0.30-0.60	Soil	16/09/2022	20/09/2022
PDI1180-03	HA1	0.60-0.90	Soil	16/09/2022	20/09/2022
PDI1180-04	HA1	0.90-1.20	Soil	16/09/2022	20/09/2022
PDI1180-05	HA2	0.00-0.30	Soil	16/09/2022	20/09/2022
PDI1180-06	HA2	0.30-0.60	Soil	16/09/2022	20/09/2022
PDI1180-07	HA2	0.60-0.90	Soil	16/09/2022	20/09/2022
PDI1180-08	HA2	0.90-1.20	Soil	16/09/2022	20/09/2022
PDI1180-09	HA2	1.20-1.50	Soil	16/09/2022	20/09/2022
PDI1180-10	HA2	1.50-1.80	Soil	16/09/2022	20/09/2022
PDI1180-11	HA2	1.80-2.00	Soil	16/09/2022	20/09/2022
PDI1180-12	HA7	0.30-0.60	Soil	16/09/2022	20/09/2022
PDI1180-13	HA7	0.60-0.90	Soil	16/09/2022	20/09/2022
PDI1180-14	HA7	0.90-1.20	Soil	16/09/2022	20/09/2022
PDI1180-15	HA7	1.20-1.50	Soil	16/09/2022	20/09/2022
PDI1180-16	HA7	1.50-1.80	Soil	16/09/2022	20/09/2022
PDI1180-17	HA8	0.30-0.60	Soil	16/09/2022	20/09/2022
PDI1180-18	HA8	0.60-0.90	Soil	16/09/2022	20/09/2022
PDI1180-19	HA8	0.90-1.20	Soil	16/09/2022	20/09/2022
PDI1180-20	HA8	1.20-1.50	Soil	16/09/2022	20/09/2022
PDI1180-21	HA8	1.50-1.80	Soil	16/09/2022	20/09/2022
PDI1180-22	HA8	1.80-2.10	Soil	16/09/2022	20/09/2022

Acid Sulfate Soils (Soil)

Envirolab ID	Units	PQL	PDI1180-01	PDI1180-02	PDI1180-03	PDI1180-04	PDI1180-05
Your Reference			HA1	HA1	HA1	HA1	HA2
Date Sampled			16/09/2022	16/09/2022	16/09/2022	16/09/2022	16/09/2022
Depth			0.10-0.30	0.30-0.60	0.60-0.90	0.90-1.20	0.00-0.30
pHF (field pH test)*	pH units		6.3	6.6	6.3	6.2	6.8
pHFOX (field peroxide test)*	pH units		4.4	4.6	4.2	4.3	4.1
Reaction Rate*	-		High	High	Low	Low	Medium

Envirolab ID	Units	PQL	PDI1180-06	PDI1180-07	PDI1180-08	PDI1180-09	PDI1180-10
Your Reference			HA2	HA2	HA2	HA2	HA2
Date Sampled			16/09/2022	16/09/2022	16/09/2022	16/09/2022	16/09/2022
Depth			0.30-0.60	0.60-0.90	0.90-1.20	1.20-1.50	1.50-1.80
pHF (field pH test)*	pH units		6.7	5.6	5.6	5.5	5.4
pHFOX (field peroxide test)*	pH units		4.2	4.1	4.2	4.0	4.2
Reaction Rate*	-		Low	Medium	Medium	Medium	Medium

Envirolab ID	Units	PQL	PDI1180-11	PDI1180-12	PDI1180-13	PDI1180-14	PDI1180-15
Your Reference			HA2	HA7	HA7	HA7	HA7
Date Sampled			16/09/2022	16/09/2022	16/09/2022	16/09/2022	16/09/2022
Depth			1.80-2.00	0.30-0.60	0.60-0.90	0.90-1.20	1.20-1.50
pHF (field pH test)*	pH units		5.4	6.2	6.1	6.1	6.0
pHFOX (field peroxide test)*	pH units		4.2	4.6	4.8	4.5	4.5
Reaction Rate*	-		Medium	Low	Medium	Medium	Low

Envirolab ID	Units	PQL	PDI1180-16	PDI1180-17	PDI1180-18	PDI1180-19	PDI1180-20
Your Reference			HA7	HA8	HA8	HA8	HA8
Date Sampled			16/09/2022	16/09/2022	16/09/2022	16/09/2022	16/09/2022
Depth			1.50-1.80	0.30-0.60	0.60-0.90	0.90-1.20	1.20-1.50
pHF (field pH test)*	pH units		6.6	6.1	6.1	6.1	6.6
pHFOX (field peroxide test)*	pH units		5.0	4.5	4.8	4.8	5.4
Reaction Rate*	-		Low	Low	Low	Low	Medium

Envirolab ID	Units	PQL	PDI1180-21	PDI1180-22
Your Reference			HA8	HA8
Date Sampled			16/09/2022	16/09/2022
Depth			1.50-1.80	1.80-2.10
pHF (field pH test)*	pH units		6.6	6.9
pHFOX (field peroxide test)*	pH units		5.4	5.7
Reaction Rate*	-		Medium	Medium

Method Summary

Method ID	Methodology Summary
INORG-063	pH- measured using pH meter and electrode. Solids are oxidised with Hydrogen Peroxide or extracted with water. Based on section H, Acid Sulfate Soils Laboratory Methods Guidelines, latest edition. To ensure accurate results these tests are recommended to be done in the field as pH may change with time thus these results may not be representative of true field conditions.

Result Definitions

Identifier	Description
NR	Not reported
NEPM	National Environment Protection Measure
NS	Not specified
LCS	Laboratory Control Sample
RPD	Relative Percent Difference
>	Greater than
<	Less than
PQL	Practical Quantitation Limit
INS	Insufficient sample for this test
NA	Test not required
NT	Not tested
DOL	Samples rejected due to particulate overload (air filters only)
RFD	Samples rejected due to filter damage (air filters only)
RUD	Samples rejected due to uneven deposition (air filters only)

Quality Control Definitions

Blank

This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, and is determined by processing solvents and reagents in exactly the same manner as for samples.

Surrogate Spike

Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

LCS (Laboratory Control Sample)

This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Matrix Spike

A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

Duplicate

This is the complete duplicate analysis of a sample from the process batch. The sample selected should be one where the analyte concentration is easily measurable.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria. Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction. Spikes for Physical and Aggregate Tests are not applicable. For VOCs in water samples, three vials are required for duplicate or spike analysis.

General Acceptance Criteria (GAC) - Analyte specific criteria applies for some analytes and is reflected in QC recovery tables.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% - see ELN-P05 QAQC tables for details (available on request); <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase. Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was typically insufficient in order to satisfy laboratory QA/QC protocols.

Miscellaneous Information

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Two significant figures are reported for the majority of tests and with a high degree of confidence, for results <10*PQL, the second significant figure may be in doubt i.e. has a relatively high degree of uncertainty and is provided for information only.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS where sediment/solids are included by default.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from the latest "Australian Drinking Water Guidelines", published by NHMRC & ARMC.

Urine Analysis - recommended maximums are taken from the BEI's as published by ACGIH (where available).

Air volume measurements are not covered by Envirolab's NATA accreditation.

Data Quality Assessment Summary PDI1180

Client Details

Client	WML Consultants
Your Reference	Waterloo Service Station
Date Issued	28/09/2022

Recommended Holding Time Compliance

Recommended holding time exceedances exist - See detailed list below

Quality Control and QC Frequency

QC Type	Compliant	Details
Blank	Yes	No Outliers
LCS	Yes	No Outliers
Duplicates	Yes	No Outliers
Matrix Spike	Yes	No Outliers
Surrogates / Extracted Internal Standards	Yes	No Outliers
QC Frequency	Yes	No Outliers

Surrogates/Extracted Internal Standards, Duplicates and/or Matrix Spikes are not always relevant/applicable to certain analyses and matrices. Therefore, said QC measures are deemed compliant in these situations by default. See Laboratory Acceptance Criteria for more information

Data Quality Assessment Summary PDI1180

Recommended Holding Time Compliance

Analysis	Sample Number(s)	Date Sampled	Date Extracted	Date Analysed	Compliant
pH F | Soil	1-22	16/09/2022	20/09/2022	23/09/2022	No
pH FOX | Soil	1-22	16/09/2022	20/09/2022	23/09/2022	No
Reaction Rate | Soil	1-19, 21-22	16/09/2022	20/09/2022	23/09/2022	Yes
	20	16/09/2022	23/09/2022	23/09/2022	Yes

Quality Control PDI1180

INORG-063|Acid Sulfate Soils (Soil) | Batch BDI2562

Analyte	Units	PQL	Blank	DUP1 PDI1180-01 Samp | QC | RPD %	DUP2 PDI1180-11 Samp | QC | RPD %	LCS %
pHF (field pH test)	pH units			6.3 | 6.3 | 0.793	5.4 | 5.5 | 1.65	100
pHFOX (field peroxide test)	pH units			4.4 | 4.3 | 1.15	4.2 | 4.2 | 0.240	100
Reaction Rate	-			High | High | [NA]	Low | Low | [NA]	[NA]

INORG-063|Acid Sulfate Soils (Soil) | Batch BDI2563

Analyte	Units	PQL	Blank	DUP1 PDI1180-21 Samp | QC | RPD %	LCS %
pHF (field pH test)	pH units			6.6 | 6.4 | 2.63	100
pHFOX (field peroxide test)	pH units			5.4 | 5.4 | 1.48	100
Reaction Rate	-			Medium | Medium | [NA]	[NA]

WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.3.8.1

Client:	WML Consultants	*Ticket No.*	S7499
Client Address:	Level 3/1 Prowse St, West Perth WA 6005	*Report No.*	WG22.14510_1_ECN
Project:	BORR Waterloo Service Station Geotech	*Sample No.*	WG22.14510
Location:	Waterloo	*Date Sampled:*	16/09/2022
Sample Identification:	BH1 0.3 - 0.6	*Date Tested:*	1/10/2022

TEST RESULTS - Emerson Class Number

Sampling Method:	**Sampled by Client, Tested as Received**
Source of Material:	**Not Specified**
Soil Description:	**Silty Clay**
Water Used:	**Distilled**

EMERSON CLASS NUMBER	**5**

Comments:

Approved Signatory:

Name: Cody O'Neill

Date: 06/October/2022

NATA WORLD RECOGNISED ACCREDITATION

Accreditation No. 20599
Accredited for compliance with ISO/IEC 17025 - Testing

WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.3.8.1

Client:	WML Consultants	*Ticket No.*	S7499
Client Address:	Level 3/1 Prowse St, West Perth WA 6005	*Report No.*	WG22.14511_1_ECN
Project:	BORR Waterloo Service Station Geotech	*Sample No.*	WG22.14511
Location:	Waterloo	*Date Sampled:*	16/09/2022
Sample Identification:	BH1 0.6 - 0.9	*Date Tested:*	1/10/2022

TEST RESULTS - Emerson Class Number

Sampling Method:	**Sampled by Client, Tested as Received**
Source of Material:	**Not Specified**
Soil Description:	**Silty Clay**
Water Used:	**Distilled**

EMERSON CLASS NUMBER	**5**

Comments:

Approved Signatory:

Name: Cody O'Neill

Date: 06/October/2022

NATA WORLD RECOGNISED ACCREDITATION

Accreditation No. 20599
Accredited for compliance with ISO/IEC 17025 - Testing

WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.3.1.2, 3.2.1, 3.3.1 & 3.4.1

Client:	WML Consultants	*Ticket No.*	S7499
Client Address:	Level 3/1 Prowse St, West Perth WA 6005	*Report No.*	WG22.14512_1_PI
Project:	BORR Waterloo Service Station Geotech	*Sample No.*	WG22.14512
Location:	Waterloo	*Date Sampled:*	16-09-2022
Sample Identification:	BH1 1.2 - 1.5	*Date Tested:*	4-10-2022

TEST RESULTS - Consistency Limits (Casagrande)

Sampling Method:	**Sampled by Client, Tested as Received**
History of Sample:	**Oven Dried <50°C**
Method of Preparation:	**Dry Sieved**

AS 1289.3.1.2	**Liquid Limit (%)**	**38**
AS 1289.3.2.1	**Plastic Limit (%)**	**19**
AS 1289.3.3.1	**Plasticity Index (%)**	**19**
AS 1289.3.4.1	**Linear Shrinkage (%)**	**8.0**
AS 1289.3.4.1	**Length of Mould (mm)**	**125**
AS 1289.3.4.1	**Condition of Dry Specimen**	**Curled**

Comments:

Approved Signatory:

Name: Cody O'Neill

Date: 05-October-2022

NATA WORLD RECOGNISED ACCREDITATION

Accreditation No. 20599
Accredited for compliance with ISO/IEC 17025 - Testing

WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

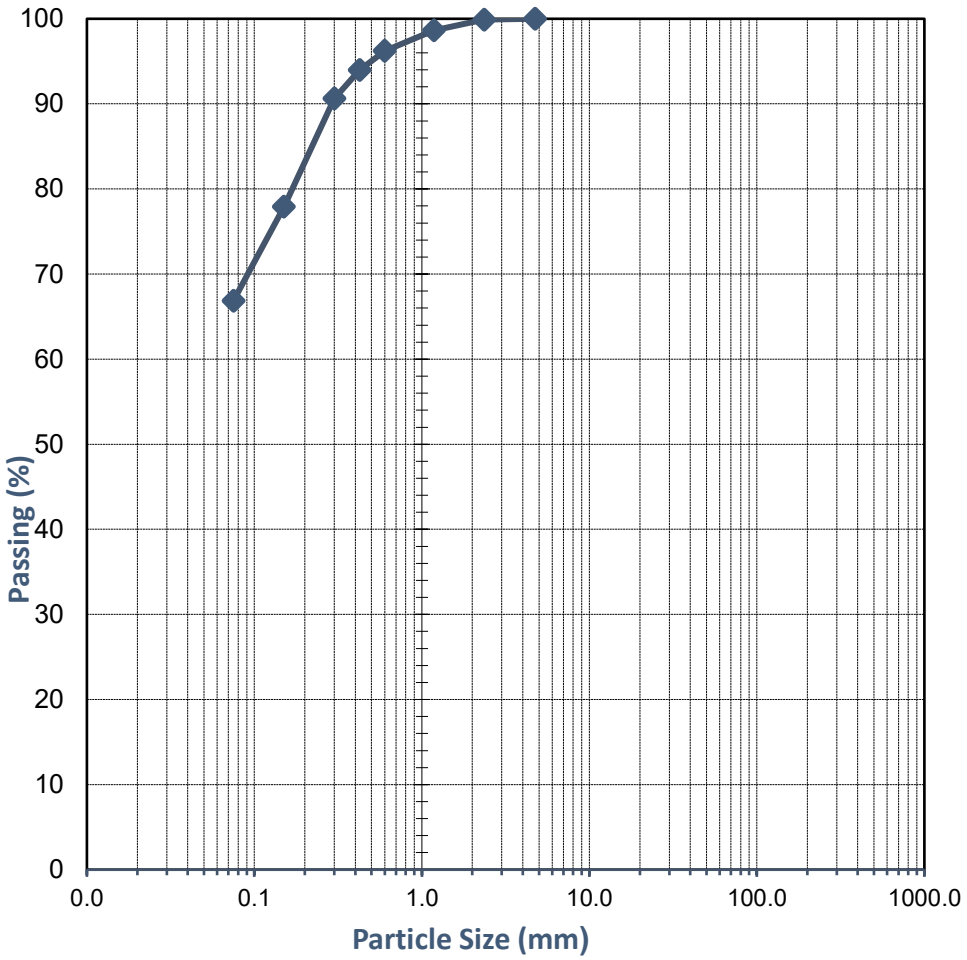
TEST REPORT - AS 1289.3.6.1

Client:	WML Consultants	*Ticket No.*	S7499
Client Address:	Level 3/1 Prowse St, West Perth WA 6005	*Report No.*	WG22.14512_1_PSD
Project:	BORR Waterloo Service Station Geotech	*Sample No.*	WG22.14512
Location:	Waterloo	*Date Sampled:*	16/09/2022
Sample Identification:	BH1 1.2 - 1.5	*Date Tested:*	30/09 - 03/10/2022

TEST RESULTS - Particle Size Distribution of Soil

Sampling Method: Sampled by Client, Tested as Received

Sieve Size (mm)	Percent Passing Sieve (%)
150.0	
100.0	
75.0	
37.5	
19.0	
9.5	
4.75	100
2.36	100
1.18	99
0.600	96
0.425	94
0.300	91
0.150	78
0.075	67



Comments:

Approved Signatory:

Name: Natasha Bielawski
Date: 03/October/2022

NATA WORLD RECOGNISED ACCREDITATION

Accreditation No. 20599
Accredited for compliance with ISO/IEC 17025 - Testing

WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.3.8.1

Client:	WML Consultants	*Ticket No.*	S7499
Client Address:	Level 3/1 Prowse St, West Perth WA 6005	*Report No.*	WG22.14513_1_ECN
Project:	BORR Waterloo Service Station Geotech	*Sample No.*	WG22.14513
Location:	Waterloo	*Date Sampled:*	17/09/2022
Sample Identification:	BH7 0.3 - 0.6	*Date Tested:*	1/10/2022

TEST RESULTS - Emerson Class Number

Sampling Method:	**Sampled by Client, Tested as Received**
Source of Material:	**Not Specified**
Soil Description:	**Silty Clay**
Water Used:	**Distilled**

EMERSON CLASS NUMBER	**5**

Comments:

Approved Signatory:

Name: Cody O'Neill

Date: 06/October/2022

NATA WORLD RECOGNISED ACCREDITATION

Accreditation No. 20599
Accredited for compliance with ISO/IEC 17025 - Testing

WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.3.8.1

Client:	WML Consultants	*Ticket No.*	S7499
Client Address:	Level 3/1 Prowse St, West Perth WA 6005	*Report No.*	WG22.14514_1_ECN
Project:	BORR Waterloo Service Station Geotech	*Sample No.*	WG22.14514
Location:	Waterloo	*Date Sampled:*	17/09/2022
Sample Identification:	BH7 0.6 - 0.9	*Date Tested:*	1/10/2022

TEST RESULTS - Emerson Class Number

Sampling Method:	**Sampled by Client, Tested as Received**
Source of Material:	**Not Specified**
Soil Description:	**Silty Clay**
Water Used:	**Distilled**

EMERSON CLASS NUMBER	**4**

Comments: Gypsum present in sample.

Approved Signatory:

Name: Cody O'Neill

Date: 06/October/2022

NATA WORLD RECOGNISED ACCREDITATION

Accreditation No. 20599
Accredited for compliance with ISO/IEC 17025 - Testing

WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

TEST REPORT - AS 1289.3.1.2, 3.2.1, 3.3.1 & 3.4.1

Client:	WML Consultants	*Ticket No.*	S7499
Client Address:	Level 3/1 Prowse St, West Perth WA 6005	*Report No.*	WG22.14514_1_PI
Project:	BORR Waterloo Service Station Geotech	*Sample No.*	WG22.14514
Location:	Waterloo	*Date Sampled:*	17/09/2022
Sample Identification:	BH7 0.6 - 0.9	*Date Tested:*	5/10/2022

TEST RESULTS - Consistency Limits (Casagrande)

Sampling Method:	**Sampled by Client, Tested as Received**
History of Sample:	**Oven Dried <50°C**
Method of Preparation:	**Dry Sieved**

AS 1289.3.1.2	**Liquid Limit (%)**	**45**
AS 1289.3.2.1	**Plastic Limit (%)**	**19**
AS 1289.3.3.1	**Plasticity Index (%)**	**26**
AS 1289.3.4.1	**Linear Shrinkage (%)**	**13.0**
AS 1289.3.4.1	**Length of Mould (mm)**	**250**
AS 1289.3.4.1	**Condition of Dry Specimen**	**Curled**

Comments:

Approved Signatory:

Name: Cody O'Neill

Date: 06/October/2022

NATA WORLD RECOGNISED ACCREDITATION

Accreditation No. 20599
Accredited for compliance with ISO/IEC 17025 - Testing

WESTERN GEOTECHNICAL & Laboratory Services

SOIL | AGGREGATE | CONCRETE | CRUSHING

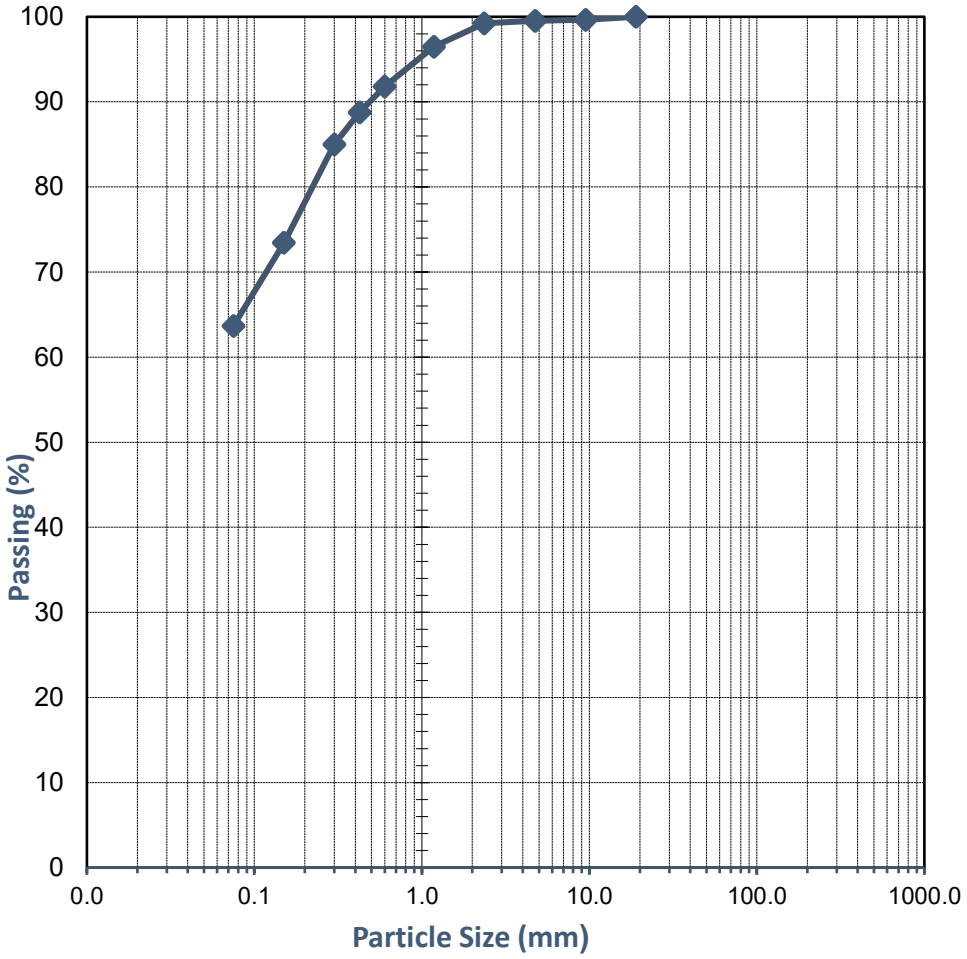
TEST REPORT - AS 1289.3.6.1

Client:	WML Consultants	*Ticket No.*	S7499
Client Address:	Level 3/1 Prowse St, West Perth WA 6005	*Report No.*	WG22.14514_1_PSD
Project:	BORR Waterloo Service Station Geotech	*Sample No.*	WG22.14514
Location:	Waterloo	*Date Sampled:*	17/09/2022
Sample Identification:	BH7 0.6 - 0.9	*Date Tested:*	30/09 - 03/10/2022

TEST RESULTS - Particle Size Distribution of Soil

Sampling Method: Sampled by Client, Tested as Received

Sieve Size (mm)	Percent Passing Sieve (%)
150.0	
100.0	
75.0	
37.5	
19.0	100
9.5	100
4.75	100
2.36	99
1.18	96
0.600	92
0.425	89
0.300	85
0.150	73
0.075	64



Comments:

Approved Signatory:

Name: Natasha Bielawski
Date: 03/October/2022

NATA WORLD RECOGNISED ACCREDITATION

Accreditation No. 20599
Accredited for compliance with ISO/IEC 17025 - Testing

Analysis Results

CSBP Soil and Plant Laboratory

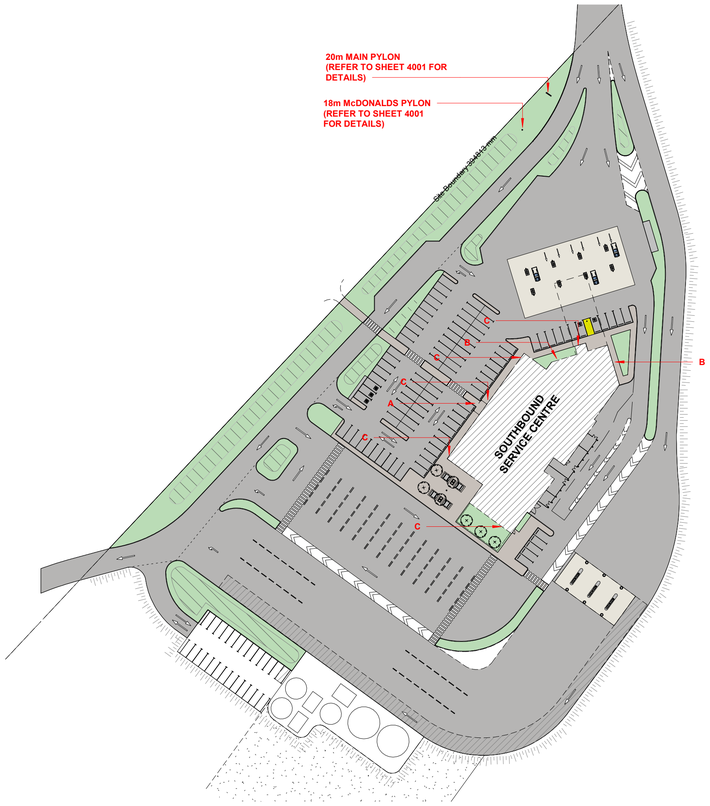
95386
Western Geotechnical & Laboratory Servic

Lab No	9WS22049	9WS22050	9WS22051	9WS22052
Name	BH1 0.3-0.6	BH1 0.6-0.9	BH7 0.3-0.6	BH7 0.6-0.9
Code	WG22.14510	WG22.14511	WG22.14513	WG22.14514
Customer	WGLS	WGLS	WGLS	WGLS
Depth	0-10	0-10	0-10	0-10
Phosphorus Retention Index	> 1000.0	> 1000.0	> 1000.0	> 1000.0

CSBP Lab. Extract Value.

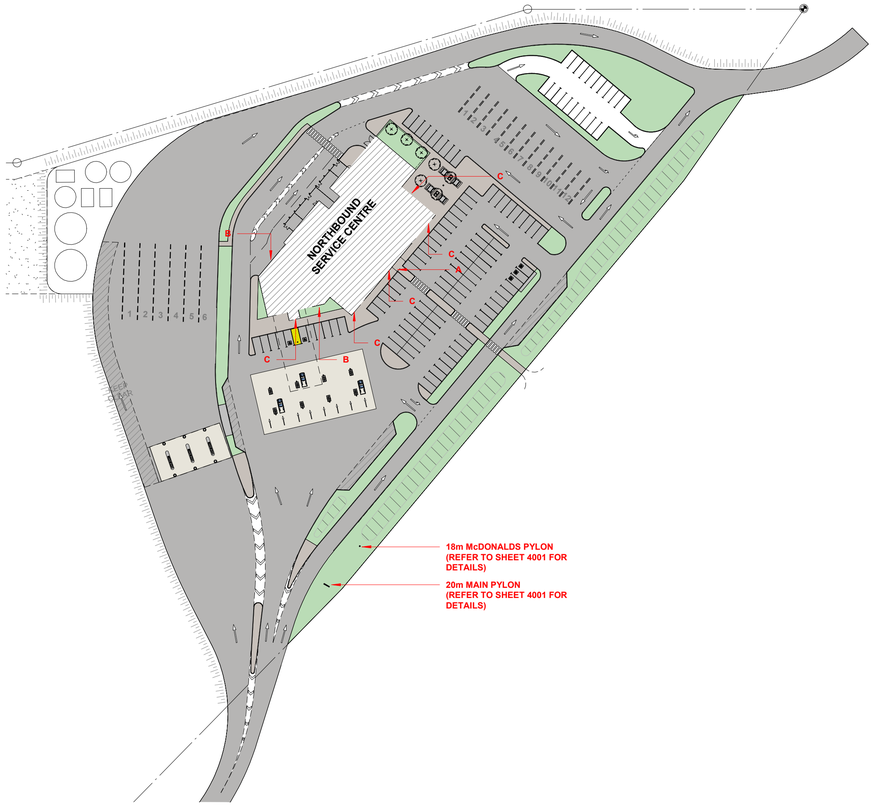
APPENDIX I

Signage Strategy



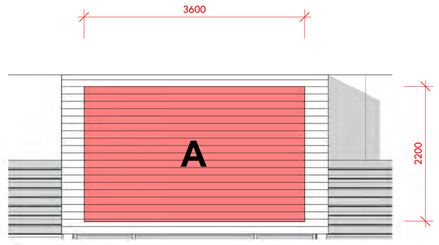
SOUTHBOUND SIGNAGE LOCATIONS

SCALE: 1 : 1000



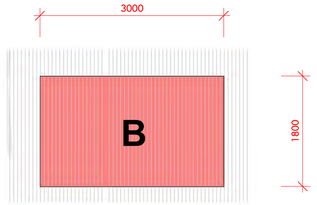
NORTHBOUND SIGNAGE LOCATIONS

SCALE: 1 : 1000



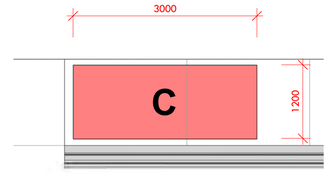
SIGNAGE A

SCALE: 1 : 50



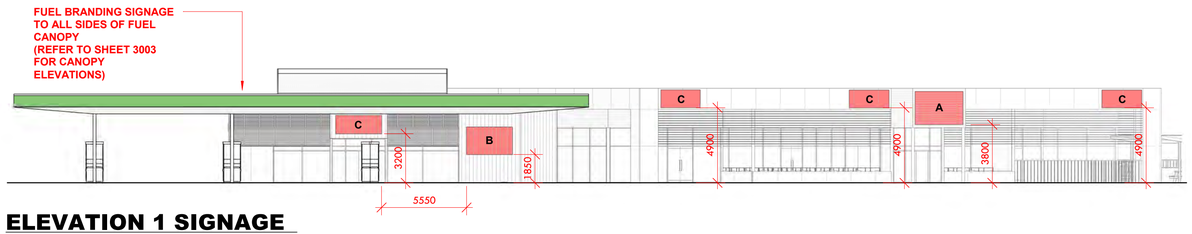
SIGNAGE B

SCALE: 1 : 50



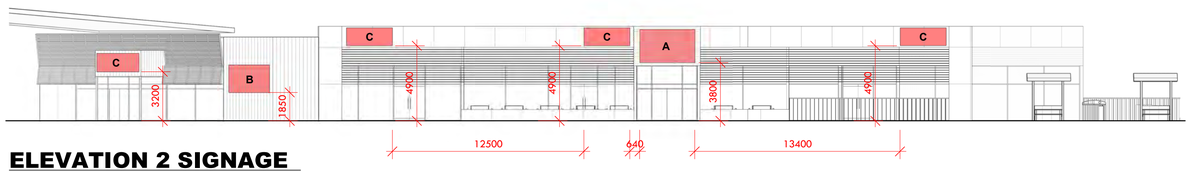
SIGNAGE C

SCALE: 1 : 50



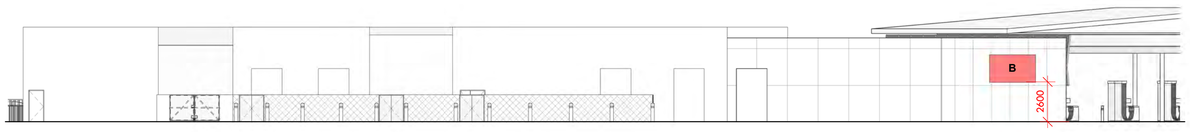
ELEVATION 1 SIGNAGE

SCALE: 1 : 200



ELEVATION 2 SIGNAGE

SCALE: 1 : 200

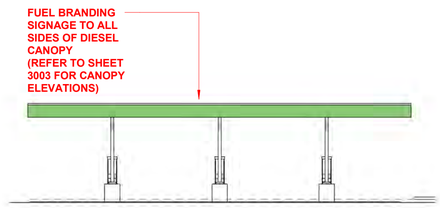


ELEVATION 3 SIGNAGE

SCALE: 1 : 200

ELEVATION 4 SIGNAGE

SCALE: 1 : 200



ELEVATION 5 SIGNAGE

SCALE: 1 : 200

PRELIMINARY

meyer shircore architects

BORR SERVICE CENTRES

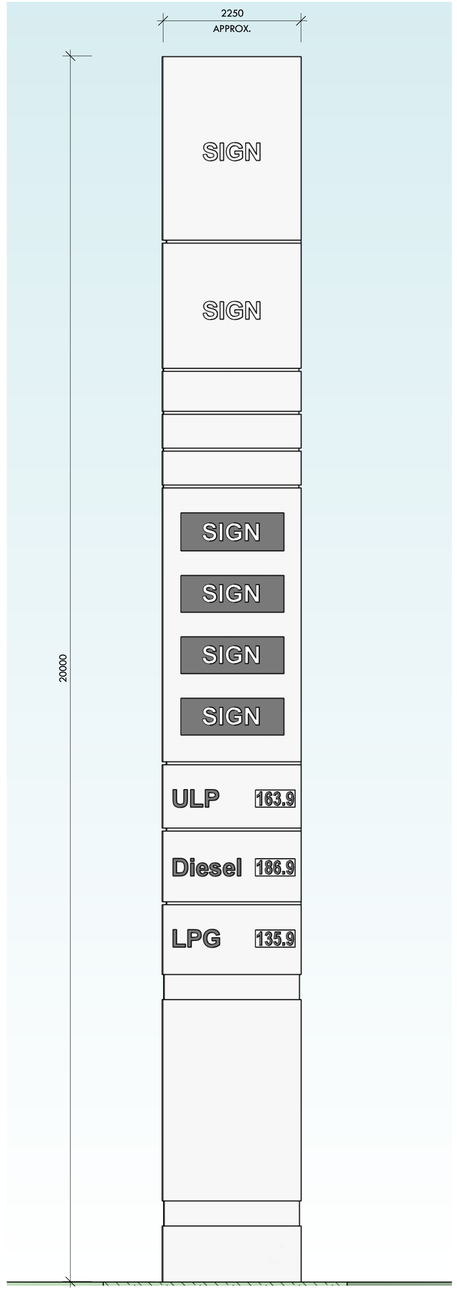
LOCATION : LOTS 425 & 426 BUNBURY OUTER RING ROAD, WATERLOO

FOR : SARACEN DEVELOPMENTS PTY LTD

DATE: FEB 2023
REVISION: SK021
SHEET: 4000
SCALE: As indicated

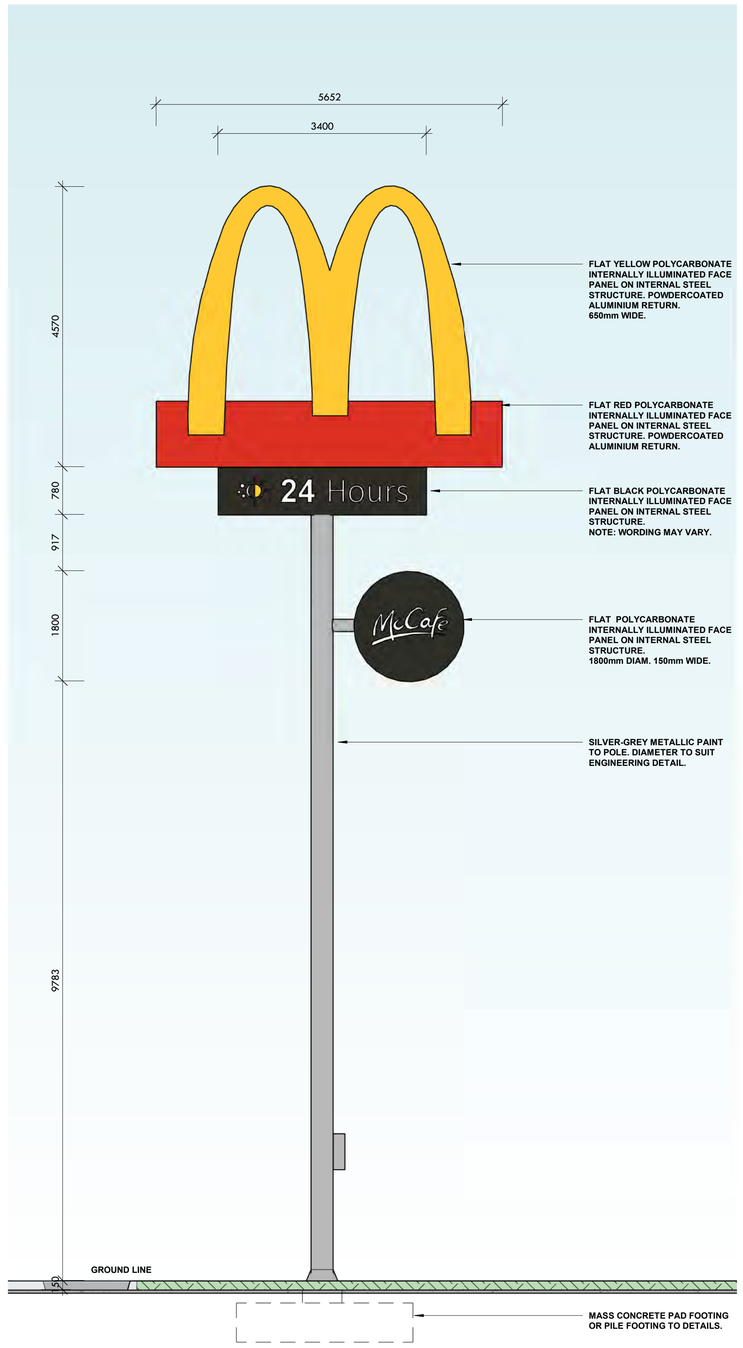
PROJECT NUMBER
22-9001

Suite 2, Ground Floor 437 Roberts Road, Subiaco WA 6008
PO Box 1294 Subiaco WA 6904
t: 08 9381 8511 e: msa@meyershircore.com.au



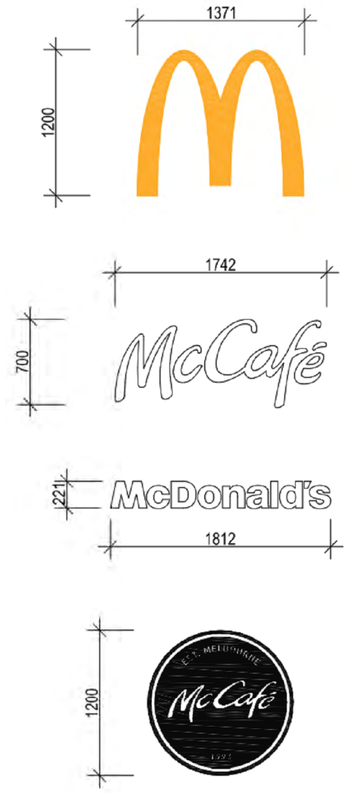
MAIN PYLON ELEVATION

SCALE: 1 : 50



McDONALDS PYLON ELEVATION

SCALE: 1 : 50



EXTERNAL AND INTERNAL SIGNAGE

McDONALDS GENERAL SIGNAGE

SCALE 1 : 25

PRELIMINARY

meyer shircore architects

BORR SERVICE CENTRES

LOCATION : LOTS 100 & 101 BUNBURY OUTER RING ROAD, WATERLOO

FOR : SARACEN DEVELOPMENTS PTY LTD

DATE: FEB 2023
REVISION: SK021
SHEET: 4001
SCALE: 1 : 50

PROJECT NUMBER
22-9001

Suite 2, Ground Floor 437 Roberts Road, Subiaco WA 6008
PO Box 1294 Subiaco WA 6904
t: 08 9381 8511 e: msa@meyershircore.com.au

Government of Western Australia
Department of Mines, Industry Regulation and Safety
Resource and Environmental Regulation

Your ref DAP-F0318554
Our ref A0107/202201
Enquiries Joshua Guilliamse — 9222 3135
Joshua.Guilliamse@dmirs.wa.gov.au

Chief Executive Officer
Shire of Dardanup
Sent by Email — submissions@dardanup.wa.gov.au

Dear Sir/Madam,

REGIONAL JOINT DEVELOPMENT ASSESSMENT PANEL APPLICATION BUNBURY OUTER RING ROAD – FREEWAY SERVICE CENTRES LOT 425 (597) WATERLOO ROAD AND LOT 426 (232) ST HELENA ROAD, WATERLOO

Thank you for your letter dated 23 March 2023 inviting comment on the above proposed service stations, lot 425 Waterloo Road and lot 426 St Helena Road, Waterloo.

The Department of Mines, Industry Regulation and Safety (DMIRS) has determined that this proposal raises no significant issues with respect to mineral and petroleum resources, geothermal energy, and basic raw materials. However, as this development is for a service station where dangerous goods will be handled, we have referred this application to the DMIRS - Resources Safety Division, who may provide a separate response to the Shire of Dardanup.

Yours sincerely

Joshua Guilliamse
Senior Geologist — Land Use Planning
Minerals and Petroleum Resources Directorate

05/05/2023

Mineral House 100 Plain Street East Perth Western Australia 6004
Postal address: Locked Bag 100 East Perth WA 6892
Telephone +61 8 9222 3333 Facsimile +61 8 9222 3862
www.dmirs.wa.gov.au
ABN 69 410 335 356

Government of **Western Australia**
Department of **Mines, Industry Regulation and Safety**
Resources Safety

Your ref: DAP-F0318554
Our ref: X0001/201901
Enquiries: Eric Gruber - Ph 9358 8037
Email: eric.gruber@dmirs.wa.gov.au

Cecilia Muller
Principal Planning Officer
Shire of Dardanup
via email: Cecilia.Muller@dardanup.wa.gov.au

Dear Cecilia,

DEVELOPMENT APPLICATION – JDAP BUNBURY OUTER RING ROAD – FREEWAY SERVICES CENTRES LOT426 ST HELENA ROAD, WATERLOO

A request for comment was received from the Shire of Dardanup, in relation to the above planning application and the proposal to develop two service centres, at the above address.

Based on the provided information, I could not identify the proposed positioning or volumes of tanks for the storage of dangerous goods. There is no identification in the application of the need to apply and have a Dangerous Goods Storage licence. Before the site is used to store Dangerous Goods above manifest quantity, it will require a Dangerous Goods Site licence.

The storage of bulk fuel is governed by AS1940; and a Dangerous Goods Site Licence applications will be assessed against this and any other relevant Australian Standards during the application process for a Dangerous Goods Site licence.

If you have any queries regarding this letter, please contact me on 9358 8037.

Yours faithfully,
Eric Gruber
_____
Eric Gruber
Acting Manager Dangerous Goods
WorkSafe Petroleum Safety and Dangerous Goods Directorate
20 April 2023

Mineral House 100 Plain Street East Perth Western Australia 6004
Telephone +61 8 9222 3333358 8037
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ABN 69 410 335 356

Department of
Primary Industries and
Regional Development
GOVERNMENT OF
WESTERN AUSTRALIA

Your reference: DAP-F0318554
Our reference: LUP 1476
Enquiries: Leon van Wyk

Cecilia Muller
Principal Planning Officer
Shire of Dardanup
PO Box 7016
EATON WA, 6232
submissions@dardanup.wa.gov.au

1 May 2023

Dear Cecilia

COMMENT: Regional Joint Development Assessment Panel Application Bunbury Outer Ring Road – Freeway Service Centres - Lot 425 (597) Waterloo Road and Lot 426 (232) St Helena Road, Waterloo

Thank you for the opportunity to comment on the proposed Freeway Service Centres at Lot 425 (597) Waterloo Road and Lot 426 (232) St Helena Road, Waterloo.

The Department of Primary Industries and Regional Development does not object to the proposed Freeway Service Centres at the abovementioned lots. This area has been identified for future industrial use as the subject site is zoned *'Industrial Deferred'* under the Greater Bunbury Region Scheme (GBRS).

If you have any queries regarding the comments, please contact Leon van Wyk at (08) 9780 6171 or leon.vanwyk@dpird.wa.gov.au.

Yours sincerely

Melanie Strawbridge

Dr Melanie Strawbridge
Director Agriculture Resource Management Assessment
Sustainability and Biosecurity

75 York Road Northam 6401
PO Box 483 Northam WA 6401
Telephone +61 (0)8 9690 2000 landuse.planning@dpird.wa.gov.au
dpird.wa.gov.au
ABN: 18 951 343 745

From: Stephen Cook <scook@harveywater.com.au>
Sent: Thursday, 23 March 2023 2:14 PM
To: Submissions Planning
Cc: Tamara Praed; Richard Yates
Subject: JDAP BUNBURY OUTER RING ROAD – FREEWAY SERVICE CENTRES, Waterloo

Good afternoon,

Thanks for inviting Harvey Water to comment on this proposal.

Harvey Water objects to this proposal as it causes a loss of agricultural land albeit at this stage, a small loss and we note that the remainder of the land will remain available for rural activities.

Recognising that in all likelihood the project will proceed, Harvey Water is most concerned for the protection and continued integrity of the two water delivery channels (St Helena Rd and Waterloo Rd) that may be affected by construction works. We request that the proponent hold proactive discussions with Harvey Water at the time of planning and execution of the works to ensure that Harvey Water's business and that of our irrigators is protected.

Whilst still in the business case stage, Harvey Water is developing the Collie to Coast project which will see an improved quality of water delivered by pipe to the area and replacing the channel system. The outcome of this project will be known by May 2024. In the event that we are successful we will require unimpeded access to replace the channels with HDPE pipe and install supply points as required on neighbouring lands.
In all cases, Harvey Water is prepared to discuss the delivery of water to the proponent with the potential to reduce draw on groundwater.

Best regards

Stephen Cook
Operations Manager
ph 08 9729 0104 | **fax** 08 9729 0111 | **mob** 0427 988 790

scook@harveywater.com.au

Eckersley House
1 Turnbull Street, Harvey Light Industrial Area, Harvey
PO BOX 456, Harvey WA 6220
www.harveywater.com.au

From: Land Planning <LandPlanning@watercorporation.com.au>
Sent: Wednesday, 26 April 2023 12:29 PM
To: Cecilia Muller; Submissions Planning
Cc: bunbury@harleydykstra.com.au
Subject: RE: DAP395169 - JDAP BUNBURY OUTER RING ROAD – FREEWAY SERVICE CENTRES, Waterloo

Dear Sir/Madam

Thankyou for your email referral. We offer the following comments regarding this proposal.

The subject area is not within a planned water scheme area and therefore a reticulated potable water supply is not immediately available. If a reticulated water connection is required the proposed demands should be provided to the Water Corporation so that water planning can be undertaken. If the resulting planning indicates water is feasible then the development may require headworks infrastructure to be constructed.

The subject area is not within a planned wastewater scheme area. If a reticulated sewerage connection is required the proposed flows should be provided to the Water Corporation so that wastewater planning can be undertaken. If the resulting planning indicates wastewater is feasible then the development may require headworks infrastructure to be constructed.

The subject area falls within the Collie River Drainage District, a rural drainage system. The Victoria Main Drain runs close to the eastern side of the subject site. Rural drains are not designed to give flood protection at all times and some inundation of land can be expected. Water Corporation maintains its existing drains to ensure they are capable of clearing water from adjacent rural properties within three days of a storm event, where contours and internal drainage make this physically possible.

Developments within this catchment are required to contain the flows from a one in one-hundred-year storm event on site. Discharge to Water Corporation drains must be compensated to pre-development levels. The developer of this land should be advised to liaise with Water Corporation at the preliminary planning stage to determine detailed planning requirements as this area could be prone to future flooding. To determine the flood level the developer should contact the Department of Water and Environmental Regulations.

Stormwater runoff from the paved areas of the proposed Service Centres must be retained on site and no additional connections into the Water Corporation rural drainage system will be approved. No adverse discharge or runoff from the subject land would be allowed into our drainage system. Further details of the future drainage system must be provided so that the Water Corporation can assess this development proposal more fully before development occurs and building plans are considered.

The information provided above is subject to review and may change. If the proposal has not proceeded within the next 12 months, please contact us to confirm that this information is still valid.

Please provide the above comments to the landowner, developer and/or their representative.

Should you have any queries or require further clarification on any of the above issues, please do not hesitate to contact us.

Kind Regards

Kevin Purcher
Snr Plnr - Land Planning
Development Services

E Kevin.Purcher@watercorporation.com.au
T (08) 9420 2385

watercorporation.com.au

Our Ref: P12404-010/433715
Your Ref: 163407

Enquiries: Adam Gornall
(08) 9780 9511
adam.gornall@aqwest.com.au

Chief Executive Officer
Shire of Dardanup
PO Box 7016
EATON WA 6232

Email: submissions@dardanup.wa.gov.au

27 March 2023

Dear Sir/Madam,

RE: REGIONAL JOINT DEVELOPMENT ASSESSMENT PANEL APPLICATION
BUNBURY OUTER RING ROAD – FREEWAY SERVICE CENTRES
LOT 425 (597) WATERLOO ROAD AND LOT 426 (232) ST HELENA ROAD, WATERLOO

With regards to the abovementioned Application, Aqwest wish to advise the following condition(s) will apply:

- Please be advised that Aqwest has no comments in relation to the above matter.

Yours faithfully

Adam Gornall
ASSET PLANNING COORDINATOR

Government of **Western Australia**
Department of **Health**

Your Ref: DAP-F0318554
Our Ref: F-AA-14495 D-AA-23/168181
Contact: Chris Hill/ Phill Oorjitham 9222 2000

Andre Schonfeldt
Chief Executive Officer
Shire of Dardanup
PO Box 7016
EATON WA 6232

Attention: Cecilia Muller

Via email: submissions@dardanup.wa.gov.au

Dear Mr Schonfeldt

PROPOSED BUNBURY OUTER RING ROAD FREEWAY SERVICE CENTRES 597 WATERLOO ROAD AND 232 ST HELENA ROAD WATERLOO

Thank you for your letter of 23 March 2023, requesting comments from the Department of Health (DoH) on the above proposal.

The DoH provides the following comment:

Water Supply and Wastewater Disposal
For non-scheme water connected areas, the development is to have access to a sufficient supply of potable water that is of the quality specified under the *Australian Drinking Water Quality Guidelines 2011*.

The necessary requirements may be referenced and downloaded from:
http://ww2.health.wa.gov.au/Articles/A_E/Drinking-water-quality-management
http://ww2.health.wa.gov.au/Articles/A_E/Drinking-water-guidelines-and-standards

In relation to the management of wastewater, it is observed that significant civil works including freeway road construction has already been undertaken and it is difficult for the DoH to request further information. This would have been related to the surface ground water that could have been assessed several weeks earlier at the wettest time of the year rather than the site assessments that were undertaken in mid-September. However, the report recognises the land is likely to be subject to surface or perched water although not observed.

189 Royal Street East Perth Western Australia 6004
Telephone (08) 9222 2000 TTY 133 677
PO Box 8172 Perth Business Centre Western Australia 6849
ABN 28 684 750 332
www.health.wa.gov.au

Clause 5.2.2 of the Government Sewerage Policy (GSP) makes reference to: “An on-site sewage system is not to be located within: any area subject to inundation and/or flooding in a 10 per cent Annual Exceedance Probability (AEP) rainfall event”. This land would appear to be captured under this clause.

As this proposal has significantly progressed, the proponent needs to ensure the remaining principles of the GSP and the health (Treatment of Sewage and Disposal of Effluent and Liquid Wastes) Regulations, 1974, are implemented and demonstrated as part of the development application. These include:

a) As the report has identified, secondary treatment systems will be required (STS) as the proposals are located within a sewage sensitive area;

b) Important note for this proposal: To demonstrate proposed volumes based on daily customers and staff and size the systems accordingly. This includes managing the land application area as the site and soil evaluation (SSE) report from WML Consulting Engineers dated December 22, highlights ‘the in-situ clay ground materials should be considered as essentially impermeable’. Land infill should not be used to determine infiltration rates and alternative engineering methods may be required;

c) There is reference of providing a minimum 1 metre building envelope pad elevated above the natural ground level for the building areas. This is to provide clearance from perched water and assist stormwater management. The GSP requests a minimum of 1.5m from the underside of the disposal source and that will require a minimum separation greater than 1 metre;

d) Ensure private bores, waterways, winter creeks, main drains and other sewage sensitive areas are not negatively impacted and ensure the wastewater treatment systems and disposal areas meet the minimum setback requirements;

e) Storm water management needs to prevent negative impacts on the wastewater treatment system and land application area/s;

f) To provide scaled drawings detailing the proposed building envelopes, hard stand areas, application/disposal area/s and exclusion zones (with measurements shown) are provided for each proposal;

g) Consideration of nuisances such as odours, noise, and vibration in relation to the location of the wastewater treatment plant to accommodation or sensitive land users.

h) To submit separate formal wastewater applications to the local government for assessment prior them sending the applications to the DoH for assessment and approval.

Should you have any queries or require further information please contact Chris Hill or Phill Oorjitham on 9222 2000 or eh.eSubmissions@health.wa.gov.au

Yours sincerely

Dr Michael Lindsay
EXECUTIVE DIRECTOR
ENVIRONMENTAL HEALTH DIRECTORATE

01 May 2023

From: Mike Fitzgerald <mfitzgerald@cgcapital.com.au>
Sent: Thursday, 4 May 2023 2:31 PM
To: Submissions Planning
Subject: Submission on proposed Service Centres BORR

To:

Chief Executive Officer

Shire of Dardanup

PO Box 7016 EATON WA 6232

Dear Sir

Please find below a brief submission on the proposed Service Centres

1. WAPC Policy DC. 1.10 Freeway Service Centres and Roadhouses essentially preclude the establishment of Service Centres in locations not approximately 40km from other similar facilities.
2. Why Does the Shire of Dardanup entertain an application of this nature given the inadequate policy position horridly pulled together by MRWA in response to my competing application
3. The Introduction of the Planning report recounts the experience of the developer in bring forward this proposal
4. The experience is nothing like the experience I encountered where MRWA staff refused to meet with me, set about creating a policy to block my application(even sending me the Policy in a word document and telling me it was an “established” actual policy when I could clearly see that the document had only been drafted the week prior.) and
5. This proposal does not accord with Policy DC 1.10 and policies like DC1.10 which probably hasn’t been amended in many years, should not be sidelined because MRWA support an application
6. Table 9 Point B – the site is much closer than 40km to existing operations / facilities
7. Point E the location proposed will be highly visible from the over bridge for the existing Rail line making the proposed landuse visually prominent- the entire character of the view will be dominated by the proposal
8. Point I not compliant as Urban development is located close by

9. Point J this point dismisses the presence of existing facilities but as part of the processing of my DA, MRWA insisted that these existing facilities be taken into account even though I was not proposing a Service Centre as defined
10. Page 29 of the Report Table of Requirements Point C- the site is very prominent
11. In the Stantec Report a total of 13,300 Vehicles per day is suggested which seems very high- We have recently concluded a similar exercise and the number is very much less than that-Traffic generation based on an assumption of passing traffic suggests 101 peak trips southbound and 111 peak trips northbound- this is not accurate and a peer review of the TIA is warranted-

Thank you for considering my submission

I can be contacted on the number below

Mike Fitzgerald

Fast Forward Project Management

T:0410415333

From: WAPCreferrals <WAPCreferrals@pta.wa.gov.au>
Sent: Thursday, 27 April 2023 7:39 AM
To: Submissions Planning
Cc: Cecilia Muller
Subject: Public Transport Authority Referral Response - BUNBURY OUTER RING ROAD – FREEWAY SERVICE CENTRES LOT 425 (597) WATERLOO ROAD AND LOT 426 (232) ST HELENA ROAD, WATERLOO

Dear Cecilia,

Re: *BUNBURY OUTER RING ROAD – FREEWAY SERVICE CENTRES LOT 425 (597) WATERLOO ROAD AND LOT 426 (232) ST HELENA ROAD, WATERLOO*

Thank you for your email correspondence, dated 23 March 2023, the Public Transport Authority (PTA) advises that it has no objections to the above proposal.

Should the Shire have any queries in respect to the above response, in the first instance please feel free to contact Rashidah MacLeod, Transport and Land Use Planner, 9326 5658 or WAPCreferrals@pta.wa.gov.au.

The PTA requests a copy of JDAP final determination on this proposal to be sent to WAPCreferrals@pta.wa.gov.au.

Kind regards,

Rashidah MacLeod
Transport and Land Use Planner | Infrastructure Planning and Land Services
Public Transport Authority of Western Australia
Public Transport Centre, West Parade, Perth, 6000
PO Box 8125, Perth Business Centre, WA, 6849
Tel: (08) 9326 5658 Fax: (08) 9326 2000
Email: Rashidah.MacLeod@pta.wa.gov.au | Web: www.pta.wa.gov.au

From: Daniel Wong <daniel.wong@dwer.wa.gov.au>
Sent: Monday, 8 May 2023 10:24 AM
To: Cecilia Muller; Submissions Planning
Subject: Interim response: Proposed Bunbury Outer Ring Road Freeway Service Centres at Lot 425 & 426 St Helena Road Waterloo (Regional Joint Development assessment panel application) (DWER ref: PA 055219 , DWERT50~89 ; Shire ref: DAP-F0318554)
Attachments: Screenshot 1__Subject land.JPG; Screenshot 2__Both service centres.JPG; Screenshot 3__Water fully allocated.JPG

8th May 2023

Our Reference: PA 055219 , DWERT50~89

Your Reference: DAP-F0318554

To: Shire of Dardanup

From: Department of Water and Environmental Regulation

Attention: Cecilia Muller

RE: Interim response: Proposed Bunbury Outer Ring Road Freeway Service Centres at Lot 425 & 426 St Helena Road Waterloo (Regional Joint Development assessment panel application)

Dear Cecilia,

Thank you for providing the proposal for the Department of Water and Environmental Regulation (Department) to consider.

Request for extension
Please be advised that this is an **interim** response. As such, the advice provided below may change in our final response.

Can you please advise that you would be happy for an extension to 15th May 2023?

Thank you.

Interim response
To support the 2 proposed service centres (Screenshots 1 & 2), the '*Development Application - Proposed BORR Service Centres - Lot 425 & 426, Bunbury Outer Ring Road*, Waterloo' (by HARLEY DYKSTRA PTY LTD, Job: 22454, dated 23rd Feb 2023, Ver C) (to be referred to as the 'Feb 2023 BORR Service Centres Document - Lot 425 & 426') has been submitted in this referral.

The Department has identified that the proposal will impact on the environment and water resource management. Key issues and recommendations are provided below, and these matters must be addressed to the satisfaction of the Department:

- **Issue 1**: Stormwater and groundwater management (hydrocarbons)
- **Advice 1**: A stormwater and groundwater management plan be prepared to the satisfaction of the Shire, consistent with the following documents as appropriate:-
    - *Decision process for stormwater management in WA* (DWER 2017)
    - *Stormwater Management Manual for Western Australia* (DoW 2004–2007)
    - WQPN 56 - *Tanks for fuel and chemical storage near sensitive water resources* (Dec 2018)
    - WQPN 49 - *Service stations* (Sept 2013)

- **Issue 2**: Acid sulphate soils
- **Advice 2**: Advice note: The proponent refer to DWER's acid sulfate soil guidelines for information to assist with the management of ground disturbing works at: https://www.der.wa.gov.au/your-environment/acid-sulfate-soils/69-acidsulfatesoils-guidelines

- **Issue 3**: Dewatering, if carried out, may be subject to licensing under the *Rights in Water and Irrigation Act 1914* (RIWI Act)
- **Advice 3**: The proponent be advised to contact DWER's Bunbury water licensing office on 9726 4111 for a licence to dewater under the RIWI Act if the proposed activity is to exceed the threshold specified at https://www.water.wa.gov.au/licensing/water-licensing/exemptions

- **Issue 4**: Water supply
- **Advice 4**: Prior to any works commencing a secure and sustainable water supply is to be proven to the satisfaction of the Shire of Dardanup

- **Issue 5**: Clearing of native vegetation is subject to the *Environmental Protection Act 1986* (EP Act)
- **Advice 5**: In the event clearing of native vegetation is proposed, the proponent is advised to apply for a permit to clear under the EP Act at: https://www.der.wa.gov.au/our-work/clearing-permits/46-clearing-permit-application-forms

- **Issue 6**: The proposed on-site sewerage system may be subject to regulation under the *Environmental Protection Act 1986*
- **Advice 6**: Further advice to be provided

Where the Department has a statutory role, planning applications should be considered prior to the Department issuing any relevant permits, licenses and/or approvals

In the event that the applicant determines that a works approval or licence application is required under Part V of the *Environmental Protection Act 1986* (EP Act), the advice provided in this communication does not prejudice and must not be considered to infer the outcome of the EP Act licence and works approval process.

More detail pertaining to the above items are provided in Table 1 below.

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.

Should you require any further information on the comments please contact the undersigned.

Thank you.

Yours sincerely,

Daniel Wong

Environmental Officer
Department of Water and Environmental Regulation
Planning Advice South West Region

Email: daniel.wong@dwer.wa.gov.au
Phone: 08 9726 4113
Fax: 08 9726 4100
Postal: PO Box 261, Bunbury, WA 6231
Location: 71 McCombe Road, Bunbury, WA 6230

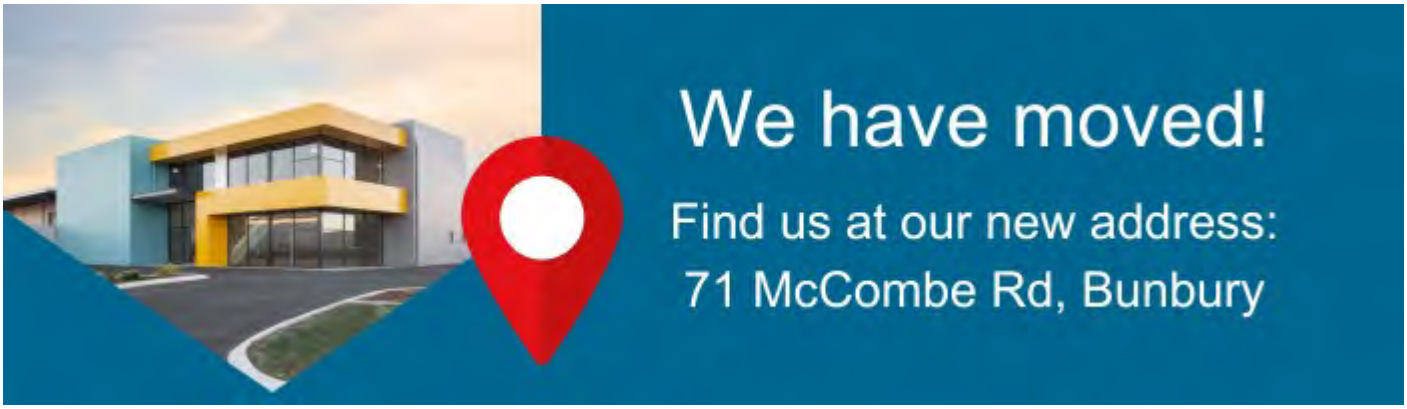
Table 1 - **Department of Water and Environmental Regulation detailed comments on DAP-F0318554**

Item No.	Ref	Reviewer comment/advice
1	N/A	**Issue 1:** Stormwater and groundwater management (hydrocarbons) **Advice 1:** A stormwater and groundwater management plan be prepared to the satisfaction of the Shire, consistent with the following documents as appropriate:- • *Decision process for stormwater management in WA* (DWER 2017) • *Stormwater Management Manual for Western Australia* (DoW 2004–2007) • WQPN 56 - *Tanks for fuel and chemical storage near sensitive water resources* (Dec 2018) • WQPN 49 - *Service stations* (Sept 2013) **Discussion 1:** No information has been provided in the 'Feb 2023 BORR Service Centres Document - Lot 425 & 426' with regards to the management of hydrocarbons, or contingency plans in the event of spills. No detail has been provided as to how hydrocarbons in stormwater or from spills/leaks will be captured for treatment/disposal. DWER notes that underground fuel tanks are proposed, which can pose a risk to the Bunbury groundwater resource in the event of leaks. In view of the above, DWER recommends that a stormwater and groundwater management plan be prepared to the satisfaction of the Shire that includes details on mitigating the hydrocarbon risk, consistent with the above advice recommendation (Advice 1).
2	N/A	**Issue 2:** Acid sulphate soils **Advice 2:** Advice note: The proponent refer to DWER's acid sulfate soil guidelines for information to assist with the management of ground disturbing works at: https://www.der.wa.gov.au/your-environment/acid-sulfate-soils/69-acidsulfatesoils-guidelines

		Discussion 2: The 'Feb 2023 BORR Service Centres Document - Lot 425 & 426' states: • "Laboratory testing was conducted as a part of a preliminary Acid Sulphate Soils investigation to determine the potential need for further confirmatory testing and subsequent ASS and dewatering management plans." • "However, it is understood that the service stations are being built up from the existing ground levels and no excavation may take place and therefore no further ASS testing would be required." It is however unknown if there would be any ground disturbing activities that would extend below the existing surface, such as the installation of underground tanks. As such, the following is advised: Acid sulfate soils (ASS) risk mapping indicates that the site is located within an area identified as representing a moderate to low risk of ASS occurring within 3 metres of the natural soil surface. DWER advises that a model ASS related condition is not considered necessary in this instance. However, the following advice is recommended to be applied to the relevant approval. **Advice**: Acid sulfate soils (ASS) risk mapping indicates that the site is located within an area identified as representing a moderate to low risk of ASS occurring within 3 metres of the natural soil surface. Please refer to Department of Water and Environmental Regulation's (DWER) acid sulfate soil guidelines for information to assist with the management of ground and/or groundwater disturbing works: https://www.der.wa.gov.au/your-environment/acid-sulfate-soils/69-acidsulfatesoils-guidelines.
3	N/A	**Issue 3:** Dewatering, if carried out, may be subject to licensing under the *Rights in Water and Irrigation Act 1914* (RIWI Act) **Advice 3:** The proponent be advised to contact DWER's Bunbury water licensing office on 9726 4111 for a licence to dewater under the RIWI Act if the proposed activity is to exceed the threshold specified at https://www.water.wa.gov.au/licensing/water-licensing/exemptions **Discussion 4:** The subject site is located in a Multiple Use Wetland, which may indicate a high groundwater table. In view of the proposed underground fuel tanks and underground services, there may be a possibility that groundwater may be encountered depending upon the proposed excavation depth. The proposal is located in the Bunbury Groundwater Area, as proclaimed under the *Rights in Water and Irrigation Act 1914*. As such, dewatering, if proposed would be subject to licensing under the RIWI Act if the following thresholds specified at https://www.water.wa.gov.au/licensing/water-licensing/exemptions is exceeded. A licence is not required for dewatering purposes if:

		• The development is within the water table (non-artesian) aquifer; and • water is taken from the well solely for the purpose of removing underground water to facilitate construction or other activity (that is, dewatering); and • the water is taken at a pump rate not exceeding 10 litres per second over a period of less than 30 consecutive days; and • the volume of water taken over the period does not exceed 25 000 kilolitres
4	N/A	**Issue 4:** Water supply **Advice 4:** Prior to any works commencing a secure and sustainable water supply is to be proven to the satisfaction of the Shire of Dardanup **Discussion 4:** The following statement is noted in the referral: • "Water – the sites will not be served by scheme water, and will require groundwater bores to be installed under the approval and licencing by the Department of Water and Environment (DWER). The groundwater will be subjected to Reverse Osmosis treatment (RO) to generate a potable water supply" Please be advised that groundwater resources have been identified as being fully allocated. As such, no water is identified as being available to support the proposed development (Screenshot 3). In such circumstances, trading of water or alternative water sources will need to be investigated. The details of licences in the subarea for consideration for trading can be viewed at the water register at https://maps.water.wa.gov.au/#/webmap/register. Further information on trades and transfers can be found at the department's website at https://www.water.wa.gov.au/licensing/water-licensing/transfers,-trades-and-agreements.
5	N/A	**Issue 5:** Clearing of native vegetation is subject to the *Environmental Protection Act 1986* (EP Act) **Advice 5:** In the event clearing of native vegetation is proposed, the proponent is advised to apply for a permit to clear under the EP Act at: https://www.der.wa.gov.au/our-work/clearing-permits/46-clearing-permit-application-forms **Discussion 5:** Under section 51C of the Environmental Protection Act 1986 (EP Act), clearing of native vegetation is an offence unless undertaken under the authority of a clearing permit, or the clearing is subject to an exemption. Exemptions for clearing that are a requirement of written law, or authorised under certain statutory processes, are contained in Schedule 6 of the EP Act. Exemptions for low impact routine land management practices outside of environmentally sensitive areas (ESAs) are contained in the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (the Clearing Regulations). DWER notes that a permit to clear native vegetation would not be required for intentionally sown (not for conservation purposes) or non-native vegetation.

		However, in the event native vegetation is proposed to be cleared, as the area is located in an Environmentally Sensitive Area, no exemption applies under the EP Act and a clearing permit is required. The Department has not received a clearing permit application relating to this proposal. Application forms are available from https://www.der.wa.gov.au/our-work/clearing-permits/46-clearing-permit-application-forms. Additional information on how to apply for a clearing permit is available here: https://www.der.wa.gov.au/images/documents/your-environment/native-vegetation/Fact_sheets/Fact_Sheet_-_how_to_apply.pdf
6	N/A	**Issue 6:** The proposed on-site sewerage system may be subject to regulation under the *Environmental Protection Act* 1986 **Advice 6:** Further advice to be provided **Discussion 6:** The proposed domestic wastewater operations may cause the premises to become Prescribed Premises under Part V Division 3 of the *Environmental Protection Act*, if it has the capability to meet or exceed the specified production or design capacity of category 85 under Schedule 1 of the *Environmental Protection Regulations 1987*. The Applicant is therefore advised to refer to the Industry Regulation Guide to Licensing available at http://www.der.wa.gov.au/our-work/licences-and-works-approvals and / or if they have queries relating to works approvals and licences to contact DWER at info@dwer.wa.gov.au or 6364 7000.




Attachment 3
SCREENSHOT 1
meyer shircore
SOUTH WESTERN HWY
RAILWAY ROAD
WIRELESS ROAD
WATERLOO ROAD
SUBJECT SITE - NORTHBOUND
SUBJECT SITE - SOUTHBOUND
WILD ROSE ROAD
BUNBURY OUTER RING ROAD
WATERLOO ROAD

Attachment 3

SCREENSHOT 2

SUBJECT SITE BOUNDARY
LOT 425

SUBJECT SITE BOUNDARY
LOT 426

NORTHBOUND SERVICE CENTRE

SOUTHBOUND SERVICE CENTRE

BUNBURY OUTER RING ROAD - NORTHBOUND

BUNBURY OUTER RING ROAD - SOUTHBOUND

EXIT RAMP GEOMETRY SUBJECT TO FINAL DESIGN

ENTRY RAMP GEOMETRY SUBJECT TO FINAL DESIGN

CONNECTION TO DUAL USE SHARED PATH SUBJECT TO FINAL DESIGN

NOTE: All survey levels +1m min. as per Geotech report.

Site Boundary 117100mm

Site Boundary 173900mm

Site Boundary 90400mm

Site Boundary 11300mm

Site Boundary 177400mm

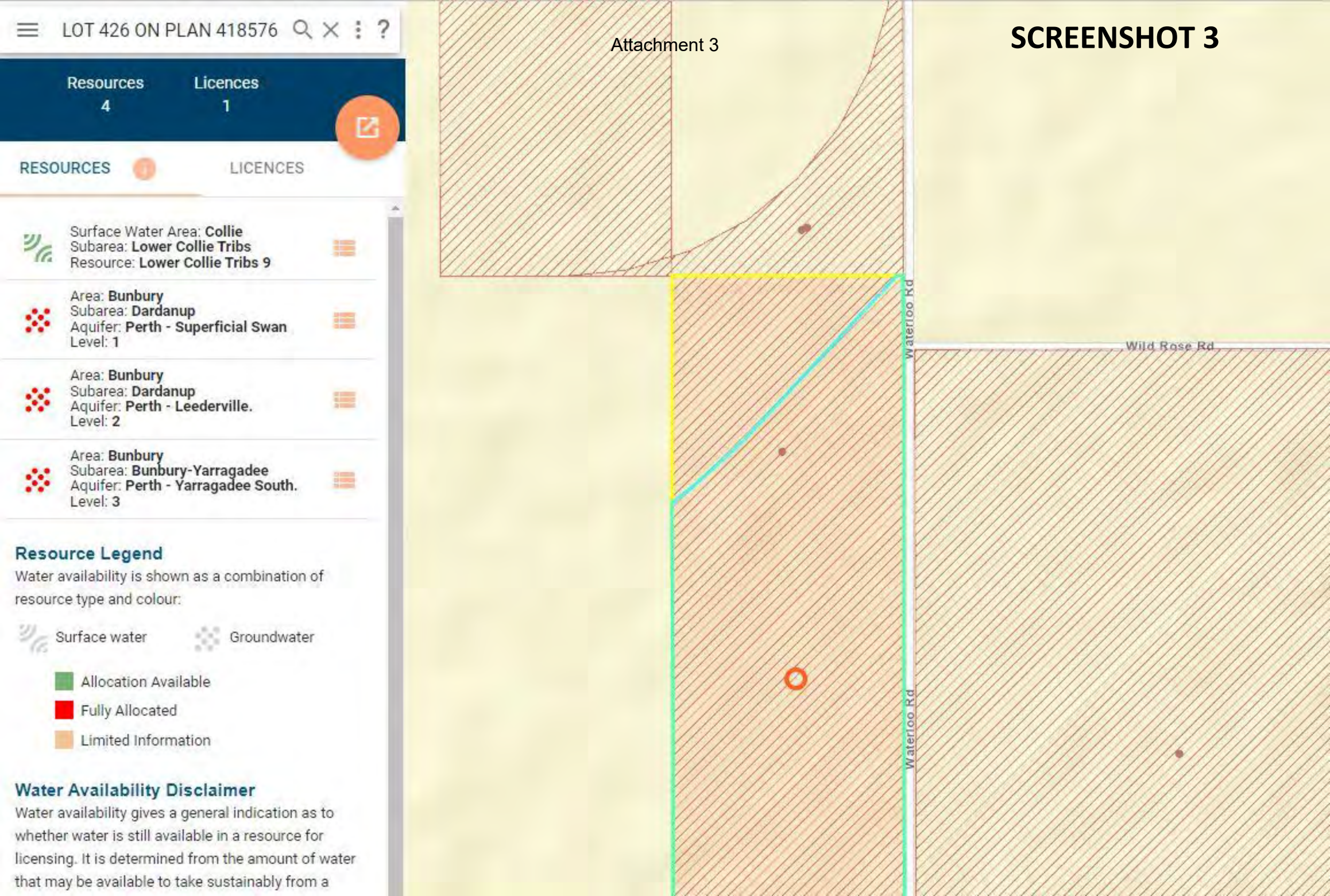
Site Boundary 38400mm

Site Boundary 45100mm

Site Boundary 34000mm

Attachment 3

SCREENSHOT 3



GOVERNMENT OF WESTERN AUSTRALIA

Department of **Biodiversity, Conservation and Attractions**

PARKS AND WILDLIFE SERVICE

Your ref:
Our ref: PRS 48544 2022/002102
Enquiries: Tracy Teede
Phone: 9725 4300
Email: swlanduseplanning@dbca.wa.gov.au

Chief Executive Officer
Shire of Dardanup
PO Box 7016
DARDANUP WA 6232

ATTENTION: Cecelia Muller

BUNBURY OUTER RING ROAD – FREEWAY SERVICE CENTRES –
LOT 425 (597) WATERLOO ROAD & LOT 426 (232) ST HELENA ROAD WATERLOO

The Department of Biodiversity Conservation and Attractions Parks and Wildlife Service South West Region has no comments on the above proposal.

It is considered that the proposal and any potential environmental impacts will be appropriately addressed through the existing planning framework.

Thank you for the opportunity to comment on this application. Please contact Tracy Teede at the Parks and Wildlife Service's South West Region office on 9725 4300 if you have any queries regarding this advice.

Yours sincerely

Teede

Aminya Ennis
Acting Regional Manager
Parks and Wildlife Service

18 May 2023

Regional and Fire Management Services Division
South West Region
PO Box 1693, Bunbury, Western Australia 6230
dbca.wa.gov.au

To: Cecilia Muller
Subject: RE: Reply: JDAP BUNBURY OUTER RING ROAD – FREEWAY SERVICE CENTRES: LOT 425 (597) WATERLOO ROAD AND LOT 426 (232) ST HELENA ROAD, WATERLOO

From: Daniel Naude <Daniel.Naude@mainroads.wa.gov.au>
Sent: Thursday, May 18, 2023 5:59 PM
To: Cecilia Muller <Cecilia.Muller@dardanup.wa.gov.au>
Subject: Reply: JDAP BUNBURY OUTER RING ROAD – FREEWAY SERVICE CENTRES: LOT 425 (597) WATERLOO ROAD AND LOT 426 (232) ST HELENA ROAD, WATERLOO

Dear Cecilia

I refer to the Shire's request for comment regarding the above proposal and advise that Main Roads has no objection in principle to the proposal. However, further clarification is required regarding the operational nature/format of the proposed Bunbury Farmers Market tenancy, as discussed below.

A list of draft conditions likely to be requested for imposition is included below. It is anticipated that the conditions will be refined in consultation with the Shire, once the further information has been received on the land use of Tenancy 2.

It is understood, following discussion with the Shire and DPLH, that the referral response to the Shire is required to address that part of the development proposal outside of the 'Planning Control Area' boundary (land subject to the 'Bunbury Outer Ring Road' project) and matters related to development within the 'Planning Control Area' should be addressed in the WAPC's planning referral. Notwithstanding the specific jurisdictional areas of the Shire/JDAP and the WAPC over the planning proposal, several access and design matters relating to the proposal are interrelated and it is proposed that these matters be addressed within a Deed/Access Agreement between the landowner and the Commissioner of Main Roads and a Construction Management Plan, as outlined below.

Ultimately, approval for any works within the Bunbury Outer Ring Road reserve (BORR), including the installation of utility services and private servicing requirements where agreed, and physical access to the BORR is subject to conditions for development relating to external access, internal development layout and operation being addressed to Main Roads specifications and reimbursement of any construction/development costs incurred by MRWA to facilitate the development and/or having to remobilise contractors for currently planned works afterwards.

Main Roads has prepared specific guidelines for the BORR, entitled 'Guideline – Bunbury Outer Ring Road Service Centres Development' (BORR Guidelines), based on the overarching policy entitled 'Main Roads Policy and Guidelines for the Provision of Freeway Service to provide developers with an outline of Main Roads' respective design requirements, particularly in relation to achieving a high safety standard of access, and operational criteria that must be satisfied in order to obtain vehicle access for Service Centres from declared or planned 'Control of Access' routes. The operational criteria for Service Centres has been developed to ensure that the servicing needs and a high standard of amenities for the travelling public will be achieved.

Declared Control of Access and Primary Regional Roads provide a high degree of mobility, including safe and efficient movement of large volumes of traffic, at high speed and over relatively long distances. The Bunbury Outer Ring Road (BORR) is a new Primary Regional Road link that will form part of the planned Perth to Bunbury Freeway. The ultimate configuration of BORR has been designed as a Control of Access route including interchange/freeway standard connections to maximise network efficiency and provide a high standard of safety. It would therefore be appropriate for these standards to be extended to Service Centres in terms of access, internal operational layout

and movement network to minimise the potential for conflict between pedestrians, light vehicles and heavy vehicles accessing these facilities. Key considerations are safe and efficient traffic circulation and safe pedestrian movement.

The Guidelines requires landowners to enter into an Access Agreement with the Commissioner of Main Roads Western Australia, which sets out the arrangements upon which the provision of access to the Bunbury Outer Ring Road will be granted, which include, but is not limited to, the design of the commercial and operational aspects of the Service Centre. Design and construction of the facility shall be in accordance with the respective Main Roads Guidelines, and any servicing/utility infrastructure. An Access Agreement will not formally be entered into until all approvals have been obtained.

Main Roads has reviewed the proposal and provides the following comments.

The proposal appears to be generally consistent with Main Roads' respective Guidelines for Service Centres and the WAPC's *DC Policy 1.10 - Freeway service centres and roadhouses, including signage*, which should be read in conjunction with the Guidelines.

The Service Centre is required to cater for all vehicle classes that would be permitted on the BORR, including RAV7. The applicant has provided a swept path analysis for the types/classes of vehicles that would be accessing the site, however, has not adequately demonstrated that all truck parking bays would be accessible for RAV7 vehicle types. Main Roads will review this aspect as part of the final internal design which must be to Main Roads satisfaction.

Main Roads recommends that a condition be imposed requiring the applicant/developer to undertake a 'Road Safety Audit' of the development's internal movement network, parking layout and development access interface with the approved Access Ramps to the BORR ('access ramps') prior to opening of the access ramps to traffic, to identify and rectify the potential for any vehicle and pedestrian traffic conflict or public safety issues to occur. The applicant must contact Main Roads to agree the scope of the audit to be undertaken and the composition of the members of the Audit Team. The scope of the audit will be similar to the audit the proponent undertook at the West Pinjarra Service Centres on Forrest Highway. Main Roads will ultimately need to be satisfied with the development's internal movement network, parking layout and development access interface with the approved access ramps design before the access ramps are opened to BORR traffic.

The BORR is currently under construction and the programming of work is determined by Main Roads' contractor. The construction of the new Discovery Road link also forms part of the BORR contract and it will be necessary to negotiate the timing and type/level of access that can be provided for access and construction of the North Bound Service Centre site during the construction of Discovery Road with the BORR contractor. It is expected that construction access for both Service Centres would be obtained from the local road network and any such construction access must be removed following completion of construction of the Service Centres and prior to opening of the access ramps. It is recommended that the applicant/landowner be required to prepare a Construction Traffic Management Plan to the specifications of Main Roads to demonstrate how the timing and conditions for construction access are to be coordinated. The applicant/landowner should liaise with Main Roads in this regard.

Main Roads has generally adopted the WAPC's policy measures for Freeway Service Centres contained in DC 1.10 in relation to locational-, siting-, and design measures, including signage.

The proposal, by reason of the two pylon signs being proposed, is inconsistent with the signage criteria of DC 1.10. The policy specifies that following –

> *3.3.7 To avoid visual clutter, there should be a single, multi-tenancy pylon sign that identifies the primary facility and may include individual tenancies. To ensure that the scale of the sign is compatible with the character of the landscape, the overall height of the multi-tenancy pylon sign should be no greater than 12.0m. However, a height up to a maximum of 20.0m may be considered where it can be demonstrated that particular circumstances prevailing at the site, such as visual obstructions caused by vegetation or nearby buildings, warrant an increase.*

Main Roads advises that an applicant for advertising signage on or in the vicinity (visible from) a main road or highway is also required to submit a separate application/request to Main Roads for regulatory approval, once they have obtained Development Approval from the Shire, unless the signage is of a type and size which is exempted from the need to obtain approval. Any signage which requires Main Roads approval is required to meet the relevant standards of Main Roads' 'Policy and Application Guidelines for Advertising Signs within and beyond State Roads Reserves' (the Guidelines).

The plans submitted in support of the proposals does not clearly depict all the necessary information i.e. dimensions and respective setbacks from the Planning Control Area boundary/BORR. the proposal includes a standard typical pylon-type sign ordinarily found at Service Centres, Road Houses and filling stations, however, also includes a separate, detached sign (McDonalds) which is not permissible under DC 1.10 and not supported by Main Roads in principle due to the potential for a proliferation of signage to adversely impact driver attention and thus detract from the safety of the BORR.

The secondary pylon sign is required to be deleted from the proposal. Main Roads has become aware of unauthorised signs having been erected at the Service Centre at West Pinjarra and will be investigating the matter with a view to have the signs removed. Main Roads will review the on-site signage once an application is made for approval under the Guidelines and it is recommended that the applicant be advised of the need for a separate application to be submitted to Main Roads and to liaise with Main regarding the necessary information/plan detail that should be depicted on the application.

Main Roads notes that the proposal, in relation to the convenience shopping retail floor area component, depicts a Tenancy 2 entitled 'Bunbury Farmers Market' comprising a floor area of 160 square metres with a nett retail floor area of 140 square metres. The planning report submitted in support of the proposal indicates that the 'Bunbury Farmers Market' tenancy component comprises a Café / 'Takeaway' / Retail / 'Produce' use. Further information is sought as to the specific nature/operational breakdown of these commercial activities, with specific reference to the extent of the 'Café'/ 'Takeaway' component and the operational detail of the 'Retail' / 'Produce' floor area. Main Roads notes that the 'Model provisions for local planning schemes' at Schedule 1, part 6 of the *Planning and Development (Local Planning Schemes) Regulations 2015* defines a convenience store/shop as follows:

> *convenience store means premises —*
>
> *(a) used for the retail sale of convenience goods commonly sold in supermarkets, delicatessens or newsagents; and*
> *(b) operated during hours which include, but may extend beyond, normal trading hours; and*
> *(c) the floor area of which does not exceed 300 m2 net lettable area;*

Main Roads wish to advise that it would not be supportive of a retail online distribution-type facility ("click-and-collect") which has recently been approved by the WAPC for the Bunbury Farmers Market at a similar service station facility on Forrest Highway in Bunbury.

Main Roads also wish to advise that, in the possible event of future changes to land use definitions for Service Centres to permit a licenced premises, Main Roads would not support the sale or consumption of alcohol under the *Liquor Licencing Act 1988* or the establishment of a licenced premises on Service Centre sites in the interest of traffic safety. It is considered inappropriate from a traffic safety perspective to allow any licenced premises with direct access to a high speed State road. The inclusion of a land use with the potential to result in a licensed premises will significantly increase potential for traffic conflicts to occur at the access location which will detract from the safety and function of a highway. The BORR is a high speed road which is planned for upgrading to a freeway standard. It is noted that the WAPC's operational policy on Freeway Service Centres and Road Houses only permit a restaurant or café which excludes the sale or consumption of alcohol under the Liquor Licencing Act 1988/a licenced premises. Notwithstanding, it is requested that a condition be imposed on the development to preclude any future potential licenced premises.

Due to the potential for land use conflict to occur (potential operational restrictions to be introduced as a result of residential amenity impacts) between the Service Centre(s) and the existing dwelling on Lot 426, the existing

dwelling is required to be removed/demolished prior to occupation of the development and opening of the access ramps to BORR traffic.

Main Roads proposes that the following draft conditions be forwarded to the applicant/landowner for review and request the further information regarding Tenancy 2.

1. Prior to commencement of any works, the applicant/landowner shall enter into an Access Agreement with the Commissioner of Main Roads Western Australia, which sets out the arrangements upon which the provision of access to the Bunbury Outer Ring Road will be granted, which include, but is not limited to, the design, commercial and operational aspects of the Service Centres which shall be in accordance with Main Roads' Guidelines for the Bunbury Outer Ring Road Service Centres Development, and any servicing/utility infrastructure. The costs associated with the preparation of the Access Agreement are to be met by the applicant/landowner.

2. A Road Safety Audit (internal traffic) shall be undertaken for the Service Centres development in consultation with Main Roads prior to occupation of the use and opening of the Access Ramps to Bunbury Outer Ring Road traffic/the public. The applicant is advised to contact Main Roads to confirm the scope of the Audit to be undertaken and the composition of the Members of the Audit Team. The Audit shall be undertaken at the full cost of the applicant/landowner.

3. Prior to commencement of any works, the applicant/landowner shall prepare a Construction Traffic Management Plan to the specifications of Main Roads to coordinate and agree the timing and scope of vehicle access for construction of the North Bound Service Centre from the new Discovery Road, which is currently under construction.

4. Any construction vehicle access for both Service Centres are to be removed and decommissioned following Practical Completion/construction of the Service Centres, as determined by Main Roads, and primary/sole access and egress to the Service Centres shall be obtained from the Main Roads-approved Access Ramps to the Bunbury Outer Ring Road.

5. The applicant/landowner shall install a fauna fence on the boundaries of the Service Centre development sites to the specifications of Main Roads to restrict access for all motorised vehicles, cyclists and pedestrians (including animal access) from the surrounding location, at the full cost of the applicant/landowner.

6. Prior to opening of the Service Centres, the existing dwelling on Lot 426 shall be demolished at the full cost of the applicant/landowner.

7. Prior to commencement of works, an Urban Water Management Plan shall be prepared to the specification of the local authority and in consultation with Main Roads to ensure that stormwater discharged from the proposed development shall be contained on-site. The approved Urban Water Management Plan shall be implemented at the full cost of the applicant/landowner.

8. Prior to commencement of works, a Landscape Management Plan shall be prepared to the specifications of Main Roads and the satisfaction of the local authority to ensure that new landscaping integrates with any existing or proposed plantings in the Bunbury Outer Ring Road reservation to contribute positively to the amenity and character of the roadside environment. The plans are to specify the details of the vegetation and landscaping and ongoing maintenance. The approved plans are to be implemented within 60 days of opening of each centre, unless otherwise agreed to by Main Roads, with the landscaping thereafter to be maintained in a healthy condition to the satisfaction of the local government and Main Roads, at the full cost of the landowner/applicant.

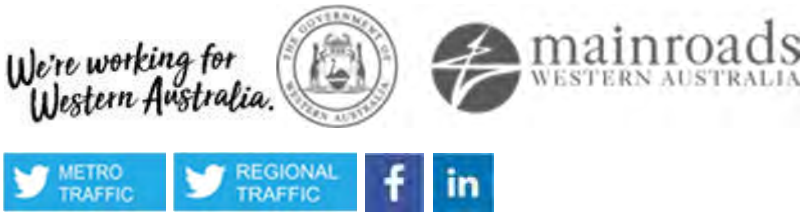
9. Signage does not form part of this approval. Prior to the installation of any signage a separate application for the installation of signage is to be submitted to Main Roads for approval in accordance with Main Roads' 'Policy and Application Guidelines for Advertising Signs within and beyond State Roads Reserves'.

10. The sale and/or consumption of alcohol under the Liquor Licencing Act 1988 is not permitted on the subject land.

Please do not hesitate to contact me should you required any further assistance.

Kind regards,

Daniel Naude
ROAD CORRIDOR PLANNING MANAGER
Regional Management & Operations Directorate
p: +61 9724 5724 | **m:** +61 4189 31078
w: www.mainroads.wa.gov.au



Attachment 3

From: [redacted]
Sent: Thursday, 4 May 2023 2:31 PM
To: Submissions Planning
Subject: Submission on proposed Service Centres BORR

To:

Chief Executive Officer

Shire of Dardanup

PO Box 7016 EATON WA 6232

Dear Sir

Please find below a brief submission on the proposed Service Centres

1. WAPC Policy DC. 1.10 Freeway Service Centres and Roadhouses essentially preclude the establishment of Service Centres in locations not approximately 40km from other similar facilities.
2. Why Does the Shire of Dardanup entertain an application of this nature given the inadequate policy position horridly pulled together by MRWA in response to my competing application
3. The Introduction of the Planning report recounts the experience of the developer in bring forward this proposal
4. The experience is nothing like the experience I encountered where MRWA staff refused to meet with me, set about creating a policy to block my application(even sending me the Policy in a word document and telling me it was an “established” actual policy when I could clearly see that the document had only been drafted the week prior.) and
5. This proposal does not accord with Policy DC 1.10 and policies like DC1.10 which probably hasn’t been amended in many years, should not be sidelined because MRWA support an application
6. Table 9 Point B – the site is much closer than 40km to existing operations / facilities
7. Point E the location proposed will be highly visible from the over bridge for the existing Rail line making the proposed landuse visually prominent- the entire character of the view will be dominated by the proposal

8. Point I not compliant as Urban development is located close by
9. Point J this point dismisses the presence of existing facilities but as part of the processing of my DA, MRWA insisted that these existing facilities be taken into account even though I was not proposing a Service Centre as defined
10. Page 29 of the Report Table of Requirements Point C- the site is very prominent
11. In the Stantec Report a total of 13,300 Vehicles per day is suggested which seems very high- We have recently concluded a similar exercise and the number is very much less than that-Traffic generation based on an assumption of passing traffic suggests 101 peak trips southbound and 111 peak trips northbound- this is not accurate and a peer review of the TIA is warranted-

Thank you for considering my submission

I can be contacted on the number below

Mike Fitzgerald

Fast Forward Project Management

[redacted]