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From: "Emma Staines" <Emma.Staines@braziermotti.com.au>
Sent: Thu, 3 Apr 2025 11:13:35 +1000
To: "Development Assessment" <developmentassessment@townsville.qld.gov.au>
Cc: "Estelle Trueman" <estelle.trueman@townsville.qld.gov.au>; "Shelly Sharma" <shelly.sharma@townsville.qld.gov.au>
Subject: MCU24/0117 - Response to Information Request - 26700-342-01

Good morning,

Please follow the link below to access the full response to the Information Request associated with MCU24/0117.

[Download here.](#)

The file sizes are quite large so if you have trouble accessing, please let me know.

The response to the SARA Information Request has also been uploaded to MyDAS today.

If you require any further information, please do not hesitate to contact our office.

Kind regards,



Emma Staines
Town Planner

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03 April 2025

Our Ref: 26700-342-01
Council Ref: MCU24/0117
& RAL24/0075
QA: es

Assessment Manager
Townsville City Council
PO Box 1268
TOWNSVILLE QLD 4810

Via email: developmentassessment@townsville.qld.gov.au

Attention: Development Assessment – Estelle Trueman

Dear Estelle,

RESPONSE TO INFORMATION REQUEST – MCU24/0117 & RAL24/0075

Development Permit for Reconfiguring a Lot (Two Lots into Five Lots, New Road and Easements) combined with Material Change of Use (Child Care Centre, Service Station, Car Wash, Low Impact Industry and Food & Drink Outlets)
182 Shaw Road, Shaw

Brazier Motti act on behalf of the applicant, Parkside Development Pty Ltd, with respect to the abovementioned development application and refer to the Information Request issued by the Townsville City Council on 18 December 2024.

The information herein with the following attachments represent the applicant's full response to the RFI:

Appendix A	Amended Development Plans prepared by Cottee Parker
Appendix B	Hydraulic Impact Assessment prepared by Premise
Appendix C	Amended Traffic Impact Assessment prepared by Premise
Appendix D	Stormwater Management Plan prepared by Premise

Throughout the preparation of this response to the Information Request, minor amendments to the development plans were required. This includes a change to the footprint and design of QSR 4 and the inclusion of staging the delivery of the public road. The proposed staging is demonstrated on the Stage 1 Site Plan (Ref SD1002 Rev 16). It includes Stage 1A and Stage 1B.

The set of amended development plans prepared by Cottee Parker are included in **Appendix A**. Details on the full set of plans are provided in Table 1 for completeness.

Table 1 – Development Plans

Plan Name	Plan No.	Revision No.	Revision Date
Master Plan			
Stage 1 Site Plan	SD1002	16	1/04/25
3D Drawing & Renders	SD0201	04	7/11/24
3D Drawing & Renders	SD0202	04	7/11/24
All Stage Pedestrian Movement	SD2805	02	12/03/25
Bicycle Circulation Movement	SD2807	01	12/03/25
Child Care Centre			
Child Care Site Plan	SD1101	07	7/11/24



Child Care Floor Plan	SD2001	08	12/03/25
Child Care Roof Plan	SD2002	06	7/11/24
Child Care Elevations – Sheet 01	SD3004	06	7/11/24
Child Care Elevations – Sheet 02	SD3005	06	7/11/24
3D Drawing & Renders – Sheet 01	SD0203	06	7/11/24
3D Drawing & Renders – Sheet 02	SD0204	04	7/11/24
3D Drawing & Renders – Sheet 03	SD0215	02	7/11/24
3D Drawing & Renders – Sheet 04	SD0216	02	7/11/24
Service Station			
Service Station Floor Plan	SD2009	04	12/03/25
Service Station Elevations – Sheet 01	SD3010	04	7/11/24
Service Station Elevations – Sheet 02	SD3011	04	7/11/24
3D Drawing & Renders – Sheet 01	SD0213	03	7/11/24
3D Drawing & Renders – Sheet 02	SD0214	03	7/11/24
Car Wash			
Car Wash Floor Plan	SD2008	04	12/03/25
Car Wash Elevations	SD3009	04	7/11/24
3D Drawing & Renders – Sheet 01	SD0211	03	7/11/24
3D Drawing & Renders – Sheet 02	SD0212	03	7/11/24
Tyre & Auto Centre			
Tyre & Auto Centre Ground Floor Plan	SD2005	05	12/03/25
Tyre & Auto Centre Level 1 Floor Plan	SD2006	02	7/11/24
Tyre & Auto Centre Roof Plan	SD2007	02	7/11/24
Tyre & Auto Centre Elevations	SD3008	05	7/11/24
3D Drawing & Renders – Sheet 01	SD0209	04	7/11/24
3D Drawing & Renders – Sheet 02	SD0210	04	7/11/24
Food & Drink Outlet 1			
QSR4 Floor Plan	SD2004	06	1/04/25
QSR4 Elevations	SD3007	06	1/04/25
3D Drawing & Renders – Sheet 01	SD0207	04	1/04/25
3D Drawing & Renders – Sheet 02	SD0208	04	1/04/25
Food & Drink Outlet 2			
QSR5 Floor Plan	SD2003	06	12/03/25
QSR5 Elevations	SD3006	05	7/11/24
3D Drawing & Renders – Sheet 01	SD0205	04	7/11/24
3D Drawing & Renders – Sheet 02	SD0206	04	7/11/24

Request Item 1 – Flood Impact Assessment

A Hydraulic Impact Assessment has been prepared by Premise which concludes that the proposed development “does not result in an actionable nuisance or unreasonably interfere with neighbouring property owners’ use or enjoyment of their land.”

The report reviews the existing drainage and topography of the development site and provides an assessment based on proposed hydraulic controls, including an open drain along the northern side of the District Centre of the site which is designed to convey flows to the east. A copy of the report is included in **Appendix B**.



Request Item 2 – Master Plan – Active Transport and Public Transport

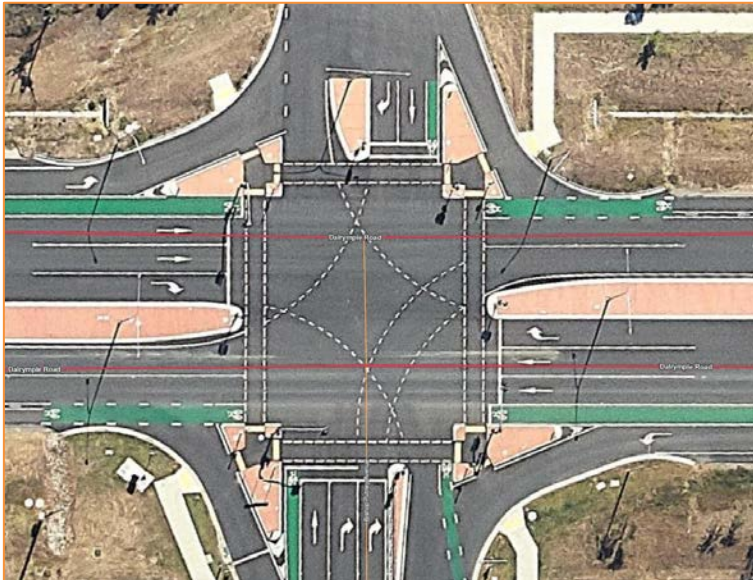
A set of amended development plans, prepared by Cottey Parker, are included in **Appendix A**. The set includes two new plans which demonstrate a conceptual active transport master plan for the Greater Ascot District Centre. Refer Drawing No SD2805 for Pedestrian Movement and Drawing No. SD2807 for Bicycle Circulation. The plans consider:

- The provision for a pathway along Shaw Road to connect to the northern end of Greater Ascot;
- Internal footpaths connecting each use throughout the District Centre and external footpaths providing connectivity to the wider residential estate and community; and
- A potential bus stop location along the proposed major collector road (northern leg extension of the Bishop Putney Avenue/Dalrymple Road signalised intersection). It is conceptually shown to be situated adjacent the proposed Town Square. This does not form part of this Development Application for Stage 1 of the District Centre. Formal details on the bus stop will require input and approval from Translink which will be provided with future stages of the development.

The pedestrian footpaths along Shaw Road and Dalrymple Road are not planned to connect to the Shaw Road/ Dalrymple Road signalised intersection as this intersection does not incorporate pedestrian signals for safe crossing.

Pedestrians are to be encouraged to utilise the existing pathway along Dalrymple Road which connects to the Bishop Putney Avenue/ Dalrymple Road signalised intersection. This intersection has been designed and constructed for safe pedestrian crossing. Figure 1 below demonstrates.

Figure 1 – Dalrymple Road / Bishop Putney Avenue signalised intersection

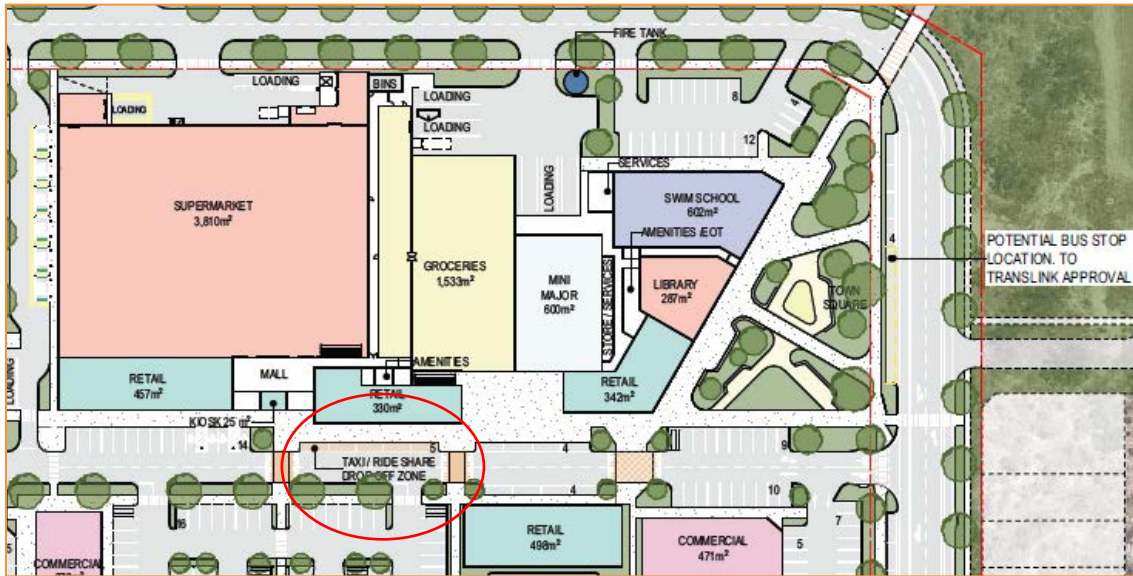


Source – Queensland Globe, 2025

A taxi drop off/pick off zone is planned to be delivered to the front of the Supermarket as part of a later Stage for the District Centre. Figure 2 below is an extract of the Greater Ascot District Centre Master Plan which is a work in progress. The taxi drop off/pick off zone is circled in red.



Figure 2 – Greater Ascot District Centre Master Plan - Work in progress



Source – Cottee Parker

Details on bicycle parking are provided in the Response to Request Item 9.

Furthermore, sight visibility between pedestrians and vehicles at the roundabouts will be confirmed during detailed design and technical details will be provided to Council for approval as part of a future application for Operational Work (Civil Works).

Request Item 3 – Amended Traffic Impact Assessment

An amended Traffic Impact Assessment, prepared by Premise, is included in **Appendix C**.

A swept path analysis will be carried out during detailed design and technical details will be provided to Council for approval as part of a future application for Operational Work.

Request Item 4 – Waste Management Plan / Facilities

Each pad site has a designated refuse collection area as demonstrated on the set of amended development plans in **Appendix A**. This includes:

- Child care – a 9m² bin storage is located between the staff terrace and the program room. It is not visible from public view. The bins will be wheeled out to the car park via the provided footpaths for collection by a private collection company, as required.
- Service station – a 17m² bin store is located on the western side of the main building. It has double gates for easy accessibility. Ample loading space is provided to the front of the bin store allowing a refuse collection truck to reverse in at the designated space and exit site in forward direction. Collection of waste will be carried out by a private collection company, as required.
- Car wash – the car wash use will utilise the designated refuse collection area at the service station as the uses will be managed by the same tenant. The bin store is accessible by the provided footpath network that connects the sites.
- Auto centre – a timber panelled bin enclosure is provided on the northern side of the building. Ample service access space is provided to the front of the bin container allowing a refuse collection truck to reverse in at the designated space and exit site in forward direction. No standing signage should be provided to ensure the space remains accessible. Collection will be undertaken on an as required basis, by a private waste collection company.



- QSR4 – a large services yard and bin enclosure is located on the southern end of the main building. A large loading area is provided, designated with appropriate line marking, which can be utilised by refuse collection vehicles. Waste will be collected by a private waste collection company as required.
- QSR5 – a bin enclosure is located on the northern side of the building. Ample service access space is provided to the front of the bin container allowing a refuse collection truck to reverse in at the designated space and exit site in forward direction. Collection will be undertaken on an as required basis, by a private waste collection company.

These areas will house general waste and recycle bins, each of sufficient size and capacity to service the tenants associated with the individual land uses. All waste generated on site will be collected by a private waste management company who will dispose of the waste appropriately.

As noted above, swept path analysis demonstrating accessibility for waste collection will be confirmed during detailed design and technical details will be provided to Council for approval as part of a future application for Operational Work.

Request Item 5 – Stormwater Management Plan

A Stormwater Management Plan has been prepared by Premise which details stormwater quality management strategies for the development, including a monetary contribution to be accepted for a portion of proposed stage 1, with the remainder of the first stage to incorporate a treatment train implementing Bio Pods to meet planning policy targets for pollutant removal. A copy of the report is included in **Appendix D**.

Request Item 6 – Car Park Amenity

The amended development plans incorporate shade trees within the car parking areas for both food and drink outlets, the tyre & auto centre and the car wash. A rate of 1 tree per 3 car parking spaces for single sided bays and 1 tree per 6 car parking spaces for double sided bays.

As a result, two (2) car parking spaces have been removed from the pad site for the Tyre and Auto Centre. Ten (10) are proposed which remains compliant with SC6.10 Parking rates planning scheme policy. Refer below.

Use	Parking Rates	Required	Provided
Tyre & Auto Centre	One (1) per 100m ² of GFA.	3.7	10

Technical details on shade trees in car parking areas will be provided to Council for approval as part of a future application for Operational Work (Landscaping Work).

Request Item 7 – Pedestrian Connection to Child Care Centre

Unfortunately, it is not feasible to provide a temporary pedestrian connection to the Child Care Centre given the topography (open drain) that separates the development site, and the residential estate and liability issues associated.

For Stage 1, residents of Greater Ascot will be able to walk to the Child Care Centre via the existing footpath in Greater Ascot Avenue and in Dalrymple Road. Additional pedestrian connections to the balance of the Estate are to be provided with later stages of District Centre as shown on the conceptual pedestrian movement plan, prepared by Cottee Parker (Drawing No. SD2805 Rev 02) in **Appendix A**.



Request Item 8 – Landscape Plan

The amended development plans in **Appendix A** incorporate additional detail on the proposed landscaping concept for Stage 1 of the development. This includes but is not limited to:

- Shade trees in car parking bays; and
- Additional landscaping to separate drive through lanes from adjacent roads.

For shade trees in car parking bays, a rate of 1 tree per 3 car parking spaces for single sided bays and 1 tree per 6 car parking spaces for double sided bays is to be implemented for the development as noted in the Response to Request Item 6, above.

Soft landscaping and larger trees along the southern boundary of the site, fronting Dalrymple Road are to be considered for incorporation into the development however are not shown on the elevation plans or the architectural perspectives. These technical details on landscaping design will be provided to Council for approval as part of a future application for Operational Work (Landscaping Works).

Request Item 9 – Bicycle Parking

The amended development plans in **Appendix A** incorporate bicycle parking provision at both Quick Service Retail Sites (Drawing Nos. SD2003 Rev 06 and SD2004 Rev 06) as well as the Service Station (Drawing No. SD2009 Rev 04) in accordance with AS 2890.3.

Technical details on the design of the bicycle parking will be provided to Council for approval as part of a future application for Operational Work (Civil Works).

>> End of Response to Information Request <<

We trust that the above response adequately provides Council sufficient information to satisfactorily proceed with the assessment of the application. Brazier Motti would be please to expand on the information further with you, should you require.

We will now proceed with the Public Notification stage as required by Part 4 of the Development Assessment Rules.

Yours faithfully,

Emma Staines

Town Planner

Brazier Motti Pty Ltd

APPENDIX A

Amended Development Plans prepared by Cottee Parker

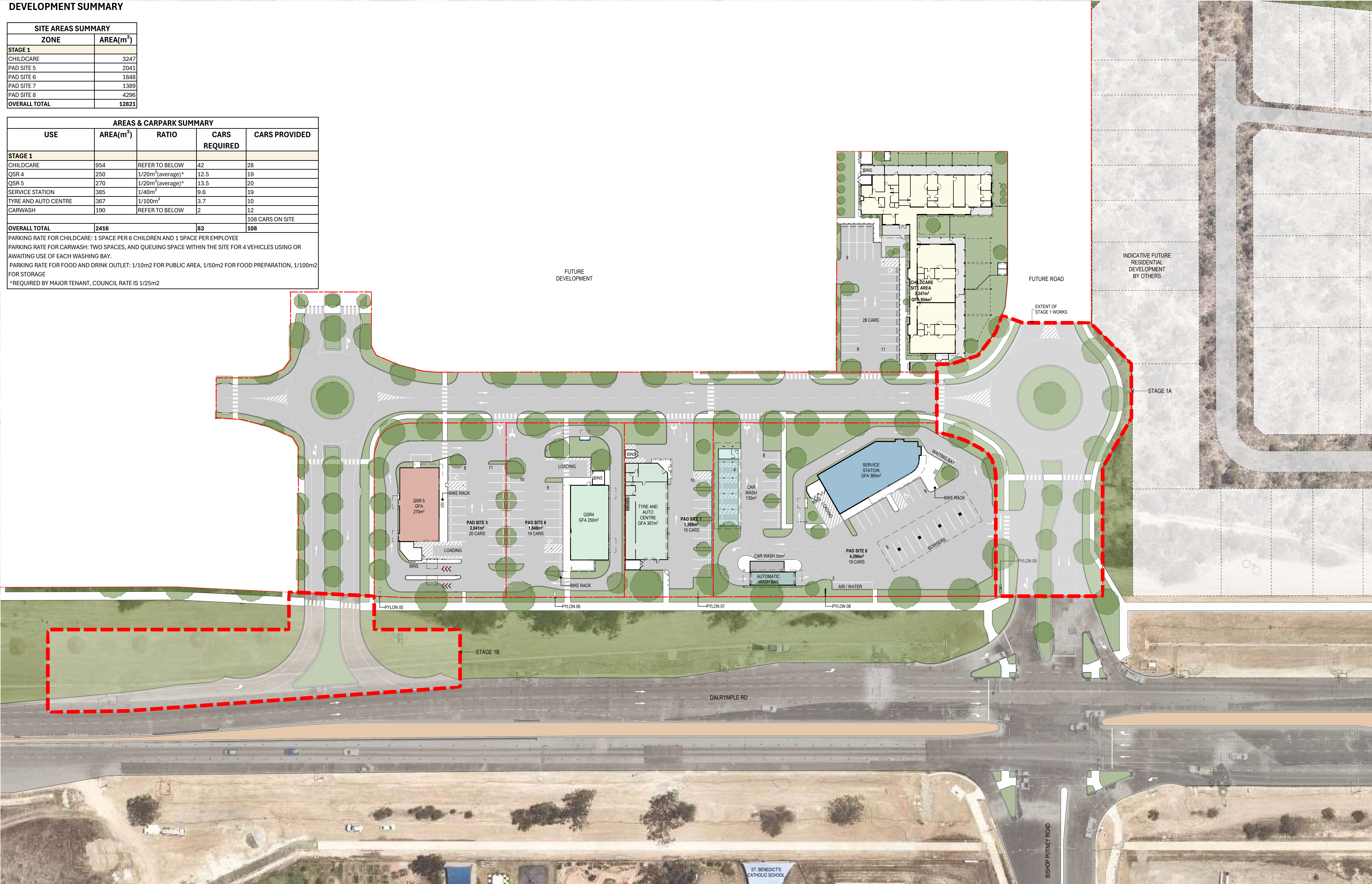
brazier motti



DEVELOPMENT SUMMARY

SITE AREAS SUMMARY	
ZONE	AREA(m ²)
STAGE 1	
CHILDCARE	3247
PAD SITE 5	2041
PAD SITE 6	1848
PAD SITE 7	1389
PAD SITE 8	4296
OVERALL TOTAL	12821

AREAS & CARPARK SUMMARY				
USE	AREA(m ²)	RATIO	CARS REQUIRED	CARS PROVIDED
STAGE 1				
CHILDCARE	954	REFER TO BELOW	42	28
QSR 4	250	1/20m ² (average)*	12.5	19
QSR 5	270	1/20m ² (average)*	13.5	20
SERVICE STATION	385	1/40m ²	9.6	19
TYRE AND AUTO CENTRE	367	1/100m ²	3.7	10
CARWASH	190	REFER TO BELOW	2	12
				108 CARS ON SITE
OVERALL TOTAL	2416		83	108
PARKING RATE FOR CHILDCARE: 1 SPACE PER 6 CHILDREN AND 1 SPACE PER EMPLOYEE				
PARKING RATE FOR CARWASH: TWO SPACES, AND QUEUING SPACE WITHIN THE SITE FOR 4 VEHICLES USING OR AWAITING USE OF EACH WASHING BAY.				
PARKING RATE FOR FOOD AND DRINK OUTLET: 1/10m2 FOR PUBLIC AREA, 1/50m2 FOR FOOD PREPARATION, 1/100m2 FOR STORAGE				
*REQUIRED BY MAJOR TENANT, COUNCIL RATE IS 1/25m2				



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SCALE 1:500 @ A1
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12	BRIDGESTONE UPDATE	04/11/24	CPA	EB	MC
11	STAGE 2 ISSUE	28/10/24	CPA	EB	MC
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07	MASTERPLAN PROGRESS ISSUE	27/08/24	CPA	EB	MC
06	FOR INFORMATION	19/08/24	CPA	EB	MC
ISSUE PURPOSE	DATE	D	C	A	

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PARKSIDE GREATER ASCOT

DALRYMPLE ROAD, SHAW
CLIENT - PARKSIDE DEVELOPMENTS

DRAWING TITLE
STAGE 1 SITE PLAN

JOB No
6570
DRAWING No
SD1002
ISSUE
16

- LEGEND
- PEDESTRIAN PATH
 - VEHICLE ENTRY
 - POTENTIAL BUS STOP

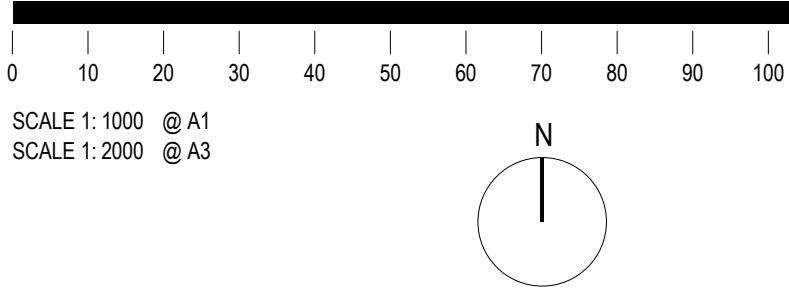


1 PEDESTRIAN MOVEMENT PLAN

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02 CLIENT ISSUE	12/03/25	CPA	DG	MC	
03 CLIENT ISSUE	11/10/24	CPA	MC	MC	
ISSUE PURPOSE	DATE	D	C	A	

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DIAGRAM ALL STAGE PEDESTRIAN MOVEMENT

6570

02

SD2805

PARKSIDE GREATER ASCOT

DALRYMPLE ROAD, SHAW
CLIENT - PARKSIDE DEVELOPMENTS

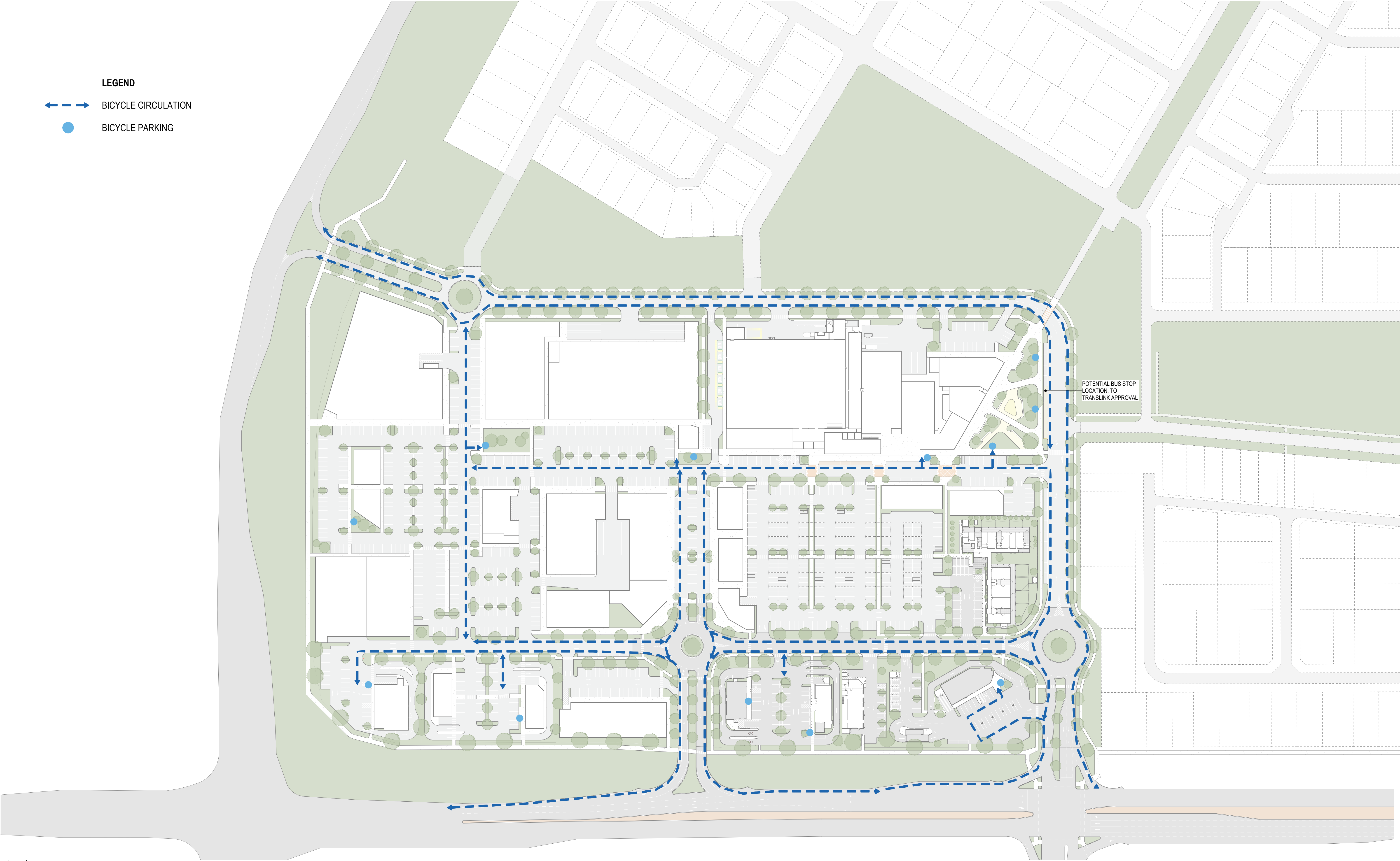
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BICYCLE CIRCULATION

●

BICYCLE PARKING



1

BICYCLE CIRCULATION PLAN

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12/03/25

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PARKSIDE GREATER ASCOT

DALRYMPLE ROAD, SHAW

CLIENT - PARKSIDE DEVELOPMENTS

DRAWING TITLE

BICYCLE CIRCULATION MOVEMENT

JOB No

6570

DRAWING No

SD2807

ISSUE

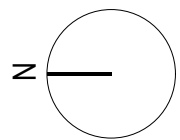
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PARKSIDE GREATER ASCOT

DALRYMPLE ROAD, SHAW
CLIENT - PARKSIDE DEVELOPMENTS

DRAWING TITLE
CHILDCARE FLOOR PLAN

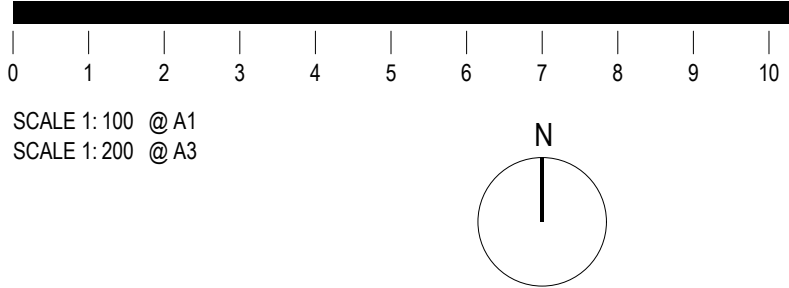
JOB No 6570
ISSUE DATE 08
SD2001

ADJOINS 2008 - CARWASH FLOOR PLAN



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PARKSIDE GREATER ASCOT

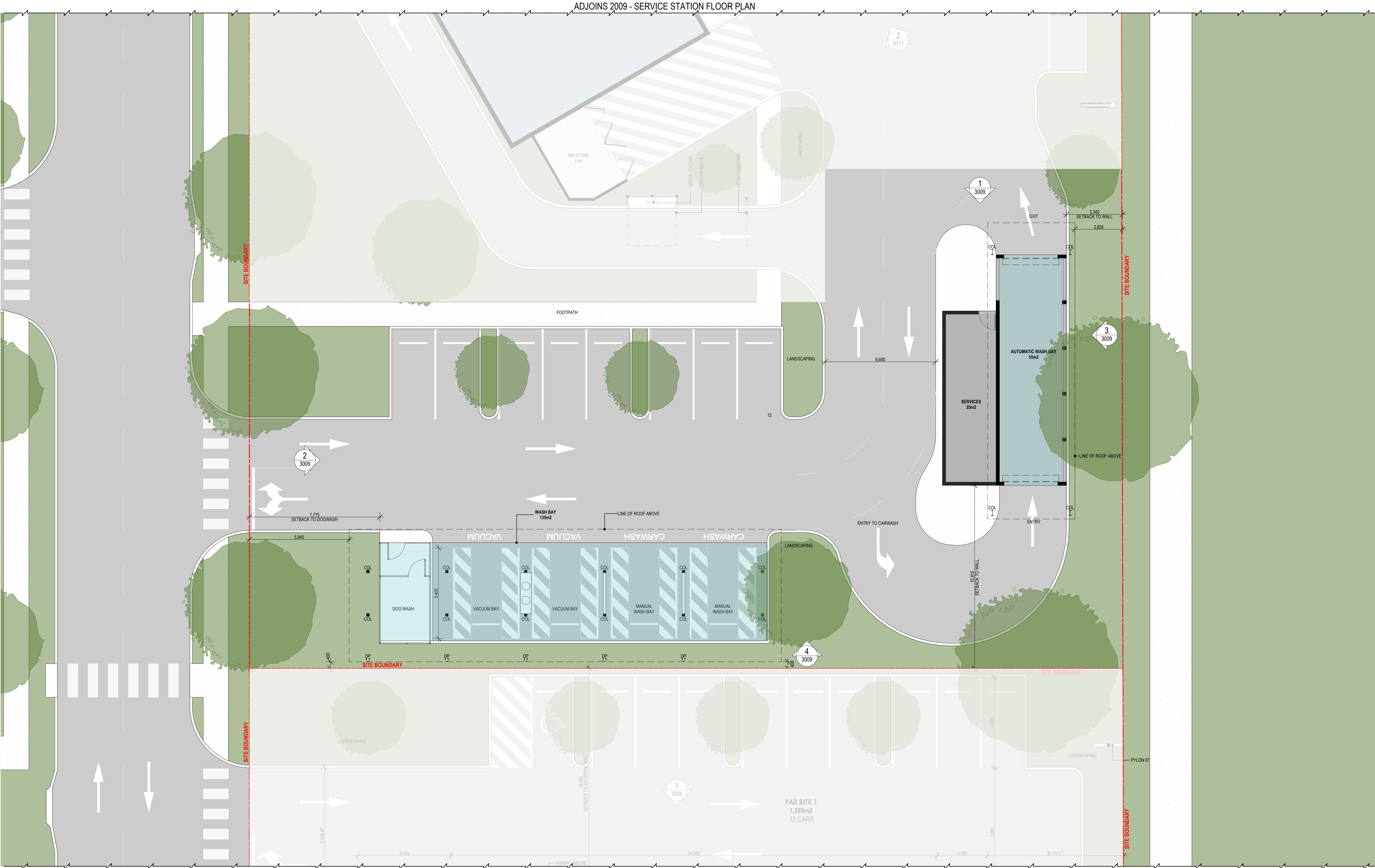
DALRYMPLE ROAD, SHAW
CLIENT - PARKSIDE DEVELOPMENTS

DRAWING TITLE
SERVICE STATION FLOOR PLAN

JOB No 6570
DRAWING No SD2009
ISSUE 04

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ISSUE PURPOSE	DATE	D	C	A	

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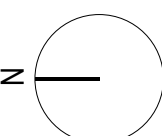


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REFER 2005 - TYRE AND AUTOCENTRE FLOOR PLAN

ADJOINS 2009 - SERVICE STATION FLOOR PLAN

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03 STAGE 1 ISSUE	7/11/24	CPA	EB	MC
02 FOR INFORMATION	19/09/24	CPA	EB	MC
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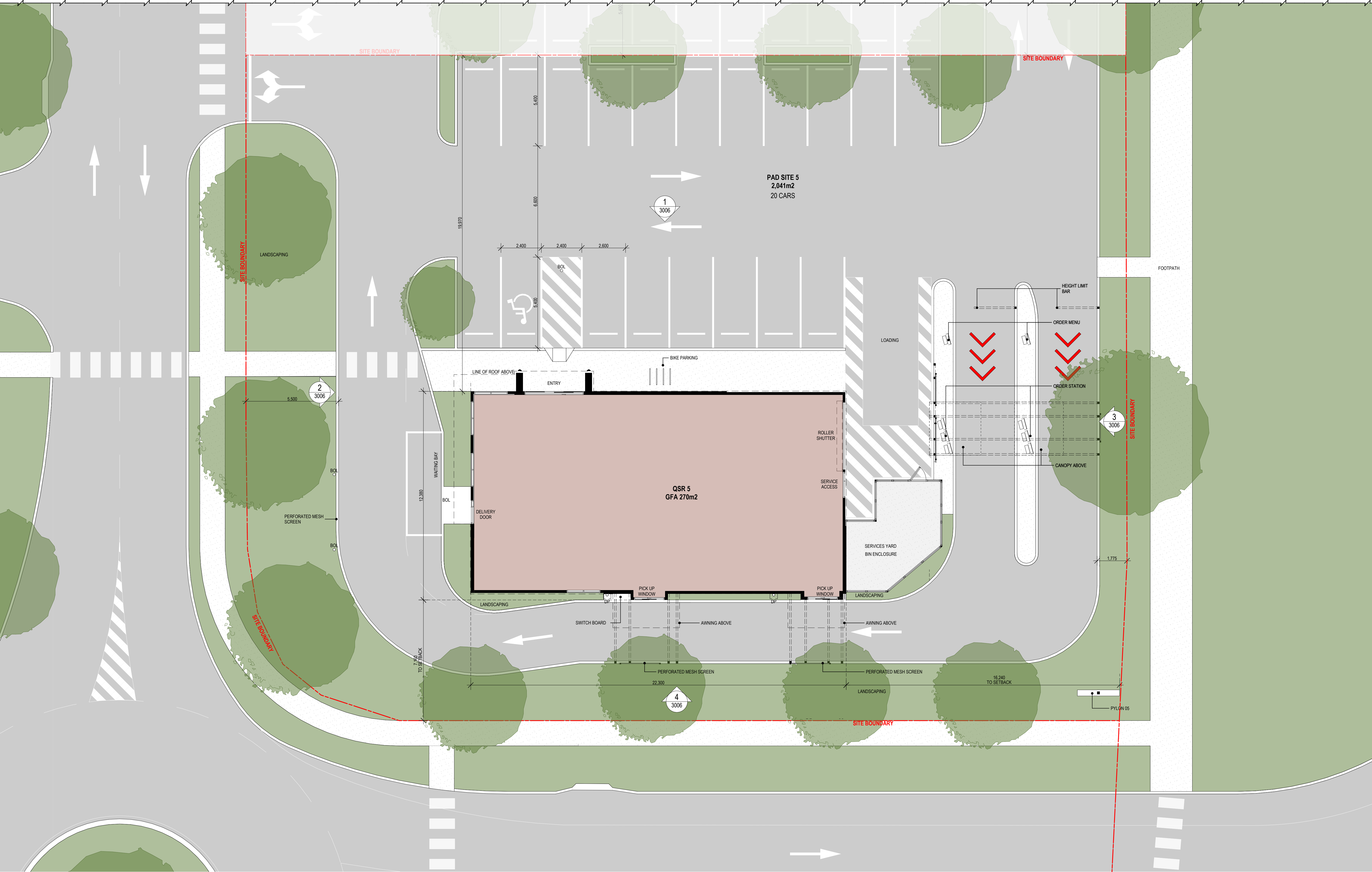
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PARKSIDE GREATER ASCOT

DALRYMPLE ROAD, SHAW
CLIENT - PARKSIDE DEVELOPMENTS

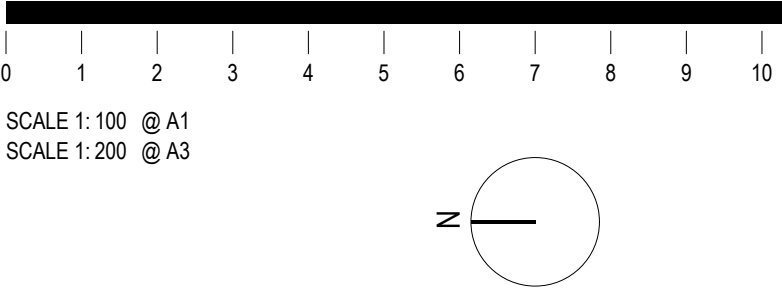
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CARWASH FLOOR PLAN

JOB No 6570
DRAWING No SD2008
ISSUE 04



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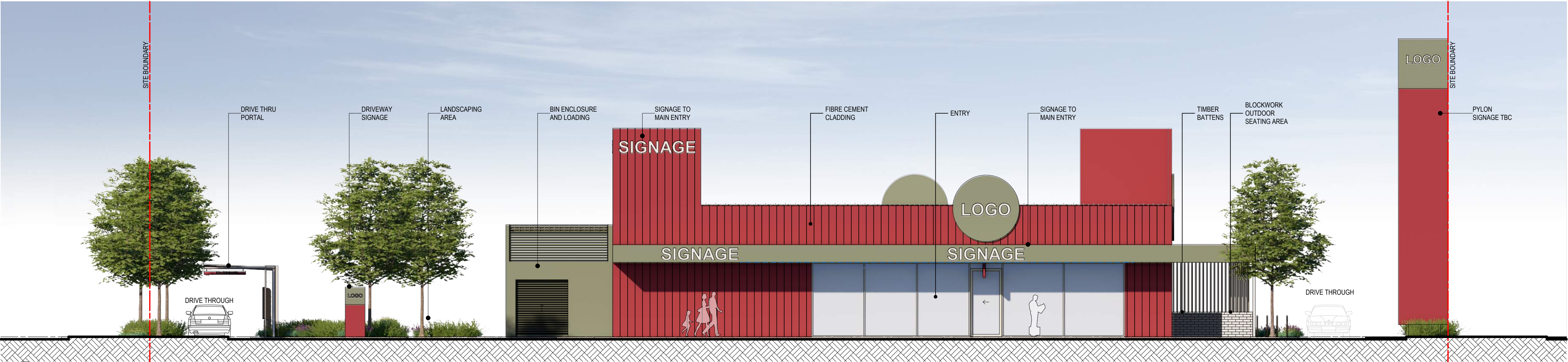
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PARKSIDE GREATER ASCOT

DALRYMPLE ROAD, SHAW
CLIENT - PARKSIDE DEVELOPMENTS

DRAWING TITLE
QSR 5 FLOOR PLAN

JOB No 6570
DRAWING No SD2003
ISSUE 06



1 QSR4 WEST ELEVATION
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2 QSR4 NORTH ELEVATION
SCALE 1:100 @ A1
SCALE 1:200 @ A3



3 QSR4 SOUTH ELEVATION
SCALE 1:100 @ A1
SCALE 1:200 @ A3



4 QSR4 EAST ELEVATION
SCALE 1:100 @ A1
SCALE 1:200 @ A3

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02	PROGRESS ISSUE	30/08/24	CPA	EB	MC
01	PROGRESS ISSUE	23/08/24	CPA	MC	MC
ISSUE	PURPOSE	DATE	D	C	A

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PARKSIDE GREATER ASCOT

DALRYMPLE ROAD, SHAW
CLIENT - PARKSIDE DEVELOPMENTS

DRAWING TITLE
QSR4 ELEVATIONS

JOB No

6570

DRAWING No

SD3007

ISSUE

06



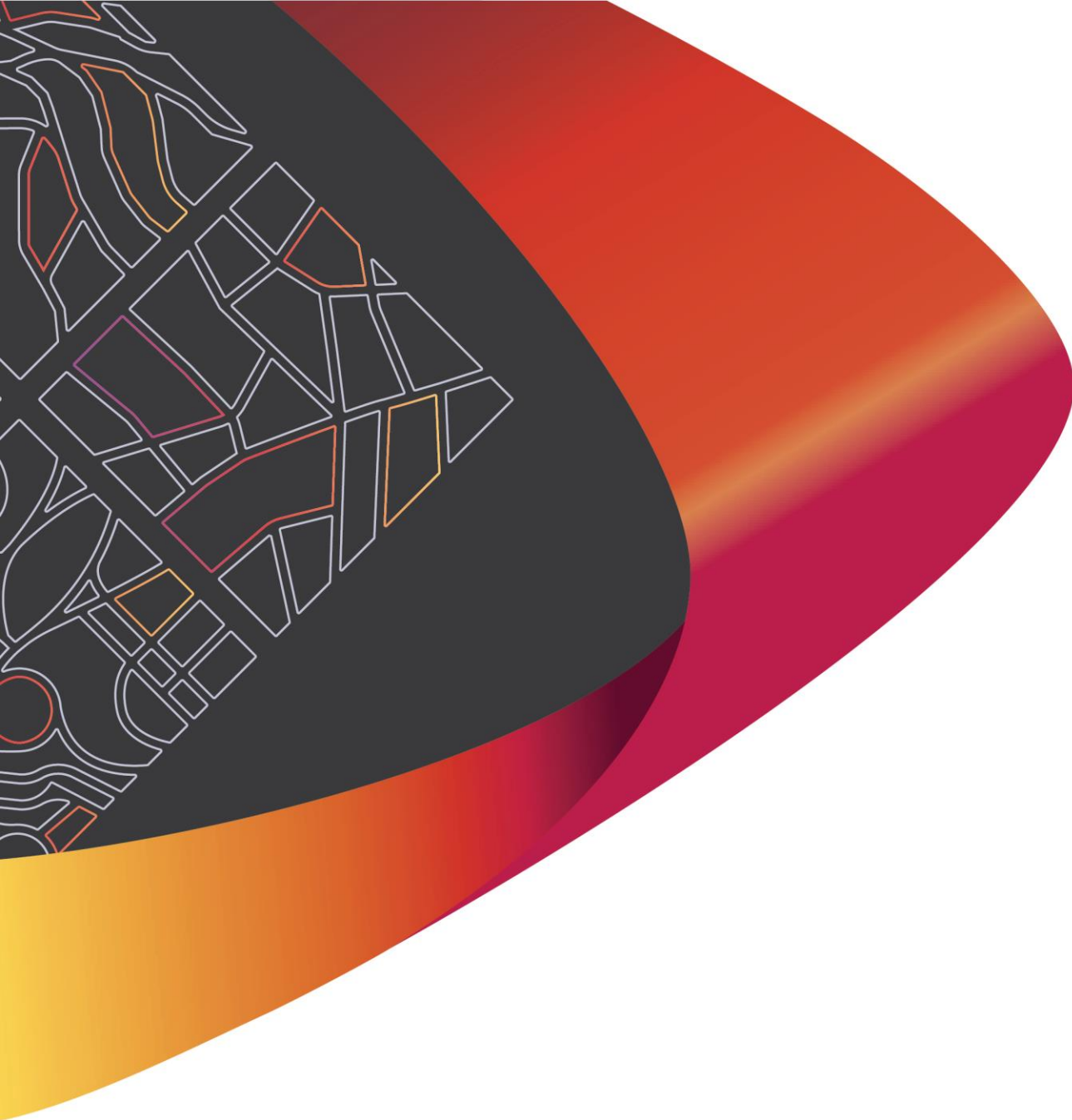


APPENDIX B

Hydraulic Impact Assessment prepared by Premise

brazier motti





PARKSIDE DEVELOPMENT PTY LTD

182 Shaw Road, Shaw

HYDRAULIC IMPACT ASSESSMENT

Report No: P001406/R03

Rev: C


21 March 2025



Premise

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DOCUMENT AUTHORISATION			
Revision	Revision Date	Proposal Details	
A	07/03/25	Hydraulic Impact Assessment	
B	18/03/25	Updated Discussion on Model Results	
C	21/03/25	Updated Modelling	
Prepared By		Approved and Authorised By	
Jeremy Cox	JC	Jeremy Cox	

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1. INTRODUCTION

Premise Australia Pty Ltd (here within referred to as "Premise") has been commissioned by Parkside Development Pty Ltd to prepare a Hydraulic Impact Assessment Report in support of a development application at 182 Shaw Road, Shaw.

The real property descriptions of this development are as follows:

- Part Lot 5000 SP 334260
- Part Lot 5001 SP 349172

This report discusses the potential impacts the proposed development will have on flooding in its operational phase and puts forth a plan for mitigating the effects of urbanisation with respect to flood characteristics.

This report has been developed to address the below planning framework:

- Flood Hazard Overlay Code (Townsville City Plan 27/06/2017);
- Planning Act 2016 and the associated State Planning Policy (SPP, DILGP, 2017); and
- Environmental Protection Act 1994, Environmental Protection (Water) Policy 2009 (EP water).

The assessment has been undertaken following best practice guidelines recommended within:

- Townsville City Plan, Flood Hazard Planning Scheme Policy (SC6.7)
- Queensland Urban Drainage Manual (IPWEAQ, 2017); and
- Australian Rainfall and Runoff: A Guide to Flood Estimation (Babister et al, 2019) (ARR19).

This report reviews the full town centre precinct shown in **Appendix A** in the context of the wider Greater Ascot development.

Refer to **Figure 1** below for an aerial image of the site and its locality. The image shows the whole site, commercial precinct area and the current stage (Stage 1) in yellow.

Appendix A shows the proposed layout.



Figure 1 – Aerial Imagery of the site (Source: Nearmap 2025)

2. DATA

In the preparation of this report, information about the site was gathered from the following sources:

- Aerial LiDAR data of the Anzlic Committee On Survey and Mapping (ELVIS, <https://elevation.fsdf.org.au/>);
- Proposed development site plans prepared by Cottee Parker;
- Infrastructure Mapping – Townsville City Council Interactive Mapping;
- Detailed survey and site layout prepared by Brazier Motti;
- Design inputs for hydrologic and hydraulic modelling from the Australian Rainfall and Runoff Data Hub;
- Rainfall and Meteorological data by the Australian Bureau of Meteorology;
- Aerial Imagery and map data from Queensland Globe, Google and Nearmap (Accessed February 2025);
- TCC Bohle River Flood Study 2023 prepared by WRM; and
- TCC Flood Model from the Bohle River Flood Study 2023

3. SITE CHARACTERISTICS

3.1 Existing Drainage and Topography

There is currently no underground stormwater infrastructure within the site. Runoff generally drains toward the natural open drain to the east. Runoff from both Dalrymple Road and Shaw Road cross the site with discharge from culverts under Shaw Road at the south-west corner of the site.

Refer to **Figure 2** for the existing drainage regime of the site.

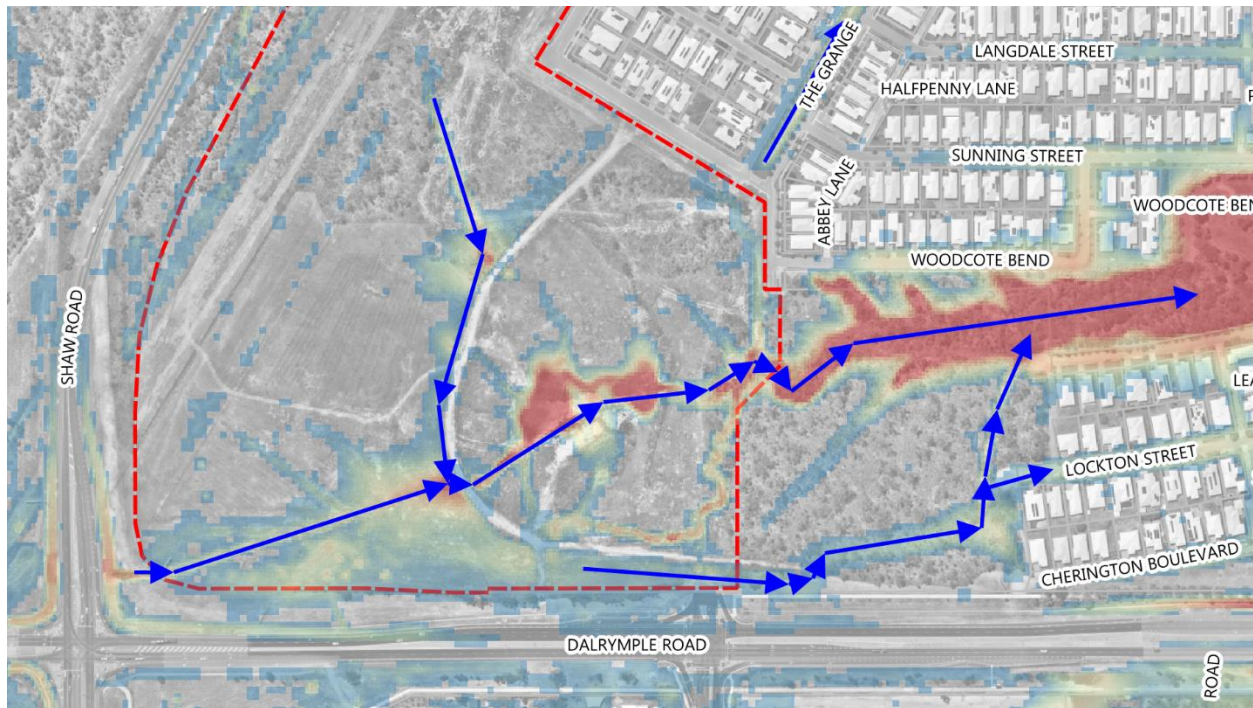


Figure 2 – Pre Development Drainage Regime and Discharge Locations (Source: Nearmap, QGIS)

3.2 Proposed Development

The proposed development will consist of the Parkside Greater Ascot Town Centre shown on **Figure 3** and in **Appendix A**. Stage 1 of the development feature a Child Care Centre for approximately 120 children, a Service Station, Car Wash, Food & Drink Outlet and Low Impact Industry. Further stages will include a supermarket, library, tavern and other commercial uses.

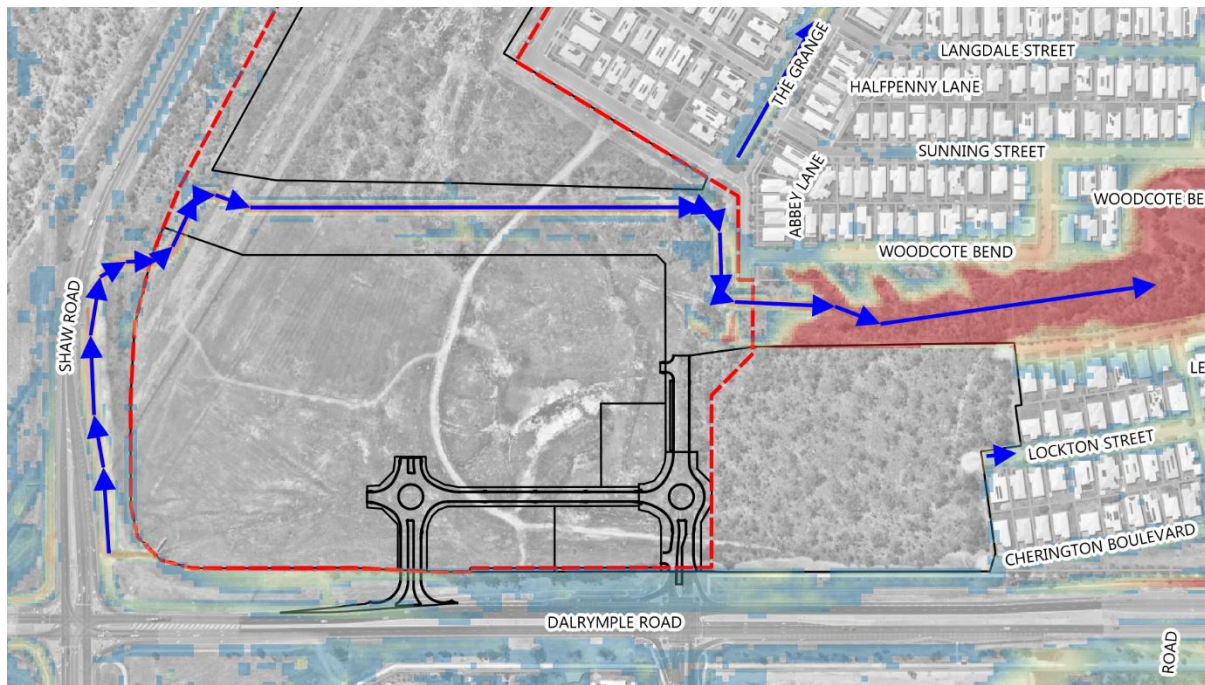


Figure 4 – Post Development Drainage Regime and Discharge Locations (Source: Nearmap, QGIS)

4. HYDROLOGY

The hydrology was unchanged in this study from the 2023 TCC Bohle River Flood Study XP-RAFTS model. As this report deals with regional flooding as it relates to the proposed development, a site only runoff analysis was not undertaken. Further discussion on the critical temporal patterns and duration for each AEP event is contained below.

4.1 Design Storm Event Temporal Pattern Selection

Section 7 of the TCC Bohle River Flood Study 2023 deals with the design rainfall events and critical pattern and duration for each AEP at key calibration/comparison locations. One such comparison location was the Mt Bohle Alert which is adjacent to the downstream end of the site. For the 50%, 20%, 5% and 2% AEP the critical duration and temporal pattern were selected directly from Table 7-12 of the TCC report. Figure 7-6 and 7-7 of the TCC study showed mapping for critical durations for the 10% and 1% AEP. These durations were simulated for the full Council hydraulic model and compared to determine the critical duration and temporal patterns for the development. The resulting critical storms are therefore listed in **Table 1** below.

Table 1 – Ensemble Temporal Pattern Selection for Hydraulic

ANNUAL EXCEEDANCE PROBABILITY	CRITICAL DURATION (Min)	TEMPORAL PATTERN
50%	540	6
20%	540	6
10%	720	10
5%	540	6
2%	360	4
1%	360	4

5. HYDRAULIC ASSESSMENT

An unsteady state, two-dimensional hydraulic model was developed in the TUFLOW modelling package (build 2020-10-AC). This model was built on the Bohle River Model, which was obtained by TCC. The model was truncated for this project to minimise run times. Only the items required for truncation were changed from the original model for the base case. Model results were compared to the full model run times and the results were within acceptable range (less than +/- 10mm for much of the domain).

TUFLOW is a computer program used to simulate depth-averaged, two and one-dimensional free-surface flows, which commonly occur during flood events with significant floodplain interaction. This package was selected due to the program's ability to model detailed 1D hydraulic structures, in conjunction with the 2D terrain and allows for rapid interpretation of the model results.

The hydraulic model was used to estimate the inundation extents and flow characteristics of the 50%, 20%, 10%, 5%, 2% and 1% AEP event for the critical durations and temporal patterns identified in **Section 4**.

5.1 Model Extent and Topography

A Digital Terrain Model (DTM) was created for the study area using the TCC model. The grid cell size was set as 5m with 1m sub-grid sampling which was deemed to provide adequate detail for the purposes of this study. Refer to **Appendix D** for an overview of the TUFLOW model topography and setup.

5.2 Hydraulic Model Roughness

The model roughness of the streams and floodplains in the catchments was represented by the Manning's roughness coefficient, n . Different Manning's coefficients (n) have been applied to reflect the various land uses within the catchment. This was achieved by defining polygons for the various land uses and assigning the relevant " n " value. These values were maintained from the Bohle River Study/ The study area was delineated based on the following roughness values:

• Watercourse	$n = 0.045$
• Riparian Corridor	$n = 0.075$
• Open Grassland	$n = 0.040$
• Low Density Vegetation	$n = 0.055$
• High Density Vegetation	$n = 0.080$
• Roads/Open Channels	$n = 0.030$
• Rural Residential	$n = 0.060$
• Urban Residential	$n = 0.100$

5.3 Boundary Conditions

Flow hydrographs for areas upstream of the truncated model were derived from the full Bohle River model. These were extracted from the model using the PO lines defined within the model for the critical durations and temporal patterns detailed in **Section 4**. These output hydrographs from the full model were adopted as the inflow boundary conditions for the 1D/2D hydraulic assessment.

Within the truncated model, domain direct rainfall was still adopted as per the larger Bohle River model. The truncated model extent can be found in **Appendix D** of this report.

The downstream model boundary was defined as a stage hydrograph at the Mt Bohle Alert PO point within the larger model. **Table 2** lists the output locations used as model boundaries for the truncated model.

Table 2 – Reporting Locations used for Truncated Model Boundaries

BOHLE RIVR MODEL PO LOCATION NAME	BOUNDARY TYPE
Flow_421	Inflow (QT)
Flow_420	Inflow (QT)
Flow_699	Inflow (QT)
Flow_108	Inflow (QT)
Flow_113	Inflow (QT)
Flow_101	Inflow (QT)
Flow_464	Inflow (QT)
Flow_700	Inflow (QT)
Mt Bohle	Height/Tailwater (HT)

5.3.1 DALRYMPLE ROAD DRAINAGE IN TCC MODEL

The TCC model received does not include the upgraded Dalrymple Road and associated table drain adjacent to the site. The table drain can be seen upon site inspection and on Nearmap imagery. It was found to be 7m wide with a 1m concrete base. As drainage in this road is critical for the site, in particular for evaluating flood impacts, it was added to the model. The table drain in Dalrymple Road (which conveys flows to the east) was included in the model as a 5m wide 2d_zsh line. It was included in both the pre-development scenario and post development scenario.

5.4 Post-Development Scenario

In the post-development scenario, boundary conditions remained the same. The proposed development footprint has been modelled through terrain modification using a 2d_zsh layer, to convey runoff to the proposed drain. The main proposed drain which runs around the northern boundary was conceptually modelled in 12d and input to the post development model terrain. Characteristics of the open drain is listed in **Table 3** below.

Table 3 – Open Drain Characteristics

CHARACTERISTIC	VALUE
Shaw Road (northern) Drain	
Base Width	5
Side Slopes	1:6
Bed Slope	1:333 (0.3%)
1% AEP Depth Range	0.6-0.825m

The internal drainage network has not been included explicitly in the model. This is considered appropriate as it is anticipated detailed sizing of the minor drainage system will be undertaken at the operational works phase, considering the capacity of the combined minor and major drainage system internal to the site will comply with safety criteria outlined in the TCC planning scheme and QUDM.

5.5 Hydraulic Assessment Results

Flood mapping has been produced for peak flood levels, depth, velocity for the pre and post development scenarios, and flood afflux.

For the hydraulic model results, refer to:

- **Appendix E** for pre-development maps;
- **Appendix F** for post-development maps; and
- **Appendix G** for impact assessment maps.

As shown in **Appendix G**, the impact assessment demonstrates suitability of the proposed development to appropriate standards.

5.6 Impact Assessment

The post-development flood mapping and hydrographs in **Appendix G** demonstrate the hydraulic controls provided by the proposed infrastructure provides sufficient capacity to convey flows such that upstream impacts are minimal and contained within road or drainage reserve near the site. Downstream impacts are also seen to be minimal and contained within the designated drainage or road corridors.

Overall, this assessment indicates that there are no actionable or adverse impacts to neighbouring properties or transport infrastructure for the regional flooding as a result of the proposed development.

5.7 Flood Planning Level and Immunity Requirements

Flood planning levels should be taken as being consistent with those shown in the maps in **Appendix F**.

2. CONCLUSION

This Hydraulic Impact Assessment details the proposed flood behaviour for the project in accordance with the Queensland Urban Drainage Manual, Australian Rainfall & Runoff 2019 and Townsville City Council Guidelines.

The Townsville City Council Planning Scheme indicates that the site is affected by flooding up to the high-risk category. Hydraulic modelling was undertaken to demonstrate the development does not result in an actionable nuisance or unreasonably interfere with neighbouring property owners' use or enjoyment of their land.

3. QUALIFICATIONS

Our analysis and overall approach have been specifically catered for the requirements of Parkside Development Pty Ltd and may not be applicable beyond this scope. For this reason, any other third parties are not authorised to utilise this report without further input and advice from Premise.

Premise has relied on the information as outlined in **Section 2** of this Report.

While Premise's report accurately assesses peak flows from design storms in accordance with current industry standards and guidelines, the sites future observed flows may vary from that predicted. For these reasons appropriate freeboards should be adopted.

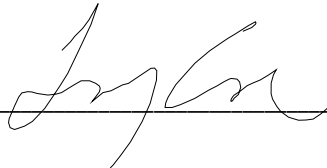
8. RPEQ CERTIFICATION

As Registered Professional Engineer of Queensland (RPEQ) for this project, on behalf of Premise Australia Pty Ltd, I certify that the modelling undertaken as part of this assessment has been undertaken in accordance with current engineering best practice as recommended in the QUDM, ARR and Townsville City Council Guidelines.

Name: Jeremy Cox

RPEQ No: 14732

Date: 21 March 2025

Signature: 

9. REFERENCES

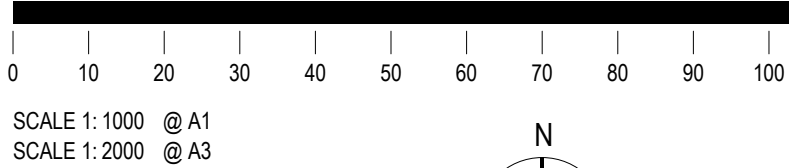
1. Institute of Public Works Engineering Australasia (QLD Division), et al, 2016. *Queensland Urban Drainage Manual (QUDM), Fourth Edition*. Brisbane.
2. Ball J, Babister M, Nathan R, Weeks W, Weinmann E, Retallick M, Testoni I, *Australian Rainfall and Runoff: A Guide to Flood Estimation*, Commonwealth of Australia (Geoscience Australia), 2016, Canberra.
3. Bureau of Meteorology, 2016 *IFDs – Rainfall Data*. Available at: <http://www.bom.gov.au/water/designRainfalls/revised-ifd/?year=2016>

APPENDICES

APPENDIX A

PROPOSED LAYOUT

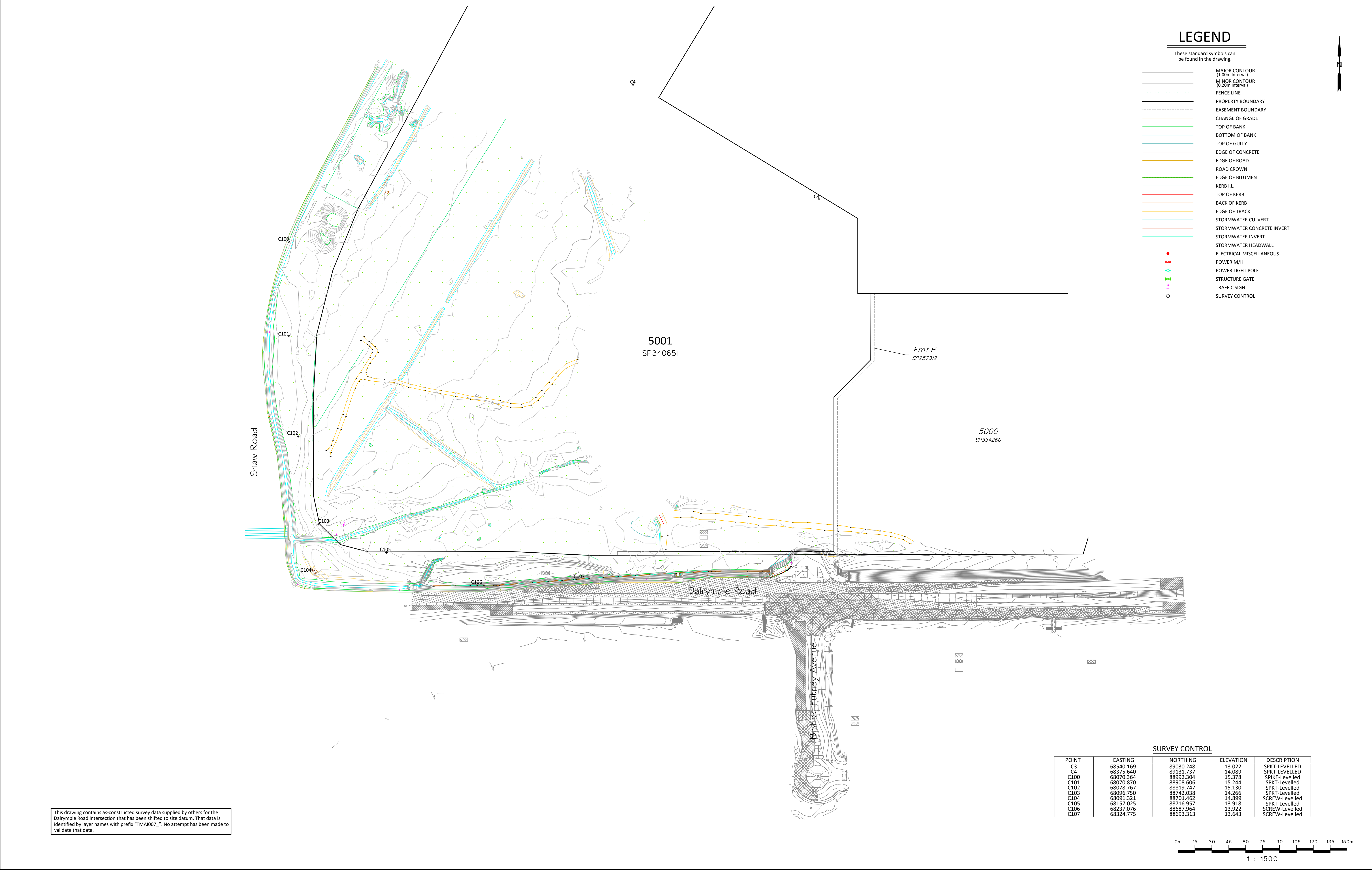
An aerial photograph showing a road intersection. A gray rectangular area highlights the proposed widening of the road, extending from the intersection point towards the top left. The surrounding landscape is dry and hilly, with some sparse vegetation and a dirt road visible in the upper left corner.



05	STAGE 1 ISSUE	7/11/24	CPA	EB	MC
04	STAGE 2 ISSUE	28/10/24	CPA	EB	MC
03	PROGRESS ISSUE	23/10/24	CPA	EB	MC
02	MASTERPLAN PROGRESS ISSUE	21/10/24	CPA	EB	MC
01	MASTERPLAN PROGRESS ISSUE	25/09/24	EB	MC	MC
ISSUE PURPOSE	DATE	D	C	A	

APPENDIX B

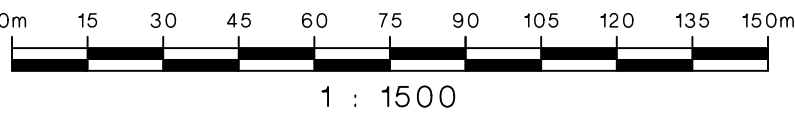
SURVEY



This drawing contains as-constructed survey data supplied by others for the Dalrymple Road Intersection that has been shifted to site datum. That data is identified by layer names with prefix "TMAI007_". No attempt has been made to validate that data.

SURVEY CONTROL

POINT	EASTING	NORTHING	ELEVATION	DESCRIPTION
C3	68540.169	89030.248	13.022	SPKT-LEVELLED
C4	68375.640	89131.737	14.089	SPKT-LEVELLED
C100	68070.364	88992.304	15.378	SPIKE-Levelled
C101	68070.870	88908.606	15.244	SPKT-Levelled
C102	68078.767	88819.747	15.130	SPKT-Levelled
C103	68096.750	88742.038	14.266	SPKT-Levelled
C104	68091.321	88701.462	14.899	SCREW-Levelled
C105	68157.025	88716.957	13.918	SPKT-Levelled
C106	68237.076	88687.964	13.922	SCREW-Levelled
C107	68324.775	88693.313	13.643	SCREW-Levelled



Revisions			
No.	Date	Details	Check
A	03.05.24	Original Issue	GEO

Level Datum: AHD Derived	
B.M. Used: PSM198049 RL:11.617	
Coordinate Projection: Plane Rectangular	
Coordinate Datum: Site Datum	
Origin of Coordinates: PSM198049	E: 68964.618
Meridian: MGA wide SP250587	N: 89294.728
Map Reference:	
Contour Interval: 0.20m	Surveyed by: NR
Job No: 26700/001-17	Drawn: MJM
File No: 26700_295A.dwg	Approved:

The title boundaries as shown hereon were not marked at the time of survey and have been determined by plan dimensions only and not by field survey. Services shown hereon have been located where possible by field survey. Prior to any demolition, excavation or construction on the site, the relevant authority should be contacted for possible location of further underground services and detailed locations of all services.

Client:

PARKSIDE DEVELOPMENT PTY LTD

Project:

DETAIL AND LEVEL SURVEY OF
PART OF LOT 5001 ON SP340651
GREATER ASCOT - DALRYMPLE ROAD

Local Authority: Townsville City Council

Locality: Shaw

Client:

3rd May, 2024

Sheet

1

 of

1

 Sheets

Scale: 1:1500

Plan No: 26700/295 A

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SURVIVING
TOWNPLANNING
PROJECTMANAGEMENT
MAPPING&GIS

APPENDIX C

CATCHMENT MAPS

Courtesy of the TCC, Bohle River Flood Study 2023, Prepared by WRM

