1517 - 1529 BASS HIGHWAY, GRANTVILLE

PROPOSED DEVELOPMENT (RETAIL / CONVENIENCE RESTAURANT / SERVICE STATION / CHILDCARE)

DRAWING NO.	DRAWING TITLE
TP00	COVER SHEET
TP01	EXISTING SITE PLAN
TP02	PROPOSED SITE PLAN
TP02.1	FOOTPATH & FENCING PLAN
TP02.2	PROPOSED CUT & FILL PLAN
TP03	GROUND FLOOR PLAN
TP04	FIRST FLOOR PLAN
TP05	SIGNAGE & ROOF PLAN
TP06	ELEVATIONS (NORTH & EAST)
TP07	ELEVATIONS (SOUTH & WEST)
TP08	ARTIST IMPRESSION - OVERALL RENDER LOCATIONS
TP09	ARTISTS IMPRESSION - RENDERS 1-4
TP10	ARTISTS IMPRESSION - RENDERS 5-8
TP11	ARTISTS IMPRESSION - RENDERS 9-12
TP12	ARTISTS IMPRESSION - RENDERS 13-16
TP13	ARTISTS IMPRESSION - RENDERS 17-20

DEVELOPMENT SUMMARY	
TOTAL SITE AREA (m^2):	7779m^2
TOTAL GROSS FLOOR AREA (m^2):	1196.4m^2
PERMEABLE AREA (m^2):	1274.5m^2
SITE COVERAGE (m^2):	2605m^2
TOTAL PARKING BAYS:	69



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Document Set ID: 11482265
Version: 1, Version Date: 22/10/2024

Rev	Description	Date
A	Site Layout Plan - Preliminary ISS	03.05.2023
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D	Town Planning Application	26.07.2023
E	TP Development Plan Amendments	17.11.2023
F	Service Lane and Referral Amendments	07.02.2024
G	RFI Response	04.10.2024

Project Number: 2223
Drawing Title: Cover Page
Project Address: 1517 - 1529 Bass Highway, Grantville

TP 00
Rev: G



LEGEND

- EXISTING SITE TREES TO REMAIN
- EXISTING SITE TREES TO BE REMOVED
- EXISTING SITE VEGETATION TO BE REMOVED
- EXISTING SITE VEGETATION TO BE RETAINED
- EXISTING NEIGHBOURING BUILDING
- SUBJECT SITE

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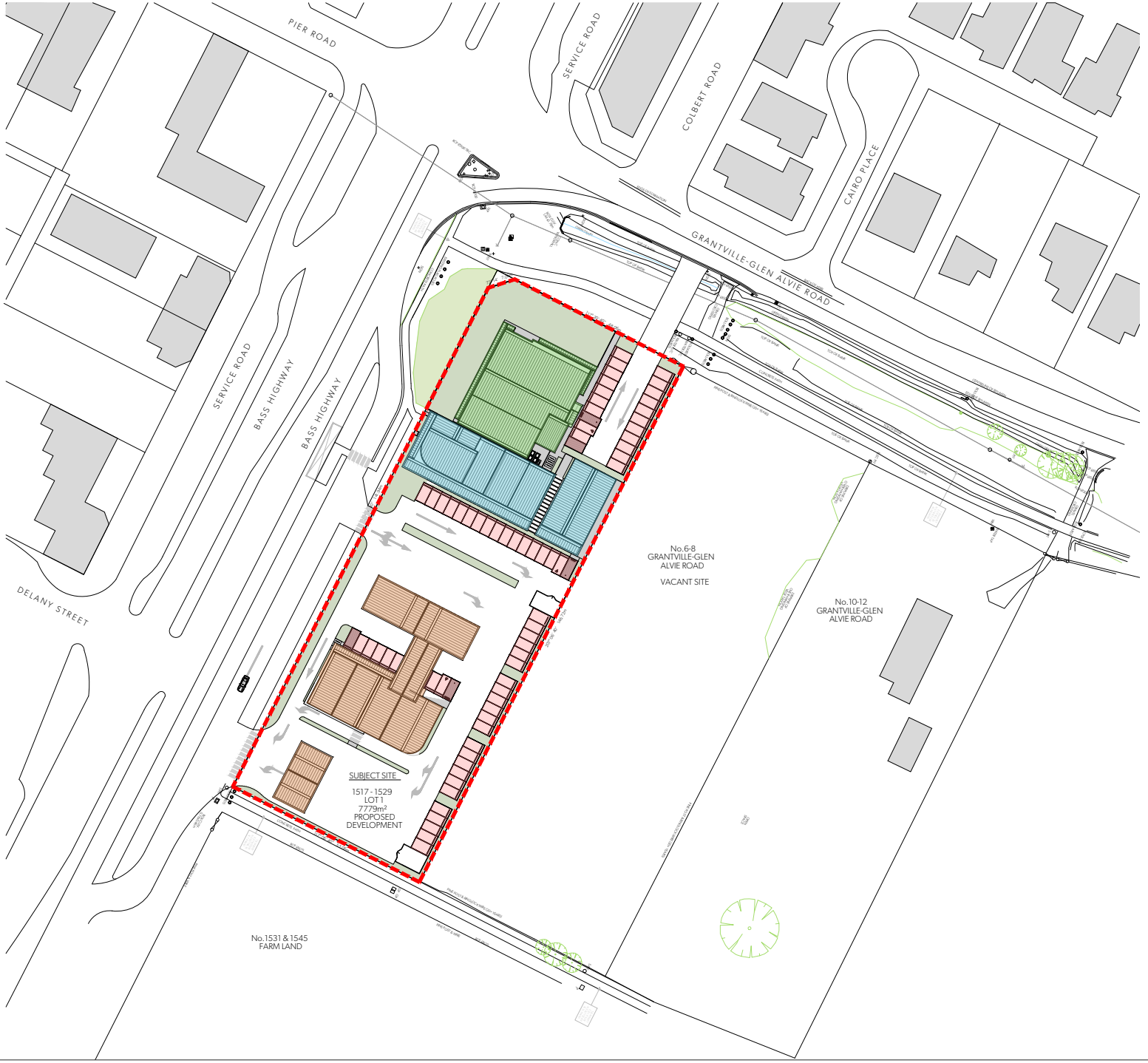
G	RFI Response	04.10.2024

N

Project Number: 2223
Drawing Title:
Existing Conditions Plan
Project Address:
1517 - 1529 Bass Highway, Grantville

TP 01
Scale: 1:500
Rev: G



LEGEND

- EXISTING SITE TREES TO REMAIN
- EXISTING SITE VEGETATION TO BE REMOVED
- EXISTING NEIGHBOURING BUILDING
- SUBJECT SITE
- CHILDCARE CENTRE
- RETAIL x 6
- SERVICE STATION / CONVENIENCE RESTAURANT
- ON-SITE PARKING BAYS

DEVELOPMENT SUMMARY / AREA SCHEDULE

SUBJECT SITE:	NO. 1517-1529 - LOT 1 LP1431
TOTAL SITE AREA (m²):	7779m²
TOTAL GROSS FLOOR AREA (m²):	1196.4m²
PERMEABLE AREA (m²):	1274.5m²
SITE COVERAGE (m²):	2605m²
TOTAL PARKING BAYS:	69

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N

Project Number: 2223
Drawing Title:
Proposed Site Plan
Project Address:
1517 - 1529 Bass Highway, Grantville

TP 02
Scale: 1:500
Rev: G



LEGEND - PROPOSED FENCING

- HEIGHT AS INDICATED ACOUSTIC FENCE 'MODULAR WALL - ACOUSTIC MAX' OR SIMILAR
- 2.1m HIGH TIMBER PALING FENCE
- 2.1m HIGH ALUMINIUM BLADE FENCE
- 2.1m HIGH COLORBOND FENCE
- 2.1m HIGH TIMBER BATTEN FENCE / SCREENING

LEGEND - PROPOSED / EXISTING FOOTPATHS

- EXISTING FOOTPATH
- PROPOSED FOOTPATH
- PROPOSED CROSSOVER

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N

Project Number: 2223
Drawing Title:
Footpath & Fencing Plan
Project Address:
1517 - 1529 Bass Highway, Grantville

TP 02.1
Scale: 1:500
Rev: G



LEGEND - PROPOSED FENCING

PROPOSED SITE FILL

PROPOSED SITE CUT

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Document Set ID: 11482255
Version: 1, Version Date: 22/10/2024

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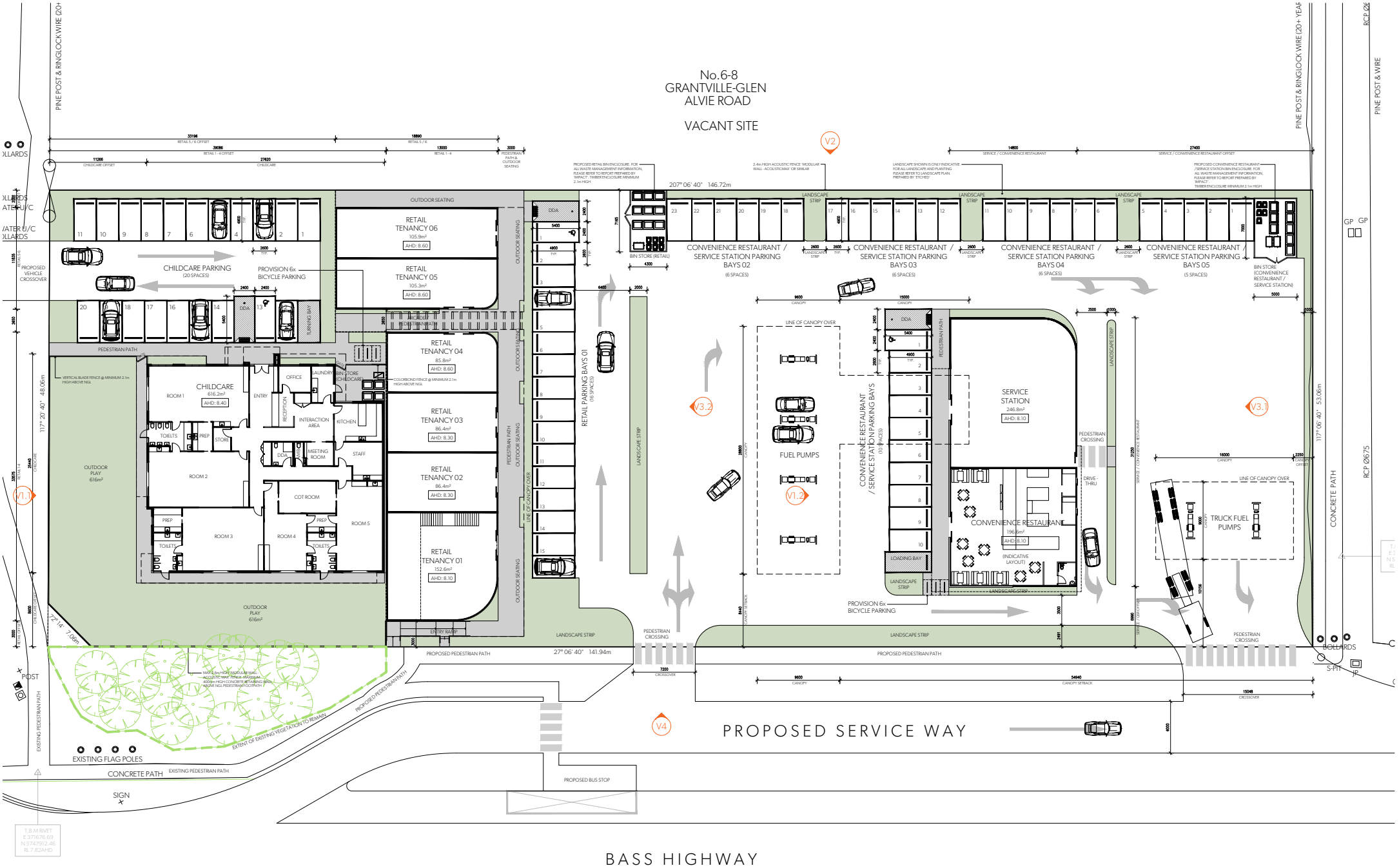
G	RFI Response	04.10.2024

N

Project Number: 2223
Drawing Title:
Proposed Cut & Fill Plan
Project Address:
1517 - 1529 Bass Highway, Grantville

TP 02.2
Scale: 1:500
Rev: G



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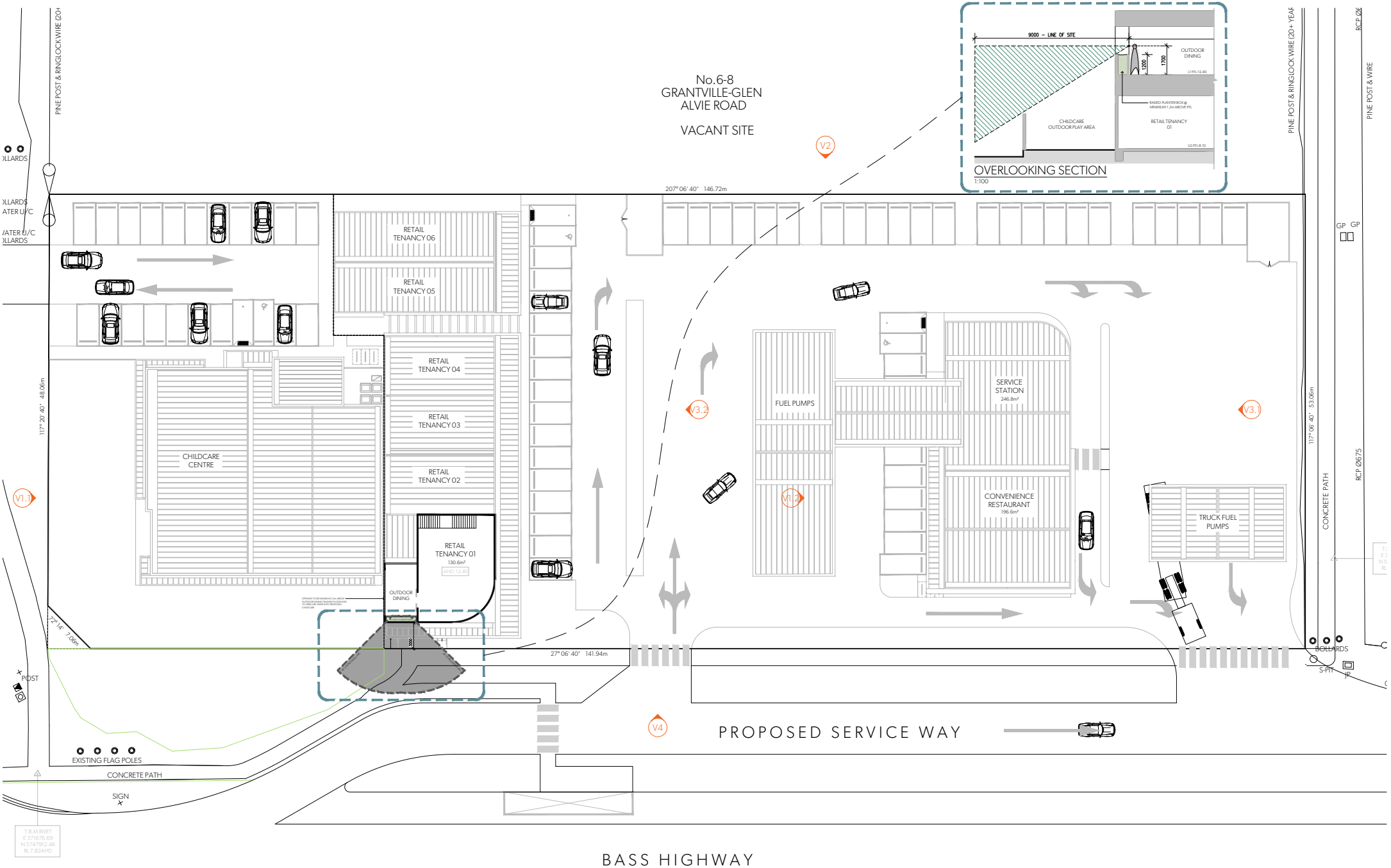
G	RFI Response	04.10.2024

N

Project Number: 2223
Drawing Title:
Site Layout & Ground Floor Plan
Project Address:
1517 - 1529 Bass Highway, Grantville

TP 03
Scale: 1:200
Rev: G



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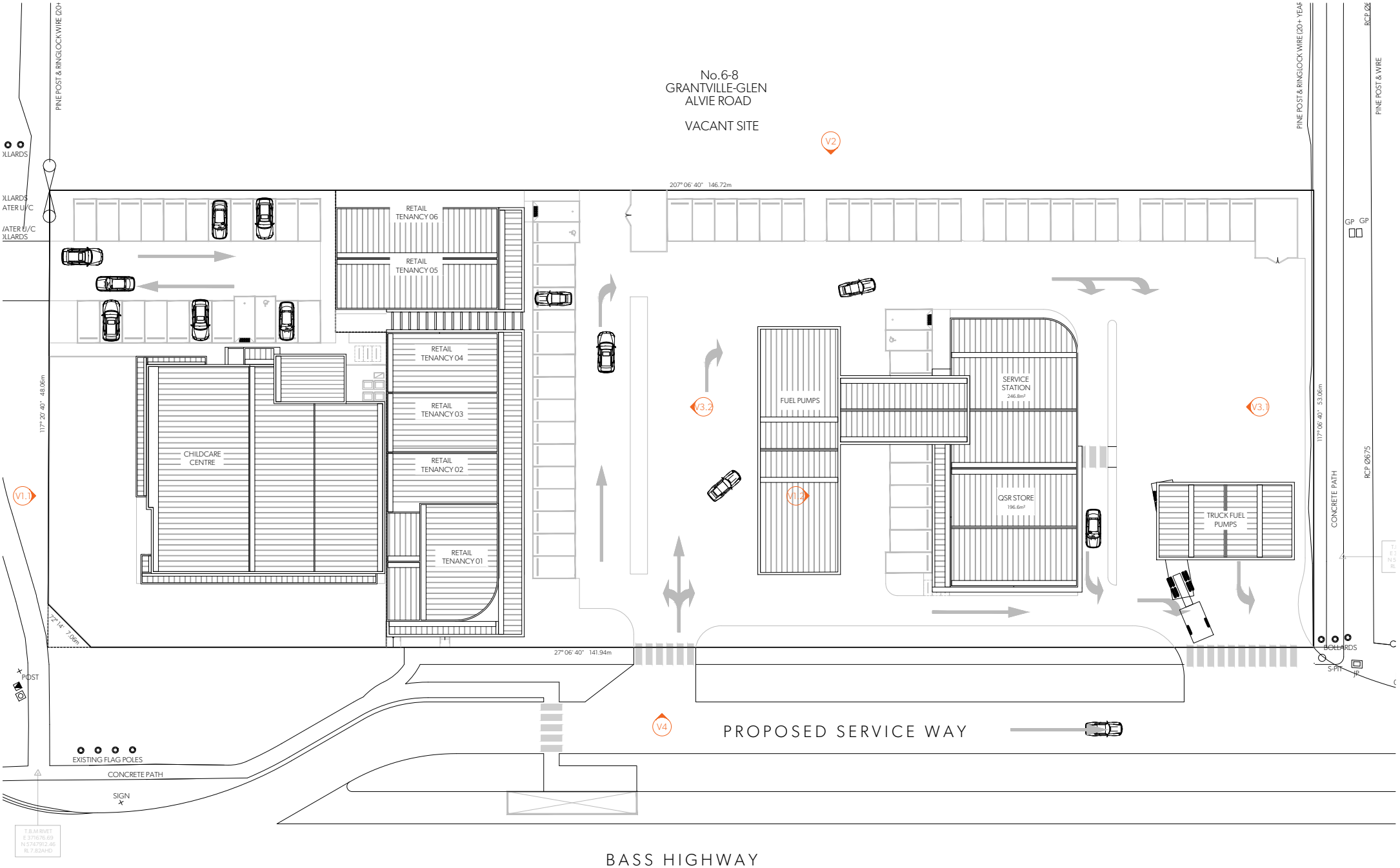
G	RFI Response	04.10.2024

N

Project Number: 2223
Drawing Title:
Site Layout & First Floor Plan
Project Address:
1517 - 1529 Bass Highway, Grantville

TP 04
Scale: 1:200
Rev: G



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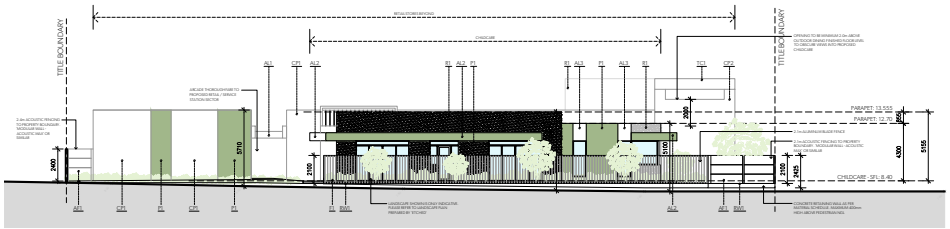
G	RFI Response	04.10.2024

N

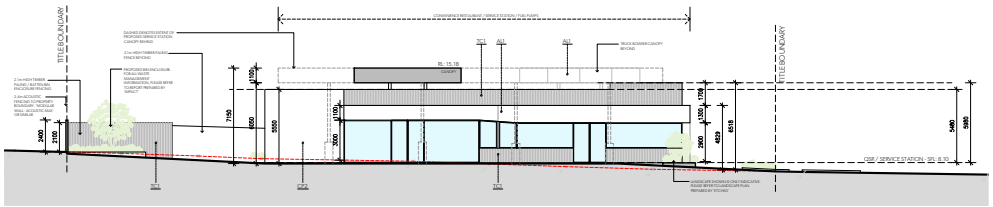
Project Number: 2223
Drawing Title:
Site Layout / Roof & Signage Plan
Project Address:
1517 - 1529 Bass Highway, Grantville

TP 05
Scale: 1:200
Rev: G



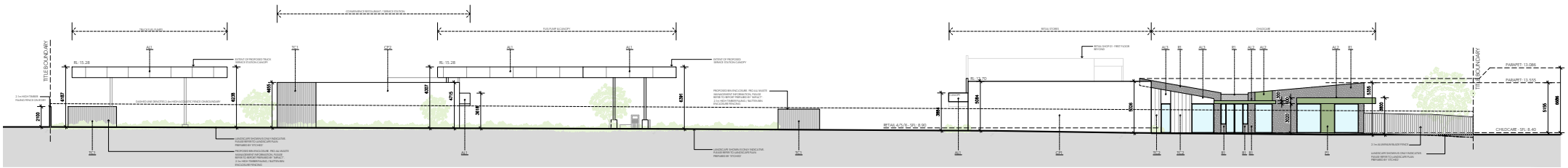
NORTH ELEVATION (VIEW OF CHILDCARE AND REAR OF RETAIL - FACING FROM GRANTVILLE-GLEN ALVIE ROAD)

1:200 - V1.1



NORTH ELEVATION INTERNAL (VIEW OF CONVENIENCE RESTAURANT & SERVICE STATION ENTRY)

1:200 - V1.2



EAST ELEVATION (VIEW OF FUEL PUMPS / CONVENIENCE RESTAURANT / SERVICE STATION / RETAIL STORES / CHILDCARE ENTRY)

1:200 - V2



AF1
LIGHT GREY ACOUSTIC FENCING - MODULAR WALL 'ACOUSTICMAX' OR

AL1
WHITE ALUMINIUM

AL2
GREEN ALUMINIUM

AL3
BLACK ALUMINIUM

CP1
CONCRETE PANEL MATTE

CP2
CONCRETE PANEL GLOSS

F1
BLACK ALUMINIUM BLADE FENCE

MS1
WHITE VERTICAL ALUMINIUM SCREEN

P1
GREEN PAINT FINISH

R1
LIGHT GREY RENDER

R1
LIGHT GREY RENDER

RW1
CONCRETE RETAINING WALL

TC1
VERTICAL TIMBER

TC2
WHITE VERTICAL BOARDS

FINISHES SCHEDULE

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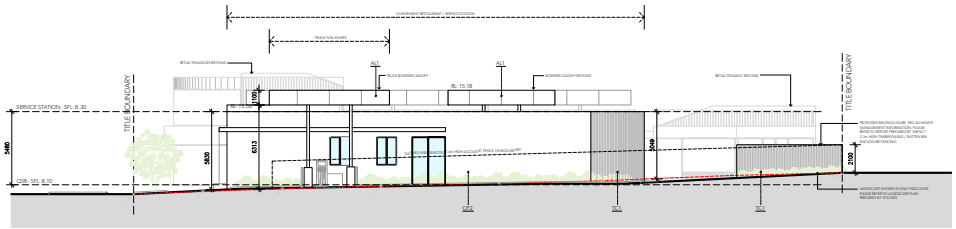
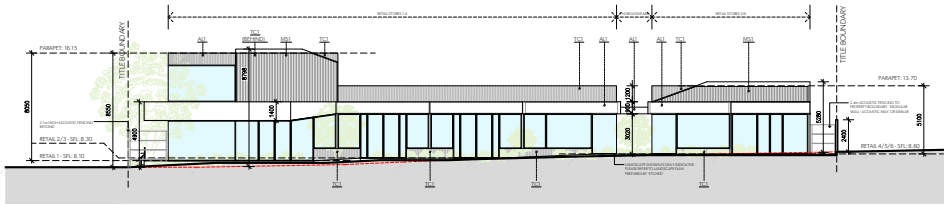
Project Number: 2223
Drawing Title:
Elevations (North & East)
Project Address:
1517 - 1529 Bass Highway, Grantville

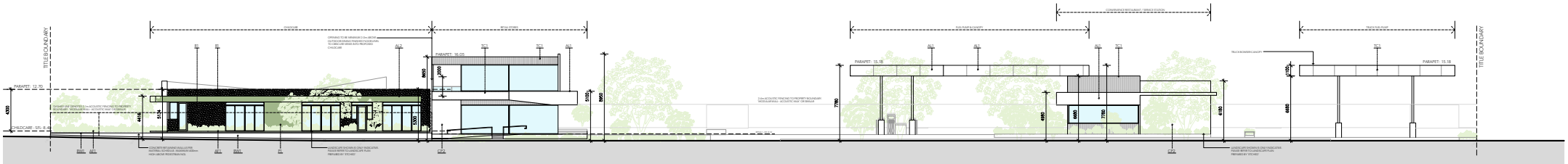
TP 06
Scale: 1:200
Rev: G



SOUTH ELEVATION (VIEW OF TRUCK FUEL PUMPS AND REAR OF CONVENIENT RESTAURANT)
1:200 V3.1



SOUTH ELEVATION INTERNAL (VIEW OF RETAIL STORES)
1:200 V3.2



WEST ELEVATION - BASS HWY (VIEW OF CHILDCARE FUEL PUMPS / RETAIL STORES / CONVENIENCE RESTAURANT / SERVICE STATION / TRUCK FUEL PUMPS)
1:200 V4



AF1
LIGHT GREY ACOUSTIC FENCING - MODULAR WALL 'ACOUSTICMAX' OR



AL1
WHITE ALUMINIUM



AL2
GREEN ALUMINIUM



AL3
BLACK ALUMINIUM



CP1
CONCRETE PANEL MATTE



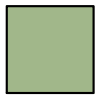
CP2
CONCRETE PANEL GLOSS



F1
BLACK ALUMINIUM BLADE FENCE



MS1
WHITE VERTICAL ALUMINIUM SCREEN



P1
GREEN PAINT FINISH



R1
LIGHT GREY RENDER



R1
LIGHT GREY RENDER



RW1
CONCRETE RETAINING WALL



TC1
VERTICAL TIMBER



TC2
WHITE VERTICAL BOARDS

FINISHES SCHEDULE

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Project Number: 2223
Drawing Title:
Elevations (South & West)
Project Address:
1517 - 1529 Bass Highway, Grantville

TP 07
Scale: 1:200
Rev: G

CHILDCARE SECTOR

COMMERCIAL SECTOR



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Project Number: 2223
Drawing Title:
Artists Impressions - Overall Render Locations
TP 08
Project Address:
1517 - 1529 Bass Highway, Grantville
Rev: G

RENDER 01 - CHILDCARE CENTRE 1



RENDER 02 - CHILDCARE CENTRE 2



RENDER 03 - CHILDCARE CENTRE 3



RENDER 04 - CHILDCARE CENTRE 4



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Project Number: 2223
Drawing Title:
Artists Impressions - Renders 1-4
Project Address:
1517 - 1529 Bass Highway, Grantville

TP 09
Rev: G

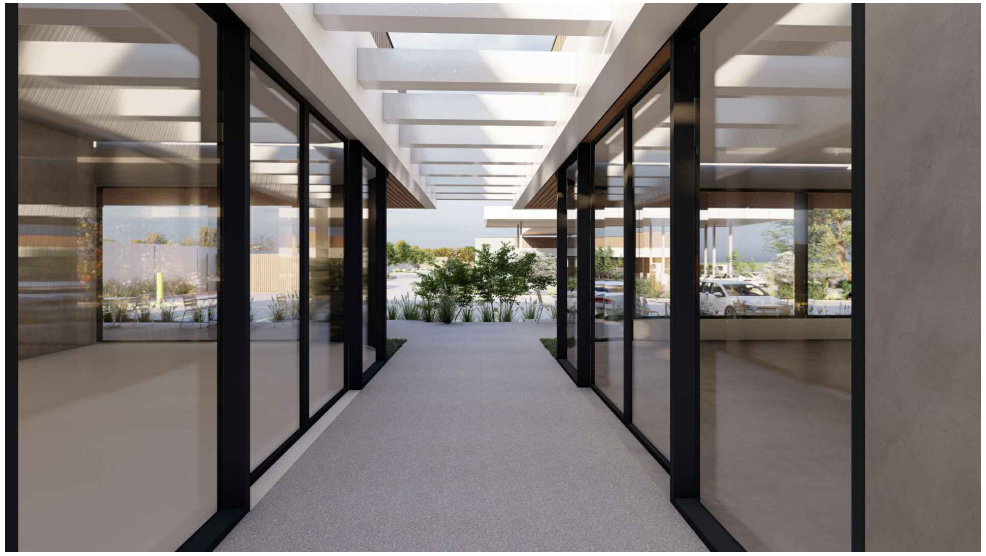
RENDER 05 - CHILDCARE CENTRE 5



RENDER 06 - CHILDCARE SECTOR / COMMERCIAL ENTRY 6



RENDER 07 - ARCADE 7



RENDER 08 - RETAIL / SERVICE STATION & QSR 8



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Project Number: 2223
Drawing Title:
Artists Impressions - Renders 5-8
Project Address:
1517 - 1529 Bass Highway, Grantville

TP 10
Rev: G

RENDER 09 - RETAIL / SERVICE STATION & QSR 9



RENDER 10 - RETAIL 10



RENDER 11 - SERVICE STATION & QSR 11



RENDER 12 - RETAIL / SERVICE STATION & QSR 12



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Project Number: 2223
Drawing Title:
Artists Impressions - Renders 9-12
Project Address:
1517 - 1529 Bass Highway, Grantville

TP 11
Rev: G

RENDER 13 - RETAIL 13



RENDER 14 - RETAIL / SERVICE STATION & QSR 14



RENDER 15 - SERVICE STATION & QSR 15



RENDER 16 - RETAIL 16



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Project Number: 2223
Drawing Title:
Artists Impressions - Renders 13-16
Project Address:
1517 - 1529 Bass Highway, Grantville

TP 12
Rev: G

RENDER 17 - RETAIL / SERVICE STATION & QSR 17



RENDER 18 - SERVICE STATION & QSR 18



RENDER 19 - SERVICE STATION & QSR 19



RENDER 20 - SERVICE STATION & QSR 20



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Rev	Description	Date
A	Site Layout Plan - Preliminary ISS	03.05.2023
B	Site Layout Plan - Re-ISS to Traffic	29.05.2023
C	Site Layout Plan - Re-ISS to Traffic (AMENDMENTS)	14.06.2023
D	Town Planning Application	26.07.2023
E	TP Development Plan Amendments	17.11.2023
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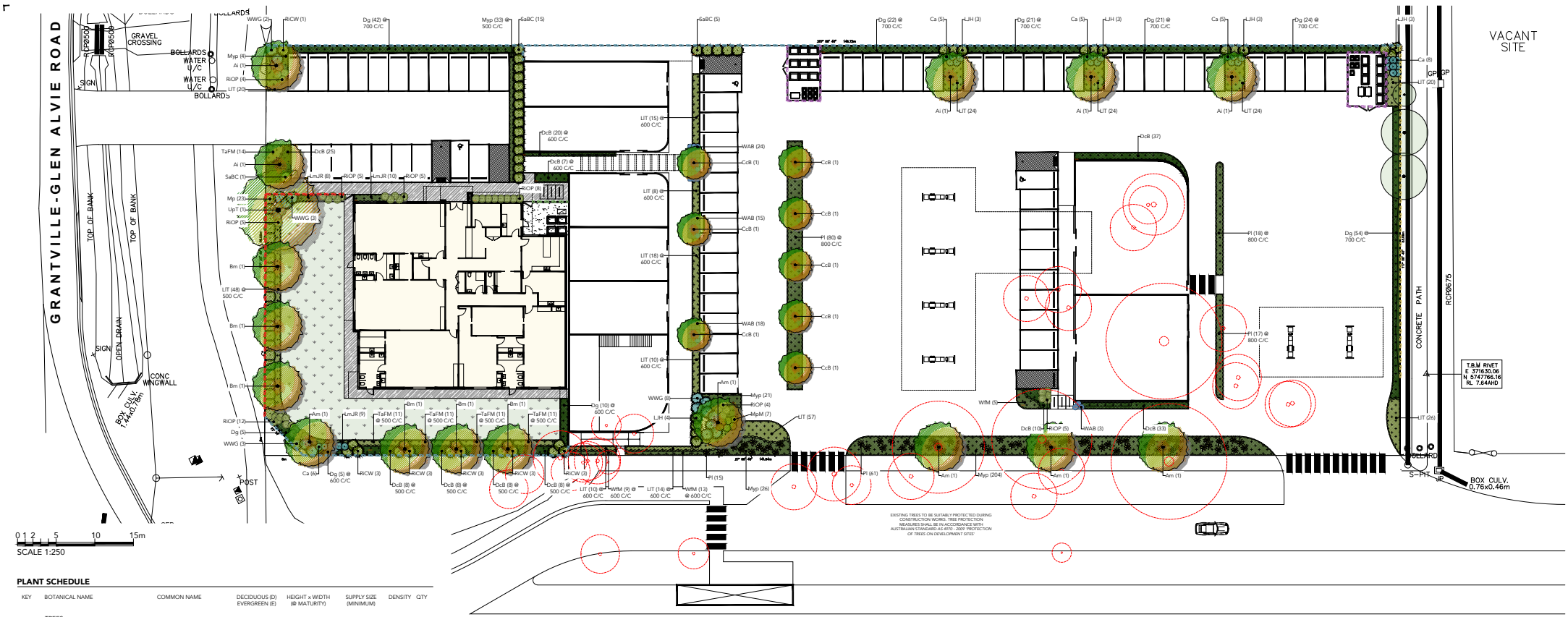


PLANT SCHEDULE

KEY	BOTANICAL NAME	COMMON NAME	DECIDUOUS (D) EVERGREEN (E)	HEIGHT x WIDTH (@ MATURITY)	SUPPLY SIZE (MINIMUM)	DENSITY	QTY
	TREES						
Ai	*Acacia implexa*	Lightwood	E	8.0 x 6.0m	2.0m Height	--	5
Am	*Acacia melanoxylon*	Blackwood	E	10.0 x 6.0m	2.0m Height	--	5
Bm	*Banksia* marginata	Silver Banksia	E	7.0 x 6.0m	2.0m Height	--	6
CcB	*Corymbia citriodora* 'Babycit'	Baby Cit Lemon-scented Gum	E	5.0 x 4.0m	1.6m Height	--	8
UpT	*Ulmus parvifolia* 'Todd'	Todd Chinese Elm	D	11.0 x 10.0m	2.0m Height	--	1
	SHRUBS						
Ca	*Correa alba*	White Correa	E	1.0 x 1.0m	140mm Pots	--	29
LJH	*Leucadendron* 'Jack Harre'	Jack Harre	E	1.5 x 1.5m	200mm Pots	--	16
Mp	*Murraya paniculata*	Orange Jessamine	E	2.0 x 1.4m	140mm Pots	--	23
MpM	*Murraya paniculata* 'Min-A-Min'	Dwarf Orange Jessamine	E	1.0 x 1.0m	140mm Pots	--	7
RiCW	*Rhaphiolepis indica* 'Cosmic White'	Cosmic White Indian Hawthorn	E	1.5 x 1.5m	140mm Pots	--	16
RiOP	*Rhaphiolepis indica* 'Oriental Pearl'	Oriental Pearl Indian Hawthorn	E	0.9 x 0.9m	140mm Pots	--	48
SaBC	*Syzygium australe* 'Bush Christmas'	Bush Christmas Lilly Pilly	E	1.5 x 1.5m	140mm Pots	--	21
WAB	*Westringia* 'Aussie Box'	Aussie Box	E	0.7 x 0.7m	140mm Pots	--	60
WWG	*Westringia* 'Wynyabbie Gem'	Wynyabbie	E	1.5 x 1.5m	140mm Pots	--	16
	GROUNDCOVERS						
DcB	*Dianella caerulea* 'Breeze'	Breeze Paroo Lily	E	0.6 x 0.7m	140mm Pots	2.5 p/m²	164
Dg	*Dietes grandiflora*	Wild Iris	E	0.7 x 0.7m	140mm Pots	1.5 p/m²	204
LIT	*Lomandra longifolia* 'Tanika'	Tanika Lomandra	E	0.6 x 0.6m	140mm Pots	2.5 p/m²	318
LmJR	*Liriope muscari* 'Just Right'	Just Right Turf Lily	E	0.5 x 0.5m	140mm Pots	2.5 p/m²	27
Myp	*Myoporum parvifolium*	Creeping Boobialla	E	0.2 x 0.7m	140mm Pots	2.0 p/m²	288
Pl	*Poa labillardieri*	Common Tussock Grass	E	0.9 x 0.9m	140mm Pots	1.5 p/m²	191
TaFM	*Trachelospermum asiaticum* 'Flat Mat'	Flat Mat Jasmine	E	0.2 x spreading	140mm Pots	3.0 p/m²	58
WfM	*Westringia fruticosa* 'Mundi'	Groundcover Rosemary	E	0.4 x 1.5m	140mm Pots	1.0 p/m²	27

NOTES:
—*Stock procurement must be from a suitable local provenance supplier (nursery) with plants to be in a healthy condition, free of pests and disease and with relevant certification.*
—*All plants must be signed off by the clients' landscape architect prior to delivery & installation to ensure adequate size and maturity.*

LEGEND

- EXISTING TREE TO BE RETAINED
- EXISTING TREE TO BE REMOVED
- PROPOSED TREE REFER PLANT SCHEDULE
- PROPOSED SHRUB REFER PLANT SCHEDULE
- PROPOSED GRASSES / GROUNDCOVERS REFER PLANT SCHEDULE
- PROPOSED LAWN AREA REFER SPECIFICATION (PERMEABLE)
- PROPOSED GRAVEL AREA (PERMEABLE) REFER SPECIFICATION
- PROPOSED PAVEMENT AREA (HARDSTAND)
- BUILDING HATCH

LEGEND - PROPOSED FENCING

- HEIGHT AS INDICATED ACOUSTIC FENCE 'MODULAR WALL - ACOUSTIC MAX' OR SIMILAR
- 2.1m HIGH TIMBER PALING FENCE
- 2.1m HIGH ALUMINIUM BLADE FENCE
- 2.1m HIGH COLORBOND FENCE
- 2.1m HIGH TIMBER BATTEN FENCE / SCREENING

SPECIFICATION NOTES

Site Preparation
Remove any concrete building material, rubbish and weeds from planting areas that will be restrictive to plant growth. Stump ground all trees marked as 'to be removed.' Imported topsoil to be a medium texture sandy loam.

Garden Beds
Existing subgrade to be dug to a depth of no less than 275mm below finished grade in garden beds to allow for 200mm topsoil and 75mm mulch. Original sub-base to be cultivated where possible. Gypsum to be spread if there is a clay sub surface. Use organic mulch on all garden bed areas.

Trees
Use three 50 x 50 x 2400 HW stakes per tree. Fasten trees to stakes with 50mm fabric tie in figure-8 loop. Existing street trees to be suitably protected. Maintain existing ground levels at the interface between the ground and the tree trunk. Area beneath the canopy should be fenced prior to the commencement of the construction activities. No excavation, filling, machinery or storage of materials shall occur within the fenced off area. Boots requiring severance beyond the tree canopy shall be clean cut with hand saw and kept moist. All roots over 40mm dia. Any roots within the fenced area should not be cut without the approval from an experienced arborist.

Planting
Planting shall be carried out using accepted horticultural practices with all plants conforming to the species, size and quantities indicated on the Landscape Plan and Plant Schedule. Plants shall be thoroughly soaked through immersion in water prior to planting and if the planting soil is very dry then the planting hole is also to be filled with water and allowed to drain completely.

All plants shall be appropriately hardened off in the nursery. Use plants with the following characteristics: Large healthy root systems with no evidence of root curl or pot-bound restriction or damage, vigorous, well established, free from disease and pests and of good form, consistent with the species or variety.

Planting holes for shrubs and groundcovers are to be of minimum size 75mm larger than the planting pot in all directions.
Semi-advanced tree planting holes are to be the same depth as the rootball and 2-3 times its diameter, with the top of the rootball being at grade.
A 75mm high berm is to be constructed at edge of root-ball to hold water. All plants are to be thoroughly watered after planting and slow release fertiliser added at the quantities specified by the manufacturer.

Mulch
Mulch is to be supplied to all garden beds and is to be an organic type laid to a minimum depth of 75mm, consisting of fine dark coloured chipped or shredded pine bark or similar with 80% of particles in the size range 10 to 20mm in plan and 5mm in thickness. No particles are to exceed 30mm in plan. Mulch shall be free of damaging matter such as soil, weeds and sticks and is to be stockpiled and thoroughly weathered prior to delivery. All mulch is to be sloped towards plant stems but shall be kept back 100mm from the stems of all plants to prevent collar rot.

Permeable Gravel Surface
75mm depth of Orthotane Toppings gravel surface is to be laid on a 50mm depth of consolidated crushed rock. Surface to be compacted using a vibrating plate.

Lawn
Soft Leaf Buffalo turf (or similar) is to be supplied to lawn areas as shown. Turf is to be supplied by a specialist grower and is not to be allowed to dry out between cutting and laying. Turf should be laid in a stretcher pattern so that joints are staggered and is to be lightly tamped following laying. All lawn areas are to be thoroughly watered following planting and fertilised with an appropriate lawn starter at the quantities recommended by the manufacturer.

Timber Edges
Provide 75 x 25mm treated pine edges to all borders between gravel paths and garden beds (and lawn), using 75x25x300mm long treated pine stakes at 1200mm maximum centres. An additional stake is to be provided at pine in the plinth.

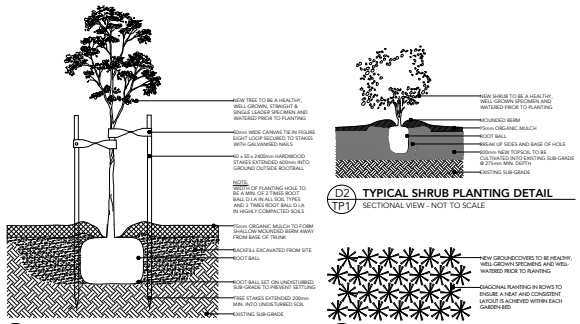
Fertiliser
Use 6-9 month osmocote suitable for Australian plants and applied at following rates:
Advanced trees: 200g per tree. 200 dia pots: 20g per pot. 150 dia pots: 15g per pot.

Irrigation
Drip irrigation to be supplied. For all shrub/ tree areas include a battery operated timer, water filter, pressure regulator backflow preventer, vacuum breakers and master valve.

Maintenance Schedule
To follow for a two year period after final completion. Work to be carried out by the owner or body corporate. Plants to be regularly checked for pests and diseases and appropriate treatments applied. Where necessary:

i. prune every 3 months to ensure good shape and remove dead limbs
ii. additional applications of osmocote as per manufacturers recommendations
iii. regular watering during summer months and dry periods
iv. replace dead plants with equally sized plants within maintenance period
v. control weeds throughout maintenance via hand and chemical means
vi. replenish mulch
vii. remove tree stakes after establishment to ensure successful ongoing health & shape of trees

INDICATIVE PLANTING DETAILS



D1 TP1 **TYPICAL TREE PLANTING DETAIL**
SECTIONAL VIEW - NOT TO SCALE

D2 TP1 **TYPICAL SHRUB PLANTING DETAIL**
SECTIONAL VIEW - NOT TO SCALE

D3 TP1 **TYPICAL GROUNDCOVER LAYOUT**
PLAN VIEW - NOT TO SCALE

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REVISION	DATE	DRAWN
-- TOWN PLANNING ISSUE	07.08.2023	RM
A. CLIENT REQUEST	21.10.2024	RM

Etched

1517—1529 BASS HIGHWAY, GRANTVILLE — PROPOSED INDUSTRIAL DEVELOPMENT
Project

LANDSCAPE PLAN
Drawing

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TOWN PLANNING ISSUE	HH	A1
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L-TP1 A
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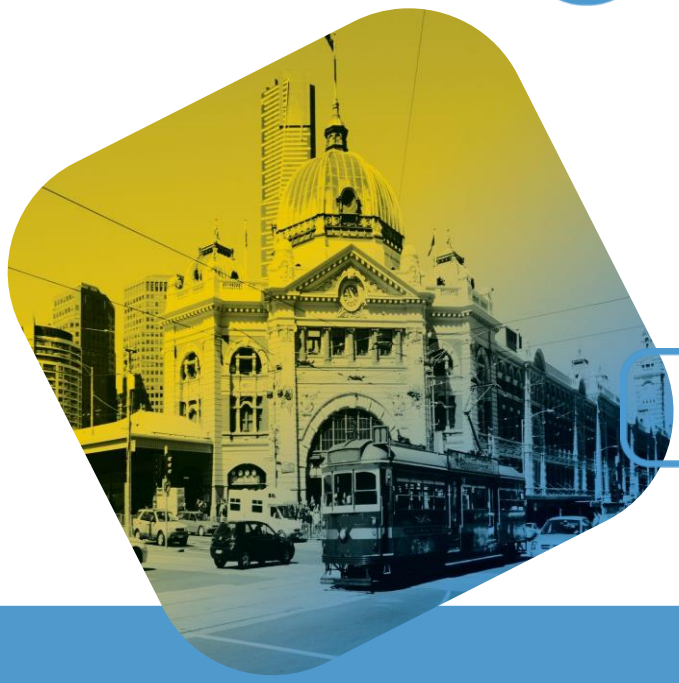
Version: 1, Version Date: 22/10/2024

38°24'30.9"S
145°31'49.2"E

Mixed-Use Development: 1517-1529 Bass Highway, Grantville



Traffic and Transport Assessment

15 October 2024
Prepared for Bass Hwy PTY LTD

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Impact

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APPENDIX B SIDRA Analysis

1 IMPACT® Snap Shot

Development Proposition		
Location	38°24'30.9"S 145°31'49.2"E	1517-1529 Bass Highway, Grantville
Use	Mixed-Use: Service Station, Convenience Restaurant, Retail & Childcare	
Yield	Service Station Convenience Restaurant Retail Childcare	12 bowsers / 250 sq.m 50 patrons / 200 sq.m 753 sq.m 88 places
Car Parking	69 spaces, including three (3) DDA compliant bays	
Bicycle Parking	Twelve (12) bicycle parking spaces	

Statutory Controls

Particular Provisions

Clause 52.06 - Car Parking

Requirement vs Provision	64 spaces required. 69 spaces provided. The provision of car parking for the childcare portion of the site satisfies the statutory car parking requirements. The remaining portion of the site is expected to generate an absolute peak demand of 51 spaces, compared to a provision of 49 spaces.
Adequacy of Provision	Whilst marginally short of the anticipated demand, this provision is considered appropriate in this context noting: - The high likelihood of shared trips (noting visitors to the land are likely to visit multiple different uses when coming to the site); and - The additional on-street parking available immediately adjacent the subject site (which can be leveraged with minimal impact on the operation or amenity of the area)
Design	The proposed car parking layout and accessways have been assessed and determined to have satisfied the relevant design guidelines.

ð Clause 52.29 - Land Adjacent to the Principal Road Network

Requirement	The proposal seeks to alter access within the Principal Road Network, and hence a permit under Clause 52.29 is required. The site is expected to generate up to 257 peak hour vehicle movements to / from Bass Highway.
Effect on the operation of the road and on public safety	This traffic will be split across two crossovers (one left-in only and one left-out only). A SIDRA intersection assessment confirms this level of traffic travelling through the Bass Highway / Grantville-Glen Alvie Road intersection is not expected to have any material impact on the operation of the road. Additionally, the proposed service lane and site access have been designed to satisfy relevant design standards (including allowance for a 45 metre deceleration length from the highway for vehicles entering the site). To this end, the proposal is not expected to have any adverse effects on Bass Highway or on public safety.

Clause 52.34 - Bicycle Facilities

Requirement vs Provision	11 bicycle parking spaces required. 12 bicycle parking spaces proposed.
Adequacy of Provision	The bicycle parking provision exceeds the statutory requirement, and is therefore considered satisfactory.

Clause 65.01 - Loading Arrangements

Design Considerations	The proposed loading arrangements have been assessed and determined to have satisfied the relevant design guidelines / principles contained within Clause 65.01 and AS2890.2:2018.

Traffic Considerations

Traffic Generation	The development is expected to generate a total of 336 movements in the AM peak, which will largely be attributed to diverted trips to the service station.
Traffic Impact	Post-development analysis using SIDRA shows the Bass Highway / Grantville-Glen Alvie Road intersection will operate well within the intersection practical degree of saturation with motorists experiencing manageable delays and queues. These results are consistent with the results / performance shown for the previously approved application for this site.

Conclusion

- The proposed development satisfies relevant statutory requirements and where the statutory requirements are not explicitly met, the development is deemed to satisfy decision guidelines that allow for a reduction or waiver of the said requirement.
- There are no traffic and transport grounds that should prohibit the issue of a permit.

2 Introduction

2.1 Engagement

IMPACT® have been engaged by Bass Hwy PTY LTD to undertake a Traffic and Transport Impact Assessment for the proposed mixed-use development at 1517-1529 Bass Highway, Grantville.

A permit (210196) was issued approving the subject site to be constructed as mixed-use site comprising a service station, convenience restaurant and retail tenancies, subject to conditions.

A new application is now being lodged which considers a revised yet similar proposal to that which was previously approved. The main modification being the addition of a childcare on the northern side of the site (whilst the remaining uses are generally consistent with what was previously endorsed).

The following report has been prepared to assess the appropriateness of the proposed parking provisions and vehicle access for the current application.

2.2 Scope of Engagement

This Traffic and Transport Impact Assessment has been prepared to accompany a town planning submission.

In preparing this assessment we have referenced the following:

- Development plans prepared by Rise Architecture;
- Bass Coast planning permit 210196;
- Traffic report prepared by O'Brien Traffic (12-08-21)
- Previous development plans prepared by Idle Architecture Studio;
- Bass Coast Planning Scheme, specifically:
  - Clause 52.06 - Car Parking;
  - Clause 52.24 - Bicycle Facilities;
  - Clause 52.29 - Land Adjacent to the Principal Road Network
  - Clause 65.01 - Approval of an Application or Plan
  - Australian Standard AS2890.1:2004, and AS2890.6:2009.

3 Existing Conditions

3.1 Location

The subject site is located on the south-eastern corner of the intersection of Bass Highway and Grantville-Glen Alvie Road as illustrated in Figure 1 and Figure 2.

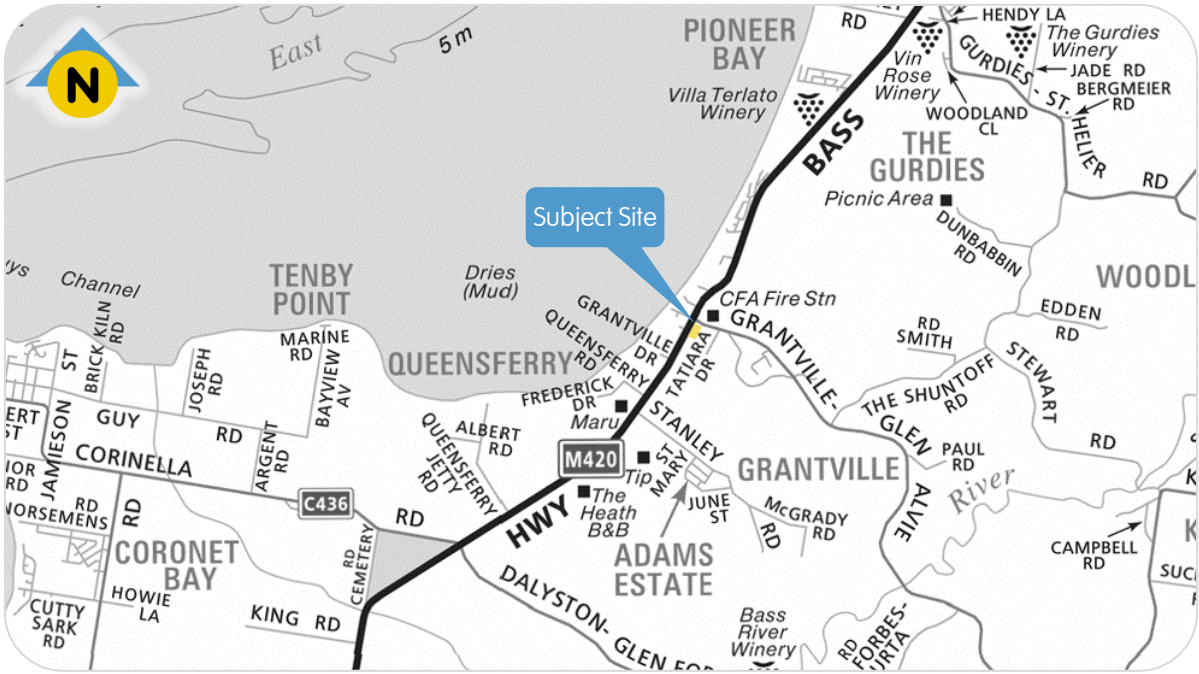


Figure 1 Location of Subject Site



Figure 2 Aerial View of Subject Site

The site is symmetrical in shape with frontages to Bass Highway to the west & Grantville-Glen Alvie Road to the north.

3.2 Planning Zone

The subject site is located within the Mixed Use Zone as illustrated in Figure 3.

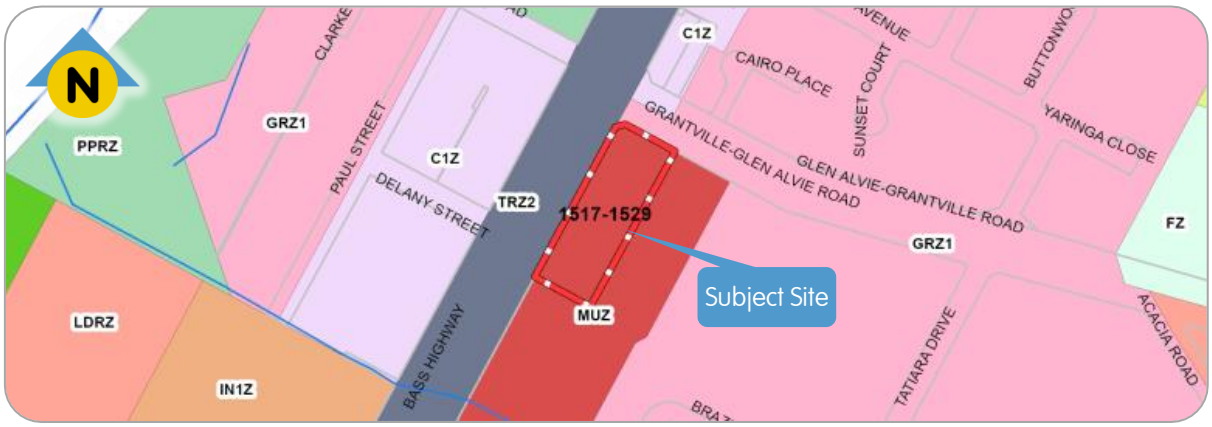


Figure 3 Land Use Planning Zone

The purpose of this zone is to provide for a range of residential, commercial, industrial and other uses which complement the mixed-use function of the locality.

3.3 Road Network

3.3.1 Bass Highway

Classified as Primary State Arterial Road. Aligned in a northeast southwest direction between South Gippsland Highway to the north and Williams St to the south where it continues as Inverloch-Venus Bay Road.

Along the site frontage, Bass Highway comprises an approximate 35 metre road pavement that provides two (2) trafficable lanes on its east and west carriageways, in addition to auxiliary left and right turn lanes at its signalised intersections. Opposite the subject site a one-way service road provides access to 90-degree car parking spaces. Its typical cross-section is illustrated in Figure 4.



Figure 4 View of Bass Highway facing south adjacent the subject site

3.3.2 Grantville-Glen Alvie Road

Classified as a local major road. Generally aligned in an east-west direction between Bass Highway to the west and Loch-Wonthaggi Road to the west

Along the site frontage, Grantville-Glen Alvie Road comprises an approximate eight (8) metre road pavement that provides one (1) trafficable lane in each direction, in addition to auxiliary left turn lanes at its signalised intersections. Its typical cross-section is illustrated in Figure 5.



Figure 5 View of Grantville-Glen Alvie Road facing east adjacent the subject site

3.4 Public Transport

The site has limited access to public transport, with a bus stop located adjacent the site on Bass Highway. This provides access to a V/Line run bus route to the nearby towns of Cowes, Wonthaggi and Inverloch as well as Koo Wee Rup and Melbourne.

3.5 Existing Traffic Conditions

IMPACT® has commissioned Trans traffic Survey to undertake pneumatic tube count surveys of the southbound carriageway along site frontage to Bass Highway. The pneumatic tube count surveys were undertaken across a weeklong period from Monday 15th May to Monday 22nd May 2023. A review of the tube count surveys indicates the following average weekday daily, AM and PM movements:

- Weekday Daily Vehicle Movements 6,677
- Average AM Peak (11:00am - 12:00pm) Vehicle Movements 458
- Average PM Peak (4:00pm - 5:00pm) Vehicle Movements 587

Figure 6 overleaf illustrates the average weekday, daily traffic profile.

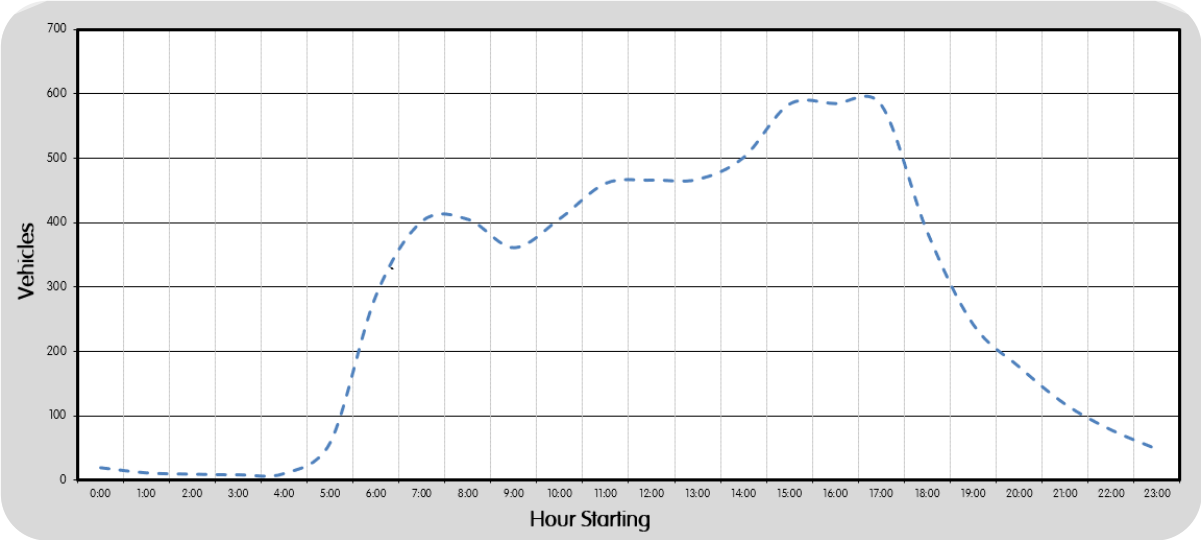


Figure 6 Average Weekday, Daily Traffic Profile

3.5.1 Traffic Volumes

In addition to the aforementioned tube counts, an intersection turning movement count survey was taken at the intersection of Bass Highway / Grantville-Glen Alvie Road / Pier Road on Tuesday 16th of May 2023.

The survey indicated that the AM peak will occur at 7:15am - 8:15am whilst the PM peak occurs at 3:45 - 4:45pm. This data will be utilised as part of the intersection assessment as described in Section 6.3.

See Figure 7 for an illustration of the peak period turning movements at this intersection.

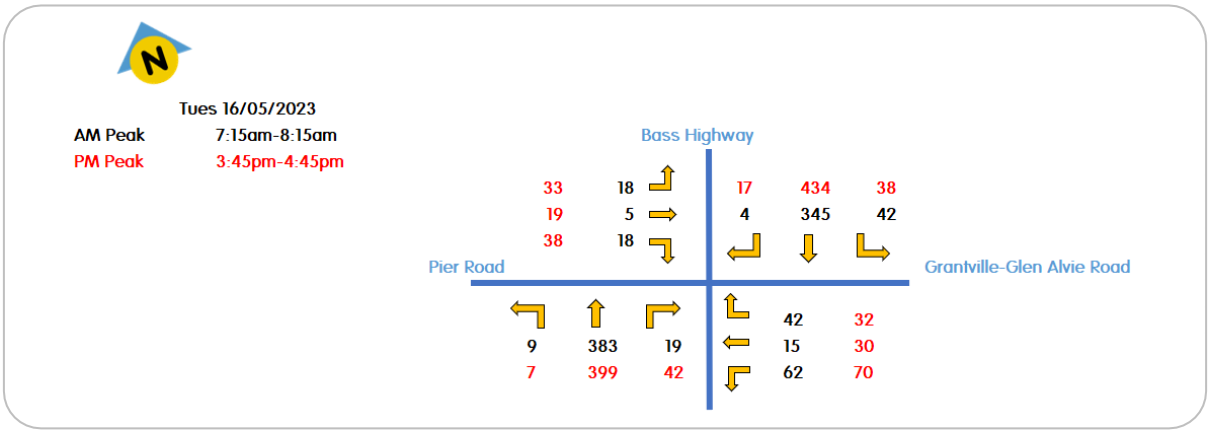


Figure 7 Vehicle Turning Movement Counts

It is noted that according to the tube count surveys, the busiest AM peak period occurs on Monday and the PM peak period occurs on Fridays. For the purposes of a conservative assessment the through movements observed on Tuesday southbound on Bass Highway have been factored up to match the busier peak periods.

3.5.2 Intersection Capacity - SIDRA analysis

The predevelopment operation of the critical intersection (Bass Highway / Grantville-Glen Alvie Road) was analysed using SIDRA Intersection 9.1.

Critical outputs of this network analysis software are:

Degree of Saturation (D.O.S.) - Defined as the ratio of the volume of traffic observed making a movement compared to the maximum capacity for that movement. These are rated as follows:

D.O.S.	Rating
Up to 0.6	Excellent
0.6 to 0.7	Very Good
0.7 to 0.8	Good
0.8 to 0.9	Fair
0.9 to 1.0	Poor
Above 1.0	Very Poor

A degree of saturation (DoS) greater than 1.0 indicates oversaturated conditions. When undertaking capacity analysis, consideration is best given to the practical degree of saturation, which is stated by Author of the SIDRA software as ranging between 0.8 to 0.95.

95th Percentile (95%ile) Queue - Defined as the maximum queue length, in metres, that can be expected in 95% of observed queue lengths in the peak hour; and

Average Delay - Defined as the delay time, in seconds, which can be expected over all vehicles making a movement in the peak hour.

3.5.3 Results - SIDRA Analysis

Table 1 Existing Conditions - Bass Highway / Grantville-Glen Alvie Road

	Approach	Degree of Saturation	95th%ile Queue	Average Delay
Bass Highway / Grantville-Glen Alvie Road				
AM Peak	North	0.30	61 metres	33 seconds
	South	0.33	67 metres	35 seconds
	East	0.24	32 metres	28 seconds
	West	0.13	16 metres	48 seconds
	Intersection	**0.33**	**67 metres**	**34 seconds**
PM Peak	North	0.37	73 metres	35 seconds
	South	0.38	69 metres	38 seconds
	East	0.27	33 metres	26 seconds
	West	0.28	35 metres	49 seconds
	Intersection	**0.38**	**73 metres**	**36 seconds**

The analysis reveals that Bass Highway / Grantville-Glen Alvie Road operates with an 'excellent' rating during both the AM and PM peak periods.

4 Development Proposition

4.1 Use and Yield

4.1.1 Previouly Approved Development

The site at 1517-1529 Bass Highway, Grantville is approved for development as a mixed-use development.

The previously approved development comprised the following uses:

Table 2 Approved Development Summary

Use	Size / Area
Service Station (incl. convenience shop & restaurant)	12 bowsers / 320 sq.m
Convenience Restaurant	460 sq.m
Retail	610 sq.m across five (5) tenancies

4.1.2 Current Proposal / Development

A new application / permit is now being sought - albeit with a similar scheme to the previously approved proposal.

It is still planned to develop the site as a mixed use development comprising a service station, convenience restaurant and retail tenancies.

This application however considers a new child care use on the northern side of the subject site in place of one of the previous convenience restaurant tenancies.

The proposed uses and areas are outlined in Table 3.

Table 3 Proposed Development Summary

Use	Size / Area
Service Station (incl. convenience shop)	12 bowsers / 247 sq.m
Convenience Restaurant	50 patrons / 197 sq.m
Retail	753 sq.m across six (6) tenancies
Childcare	88 places

4.2 Parking

A total of 69 parking spaces are proposed split across two separate car parks comprising the following:

- A car park servicing the childcare is proposed with 20 spaces including one (1) DDA compliant space.
- A total of 49 car parking spaces are proposed to service the service station, convenience restaurant and retail tenancies including two (2) DDA compliant spaces.

Additionally, a small loading bay is proposed to be provided adjacent the service station / convenience restaurant.

4.3 Access Arrangements

The access arrangements are illustrated in Figure 8.

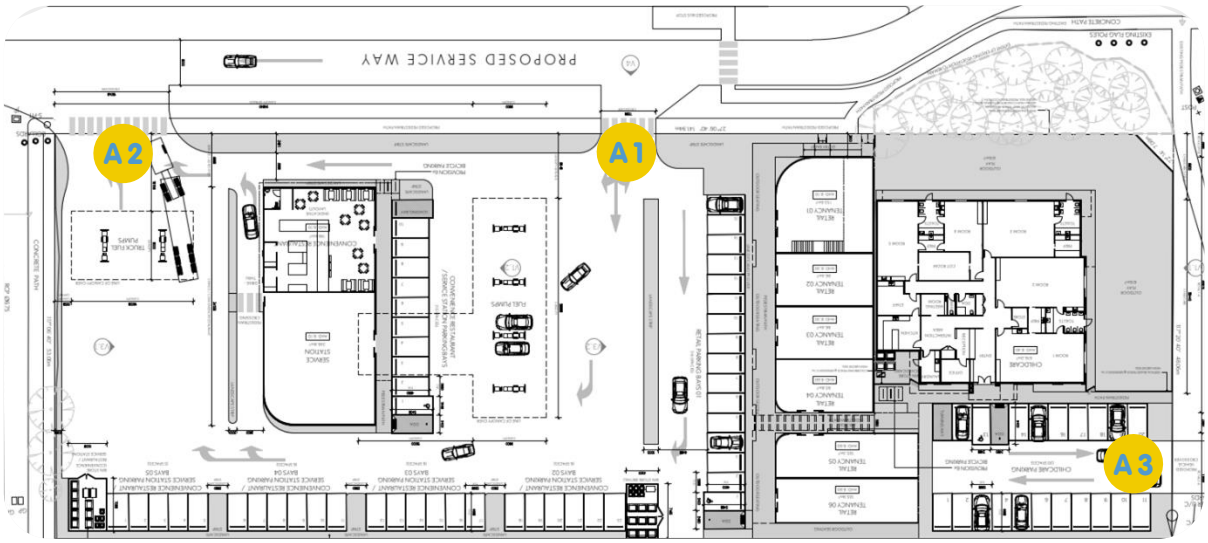


Figure 8 Crossover Locations

These access points will operate as follows:

Crossover A1 Entry point for access to the service station, convenience restaurant & retail tenancies.

Crossover A2 Exit point for the service station, convenience restaurant & retail tenancies.

Crossover A3 Will provide access to the childcare carpark.

Note:

In line with the previously approved application, the service lane on Bass Highway will need to be constructed for the length of the subject site to facilitate these access arrangements.

5 Statutory Controls

The relevant traffic and transportation Statutory Controls are:

Particular Provisions

- Clause 52.06 - Car Parking
- Clause 52.29 - Land Adjacent to the Principal Road Network
- Clause 52.34 - Bicycle Facilities
- Clause 65.01 - Approval of an Application or Plan

5.1 Clause 52.06 - Car Parking

5.1.1 Purpose

The purpose of Clause 52.06 is:

- To ensure that car parking is provided in accordance with the Municipal Planning Strategy and Planning Policy Framework.
- To ensure the provision of an appropriate number of car parking spaces having regard to the demand likely to be generated, the activities on the land and the nature of the locality.
- To support sustainable transport alternatives to the motor car.
- To promote the efficient use of car parking spaces through the consolidation of car parking facilities.
- To ensure that car parking does not adversely affect the amenity of the locality.
- To ensure that the design and location of car parking is of a high standard, creates a safe environment for users and enables easy and efficient use.

5.1.2 Provision and Design Requirements

To satisfy the above purpose, Clause 52.06 of the Bass Coast Planning Scheme specifies requirements relating to the provision and design of car parking as follows:

5.1.3 Car Parking Provision Requirements - Clause 52.06-5

Table 1 to Clause 52.06-05 of the Bass Coast Planning Scheme provides rates for various land uses. The following rates apply to the various uses contemplated on the site:

Convenience Restaurant	0.3 spaces to each patron permitted
Retail Premises	4 spaces to each 100 sqm of leasable floor area
Child Care Centre	0.22 spaces to each child
Service Station	To the satisfaction of Council

Application of the above rates reveals a requirement for a total of **64** car parking spaces comprising:

Convenience Restaurant	50 patrons	15 spaces
Retail Premises	753 sq.m	30 spaces
Child Care Centre	88 children	19 spaces

5.1.4 Car Parking Provision versus Requirment

The following table provides a breakdown of the proposed parking provision against the Statutory Requirement.

Table 4 Parking Provisions versus Statutory Requirement

Component	Required Parking	Proposed Provision
Childcare Centre	19 spaces	20 spaces
Convenience Restaurant	15 spaces	49 spaces
Retail	30 spaces	
Service Station	To the satisfaction of Council	

We note that where no rate is provided for a particular use, parking is to be provided to the satisfaction of Council.

Accordingly, the following car park demand assessment has been prepared to discuss the parking demand associated with the development as a whole.

5.1.5 Car Park Demand Assessment

Child Care

For the purposes of this assessment, it is assumed that the child care component of the land will generate parking demands in accordance with the statutory requirement (19 spaces).

It is planned to provide this area of the site with 20 spaces in total, exceeding this statutory requirement.

This is considered appropriate in the context of the land.

Note:

> This portion of the site is separate from the remaining uses - and will not likely share parking opportunities / spaces with the other uses.

Convenience Restaurant, Retail Premises & Service Station

The convenience restaurant has been nominated with a capacity of up to 50 patrons, which will generate a peak demand for 15 parking spaces, based on the statutory requirements.

It is also conservatively assumed that the retail components of the site can generate a demand in line with the statutory requirement (30 spaces in total)

Service stations, with ancillary convenience stores typically generate low car parking demands, as the majority of customers of the convenience stores also purchase fuel and hence do not typically 'occupy' a parking space in their own right. Instead, vehicles are 'parked' at the bowser which serves as a 'quasi' car park.

The parking demands for the service station are therefore accommodated at the bowser. The development plans allow for two (2) cars to be parked either side of each bowser, clear of circulating traffic

Outside of cars parked adjacent to the bowsers, we note that the traffic report prepared for the previous proposal, prepared by O'Brien Traffic, assumed a demand for the convenience store of 1-2 staff car spaces and 2-3 customer spaces, for a total demand of 3-5 spaces.

Car parking surveys of similar service stations with convenience stores undertaken by NSW Roads and Maritime Services' report 'Trip Generation Surveys - Service Stations' published in June 2013 indicate peak car parking demands (other than cars parked at a bowser) in the order of up to six (6) spaces.

A conservative demand for up to **6 spaces** not associated with petrol filling activities is therefore projected.

5.1.6 Responsible Authority Considerations

Parking Demand Assessment

As above, the main portion of the site is expected to generate a demand for up to 51 parking spaces.

The proposed provision for this portion of the site is 49 spaces, marginally short of the peak demand anticipated.

Likelihood of Multi-Purpose Trips

If the main portion of the site was treated as three separate components in isolation, the anticipated demand (51 spaces) would marginally exceed the planned provision (49 spaces).

We note however that the uses proposed are likely to integrate with one another, generating 'shared trips' which will ultimately reduce the level of parking expected to occur on the site.

For example, it is highly likely that people travelling to the service station to get fuel may also visit the convenience restaurant.

Or people eating at the convenience restaurant may then choose to visit the retail stores before or after they have finished eating.

Noting the above, the anticipated demand of 51 spaces is considered conservative and unlikely to occur on-site, in practice parking demands are likely to be less - with trips to the various uses being shared between one car space.

Availability of Alternative Car Parking

In addition to the on-site parking provision, we note that the service lane will ultimately be constructed with on-street parking bays available for use by the public.

These spaces (particularly those immediately adjacent the site) will be conveniently located such that users to the land may choose to use these spaces instead of entering the subject site itself.

In the context of the subject site, it is expected that these spaces could reasonably be relied upon without any detrimental impact on the operation of the road network or local amenity.

5.1.7 Adequacy of Proposed Provision

Based on the foregoing, we are satisfied that the proposed provision for the main portion of the site (49 spaces) will be able to comfortably cater to the uses proposed within this portion of the land.

5.1.8 Conclusion - Car Parking Provision

We can conclude that an adequate number of spaces are provided to cater for the projected demand.

Accordingly, the development proposition satisfies the purpose of Clause 52.06, specifically:

- To ensure the provision of an appropriate number of car parking spaces having regard to the demand likely to be generated, the activities on the land and the nature of the locality.

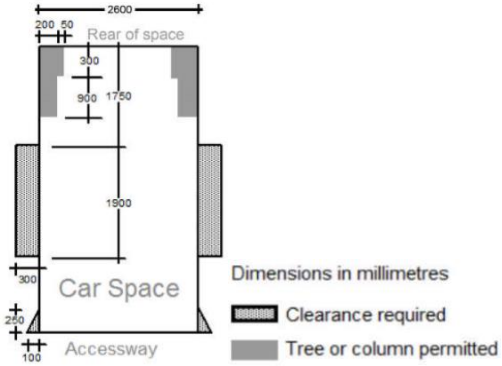
5.1.9 Design Standard for Car Parking - Clause 52.06 - 9

We have assessed the proposed car parking design and access arrangements against the requirements of Clause 52.06-9 of the Bass Coast Planning Scheme. Our findings are as follows:

5.1.9.1 Design Standard 1 - Accessways

Requirements		Design Response	Status
Accessways Must:			
1	Be at least 3 metres wide.	Accessways are at least 3.5 metres wide throughout.	**Comply**
2	Have an internal radius of at least 4 metres at changes of direction or intersection or be at least 4.2 metres wide.	Accessways exceed 4.2 metres in width at changes of direction.	**Comply**
3	Allow vehicles parked in the last space of a dead-end accessway in public car parks to exit in a forward direction with one manoeuvre.	A turning bay has been provided for the childcare car park to ensure vehicles can circulate and move out of this car park.	**Comply**
4	Provide at least 2.1 metres headroom beneath overhead obstructions, calculated for a vehicle with a wheel base of 2.8 metres.	At least 2.1 metres headroom has been provided to overhead obstructions.	**Comply**
5	If the accessway serves four or more car spaces or connects to a road in a Transport Zone 2 or Transport Zone 3, the accessway must be designed so that cars can exit the site in a forward direction.	Vehicles can exit the site in a forward direction.	**Comply**
6	Provide a passing area at the entrance at least 6.1 metres wide and 7 metres long if the accessway serves ten or more car parking spaces and is either more than 50 metres long or connects to a road in a Transport Zone 2 or Transport Zone 3.	The childcare car park is provided with a suitable passing area. The service station, retail and convenience restaurant portion of the site is serviced by a dedicated one-way entry and dedicated one-way exit.	**Comply**
7	Have a corner splay or area at least 50 percent clear of visual obstructions extending at least 2 metres along the frontage road from the edge of an exit lane and 2.5 metres along the exit lane from the frontage, to provide a clear view of pedestrians on the footpath of the frontage road. The area clear of visual obstructions may include an adjacent entry or exit lane where more than one lane is provided, or adjacent landscaped areas, provided the landscaping in those areas is less than 900mm in height.	Suitable pedestrian sight splays have been provided.	**Comply**
8	If an accessway to four or more car parking spaces is from land in a Transport Zone 2 or Transport Zone 3, the access to the car spaces must be at least 6 metres from the road carriageway.	All proposed car parking is more than 6 metres from the road carriageway.	**Comply**

5.1.9.2 Design Standard 2 - Car Parking Spaces

<table>
<tr><th></th><th>Requirements</th><th>Design Response</th><th>Status</th></tr>
<tr><td>1</td><td>Car parking spaces and accessways must have the minimum dimensions in Table 2 of Clause 52.06-9.
<table>
<tr><th>Angle of car parking spaces to access way</th><th>Accessway width</th><th>Car space width</th><th>Car space length</th></tr>
<tr><td>Parallel</td><td>3.6 m</td><td>2.3 m</td><td>6.7 m</td></tr>
<tr><td>45°</td><td>3.5 m</td><td>2.6 m</td><td>4.9 m</td></tr>
<tr><td>60°</td><td>4.9 m</td><td>2.6 m</td><td>4.9 m</td></tr>
<tr><td>90°</td><td>6.4 m</td><td>2.6 m</td><td>4.9 m</td></tr>
<tr><td></td><td>5.8 m</td><td>2.8 m</td><td>4.9 m</td></tr>
<tr><td></td><td>5.2 m</td><td>3.0 m</td><td>4.9 m</td></tr>
<tr><td></td><td>4.8 m</td><td>3.2 m</td><td>4.9 m</td></tr>
</table></td><td>Car parking provided is 2.6 meters wide by 4.9 metres long with an aisle of at least 6.4 metres.</td><td>Comply</td></tr>
<tr><td>2</td><td>A wall, fence, column, tree, tree guard or any other structure that abuts a car space must not encroach into the area marked 'clearance required' on Diagram 1 other than:
A column, tree or tree guard, which may project into a space if it is within the area marked 'tree or column permitted' on Diagram 1 of the design standard
A structure, which may project into the space if it is at least 2.1 metres above the space.

</td><td>Suitable clearance is provided to all car parking spaces.</td><td>Comply</td></tr>
<tr><td>3</td><td>Car spaces in garages or carports must be at least 6 metres long and 3.5 metres wide for a single space and 5.5 metres wide for a double space measured inside the garage or carport.</td><td>No garages proposed.</td><td>N/A</td></tr>
<tr><td>4</td><td>Where parking spaces are provided in tandem (one space behind another) an additional 500mm in length must be provided between each space.</td><td>No tandem spaces proposed.</td><td>N/A</td></tr>
<tr><td>5</td><td>Where two or more car parking spaces are provided for a dwelling, at least one space must be under cover.</td><td>No dwellings proposed.</td><td>N/A</td></tr>
<tr><td>6</td><td>Disabled car parking spaces must be designed in accordance with AS 2890.6-2009 (disabled) and the Building Code of Australia. Disabled car parking spaces may encroach into an accessway width specified in Table 2 by 500mm.</td><td>Disabled car parking space has been designed in accordance with AS2890.6-2009.
An additional 500mm will be taken up within the aisle as allowed by this standard</td><td>Comply</td></tr>
</table>

5.1.10 Other Considerations

5.1.10.1 Vehicle Circulation

The site is designed so that smaller vehicles can enter the site, access the northern fuel pumps, and then exit the site via either a single width one-way accessway to the west or circulate around the east of the convenience store/restaurant to the south of the site and exit to the Bass Highway service road. Larger vehicles can utilise the southern fuel pumps, the vehicle paths throughout the site are illustrated in Figure 9.

Swept path analysis confirms that a B99 car can circulate clear of any trucks refuelling at the southern fuel pumps. Additionally, 19m Semi-Trailers can access the truck refuelling pumps clear of queued vehicles at the southern fuel pumps. See swept paths attached as Appendix A.

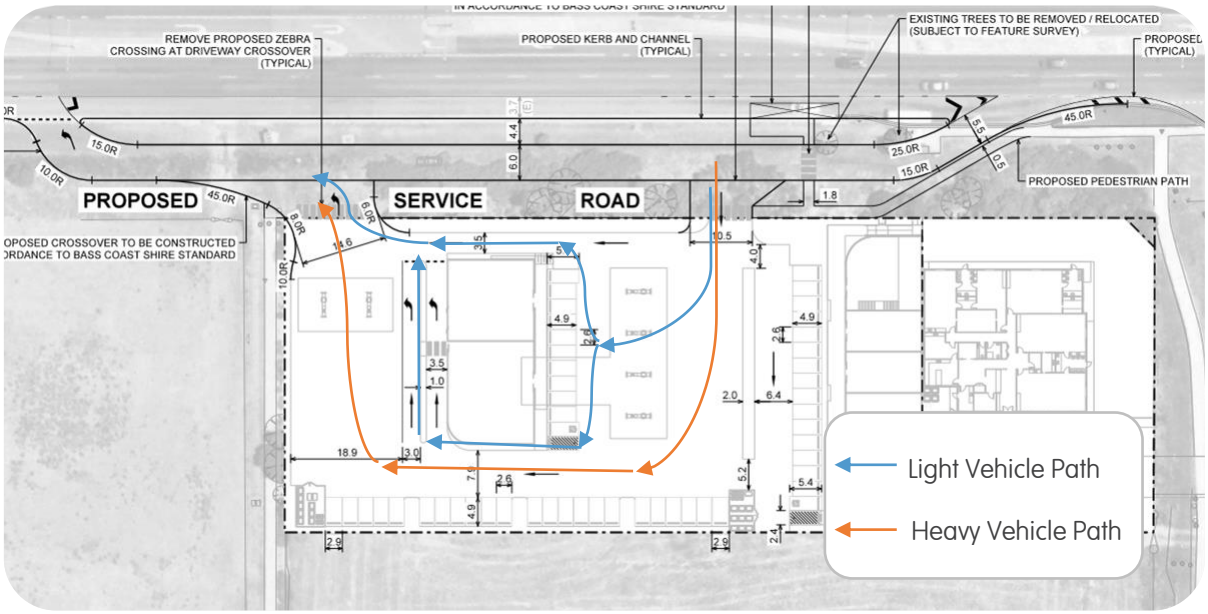


Figure 9 Light and Heavy Vehicle Paths

5.1.10.2 Pedestrians

It is proposed for pedestrians to share the carriageway with traffic adjacent the service station.

No line marked paths have been provided within the car park for pedestrians. However, this could be provided to help delineate and or direct the preferred pedestrian paths between the various uses contemplated on-site. A plan showing signs and line marking could be prepared as a permit condition.

5.1.11 Conclusion - Car Park Design

The proposed car park and accessways have been assessed and determined to have satisfied the relevant design guidelines.

Accordingly, the proposal satisfies the purpose of Clause 52.06, specifically:

- To ensure that the design and location of car parking is of a high standard, creates a safe environment for users and enables easy and efficient use.

5.2 Clause 52.29 - Land Adjacent to the Principal Road Network

5.2.1 Purpose

The purpose of Clause 52.29 is to:

- Ensure appropriate access to the Principal Road Network or land planned to form part of the Principal Road Network; and
- Ensure appropriate subdivision of land adjacent to the Principal Road Network or land planned to form part of the Principal Road Network.

5.2.2 Permit Requirement

A permit is required to:

- Create or alter access to:
  - A road in a Transport Zone 2;
  - Land in a Public Acquisition Overlay if a transport manager (other than a municipal council) is the acquiring authority and the acquisition is for the purpose of a road.
- Subdivide land adjacent to:
  - A road in a Transport Zone 2;
  - Land in a Public Acquisition Overlay if a transport manager (other than a municipal council) is the acquiring authority and the acquisition is for the purpose of a road

In response to the above, it is noted that:

- The proposal seeks to create a new vehicle access point into a road in a Transport Zone 2

Specifically:

  - The proposal contemplates the addition of a service lane on Bass Highway and separate ingress and egress crossovers to the subject site.

A permit under Clause 52.29 is therefore required.

5.2.3 Decision Guidelines

Before deciding on an application, in addition to the decision guideline in Clause 65, the responsible authority must consider:

- The Municipal Planning Strategy and the Planning Policy Framework;
- The view of the relevant road authority;
- The effect of the proposal on the operation of the road and on public safety; and
- Any policy made by the relevant road authority pursuant to Schedule 2, Clause 3 of the Road Management Act 2004 regarding access between a controlled access road and adjacent land.

5.2.4 Response to Decision Guidelines

5.2.4.1 The Effect of The Proposal on the Operation of the Road

Section 6 demonstrates that the proposal (specifically the child care) will not have any detrimental impact on the Bass Highway / Grantville-Glen Alvie Road intersection.

The access to the service station will be from / to a service lane, facilitate movement and the subject site.

The access and service lane remain relatively unchanged from the previous approved permit. However, it should be noted that the ingress has been designed in such a way as to limit the ability for drivers to exit out the nominated entry point while still providing access for 26m B-Double vehicles.

This outcome is consistent with the previously approved development and is therefore considered appropriate.

5.2.4.2 The Effect of The Proposal Public Safety

The access to / from the service lane has been designed to satisfy relevant design standards.

Additionally, the site entrance (off the service lane) has been set back a distance of 45 metres from service lane merge off Bass Highway. This distance is provided in accordance with AustRoads Guide to Road Design, Table 8.4 and Figure 8.4 for the deceleration length for auxiliary turn lanes and allows sufficient time for the deceleration of vehicles as they enter into the subject site.

We note that to facilitate this service lane entry (from Bass Highway) the nearby bus stop will need to be relocated a short distance south of the existing stop. This outcome is consistent with that which was endorsed as part of the previous development plan for the subject site.

Additionally, an 'interim' egress point from the service lane is recommended until such a time that the full-length service lane is delivered. This is also in line with the previously approved proposal.

5.3 Clause 52.34 - Bicycle Facilities

5.3.1 Purpose

The purpose of Clause 52.34 is to encourage cycling as a mode of transport, and provide secure, accessible and convenient bicycle parking spaces and associated shower and change facilities.

5.3.2 Provision Requirements - Clause 52.34.3

To satisfy the above purpose, Clause 52.34-3 of the Bass Coast Planning Scheme specifies the bicycle parking provision requirements for a variety of different uses within Table 1. Rates applicable to the proposed use are shown within Table 5.

Table 5 Statutory Bicycle Parking Requirements

Component	Description (Clause 52.34)	Quantity / Size	Statutory Parking Rate	Statutory Requirement
Convenience Restaurant	Convenience Restaurant	197 sqm (inc. 99 sq.m publicly accessible)	**Employee**: 1 space to each 25 sqm of floor area available to the public	4 spaces
			Visitor: 2 spaces	2 spaces
Retail	Retail Premises	753 sqm	**Employee**: 1 to each 300 sqm LFA	3 spaces
			Visitor: 1 to each 500 sqm LFA	2 spaces
Service Station	-	12 bowsers / 250 sqm	No rate specified	Nil
			No rate specified	Nil
Child Care Centre	-	88 places	No rate specified	Nil
			No rate specified	Nil
Total				**7 employee and 4 visitor spaces**

Note: It has conservatively been assumed that half of the convenience restaurant GFA will be accessible to the public.

5.3.3 Proposed Provision

In the context of this site, we don't expect that cycling will be a primary mode of transport for customers or staff.

Notwithstanding, we note that a total of twelve (12) bicycle parking spaces are provided on-site:

- Six (6) spaces are provided adjacent to the Child Care Centre and Retail Tenancy 4; and
- Six (6) spaces are provided adjacent to the Convenience Restaurant.

The bicycle parking provision (12 spaces) exceeds the statutory minimum requirement (11 spaces), and is therefore considered satisfactory.

5.3.3.1 Design

The on-site bicycle spaces are proposed in the form of proprietary bicycle hoops designed to satisfy the relevant standards.

5.3.3.2 Conclusion - Bicycle Parking

We can conclude that bicycle parking provided as part of this development satisfies the purpose of Clause 52.34, specifically:

- To encourage cycling as a mode of transport, and provide secure, accessible and convenient bicycle parking spaces.

5.4 Clause 65.01 - Approval of An Application or Plan

5.4.1 Loading Requirements and Objectives

To address the adequacy of loading for new developments, the Bass Coast Planning Scheme specifies the following:

- Clause 65.01 - The responsible authority must consider, as appropriate, the adequacy of loading and unloading facilities and any associated amenity, traffic flow and road safety impacts.

5.4.2 Adequacy of Proposed Loading Facilities

In response to the above, we note that:

- Small retail tenancies, such as those proposed on-site typically undertake loading infrequently, by smaller vehicles, such as vans and utes.
- A dedicated loading bay is proposed for the convenience restaurant and service station / convenience store.
- There is sufficient space adjacent each waste bin storage area for a vehicle to prop during the collection of waste.
- B-Double vehicles can access the pumps at the south of the site, for loading / refilling of fuel on-site.

Swept paths prepared (and attached as Appendix A) illustrate that vehicles up to 26m in length are physically able to access the site. Additionally, swept paths for proposed service vehicles (for waste collection) have been provided to show how these trucks will circulate and prop to collect waste within the site.

5.4.3 Conclusion - Loading Arrangements

The proposed loading arrangements have been assessed and determined to have satisfied the relevant design guidelines / principles contained within Clause 65.01 and AS2890.2:2018.

Accordingly, it is considered that the proposal:

- Provides adequate vehicle loading and unloading facilities, which will not result in associated amenity, traffic flow and road safety impacts.

6 Traffic Considerations

6.1 Traffic Generation

6.1.1 Service Station, Convenince Store & Convenience Restaurant

The Roads and Maritime Services of New South Wales' (RMS) report 'Service Stations - Analysis Report' (June 2013) finds traffic and parking generation demands based on case study data from a range of service station sites.

The results of the case studies suggest that standalone fuel stations with ancillary convenience stores generate vehicles at a rate of approximately **19 vehicles per pump** in the peak hour.

Additionally the case study data within the RMS report contains three (3) service stations with convenience restaurants on the same site. These sites generate vehicles of approximately **15 vehicles per pump** in the peak hour.

Conservatively applying the higher rate to the twelve (12) proposed fuel pumps corresponds to a projected peak demand of **231 vehicle movements** within the peak hour.

Further to the above, case study data available to **IMPACT**® indicates that approximately 80% of vehicles patronising a service station are attributed to diverted trips, i.e. vehicles that are already on the adjacent road network which are merely diverted to the site from a trip made for a potentially unrelated primary purpose.

This results in 185 of the 231 vehicle trips considered to already be utilising the road network for another trip purpose, and thus, the service station component of the development will generate **46 new vehicle trips** in a peak hour.

- AM Peak:
  - 231 inbound vehicle movements
  - 231 outbound vehicle movements
- PM Peak:
  - 231 inbound vehicle movements
  - 231 outbound vehicle movements

6.1.2 Retail

The proposal includes 753 sq.m of retail across six (6) tenancies. In the context of the site, it is expected that there will be an overlap between trips to the retail and service station tenancies on site. As such it has been conservatively assumed that the retail use will generate vehicle trips attributed to the allocated on-site car parking spaces.

For the purposes of this assessment, it is conservatively assumed that each dedicated retail parking space (26 in total) will turnover once per peak period (i.e. one in and 1 out). Given the overlap and multiple uses on the site, this is considered to be a conservative estimate.

Application of the above rate generates a demand for 52 vehicle trips in each peak hour.

- AM Peak:
  - 26 inbound vehicle movements
  - 26 outbound vehicle movements
- PM Peak:
  - 26 inbound vehicle movements
  - 26 outbound vehicle movements

6.1.3 Child Care

Reference is made to the RMS Guide to Traffic Engineering Developments' (October 2002) which includes daily peak hour traffic generation rates for childcare centres. The Guide specifies traffic generation rates of:

- AM Peak 0.9 trips / child
- PM Peak 0.7 trips / child

In this regard, it is anticipated that the 88-place childcare centre is likely to generate.

- AM Peak **79 total vehicle trips**
- PM Peak **61 total vehicle trips**

In the context of childcare traffic, these movements are generally distributed evenly between inbound and outbound movements (associated with pick-up / drop-off movements).

- AM Peak:
  - 35 inbound vehicle movements
  - 34 outbound vehicle movements
- PM Peak:
  - 30 inbound vehicle movements
  - 31 outbound vehicle movements

6.1.4 Total Traffic Generation

The sites traffic generation will be split across Bass Highway (convenience restaurant, service station and retail tenancies) and Grantville-Glen Alvie Road (child care). Specifically, the following is expected to be generated:

Bass Highway - Service Station / Convenience Store, Convenience Restaurant and Retail

- AM Peak 257 total vehicle trips (72 new vehicle trips, 185 diverted trips)
- PM Peak 257 total vehicle trips (72 new vehicle trips, 185 diverted trips)

Grantville-Glen Alvie Road - Childcare

- AM Peak 79 total vehicle trips
- PM Peak 61 total vehicle trips

6.2 Traffic Distribution

6.2.1 Post Development

For the purpose of this assessment, it is anticipated that traffic arriving / departing the subject site will be distributed in a pattern similar to the existing conditions outlined in Section 3.5.1, summarised as follows:

Childcare

- AM Peak inbound
  - Bass Highway (north) 65%
  - Bass Highway (south) 30%
  - Pier Road 5%
- AM Peak outbound
  - Bass Highway (north) 35%
  - Bass Highway (south) 50%
  - Pier Road 15%

- PM Peak inbound
  - Bass Highway (north) 40%
  - Bass Highway (south) 40%
  - Pier Road 20%
- PM Peak outbound
  - Bass Highway (north) 25%
  - Bass Highway (south) 50%
  - Pier Road 25%

Note:

It has conservatively assumed that all generated traffic to and from the childcare is coming from the west (Bass Highway / Grantville-Glen Alvie Road intersection).

Service Station / Convenience Store, Convenience Restaurant and Retail

- AM Peak inbound
  - Bass Highway (north) 80%
  - Grantville-Glen Alvie Road 15%
  - Pier Road 5%
- PM Peak inbound
  - Bass Highway (north) 80%
  - Grantville-Glen Alvie Road 15%
  - Pier Road 5%

The outbound movements for the service station portion of the site will exit the site southbound on Bass Highway and will not affect the Bass Highway / Grantville-Glen Alvie Road intersection.

6.2.2 Post Development

Based on the foregoing traffic generation and distribution assumptions, Figure 10 and Figure 11 overleaf provides a summary of the projected development traffic for the AM and PM peak periods.

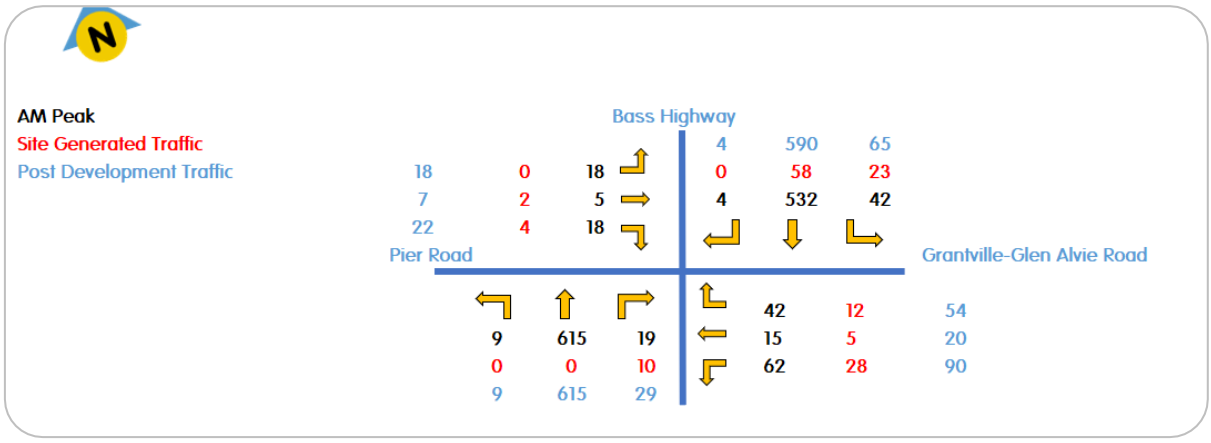


Figure 10 Post Development Traffic Generation - AM Peak

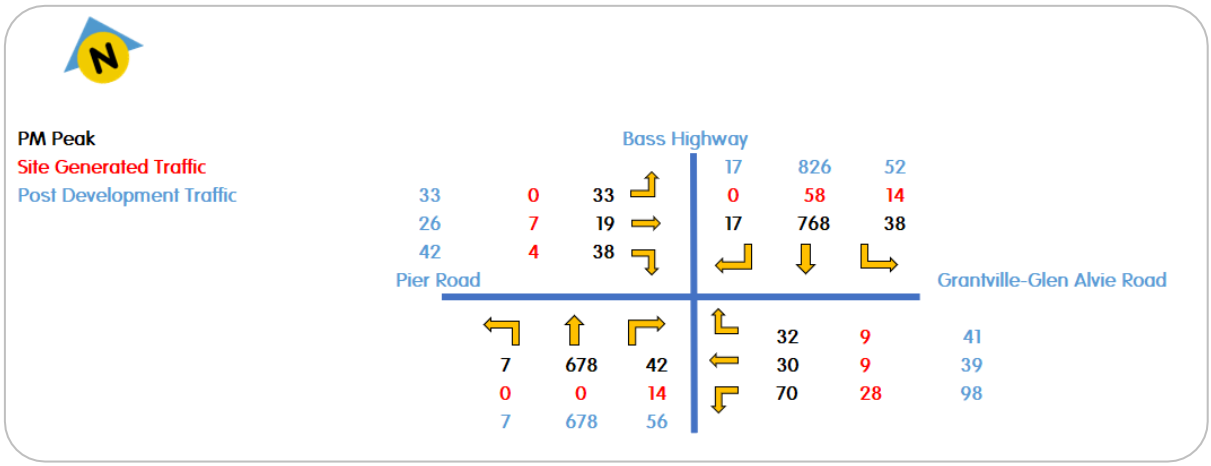


Figure 11 Post Development Traffic Generation - PM Peak

6.2.3 SIDRA Analysis

Table 6 Bass Highway / Grantville-Glen Alvie Road SIDRA Summary

Peak Time	Approach	Degree of Saturation		Average Delay (s)		95th% Queue (m)	
		Existing	Post Dev.	Existing	Post Dev.	Existing	Post Dev.
AM Peak	Bass Highway (North)	0.3	0.47	33	40	61	104
	Bass Highway (South)	0.33	0.49	35	32	67	109
	Grantville-Glen Alvie Road	0.24	0.35	27	26	32	40
	Pier Road	0.13	0.15	48	48	16	19
PM Peak	Bass Highway (North)	0.37	0.60	35	34	73	145
	Bass Highway (South)	0.38	0.57	38	41	69	116
	Grantville-Glen Alvie Road	0.27	0.41	20	25	33	39
	Pier Road	0.28	0.32	49	50	35	39

The analysis reveals that Bass Highway / Grantville-Glen Alvie Road continues to operate with 'excellent' degrees of saturation during both the AM and PM peak periods.

It is noted that queues along each extent of Bass Highway increase post development (up to 145 metres to the north), however clear relatively quickly, with only a minimal increase to the observed delays post development (increases of 6 seconds or less across all legs of the intersection).

6.3 Traffic Discussion & Impact

The proposal largely considers traffic uses that are consistent with the previously approved development. We note however that the current development plans consider a new use (child care) which will change the access arrangements / behaviours for vehicles

- All child care traffic will be accessed to/from Grantville - Glen Alvie Road; and
- All service station traffic will be accessed solely from Bass Highway (service lane).

The above notwithstanding, the SIDRA analysis indicates that the Bass Highway / Grantville-Glen Alvie Road signalised intersection will continue to operate within a satisfactory range post development (with negligible changes observed in queues and delays from the existing conditions analysed in Section 3.5.3).

Additionally, these SIDRA results are consistent with / in line with the outcomes / observations provided for the previously approved permit application.

Based on the foregoing, we are comfortable that the external road network (including Bass Highway and the Bass Highway / Grantville-Glen Alvie Road intersection) will continue to operate satisfactorily post development.

Note:

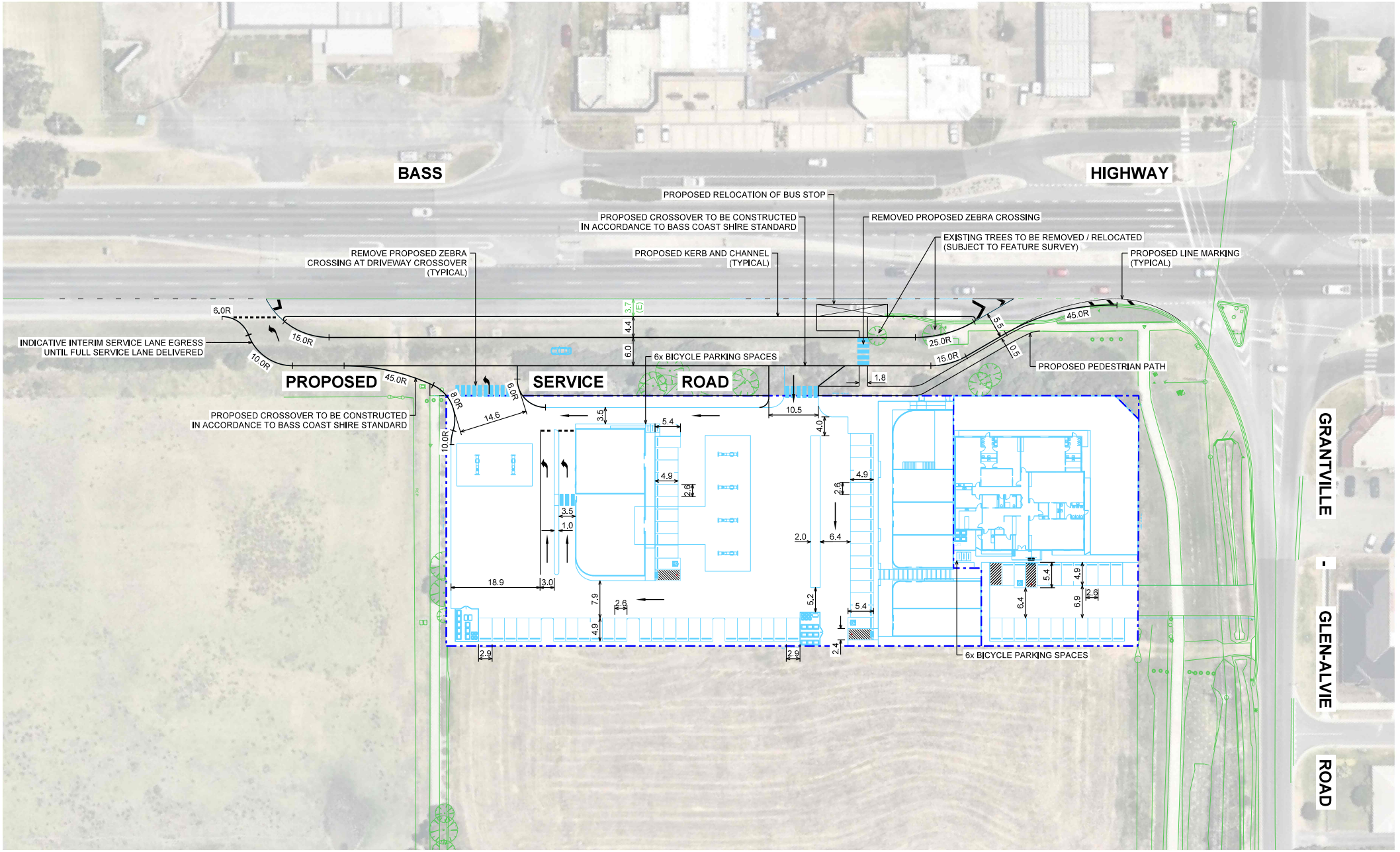
The access arrangements for vehicles travelling to the subject site will likely restrict which vehicles choose to travel to / from the subject site (when compared to the previous permit).

This change shouldn't have any material impact on the operation of the road network (refer SIDRA intersection analysis), but will limit the number of people who are able to access the site (i.e. people travelling north are less likely to stop here, as it will be more difficult for them to exit and return to their path of travel).

APPENDIX A
Swept Path Analysis

Design Vehicles:

- B85 & B99 Cars
- 19m Semi-Trailer
- 26m B-Double
- 8.8m Service Vehicle



GENERAL NOTES:

1. ALL DIMENSIONS ARE TO FACE OF KERB AND CHANNEL UNLESS NOTED OTHERWISE.
2. LOCAL ROADS - GRANTVILLE-GLEN-ALVIE ROAD (SPEED ZONE 80KM/H).
   DECLARED ROADS - BASS HIGHWAY (SPEED ZONE 80KM/H).
   - BASS HIGHWAY SERVICE ROAD (SPEED ZONE 50KM/H).
3. BASE INFORMATION FROM NEARMAP AERIAL PHOTOGRAPHY DATED 09.01.2023 AND RISE ARCHITECTURE 2223_Ground Floor Plan (08.02.2024).dwg DATED 08.02.2024

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SCALE
1:750 @ A3

Client
TAYLORS

Date 2024-10-15
Drawn / Approved WH / ES

Project
COMMERCIAL DEVELOPMENT
1517-1529 BASS HIGHWAY GRANTVILLE
BASS COAST SHIRE

Title
TRAFFIC & TRANSPORT ASSESSMENT
CONCEPT LAYOUT PLAN

Status
PRELIMINARY

Drawing Number
IMP2302059 - DRG-01-01

Revision
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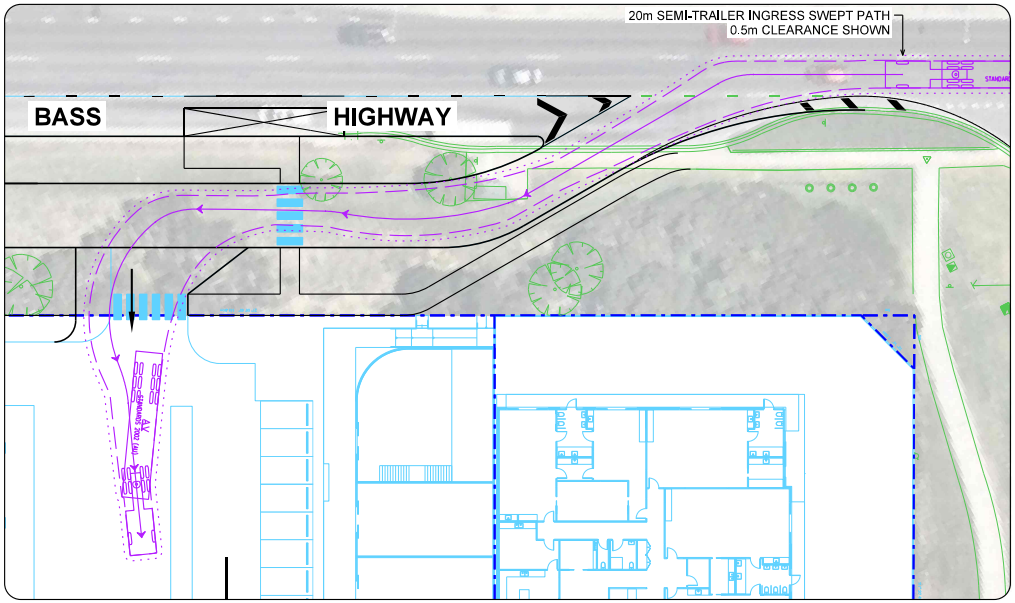

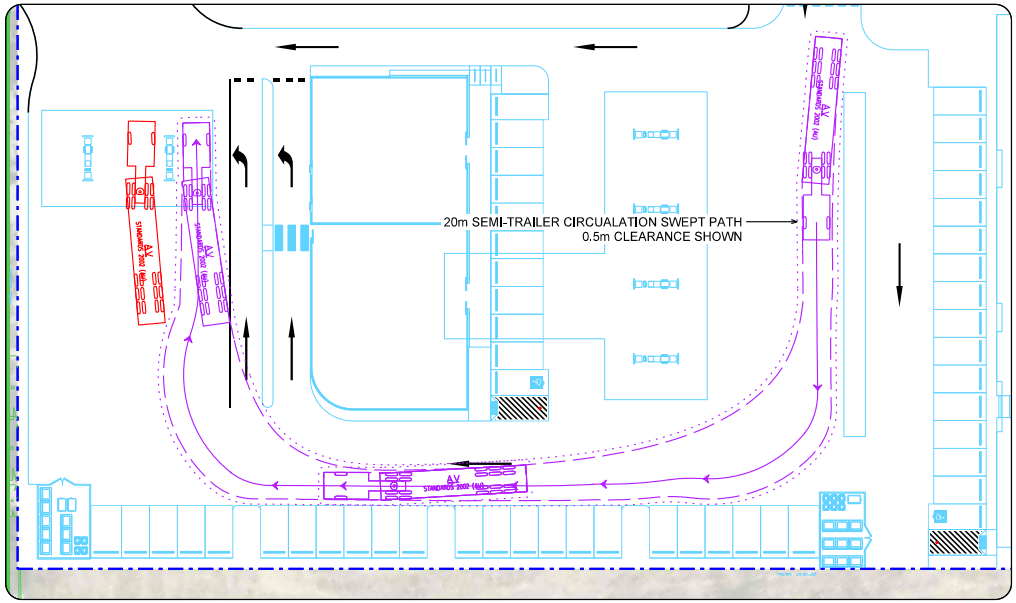

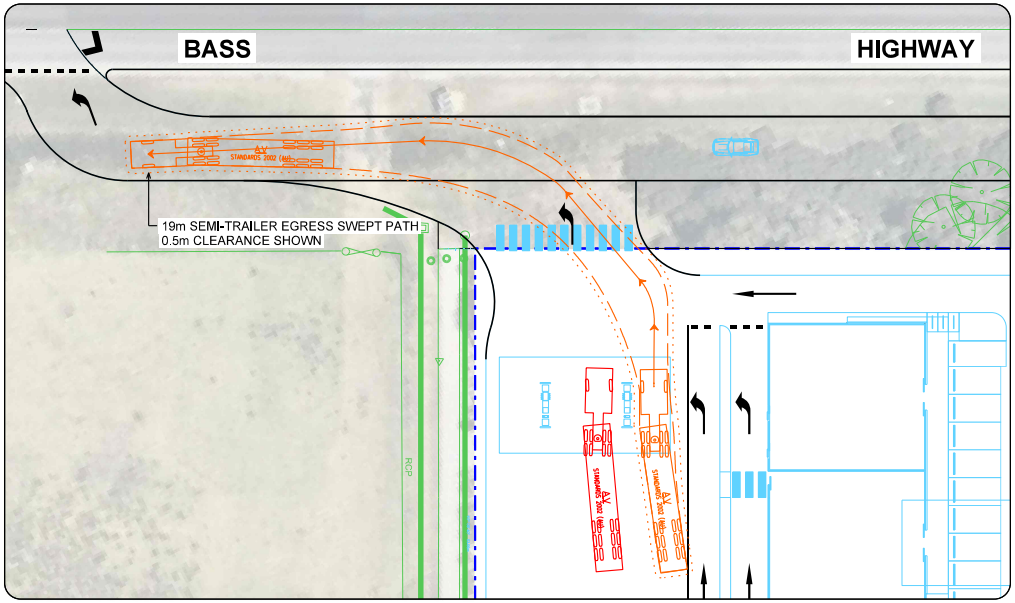

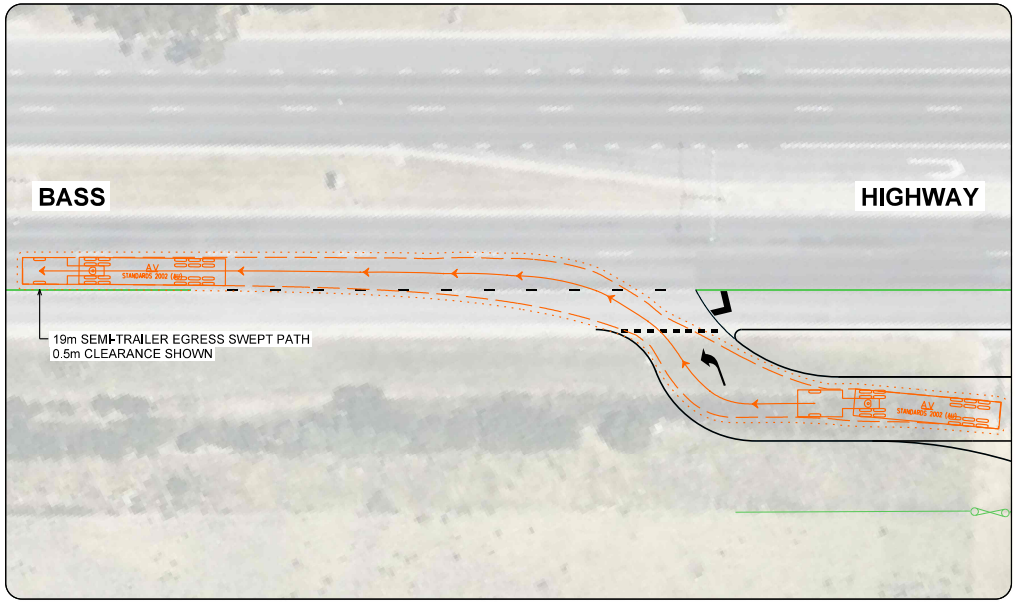

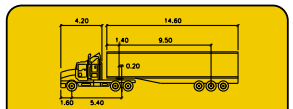

20m SEMI-TRAILER

METERS			
TRACTOR WIDTH	: 2.50	LOCK TO LOCK TIME	: 6.0
TRAILER WIDTH	: 2.50	STEERING ANGLE	: 28.3
TRACTOR TRACK	: 2.50	ARTICULATING ANGLE	: 72.0
TRAILER TRACK	: 2.50		

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SCALE
1:500 @ A3

Client
TAYLORS

Date **2024-10-15**
Drawn / Approved **WH / ES**

Project
COMMERCIAL DEVELOPMENT
1517-1529 BASS HIGHWAY GRANTVILLE
BASS COAST SHIRE

Title
TRAFFIC & TRANSPORT ASSESSMENT
SWEPT PATH ANALYSIS
20m SEMI-TRAILER - DESIGN VEHICLE

Status
PRELIMINARY

Drawing Number
IMP2302059 - DRG-01-02

Revision
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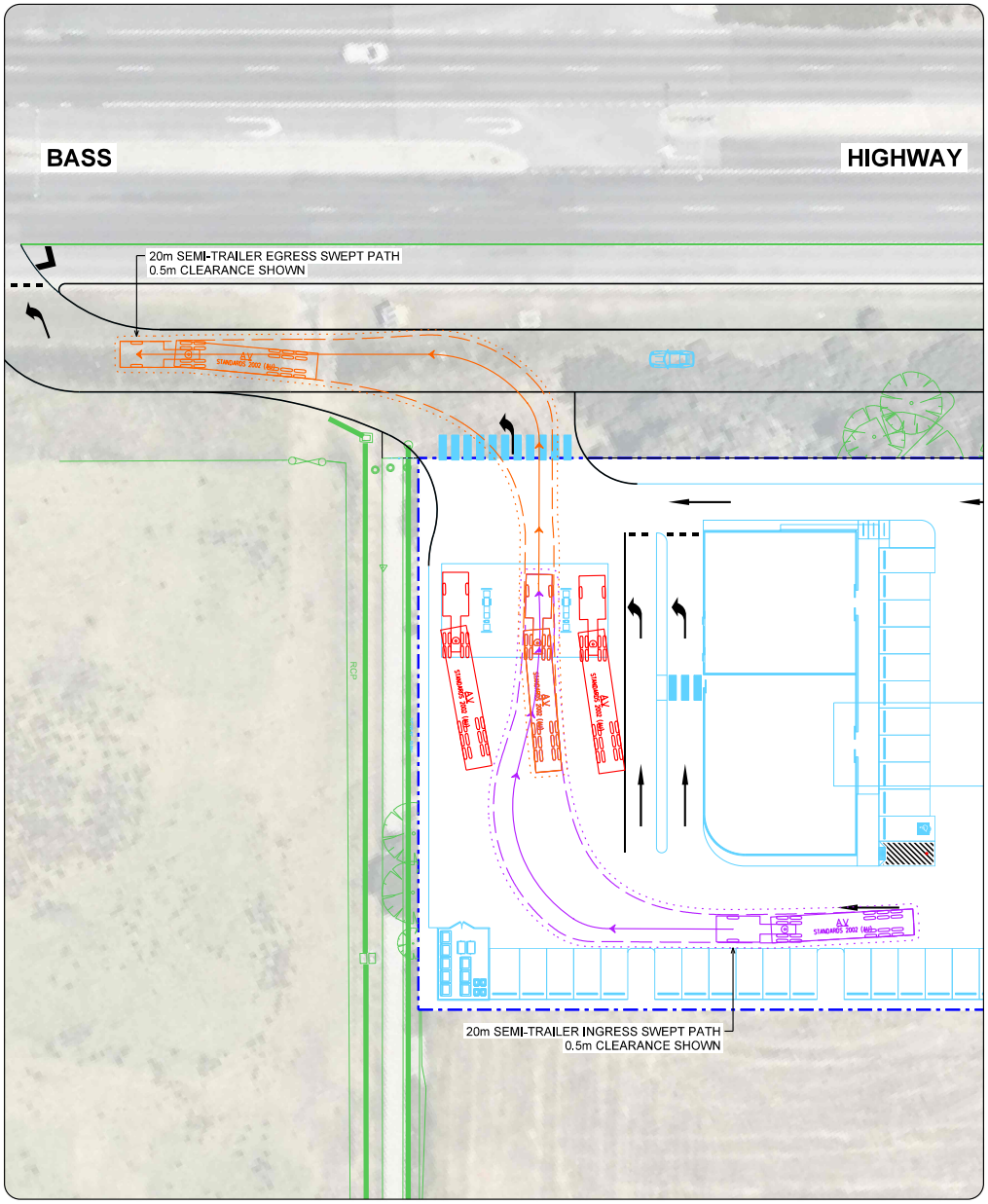

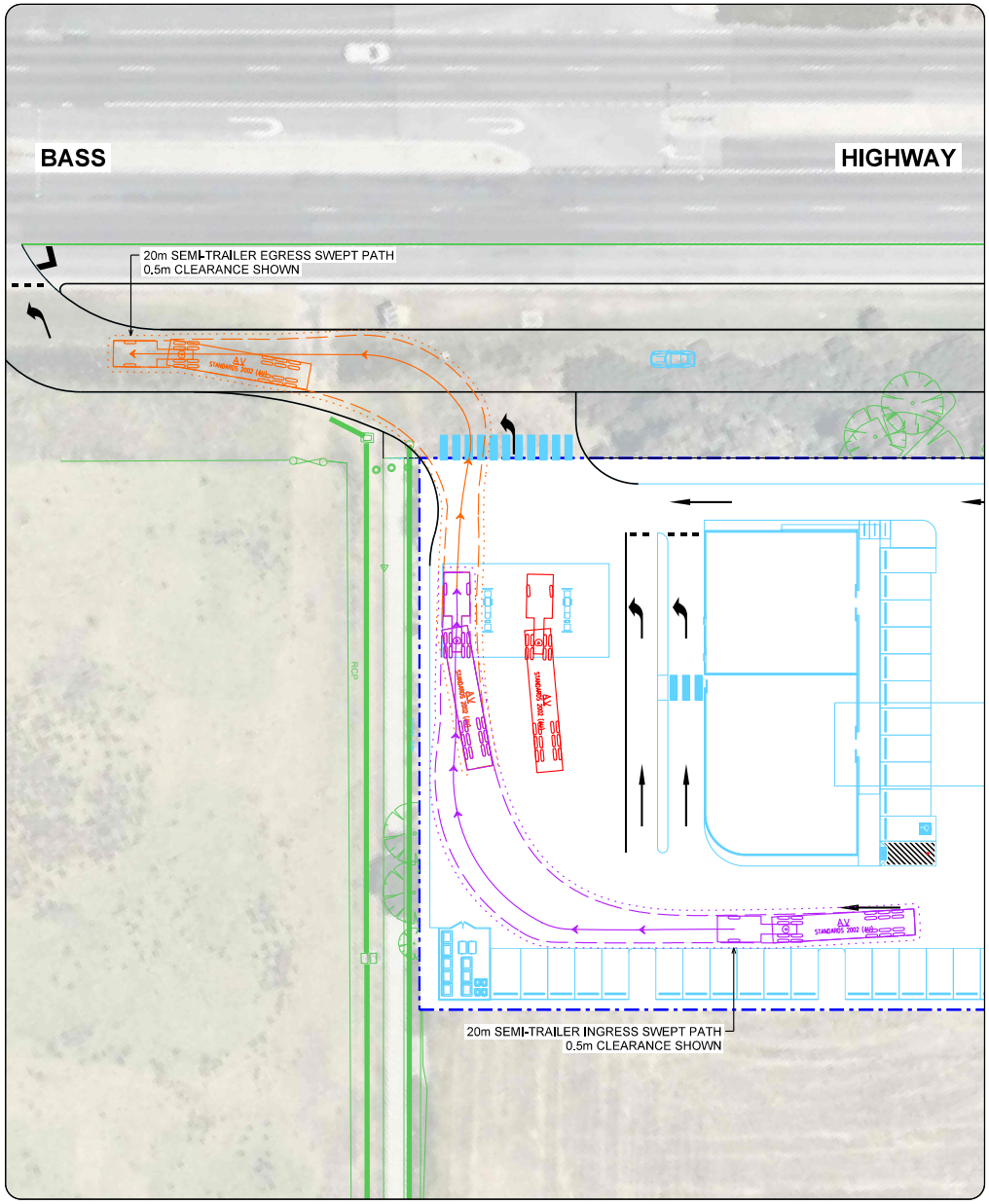

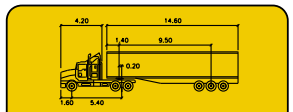

20m SEMI-TRAILER

METERS			
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TRAILER WIDTH	: 2.50	STEERING ANGLE	: 28.3
TRACTOR TRACK	: 2.50	ARTICULATING ANGLE	: 72.0
TRAILER TRACK	: 2.50		

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Project
COMMERCIAL DEVELOPMENT
1517-1529 BASS HIGHWAY GRANTVILLE
BASS COAST SHIRE

Title
TRAFFIC & TRANSPORT ASSESSMENT
SWEPT PATH ANALYSIS
20m SEMI-TRAILER - DESIGN VEHICLE

Status
PRELIMINARY

Drawing Number
IMP2302059 - DRG-01-03

Revision
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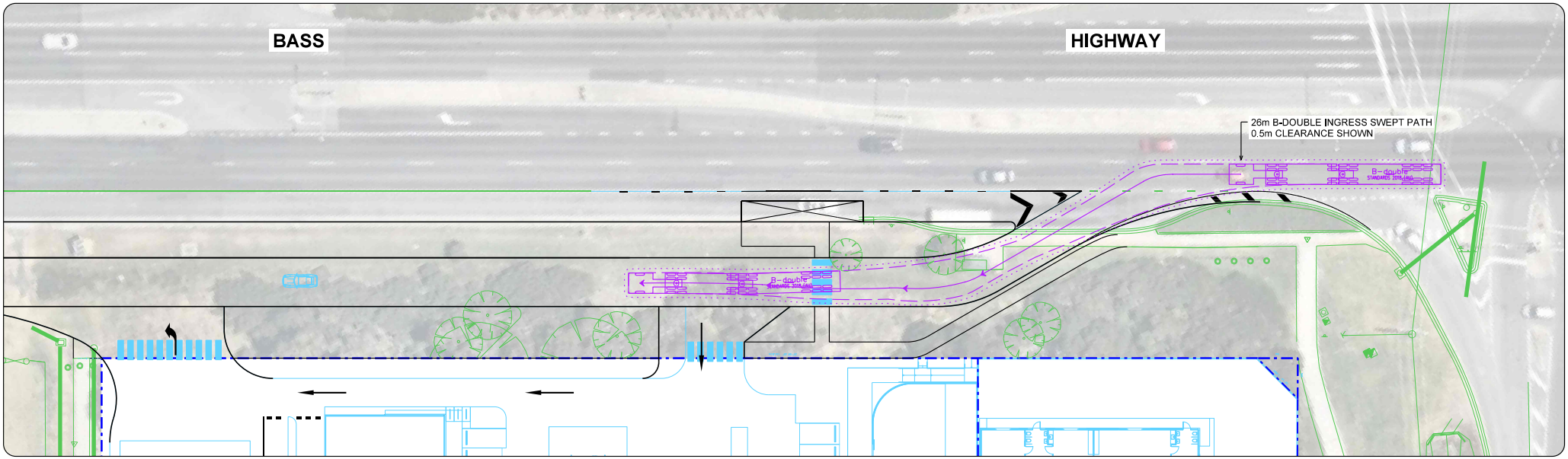

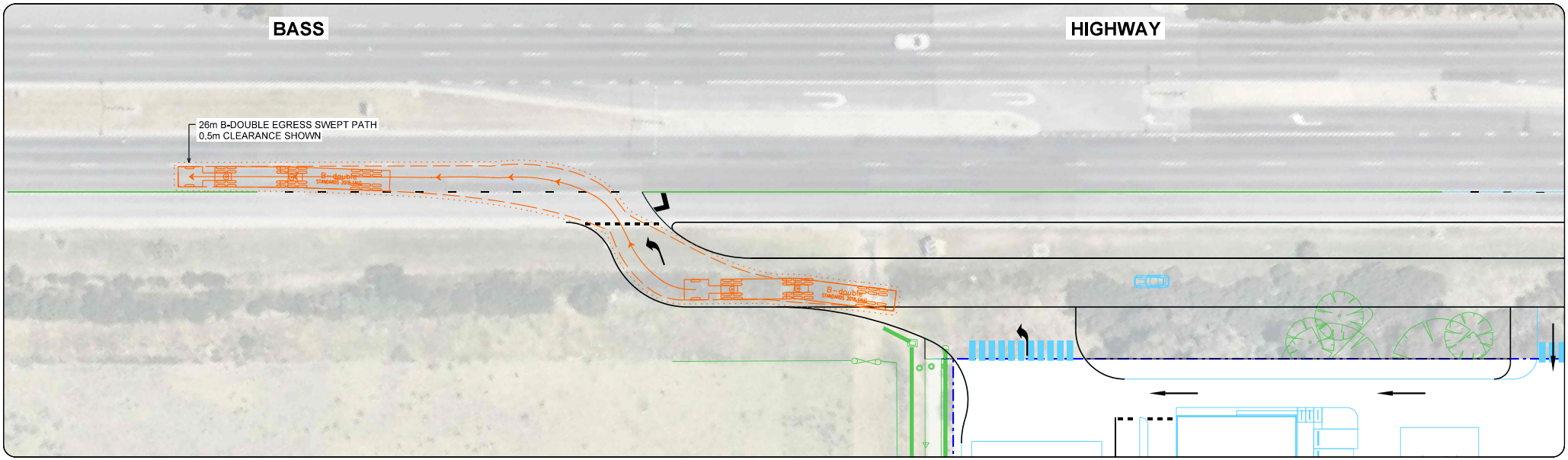

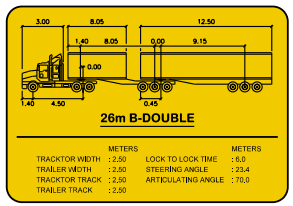

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Project
COMMERCIAL DEVELOPMENT
1517-1529 BASS HIGHWAY GRANTVILLE
BASS COAST SHIRE

Title
TRAFFIC & TRANSPORT ASSESSMENT
SWEPT PATH ANALYSIS
26m B-DOUBLE - DESIGN VEHICLE

Status
PRELIMINARY

Drawing Number
IMP2302059 - DRG-01-04

Revision
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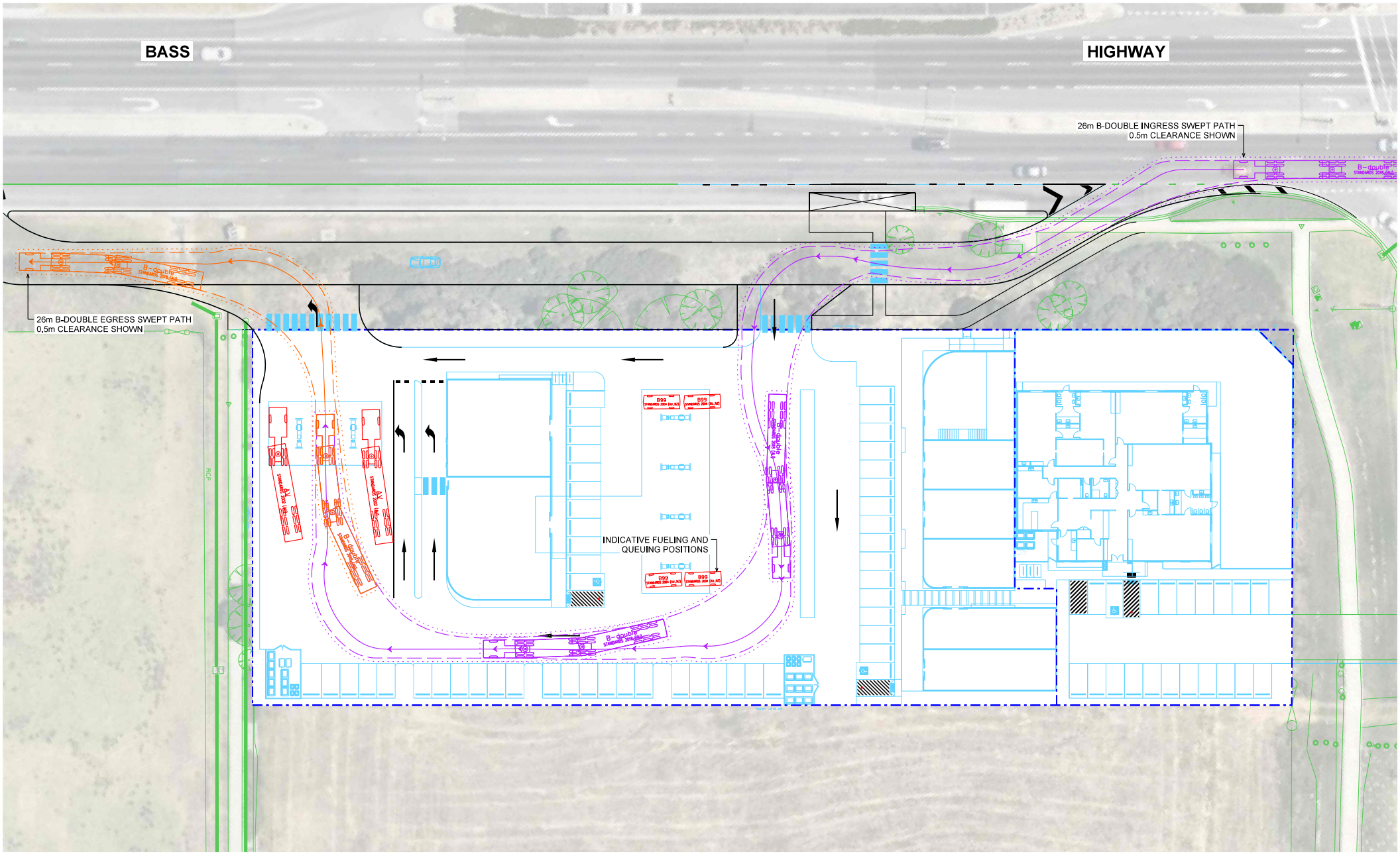

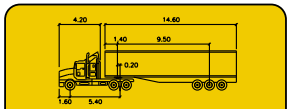

20m SEMI-TRAILER

	METERS		
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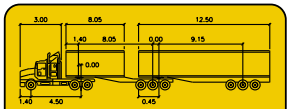
TRAILER WIDTH	: 2.50	STEERING ANGLE	: 28.3
TRACTOR TRACK	: 2.50	ARTICULATING ANGLE	: 72.0
TRAILER TRACK	: 2.50		



26m B-DOUBLE

	METERS		METERS
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TRAILER WIDTH	: 2.50	STEERING ANGLE	: 23.4
TRACKTOR TRACK	: 2.50	ARTICULATING ANGLE	: 70.0
TRAILER TRACK	: 2.50		

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Client
TAYLORS

Date **2024-10-15**
Drawn / Approved **WH / ES**

Project
COMMERCIAL DEVELOPMENT
1517-1529 BASS HIGHWAY GRANTVILLE
BASS COAST SHIRE

Title
TRAFFIC & TRANSPORT ASSESSMENT
SWEPT PATH ANALYSIS
20m SEMI-TRAILER & 26m B-DOUBLE DESIGN VEHICLES

Status
PRELIMINARY

Drawing Number
IMP2302059 - DRG-01-05

Revision
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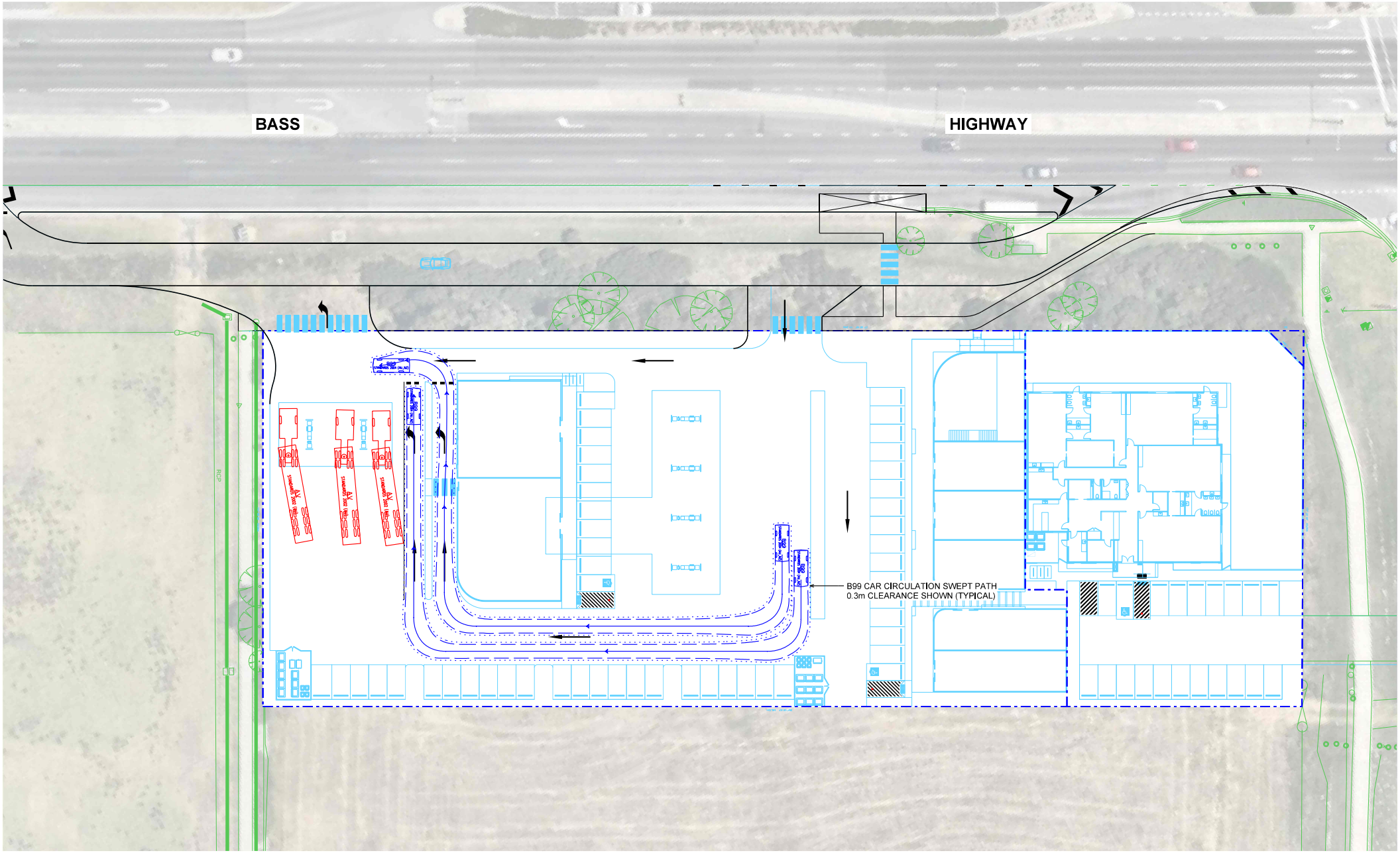

5.20

0.95 3.05

B99 CAR

	METERS
WIDTH	: 1.84
TRACK	: 1.84
LOCK TO LOCK TIME	: 6.0
STEERING ANGLE	: 33.9

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Client
TAYLORS

Date **2024-10-15**
Drawn / Approved **WH / ES**

Project
COMMERCIAL DEVELOPMENT
1517-1529 BASS HIGHWAY GRANTVILLE
BASS COAST SHIRE

Title
TRAFFIC & TRANSPORT ASSESSMENT
SWEPT PATH ANALYSIS
B99 CAR - DESIGN VEHICLE

Status
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Drawing Number
IMP2302059 - DRG-01-06

Revision
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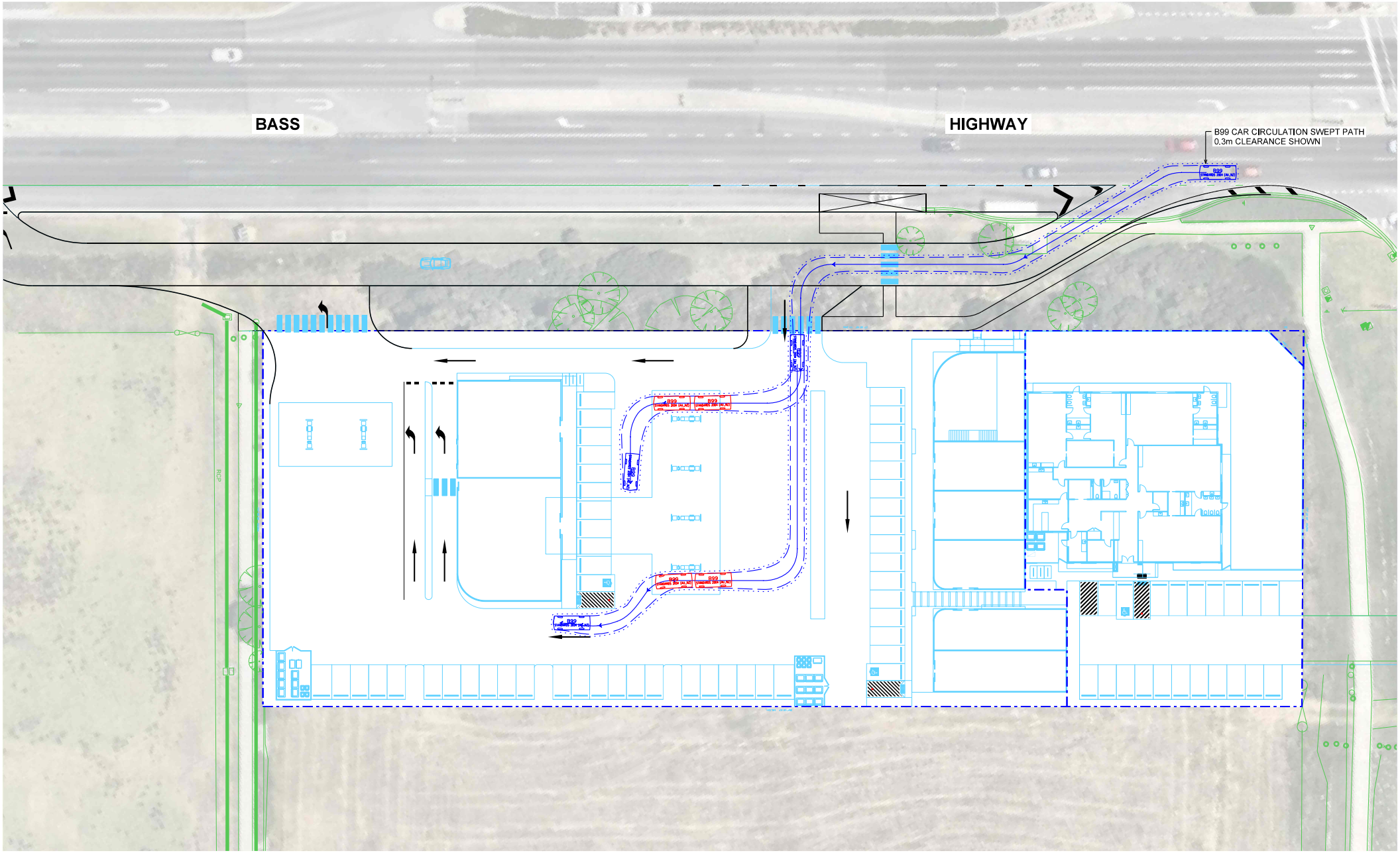

5.20

0.95 3.05

B99 CAR

	METERS
WIDTH	: 1.84
TRACK	: 1.84
LOCK TO LOCK TIME	: 6.0
STEERING ANGLE	: 33.9

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SCALE

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Client
TAYLORS

Date **2024-10-15**
Drawn / Approved **WH / ES**

Project
COMMERCIAL DEVELOPMENT
1517-1529 BASS HIGHWAY GRANTVILLE
BASS COAST SHIRE

Title
TRAFFIC & TRANSPORT ASSESSMENT
SWEPT PATH ANALYSIS
B99 CAR - DESIGN VEHICLE

Status
PRELIMINARY

Drawing Number
IMP2302059 - DRG-01-07

Revision
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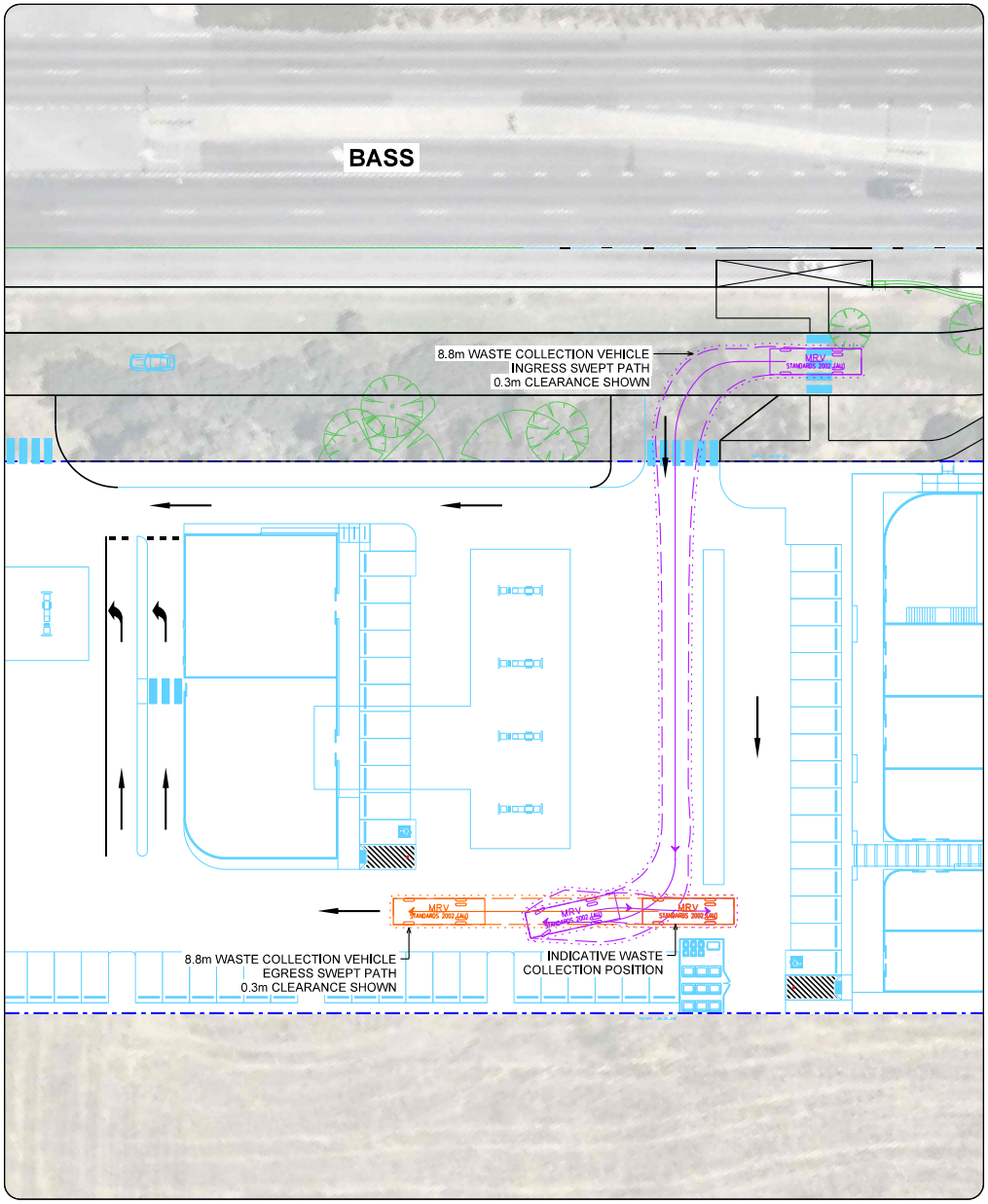

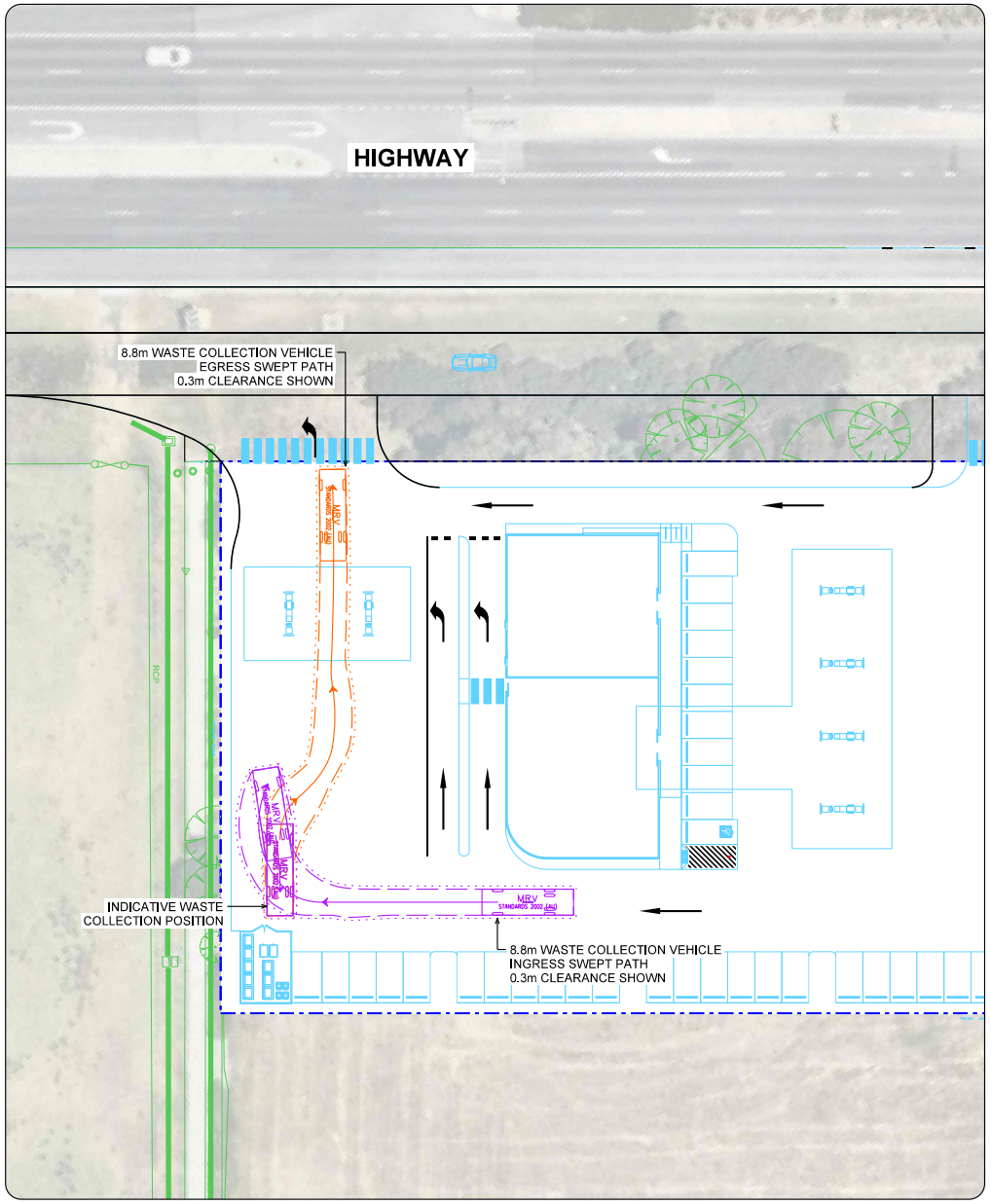



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SCALE
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Client
TAYLORS

Date 2024-10-15
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Project
COMMERCIAL DEVELOPMENT
1517-1529 BASS HIGHWAY GRANTVILLE
BASS COAST SHIRE

Title
TRAFFIC & TRANSPORT ASSESSMENT
SWEPT PATH ANALYSIS
8.8m WASTE COLLECTION VEHICLE

Status
PRELIMINARY

Drawing Number
IMP2302059 - DRG-01-08

Revision
I

15/10/2024 11:40:05 AM

APPENDIX B
SIDRA Analysis

LANE SUMMARY

Site: 6681 [Bass Highway / Grantville-Glen Alvie Road / Pier Road - PM Peak (Site Folder: Proposed Conditions)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Bass Highway (S)															
Lane 1	7	0.0	7	0.0	696	0.011	100	45.1	LOS D	0.3	1.8	Short	35	0.0	NA
Lane 2	356	3.5	356	3.5	708[1]	0.502	100	44.4	LOS D	15.9	114.9	Full	800	0.0	0.0
Lane 3	358	3.5	358	3.5	713[1]	0.502	100	31.4	LOS C	16.0	115.7	Full	800	0.0	0.0
Lane 4	59	5.4	59	5.4	104	0.565	100	71.3	LOS E	3.6	26.4	Short	65	0.0	NA
Approach	780	3.6	780	3.6		0.565		40.5	LOS D	16.0	115.7				
East: Grantville-Glen Alvie Road (E)															
Lane 1	187	5.1	187	5.1	460	0.407	100	25.3	LOS C	5.4	39.1	Full	800	0.0	0.0
Approach	187	5.1	187	5.1		0.407		25.3	LOS C	5.4	39.1				
North: Bass Highway (N)															
Lane 1	55	5.8	55	5.8	669	0.082	100	32.7	LOS C	2.0	14.9	Short (P)	145	0.0	NA
Lane 2	436	1.3	436	1.3	725	0.601	100	32.4	LOS C	20.5	144.8	Full	800	0.0	0.0
Lane 3	434	1.3	434	1.3	722[1]	0.601	100	35.1	LOS D	20.4	144.3	Full	800	0.0	0.0
Lane 4	18	0.0	18	0.0	108	0.165	100	70.5	LOS E	1.0	7.3	Short	75	0.0	NA
Approach	942	1.6	942	1.6		0.601		34.4	LOS C	20.5	144.8				
West: Pier Road (W)															
Lane 1	106	3.0	106	3.0	337	0.316	100	49.7	LOS D	5.5	39.2	Full	200	0.0	0.0
Approach	106	3.0	106	3.0		0.316		49.7	LOS D	5.5	39.2				
All Vehicles	2016	2.8	2016	2.8		0.601		36.7	LOS D	20.5	144.8				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes.
Delay and stops experienced by drivers upstream of short lane entry have been accounted for.

Approach Lane Flows (veh/h)

South: Bass Highway (S)

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	7	-	-	7	0.0	696	0.011	100	0.0	2
Lane 2	-	356	-	356	3.5	708[1]	0.502	100	NA	NA
Lane 3	-	358	-	358	3.5	713[1]	0.502	100	NA	NA
Lane 4	-	-	59	59	5.4	104	0.565	100	0.0	3
Approach	7	714	59	780	3.6		0.565			

East: Grantville-Glen Alvie Road (E)

Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	103	41	43	187	5.1	460	0.407	100	NA	NA
Approach	103	41	43	187	5.1		0.407			

North: Bass Highway (N)

Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	55	-	-	55	5.8	669	0.082	100	0.0	2
Lane 2	-	436	-	436	1.3	725	0.601	100	NA	NA
Lane 3	-	434	-	434	1.3	722[1]	0.601	100	NA	NA
Lane 4	-	-	18	18	0.0	108	0.165	100	0.0	3
Approach	55	869	18	942	1.6		0.601			

West: Pier Road (W)

Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	35	27	44	106	3.0	337	0.316	100	NA	NA

Approach	35	27	44	106	3.0		0.316

	Total	%HV	Deg.Satn (v/c)
All Vehicles	2016	2.8	0.601

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes.
Delay and stops experienced by drivers upstream of short lane entry have been accounted for.

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis

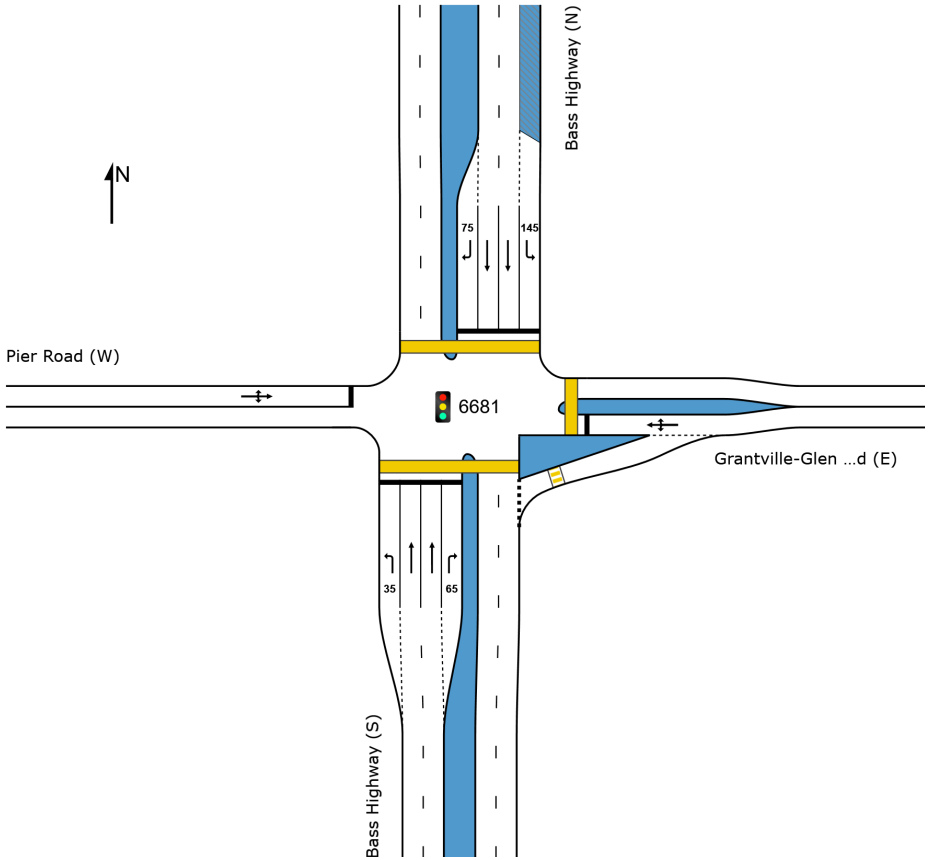
	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Bass Highway (S)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0
Lane 4	0.0	0.0	0.0	0.0
East: Grantville-Glen Alvie Road (E)				
Lane 1	0.0	0.0	0.0	0.0
North: Bass Highway (N)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0
Lane 4	0.0	0.0	0.0	0.0
West: Pier Road (W)				
Lane 1	0.0	0.0	0.0	0.0

SITE LAYOUT

Site: 6681 [Bass Highway / Grantville-Glen Alvie Road / Pier Road - AM Peak (Site Folder: Proposed Conditions)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

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



SIDRA INTERSECTION 9.1 | Copyright © 2000-2023 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: IMPACT TRAFFIC ENGINEERING | Licence: NETWORK / 1PC | Created: Monday, 17 July 2023 1:50:41 PM
Project: C:\IMPACT Dropbox\01. Projects\2023\IMP2302059 - 1517-1529 Bass Highway, Grantville (Taylors DS)\6. ENGINEERING\02 Analysis\IMP2302059SID01.sip9

LANE SUMMARY

Site: 6681 [Bass Highway / Grantville-Glen Alvie Road / Pier Road - AM Peak (Site Folder: Proposed Conditions)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Bass Highway (S)															
Lane 1	9	11.1	9	11.1	617	0.015	100	46.1	LOS D	0.3	2.7	Short	35	0.0	NA
Lane 2	321	6.0	321	6.0	663[1]	0.485	100	44.8	LOS D	14.5	107.0	Full	800	0.0	0.0
Lane 3	326	6.0	326	6.0	672	0.485	100	32.0	LOS C	14.7	108.5	Full	800	0.0	0.0
Lane 4	31	0.0	31	0.0	93	0.329	100	70.4	LOS E	1.8	12.9	Short	65	0.0	NA
Approach	687	5.8	687	5.8		0.485		39.9	LOS D	14.7	108.5				
East: Grantville-Glen Alvie Road (E)															
Lane 1	173	6.7	173	6.7	494	0.350	100	26.3	LOS C	5.4	40.3	Full	800	0.0	0.0
Approach	173	6.7	173	6.7		0.350		26.3	LOS C	5.4	40.3				
North: Bass Highway (N)															
Lane 1	68	10.8	68	10.8	618	0.111	100	34.5	LOS C	2.6	20.2	Short (P)	145	0.0	NA
Lane 2	311	7.3	311	7.3	667	0.465	100	31.8	LOS C	13.9	103.6	Full	800	0.0	0.0
Lane 3	311	7.3	311	7.3	667	0.465	100	31.8	LOS C	13.9	103.6	Full	800	0.0	0.0
Lane 4	4	0.0	4	0.0	93	0.045	100	67.9	LOS E	0.2	1.7	Short	75	0.0	NA
Approach	694	7.6	694	7.6		0.465		32.2	LOS C	13.9	103.6				
West: Pier Road (W)															
Lane 1	49	10.6	49	10.6	323	0.153	100	47.8	LOS D	2.4	18.6	Full	200	0.0	0.0
Approach	49	10.6	49	10.6		0.153		47.8	LOS D	2.4	18.6				
All Vehicles	1603	6.8	1603	6.8		0.485		35.4	LOS D	14.7	108.5				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes.
Delay and stops experienced by drivers upstream of short lane entry have been accounted for.

Approach Lane Flows (veh/h)

South: Bass Highway (S)

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	9	-	-	9	11.1	617	0.015	100	0.0	2
Lane 2	-	321	-	321	6.0	663[1]	0.485	100	NA	NA
Lane 3	-	326	-	326	6.0	672	0.485	100	NA	NA
Lane 4	-	-	31	31	0.0	93	0.329	100	0.0	3
Approach	9	647	31	687	5.8		0.485			

East: Grantville-Glen Alvie Road (E)

Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	95	21	57	173	6.7	494	0.350	100	NA	NA
Approach	95	21	57	173	6.7		0.350			

North: Bass Highway (N)

Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	68	-	-	68	10.8	618	0.111	100	0.0	2
Lane 2	-	311	-	311	7.3	667	0.465	100	NA	NA
Lane 3	-	311	-	311	7.3	667	0.465	100	NA	NA
Lane 4	-	-	4	4	0.0	93	0.045	100	0.0	3
Approach	68	621	4	694	7.6		0.465			

West: Pier Road (W)

Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	19	7	23	49	10.6	323	0.153	100	NA	NA

Approach	19	7	23	49	10.6		0.153

	Total	%HV	Deg.Satn (v/c)
All Vehicles	1603	6.8	0.485

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

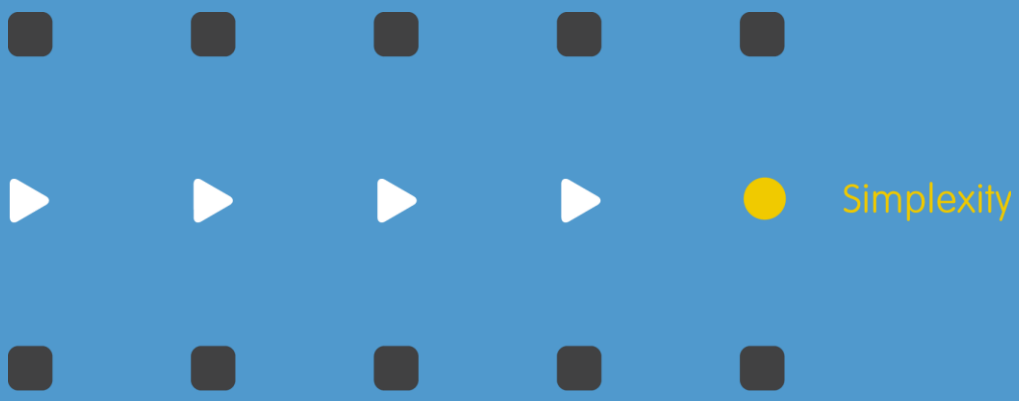
1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes.
Delay and stops experienced by drivers upstream of short lane entry have been accounted for.

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Bass Highway (S)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0
Lane 4	0.0	0.0	0.0	0.0
East: Grantville-Glen Alvie Road (E)				
Lane 1	0.0	0.0	0.0	0.0
North: Bass Highway (N)				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0
Lane 4	0.0	0.0	0.0	0.0
West: Pier Road (W)				
Lane 1	0.0	0.0	0.0	0.0


Simplexity

38°24'30.9"S
145°31'49.2"E

Mixed-Use Development: 1517-1529 Bass Highway, Grantville



Waste Management Plan

15 October 2024
Prepared for Bass Hwy PTY LTD

IMP2302059WMP01F04.docx

Impact

Document Set ID: 11482259
Version: 1, Version Date: 22/10/2024

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APPENDIX A Swept Path Analysis

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1 Introduction

1.1 Engagement

IMPACT® have been engaged by Bass Hwy PTY LTD to prepare a Waste Management Plan (WMP) for the proposed mixed-use development at 1517-1529 Bass Highway, Grantville.

A permit (210196) was issued approving the subject site to be constructed as mixed-use site comprising a service station, convenience restaurant and retail tenancies, subject to conditions.

It is noted that a previous waste management plan, prepared by WSP, was approved as a part of the previous permit application for the site.

A new application is now being lodged for the site, a proposal which is largely consistent, with the main modification being the addition of a childcare at the northern side of the site.

1.2 Scope of Engagement

This Waste Management Plan has been prepared to accompany a town planning submission.

In preparing this assessment we have referenced the following:

- Development plans prepared by Rise Architecture
- Sustainability Victoria's 'Waste Management and Recycling in Multi-Unit Developments Better Practice Guide'
- Sustainability Victoria's 'Multi-Unit and Commercial development Waste and Recycling Generation Rates Calculator.
- Bass Coast planning permit 210196; and
- Waste management planned prepared by WSP dated 28/05/2021.

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2 Existing Conditions

2.1 Location

The subject site is located on the south-eastern corner of the intersection of Bass Highway and Grantville-Glen Alvie Road as illustrated in Figure 1 and Figure 2.

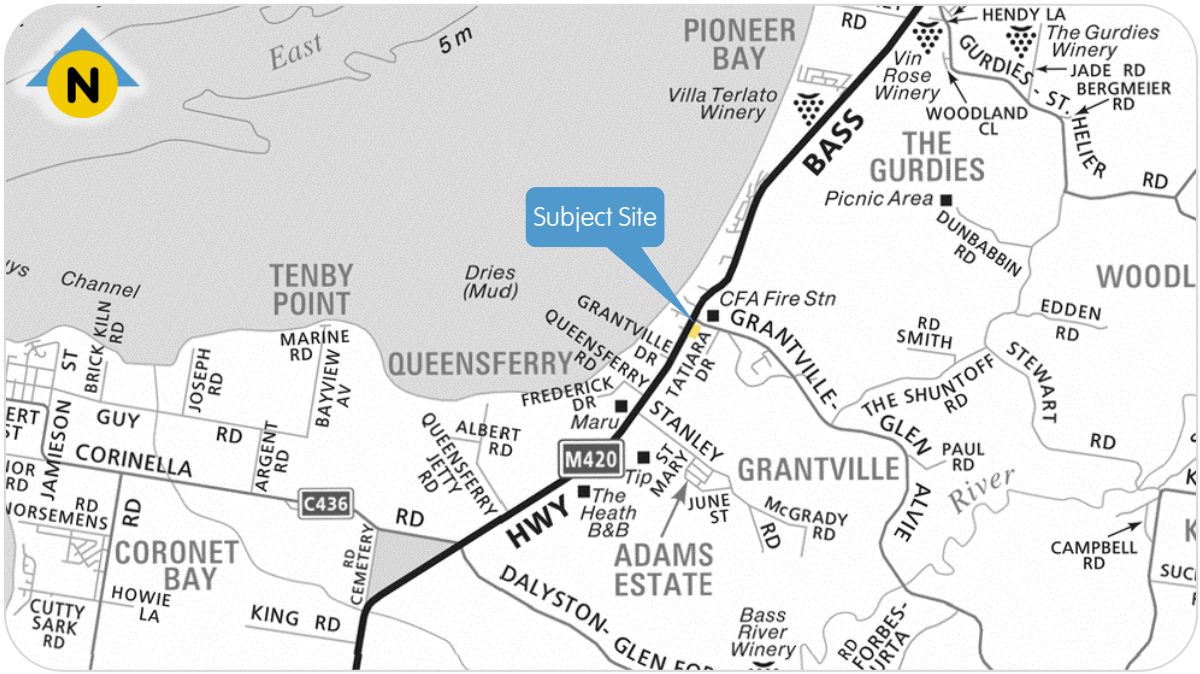

Figure 1 Location of Subject Site



Figure 2 Aerial View of Subject Site

The site is symmetrical in shape with frontages to Bass Highway to the west & Grantville-Glen Alvie Road to the north.

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3 Development Proposition

3.1 Use and Yield

It is planned to develop the subject site as a mixed-use development comprising the following as outlined in Table 1.

Table 1 Development Summary

Use	Size / Area
Service Station (incl. convenience shop)	247 sq.m
Convenience Restaurant	50 patrons / 197 sq.m
Retail	753 sq.m across six (6) tenancies
Childcare	616 sq.m

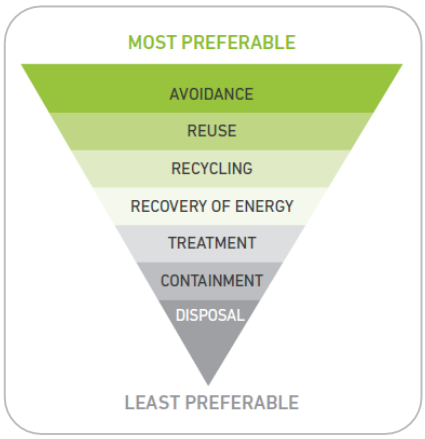
For the purposes of this assessment, it is assumed that two (2) of the six (6) retail tenancies will be non-food related, whilst the remaining four (4) will be attributed to a food related use; this translates to approximately 172 square metres and 581 square metres respectively.

4 Objectives

The primary objective of this WMP is to:

- Identify all potential waste streams likely to be generated on site; and
- Provide a description of how waste is likely to be stored, handled, processed and disposed of, or reused and recycled.

This WMP seeks to establish principles by which the design, provision and maintenance of services and infrastructure that enable garbage, recycling, organics and bulky waste services to be operated at the development site in the best possible way in order to improve resource recovery and align with the principles of waste hierarchy.



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5 Waste Generation

In relation to anticipated waste generation rates, we note that Sustainability Victoria's 'Better Practice for Waste Management and Recycling in Multi Unit Developments' indicates the following generation rates applicable to the proposed mixed-use development:

— Convenience Restaurant	Garbage Organic Recycling	528 L / 100 sq.m / day; 132 L / 100 sq.m / day; and 200 L / 100 sq.m / day.
— Retail (non-food)	Garbage Recycling	50 L / 100sq.m / day; and 50 L / 100sq.m / day.
— Retail (food)*	Garbage Organic Recycling	240 L / 100sq.m / day; 60 L / 100sq.m / day; and 200 L / 100sq.m / day.
— Convenience Shop	Garbage Recycling	300 L / 100sq.m / day 150 L / 100sq.m / day.
— Fuel Bowser	No rates available / applicable. In the context of this proposal the bowsers themselves are not expected to generate significant volumes of waste (with most waste attributable to the convenience store)	
— Childcare	Garbage Recycling	50 L / 100sq.m / day; and 50 L / 100sq.m / day.

*For the purposes of this assessment, waste generation rates for retail (food) tenancies have been assumed to be equivalent to that of a 'cafe', in practice some of these would likely function as 'take away' premises, for which lower traffic generation rates are expected.

Note: It is assumed that for the convenience restaurant and retail food tenancies approximately 20% of the garbage components / rates identified above will be attributable to food organics.

However, is understood that there are currently no private collection companies offering an Organics waste collection service in the Bass Coast Council area.

Therefore, the following assessment assumes that Organic waste will be collected with the general Landfill Garbage stream.

Organics waste streams should be considered once the relevant services become available.

Application of the above rates to the proposal will yield the following weekly waste generation:

Table 2 Projected Waste Generation

Component	Area (m^2)	Generation / 100sq.m / day	Weekly Waste Gen*
Convenience Restaurant	197	Garbage: 660 L Recycling: 200 L	9,101 L 2,758 L
Retail (non-food)	172	Garbage: 50 L Recycling: 50 L	602 L 602 L
Retail (food)	581	Garbage: 300 L Recycling: 200 L	12,201 L 8,134 L
Service Station / Convenience Shop	247	Garbage: 300 L Recycling: 150 L	5,187 L 2,593 L
Childcare*	616	Garbage: 50 L Recycling: 50 L	1,540 L 1,540 L

*Assumes 5 days per week operation for the childcare portion of the site. All other uses are assumed as 7 days per week operation.

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6 Equipment and Systems

6.1 Bins

The following bins will be allocated to each of the uses contemplated on-site:

Convenience Restaurant

- Three (3) x 1,100 L & two (2) 660 L Garbage bins; and
- One (1) x 1,100 L & one (1) x 660 L Recycling bins.

Retail Tenancies

- Six (6) x 1,100 L Garbage bins; and
- Four (4) x 1,100 L Recycling bins.

Convenience Shop

- Two (2) x 1,100 L & one (1) x 660 L Garbage bins; and
- One (1) x 1,100 L & one (1) x 240 L Recycling bins.

Childcare

- Two (2) x 1,100 L Garbage bins; and
- Two (2) x 1,100 L Recycling bins.

Table 3 Bin Dimensions

Bin	Height*	Depth*	Width*
240 L MGB	1,080 mm	735 mm	585 mm
660 L MGB	1,250 mm	880 mm	1,370 mm
1,100 L MGB	1,330 mm	1,070 mm	1,240 mm

* Based on standard bin dimensions provided in 'Sustainability Victoria's Waste Management and Recycling in Multi-Unit Developments' Guidelines

A private bin collection arrangement is recommended; thus, the bin colours can be adopted from options provided in AS4123.7 and labelled accordingly to identify the waste generator and site address.

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6.2 Location

Three separate bin storage areas are proposed to service the subject site. Specifically, one (1) bin storage area is proposed for the childcare centre, one (1) for the retail tenancies and one (1) shared bin area for the convenience restaurant / convenience shop.



Figure 3 Location of bin storage areas

6.3 Collection Frequency

The bin capacity and collection frequency for each waste type are summarised in Table 4.

Table 4 Waste Collection Frequency

Component	Waste Stream	Weekly Generation	Bin Capacity	Collection Frequency
Convenience Restaurant & Convenience Shop	Garbage Recycling	14,288 L 5,351 L	7,480 L 3,100 L	Twice a Week
Retail	Garbage Recycling	12,803 L 8,736 L	7,260 L 5,060 L	Twice a Week
Childcare	Garbage Recycling	1,540 L 1,540 L	2,200 L 2,200 L	Once a Week

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6.4 Collection Arrangements

6.4.1 Waste Disposal

In addition to the larger bins kept within each of the respective service / bin areas, a series of smaller bin stations (including one dedicated to garbage, food organics and recycling) will be provided throughout the convenience restaurant, convenience shop / service station and childcare areas.

Staff of each respective tenancy will be responsible for monitoring the smaller bins and emptying them when full (transferring waste to the larger bins when required); at a minimum, bins will be emptied at the end of each day. An example illustration of a possible bin station arrangement is shown in Figure 4.



Figure 4 Example Bin Station

6.4.2 Waste Collection

General	Waste shall be collected within the development, with a private waste collection contractor engaged. Waste bins shall be collected by rear-lift rigid vehicle, approximately 8.8 metres in length.
Retail, Convenience Shop & Restaurant	The waste vehicle will enter the site and prop adjacent the respective retail, as well as the convenience shop & restaurant bin areas while collecting bins. It will then exit the site in a forward direction to Bass Highway. A swept path analysis, provided within Appendix A confirms that the development plans make adequate provision for a vehicle of this length to access the site. Note: The site manager in conjunction with tenant operators will be responsible for managing the waste system and for developing and implementing adequate safe operating procedures.
Child Care Centre	Collections for the child care will also occur within the main service station portion of the site. Specifically, these bins will be collected at the same time / position as those from the retail area (with the truck propped adjacent the retail bin room). Staff of child care (in conjunction with waste collection contractors) will wheel bins from the childcare bin store, towards the truck and back again. Allowance has been made for the provision of a mechanical bin tug to assist in this transfer process. Note: It is expected that collections will be undertaken during 'off peak' hours when vehicle movement and traffic within the main portion of the site is minimised.

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6.5 Amenity Management

6.5.1 Washing, Ventilation and Vermin-Prevention Measures

Each tenant shall maintain, wash, sanitise/deodorise and arrange vermin prevention measures for their bin area as required.

A graded bin-wash area, hosecock, hose, and a suitable floor-waste connected shall be provided proximate to each bin store area in accordance with the relevant authority requirements. The bin and wash areas may overlap, as stored bins can be moved so that a bin can be washed.

Alternatively, a contractor can be engaged by the site's Owner's Corporation to wash and sanitise waste bins as required - the contractor will be responsible for containing and disposing of any contaminated water.

6.5.2 Noise Reduction Measures

The hours of waste collections shall be as specified in Council's local laws and / or in accordance with the Victorian EPA Noise Control Guideline, which sets out the following requirements:

- Collection occurring once a week should be restricted to the hours: 6am to 6pm Monday to Saturday.
- Collections occurring more than once a week should be restricted to the hours: 7am to 6pm Monday to Saturday.
- Compaction should only be carried out while on the move.
- Bottles should not be broken up at the point of collection.
- Routes which service entirely residential areas should be altered regularly to reduce early morning disturbance.
- Noisy verbal communication between operators should be avoided where possible

6.5.3 Stormwater Pollution Prevention

To prevent stormwater pollution, each tenant will be required to:

- Ensure all waste is disposed into bins;
- Ensure rubbish and recycling items are secured so they can't blow away;
- Keep bins closed to prevent animals from searching through waste; and
- Make sure any bin spillage is cleaned up using dry absorbent materials (such as sand, sawdust or paper towel, as required).

6.5.4 Other Waste Streams

6.5.4.1 Hard Waste / E-Waste

Allowance has been made for the temporary storage / holding of hard waste within each of the bin area / loading bay area.

Hard waste collections will also be undertaken by a private contractor on an 'as needs' basis.

Contractors will collect hard waste adjacent bin store areas on-site, with tenants (in conjunction with the contractor) responsible for transferring the hard waste to the truck for collection.

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6.5.4.2 Garden Waste

It is recommended that any green waste generated by any of the communal garden areas around the site be collected and disposed of by a garden maintenance contractor.

The body corporate (between tenancies) will be responsible for organising and coordinating the garden waste contractor.

Note: It is expected that any garden waste generated by specific tenancy garden areas will also be managed by a contractor, or could be disposed of into the respective tenancy Food Organics / Green Organics bins.

6.6 Communication Strategy

The developer is responsible for providing the Endorsed Waste Management Plan to the Building Operator;

Each tenant operator (or owner) will be responsible for the education of staff in the practices of waste reduction / minimisation to divert waste from landfill; this education should also extend to customers (as much as practical). This can be achieved by the following:

- Document and distribute details of the waste management system that is in place on-site to all staff;
- Encourage waste separation from staff (and customers) including education posters above bin stations / temporary holding bins (see example below);
- Any future change to regulatory requirements or the development's waste generation rates will require the operator (tenants) to conduct a waste audit and revise the waste management system that is in place; and
- Waste bins will be clearly marked and signed with the appropriate signage as indicatively shown below, or equivalent.

Staff will be instructed by the tenant operators to adhere to these requirements.



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6.7 Contact Information

6.7.1 Council

Bass Coast Shire Council	Local Council	ph 1300 226 278 or 5671 2211

6.7.2 Suppliers / Contractors

iDump:	Private Waste Collector	ph 1300 443 867
Kartaway	Private Waste Collector	ph 1300 362 362
Waste Wise Environmental	Private Waste Collector	ph 03 9359 1555
Sulo MGB Australia	Bin supplier	ph 1300 364 388

6.7.3 Other Useful Contacts

Sustainability Victoria	ph 1300 363 744
	Online: www.sustainability.vic.gov.au
Eco Waste Recycle Centre & Transfer Station	Online: www.ecowasterecycling.com.au
Cleanaway	Online: www.cleanaway.com.au

7 Limitations

This Waste Management Plan is intended to inform and accompany a town planning application.

The waste generation data presented in this report are estimates only based on the existing operations. Actual waste generation characteristics could vary month to month depending on demand and productivity. Accordingly, it is our expectation that the Building Manager / Site Operator will adjust the recommended strategy to respond to actual operational conditions post development. These adjustments could include, but are not limited to increasing the number of bins and or increasing the collection frequency - Subject to Council Approval.

To this end, Subject to Council request, changes in legal requirements, changes in the development's needs and / or waste patterns (waste composition, volume or distribution), or to address unforeseen operation issues, the operator shall be responsible for coordinating the necessary Waste Management Plan revisions, including (if required):

- A waste audit and new waste strategy;
- Revision of the waste systems (bin sizes / quantity / streams / collection frequency);
- Re-education of tenants;
- Revision of the services provided by the waste collector(s); and
- Any necessary statutory approval(s).

Further, it is noted that:

- The developer is responsible for providing the Endorsed Waste Management Plan to the Building Operator;
- The Building Operator is responsible for requesting a copy of the Endorsed Waste Management Plan from Council if the developer has failed to provide the WMP to the Building Operator; and
- This Waste Management Plan is limited to the operation waste requirements of this development, and does not account for demolition and / or construction waste.

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APPENDIX A
Swept Path Analysis

Design Vehicle: 8.8 Metre Medium Rigid Vehicle

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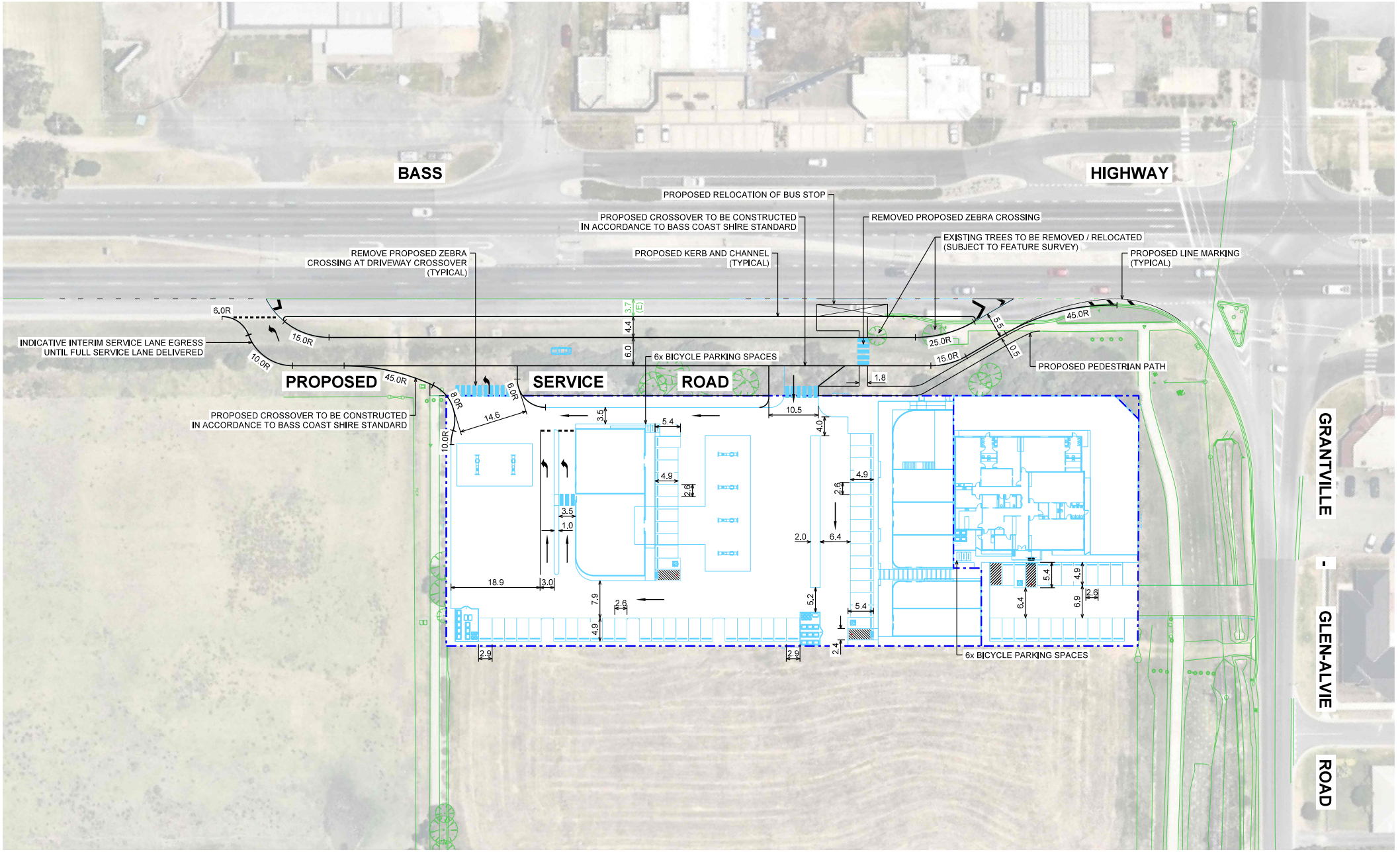

GENERAL NOTES:

1. ALL DIMENSIONS ARE TO FACE OF KERB AND CHANNEL UNLESS NOTED OTHERWISE.
2. LOCAL ROADS - GRANTVILLE-GLEN-ALVIE ROAD (SPEED ZONE 80KM/H).
   DECLARED ROADS - BASS HIGHWAY (SPEED ZONE 80KM/H).
   - BASS HIGHWAY SERVICE ROAD (SPEED ZONE 50KM/H).
3. BASE INFORMATION FROM NEARMAP AERIAL PHOTOGRAPHY DATED 09.01.2023 AND RISE ARCHITECTURE 2223_Ground Floor Plan (08.02.2024).dwg DATED 08.02.2024

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MELWAY ONLINE REF: MAP 18 Q22

SCALE
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Client
TAYLORS

Date 2024-10-15
Drawn / Approved WH / ES

Project
COMMERCIAL DEVELOPMENT
1517-1529 BASS HIGHWAY GRANTVILLE
BASS COAST SHIRE

Title
TRAFFIC & TRANSPORT ASSESSMENT
CONCEPT LAYOUT PLAN

Status
PRELIMINARY

Drawing Number
IMP2302059 - DRG-01-01

Revision
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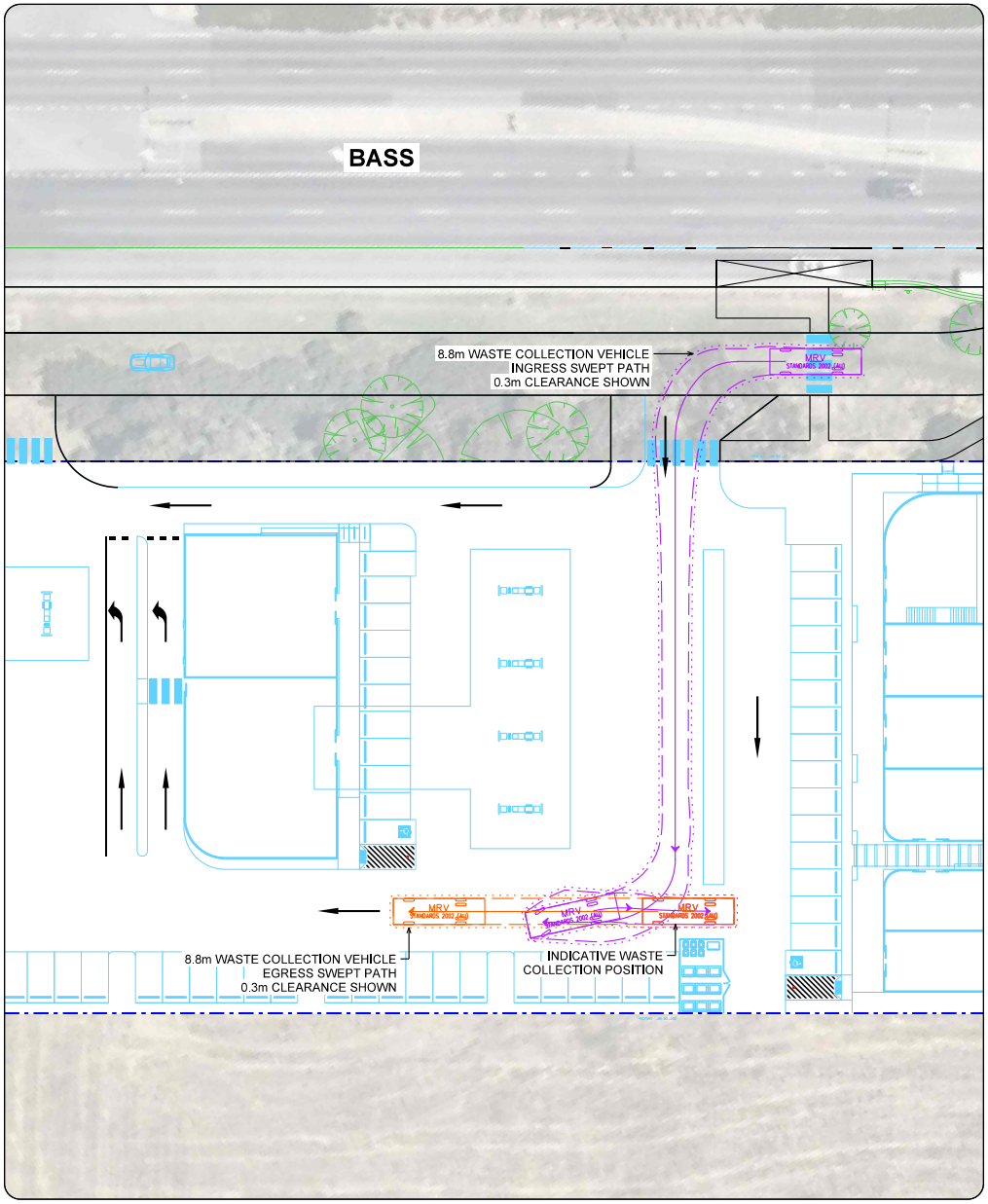

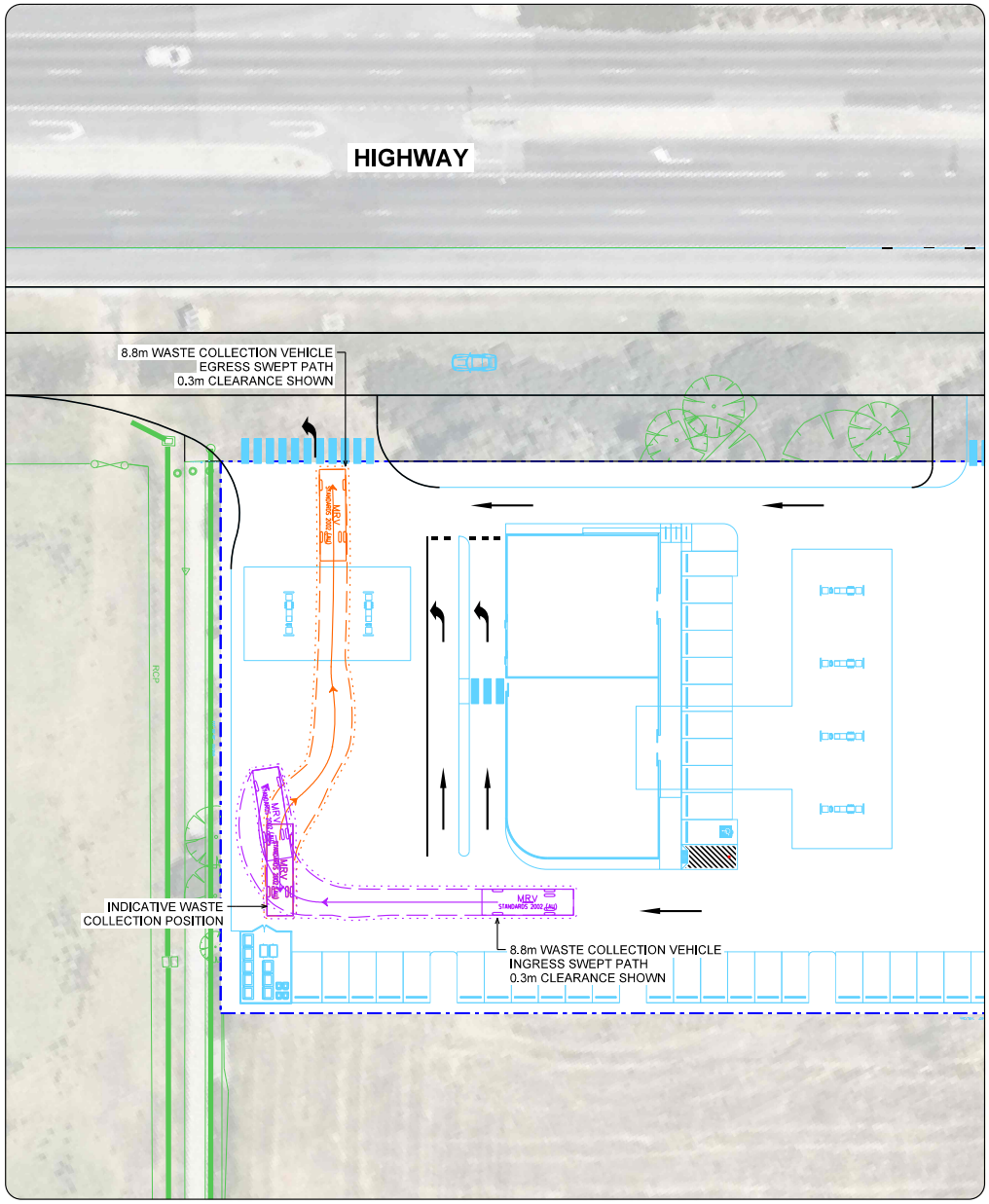



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SCALE
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Client
TAYLORS

Date 2024-10-15
Drawn / Approved WH / ES

Project
COMMERCIAL DEVELOPMENT
1517-1529 BASS HIGHWAY GRANTVILLE
BASS COAST SHIRE

Title
TRAFFIC & TRANSPORT ASSESSMENT
SWEPT PATH ANALYSIS
8.8m WASTE COLLECTION VEHICLE

Status
PRELIMINARY

Drawing Number
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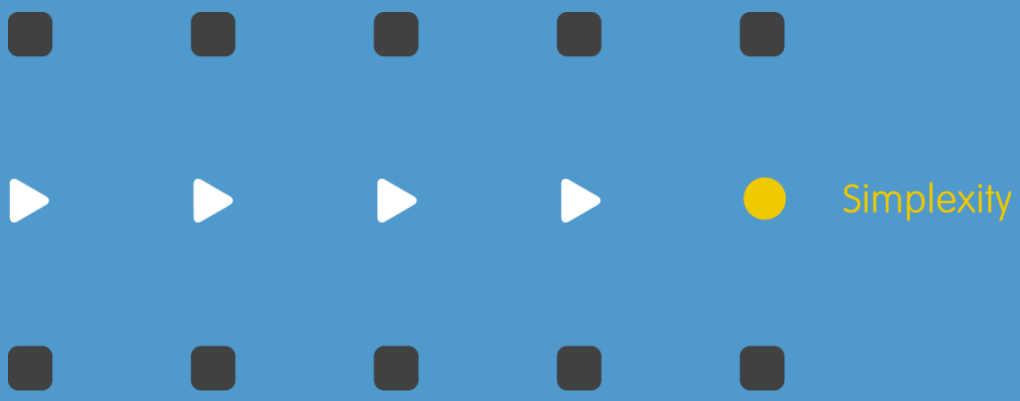

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October 2024

Biodiversity Assessment, 1517-1529 Bass Highway, Grantville, Victoria



Prepared for:

Rise Architecture

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Document Control

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Site assessors	Stuart Cooney and Liam McCormack
Report reviewer	Simon Scott
Other staff	N/A
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Cover Photograph

A photograph of vegetation within the study area taken during the current assessment.

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Executive Summary

Ecolink Consulting Pty Ltd was engaged by Rise Architecture to undertake a Biodiversity Assessment at a proposed development site at 1517-1529 Bass Highway, Grantville, Victoria (the study area). The Biodiversity Assessment was undertaken to determine the ecological constraints of the study area, and to support a planning permit application for its commercial development.

The study area is located within the township of Grantville, and is located adjacent to a small urban neighbourhood, within a rural landscape. It is zoned Mixed Use Zone within the Bass Coast Planning Scheme. No planning overlays, relevant to the current assessment, such as Environmental Significance, Vegetation Protection or Significant Landscape Overlays, cover the study area.

Department of Energy, Environment, and Climate Action modelling suggests that the study area was historically covered by Ecological Vegetation Classes (EVC) 16: Lowland Forest, throughout the north of the study area, with EVC 53: Swamp Scrub in the south of the study area. Two patches of native vegetation were recorded within the study area during the current assessment.

Thirty-one flora species were recorded during the assessment (excluding the planted trees). This comprised seven indigenous species and 24 exotic species. The vegetation was dominated by exotic species including Sweet Vernal-grass *Anthoxanthum odoratum*, Toowoomba Canary Grass *Phalaris aquatica,* Birds Foot Trefoil *Lotus corniculatus*, and Paspalum *Paspalum dilatatum,* as well as environmental weeds, such as Couch *Cynodon dactylon* var. *dactylon*, Ribwort *Plantago lanceolata,* Flatweed *Hypochaeris radicata* and Onion Grass *Romulea rosea*. Patches of native vegetation, parallel to the Bass Highway, included an overstorey of Coast Manna Gum *Eucalyptus viminalis* subsp. *pryoriana*. The midstorey consisted primarily of Blackwood *Acacia melanoxylon*. The understorey was dominated by exotic vegetation, including the above-mentioned pasture grasses and environmental weeds, with some patches of Bidgee-Widgee *Acaena nova-zealandiae*. A seasonal drain ran through the middle of the patches of native vegetation, encouraging some semi-aquatic species such as Broom Rush *Juncus sarophorus* in these areas.

Ten threatened flora species have been recorded within three kilometres of the study area. There are no historical records of threatened flora species within the study area, and none were observed during the current assessment. No threatened ecological communities were recorded during the current assessment and there are no threatened flora species or ecological communities that are likely to be impacted by the proposed development.

Ten fauna species were recorded within the study area during the current assessment. This comprised seven birds (two introduced, five native), one introduced mammal and one native frog species. It is expected that a greater diversity of fauna species would be recorded with a greater amount of time on-site.

Most of the threatened fauna species modelled to occur by the Protected Matters Search Tool, and recorded within the three kilometre buffer area, are pelagic or wetlands dependent species that are entirely dependent on habitats that are not provided within the study area. The study area may also provide air space over which White-throated Needletail *Hirundapus caudacutus* and Grey-headed

Flying-fox *Pteropus poliocephalus* fly on occasions, when moving around the landscape, however the study area itself does not provide important resources to these species, and the development of the study area is unlikely to impact either of these species.

In this context, and based on the relevant legislation and policies, the following recommendations are made:

- To obtain regulatory approval:
    - Design a development footprint that avoids and minimises impacts to the native vegetation within the study area;
- Post approval, subject to regulatory approvals:
    - Engage a zoologist or wildlife handler salvage any wildlife from planted trees prior to their removal.
    - Provide an offset for the residual loss of native vegetation of:
        - 0.073 General Habitat Units;
            - With a minimum Strategic Biodiversity Score of 0.320;
            - Located with the Melbourne Water Catchment Management Authority area or the Bass Coast Shire Council municipality; and
        - Three Large Trees
    - Prepare a Construction Environment Management Plan (or equivalent) which includes:
        - Protection of retained scattered trees within the study (if any); and
        - Using clean fill (if required);
        - Avoiding downstream and off-site impacts; and
        - Measures to minimise impacts associated with weed introduction and spread targeting noxious weeds such as:
            - Blackberry *Rubus fruticosus* spp. agg.;
            - Bridal Creeper *Asparagus asparagoides;*
            - Bulbil Bugle Lilly *Watsonia meriana* var. *bulbillifera;* and,
            - Soursob *Oxalis pes-caprae.*

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Introduction

Ecolink Consulting Pty Ltd was engaged by Rise Architecture to undertake a Biodiversity Assessment at the proposed development of 1517-1529 Bass Highway, Grantville, Victoria (the study area; Figure 1). The study area is proposed to for commercial development, comprising retail shops, a childcare centre and a service station. The Biodiversity Assessment was undertaken to determine the ecological constraints of the study area and to provide input into the development plan for the study area.

The assessment addresses the requirements of Clauses 52.17 of the Bass Coast Planning Scheme. Clauses 52.17 requires mapping and assessing the location, extent and quality of native vegetation in accordance with the *Guidelines for the Removal, Destruction or Lopping of Native Vegetation* (Department of Environment Land Water and Planning 2017). The Biodiversity Assessment also identifies the likely ecological constraints of the study area and recommends mitigation measures and offset requirements based on other relevant legislation and policies, where appropriate.

Therefore, the purpose of the Biodiversity Assessment is to:

- Determine the ecological values of the study area;
- Evaluate the extent and quality of native vegetation within the study area, required under the *Guidelines for the Removal, Destruction or Lopping of Native Vegetation* (Department of Environment Land Water and Planning 2017);
- Evaluate any impacts that are likely to occur to any ecological values as a result of the potential loss of vegetation at the study area; and
- Make recommendations to avoid or mitigate impacts identified ecological values, as appropriate.

Methods

Desktop Assessment

In order to determine the ecological values that have previously been recorded within the study area, and its vicinity, the following databases and literature were consulted:

- The Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) Protected Matters Search Tool to determine Matters of National Environmental Significance (MNES), under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act), that are modelled to occur in the vicinity of the study area (Department of Climate Change Energy the Environment and Water 2023a);
- Planning Maps to identify the planning zones and overlays relating to environmental matters e.g. Vegetation Protection Overlays or Environmental Significance Overlays (Department of Transport and Planning 2023);
- The NatureKit webpage (Department of Environment Land Water and Planning 2023c) from the Department of Energy, Environment, and Climate Action (DEECA) to identify the historic and current Ecological Vegetation Classes (EVCs);
- The Victorian Biodiversity Atlas (Department of Environment Land Water and Planning 2023f) for records of threatened[1] flora and fauna within three kilometres of the study area;
- Nearmap aerial photography to understand previous land use (Nearmap 2023);
- The Native Vegetation Information Management System (NVIM) to determine biodiversity offset requirements (Department of Environment Land Water and Planning 2023b);
- The 'Weeds of National Significance' database (Department of Climate Change Energy the Environment and Water 2023b); and,
- Other relevant legislation and policies (as required).

Site Assessment

A site assessment was undertaken on 30 May 2023 by Principal Ecologist, Stuart Cooney and Botanist/Ecologist, Liam McCormack. Stuart and Liam are both suitably qualified and experienced to undertake such assessments and Liam holds a current Vegetation Quality Assessments (Habitat Hectares) Accreditation with DEECA (Department of Environment Land Water and Planning 2023e).

All flora species observed within the study area were recorded, with the exception of planted vegetation that was not considered a 'weed' (i.e. planted vegetation that was not spreading or reproducing). Where a species was not able to be confidently identified in the field, a sample was collected and later identified. Plants were identified to species level wherever possible, however, some plants that were planted, cultivars, hybrids, or plants that did not contain suitable fertile material used for identification were recorded to genus level.

[1] Threatened flora and fauna includes species listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999 (Cth)*, and the *Flora and Fauna Guarantee Act 1988 (Vic*).

Vegetation communities such as EVCs and nationally significant vegetation communities were recorded (if observed) and compared with their corresponding benchmarks or thresholds to ensure that they were accurately assigned.

A list of all fauna species observed within, and immediately surrounding, the study area was produced. This list consists of species seen, heard, or identified by other evidence of their presence (e.g. feathers, scats). Leica 12 X 50 binoculars and call mimicry/playback were used to assist in the identification species.

The species, size (Diameter and Breast Height and Tree Protection Zone) and location of all 'scattered' indigenous trees was recorded using an iPad mini tablet that has an internal Global Positioning System (GPS) and the GIS Pro application (accuracy +/- 5 metres). The presence of hollows and birds' nests was also noted.

The presence of fauna habitat was noted, particularly in relation to potential habitats for threatened species. The greatest amount of time was spent surveying the highest quality fauna habitats (e.g. trees, water bodies, crevices or under ground debris) during the assessment.

Guidelines for the Removal, Destruction or Lopping of Native Vegetation

The *Guidelines for the Removal, Destruction or Lopping of Native Vegetation* (the Guidelines) (Department of Environment Land Water and Planning 2017) are required to be addressed under Clause 52.17 of the Planning Scheme. The Guidelines require that information regarding the biodiversity values of the site were obtained through:

- Site-based information that was measured or observed at a site, including:
    - Extent of native vegetation patches;
    - Large trees;
    - Native vegetation condition assessed in accordance with the *Vegetation Quality Assessment Manual – Guidelines for Applying the Habitat Hectares Scoring Method* (Department of Sustainability and Environment 2004);
    - Ecological Vegetation Classes (EVC); and
    - Sensitive wetlands and coastal areas.
- Landscape scale information that cannot be measured or observed at the site and includes maps and models procured from DEECA.

The Guidelines require a Habitat Hectare assessment in instances where the impact is to be assessed under the Detailed Assessment Pathway. It was not possible to determine the risk-based pathway for the loss of native vegetation prior to the site assessment, and we therefore opted to complete the Habitat Hectare assessment in accordance with the methodology prescribed within the *Vegetation Quality Assessment Manual – Guidelines for Applying the Habitat Hectares Scoring Method* (Department of Sustainability and Environment 2004) where patches[2] of vegetation were observed.

[2] A 'patch' is defined as an area with at least 25% cover abundance of perennial native vegetation, or a group (i.e. three or more) trees forming a continuous canopy.

All indigenous vegetation was assessed, and then assigned a quality rating based on the Habitat Hectare score (Department of Sustainability and Environment 2004). In addition, the location and species of indigenous 'scattered trees'[3], and any 'large trees'[4] within patches were mapped.

Limitations and Qualifications

The following limitations and qualifications apply to this report:

- The results of the desktop assessment are reliant on data obtained from various databases and other reports. These databases all have internal vetting procedures, however the accuracy of these historical data and some of the results provided within these reports cannot be verified. The desktop assessment does, however, rely on the most accurate data available.
- As with all ecological assessments, a greater survey effort is likely to yield additional flora and fauna records. Where these additional flora and fauna records may alter the recommendations made within this report (e.g. where additional threatened species may utilise habitats within the study area, or where threatened species may be impacted by the proposed development), further assessment has been recommended within this report, depending on the implications of relevant policies and legislation.
- Late autumn is not the preferred time of year for ecological assessments. Some flora and fauna species may only be recorded during certain times or seasons (e.g. plants that only contain above-ground biomass and are only visible annually, nocturnal mammals and birds, migratory birds, or fauna identified through seasonal breeding calls such as some frog species).

On the basis of the above, the author has made an informed decision about the likely presence of threatened species that may be present, or that may utilise habitats within the study area, based on a desktop assessment, a review of the species' biology, and an understanding of the ecological values of the local area.

Despite the limitations to the assessment listed above, the results gained by both a desktop and a field-assessment are adequate to address the purposes of this report.

[3] Scattered trees are defined as a native canopy tree that does not form a patch

[4] Large trees are defined as meeting the size threshold specified in the bioregional EVC Benchmark

Results

The Study Area

Study Area Description and Land Use History

The study area is rectangular, extending east of the Bass Highway, the township of Grantville. Commercial development occurs to the north and west of the study area, while residential development occurs to the east and south, although the block facing the Bass Highway to the south of the study area are not developed, and are open, slashed exotic grasslands (Figure 1).

The landscape surrounding the study area is flat, with Western Port Bay located approximately 400 metres west of the study area. The wider landscape, to the north, east and south, is rural in nature, with farms and extractive industries set among bushland reserves. Reserves and protected areas included the Gurdies Nature Conservation Reserve and Grantville Bushland Reserve to the north, the Grantville Nature Conservation Reserve to the south and the Western Port Intertidal Coastal Reserve to the west.

The study area itself is also flat. It is currently vacant, dominated by exotic vegetation with some native vegetation, mostly consisting of trees and shrubs near the western boundary of the study area, extending into the Bass Highway Road Reserve (Plate 1). The grasses appear to be regularly slashed. There are no permanent water sources, such as dams, creeks or rivers, within the study area, however a seasonal drain runs the length of the western boundary. Further to this, a permanent roadside drain runs toward Westernport Bay, north of the study area (Plate 2).

The PMST identifies one Wetland of International Importance (Ramsar wetlands) within the same catchment as the study area. The study area is located adjacent to the Western Port Wetland of International Importance, approximately 400 metres upstream of this wetland.

Local Planning Controls

The study area is zoned Mixed Use Zone within the Bass Coast Planning Scheme. No planning overlays, relevant to the current assessment, such as Environmental Significance, Vegetation Protection or Significant Landscape Overlays, cover the study area (Department of Environment Land Water and Planning 2023e).

Flora

Flora Communities

The study area is located within the Gippsland Plain bioregion of Victoria. DEECA modelling of the vegetation within the study area suggests that it was historically covered by Ecological Vegetation Classes (EVC) 16: Lowland Forest, throughout the north of the study area, with EVC 53: Swamp Scrub in the south of the study area (Department of Environment Land Water and Planning 2023c).

These EVCs are described as:

- EVC 16: Lowland Forest is a *'eucalypt forest to 25 metres tall on relatively fertile, moderately well-drained soils in areas of relatively high rainfall.* [It is] c*haracterised by the diversity of life forms and species in the understorey including a range of shrubs, grasses and herbs' (Department of Environment Land Water and Planning 2023a).* EVC 16: Lowland Forest is listed as 'Vulnerable' within the bioregion.
- EVC 53: Swamp Scrub is described as a '*closed scrub to eight metres tall at low elevations on alluvial deposits along streams or on poorly drained sites with higher nutrient availability. The EVC is dominated by Swamp Paperbark Melaleuca ericifolia (or sometimes Woolly Tea-tree Leptospermum lanigerum) which often forms a dense thicket, out-competing other species. Occasional emergent eucalypts may be present. Where light penetrates to ground level, a moss/lichen/liverwort or herbaceous ground cover is often present. Dry variants have a grassy/herbaceous ground layer*' (Department of Environment Land Water and Planning 2022a). The Conservation Status of EVC 53: Swamp Scrub is 'Endangered' within the Gippsland Plain bioregion.

Current vegetation modelling, by DEECA, suggests that none of this vegetation persists within the study area (Department of Environment Land Water and Planning 2023c). The current assessment confirmed the presence of Coast Manna Gum *Eucalyptus viminalis* subsp*. pryoriana* in the canopy of the study area, indicative of EVC 16: Lowland Forest. Whilst in the north, the lack of a canopy structure and presence of moisture preferring species indicated the presence of EVC 53: Swamp Scrub.

Flora Species

Thirty-one flora species were recorded during the assessment (excluding the planted trees). This comprised seven indigenous species and 24 exotic species (Table A1).

The vegetation within the study area was generally highly modified from its remnant state. Native trees and shrubs had been removed and open pastures, dominated by exotic vegetation cover most of the study area. Dominant pasture grasses included species such as Sweet Vernal-grass *Anthoxanthum odoratum*, Toowoomba Canary Grass *Phalaris aquatica* and Paspalum *Paspalum dilatatum,* as well as environmental weeds such as Couch *Cynodon dactylon* var. *dactylon*, Ribwort *Plantago lanceolata,* Flatweed *Hypochaeris radicata* and Wild Gladiolus *Gladiolus undulatus* (Plate 3).

Two patches of native vegetation were located along the western property boundary and covered both the private land comprising the study area and the Bass Highway road reserve.

Both patches contained an overstorey of Coast Manna Gum, although the cover of this species was relatively sparse at Patch 1 (Plate 4). The midstorey comprised Blackwood *Acacia melanoxylon* and Swamp Paperbark *Melaleuca ericifolia*. The understorey of these patches was dominated by exotic vegetation, including the above-mentioned pasture grasses and environmental weeds, with Bidgee-Widgee *Acaena nova-zealandiae* recorded on the western side of Patch 2. Scattered groups and individuals of Broom Rush *Juncus sarophorus* were also present on the boundaries of the patches (Plates 5–6).

Vegetation Quality Assessment

Two patches of native vegetation were recorded within the study area during the current assessment (Table 1; Figure 1). The patch of EVC 53: Swamp Scrub had a low Habitat Hectare Score of 25 (out of 100) as did the patch of EVC 16: Lowland Forest with a low score of 28 (out of 100).

Table 1. Habitat Hectare assessment results

Patch			1	2
Bioregion			Gippsland Plain	Gippsland Plain
EVC name			Swamp Scrub	Lowland Forest
EVC number			53	16
Conservation rating within bioregion			Endangered	Vulnerable
Assessment Criteria		**Max. Score**	**Patch Score**	**Patch Score**
Site Condition	a. Large old trees	10	N/A	7
	b. Canopy cover	5	4	0
	c. Understorey	25	5	10
	d. Lack of weeds	15	0	0
	e. Recruitment	10	6	3
	f. Organic litter	5	2	3
	g. Logs	5	0	0
	h. Total (sum of a-g)	**75**	**17**	**23**
Standardised Score			(x 1.15) 20	N/A
Landscape Value	j. Patch size	10	1	1
	k. Neighbourhood	10	1	1
	l. Distance to core	5	3	3
m. Habitat Score (sum of h-l)		**100**	**25**	**28**
n. Habitat score out of 1 (m÷100)		1	0.25	0.28
Size (ha)			0.079	0.224
Large Trees*			**0**	**3**

Table Notes:
*Large Tree DBH is ≥70cm DBH based on the EVC 16: Lowland Forest benchmark

Large Tree Assessment

The large tree benchmark for trees within EVC 16: Lowland Forest benchmark threshold is 70cm DBH. There is no large tree benchmark for EVC 53: Swamp Scrub and no large trees were recorded within the vegetation mapped as this EVC (Patch 1). However, three large trees were recorded within the EVC 16: Lowland Forest vegetation (Patch 2), as per Table 2 and shown on Figure 1.

Table 2. Large Trees in Patches of Native Vegetation

Name	Species	DBH	TPZ	Lat	Long
1	Gippsland Manna Gum	200	15	145.5299	-38.4087
2	Gippsland Manna Gum	120	14.4	145.5298	-38.40882
3	Gippsland Manna Gum	83	9.96	145.53	-38.40889

Scattered Tree Assessment

All of the trees recorded within the study area were contained within the patch of vegetation described above, therefore no Scattered Trees are present within the study area.

Threatened Flora Species and Ecological Communities

Ten threatened flora species have previously been recorded within three kilometres of the study area (Department of Environment Land Water and Planning 2023f). A further eleven threatened flora species are predicted to occur within the study area based on the Protected Matters Search Tool (Department of Climate Change Energy the Environment and Water 2023a). A consolidated list of these threatened flora species, as well as their conservation status under the EPBC Act, the *Flora and Fauna Guarantee Act 1988* (Vic) (FFG Act) Threatened List: May 2023 (Department of Environment Land Water and Planning 2022), their preferred habitats and the likelihood of occurrence for each species is provided in Table A3.

There are no historical records of threatened flora species within the study area, and none were observed during the current assessment. Most of the historic records of threatened flora species occur within the coastal reserves to the west of the study area, or are old records with locations that are accurate to approximately 10,000 metres (Department of Environment Land Water and Planning 2023f).

Given the results of the site assessment and the level of disturbance to the understorey vegetation within the study area (and surrounds), it is highly unlikely that any threatened flora species remain within the study area, or would be impacted by future development of the study area.

The modelling used by the Protected Matters Search Tool suggests that five nationally significant vegetation communities may also occur within the study area:

- Subtropical and Temperate Coastal Saltmarsh (Vulnerable); and,
- Natural Damp Grassland of the Victorian Coastal Plains (Critically Endangered) (Department of Climate Change Energy the Environment and Water 2023a).

The vegetation within the study area is not representative of either of these threatened ecological communities, based on its topography, EVC classification and the observed species mix and weediness.

Fauna

Fauna Species and Habitats

Ten fauna species were recorded within the study area during the current assessment (Table A2). This comprised eight birds (two introduced, six native), one introduced mammal and one native frog species. All of these species are common to the area. No reptiles were recorded during the assessment, although it is likely that skinks and snakes would occur within the study area, amongst areas containing dense understorey vegetation and organic litter or debris. They may also traverse the paddocks when moving between areas of higher quality habitats. It is expected that a greater diversity of fauna species would be recorded with a greater amount of time on-site.

The open areas that comprise much of the study area are likely to provide habitat to generalist species, such as Australian Magpie *Gymnorhina tibicen* and Little Raven *Corvus mellori*, which are widespread and common species throughout open areas, suburban areas and farmlands throughout Victoria. This habitat has low ecological value as it is generally very homogenous and lacks important components of structure, floral diversity and fauna resources that a diverse range of species might exploit. Mown lawns are generally unlikely to support threatened species, many of which have become threatened as a result of the proliferation of this type of habitat.

Threatened Fauna Species and Communities

Twenty threatened fauna species have previously been recorded within three kilometres of the study area (Department of Environment Land Water and Planning 2023f) (Figure 2). A further 55 threatened fauna species are predicted to occur within the study area, based on the Protected Matters Search Tool (Department of Climate Change Energy the Environment and Water 2023a). A consolidated list of these threatened fauna species, as well as their conservation status under the EPBC Act and the FFG Act Threatened List: October 2021 (Department of Environment Land Water and Planning 2022), their preferred habitats and the likelihood of occurrence for each species is provided in Table A4.

There are no historical records of threatened fauna species within the study area, and no threatened fauna species were recorded during the current assessment (Table A4, Figure 2). Many of the species modelled to occur by the Protected Matters Search Tool, and recorded within the three kilometre buffer area, are pelagic species that are entirely dependent on habitats that are not provided by the study area. This includes whales, albatrosses, petrels, turtles and sharks. None of these species are likely to be impacted by the proposed development of the study area. This is also true of the other wetland dependent species listed in Table A4, such as the ducks, shorebirds and egrets.

The study area may also provide air space over which some threatened species may fly on occasions when moving around the landscape (White-throated Needletail *Hirundapus caudacutus,* Grey-headed Flying-fox *Pteropus poliocephalus*), however the study area itself does not provide important resources to either of these species, and the development of the study area is unlikely to impact any threatened fauna species.

No fauna communities listed under the Victorian FFG Act were recorded within the study area.

Discussion

A detailed summary of the legislation that was considered when preparing this report is provided in Appendix 2. The discussion presented in this section of the report does not reiterate information provided in Appendix 2, but summarises the results and recommendations arising from the interpretation of this legislation.

Environment Protection and Biodiversity Conservation Act 1999 (Cth)

The desktop assessment identified 12 threatened flora and 62 threatened fauna species as well as two threatened ecological communities, listed under the EPBC Act, which may occur within the study area.

Almost all of the EPBC Act-listed flora and fauna species that were identified during the desktop assessment, are, in fact, unlikely to occur due to the absence of suitable habitats or the degraded nature of habitats within the study area. There is a moderate likelihood that White-throated Needletails or Grey-headed Flying-foxes occasionally fly over the study area, however the proposed development is unlikely to significantly impact either of these species, because neither of these species are likely to rely on the habitat within the study area for important phases of their lifecycle.

Furthermore, the limited and degraded native vegetation within the study area does not meet thresholds to classify as any of the threatened ecological communities listed under the EPBC Act.

The proximity of the Western Port Wetland of International Importance (Ramsar Site) means that indirect impacts to downstream catchments must be avoided in any future development of the study area. This can be achieved through the use of best practice construction techniques and management plans to direct construction works in a Construction Environmental Management Plan (or equivalent). Should these measures be applied and implemented, downstream impacts are unlikely to occur and impacts to the Western Port Wetland of International Importance avoided.

On this basis, a referral to the Commonwealth Department of Climate Change, Energy, the Environment and Water is not recommended for the project.

Flora and Fauna Guarantee Act 1988 (Vic)

The desktop assessment identified 21 flora species and 75 fauna species listed under the FFG Act that may occur within the study area (Tables A3 and A4). As stated above, there is a moderate likelihood that some mobile animals, with large home ranges, may fly over the study area on occasion (White-throated Needletails or Grey-headed Flying Foxes), however the proposed development is unlikely to significantly impact either of these species. As discussed above, the majority of the other FFG Act listed flora and fauna species modelled to occur, or historically observed near the study area, do not have habitat within the study area, are highly unlikely to occur and are therefore unlikely to be impacted by the proposed development.

The FFG Act, which was amended in 2021, contains an obligation or duty on public authorities and ministers to consider potential biodiversity impacts when exercising their functions. The FFG Act requires ministers and public authorities (including Councils) reasonably consider the objectives of the

Act where projects may impact upon biodiversity, so far as is consistent with the proper exercising of their functions. It is therefore anticipated that regulators (DEECA and Bass Coast Shire Council) will give due consideration to the FFG Act when considering the approval for the project.

The FFG Act also lists species as 'protected flora' on public land. Protected flora includes whole families or genera, (as well as species), such as daisies, heaths, orchids, and most Acacias. These species and genera are not necessarily regarded as threatened, but require an approved *Permit to Take Protected Flora* from DEECA prior to their removal when located on public land (including road reserves). No protected flora species were recorded within the Bass Highway road reserve, and the remainder of the study area is located on private land. Therefore, a *Permit to Take Protected Flora* will not be required.

Planning and Environment Act 1987 (Vic)

Due to the presence of native vegetation within the study area, the proposed development would require a planning permit from the Bass Coast Shire Council under Clause 52.17 prior to the removal, destruction or lopping of native vegetation (Department of Environment Land Water and Planning 2023d). The applicant is required to demonstrate how it applied the three-step approach to avoid, minimise and offset impacts to native vegetation (discussed below).

Catchment and Land Protection Act 1994 (Vic)

Primary considerations of the *Catchment and Land Protection Act 1994* (Vic) relate to soil and water conservation, as well as the management of pest plants and animals. Four weed species that are listed as 'noxious' within the Port Phillip and Westernport Catchment Management Area were present within the study area (Table A1, Appendix 1). These weeds include:

- Blackberry *Rubus fruticosus* spp. agg. and Bulbil Bugle Lilly *Watsonia meriana* var. *bulbillifera*, which are both listed as 'Regionally Controlled' within the catchment. The proponent is required to 'control the spread' of all 'regionally controlled' species from their property and
- Bridal Creeper *Asparagus asparagoides* and Soursob *Oxalis pes-caprae* which are listed as 'restricted'. There are restrictions on the 'trade' of the species.

Blackberry is also listed as 'Weeds of National Significance', although there are no additional legislative obligations to manage weeds under this listing.

The project should aim to remove these plants when construction commences, and ensure they are removed during the future the landscaping and maintenance of the study area. It is expected that weed management would form a section of a Construction Environmental Management Plan (or equivalent). As a minimum, this should include:

- Controlling weeds prior to the commencement of works, during works and after works are complete;
- Implementing vehicle, plant and equipment hygiene procedures to mitigate the importation and spread of noxious and environmental weeds;
- Using clean fill (if required);

- Avoiding downstream and off-site impacts; and
- Avoiding the use of noxious species and environmental weeds during future landscaping of the property.

Wildlife Act 1975 (Vic)

It is likely that some locally common species of fauna will be displaced by the proposed development. Furthermore, there remains a low likelihood that animals may be accidentally injured when disturbing soil and removing vegetation. All native vertebrate wildlife is protected under the *Wildlife Act 1975* (Vic), and therefore contractors must use due care when removing vegetation and fill from the study area. It is recommended that a zoologist or wildlife handler salvage any wildlife from trees prior to their removal. It is also recommended that fauna management protocols be included in the Construction Environment Management Plan recommended above.

Guidelines for the Removal, Destruction or Lopping of Native Vegetation

The Three-step Approach

Applicants who wish to remove native vegetation must generally demonstrate how the application meets the three-step approach to:

1. Avoid the removal, destruction or lopping of native vegetation;
2. Minimise impacts from the removal, destruction or lopping of native vegetation that cannot be avoided; and
3. Provide an offset to compensate for the biodiversity impact from the removal, destruction or lopping of native vegetation (Department of Environment Land Water and Planning 2017).

Avoidance and Minimisation Statement

Avoidance is generally demonstrated through appropriate development design. It is recommended that:

- Development design is considerate of the native vegetation and that roads, building envelopes and infrastructure be sited away from native vegetation where possible;
- When considering the removal of native vegetation, priority is given to:
    - The retention of large healthy trees;
    - The retention of patches of native vegetation; and
    - Vegetation which has the highest quality native vegetation;
- Indigenous trees, inclusive of their Tree Protection Zone, be avoided wherever safe and practicable as recommended in the arborist report;
- Retained trees include protection of the Tree Protection Zone identified within the arborist's report and the *Australian Standards for the Protection of Trees on Development Sites* (Standards Australia 2009);
- Vegetation which is to be retained is protected from construction activities, in accordance with a Construction Environment Management Plan;

- Sediment, erosion and pollution control measures, in accordance with the EPA Guidelines (EPA Victoria 1991; EPA Victoria 1996), are incorporated in the Construction Environment Management Plan to avoid indirect impacts to downstream/downhill areas of greater ecological significance; and,
- Where native vegetation cannot be avoided, offsets will be required.

Having applied these principles, some vegetation in the road reserve will be retained, however there are unavoidable impacts to the vegetation within the study area itself. This vegetation will require offsets.

Offsets

The offsets for the removal of the vegetation within the study area is provided within the Native Vegetation Removal report provide as Appendix 3 and summarised in Table 3.

Table 3. Offset requirements for removal of all native vegetation within the study area.

Offset Parameter	Result
Location Category	Location 2
Assessment Pathway	Intermediate Assessment Pathway
Total Extent Removed	0.235 hectares
General Offset Requirements	0.073 General Habitat Units
Minimum Strategic Biodiversity Score	0.320
Offset Location	Melbourne Water Catchment Management Authority (CMA) or within the Bass Coast Shire Council municipality
Tree Offset	3 Large Trees

It is expected that offsets will be achieved through a third-party offset, through a vegetation broker, as securing the offsets on site is not practicable. Based on recent trades with brokers within the Port Phillip and Western Port Catchment Management Authority area, the cost to offset this vegetation will be in the order of approximately $14,355.00[5] (excluding GST), although offset trades are based on a market based system and this price is subject to approval and a quotation from a vegetation broker. We have confirmed that these offsets are readily available at multiple sites, with multiple brokers of the Native Vegetation Credit Register (Appendix 4). Ecolink Consulting can further assist with securing these offsets if required.

[5] At the time of writing, an allowance of approximately $135,000.00 per General Habitat Unit, plus $1,000.00 per large tree, should be made to achieve these offsets, plus approximately $1,500.00 in brokerage fees (plus GST for all values provided).

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Plates



Plate 1. Bass Highway roadside reserve, edge of Patch 1 (30 May 2023).



Plate 2. Permanent roadside drain flowing toward Westernport Bay, north of study area (30 May 2023).



Plate 3. Mown area comprising exotic grass species and environmental weeds (30th May 2023).



Plate 4. *Eucalyptus viminalis* subsp. *pryoriana* acting as a Large Old Tree, within Patch 2 (30 May 2023).



Plate 5. Side view illustrative of canopy and midstory in Patch 1 and *Juncus sarophorus* presence in the background (30 May 2023).



Plate 6. Side view illustrative of canopy and midstory of Patch 2 (30 May 2023).

Figures

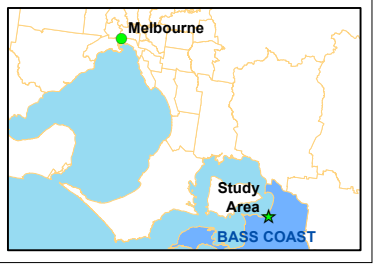


Figure 1: Results of the current assessment.

1517-1529 Bass Highway, Grantville, Victoria

Legend

- Study Area
- Patches of Native Vegetation
- Large Trees in Patches
- Tree Protection Zones
- Impacted Vegatation



P/N 2272 Figure 1. May 2023. Aerial photography: Nearmap. 9 Jan 2023

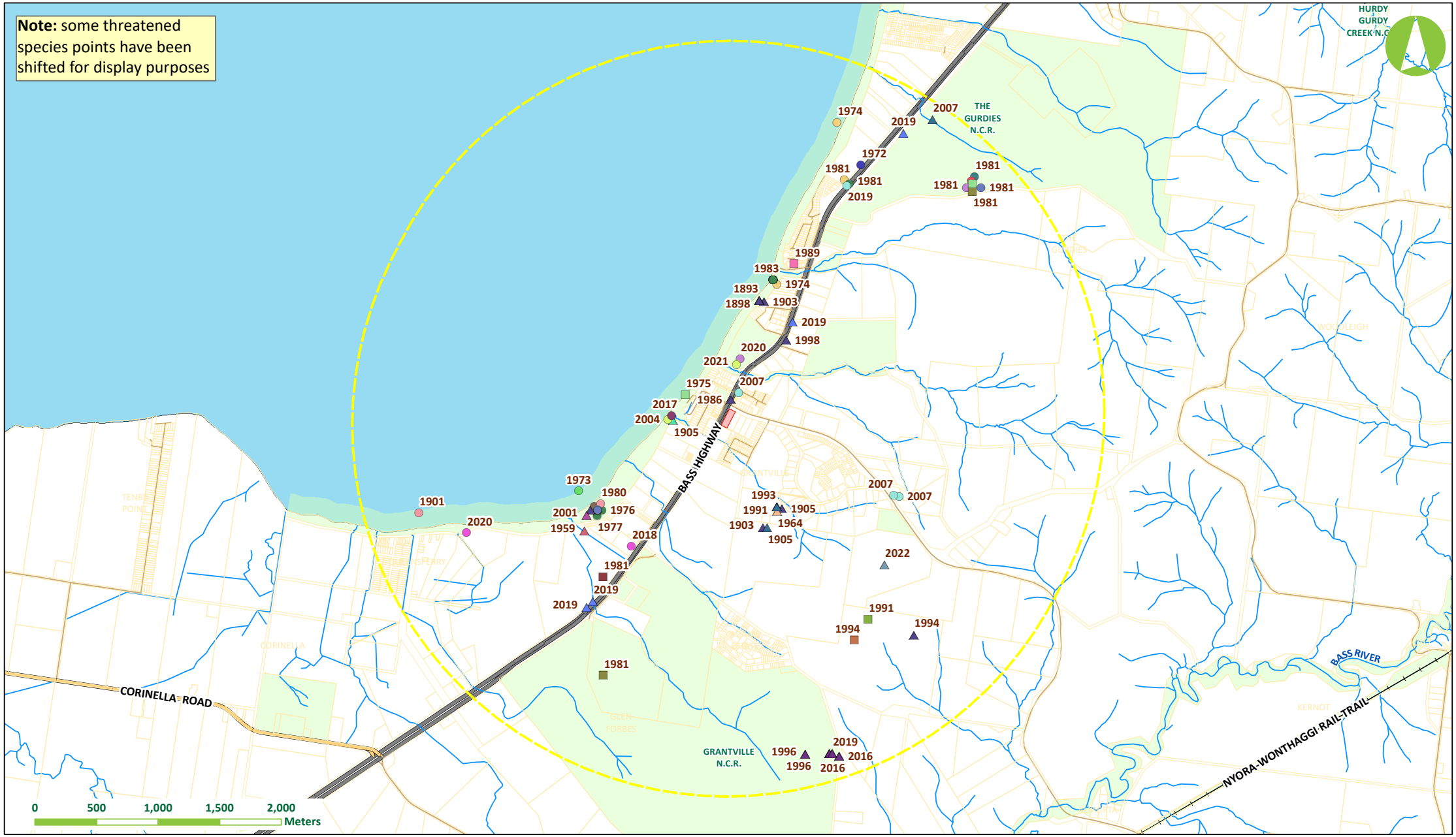


Figure 2: Threatened flora and fauna species within 3kms of the study area

1517-1529 Bass Highway, Grantville, Victoria

Legend

- Study Area
- 3km Study Area Buffer

Common Name

- Blue-winged Parrot
- Caspian Tern
- Chestnut-rumped Heathwren
- Eastern Curlew
- Eastern Great Egret
- Grey Goshawk
- Grey Plover
- Hooded Plover
- Little Egret
- Musk Duck
- Pacific Golden Plover
- Swift Parrot
- White-bellied Sea-Eagle
- White-throated Needletail
- Southern Brown Bandicoot
- Growling Grass Frog
- Southern Toadlet
- Swamp Skink
- Flatback Mangrovegoby
- Giant Gippsland Earthworm
- Christmas Spider-orchid
- Coast Saltwort
- Clasping Hypocreopsis
- Cobra Greenhood
- Giant Honey-myrtle
- Green-striped Greenhood
- Grey Mangrove
- Grey Pouchwort
- Southern Blue-gum
- Velvet Apple-berry
- Public Land

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Appendices

Appendix 1. Flora and Fauna Tables

Table A1. Flora species recorded within the study area

Origin	Common Name	Scientific Name	Weeds of National Significance	Noxious Weeds Classification
*	Common Birds Foot Trefoil	*Lotus corniculatus*	-	-
	Bidgee Widgee	*Acaena novae-zealandiae*	-	-
*	Black Nightshade	*Solanum nigrum*	-	-
*	Blackberry	*Rubus fruticosus* spp. agg.	Yes	Controlled
	Blackwood	*Acacia melanoxylon*	-	-
*	Blue Passion Fruit	*Passiflora caerulea*	-	-
*	Bridal Creeper	*Asparagus asparagoides*	Yes	Restricted
	Broom Rush	*Juncus sarophorus*	-	-
*	Buck's-horn Plantain	*Plantago coronopus*	-	-
*	Bulbil Bugle Lilly	*Watsonia meriana var. bulbillifera*	-	Controlled
*	Cleaver	*Gallium aparine*	-	-
*	Common Dandelion	*Taraxacum officinale*	-	-
*	Couch	*Cynodon dactylon* var. *dactylon*	-	-
*	Curled Dock	*Rumex crispus*	-	-
*	Flatweed	*Hypochaeris radicata*	-	-
*	Glandular Willowherb	*Epilobium ciliatum*	-	-
*	Italian Arum	*Arum italicum*	-	-
	Coast Manna Gum	*Eucalyptus viminalis* subsp. *pryoriana*	-	-
*	Onion Grass	*Romulea rosea*	-	-
*	Panic Veldt-grass	*Ehrharta erecta*	-	-
*	Paspalum	*Paspalum dilatatum*	-	-
*	Plum	*Prunus domestica*	-	-
*	Ribwort	*Plantago lanceolata*	-	-
*	Soursob	*Oxalis pes-caprae*	-	Restricted
	Swamp Paper Bark	*Melaleuca ericifolia*	-	-
*	Sweet Pittosporum	*Pittosporum undulatum*	-	-
*	Sweet Vernal Grass	*Anthoxanthum odoratum*	-	-
*	Toowoomba Canary-grass	*Phalaris aquatica*	-	-
	Tall Sedge	*Carex* spp.	-	-
	Weeping Grass	*Microlaena stipoides* var. *stipoides*	-	-
*	Wild Gladiolus	*Gladiolus undulatus*	-	-

Table Notes:

* – Exotic # – naturalised

This table does not include ornamental plants, trees or shrubs that were not spreading or reproducing beyond where they were planted.

Table A2. Fauna species recorded within the study area

Origin	Common Name	Species Name
Birds		
	Masked Lapwing	*Vanellus miles*
	Silver Gull	*Chroicocephalus novaehollandiae*
	Galah	*Eolophus roseicapilla*
	Red Wattlebird	*Anthochaera carunculata*
	Australian Magpie	*Gymnorhina tibicen*
	Little Raven	*Corvus mellori*
*	Common Myna	*Acridotheres tristis*
*	Common Starling	*Sturnus vulgaris*
Mammals		
*	European Rabbit	*Oryctolagus cuniculus*
Amphibians		
	Eastern Common Froglet	*Crinia signifera*

Definitions

* - Introduced species

Table A3. Threatened flora species that have previously been recorded within, or within 3 kilometres of the study area (Department of Environment Land Water and Planning 2023f), or that has habitat that may occur within the vicinity of the study area (Department of Climate Change Energy the Environment and Water 2023a).

Common Name	Species Name	National Status	FFG Act Status	Habitat Preferences	Most Recent Record	Habitat Present on Site	Likelihood of Presence*
Christmas Spider-orchid	*Caladenia flavovirens*	-	Critically Endangered	Grows among shrubs in stunted coastal (near coastal) scrub, often in sandy soils, or in open montane forest with a grassy understorey.	1905 (1)	No	Unlikely
Clasping Hypocreopsis	*Hypocreopsis amplectens*	-	Critically Endangered	Found on dead and living branches of tea-tree, paperbark and banksia in long-unburnt coastal stands in Victoria	2019 (12)	No	Unlikely
Clover Glycine	*Glycine latrobeana*	Vulnerable	Vulnerable	Grassy woodland; plains grassland; box woodland; dry sclerophyll forest.	NPR	No	Unlikely
Coast Saltwort	*Salsola tragus* subsp. *pontica*	-	Endangered	Coastal scrubs, tea-tree heaths	1964 (1)	No	Unlikely
Cobra Greenhood	*Pterostylis grandiflora*	-	Endangered	Valley sclerophyll forest, grassy low open forest	1998 (10)	No	Unlikely
Dense Leek-orchid	*Prasophyllum spicatum*	Vulnerable	Critically Endangered	Coastal and hinterland heath and heathy woodland	NPR	No	Unlikely
Eastern Spider-orchid	*Caladenia orientalis*	Endangered	Endangered	Coastal heathland and heathy woodland on deep siliceous sands	NPR	No	Unlikely
Giant Honey-myrtle	*Melaleuca armillaris* subsp. *armillaris*	-	Endangered	Mainly confined to near-coastal sandy heaths, scrubs slightly raised above saltmarsh, riparian scrubs, rocky coastlines and foothill outcrops eastwards from about Marlo. Occurrences to the west are naturalised.	2022 (1)	No	Unlikely
Green-striped Greenhood	*Pterostylis chlorogramma*	Vulnerable	Endangered	Open forest and woodland	2007 (6)	No	Unlikely
Grey Mangrove	*Avicennia marina* subsp. *australasica*	-	Endangered	Coastal shallows and estuaries, saltmarshes	1964 (1)	No	Unlikely

Common Name	Species Name	National Status	FFG Act Status	Habitat Preferences	Most Recent Record	Habitat Present on Site	Likelihood of Presence*
Grey Pouchwort	*Acrobolbus cinerascens*	-	Critically Endangered	Epiphytic or log-dwelling rainforest liverwort with shoots scarcely over 1mm wide	2001 (1)	No	Unlikely
Leafy Greenhood	*Pterostylis cucullata*	Vulnerable	-	Tea-tree heath	NPR	No	Unlikely
Metallic Sun-orchid	*Thelymitra epipactoides*	Endangered	Endangered	Mainly coastal areas, although occurs inland on fertile loams, scrubby heaths or near swampy depressions.	NPR	No	Unlikely
River Swamp Wallaby-grass	*Amphibromus fluitans*	Vulnerable	-	Beside swamps in grassy low open forest, riparian scrub. Required moist soils, tolerates inundation.	NPR	No	Unlikely
Southern Blue-gum	*Eucalyptus globulus* subsp. *globulus*	-	Endangered	Two populations; one south of the Strzelecki Range and the other south of the Otway Ranges.	2019 (4)	No	Unlikely
Spiny Peppercress	*Lepidium aschersonii*	Vulnerable	Endangered	Heavy clay soil near salt lakes on volcanic plain, but with outlying records from near Lake Omeo and the Grampians	NPR	No	Unlikely
Strzelecki Gum	*Eucalyptus strzeleckii*	Vulnerable	Critically Endangered	Fragmented populations in the Strzelecki Ranges, on a range of sites including ridges, slopes and along the banks of streams, but particularly foothills and flats	NPR	No	Unlikely
Swamp Everlasting	*Xerochrysum palustre*	Vulnerable	Critically Endangered	Seasonal or permanent wetlands	NPR	No	Unlikely
Swamp Fireweed	*Senecio psilocarpus*	Vulnerable	-	High-quality herb-rich wetlands on plains	NPR	No	Unlikely
Thick-lip Spider-orchid	*Caladenia tessellata*	Vulnerable	-	Grassy sclerophyll woodland on clay loam or sandy soils	NPR	No	Unlikely
Velvet Apple-berry	*Billardiera scandens s.s.*	-	Endangered	Dry open-forests and woodlands in the north-east (Beechworth, Whitfield etc.), with isolated occurrences near Mt Macedon, Eltham-Hurstbridge area, Eildon and Orbost.	1959 (1)	No	Unlikely

Table Notes:

NPR – Not previously recorded

*** Likelihood of Presence Definitions**:

Unlikely – Site does not contain habitat and/or it is outside the species' known, current distribution.

Low –Site contains some marginal habitat, but the species was not observed and has not been recently recorded in previous surveys in the area.

Moderate – Site contains preferred habitat that may support a population of the species. However, other factors, such as fragmentation, disturbance or predators may be impacting any local population.

High - Site contains the preferred habitat which is likely to support the species.

Present – Preferred habitat is present on the site, and the species was observed on the site, or recently recorded at the site.

Table A4. Threatened fauna species that have previously been recorded within, or within 3 kilometres of the study site (Department of Environment Land Water and Planning 2023f), or that has habitat that may occur within the vicinity of the site (Department of Climate Change Energy the Environment and Water 2023a).

Common Name	Species Name	EPBC Act Status	FFG Act Status	Habitat Preferences	Most Recent Record	Habitat Present on Site	Likelihood of Presence*
Birds							
Musk Duck	*Biziura lobata*	-	Vulnerable	Permanent swamps with dense vegetation, more open waters in non-breeding season.	1991 (165)	No	Unlikely
White-throated Needletail	*Hirundapus caudacutus*	Vulnerable	Vulnerable	Aerial insectivore that rarely lands to perch, often sleeping on the wing	2020 (11)	Yes	Moderate
Grey Plover	*Pluvialis squatarola*	-	Vulnerable	Estuaries, tidal mudflats, mangroves, shallow river margins, coastal or inland	1976 (1)	No	Unlikely
Pacific Golden Plover	*Pluvialis fulva*	-	Vulnerable	Estuaries, tidal mudflats, mangroves, shallow river margins, coastal or inland	1980 (7)	No	Unlikely
Greater Sand Plover	*Charadrius leschenaultii*	Vulnerable	Vulnerable	Tidal mudflats and sandflats, beaches, saltmarsh, estuaries	NPR	No	Unlikely
Lesser Sand Plover	*Charadrius mongolus*	Endangered	Endangered	Tidal mudflats and sandflats, beaches, saltmarsh, estuaries	NPR	No	Unlikely
Hooded Plover	*Thinornis cucullatus*	Vulnerable	Vulnerable	Wide beaches backed by dunes with large amounts of seaweed, creek mouths and inlet entrances. It may also occur on near-coastal saline and freshwater lakes and lagoons, tidal bays and estuaries, on rock platforms, or on rocky or sandy reefs close to shore.	1972 (1)	No	Unlikely
Australian Painted-snipe	*Rostratula australis*	Endangered	Critically Endangered	Uncommon summer migrant to Victoria. Lowlands on shallow freshwater swamps with emergent vegetation, and flooded salt marshes.	NPR	No	Unlikely
Eastern Curlew	*Numenius madagascariensis*	Critically Endangered	Critically Endangered	Estuaries, tidal mudflats, mangroves, shallow river margins, coastal or inland	1983 (149)	No	Unlikely

Common Name	Species Name	EPBC Act Status	FFG Act Status	Habitat Preferences	Most Recent Record	Habitat Present on Site	Likelihood of Presence*
Bar-tailed Godwit	*Limosa lapponica baueri*	Vulnerable	-	Migratory shorebird.	NPR	No	Unlikely
Curlew Sandpiper	*Calidris ferruginea*	Critically Endangered	Critically Endangered	Estuaries, tidal mudflats, mangroves, shallow river margins, coastal or inland	NPR	No	Unlikely
Great Knot	*Calidris tenuirostris*	Critically Endangered	Critically Endangered	Estuaries, tidal mudflats, mangroves, shallow river margins, coastal or inland	NPR	No	Unlikely
Red Knot	*Calidris canutus*	Endangered	Endangered	Estuaries, tidal mudflats, mangroves, shallow river margins, coastal or inland	NPR	No	Unlikely
Caspian Tern	*Hydroprogne caspia*	-	Vulnerable	Coastal, offshore waters, beaches estuaries, some inland birds	1979 (7)	No	Unlikely
Fairy Tern	*Sternula nereis*	Vulnerable	Critically Endangered	Along Coast Lines of Southern Australia	NPR	No	Unlikely
White-bellied Storm-Petrel	*Fregetta grallaria grallaria*	Vulnerable	-	Pelagic, breeds only on offshore islands in the Lord Howe Island group.	NPR	No	Unlikely
Gibson's Albatross	*Diomedea antipodensis gibsoni*	Vulnerable	-	Pelagic, breeding on Albatross Island, Pedra Branca the Mewstone and Macquarie Island.	NPR	No	Unlikely
New Zealand Wandering Albatross	*Diomedea antipodensis*	Vulnerable	-	Pelagic, nesting on windswept islands of the subantarctic region.	NPR	No	Unlikely
Northern Royal Albatross	*Diomedea sanfordi*	Endangered	-	Pelagic, breed on Forty-Fours, Big and Little Sister Islands (Chatham Islands), but breeding also occurs on Taiaroa Head (Otago Peninsula, South Island) and Enderby Island (Auckland Islands), New Zealand	NPR	No	Unlikely
Southern Royal Albatross	*Diomedea epomophora*	Vulnerable	Critically Endangered	A non-breeding visitor, mostly to offshore waters. Largely pelagic in behaviour	NPR	No	Unlikely
Wandering Albatross	*Diomedea exulans*	Vulnerable	Critically Endangered	A non-breeding visitor, mostly to offshore waters. Largely pelagic in behaviour	NPR	No	Unlikely

Common Name	Species Name	EPBC Act Status	FFG Act Status	Habitat Preferences	Most Recent Record	Habitat Present on Site	Likelihood of Presence*
Sooty Albatross	*Phoebetria fusca*	Vulnerable	Critically Endangered	A non-breeding visitor, mostly to offshore waters. Largely pelagic in behaviour	NPR	No	Unlikely
Black-browed Albatross	*Thalassarche melanophris*	Vulnerable	-	Coastal waters off southern Australia	NPR	No	Unlikely
Buller's albatross	*Thalassarche bulleri platei*	Vulnerable	-	Pelagic, breeding on Albatross Island, Pedra Branca the Mewstone and Macquarie Island.	NPR	No	Unlikely
Buller's Albatross	*Thalassarche bulleri*	Vulnerable	Endangered	A non-breeding visitor, mostly to offshore waters. Largely pelagic in behaviour	NPR	No	Unlikely
Campbell Albatross	*Thalassarche impavida*	Vulnerable	-	A non-breeding visitor, mostly to offshore waters. Largely pelagic in behaviour	NPR	No	Unlikely
Grey-headed Albatross	*Thalassarche chrysostoma*	Endangered	Endangered	A non-breeding visitor, mostly to offshore waters. Largely pelagic in behaviour	NPR	No	Unlikely
Indian Yellow-nosed Albatross	*Thalassarche carteri*	Vulnerable	Endangered	Coastal waters off southern Australia	NPR	No	Unlikely
Salvin's Albatross	*Thalassarche salvini*	Vulnerable	-	A non-breeding visitor, mostly to offshore waters. Largely pelagic in behaviour	NPR	No	Unlikely
Shy Albatross	*Thalassarche cauta*	Vulnerable	Endangered	Coastal waters off southern Australia	NPR	No	Unlikely
White-capped Albatross	*Thalassarche steadi*	Vulnerable	-	A non-breeding visitor, mostly to offshore waters. Largely pelagic in behaviour	NPR	No	Unlikely
Northern Giant-Petrel	*Macronectes halli*	Vulnerable	Endangered	Coastal waters off southern Australia	NPR	No	Unlikely
Southern Giant-Petrel	*Macronectes giganteus*	Endangered	Endangered	A non-breeding visitor, mostly to offshore waters. Largely pelagic in behaviour	NPR	No	Unlikely
Fairy Prion	*Pachyptila turtur subantarctica*	Vulnerable	-	Pelagic, breeding on rock stacks off Macquarie Island.	NPR	No	Unlikely
Australian Gould's Petrel	*Pterodroma leucoptera leucoptera*	Vulnerable	-	Pelagic, breeding on Cabbage Tree Island and Boondelbah Island	NPR	No	Unlikely

Common Name	Species Name	EPBC Act Status	FFG Act Status	Habitat Preferences	Most Recent Record	Habitat Present on Site	Likelihood of Presence*
Australasian Bittern	*Botaurus poiciloptilus*	Endangered	Critically Endangered	Reed beds, dense vegetation of freshwater swamps and creeks.	NPR	No	Unlikely
Eastern Great Egret	*Ardea alba modesta*	-	Vulnerable	Floodwaters, rivers and shallows of wetlands, intertidal mud flats.	2020 (2)	No	Unlikely
Little Egret	*Egretta garzetta*	-	Endangered	Tidal mudflats, saltmarshes, mangroves, freshwater wetlands.	2017 (1)	No	Unlikely
Grey Goshawk	*Accipiter novaehollandiae*	-	Endangered	Wet Eucalypt / mixed forest with closed canopy and generally low stem density	2019 (4)	No	Unlikely
White-bellied Sea-Eagle	*Haliaeetus leucogaster*	-	Endangered	Oceanic / coastal and larger inland waterways.	2021 (3)	No	Unlikely
Grey Falcon	*Falco hypoleucos*	-	Vulnerable	Shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast	NPR	No	Unlikely
Gang-gang Cockatoo	*Callocephalon fimbriatum*	Endangered	-	They inhabit cool, wet forests, particularly alpine bushland, but may visit urban parks and gardens to feed	NPR	No	Unlikely
Swift Parrot	*Lathamus discolor*	Critically Endangered	Critically Endangered	Winter migrant from Tasmania. Generally prefers Box-Ironbark forests and woodlands inland of the Great Dividing Range during winter.	1981 (1)	No	Unlikely
Blue-winged Parrot	*Neophema chrysostoma*	Vulnerable	-	A range of habitats from coastal, sub-coastal and inland areas, right through to semi-arid zones	1992 (13)	No	Unlikely
Orange-bellied Parrot	*Neophema chrysogaster*	Critically Endangered	Critically Endangered	Saltmarsh, coastal pastures	NPR	No	Unlikely
Brown Treecreeper	*Climacteris picumnus*	Vulnerable	-	Dry woodland; forest clearings, eucalypts along streams.	NPR	No	Unlikely

Common Name	Species Name	EPBC Act Status	FFG Act Status	Habitat Preferences	Most Recent Record	Habitat Present on Site	Likelihood of Presence*
Painted Honeyeater	*Grantiella picta*	Vulnerable	Vulnerable	Open box-ironbark forests and woodlands, particularly where trees are infested with mistletoe.	NPR	No	Unlikely
Regent Honeyeater	*Anthochaera phrygia*	Critically Endangered	Critically Endangered	Depends on nectar and insects from Box-Ironbark Eucalypt forests. Only breeding habitat lies in Northeast Victoria and central coast of NSW	NPR	No	Unlikely
Chestnut-rumped Heathwren	*Calamanthus pyrrhopygius*	-	Vulnerable	Woodlands and heathland with dense shrub and vegetation, rocky habitats	1981 (1)	No	Unlikely
Pilotbird	*Pycnoptilus floccosus*	Vulnerable	-	Temperate wet sclerophyll forests and occasionally temperate rainforest, where there is dense undergrowth with abundant debris	NPR	No	Unlikely
Hooded Robin	*Melanodryas cucullata*	Endangered	Vulnerable	Lightly timbered woodland, mainly dominated by acacia and/or eucalypts.	NPR	No	Unlikely
Diamond Firetail	*Stagonopleura guttata*	Vulnerable	Vulnerable	Open grassy woodland, heath and farmland or grassland with scattered trees.	NPR	No	Unlikely
Mammals							
Spot-tailed Quoll	*Dasyurus maculatus maculatus*	Endangered	Endangered	Forests including large intact areas of vegetation for foraging.	NPR	No	Unlikely
Swamp Antechinus	*Antechinus minimus maritimus*	Vulnerable	Vulnerable	Heathy forest, wetlands, heathland and coastal scrub.	NPR	No	Unlikely
Southern Brown Bandicoot	*Isoodon obesulus obesulus*	Endangered	Endangered	Heathy forest, heathland and coastal scrub.	1981 (2)	No	Unlikely
Southern Greater Glider	*Petauroides volans*	Vulnerable	Vulnerable	Wet sclerophyll forests, requires large tree hollows for nesting	NPR	No	Unlikely

Common Name	Species Name	EPBC Act Status	FFG Act Status	Habitat Preferences	Most Recent Record	Habitat Present on Site	Likelihood of Presence*
Yellow-bellied Glider	*Petaurus australis*	Vulnerable	-	Occur in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils	NPR	No	Unlikely
Long-nosed Potoroo	*Potorous tridactylus trisulcatus*	Vulnerable	Vulnerable	Heathy woodland	NPR	No	Unlikely
Broad-toothed Rat	*Mastacomys fuscus mordicus*	Vulnerable	Vulnerable	A range of habitats from sub-alpine to coastal heathland, with high vegetative coverage in high rainfall areas	NPR	No	Unlikely
New Holland Mouse	*Pseudomys novaehollandiae*	Vulnerable	Endangered	Heathlands, woodlands with a heathy understorey, open forest and vegetated sand dunes - in areas with soft, deep sandy soil in which to make burrows.	NPR	No	Unlikely
Grey-headed Flying-fox	*Pteropus poliocephalus*	Vulnerable	Vulnerable	Roost sites commonly occur in gullies, in vegetation with dense canopy cover and close to water.	NPR	No	Unlikely
Southern Right Whale	*Eubalaena australis*	Endangered	Endangered	Pelagic	NPR	No	Unlikely
Frogs							
Southern Toadlet	*Pseudophryne semimarmorata*	-	Endangered	Dry forest, woodland, grassland and heath in moist soaks and depressions; uses leaf litter for shelter.	1981 (15)	No	Unlikely
Growling Grass Frog	*Litoria raniformis*	Vulnerable	Vulnerable	Permanent lakes, swamps, dams and lagoons.	1981 (1)	No	Unlikely
Reptiles							
Loggerhead Turtle	*Caretta caretta*	Endangered	-	Pelagic	NPR	No	Unlikely
Green Turtle	*Chelonia mydas*	Vulnerable	-	Pelagic	NPR	No	Unlikely
Leathery Turtle	*Dermochelys coriacea*	Endangered	Critically Endangered	Pelagic, some breed in Queensland	NPR	No	Unlikely

Common Name	Species Name	EPBC Act Status	FFG Act Status	Habitat Preferences	Most Recent Record	Habitat Present on Site	Likelihood of Presence*
Swamp Skink	*Lissolepis coventryi*	-	Endangered	Low lying wetlands including swamp margins, tea tree thickets.	1994 (1)	No	Unlikely
Fish							
Australian Grayling	*Prototroctes maraena*	Vulnerable	Endangered	Clear gravelly streams; deep slow flowing pools.	NPR	No	Unlikely
Blue Warehou	*Seriolella brama*	Near Threatened	Conservation Dependent	Pelagic, benthopelagic	NPR	No	Unlikely
Dwarf Galaxias	*Galaxiella pusilla*	Vulnerable	Endangered	Slow moving waters, including ephemeral drains.	NPR	No	Unlikely
Flatback Mangrovegoby	*Mugilogobius platynotus*	-	Endangered	Usually in holes amongst mangroves or seagrass beds, sometimes entering freshwater, in depths of 0-10 m	1989 (1)	No	Unlikely
Great White Shark	*Carcharodon carcharias*	Vulnerable	Endangered	Pelagic	NPR	No	Unlikely
Southern Bluefin Tuna	*Thunnus maccoyii*	Near Threatened	Conservation Dependent	Pelagic, benthopelagic	NPR	No	Unlikely
Invertebrates							
Giant Gippsland Earthworm	*Megascolides australis*	Vulnerable	Endangered	Usually associated with deep blue-grey clay-like soils near creek banks (especially smaller tributaries of the Bass River), soaks, river flats or on slopes with a southerly or westerly aspect and is rarely found on north facing slopes, in the western Strzelecki Ranges.	1991 (1)	No	Unlikely

Table Notes:

This table excludes species listed exclusively as 'migratory' or 'marine' under the EPBC Protected Matters Search results.

NPR – Not previously recorded

*** Likelihood of Presence Definitions:**

Unlikely – Site does not contain habitat and/or it is outside the species' known, current distribution. Birds and bats may fly over.

Low –Site contains some marginal habitat, but the species was not observed and has not been recorded in previous recent surveys in the area. Birds and bats may fly over.

Moderate – Site contains preferred habitat that may support a population of the species. Birds and bats may opportunistically or seasonally forage at the site.

High – Site contains preferred habitat which is likely to support the species. Birds and bats are likely to regularly (at least seasonally) forage or roost at the site.

Present – Preferred habitat is present on the site, and the species was observed on the site, or recently recorded on the site.

Appendix 2. Legislation

Commonwealth Legislation

***Environment Protection and Biodiversity Conservation Act 1999* (Cth)**

The *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) is to provide for the conservation of 'Matters of National Environmental Significance'. The Act defines eight Matters of National Environmental Significance:

- World Heritage properties;
- National Heritage Places;
- Ramsar wetlands of international significance;
- Nationally listed threatened species and ecological communities;
- Listed migratory species;
- Commonwealth marine areas;
- The Great Barrier Reef Marine Park; and,
- Nuclear actions.

Under the Act, actions that are likely to have a significant impact upon Matters of National Environmental Significance require approval from the Federal Environment Minister. This approval is sought through a referral process for a particular action. An action includes any project, development, undertaking, activity or series of activities. Consideration of the requirement for an 'EPBC Referral' to the Minister has been made within this report.

State Legislation

Environmental Effects Act

The *Environment Effects Act 1978* (Vic) provides for assessment of proposed projects (works) that are capable of having a significant effect on the environment. The Act does this by enabling the Minister administering the Environment Effects Act to decide that an Environment Effects Statement (EES) should be prepared.

The Minister might typically require a proponent to prepare an EES when:

- There is a likelihood of regionally or State significant adverse effects on the environment;
- There is a need for integrated assessment of potential environmental effects (including economic and social effects) of a project and relevant alternatives; and,
- Normal statutory processes would not provide a sufficiently comprehensive, integrated and transparent assessment (Department of Sustainability and Environment 2007).

Referral criteria: individual potential environmental effects

- Individual types of potential effects on the environment that might be of regional or State significance, and therefore warrant referral of a project, are:
- Potential clearing of 10 ha or more of native vegetation from an area that:
    - is of an Ecological Vegetation Class identified endangered by the Department of Sustainability and Environment (in accordance with Appendix 2 of Victoria's Native Vegetation Management Framework); or

    - is, or is likely to be, of very high conservation significance (as defined in accordance with Appendix 3 of Victoria's Native Vegetation Management Framework); and
    - is not authorised under an approved Forest Management Plan or Fire Protection Plan
- Potential long-term loss of a significant proportion (e.g. 1 to 5 percent depending on the conservation status of the species) of known remaining habitat or population of a threatened species within Victoria;
- Potential long-term change to the ecological character of a wetland listed under the Ramsar Convention or in 'A Directory of Important Wetlands in Australia';
- Potential extensive or major effects on the health or biodiversity of aquatic, estuarine or marine ecosystems, over the long term;
- Potential extensive or major effects on the health, safety or well-being of a human community, due to emissions to air or water or chemical hazards or displacement of residences; and,
- Potential greenhouse gas emissions exceeding 200,000 tonnes of carbon dioxide equivalent per annum, directly attributable to the operation of the facility (Department of Sustainability and Environment 2007).

***Flora and Fauna Guarantee Act 1988* (Vic)**

The *Flora and Fauna Guarantee Act 1998* (Vic) (FFG Act) provides a legal framework for enabling and promoting the conservation of all Victoria's native flora and fauna, and to enable management of potentially threatening processes on public land. The Act lists native species, communities, and processes that threaten native flora and fauna, under Schedules of the Act. This enables the assessor and regulators to establish management measures to mitigate impacts on listed values within Victoria.

The FFG Act was amended in 2021 and now contains an obligation or duty on public authorities and ministers to consider potential biodiversity impacts when exercising their functions. The FFG Act requires ministers and public authorities (including Councils) reasonably consider the objectives of the Act where projects may impact upon biodiversity, so far as is consistent with the proper exercising of their functions.

The types of potential impacts on biodiversity that should be considered include:

- Long and short term impacts;
- Detrimental and beneficial impacts;
- Direct and indirect impacts;
- Cumulative impacts; and,
- Potentially threatening processes (Department of Environment Land Water and Planning 2021).

It is therefore anticipated that regulators will give due consideration to the FFG Act when considering the approval for the project.

In additional, a 'Permit to Take Protected Flora' is required to 'take' listed flora species that are members of listed communities or protected flora from public land. 'Taking' flora is defined as any action which results in the removal or death of a native plant. A permit is not required under the FFG

Act for private land, unless listed species are present and the land is declared 'critical habitat' for the species. On public land the permit is issued by DELWP.

An evaluation of the likelihood of the presence of significant flora and fauna species on the subject site, including those listed under the FFG Act that have previously been recorded in the vicinity of the site, has been undertaken.

***Planning and Environment Act 1987* (Vic)**

The *Planning and Environment Act 1987* (Vic) (P&E Act), later amended by the *Planning and Environment (Planning Schemes) Act 1996* (Vic) provides the foundation of planning schemes in Victoria. Planning schemes set out policies and provisions for the development and protection of land within each municipality in Victoria.

The *Planning and Environment (Planning Schemes) Act 1996* provides for the Minister for Planning to prepare a set of standard provisions for planning schemes called the Victoria Planning Provisions (VPP). The VPP is a state-wide reference document or template from which planning schemes are sourced and constructed. Incorporation of references such as the *Guidelines for the Removal Destruction or Lopping of Native Vegetation* into Section 12 of the VPP ensures that all municipalities must consider this policy. Local zones and overlays, such as Environmental Significance Overlays, may be incorporated into Section 30 and 40 of the planning provisions by each Council, but only remain relevant within that municipality.

The objectives of the P&E Act are to integrate local land use, development planning and development policy with environmental, social, economic, conservation and resource management policies at State, regional and municipal levels through a set of planning schemes. The Act also establishes a clear procedure for public participation in decision making in amending planning schemes.

Some important sections of the planning scheme, in relation to the ecological values of a site, include:

- Section 12 of the State Planning Policy Framework, which identifies, and aims to protect, key biodiversity assets from inappropriate development;
- Clause 52.17 which identifies where native vegetation removal is exempt from requiring a planning permit; and
- Clause 66 which identifies all of the mandatory referral authorities. In particular, the Victorian Department of Energy, Environment and Climate Action is identified as the recommending referral authority if a proponent proposes:
    - *'To remove, destroy or lop native vegetation in the Detailed Assessment Pathway as defined in the Guidelines for the removal, destruction or lopping of native vegetation;*
    - *To remove, destroy or lop native vegetation if a property vegetation plan applies to the site; and*
    - *To remove, destroy or lop native vegetation on Crown land which is occupied or managed by the responsible authority' (Department of Transport and Planning 2023).*

***Catchment and Land Protection Act 1994* (Vic)**

The *Catchment and Land Protection Act 1994* (Vic) (CALP Act) is the principle legislation relating to the management of pest plants and animals in Victoria. Under this Act, landowners have a responsibility to avoid causing or contributing to land degradation. Where possible, landowners are required to conserve soil, protect water resources, eradicate 'regionally prohibited' weeds, prevent the growth and spread of 'regionally controlled' weeds and control pest animals. The CALP Act lists the species that are considered weeds and pest animals.

***Wildlife Act 1975* (Vic)**

Victoria's *Wildlife Act 1975* (Vic) and the *Wildlife Regulations 2002* (Vic) protect all indigenous vertebrate fauna, some non-indigenous vertebrate fauna, and some invertebrate fauna listed as 'threatened' under the FFG Act. The *Wildlife Act 1975* (Vic) prevents intentional injury to wildlife and stipulates that a licence should be granted where there is a possibility that wildlife are injured, or where wildlife is to be kept, relocated or traded.

In most cases, where the proponent is planning to develop a site, a planning permit approval provides this licencing approval, however, this report advises if an additional permit is required. Circumstances where this legislation may not be relevant is where fish are involved, on public land where additional regulatory approval is required, or where other permits are required (such as where fauna are required to undergo invasive procedures or installation of telemetry systems).

***Fisheries Act 1995 (*Vic)**

The *Fisheries Act 1995* (Vic) provides the legislative framework for the regulation, management conservation of Victorian fish species and their habitats. As with the Victorian *Wildlife Act 1975* described above, the key method to ensure compliance is through licencing. Where fish, or their habitats, are likely to be impacted, this report will identify additional requirements.

Other relevant policy

***Guidelines for the Removal, Destruction or Lopping of Native Vegetation* (Department of Environment Land Water and Planning 2017c)**

The *Guidelines for the Removal, Destruction or Lopping of Native Vegetation* (Department of Environment Land Water and Planning 2017) were released by DELWP in December 2017. A permit to remove native vegetation under clause 52.16 and 52.17 of the Victoria Planning Provisions is required unless:

- The table of exemptions to this clause specifically states that a permit is not required;
- It is native vegetation or an area specified in the schedule to the clause;
- A Native Vegetation Precinct Plan corresponding to the land is incorporated into the relevant planning scheme; or
- Bushfire exemptions apply in bushfire prone areas (Department of Environment Land Water and Planning 2017).

The Guidelines describe the permitting process for applications to remove native vegetation on private and public property within Victoria. A key strategy of the State Planning Policy Framework,

relating to biodiversity, is to ensure that there is no net loss to biodiversity as a result of the removal, destruction or lopping of native vegetation. This is achieved through iteratively applying the three-step approach:

1. Avoiding the removal, destruction or lopping of native vegetation.
2. Minimising impacts from the removal, destruction or lopping of native vegetation that cannot be avoided.
3. Providing an offset to compensate for the biodiversity impact from the removal, destruction or lopping of native vegetation (Department of Environment Land Water and Planning 2017; p. 4).

Native vegetation is defined in the Victoria Planning Provisions as 'plants that are indigenous to Victoria, including trees, shrubs, herbs and grasses' (Department of Environment Land Water and Planning 2017).

Native vegetation is further classified into two categories (Department of Environment Land Water and Planning 2017):

- A remnant patch of native vegetation (measured in hectares) is either:
    - An area of vegetation where at least 25 per cent of the total perennial understorey plant cover is native, or
    - Any area with three or more native canopy trees where the drip line of each tree touches the drip line of at least one other tree, forming a continuous canopy, or
    - Any mapped wetland included in the *Current Wetlands Map*, available in DELWP systems and tools.

OR

- A scattered tree (measured in number of trees), is a native canopy tree that does not form a patch (Department of Environment Land Water and Planning 2017).

In addition, a canopy tree with a Diameter at Breast Height (DBH) greater than or equal to the large tree benchmark for the relevant bioregional EVC is defined as a large tree. Large trees can be either a large scattered tree or a large tree within a patch.

The contribution that is made by native vegetation to the biodiversity values of Victoria is determined through an assessment of both site-based information and landscape scale information.

At a site-based level, the contribution is determined through an assessment of:

- The extent of native vegetation;
- The number of large trees (either within a patch or scattered trees), relative to the appropriate EVC benchmark;
- The native vegetation condition, which is determined through a Habitat Hectare assessment
- The conservation status of the Ecological Vegetation Class (EVC) to which the vegetation can be classified; and,
- The presence of sensitive wetlands and coastal areas.

At a landscape scale, the value of the vegetation is determined with reference to its strategic context in the Victorian landscape. This is determined by the vegetation's 'Strategic Biodiversity Score' (SBS) and its 'Habitat Importance Score' (HIS) for its value to rare and threatened species (Department of Environment Land Water and Planning 2017).

All native vegetation within Victoria has a SBS that has been determined through spatial modelling, based on its rarity, level of depletion, species habitats, and condition and connectivity (Department of Environment Land Water and Planning 2017). SBS scores are between 0 and 1 and are used to determine the offset required for the loss of that vegetation. Native vegetation only has a HIS score if it is habitat for a particular rare or threatened species (Department of Environment Land Water and Planning 2017). There are two types of rare or threatened species habitats that may be provided by native vegetation:

- **Highly localised habitats for rare or threatened species** – where impact to this particular patch of native vegetation could result in a significant biodiversity impact, such as a breeding colony or species with a limited geographic extent.

- **Dispersed rare or threatened species habitats** – where habitat for the threatened species has become depleted or fragmented over time (Department of Environment Land Water and Planning 2017).

The HIS is used to apply the decision guidelines in relation to the removal of a patch of native vegetation and to determine offset requirements (Department of Environment Land Water and Planning 2017).

Applications to remove native vegetation are categorised against one of three assessment pathways. These pathways are categorised as:

- Basic – limited impacts on biodiversity.
- Intermediate – could impact on large trees, endangered EVCs, and sensitive wetlands and coastal areas.
- Detailed – could impact on large trees, endangered EVCs, sensitive wetlands and coastal areas, and could significantly impact on habitat for rare or threatened species (Department of Environment Land Water and Planning 2017).

This is initially determined in two ways, based on the 'location map' and the extent risk of the vegetation proposed to be removed. The location risk is determined with reference to the *Native Vegetation Location Risk* map available on DEECA's website. This map shows whether native vegetation is classified as Location 1, 2 or 3.

The extent risk is determined based on the amount of native vegetation that is proposed for removal and includes the area (in hectares) of impact to native vegetation, the number of scattered trees, and the number of large trees (Table A5).

Table A5. Assessment pathways for removal of remnant patches of native vegetation (Department of Environment Land Water and Planning 2017).

Extent	Location		
	Location 1	Location 2	Location 3
Less than 0.5 hectares and not including any large trees	Basic	Intermediate	Detailed
Less than 0.5 hectares and including one or more large trees	Intermediate	Intermediate	Detailed
0.5 hectares or more	Detailed	Detailed	Detailed

All applications to remove native vegetation must include the following information:

1. Information about the native vegetation to be removed, including:
    a. The assessment pathway and reason for the assessment pathway;
    b. A description of the native vegetation to be removed;
    c. Maps showing the native vegetation and property in context;
    d. The offset requirement, determined in accordance with section 5 of the Guidelines that will apply if the native vegetation is approved to be removed.
2. Topographic and land information relating to the native vegetation to be removed;
3. Recent, dated photographs of the native vegetation to be removed;
4. Details of any other native vegetation approved to be removed, or that was removed without the required approvals, on the same property or on contiguous land in the same ownership as the applicant, in the five year period before the application for a permit is lodged;
5. An 'Avoid and Minimise' statement;
6. A copy of any Property Vegetation Plan contained within an agreement made pursuant to section 69 of the *Conservation, Forests and Lands Act 1987* (Vic) that applies to the native vegetation to be removed;
7. Where the removal of native vegetation is to create defendable space, a written statement explaining why the removal of native vegetation is necessary;
8. If the application is under Clause 52.16, a statement that explains how the proposal responds to the Native Vegetation Precinct Plan considerations at decision guideline 8, and
9. An offset statement providing evidence that an offset that meets the offset requirements for the native vegetation to be removed has been identified, and can be secured in accordance with the Guidelines (Department of Environment Land Water and Planning 2017; p. 20-21).

If the application will be assessed under the Detailed Assessment Methodology, the following additional requirements apply:

10. A site assessment report of the native vegetation to be removed, including:
    a. A habitat hectare assessment of any patches of native vegetation, including the condition, extent (in hectares), Ecological Vegetation Class and bioregional conservation status.
    b. The location, number, circumference (in centimetres measured at 1.3 metres above ground level) and species of any large trees within patches.

    c. The location, number, circumference (in centimetres measured at 1.3 metres above ground level) and species of any scattered trees, and whether each tree is small or large.

11. Information about impacts on rare or threatened species habitat, including:
    a. The relevant section of the Habitat importance map for each rare or threatened species requiring a species offset.
    b. For each rare or threatened species that the native vegetation to be removed is habitat for, according to the Habitat importance maps: - the species' conservation status - the proportional impact of the removal of native vegetation on the total habitat for that species - whether their habitats are highly localised habitats, dispersed habitats, or important areas of habitat within a dispersed species habitat (Department of Environment Land Water and Planning 2017; p. 22).

Ten decisions guidelines are identified within the Guidelines that the responsible or referral authority must consider when deciding on an application to remove native vegetation. These are summarised as follows:

1. The degree to which the application avoids and minimises impacts to native vegetation, and where vegetation is proposed to be removed, the highest quality vegetation is avoided;
2. The role that the vegetation to be removed has in relation to landscape services such as erosion control, ground-water quality, waterway quality;
3. The role of the vegetation in the preservation of landscape features;
4. Whether any part of the native vegetation to be removed, destroyed or lopped is protected under the *Aboriginal Heritage Act 2006* (Vic);
5. The need to remove, destroy or lop native vegetation to create defendable space to reduce the risk of bushfire to life and property, having regard to other available bushfire risk mitigation measures;
6. Whether the native vegetation to be removed is in accordance with any Property Vegetation Plan that applies to the site;
7. Whether an offset that meets the offset requirements for the native vegetation to be removed has been identified and can be secured in accordance with the Guidelines;
8. Whether the application is consistent with a Native Vegetation Precinct Plan (where relevant);
9. For applications in both the Intermediate and Detailed Assessment Pathway only, the impacts on biodiversity values that would occur as a result of vegetation removal; and,
10. For applications in the Detailed Assessment Pathway only, the impacts on habitat for rare or threatened species (Department of Environment Land Water and Planning 2017).

Offset requirements

In all cases where native vegetation is approved for removal, the proponent is liable for the security of an offset site that meets the requirements under the Guidelines. An offset can be either a:

- First party offset – on the same property as the proposed removal of native vegetation, or on another property owned or managed (in the case of Crown land) by the party requiring the offset, or
- Third party offset – on another party's property. Third party offsets are traded as native vegetation credits.

In most cases a third party offset is the simplest and most cost effective means of securing the required offset.

There are three components to offset requirements:

1. Offset type (general or species).
2. Offset amount (measured in general or species habitat units).
3. Offset attributes.

Two types of offset are identified: General Offsets and Specifies Offsets. Specific Offsets may only be required if the native vegetation to be removed is habitat for rare or threatened species that are identified in an Intermediate or Detailed Assessment Pathway application (Department of Environment Land Water and Planning 2017). To determine this, a 'Specific Biodiversity Equivalence Score' is calculated by multiplying the habitat hectares with the HIS for each species that may be impacted. For each of the species, this figure is divided by the sum of all the Specific Biodiversity Value Scores calculated for the remaining vegetation under investigation to give a specific offset threshold for each species. If the amount of vegetation removed exceeds this threshold, then a Specific Offset is required. If it does not exceed the threshold, then only a General Habitat Offset is required (Table A6)(Department of Environment Land Water and Planning 2017).

Table A6 summarises the offset requirements for each of the Assessment Pathways and offset types.

Table A6. Offset requirements for the removal of native vegetation

Assessment Pathway	Offset Type	Offset amount		Offset attributes	
		Risk Adjusted Biodiversity Equivalence	Species Habitat Requirement	Vicinity	Strategic Biodiversity Score
Basic Assessment Pathway	General offset	1.5 times the general biodiversity equivalence score[1] of the native vegetation to be removed.	No restrictions.	In the same Catchment Management Authority boundary as the native vegetation to be removed.	At least 80 per cent of the SBS of the native vegetation to be removed.
Intermediate or Detailed Assessment Pathway	General offset	1.5 times the general biodiversity equivalence score of the native vegetation to be removed.	No restrictions.	In the same Catchment Management Authority boundary as the native vegetation to be removed.	At least 80 per cent of the SBS of the native vegetation to be removed.
	Specific offset	For each species impacted, 2 times the specific biodiversity equivalence score of the native vegetation to be removed.	Likely habitat for each rare or threatened species that a specific offset is required for, according to the specific-general offset test.	No restrictions.	No restrictions.

[1] The general biodiversity equivalence score is determined by multiplying the vegetation's habitat hectare score by its SBS.

Appendix 3. Native Vegetation Removal Report

Native Vegetation Removal Report

NVRR ID: 304_20241018_FJ5

This report provides information to support an application to remove, destroy or lop native vegetation in accordance with the *Guidelines for the removal, destruction or lopping of native vegetation* (the Guidelines). This report is **not an assessment by DEECA** of the proposed native vegetation removal. Offset requirements have been calculated using modelled condition scores.

Report details

Date created: 18/10/2024

Local Government Area: BASS COAST SHIRE

Registered Aboriginal Party: Bunurong

Coordinates: 145.52990, -38.40889

Address: 1517-1529 BASS HIGHWAY GRANTVILLE 3984

Regulator Notes

Removal polygons are located:

Summary of native vegetation to be removed

Assessment pathway	**Intermediate Assessment Pathway**		
Location category	Location 2 The native vegetation extent map indicates that this area is typically characterised as supporting native vegetation. Additionally, it is modelled as encompassing an endangered Ecological Vegetation Class, sensitive wetland or sensitive coastal area. The removal of less than 0.5 hectares of native vegetation in this area will not require a Species Offset.		
Total extent including past and proposed removal (ha) *Includes endangered EVCs (ha): 0.182*	**0.235**	*Extent of past removal (ha)*	*0*
		Extent of proposed removal - Patches (ha)	*0.235*
		Extent of proposed removal - Scattered Trees (ha)	*0.000*
No. Large Trees proposed to be removed	**3**	*No. Large Patch Trees*	*3*
		No. Large Scattered Trees	*0*
No. Small Scattered Trees	0		

Offset requirements if approval is granted

Any approval granted will include a condition to secure an offset, before the removal of native vegetation, that meets the following requirements:

General Offset amount [1]	**0.073 General Habitat Units**
Minimum strategic biodiversity value score [2]	0.32
Large Trees	3
Vicinity	Melbourne Water CMA or BASS COAST SHIRE LGA

NB: values within tables in this document may not add to the totals shown above due to rounding

The availability of third-party offset credits can be checked using the Native Vegetation Credit Register (NVCR) Search Tool - https://nvcr.delwp.vic.gov.au

1. The General Offset amount required is the sum of all General Habitat Units in Appendix 1.
2. Minimum strategic biodiversity value score is 80 per cent of the weighted average score across habitat zones where a General Offset is required.

Application requirements

Applications to remove, destroy or lop native vegetation must include all the below information. If an appropriate response has not been provided the application is not complete.

Application Requirement 1 - Native vegetation removal information

If the native vegetation removal is mapped correctly, the information presented in this Native Vegetation Removal Report addresses Application Requirement 1.

Application Requirement 2 - Topographical and land information

This statement describes the topographical and land features in the vicinity of the proposed works, including the location and extent of any ridges, hilltops, wetlands and waterways, slopes of more than 20% gradient, low-lying areas, saline discharge areas or areas of erosion.

See attached Biodiversity Assessment (Ecolink Consulting 2024)

Application Requirement 3 - Photographs of the native vegetation to be removed

Application Requirement 3 is not addressed in this Native Vegetation Removal Report. All applications must include recent, timestamped photos of each Patch, Large Patch Tree and Scattered Tree which has been mapped in this report.

Application Requirement 4 - Past removal

If past removal has been considered correctly, the information presented in this Native Vegetation Removal Report addresses Application Requirement 4.

Application Requirement 5 - Avoid and minimise statement

This statement describes what has been done to avoid and minimise impacts on native vegetation and associated biodiversity values.

See attached Biodiversity Assessment (Ecolink Consulting 2024)

Application Requirement 6 - Property Vegetation Plan

This requirement only applies if an approved Property Vegetation Plan (PVP) applies to the property
Does a PVP apply to the proposal?

No

Application Requirement 7 - Defendable space statement

Where the removal of native vegetation is to create defendable space, this statement:

- Describes the bushfire threat; and
- Describes how other bushfire risk mitigation measures were considered to reduce the amount of native vegetation proposed for removal (this can also be part of the avoid and minimise statement).

This statement is not required if, If the proposed defendable space is within the Bushfire Management Overlay (BMO), and in accordance with the 'Exemption to create defendable space for a dwelling under Clause 44.06 of local planning schemes' in Clause 52.12-5.

N/A

Application Requirement 8 - Native Vegetation Precinct Plan

This requirement is only applicable if you are removing native vegetation from within an area covered by Native Vegetation Precinct Plan (NVPP), and the proposed removal is not identified as 'to be removed' within the NVPP.
Does an NVPP apply to the proposal?

No

Application Requirement 9 - Offset statement

This statement demonstrates that an offset is available and describes how the required offset will be secured. The Applicant's Guide provides information relating to this requirement.

See attached Biodiversity Assessment (Ecolink Consulting 2024)

Next steps

Applications to remove, destroy or lop native vegetation must address all the application requirements specified in the Guidelines. If you wish to remove the mapped native vegetation you are required to apply for approval from the responsible authority (e.g. local Council). This Native vegetation removal report must be submitted with your application and meets most of the application requirements. The following requirements need to be addressed, as applicable.

Application Requirement 3 - Photographs of the native vegetation to be removed

Recent, dated photographs of the native vegetation to be removed **must be provided** with the application. All photographs must be clear, show whether the vegetation is a Patch of native vegetation, Patch Tree or Scattered Tree, and identify any Large Trees. If the area of native vegetation to be removed is large, provide photos that are indicative of the native vegetation.

Ensure photographs are attached to the application. If appropriate photographs have not been provided the application is not complete.

Application Requirement 6 - Property Vegetation Plan

If a PVP is applicable, it must be provided with the application.

Appendix 1: Description of native vegetation to be removed

General Habitat Units for each zone (Patch, Scattered Tree or Patch Tree) are calculated by the following equation in accordance with the Guidelines

General Habitat Units = extent without overlap x condition score x general landscape factor x 1.5, where the general landscape factor = 0.5 + (strategic biodiversity value score/2)

The General Offset amount required is the sum of all General Habitat Units per zone.

Native vegetation to be removed

Information provided by or on behalf of the applicant			Information calculated by NVR Map							
Zone	**Type**	**DBH (cm)**	**EVC code (modelled)**	**Bioregional conservation status**	**Large Tree(s)**	**Condition score (modelled)**	**Polygon extent (ha)**	**Extent without overlap (ha)**	**SBV score**	**General Habitat Units**
1	Patch	-	GipP0053, GipP0016	Endangered, Vulnerable	-	0.288	0.052	0.052	0.400	0.016
2	Patch	-	GipP0053, GipP0016	Endangered, Vulnerable	3	0.299	0.182	0.182	0.400	0.057

Appendix 2: Images of mapped native vegetation

1. Property in context



2. Aerial photograph showing mapped native vegetation

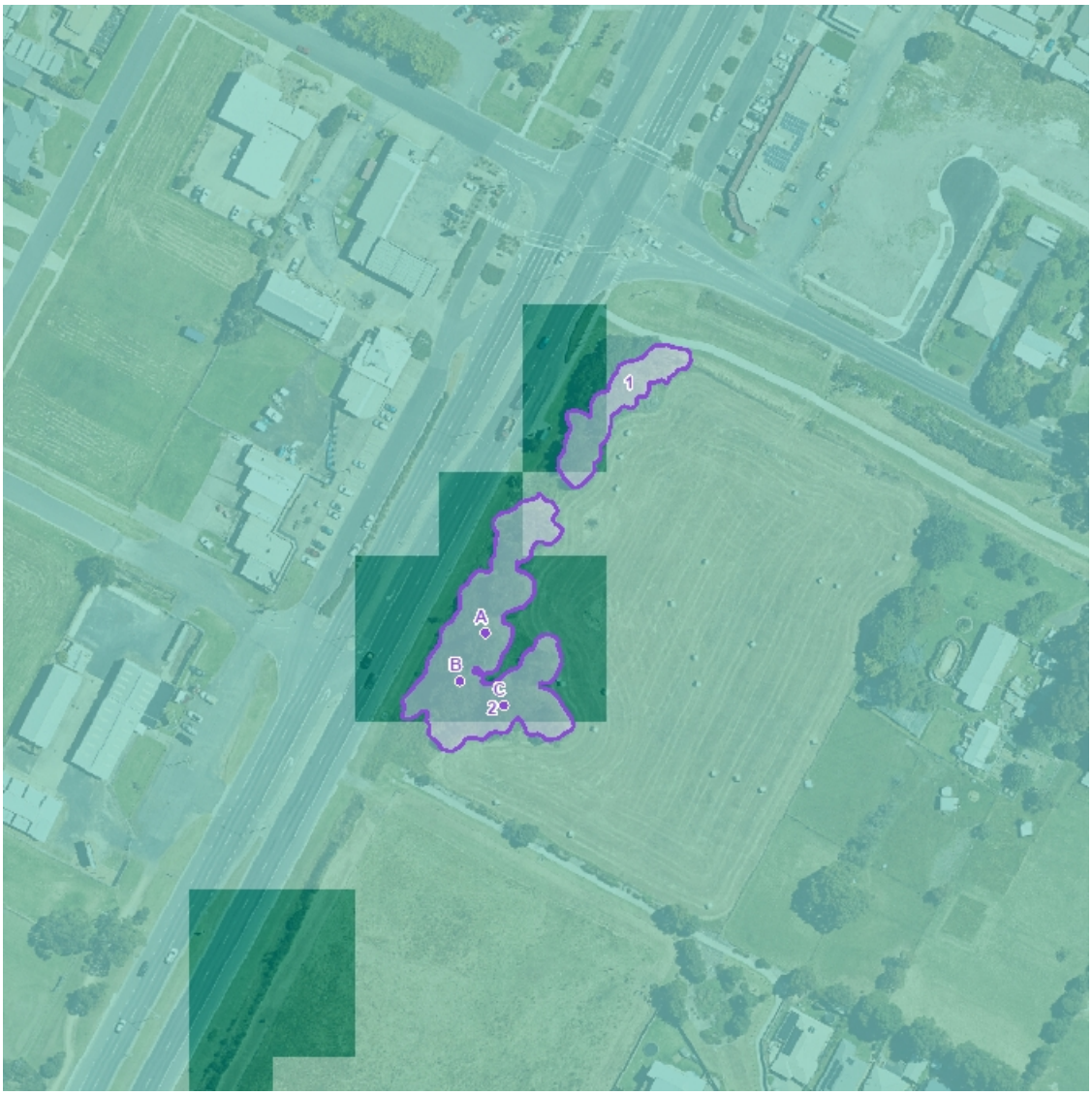


Proposed Removal

N

45 m

3. Location Risk Map



4. Strategic Biodiversity Value Score Map



Proposed Removal

0.81 - 1.00
0.61 - 0.80
0.41 - 0.60
0.21 - 0.40
0.00 - 0.20

N

45 m

5. Condition Score Map



6. Endangered EVCs



Proposed Removal

Endangered 1750 Ecological Vegetation Classes

N

45 m

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Appendix 4. Native Vegetation Credit Register Search Results

Report of available native vegetation credits

This report lists native vegetation credits available to purchase through the Native Vegetation Credit Register.

This report is **not evidence** that an offset has been secured. An offset is only secured when the units have been purchased and allocated to a permit or other approval and an allocated credit extract is provided by the Native Vegetation Credit Register.

Date and time: 18/10/2024 08:12 **Report ID: 26891**

What was searched for?

General offset

General habitat units	Strategic biodiversity value	Large trees	Vicinity (Catchment Management Authority or Municipal district)	
0.073	0.32	3	CMA	Melbourne Water
			or LGA	Bass Coast Shire

Details of available native vegetation credits on 18 October 2024 08:12

These sites meet your requirements for general offsets.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)
BBA-0277	0.644	438	Melbourne Water	Mornington Peninsula Shire	No	Yes	No	Abezco, Ethos, VegLink
BBA-0670	14.373	102	Melbourne Water	Cardinia Shire	No	Yes	No	Abezco, VegLink
BBA-0677	5.203	1409	Melbourne Water	Whittlesea City	No	Yes	No	Abezco, VegLink
BBA-0678	41.860	2579	Melbourne Water	Nillumbik Shire	No	Yes	No	VegLink
BBA-0678_02	0.562	58	Melbourne Water	Nillumbik Shire	No	Yes	No	Abezco, VegLink
BBA-2789	1.317	14	Melbourne Water	Baw Baw Shire	Yes	Yes	No	Contact NVOR
BBA-2790	2.911	116	Melbourne Water	Baw Baw Shire	Yes	Yes	No	Contact NVOR
BBA-2870	2.544	431	Melbourne Water	Yarra Ranges Shire	Yes	Yes	No	VegLink
BBA-2871	14.299	1641	Melbourne Water	Yarra Ranges Shire	Yes	Yes	No	VegLink
VC_CFL-0838_01	0.184	648	Melbourne Water	Yarra Ranges Shire	Yes	Yes	No	VegLink
VC_CFL-3687_01	0.278	61	Melbourne Water	Baw Baw Shire	Yes	Yes	No	Baw Baw SC
VC_CFL-3696_01	1.544	252	West Gippsland	Bass Coast Shire	Yes	Yes	No	Ethos, VegLink
VC_CFL-3708_01	0.193	492	Melbourne Water	Yarra Ranges Shire	Yes	Yes	No	VegLink

VC_CFL-3709_01	0.122	340	Melbourne Water	Yarra Ranges Shire	Yes	Yes	No	VegLink
VC_CFL-3710_01	6.300	322	Melbourne Water	Yarra Ranges Shire	Yes	Yes	No	VegLink
VC_CFL-3744_01	1.164	349	Melbourne Water	Macedon Ranges Shire	Yes	Yes	No	VegLink

These sites meet your requirements using alternative arrangements for general offsets.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)

There are no sites listed in the Native Vegetation Credit Register that meet your offset requirements when applying the alternative arrangements as listed in section 11.2 of the Guidelines for the removal, destruction or lopping of native vegetation.

These potential sites are not yet available, land owners may finalise them once a buyer is confirmed.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)
VC_CFL-3746_01	4.962	563	Melbourne Water	Macedon Ranges Shire	Yes	Yes	No	VegLink

LT - Large Trees *CMA - Catchment Management Authority* *LGA - Municipal District or Local Government Authority*

Next steps

If applying for approval to remove native vegetation
Attach this report to an application to remove native vegetation as evidence that your offset requirement is currently available.

If you have approval to remove native vegetation
Below are the contact details for all brokers. Contact the broker(s) listed for the credit site(s) that meet your offset requirements. These are shown in the above tables. If more than one broker or site is listed, you should get more than one quote before deciding which offset to secure.

Broker contact details

Broker Abbreviation	Broker Name	Phone	Email	Website
Abezco	Abzeco Pty. Ltd.	(03) 9431 5444	offsets@abzeco.com.au	www.abzeco.com.au
Baw Baw SC	Baw Baw Shire Council	(03) 5624 2411	bawbaw@bawbawshire.vic.gov.au	www.bawbawshire.vic.gov.au
Bio Offsets	Biodiversity Offsets Victoria	0452 161 013	info@offsetsvictoria.com.au	www.offsetsvictoria.com.au
Contact NVOR	Native Vegetation Offset Register	136 186	nativevegetation.offsetregister@deeca.vic.gov.au	www.environment.vic.gov.au/native-vegetation
Ecocentric	Ecocentric Environmental Consulting	0410 564 139	ecocentric@me.com	Not avaliable
Ethos	Ethos NRM Pty Ltd	(03) 5153 0037	offsets@ethosnrm.com.au	www.ethosnrm.com.au
Nillumbik SC	Nillumbik Shire Council	(03) 9433 3316	offsets@nillumbik.vic.gov.au	www.nillumbik.vic.gov.au
TFN	Trust for Nature	8631 5888	offsets@tfn.org.au	www.trustfornature.org.au
VegLink	Vegetation Link Pty Ltd	(03) 8578 4250 or 1300 834 546	offsets@vegetationlink.com.au	www.vegetationlink.com.au
Yarra Ranges SC	Yarra Ranges Shire Council	1300 368 333	biodiversityoffsets@yarraranges.vic.gov.au	www.yarraranges.vic.gov.au

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For more information contact the DEECA Customer Service Centre 136 186 or the Native Vegetation Credit Register at nativevegetation.offsetregister@delwp.vic.gov.au

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Obtaining this publication does not guarantee that the credits shown will be available in the Native Vegetation Credit Register either now or at a later time when a purchase of native vegetation credits is planned.

Notwithstanding anything else contained in this publication, you must ensure that you comply with all relevant laws, legislation, awards or orders and that you obtain and comply with all permits, approvals and the like that affect, are applicable or are necessary to undertake any action to remove, lop or destroy or otherwise deal with any native vegetation or that apply to matters within the scope of Clauses 52.16 or 52.17 of the Victoria Planning Provisions and Victorian planning schemes

ARBORICULTURAL REPORT
1517 – 1529 BASS HIGHWAY, GRANTVILLE

November 2024

PREPARED BY

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1 Introduction

1.1 John Patrick, consulting arborists, have been engaged by 1517 Bass Highway Pty Ltd to prepare an arboricultural report for 1517 – 1529 Bass Highway, Grantville to accompany planning application documents for the site.

1.2 This report is in response to Item 2 of the Bass coast Council RFI, dated 23 July 2024.

2 Objectives

2.1 The intent of this report is to:

- Assess the condition of trees within the subject site and those neighbouring that may be impacted by the proposed development and estimate the extent of any impact.
- Identify trees which will require removal and whether their removal can be either avoided or minimised and if not to generate a report which calculates necessary offsets.

2.2 The report will include the following;

- Botanic / Common names
- Tree Location
- Canopy width and height
- DBH (trunk diameter)
- Tree health & structure condition
- Useful Life Expectancy (ULE)
- Tree Protection Zones (TPZ's) in accordance with AS-4970
- Arboricultural value
- Other tree characteristics of consideration.

3 Methodology

3.1 The site was visited on the 28 August 2024 and a visual assessment of the subject trees was undertaken from ground level. Each tree was assigned an identification number for reference purposes, denoted on the attached Tree Location and Impact Assessment Plan (Section 5) which is based on the Plan of Features & Levels Survey prepared for the site by Raso Consulting Surveyors, Drawing No. W1915-F&L.01 Rev B, 9/11/2020 and the Development Plan prepared by Idle Architecture Job Number 2223, Rev G, 04/10/2024.

3.2 Trees identified with a DBH of 100mm or less were not assessed in this report unless rare or of unusual attributes.

3.3 No aerial or diagnostic testing was undertaken as part of this assessment.

3.4 The DBH of trees was measured using a diameter tape measure at 1.4m above ground level in accordance with AS-4970. Where access directly to the trees was not possible DBH was estimated.

3.5 Heights of canopies were measures using a laser range finder

3.6 Widths of canopies were measured by stepping out.

4 Observations

EXISTING CONDITIONS

4.1 The subject site is located on the eastern side of the Bass Highway. Currently it exists as an empty paddock. Site vegetation is restricted to a group of trees of varying ages and size located along the western boundary and towards the southern boundary of the site.

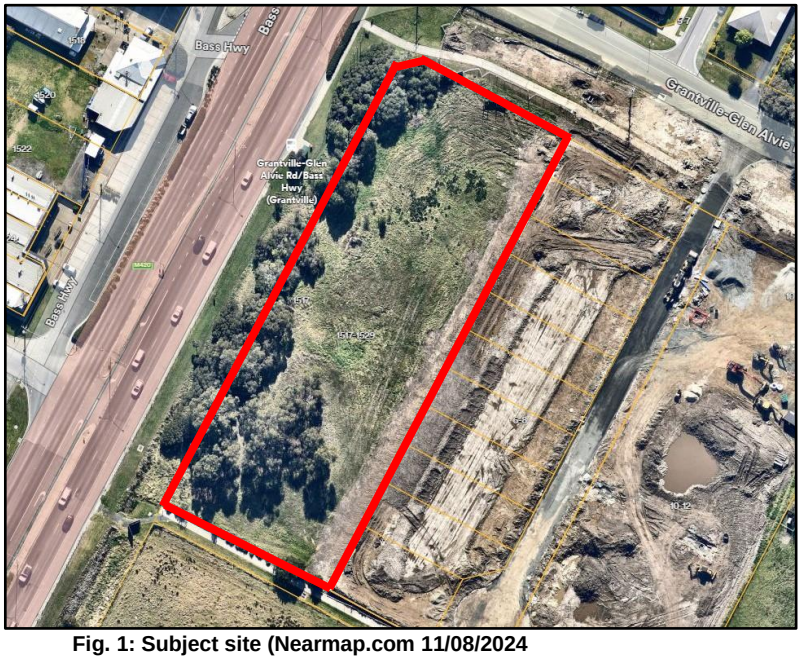

Fig. 1: Subject site (Nearmap.com 11/08/2024

VEGETATION CONTROLS

4.2 An internet search of VicPlan reveals that the site is not covered by any overlays pertaining to tree control of the Bass Coast Council Planning Scheme.

4.3 Bass Coast Local Law No.1 Neighbourhood Amenity 2022 features the following tree controls:

> **30. Significant Trees and Protected Trees**
>
> *(1) An owner or occupier of private property must not, without a permit:*
>
> *(a) Cut, trim, lop, prune or otherwise interfere with, or cause or allow to be cut, trimmed, lopped, pruned or otherwise interfered with, on any private property any significant tree or protected tree; or*
>
> *(b) Carry out, or cause or allow to be carried out, any works within the tree protection zone of a significant tree or protected tree, including but not limited to building, trenching, digging, compacting, excavating, filling, or storing materials and equipment.*
>
> *(2) Sub-clause (1) does not apply to:*
>
> *(a) A person whose actions are authorised under a permit under the Planning Scheme;*
>
> *(b) A person whose actions are required by any other legislation; or*
>
> *(c) A person acting in accordance with a direction from Council or an Authorised Officer.*
>
> *(3) Council must maintain a Significant Tree Register recording all significant trees within the municipal district and ensure that such Significant Tree Register is accessible on Council's website and can be inspected at Council's principal office during normal business hours*
>
> ***Protected tree***
>
> *Means a tree with a single trunk circumference or combined trunk circumference greater than 155 centimetres measured at one metre above ground level but excluding species which are noxious weeds.*
>
> ***Significant tree***
>
> *Means a tree that is recorded on Council's Significant Tree Register.*

4.4 Two trees within the site and one without meet or exceed the dimensions required to be classified as protected trees and will require permits from the Responsible Authority for any works to or adjacent to them. See section *5. Discussion* for details.

4.5 As the site is greater than 4000m^2. Clause 52.17 Native Vegetation applies to the site. Under this clause, a permit is required to remove, destroy, or lop native vegetation, including dead native vegetation and the biodiversity impacts from the removal, destruction or lopping of the native vegetation must be offset.

4.6 Several trees within the site are native to Victoria and are protected by Clause 52.17. See section *5. Discussion* for details.

Note: It is recommended that vegetation controls be confirmed with the local authority prior to any tree removal.

TREE INFORMATION

4.7 A total of 27 trees or tree groups were assessed including 11 trees or tree groups within the subject site and 16 trees within the road reserve or neighbouring properties. Information on these can be found in the following table.

TREE DATA

Tree No.	Botanic Name	Common Name	Size (m) HXW	DBH (cm)	TPZ (m)	Cir. @ 1m (cm)	Cir. @ 1.3m (cm)	Age	Health	Structure	ULE (Yrs.)	Arb Value	Comments
1	*Melaleuca ericifolia*	Swamp Paperbark	3 x 1	10-20	2.0	33-66	Varies. All <50	Semi-mature - Mature	Good	Fair	0	Low	Dense thicket partly outside and partly within site.
2	*Acacia melanoxylon*	Blackwood	6 x 4	25	3.0	83	80	Mature	Fair	Poor	5-10	Low	Decay in trunk, outside site
3	*Acacia melanoxylon*	Blackwood	10 x 6	45	5.4	149	143	Mature	Poor	Poor	0-5	Low	Mostly dead, outside site
4	*Acacia melanoxylon*	Blackwood	10 x 5	39	4.7	130	124	Mature	Poor	Fair	0-5	Low	Mostly dead, outside site
5	*Acacia melanoxylon*	Blackwood	7 x 4	<30	3.0	<100	<95	Mature	Fair	Fair	5-10	Low	Group of smaller trees scattered amongst larger trees. Outside site.
6	*Acacia melanoxylon*	Blackwood	6 x 5	22	2.6	73	70	Mature	Good	Good	20+	Medium	Pair of developing trees
7	*Corymbia ficifolia* cvr	Red-flowering Gum	4 x 8	30	3.6	100	96	Mature	Good	Good	10-20	Medium	Located in road reserve
8	*Corymbia ficifolia cvr*	Red-flowering Gum	4 x 4	22	2.6	73	70	Mature	Fair	Poor	5-10	Low	Located in road reserve. Scaffold broken away.
9	*Eucalyptus viminalis*	Manna Gum	8 x 8	35	4.2	116	112	Semi-mature	Poor	Poor	0-5	Low	Outside site. Large amount of deadwood in canopy.
10	*Eucalyptus viminalis*	Manna Gum	10 x 10	45	5.4	149	143	Maturing	Good	Fair	20+	Medium	Developing tree.
11	*Eucalyptus ovata*	Swamp Gum	13 x 13	120	15.0	399	382	Over-mature	Fair	Poor	0	Low	Main stem failed and decaying. Large amount of deadwood. Hazardous.
12	*Corymbia ficifolia cvr*	Red-flowering Gum	3 x 3	18	2.2	60	57	Semi-mature	Good	Fair	0-5	Low	Stunted tree in road reserve.
13	*Eucalyptus ovata*	Swamp Gum	14 x 14	110	15.0	365	351	Mature	Fair	Fair	5-10	Medium	Outside site. Large hollow in main stem. Deadwood
14	*Eucalyptus ovata*	Swamp Gum	9 x 9	38	4.5	126	121	Mature	Good	Fair	10-20	Medium	Codominant from 0.3m with narrow union

Tree No.	Botanic Name	Common Name	Size (m) HXW	DBH (cm)	TPZ (m)	Cir. @ 1m (cm)	Cir. @ 1.3m (cm)	Age	Health	Structure	ULE (Yrs.)	Arb Value	Comments
15	*Eucalyptus ovata*	Swamp Gum	9 x 9	35	4.2	126	121	Mature	Good	Fair	10-20	Medium	Codominant from near base with narrow union
16	*Eucalyptus ovata*	Swamp Gum	8 x 7	24	2.9	80	76	Semi-mature	Good	Fair	10-20	Medium	Top of canopy suppressed by T17.
17	*Eucalyptus ovata*	Swamp Gum	16 x 16	91	10.9	302	290	Mature	Fair	Fair	10-20	Medium	Large scaffold failed. Deadwood.
18	*Eucalyptus ovata*	Swamp Gum	9 x 5	35*	4.2*	116*	112*	Maturing	Good	Fair	10-20	Medium	Group of 3 developing trees, one with failed stem, *=largest
19	*Eucalyptus ovata*	Swamp Gum	9 x 5	37*	4.4*	123*	118*	Maturing	Good	Fair	10-20	Medium	Pair of developing trees, *=largest
20	*Acacia melanoxylon*	Blackwood	5 x 4	32 @ 1m	3.8	101	96	Maturing	Poor	Poor	0	Low	Outside site. Thin canopy with large portion dead.
21	*Acacia melanoxylon*	Blackwood	5 x 9	37	4.4	123	118	Mature	Good	Fair	10-20	Medium	Outside site.
22	*Melaleuca ericifolia*	Swamp Paperbark	2 x 1	<10	2.0	<30	<35	Semi-mature	Good	Good	20+	Low	Dense thicket located outside site
23	*Eucalyptus viminalis*	Manna Gum	4 x 6	30	3.6	100	96	Mature	Good	Fair	10-20	Medium	Suppressed form, outside site
24	*Melaleuca ericifolia*	Swamp Paperbark	2 x 1	<10	2.0	<30	<35	Semi-mature	Good	Good	20+	Low	Dense thicket located outside site
25	*Acacia melanoxylon*	Blackwood	4 x 3	13	2.0	43	41	Maturing	Good	Fair	5-10	Low	Outside site
26	*Melaleuca ericifolia*	Swamp Paperbark	4 x 5*	21*	2.5*	70*	67*	Mature	Good	Fair	10-20	Low	x2 trees, outside site, *= largest
27	*Pittosporum undulatum*	Sweet Pittosporum	4 x 4	17*	2.0	56*	54*	Semi-mature	Good	Fair	5-10	Low	Scattered thickets of young trees. *=average

NOTE:

Tree No. shaded blue are external to the subject site, on public land.

Botanic Names shaded green are considered protected trees under the Bass Coast Local Law.

Common Names shaded purple are native to Victoria and are covered by Clause 52.17 Native Vegetation.

TREE IMAGES – CAPTURED 28TH AUGUST 2024



Fig. 2: Tree Group 1.

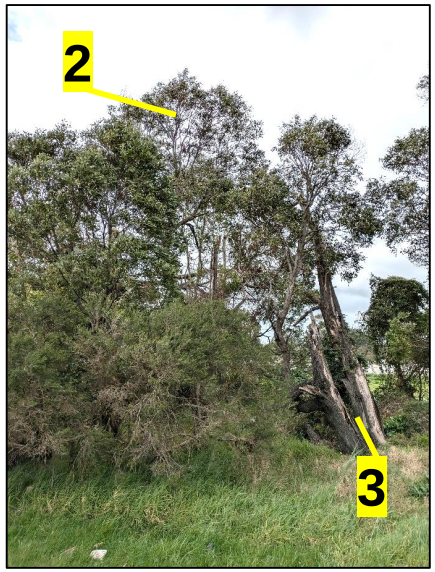

Fig. 3: Trees 2 and 3.



Fig. 4: Tree 4

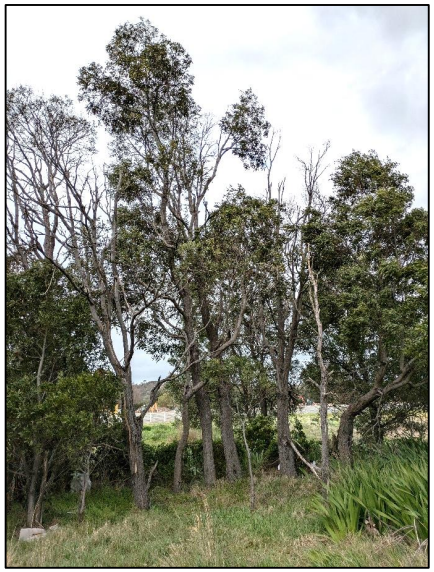

Fig. 5: Tree Group 5.



Fig. 6: Tree Group 6.

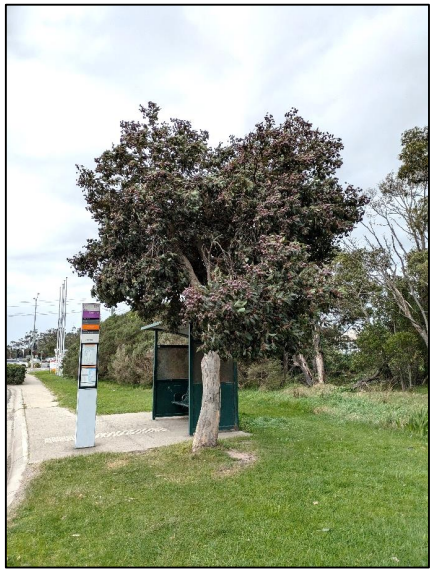

Fig. 7: Tree 7.



Fig. 8: Tree 8.

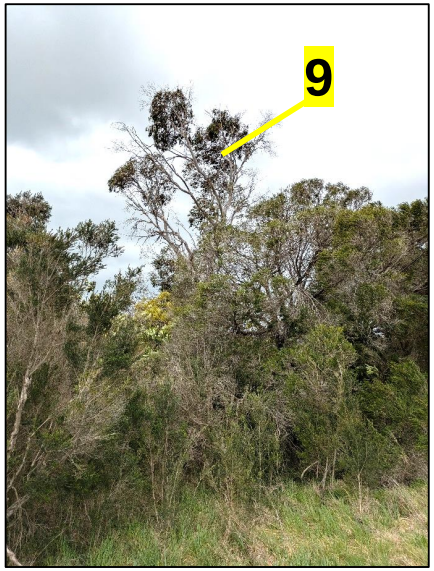

Fig. 9: Tree 9.


Fig. 10: Tree 10.


Fig. 11: Tree 11.


Fig. 12: Tree 12.


Fig. 13: Tree 13.


Fig. 14: Tree 14.


Fig. 15: Tree 15.


Fig. 16: Tree 16.

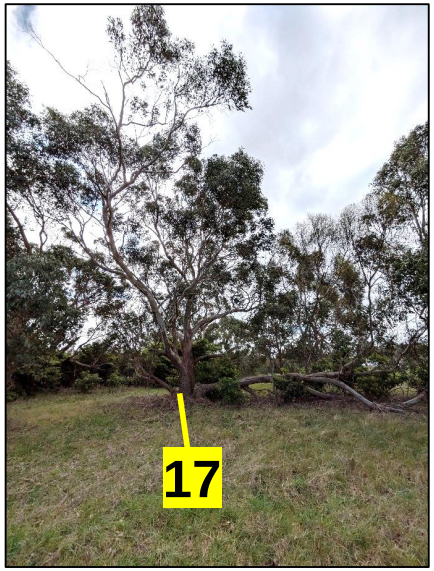

Fig. 17: Tree 17.


Fig. 18: Tree Group 18.


Fig. 19: Tree Group 19.



Fig. 20: Trees 20 and 21.


Fig. 21: Tree Group 22.

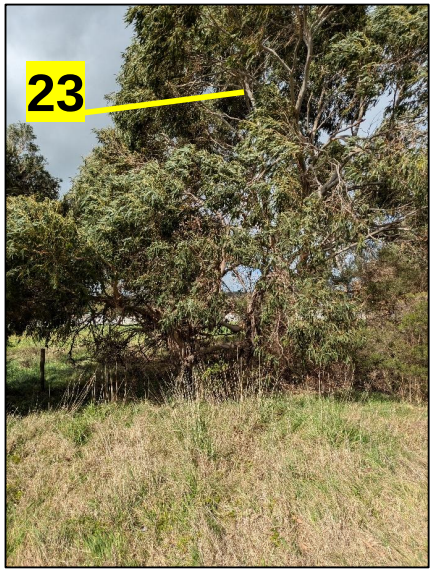

Fig. 22: Tree 23.


Fig. 23: Tree Group 24.


Fig. 24: Tree 25.



Fig. 25: Tree Group 26.

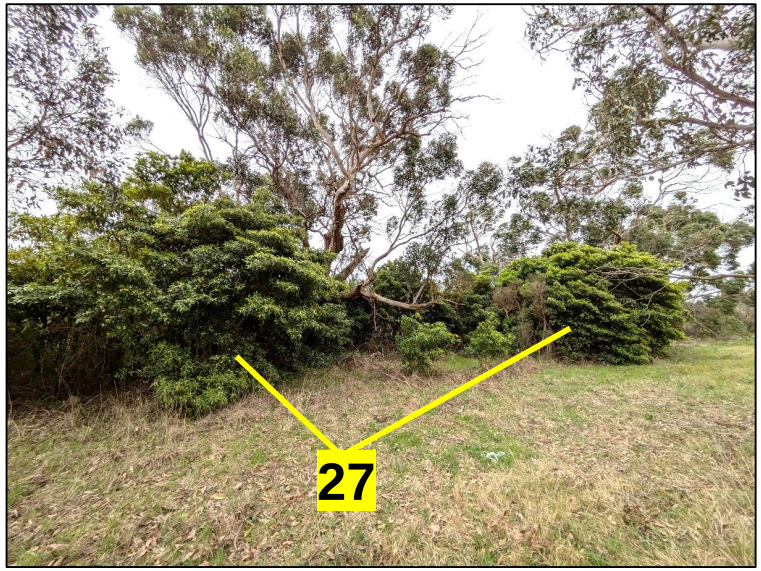

Fig. 26: Tree Group 27.

5 Discussion

5.1 The proposed development for the subject site includes a childcare centre with additional retail spaces in the northern third of the site, a fuel service station occupying the southern section of the site, and an additional service road adjacent to the western boundary to enable ingress and egress for the station. The following plans have been reviewed as part of this impact assessment:

1517-1529 Bass Highway, Grantville
Proposed Development (Retail / Convenience Restaurant / Service Station / Childcare
Project Number: 2223, Rev: G
Prepared by Idle Architecture, 04/10/2024

5.2 This report assumes that the levels, dimensions and drawings provided by the surveyors and architects named within this report are correct as these have been used as the basis for this impact assessment.

5.3 Trees 24-27 were not shown on the survey provided, their location on the Impact Assessment Plan is therefore based on a visual estimation of their location. Any comments regarding the impact on these trees are approximate only.

SITE TREES

5.4 Plans indicate the removal of all site vegetation to accommodate the proposed development.

5.5 Tree Group 1, a dense thicket of semi-mature to mature Swamp Paperbark (*Melaleuca ericifolia*) in the northwest corner of the site, is spread across the site and the public land. It is overall of low arboricultural value and proposed to be removed to accommodate the outdoor play area of the childcare centre.

5.6 Tree Group 6 is two developing Blackwoods (*Acacia melanoxylon*) located along the northern half of the western boundary of the site. The trees are of good health and structure, and of medium arboricultural value. They are proposed to be removed to accommodate a retail building footprint.

5.7 Tree 10 is a maturing Manna Gum (*Eucalyptus viminalis*) located approximately halfway along the western boundary of the site. It is of medium arboricultural value and proposed to be removed to accommodate a pedestrian path and service station forecourt.

5.8 Tree 11 is an over-mature Swamp Gum (Eucalyptus ovata) located along the western boundary of the site. While of significant size it appears to be senescing with large amounts of deadwood and stem failure giving it a lower arboricultural value. It is proposed to be removed to accommodate a pedestrian path and service station forecourt. The tree has a trunk circumference greater than 155cm at 1m from ground classifying it as a protected tree under the Bass Coast Local Law. A permit will be required for its removal.

5.9 Trees 14-19 are a group of Swamp Gums (*Eucalyptus ovata*) located within the southern half of the site. All are of good to fair health and structure and are of medium arboricultural value. All are proposed to be removed to accommodate the service station forecourt and associated structures. Tree 17 has a trunk circumference greater than 155cm at 1m from ground classifying it as a protected tree under the Bass Coast Local Law. A permit will be required for its removal.

5.10 Tree Group 27 are scattered thickets of semi-mature Sweet Pittosporum (*Pittosporum undulatum*) located along the western boundary in the southern half of the site. They are of low arboricultural value and are proposed to be removed to accommodate the service station forecourt.

NEIGHBOURING TREES

5.11 All neighbouring trees are proposed to be removed to accommodate the development of the site.

5.12 Tree Group 1, a dense thicket of semi-mature to mature Swamp Paperbark (*Melaleuca ericifolia*) in the northwest corner of the site, is spread across the site and public land. A small area of the southern extent and along the northern boundary of the subject site are proposed to be removed, while the remaining is proposed to be retained. The proposed removal of the sections within public land will require permission from the Responsible Authority.

5.13 Trees 2-5 are a loose row of Blackwood (*Acacia melanoxylon*) located within the nature strip along the western boundary of the site. All are of fair to poor health and structure, and of low arboricultural value. All are proposed to be removed to accommodate the building footprints, boundary fence lines, and external pedestrian paths. Permission from the Responsible Authority will be required for their proposed removal.

5.14 Trees 7, 8 and 12 are all Red-flowering Gums (*Corymbia ficifolia* cvr.) located within the nature strip along the Bass Highway, west of the subject site. Tree 7 is of medium arboricultural value, while Tree 8, with its fair to poor health and structure, and Tree 12 are of low value. All are proposed to be removed to accommodate a new service road. Permission from the Responsible Authority will be required for their proposed removal.

5.15 Tree 9 is a Manna Gum (*Eucalyptus viminalis*) located within the nature strip along the Bass Highway, approximately halfway along the western boundary of the subject site. This semi-mature specimen is of poor health and structure, with a low arboricultural value. It is proposed to be removed to accommodate a site crossover. Permission from the Responsible Authority will be required for its proposed removal.

5.16 Tree 13 is a Swamp Gum (*Eucalyptus ovata*) located within the nature strip along the western boundary of the subject site, towards the southern end. It is of fair health and structure, and of medium arboricultural value. It is proposed to be removed to accommodate a pedestrian path. The tree has a trunk circumference greater than 155cm at 1m from ground classifying it as a protected tree under the Bass Coast Local Law. Permission from the Responsible Authority will be required for its proposed removal.

Trees 20, 21, and 25 are all Blackwood (*Acacia melanoxylon*) located along the southern boundary of the subject site, towards the southeast corner. Trees 20 and 25 are of low arboricultural value with 20 being of significantly poor quality. Tree 21 is of medium arboricultural value. All are proposed to be removed to accommodate the service station forecourt and timber fence along this boundary. Permission from the Responsible Authority will be required for its proposed removal.

5.17 Tree Group 22 and 24 are dense thickets of semi-mature Swamp Paperbark (*Melaleuca ericifolia*) located within the nature strip approximately halfway along the western boundary of the subject site. Both group are generally of low arboricultural value and are proposed to be removed to accommodate a pedestrian path, service road, and site access crossover. Permission from the Responsible Authority will be required for their proposed removal.

5.18 Tree 23 is a Manna Gum (*Eucalyptus viminalis*) located within the nature strip approximately halfway along the western boundary of the subject site. It is good health, and fair structure being somewhat suppressed by surrounding trees, giving it a medium arboricultural value. It is proposed to be removed to accommodate the pedestrian path. Permission from the Responsible Authority will be required for its proposed removal.

5.19 Tree Group 26 is two Swamp Paperbark (*Melaleuca ericifolia*) located within the nature strip approximately halfway along the western boundary of the subject site. While of good health and fair structure, they are generally of low arboriculture value. They are proposed to be removed to accommodate a pedestrian path.

NATIVE VEGETATION OFFSETS

5.20 The majority of vegetation proposed for removal, both within and neighbouring the site, is native to Victoria and therefore subject to the provisions of Clause 52.17 Native Vegetation.

5.21 Trees and Tree Groups 1, 3, 4, 9-11, 13-19, and 23 will all require permits for their removal. Offsets may also be required to be purchased against these removals.

5.22 Trees and Tree Groups 2, 5, 6, 22, 24, 26, and 27 are native to Victoria but are considered to be regrowth less than 10 years old. They are exempt from permit and offset requirements as per *52.17-7 Table of exemptions: Regrowth.*

5.23 Trees 20, 21, and 25 are native to Victoria but have been identified as planted specimens. They are exempt from permit and offset requirements as per *52.17-7 Table of exemptions: Planted vegetation.*

5.24 The location and extent of vegetation within and neighbouring the site and the extent of the proposed development makes avoiding or minimising removal of much of the vegetation not possible. Offset requirements have been calculated using the Native Vegetation removal tool available from the Native Vegetation Information Management (NVIM) website. The report (Native Vegetation Removal Report), generated using this tool (supplied by Ecolink Consulting, who undertook the Biodiverse Assessment (Project Number 2293, October 2024)) for the site can be found at Appendix 1 and is based on removal of the following native vegetation:

- Patch 1 being the extent of Tree Group 1 within the subject site.
- Patch 2 being the roughly contiguous group of trees along the western boundary, as well as trees within the southwest quadrant of the subject site. This patch contains three large trees.

5.25 A search of native vegetation credits available for purchase has also been undertaken using Native Vegetation Credit Register online tool. This has indicated 18 available sites which meet the offset criteria. A copy of this report can be found at Appendix 2.

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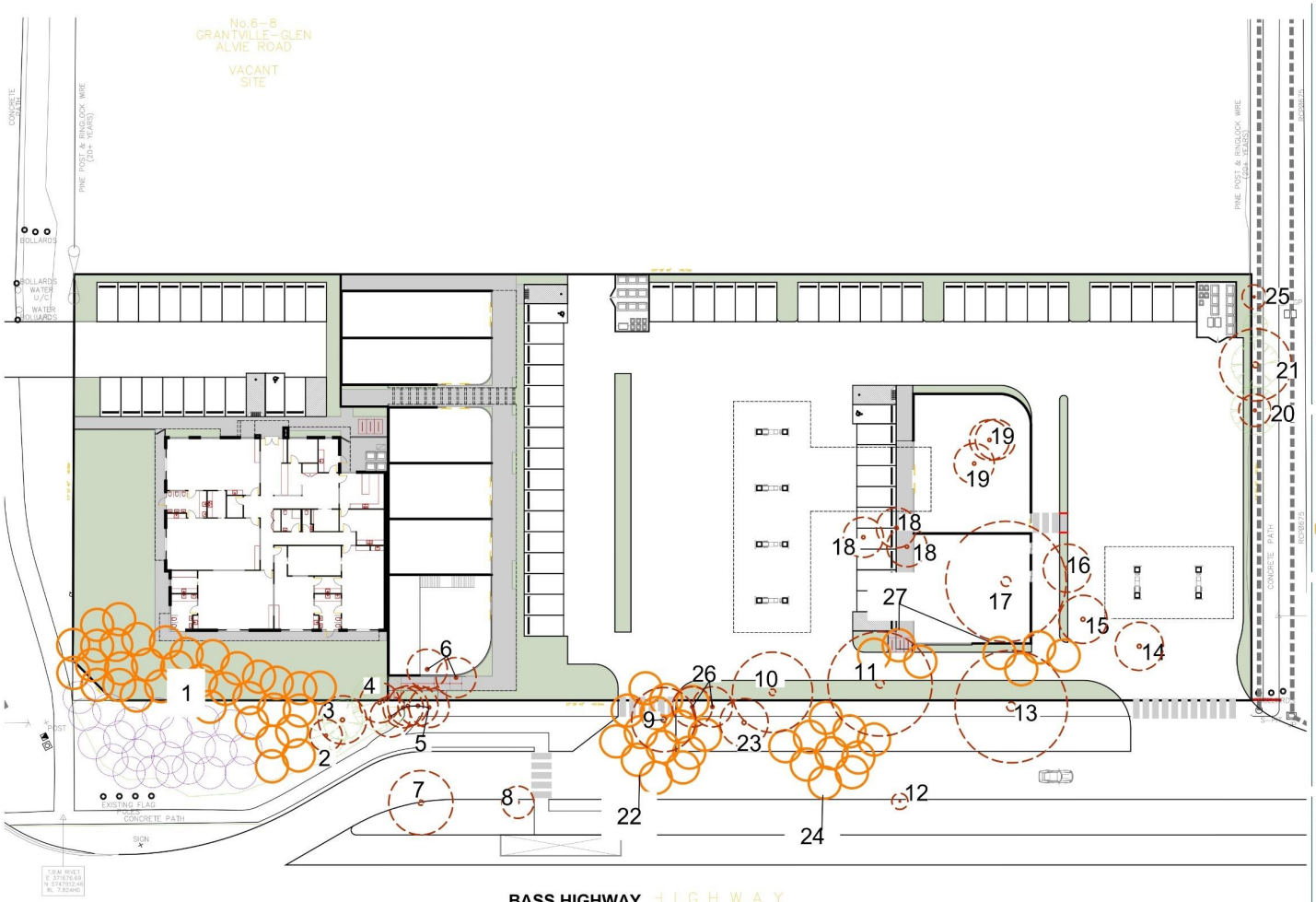
TREE LOCATION AND IMPACT ASSESSMENT PLAN



LEGEND

- Existing Tree To Be Retained Blue denotes TPZ
- Existing Tree To Be Removed
- Existing Tree Patch To Be Removed
- Existing Tree Patch To Be Retained

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Do not scale off drawings

NOT FOR CONSTRUCTION

REVISION		DATE	BY
B	October 2024 update	14/10/2024	JH

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CLIENT
Bass Highway Pty Ltd

PROJECT
Proposed Mixed Development

1517-1529 Bass Coast Highway, Grantville

DRAWING
Tree Impact Assessment Plan

SCALE	1:500
DATE	08/11/2024
DRAWN	JH
CHECKED	
JOB NO	24-324
DWG NO	IAP01rev1
CAD FILE	24-324 IAP

6 Conclusion

6.1 A total of 27 trees or tree groups were assessed, comprising of 11 within the subject site and 16 within the neighbouring nature strips, road reserves, or other public land.

6.2 All site and neighbouring trees are proposed to be removed to accommodate the development.

6.3 Site Trees and Tree Groups 1, 11 and 27 were assessed as being of low arboricultural value.

6.4 Site Trees and Tree Groups 6, 10, and 14-19 were assessed as being of medium arboricultural value.

6.5 Neighbouring Trees and Tree Groups 3-5, 8, 9, 12, 20, 22, and 24-26 were assessed as being of low arboricultural value.

6.6 Neighbouring Trees and Tree Groups 2, 7, and 13 were assessed as being of medium arboricultural value.

6.7 Site Trees 11 and 17, and Neighbouring Tree 13 all have trunk circumferences greater than 155cm at 1m from ground level. All will require permits for their removal under the Bass Coast Local Law.

6.8 All Neighbouring Trees and Tree Groups proposed to be removed, being Trees 1-5, 7-9, 12, 13, and 20-26 will require permission from the Responsible Authority prior to any works.

6.9 Trees and Tree Groups 1, 3, 4, 9-11, 13-19, and 23 are native to Victoria and are protected by *Clause 52.17 Native Vegetation*. Permits and offsets will be required for their removal.

6.10 Trees and Tree Groups 2, 5, 6, 20-22, and 24-27 are native to Victoria but are exempt from Clause 52.17 permit and offset requirements as they have been assessed as either being regrowth less than 10 years old or planted vegetation.

7 Descriptors

Tree Number:

Refers to the identification number for reference purposes, denoted on the Tree Data and Tree Survey Plan.

Botanical Name:

Botanical name of species, based on nomenclature and spelling in Spencer, R 1995, *Horticultural flora of South Eastern Australia* (vols. 1-5), University of NSW Press, Sydney. Where Eucalyptus spp. are not found in this source, nomenclature is based on Euclid: Eucalypts of Australia, 2006, Centre for Australian National Biodiversity Research (CANBR). Eucalypt subspecies information is also based on this source.

While accurate tree identification is attempted, and uncertainties are indicated, some inaccuracies in tree identification may still be present – especially in the case of difficult to determine genera (e.g. *Cotoneaster* and *Ulmus*), and with cultivars which can have similar characteristics.

From time to time taxonomists revise plant classification, and name changes are assigned. If it is known names have been revised post the publication of the relevant above listed source, the new nomenclature has been used.

Common Name:

Common names are based primarily on names and spelling used by Spencer in Horticultural Flora of South Eastern Australia (vols 1-5). The source of common names is taken in the following order:

- Single name supplied in Horticultural Flora of South Eastern Australia;
- First in list of names supplied in Horticultural Flora of South Eastern Australia, unless another name in the list is deemed more appropriate;
- Common name as per Costermans, LF 2006, *Trees of Victoria and adjoining areas*; Costermans Publishing, Victoria.
- Most widely used common name if not available in either source previously mentioned.

Common names are provided for thoroughness; the botanical name should be used when referring to the tree taxon.

Age:

Juvenile: Tree has recently been planted and is still in establishment phase. Tree currently makes little contribution to the amenity of the landscape. Trees of this age are possible candidates for relocation during development.

Semi-mature: Tree has established but has not yet developed mature habit. The tree provides some landscape contribution. Tree size would still be expected to increase considerably provided there are no significant changes to existing growing conditions.

Maturing: Tree has developed mature structural habit but has substantial potential to increase in size.

Mature: Tree has or is close to reaching full potential and expected size. Growth rate has slowed, however the tree does not exhibit any major signs of health or structural weakness due to age.

Over mature: Tree is no longer actively putting out extension growth, and is starting to show signs of decline in health due to age. Canopy may thinning and signs of die back in the canopy may be present

Height: The tree's height in metres

Width: The tree's average canopy width in meters. Variations in canopy width to that stated may be present due to canopy asymmetry.

DBH: The tree's trunk Diameter at Breast Height. Measured at 1.4m above ground level, in accordance with *AS4970 Protection of trees on development sites*, unless specified as having been measured lower. DBH may be estimated or measured, as specified in the report. In the case of multi-stemmed trees, stem diameter is either listed individually, or a measurement taken at a point lower than the point of stem divergence. In some cases, especially where trees are not considered worthy of retention or stems are too numerous the DBH may simply be listed as 'multi-stemmed'.

Health:

Good: Tree is not stressed and shows no obvious signs of pest or disease. It is free of wounding. Annual growth rate is as would be expected of a healthy specimen in the same area. There are no signs of die back and canopy is dense. Tree maybe partially suppressed by neighbouring trees.

Fair: Tree is showing signs of reduced health. It maybe drought stressed or show partial signs of pest or disease. Foliage density is less than optimal and minor die back may be present. Tree is typical of its species. Remedial works may improve tree health.

Poor: Tree exhibits signs of stress, e.g. sparse canopy and possibly stunted growth. A large number of dead branches or dieback are present. Tree is likely to be significantly affected by pests or disease. Tree often in decline. Remedial works not expected to improve long-term health.

Dead: Tree shows no signs of life and is not growing.

Note on Deciduous Species: Assessment of deciduous species can be problematic and results may vary depending on the time of year. Descriptor comments in relation to foliage density do not apply to deciduous trees assessed when dormant or entering or exiting dormancy. Time of leaf drop or bud burst and extent of bud swell may be considered in the health rating of these trees.

The ratings indicate that certain characteristics listed have, or have not, been observed. Inspections do not assess the entire tree in detail for each characteristic. The comments category should be referred to for further information.

Structure:

As a rule, the structure rating is based on identified faults in tree habit which reduce the structural integrity and may lead to partial or entire tree failure. It must be noted, however, that this is not a full hazard or failure assessment.

Good: Tree appears to have no obvious structural defects which would diminish the tree's structural integrity.

Fair: The tree has one or more obvious structural defects. e.g. dead branches or codominant stems, however the observed defects are unlikely to prevent retention of the tree. Judicious remedial intervention could remove structural defects and improve the structure rating.

Poor: Tree has at least one or more structural defects that remedial intervention cannot rectify without significantly reducing the retention value of the tree. These defects reduce the useful life expectancy of the tree.

Hazardous: The tree shows one or more structural faults that are prone to failure and present an immediate safety concern. Judicious intervention to remove structural faults and reduce safety risk would leave a tree not worthy of retention. These trees should be removed as a high priority.

Arboricultural Value:

The Arboricultural Values shown in the table below are based on the ULE of the tree which considers structure and health ratings and landscape contribution.

The arboricultural value assists in determining the positioning of structures and infrastructure outside the tree's identified TPZ.

ULE	**Landscape Significance**			
	High	Medium	Low	Very Low
20+ yrs.	High Arboricultural			
10-20 yrs.				

5-10 yrs.	Medium Arboricultural Value
0-5 yrs.	Low Arboricultural Value
0 yrs.	No Arboricultural Value

ULE: The Useful Life Expectancy of the tree from a health, structure, amenity and weediness viewpoint given no significant changes to the current situation occur. This category is difficult to determine, and should be taken as an estimate only. In addition, factors not observed at the time of inspection can lead to tree decline.

- 0 yrs.: Tree should be removed due advanced decline/ dead or hazardous.
- 0-5 yrs. Tree is in decline and has poor health or structural faults which cannot be resolved by intervention. Tree is often over- mature.
- 5-10yrs. Tree of fair health or structure
- 10-20. Semi-mature or mature tree of fair health and structure
- 20+ yrs. Juvenile or semi-mature, or a long lived species of good health and structure.

TPZ (Tree Protection Zone):

The Tree Protection Zone of the tree, measured as a radial distance in metres from the centre of the trunk. The TPZ is calculated using the method specified in Australian Standard *AS4970-2009 Protection of trees on development sites*. 12 x DBH=TPZ

Recommendation:

i.e. Further exploratory root investigation, alterations to proposed works to allow tree retention.

Comments:

Any additional comments specific to individual tree specimens.

AS4970-2009:

The recognised Australian Standard for the 'Protection of Trees on Development Sites'. It provides guidelines on tree protection and formulas for calculating Tree Protection Zones (TPZs), Structural Root Zones (SRZs) and the Diameter at Breast Height (DBH).

AS-4373-2007:

The recognised Australian Standard for the 'Pruning of Amenity Trees'. This Standard provides guidelines on tree pruning to encourage good health and structure.

Ecological Vegetation Class (EVC):

A type of native vegetation classification that is described through a combination of its floristics, life form and ecological characteristics, and through an inferred fidelity to environment attributes. Each EVC includes a collection of floristic communities (i.e. lower level in the classification that is based solely on groups in the same species) that occur across a biogeographic range, and although differing in species, have similar habitat and ecological processes operating.

8 Appendix 1 - Native Vegetation Removal Report

Native Vegetation Removal Report

NVRR ID: 304_20241018_FJ5

This report provides information to support an application to remove, destroy or lop native vegetation in accordance with the *Guidelines for the removal, destruction or lopping of native vegetation* (the Guidelines). This report is **not an assessment by DEECA** of the proposed native vegetation removal. Offset requirements have been calculated using modelled condition scores.

Report details

Date created: 18/10/2024

Local Government Area: BASS COAST SHIRE

Registered Aboriginal Party: Bunurong

Coordinates: 145.52990, -38.40889

Address: 1517-1529 BASS HIGHWAY GRANTVILLE 3984

Regulator Notes

Removal polygons are located:

Summary of native vegetation to be removed

Assessment pathway	**Intermediate Assessment Pathway**		
Location category	Location 2 The native vegetation extent map indicates that this area is typically characterised as supporting native vegetation. Additionally, it is modelled as encompassing an endangered Ecological Vegetation Class, sensitive wetland or sensitive coastal area. The removal of less than 0.5 hectares of native vegetation in this area will not require a Species Offset.		
Total extent including past and proposed removal (ha) *Includes endangered EVCs (ha): 0.182*	**0.235**	*Extent of past removal (ha)*	*0*
		Extent of proposed removal - Patches (ha)	*0.235*
		Extent of proposed removal - Scattered Trees (ha)	*0.000*
No. Large Trees proposed to be removed	**3**	*No. Large Patch Trees*	*3*
		No. Large Scattered Trees	*0*
No. Small Scattered Trees	0		

VICTORIA State Government | Energy, Environment and Climate Action

Page 1

Offset requirements if approval is granted

Any approval granted will include a condition to secure an offset, before the removal of native vegetation, that meets the following requirements:

General Offset amount [1]	**0.073 General Habitat Units**
Minimum strategic biodiversity value score [2]	0.32
Large Trees	3
Vicinity	Melbourne Water CMA or BASS COAST SHIRE LGA

NB: values within tables in this document may not add to the totals shown above due to rounding

The availability of third-party offset credits can be checked using the Native Vegetation Credit Register (NVCR) Search Tool - https://nvcr.delwp.vic.gov.au

1. The General Offset amount required is the sum of all General Habitat Units in Appendix 1.
2. Minimum strategic biodiversity value score is 80 per cent of the weighted average score across habitat zones where a General Offset is required.

Page 2

Application requirements

Applications to remove, destroy or lop native vegetation must include all the below information. If an appropriate response has not been provided the application is not complete.

Application Requirement 1 - Native vegetation removal information

If the native vegetation removal is mapped correctly, the information presented in this Native Vegetation Removal Report addresses Application Requirement 1.

Application Requirement 2 - Topographical and land information

This statement describes the topographical and land features in the vicinity of the proposed works, including the location and extent of any ridges, hilltops, wetlands and waterways, slopes of more than 20% gradient, low-lying areas, saline discharge areas or areas of erosion.

See attached Biodiversity Assessment (Ecolink Consulting 2024)

Application Requirement 3 - Photographs of the native vegetation to be removed

Application Requirement 3 is not addressed in this Native Vegetation Removal Report. All applications must include recent, timestamped photos of each Patch, Large Patch Tree and Scattered Tree which has been mapped in this report.

Application Requirement 4 - Past removal

If past removal has been considered correctly, the information presented in this Native Vegetation Removal Report addresses Application Requirement 4.

Application Requirement 5 - Avoid and minimise statement

This statement describes what has been done to avoid and minimise impacts on native vegetation and associated biodiversity values.

See attached Biodiversity Assessment (Ecolink Consulting 2024)

Application Requirement 6 - Property Vegetation Plan

This requirement only applies if an approved Property Vegetation Plan (PVP) applies to the property
Does a PVP apply to the proposal?

No

Application Requirement 7 - Defendable space statement

Where the removal of native vegetation is to create defendable space, this statement:

- Describes the bushfire threat; and
- Describes how other bushfire risk mitigation measures were considered to reduce the amount of native vegetation proposed for removal (this can also be part of the avoid and minimise statement).

This statement is not required if, If the proposed defendable space is within the Bushfire Management Overlay (BMO), and in accordance with the 'Exemption to create defendable space for a dwelling under Clause 44.06 of local planning schemes' in Clause 52.12-5.

N/A

Application Requirement 8 - Native Vegetation Precinct Plan

This requirement is only applicable if you are removing native vegetation from within an area covered by Native Vegetation Precinct Plan (NVPP), and the proposed removal is not identified as 'to be removed' within the NVPP.
Does an NVPP apply to the proposal?

No

Application Requirement 9 - Offset statement

This statement demonstrates that an offset is available and describes how the required offset will be secured. The Applicant's Guide provides information relating to this requirement.

See attached Biodiversity Assessment (Ecolink Consulting 2024)

Next steps

Applications to remove, destroy or lop native vegetation must address all the application requirements specified in the Guidelines. If you wish to remove the mapped native vegetation you are required to apply for approval from the responsible authority (e.g. local Council). This Native vegetation removal report must be submitted with your application and meets most of the application requirements. The following requirements need to be addressed, as applicable.

Application Requirement 3 - Photographs of the native vegetation to be removed

Recent, dated photographs of the native vegetation to be removed **must be provided** with the application. All photographs must be clear, show whether the vegetation is a Patch of native vegetation, Patch Tree or Scattered Tree, and identify any Large Trees. If the area of native vegetation to be removed is large, provide photos that are indicative of the native vegetation.

Ensure photographs are attached to the application. If appropriate photographs have not been provided the application is not complete.

Application Requirement 6 - Property Vegetation Plan

If a PVP is applicable, it must be provided with the application.

Appendix 1: Description of native vegetation to be removed

General Habitat Units for each zone (Patch, Scattered Tree or Patch Tree) are calculated by the following equation in accordance with the Guidelines

General Habitat Units = extent without overlap x condition score x general landscape factor x 1.5, where the general landscape factor = 0.5 + (strategic biodiversity value score/2)

The General Offset amount required is the sum of all General Habitat Units per zone.

Native vegetation to be removed

Information provided by or on behalf of the applicant			Information calculated by NVR Map							
Zone	**Type**	**DBH (cm)**	**EVC code (modelled)**	**Bioregional conservation status**	**Large Tree(s)**	**Condition score (modelled)**	**Polygon extent (ha)**	**Extent without overlap (ha)**	**SBV score**	**General Habitat Units**
1	Patch	-	GipP0053, GipP0016	Endangered, Vulnerable	-	0.288	0.052	0.052	0.400	0.016
2	Patch	-	GipP0053, GipP0016	Endangered, Vulnerable	3	0.299	0.182	0.182	0.400	0.057

Appendix 2: Images of mapped native vegetation

1. Property in context



2. Aerial photograph showing mapped native vegetation



Proposed Removal

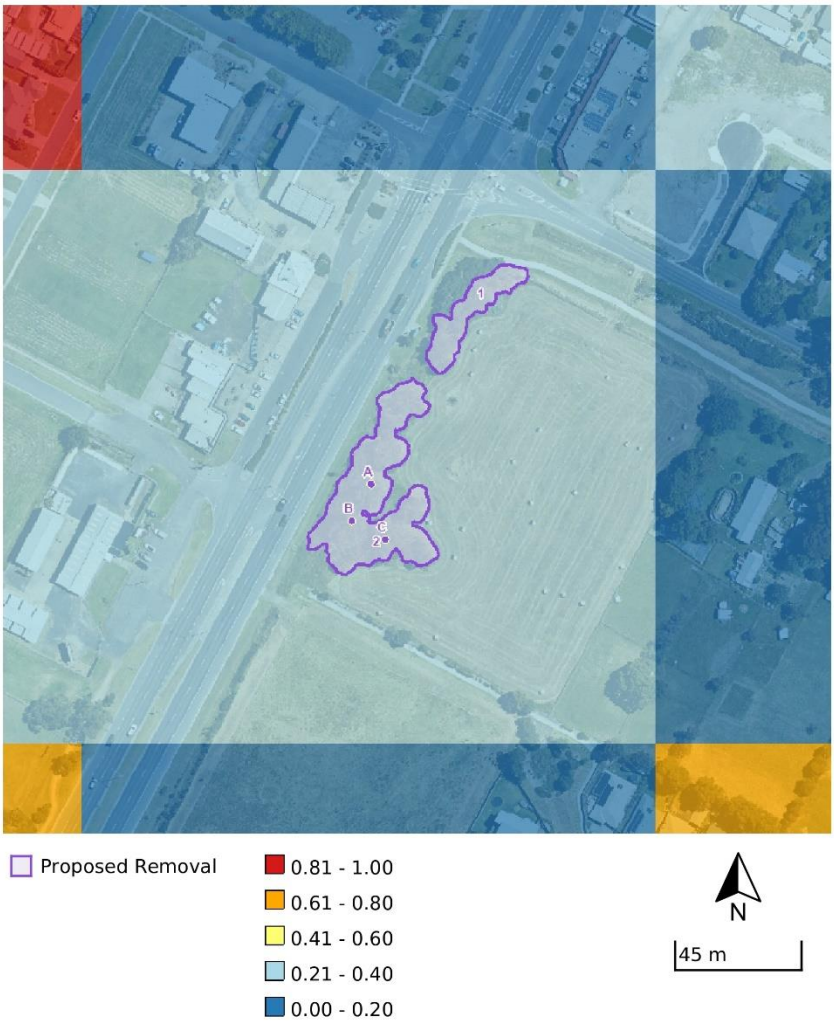
N

45 m

3. Location Risk Map



4. Strategic Biodiversity Value Score Map



5. Condition Score Map



6. Endangered EVCs



Proposed Removal

Endangered 1750 Ecological Vegetation Classes

N

45 m

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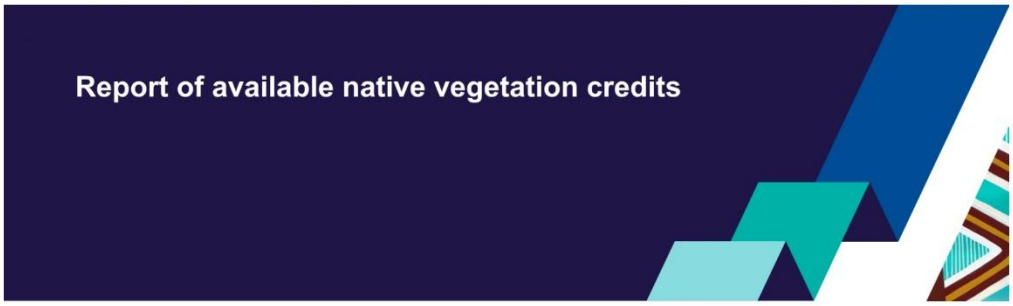
9 Appendix 2 – Report of Available Native Vegetation Credits



This report lists native vegetation credits available to purchase through the Native Vegetation Credit Register.

This report is **not evidence** that an offset has been secured. An offset is only secured when the units have been purchased and allocated to a permit or other approval and an allocated credit extract is provided by the Native Vegetation Credit Register.

Date and time: 08/11/2024 01:41 **Report ID: 27153**

What was searched for?

General offset

General habitat units	Strategic biodiversity value	Large trees	Vicinity (Catchment Management Authority or Municipal district)	
0.073	0.32	3	CMA	Melbourne Water
			or LGA	Bass Coast Shire

Details of available native vegetation credits on 08 November 2024 01:41

These sites meet your requirements for general offsets.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)
BBA-0277	0.644	438	Melbourne Water	Mornington Peninsula Shire	No	Yes	No	Abezco, Ethos, VegLink
BBA-0670	14.213	97	Melbourne Water	Cardinia Shire	No	Yes	No	Abezco, VegLink
BBA-0677	5.087	1408	Melbourne Water	Whittlesea City	No	Yes	No	Abezco, VegLink
BBA-0678	41.801	2578	Melbourne Water	Nillumbik Shire	No	Yes	No	VegLink
BBA-0678_02	0.562	58	Melbourne Water	Nillumbik Shire	No	Yes	No	Abezco, VegLink
BBA-2789	1.317	14	Melbourne Water	Baw Baw Shire	Yes	Yes	No	Contact NVOR
BBA-2790	2.911	116	Melbourne Water	Baw Baw Shire	Yes	Yes	No	Contact NVOR
BBA-2870	2.544	431	Melbourne Water	Yarra Ranges Shire	Yes	Yes	No	VegLink
BBA-2871	14.245	1638	Melbourne Water	Yarra Ranges Shire	Yes	Yes	No	VegLink
VC_CFL-0838_01	0.184	648	Melbourne Water	Yarra Ranges Shire	Yes	Yes	No	VegLink
VC_CFL-3687_01	0.278	61	Melbourne Water	Baw Baw Shire	Yes	Yes	No	Baw Baw SC
VC_CFL-3696_01	1.544	252	West Gippsland	Bass Coast Shire	Yes	Yes	No	Ethos, VegLink
VC_CFL-3708_01	0.192	487	Melbourne Water	Yarra Ranges Shire	Yes	Yes	No	VegLink

VC_CFL-3709_01	0.122	340	Melbourne Water	Yarra Ranges Shire	Yes	Yes	No	VegLink
VC_CFL-3710_01	6.300	322	Melbourne Water	Yarra Ranges Shire	Yes	Yes	No	VegLink
VC_CFL-3744_01	1.164	349	Melbourne Water	Macedon Ranges Shire	Yes	Yes	No	VegLink
VC_CFL-3805_01	3.323	802	Melbourne Water	Yarra Ranges Shire	Yes	Yes	No	VegLink

These sites meet your requirements using alternative arrangements for general offsets.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)

There are no sites listed in the Native Vegetation Credit Register that meet your offset requirements when applying the alternative arrangements as listed in section 11.2 of the Guidelines for the removal, destruction or lopping of native vegetation.

These potential sites are not yet available, land owners may finalise them once a buyer is confirmed.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)
VC_CFL-3746_01	4.962	563	Melbourne Water	Macedon Ranges Shire	Yes	Yes	No	VegLink
VC_CFL-3792_01	14.025	1235	Melbourne Water	Macedon Ranges Shire	Yes	Yes	No	VegLink

LT - Large Trees *CMA - Catchment Management Authority* *LGA - Municipal District or Local Government Authority*

Next steps

If applying for approval to remove native vegetation
Attach this report to an application to remove native vegetation as evidence that your offset requirement is currently available.

If you have approval to remove native vegetation
Below are the contact details for all brokers. Contact the broker(s) listed for the credit site(s) that meet your offset requirements. These are shown in the above tables. If more than one broker or site is listed, you should get more than one quote before deciding which offset to secure.

Broker contact details

Broker Abbreviation	Broker Name	Phone	Email	Website
Abezco	Abzeco Pty. Ltd.	(03) 9431 5444	offsets@abzeco.com.au	www.abzeco.com.au
Baw Baw SC	Baw Baw Shire Council	(03) 5624 2411	bawbaw@bawbawshire.vic.gov.au	www.bawbawshire.vic.gov.au
Bio Offsets	Biodiversity Offsets Victoria	0452 161 013	info@offsetsvictoria.com.au	www.offsetsvictoria.com.au
Contact NVOR	Native Vegetation Offset Register	136 186	nativevegetation.offsetregister@deeca.vic.gov.au	www.environment.vic.gov.au/native-vegetation
Ecocentric	Ecocentric Environmental Consulting	0410 564 139	ecocentric@me.com	Not avaliable
Ethos	Ethos NRM Pty Ltd	(03) 5153 0037	offsets@ethosnrm.com.au	www.ethosnrm.com.au
Nillumbik SC	Nillumbik Shire Council	(03) 9433 3316	offsets@nillumbik.vic.gov.au	www.nillumbik.vic.gov.au
TFN	Trust for Nature	8631 5888	offsets@tfn.org.au	www.trustfornature.org.au
VegLink	Vegetation Link Pty Ltd	(03) 8578 4250 or 1300 834 546	offsets@vegetationlink.com.au	www.vegetationlink.com.au
Yarra Ranges SC	Yarra Ranges Shire Council	1300 368 333	biodiversityoffsets@yarraranges.vic.gov.au	www.yarraranges.vic.gov.au

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For more information contact the DEECA Customer Service Centre 136 186 or the Native Vegetation Credit Register at nativevegetation.offsetregister@delwp.vic.gov.au

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1517-1529, Bass Hwy, Grantville, 3207

Stormwater Management Strategy

Prepared by: DPM Consulting Group

For: Rise Architecture



DPM REF: 3207/M/C

- Design Development
- Project Management
- Civil Engineering
- Urban Development
- Storm Water Management
- Construction Management

15th November 2024

Disclaimer:

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The information provided in this report should be considered as "Preliminary" and used for planning purposes. The information is subject to variation following further advice and confirmation from respective authorities. It should be noted that the information contained in this report is derived from generally reliable sources; however, it is subject to variation after detailed planning, survey, design and formal liaison with the relevant authorities. It should also be noted that the development of other properties in the surrounding area may also have an impact on the development of the property.

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Reference Plans/Documents:

Date	Plan Reference
27.02.2023	Arboricultural Report (John Patrick Landscape Architects, March 2021, Revised August 2021)
27.02.2023	Cultural Heritage Management Plan (Grace McKenzie-McHarg, December 2021)
27.02.2023	Planning Application Report (SJB Planning, May 2021)
27.02.2023	Plan Of Subdivision PS 900442Y (Raso Consulting Surveyors, edition 1)
27.02.2023	Stormwater Management Strategy (KLM Spatial, August 2021)
27.02.2023	Traffic Impact Assessment (O'Brien Traffic, August 2021)
27.02.2023	Waste Management Plan (WSP, May 2021)
27.02.2023	F&L Survey (Raso Consulting Surveyors, rev. B, 09.11.2020)
27.02.2023	Flood Level Response (Melbourne Water, September 2022)
27.02.2023	Colbert Creek DSS, 100 year ARI Flood Contours (Engeny, 2014)
27.02.2023	Development Plan, TP1.11, revision no.F (Idle Architecture, 11.06.2021)
27.02.2023	Planning Permit No. 210196 (Bass Coast)
27.02.2023	Site Plan, TP 2.01, revision no. A (Idle Architecture, 28.05.2021)
28.07.2023	Proposed Development Plan, revision A (Rise Architecture, 26.07.2023)
28.07.2023	Town Planning set of plans, revision D (Rise Architecture, 26.07.2023)
04.10.2024	Architectural Design Drawing Set, revision G (Rise Architecture, 04.10.2024)

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1.0 Introduction

1.1 Background

1.1.1. DPM Consulting Group (DPM) has been engaged by Rise Architecture (the Developer) as the Civil Engineering Consultant for the proposed development located at 1517-1529 Bass Highway, Grantville. As part of this engagement, DPM has prepared a Stormwater Management Strategy (SWMS) and Flood Impact Assessment (FIA) to determine an adequate flood level for the proposed development.

1.1.2. It is noted that a previously planning permit has been issued for the site (refer to Appendix G – Previous Planning Permit Issued for the site); however, the use of land was amended to align with the proposed development plan (refer to Appendix B – Development Layout Plan & Town Planning Set).

1.1.3. Further to the below, a Stormwater Management Strategy was prepared by KLM Spatial (KLM) as part of the previous Planning Permit Application. DPM will refer to this strategy throughout this report.

1.1.4. This report has been updated (27.08.2024) based on the comments received from Council (see Appendix I – Comments from Bass Coast Shire Council).

1.1.5. In response to the comments received by Council on the 13.11.2024, DPM have amended this document accordingly to address the outstanding RFIs. Refer to the following sections for further information:

- 2.3.9 and 2.3.10 – Information regarding the existing culvert crossing at the intersection of Bass Highway and Grantville-Glen Alvie Road;
- 3.6.2 and 3.6.3 – Pre-developed flows and catchment plan demonstrating that only the northern part of the site gravitates to the LPOD, with the remaining part of the site gravitating towards Bass Highway;
- 3.10.13 and 3.10.14 post-developed flows calculated at the existing 1500x750 box culvert crossing at the intersection between Bass Highway and Grantville-Glen Alvie Road;
- 3.11.7 to 3.11.10 inclusion of post-developed flows at the existing 1500x750 box culvert and summary of the results;
- Conclusion

1.2 Objectives

1.2.1. The purpose of this document is to set out a high-level stormwater management strategy for the subject development site, which will entail:

- Delineating the site's internal and external drainage catchments.
- Identifying the flood mitigation measures that need to be put in place;

- Recognising the key drainage infrastructure required to help meet these objectives.
- Determining the flood impact assessment of the proposed development.

1.2.2. The Stormwater Management Strategy will investigate the viability of stormwater quality treatment to Best Practice Environmental Management (BPEM) objectives.

1.2.3. Additionally, this report aims to develop a strategy to identify, prioritise and investigate Integrated Water Management (IWM) opportunities in accordance with the Integrated Water Management Framework for Victoria and the Integrated Water Management Plan – 2020 prepared by Bass Coast Shire Council.

1.2.4. The objectives of this document are as follows:

- Providing a stormwater strategy for the peak flows generated by a 10% Annual Exceedance Probability (AEP) event and a 1% AEP event;
- Promoting the safe conveyance of the peak flows downstream to Grantville-Glen Alvie Road to the north of the proposed development;
- Consider the potential delivery of a Temporary Retarding Basin (TRB) or underground tank for the attenuation of the post-developed flows to pre-developed conditions;
- Identify and leverage opportunities to optimise the outcomes of the water cycle;
- Pursue new approaches which contribute to conserve water resources as well as protecting the environment.

1.3 Stormwater Management Strategy

1.3.1. DPM have prepared a SWMS for the proposed residential development based on the latest approach to urban stormwater management.

1.3.2. This is based on retention and conveyance of stormwater runoff to meet multi-purpose design objectives, that enhance liveability of urban areas, mitigate flood nuisance and avoid damage to property and loss of life.

1.3.3. This SWMS incorporates two classes of stormwater management infrastructure in accordance with the latest Australian Rainfall & Runoff 2019 (AR&R19): conveyance systems and volume management.

Conveyance Systems

1.3.4. Conveyance systems allow runoff to be conveyed through urban areas and provide connections through the catchment.

1.3.5. This SWMS also incorporates the traditional approach to stormwater management which involves a minor and major event management philosophy.

1.3.6. Minor flows up to the 10% Annual Exceedance Probability (AEP) will be conveyed in an underground pipe network to their ultimate discharge point.

1.3.7. Major flows up to the 1% AEP, meeting specific safety requirements, can flow in an overland flow path, along road reserves and constructed waterways and to their ultimate discharge point. Both the Minor and Major drainage strategies for the site have been discussed in this SWMS.

Volume Management

1.3.8. Volume management includes measures and solutions which can store runoff for a period of time, promote infiltration and potentially stored harvested stormwater for beneficial uses.

1.3.9. Volume management is a key element of stormwater management and flood control which has a fundamental importance in achieving a range of hydrological and water quality objectives within these facilities.

1.3.10. Additionally, DPM's SWMS aims to achieve the water quality targets in accordance with the Best Practice Environmental Management Guidelines (BPEMG) which requires the treatment of stormwater runoff to achieve 80% reduction in Total Suspended Solids (TSS), 45% reduction in Total Phosphorous (TP) and 45% reduction in Total Nitrogen (TN).

1.3.11. As part of the Victoria Planning Provision Clause 53.18, developers are required to minimise stormwater quality and quantity related impacts. Typically, these pollutant targets are achieved through the implementation of WSUD practices, such as wetlands and bio-retention systems.

1.3.12. DPM also intends for these stormwater management assets to be multi-functional, whereby rather than just serving as a treatment mechanism for stormwater, their presence will provide public amenity, an opportunity for communities to engage with their environment and beautification of the site's existing natural features.

1.4 Integrated Water Management

1.4.1. In accordance with the Integrated Water Management Plan – 2020 prepared by Bass Coast Shire Council, DPM aim to realise integrated opportunities through collaboration and communication with relevant stakeholders in order to identify, coordinate and priorities areas that would most benefit from IWM applications.

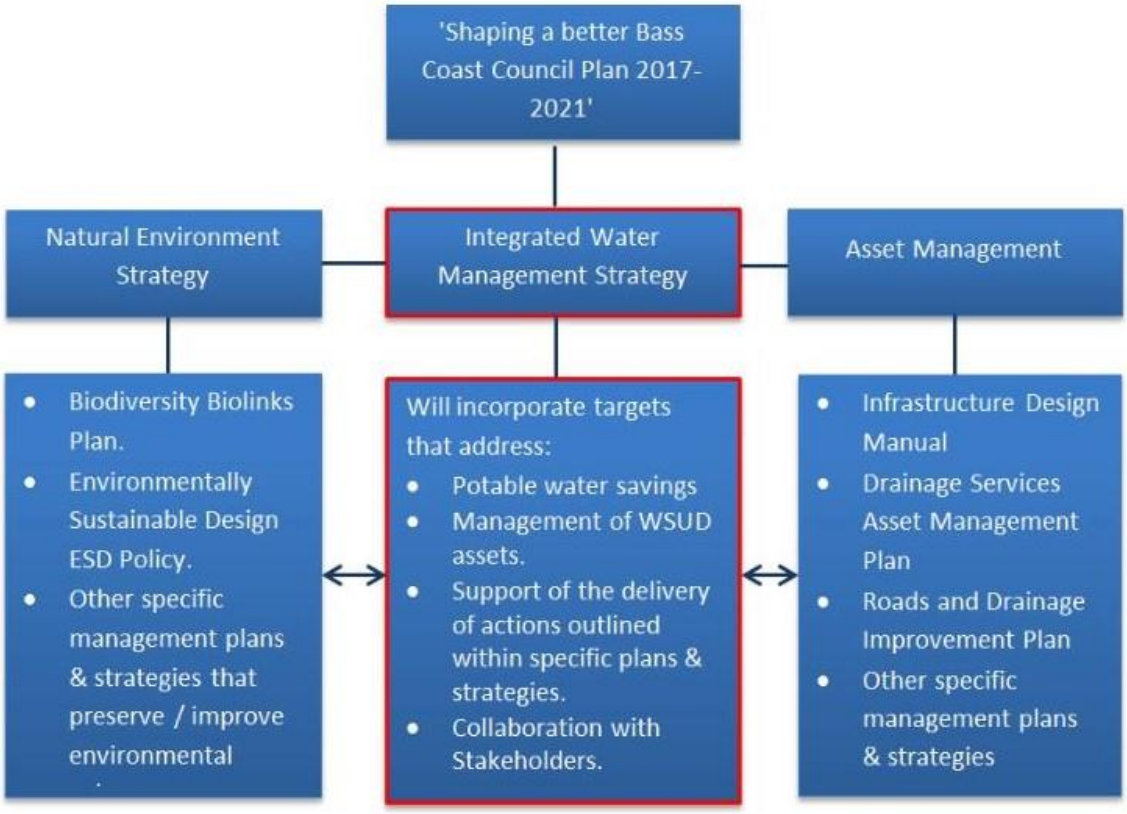

Figure 1 – Goals of the Stormwater Service Strategy prepared by Bass Coast Shire Council (2020)

1.4.2. DPM understand the importance of creating greater value to the community by focusing on improving and enhancing the water cycle planning and management within the Bass Coast Shire Council.

1.4.3. DPM continuously thrive to seek opportunities and foster innovation to provide efficient and successful economic and liveability outcomes, pursuing new approaches which would contribute to conserve water resources as well as protecting the environment.

1.4.4. DPM will aim to address several objectives within the proposed development which can be listed as per below:

- Encourage the installation of rainwater tanks to reduce total volumes of runoff entering the Legal Point Of Discharge;
- Ensure the proposed development achieve the pollutant load reductions outlined within the Best Practice Environmental Management Guidelines (BPEMG);

2.0 Property Description

2.1 Property location

2.1.1. The proposed development site is located at 1517-1529 Bass Highway, Grantville, approximately 108 km Southeast of Melbourne's CBD.

2.1.2. The site consists of undeveloped Greenfield land with a total area of approximately 0.781 ha (see Figure 2). The site's current and past uses are largely pastoral.



Figure 2 – Locality plan of the proposed development (Nearmap, 2021)

2.1.3. The site is within the municipality of the Bass Coast Shire Council and Melbourne Water Catchment Management Authority.

2.2 Site Description

2.2.1. Table 1 below summarises the general site characteristics.

Table 1 - Site Summary

Gross Area		**0.781 Ha**
Topography		The site is fairly steep with a grade of 1 in 37 across the site from south-east to north-west direction
Boundaries	North	Grantville-Glen Alvie Road
	East	Future Residential Development (Stage 2)
	West	Bass Highway
	South	Mixed Used Zone
Access		Bass Highway / Grantville Glen Avie Road

2.2.2. The site is expected to yield Mixed Zone including car parking lot, retail lot, food stalls and a fuel station.

2.2.3. Access to the site will ultimately be provided from Grantville Glen Avie Road to the north and Bass Highway to the west and the construction of a service lane parallel to Bass Highway. See Appendix B – Development Layout Plan for details and Figure 3.

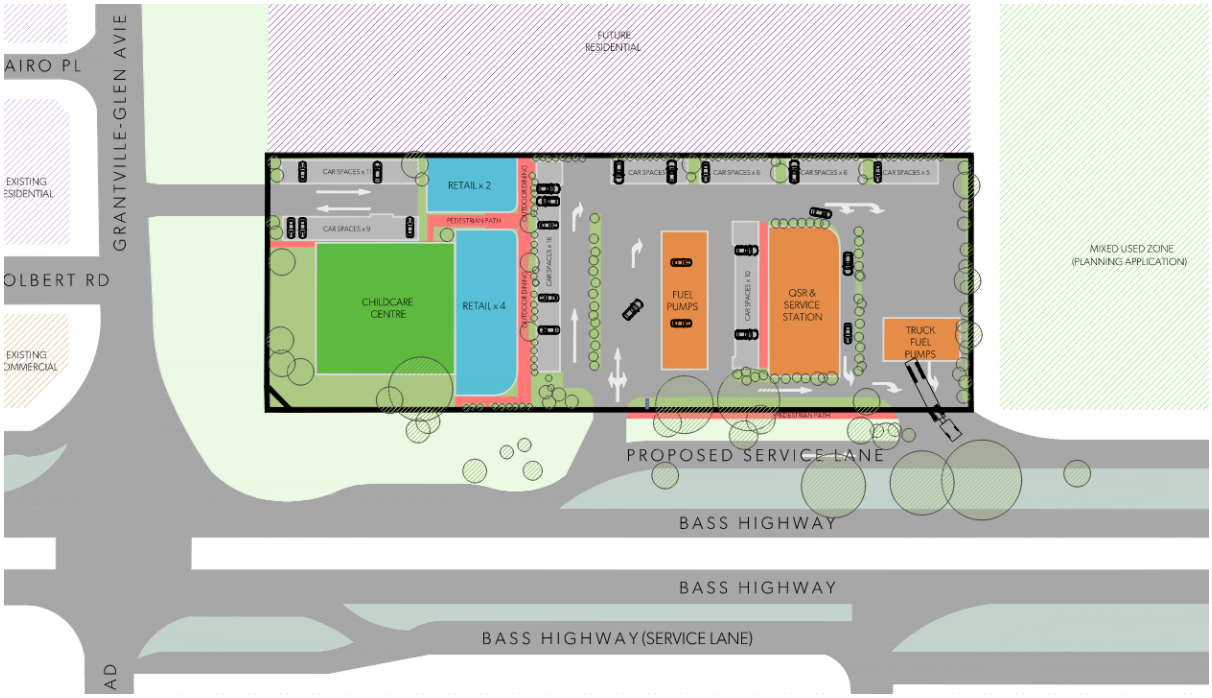

Figure 3 – Extract of the development plan and access to the site (Rise Architecture, 2023)

2.3 Existing Topography

2.3.1. The site generally features good fall (refer to Figure 4 and Figure 5), gravitating from a south-east to north-west direction.

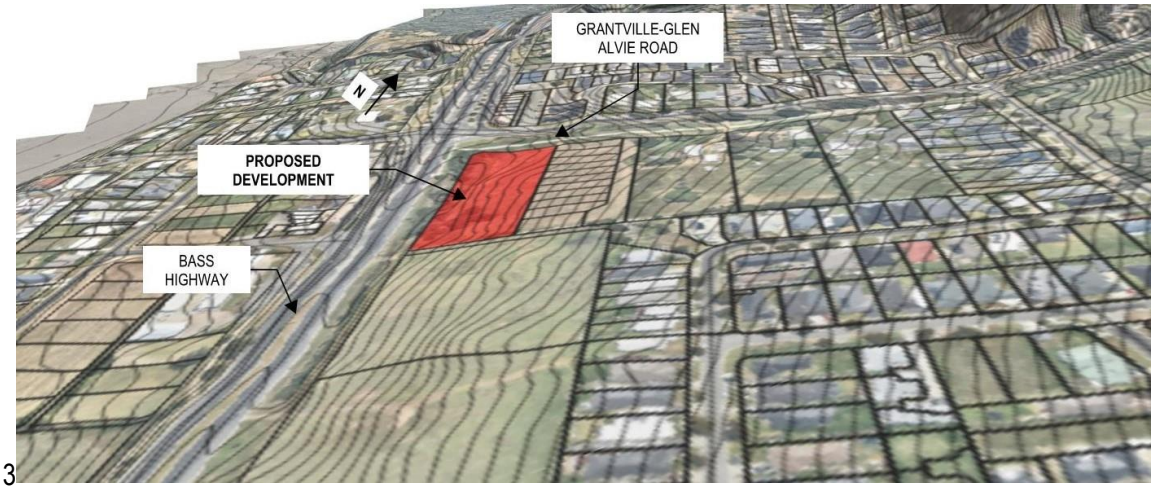

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Figure 4 – Three-dimension view of the topography of the site and surrounding



Figure 5 - Existing site topography (DPM, 2023)

2.3.2. The existing land is undeveloped Greenfield and there is little sign of any mounds or deposited fill.

2.4 Site Constraints

2.3.3. The Legal Point of Discharge (LPOD) of the proposed development is found to be the existing Council open drain located to the north of the site and gravitating from east to west and ultimately discharging to Western Port, approximately 315 m downstream of the proposed development.

2.3.4. Based on the information provided within the Feature and Level Survey of the site and the previous SWMS completed by KLM (2021), the existing Council open drain (see Figure 6 and Figure 7) does not have the capacity to convey the additional flows from the proposed development downstream.



Figure 6 – Existing Council open drain located to the north of the proposed development



Figure 7 – Existing Council open drain located along Grantville-Glen Alvie Road to the north of the site

2.3.5. Therefore, the provision of a drainage asset (i.e. underground tank) will be required to attenuate the post-developed flows to pre-developed conditions prior to connecting to the existing Council drainage infrastructure.

2.3.6. It is noted that a 300 dia mm drainage pipeline is located within Bass Highway Road Reserve conveying stormwater flows north to south direction. Due to the size of the pipe, no connection from the development is deemed feasible.

2.3.7. Additionally, a 675 dia mm drainage pipeline is found to be located to the south of the site, conveying the flows from the upstream catchment towards west direction.

2.3.8. However, as highlighted in section 3.2 of this report, the aforementioned pipeline is located within the future Melbourne Water (MW) Stanley Road Development Services Scheme (DSS) and it is understood that no connection to the pipe from the proposed development can be undertaken.

2.3.9. In accordance with the information included in the previous SWMS prepared by KLM (2021) for the development the existing culvert crossing (1500x750 box culvert) the intersection between Bass Highway and Grantville-Glen Alvie Road has a maximum capacity of **2.69 m^3/s** (grade of 1 in 163).

2.3.10. Refer to Figure 8 and Appendix J – KLM SWMS (2021) for further information.

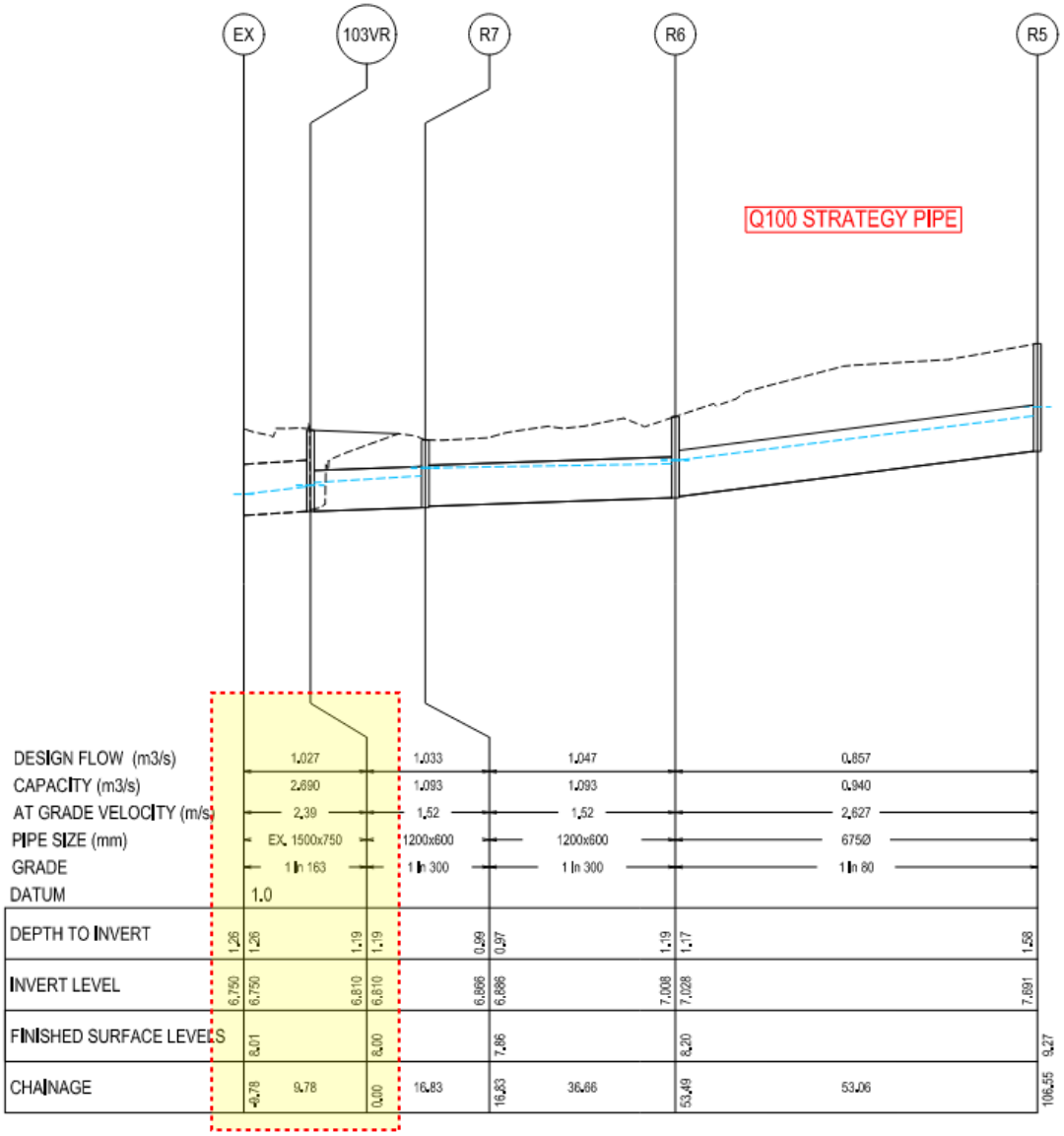


Figure 8 – Extract from the KLM SWMS (2021) showing the existing box culvert crossing the intersection between Bass Highway and Grantville-Glen Alvie Road

2.3.11. In order to confirm the capacity of the existing culvert crossing, DPM have carried out a capacity check using the Headwater depth for concrete box culverts with inlet control, in accordance with the Guide for Road Design Part 5B: Drainage - Open Channels, Culverts and Floodway Crossings

2.3.12. Based on the above and assuming a maximum head of 0.5 m on top of the box culvert, the preliminary capacity of the culvert crossing is estimated to be approximately **3.0 m³/s** (see Figure 9).

Figure B 1: Headwater depth for box culvert with inlet control

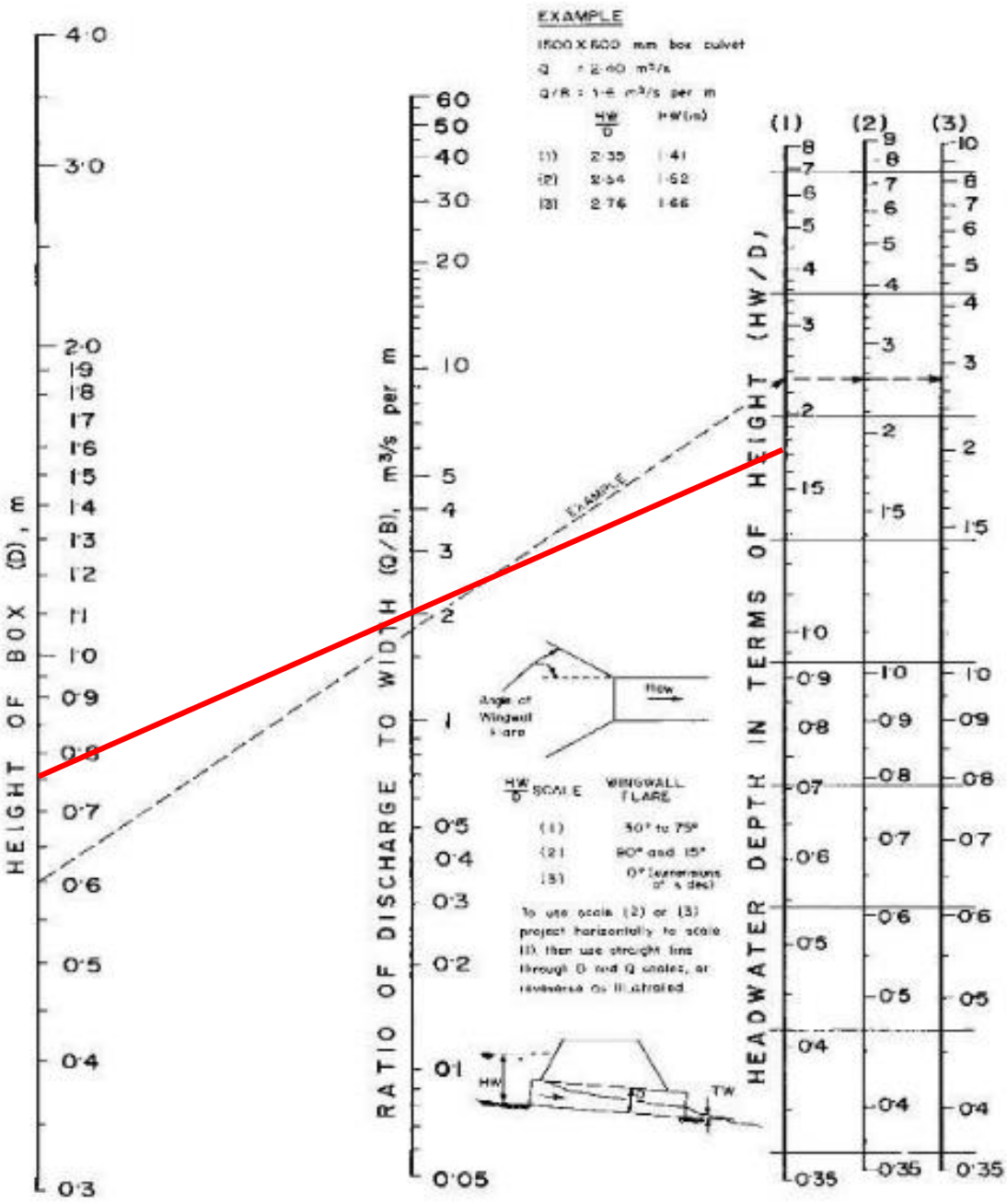


Figure 9 - Maximum flow conveyed by the existing box culvert crossing

2.3.13. In accordance with the Dial Before You Dig (DBYD) completed for the area and images from Google Street, existing services are within the existing road reserves adjacent to the site and they will need to be considered in the design of the proposed development.

2.3.14. In particular, Westernport Water infrastructure is located to the north and the west of the site, with Raw Water infrastructure located within the southern side of Grantville-Glen Alvie Road and within the eastern side of Bass Highway.

2.3.15. Similarly, potable water infrastructure is located within the southern side of Grantville-Glen Alvie Road and within the western side of Bass Highway as per Figure 10.

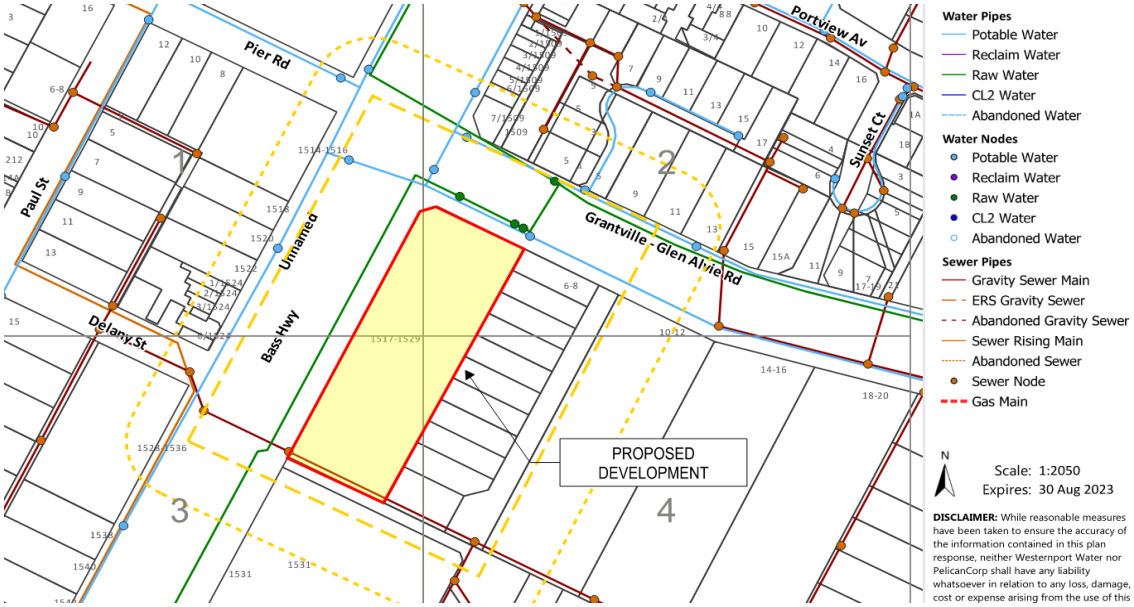


Figure 10 – Existing water and sewer pipes within the adjacent to the proposed development (Westernport Water, 2023)

2.3.16. It is also noted that a gravity sewer main is located within the southern part of the site.

3.0 Drainage Strategy

3.1 Background

3.1.1. The proposed development falls under the municipality of Bass Coast Shire Council and Melbourne Water Catchment Management Authority.

3.1.2. At the time of this report DPM have made an application for pre-development advice to Melbourne Water and they are currently waiting for flood and drainage conditions advice to be provided.

3.1.3. It is also understood that Engeny have completed an investigation of the overall MW Colvert Creek DSS and MW Stanley Road DSS. DPM have in communication with both Engeny and Melbourne Water in order to obtain the required modelling information to inform this report.

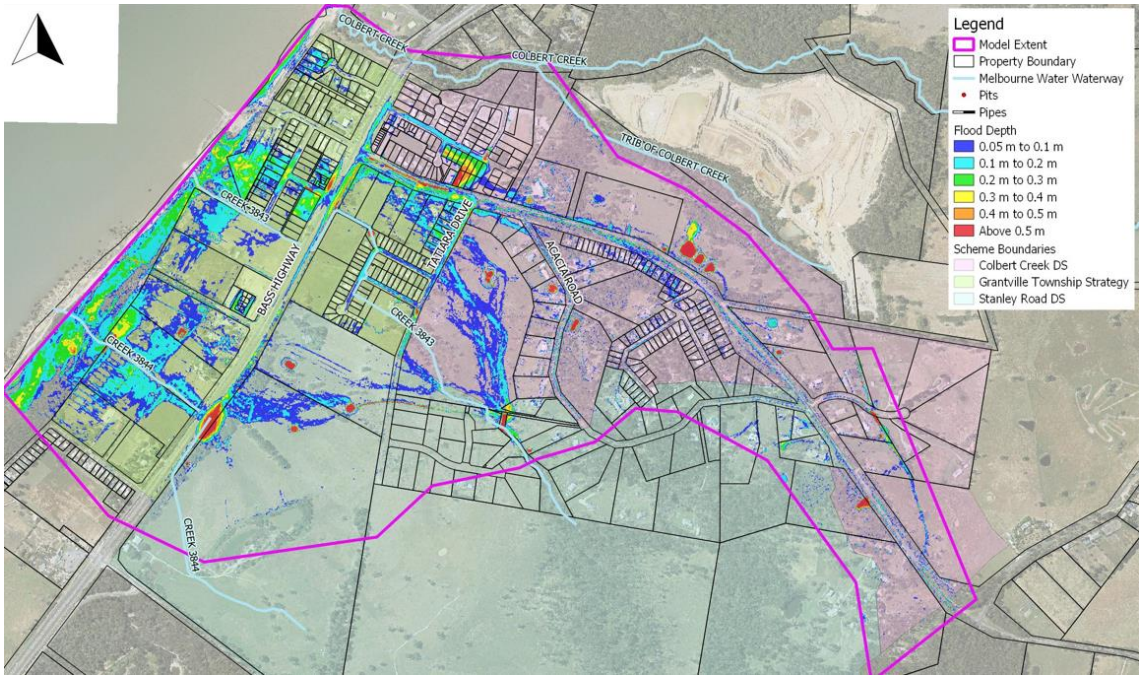


Figure 11 – 1% AEP Flood Depth Layout Plan (Engeny, 2021)

3.1.4. However, at the time of this report, no information has been received and DPM have completed the SWMS for the proposed development based on the available results and assumptions based on the previous SWMS completed by KLM.

3.1.5. For the purpose of this report, three different scenarios have been considered and modelled with the hydraulic model:

- **Rural conditions/scenario** – RORB model prepared by DPM for calibration purposes. Considering no gauges or available information has been provided for the catchment subject to this study, the calibration has been undertaken in accordance with the Flood Mapping Projects Specification (Melbourne Water, July 2020).

- **Pre-developed conditions/scenario** – Pre-developed flow from the catchment upstream of the intersection between Grantville – Glen Alvie Road and Tatiara Road has been considered, along with the pre-developed flow from the sub-catchments located south-east of Tatiara Road. Excess of rainfall has been applied to the site and adjacent areas to the west of Tatiara Road under pre-developed conditions. The terrain conditions used for the site has been derived based on the LiDAR data obtained from DEECA (ex. DELWP).

- **Post-developed conditions/scenario** – Post-developed flow from the catchment upstream of the intersection between Grantville – Glen Alvie Road and Tatiara Road has been conveyed north to Colbert Creek in accordance with MW Colbert Creek DSS. The flows from the sub-catchments south-east and east of Tatiara Road have been conveyed to the future drainage scheme asset WL3/RB1 in accordance with the MW Colbert Creek DSS, with the attenuated flows directed north. The terrain conditions used for the site has been derived based on the LiDAR data obtained from DEECA (ex. DELWP).

3.1.6. Further information has been included within the next sections of the report.

3.2 Context to the (3843) Grantville Township Strategy DSS

3.2.1. The proposed development forms part of the broader MW Grantville Township Strategy DSS, administered by Melbourne Water. It is noted that the DSS is not available to the public and a copy has been requested to MW.

3.2.2. DPM acknowledge that an extract of the MW Grantville Township Strategy DSS has been provided and included as part of the previous SWMS completed by KLM (see Figure 12).

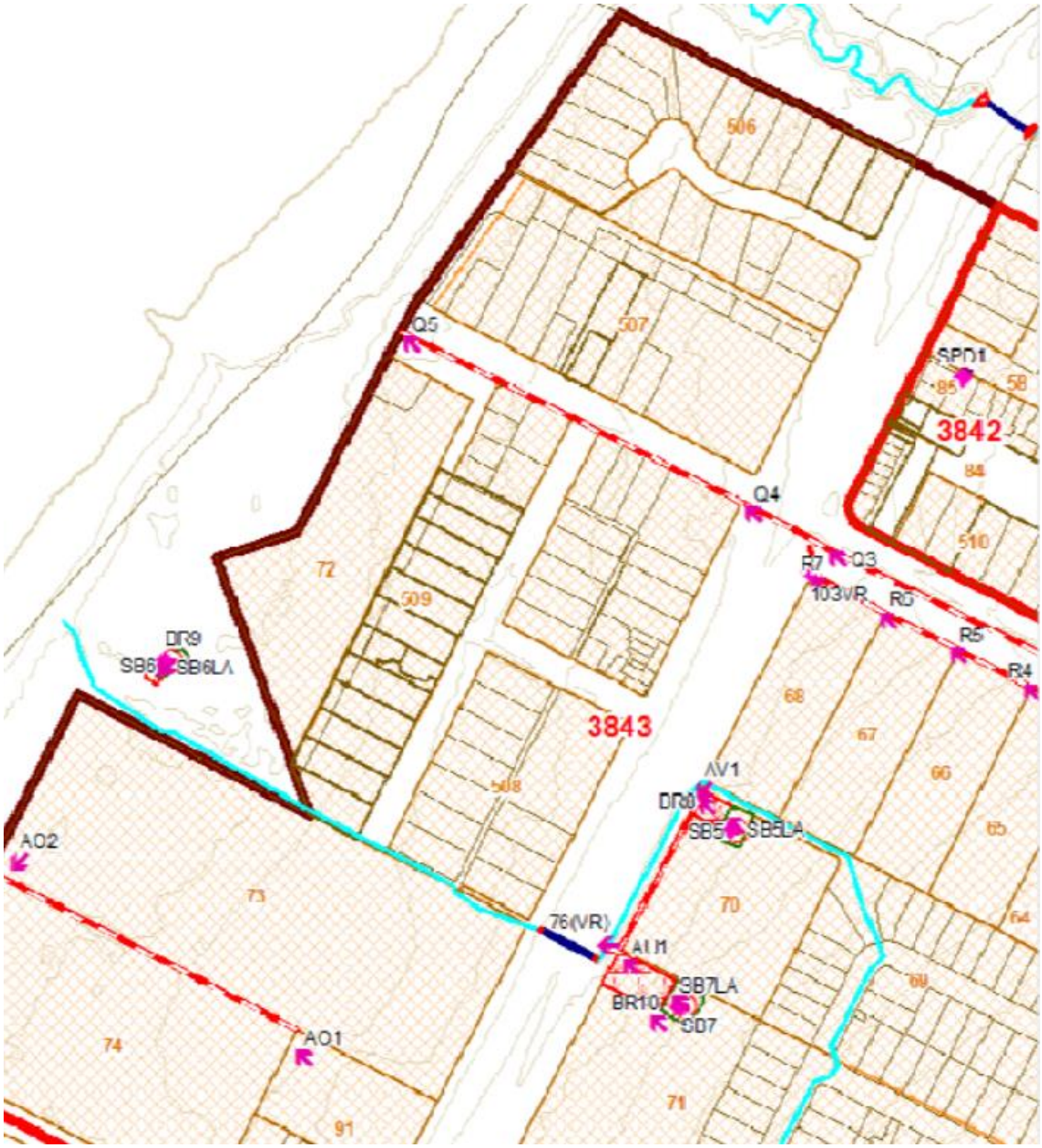


Figure 12 – MW Grantville Township Strategy DSS (KLM, 2021)

3.1.7. It is noted that the extract of the DSS and advice provided by MW to KLM is date 26th of March 2021.

3.1.8. Due to the above, the information included within the KLM might be outdated; however, for the purpose of this report and until further advice is provided by Melbourne Water, DPM will consider such information current.

3.1.9. In accordance with the flood response provided by MW on the 26th of March 2021 (MWA-1201683), the drainage scheme pipes R6-R7 (approximate length of 48 m) and R7-103VR (approximate length of 22 m) are expected to be delivered as part of the development.

3.1.10. The scheme pipes will need to cater for the 1% AEP flow originated from the upstream catchment with final connection to the ultimate drainage infrastructure crossing Bass Highway.

3.1.11. DPM acknowledge that functional design and initial cost estimates of the proposed drainage scheme pipes will be required to be submitted to the satisfaction of Melbourne Water prior to consideration of a works offer.

3.1.12. It is understood that the Drainage Scheme is currently active, however current base rate for hydraulic contribution of and base rate of water quality reduction for onsite treatment are unknown to the public.

3.1.13. The proposed development area ultimately relies on the delivery of the ultimate drainage infrastructure along Pier Road across Bass Highway to the final point of discharge represented by Western Port Bay.

3.1.14. Notwithstanding the above, in accordance with the MW Colbert Creek DSS, the 1% AEP from the majority of the upstream catchment to the south of Grantville – Glen Alvie Road is conveyed to the future drainage scheme asset WL3/RB1 with the intention of attenuating the post-developed flows to pre-developed conditions prior to crossing Grantville – Glen Alvie Rd to the north and direct flow towards Colbert Creek.

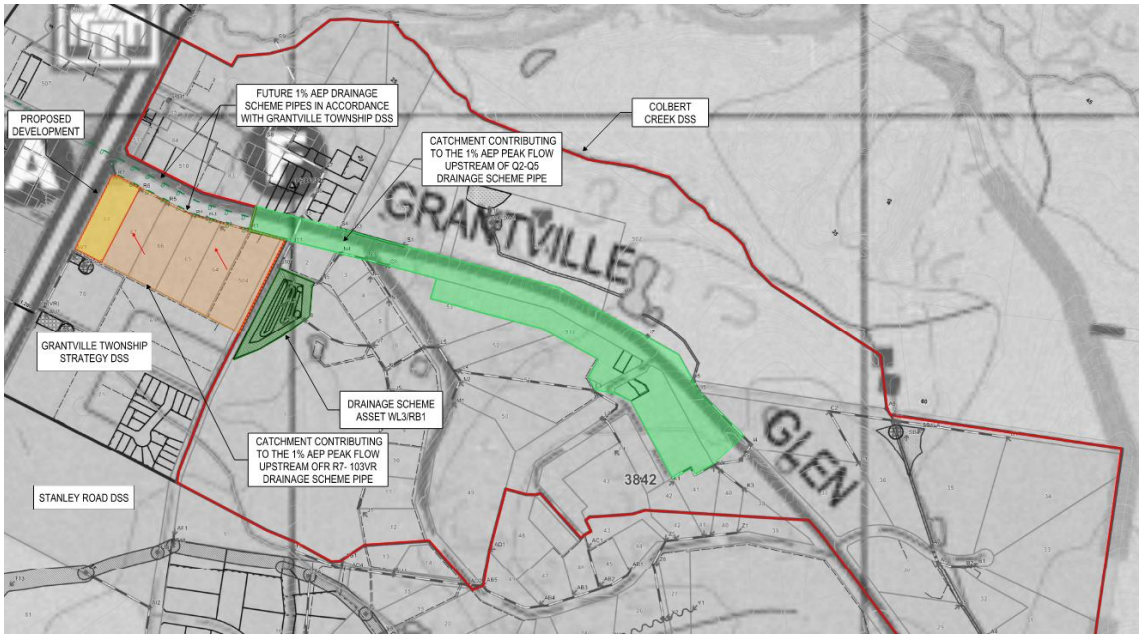


Figure 13 – Extract of the Colbert Creek DSS

3.1.15. A copy of Figure 13 has been included in Appendix H – Melbourne Water Colbert Creek Development Services Scheme.

3.1.16. The 1% AEP flow from the upstream catchment to the north of Grantville – Glen Alvie Rd is directed to the future drainage scheme assets SB-DAM and I10 and, ultimately to Colbert Creek to the north.

3.1.17. The remaining 1% AEP flow from the upstream catchment which can't be directed to the proposed drainage scheme asset scheme asset WL3/RB1 will be collected by the proposed 1% AEP drainage scheme pipe shown on the MW Grantville Township Strategy DSS Q3-Q5 and safely conveyed downstream of Bass Highway.

3.1.18. DPM believe that the intent of the MW DSS within the area is to avoid any overland flow crossing Bass Highway and safely convey the 1% AEP flows via drainage scheme pipe across the Bass highway Road reserve and ultimately to Western Port Bay.

3.3 Works proposed as part of 1517-1529 Bass Highway, Grantville

3.3.1. The Development will be delivered in accordance with the proposed plan as shown in Appendix B – Development Layout Plan & Town Planning Set with the construction of an underground tank to attenuate the post-developed flows to pre-developed conditions before conveying the flows to Grantville-Glen Alvie Road.

3.4 Hydrological modelling

Introduction

3.4.1. As stated in section 1.3, the minor drainage system of the proposed development must be sized for the developed 10% AEP flows (10-year storm recurrence interval).

3.4.2. The major drainage system must be designed to convey the maximum developed 1% AEP flow (100-year storm recurrence interval).

3.4.3. The critical 1% AEP event that produces the maximum peak flow must be defined against the proposed road reserve geometry to confirm that the DEECA (ex DELWP) floodway safety criteria are fulfilled.

RORB model and calibration

3.4.4. An extract of the rural catchment plan prepared by DPM has been included in Figure 14.

3.4.5. The model takes consideration of the latest updates in the stormwater industry (i.e. ARR19) and includes provision of the impact of climate change on the intensity of the rainfall.

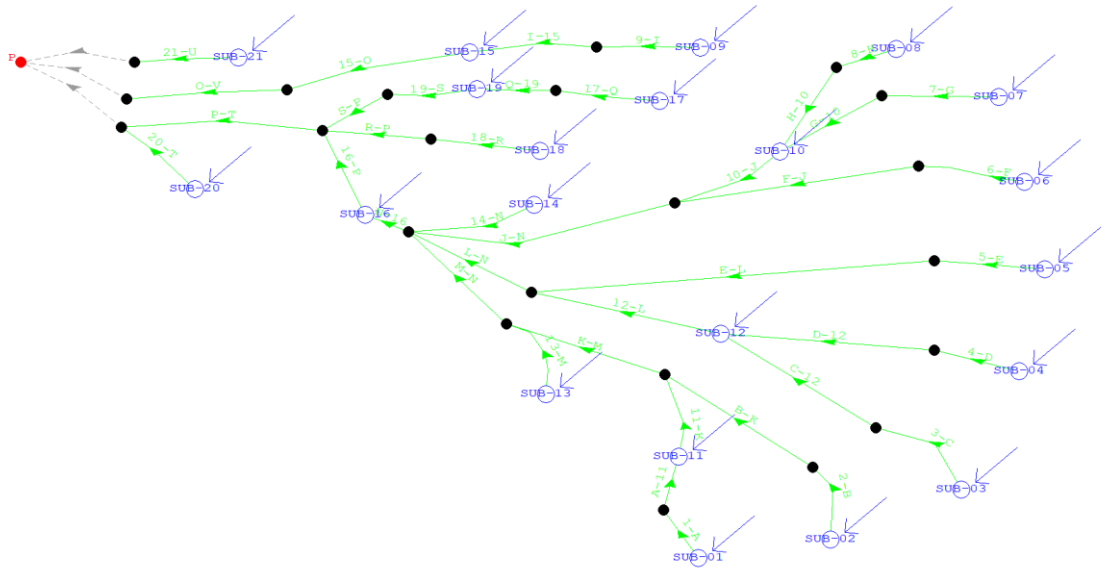


Figure 14 - Rural catchment plan for 1517-1529 Bass Highway, Grantville

3.4.6. The main features of the RORB model prepared by DPM have been listed below and a copy of the updated model will form part of the SWMS submission to Council.

- Use of Australian Rainfall & Runoff 2019 (ARR19);
- Inclusion of pre-burst in accordance with ARR19;
- Initial Losses/Continuing Losses model;
- Average flow distance d_{AV}=0.73 (rural model), d_{AV}=0.73 (pre-developed model), d_{AV}=0.54 (post-developed model);
- Kc=1.14 (rural model), Kc=1.14 (pre-developed model), Kc=0.84 (post-developed model);
- Consideration for climate change Representative Concentration Pathway (RCP8.5).

3.4.7. Considering the lack of available information (i.e. results from previous studies, gauges etc.) to inform the RORB model, DPM have undertaken the calibration of the hydrological model using the 1% AEP peak flow obtained with the rational method.

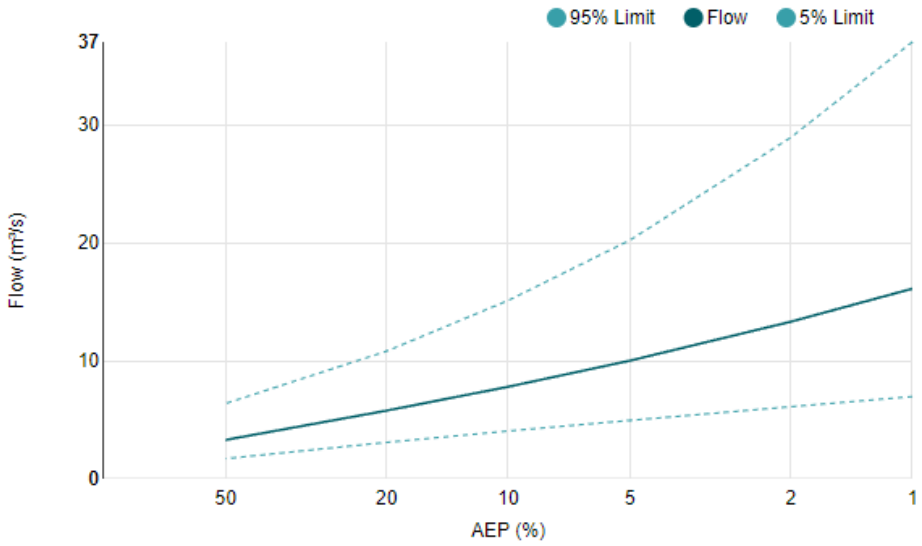
3.4.8. Given the uncertainty associated with selecting an appropriate routing parameter (Kc), an additional investigation was conducted by considering the relationship between Kc and the average flow distance (d_{AV}). Studies from different authors (Pearse et al., 2002; Yu, 1989 and CRCCH) have determined the expected Kc/d_{AV} relationship for RORB hydrological models which have been summarised in Table 2.

Table 2 – Summary if the Kc/d_{AV} relationship for the RORB model

Group	Pearse et al., 2002	Yu, 1989	CRCCH
Expected	1.25	0.96	1.14
Low (-1 SD in log)	0.75	0.47	0.61
High (+1 SD in log)	2.07	1.94	2.13

3.4.9. The rural RORB model prepared by DPM has an average flow distance of 0.73 km, which results in Kc/d_{AV} ratio of 1.56 which results to be between the expected and high value for the three studies carried out.

3.4.10. The rural flow obtained with the RORB model at the final point of discharge has been compared with the discharge obtained with the Regional Flood frequency Estimation (RFFE) model (see Figure 15).



AEP (%)	Discharge (m^3/s)	Lower Confidence Limit (5%) (m^3/s)	Upper Confidence Limit (95%) (m^3/s)
50	3.29	1.70	6.37
20	5.77	3.08	10.8
10	7.79	4.04	15.1
5	10.0	4.94	20.2
2	13.3	6.10	28.9
1	16.1	6.96	37.0

Figure 15 – Regional Frequency Flood Estimation at the final point of discharge at Bass Highway

3.4.11. DPM acknowledge that the catchment is within the lower limit of the recommended catchment size of 0.5 to 1,000 km^2 required by the RFFE model.

3.4.12. The RFFE flood estimation model estimated a peak rural flow of 16.1 m^3/s which was found to be significantly higher than the other methods.

3.4.13. The 1% AEP peak rural flow determined for the rural catchment with the rational method was estimated to be 2.86 m^3/s. Whereas Nikolai/von Steen equation estimated a total rural flow of 2.91 m^3/s. Conversely, using the rule of thumb (3 m^3/s x 100 ha of rural catchment), a peak rural flow of 1.62 m^3/s is obtained.

3.4.14. Using the average value between the Rational Method, the Nikolai/von Steen equation and the rule of thumb, a flow of approximately 2.46 m^3/s is calculated; therefore, the RORB formula for the parameter Kc was used in the calculation of the Kc value and a peak flow of approximately 2.41 m^3/s was determined from the RORB model representing the rural catchment.

3.5 Flow Conveyance

3.5.1. The minor drainage system of the proposed development must be sized for the peak 10% AEP event flow (Q_{10}).

3.5.2. This will be conveyed in an underground piped system, the alignment of which to be determined in the functional and detailed design stage of the proposed development.

3.5.3. The access to the site and the other areas must be designed to avoid excessive pooling of water and to convey these flows into the minor system.

3.5.4. The major drainage system must be sized for the peak 1% AEP event flow (Q_{100}) and may utilise the road surface to convey flows above the capacity of the minor drainage system to the LPOD, provided that freeboard and flow safety limits are adhered to.

3.5.5. The 1% AEP event flow will be conveyed via road network to a potential detention storage within the northern part of the development, with the outfall flowing to the proposed drainage scheme asset.

3.6 Attenuation Requirements

3.6.1 As outlined in the KLM SWMS, it has previously been acknowledged that the existing drainage network is adequately sized for the existing flows generated from the site in its predeveloped arrangement.

3.6.2 In accordance with the RORB model prepared by DPM, the maximum pre-developed flow from the site is **0.05 m^3/s**, noting that only the northern part of the site (approximately 0.28 ha) has been considered as the remaining part of the property sheets flow in western direction towards Bass Highway.

3.6.3 This has been shown in the extract of the pre-developed catchment plan shown in Figure 16 and Appendix C – Pre-developed Catchment Plan.

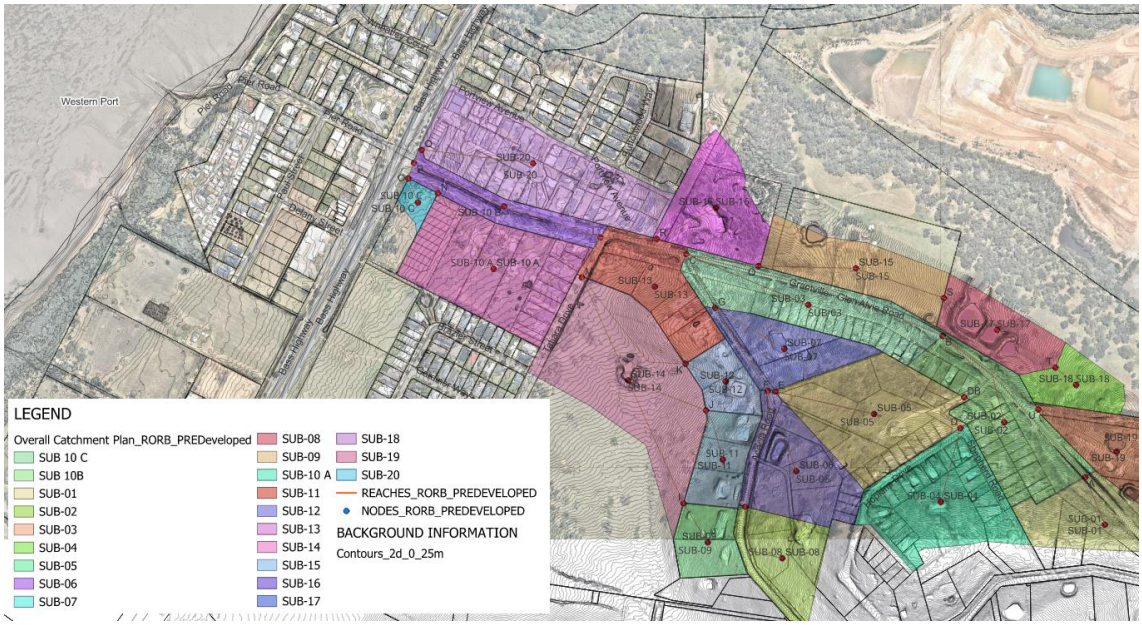


Figure 16 – Extract of the pre-developed catchment plan

3.6.4 Therefore, the required attenuation volumes are to ensure that the flows exiting the site maintain the existing flows for the 1% AEP event rainfall event.

3.6.5 Due to the relatively small and uniform catchment the Rational Method is considered an acceptable flow calculation method for both predeveloped flows and developed flows.

3.6.6 Boyd's Method (Boyd et al. 1994) and the modified rational method have been used to estimate the required storage for attenuation purposes at the downstream end of the site.

3.6.7 Boyd's method estimates the storage using the rational method calculated peak flow rate.

3.6.8 The modified rational method uses longer duration storms that produce smaller flow rates to verify that the storage capacity of the retarding basin is not exceeded (see Figure 17).

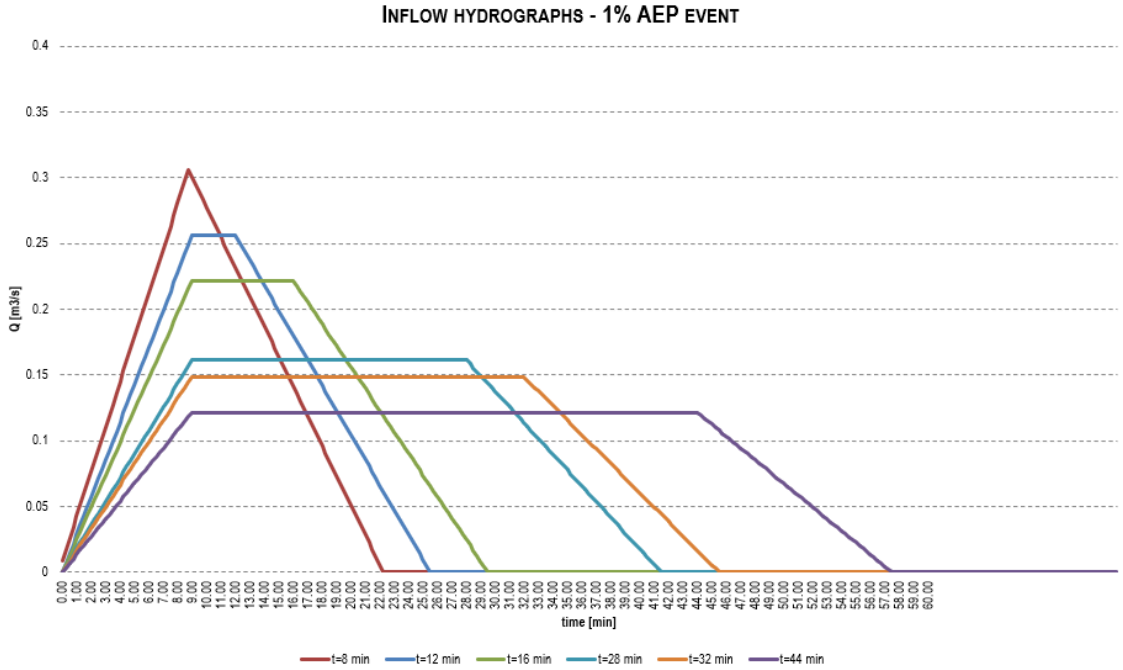


Figure 17 - Inflow hydrographs for different storm durations

3.6.9 Table 3 outlines the storage volume required based on the different durations of the storm event.

Table 3 – Summary of the results: storage required for different storm events

Storm Duration [min]	Q_{100} [m^3/s]	Storage required [m^3]
8 min	0.306	177
12 min	0.256	187
16 min	0.222	207
28 min	0.161	243
32 min	0.149	251
44 min	0.121	268

3.6.10 The critical AEP 1% storm that maximises the volume of the detention system is the 44-minute duration storm that produces a peak flow of 0.121 m^3/s and requires an attenuation storage of approximately 268 m^3.

3.6.11 The provision of approximately **270 m^3** of storage will be required for the attenuation of the post-developed flows to pre-developed condition within the north-east corner of the site.

3.6.12 This report assumes an attenuation requirement of approximately **270 m^3**, noting that this has been amended based on the comments provided by Council (23.07.24) and it is no longer consistent with KLM SWMS (which provides an underground storage of 150 m^3) which has been based of the Boyd's method.

3.6.13 The required attenuation can be achieved using a Atlan chamber solution (CHA750 mm high, minimum 1,355 mm installed depth), consisting of 120 individual chamber units, which collectively provide 273 m^3 of attenuation, refer to Figure 18 for an example of the typical configuration of the system. Alternative solutions (i.e. ACO StormBrixx or) can be investigates as required, ensuring that a storage of 270 m^3 is provided.



Figure 18 – Example of Atlan chamber units

3.6.14 The proposed attenuation system can be located to the north-east of the site, generally positioned under the location of a proposed car park with the outfall connecting to the drainage scheme pipeline to the north of the site delivered as part of the development.

3.6.15 It is noted that the general fall of the site is towards west, therefore a 1% AEP system might be required to collect to the post-developed flow and convey it to the Atlan chamber system to within the north-east of the site. Alternatively, the location of the Atlan chamber system can be located within the south-west corner of the site with the attenuated flow conveyed to the LPOD or combination of this scenarios (i.e. underground storage at the north-east corner of the site, under the car park, and at the south-west corner of the site, in proximity of the entrance/exist to the site).

3.6.16 The detailed design is to ensure that appropriate cover requirements have been considered for required loading classification of the site.

3.6.17 Figure 19 shows an indicative drainage layout for the proposed development.

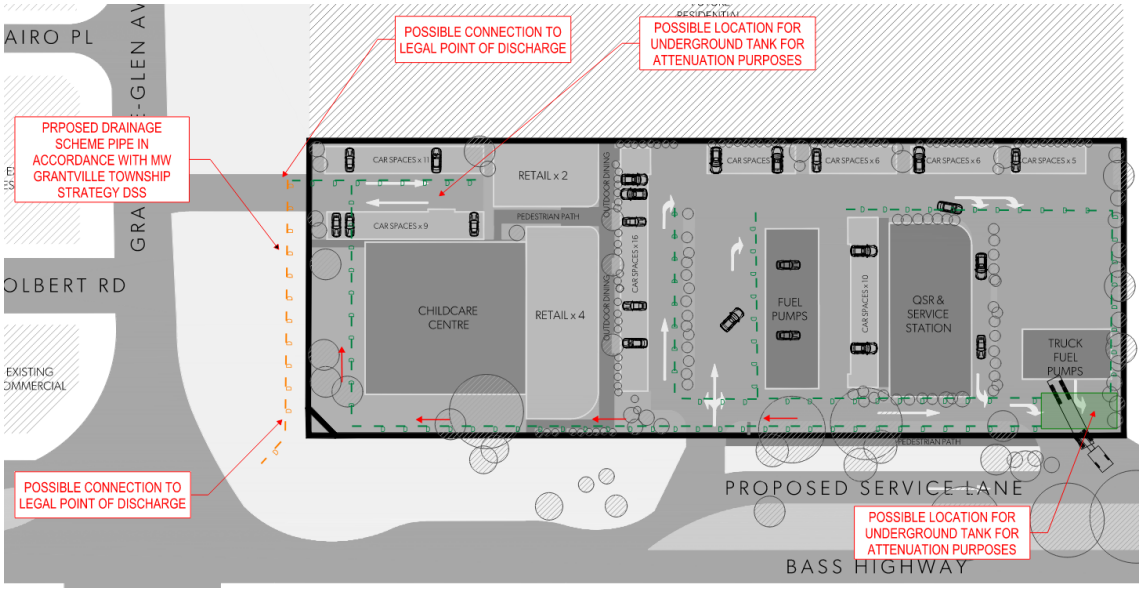


Figure 19 – Indicative drainage layout for the proposed development

3.6.18 Assuming that two underground tanks are proposed, the tank located within the south-west corner of the site will be collecting the 1% AEP flows via overland flow to grated pits and the 10% AEP flows via drainage network. The outfall pipe from the tank will be constructed at the western and northern boundary of the site, conveying the attenuated flows to the LPOD to the north.

3.6.19 Similarly, the north-east underground tank, located under the proposed carpark, will be collecting the 1% AEP flows via overland flow to grated pits and the 10% AEP flows via drainage network.

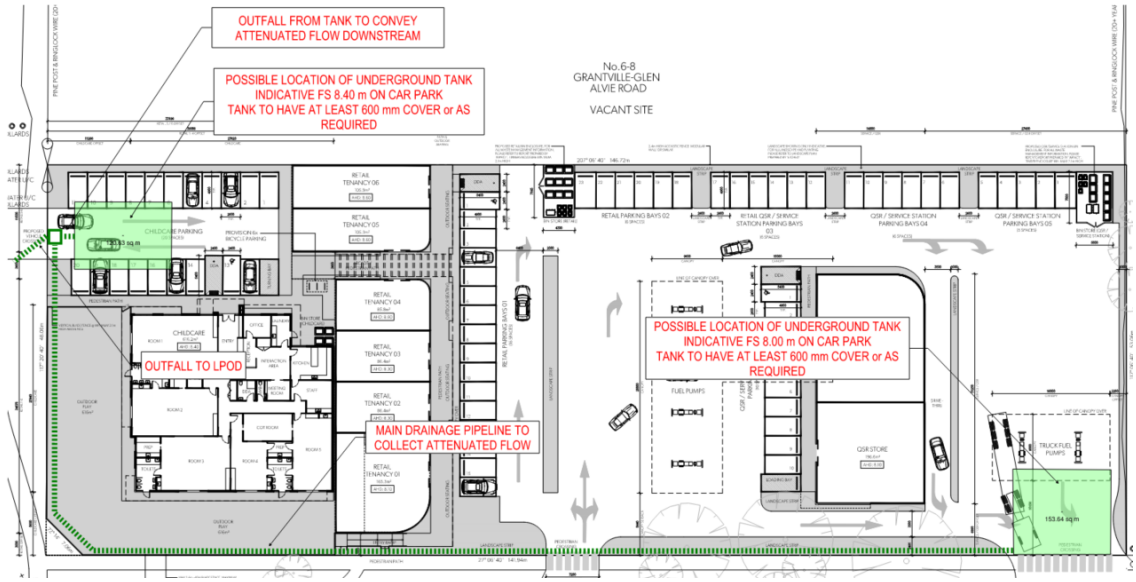


Figure 20 – Possible solution for underground tanks and outfalls to LPOD

3.6.20 The outfall pipe from the development, conveying the attenuated flow of **0.05 m³/s**, will be connecting to the existing Council drain/swale to the north of the site, along Grantville-Glen Alvie Road.

3.7 Key Drainage Requirements

3.7.1 Consistent with the trade waste requirements, DPM have liaised with the Project Team to ensure the following has been achieved:

- Isolation of the proposed refuelling areas from the stormwater system, through the use of incorporating pavement ridgelines in key areas;
- Stormwater runoff from the proposed refuelling areas is treated via a SPEL Puraceptor prior to its connection into the stormwater system.

3.7.2 The stormwater flows relevant to the refuelling areas will be treated with a Puraceptor prior to discharging into the stormwater network.

3.7.3 A SPEL Puraceptor is a full retention separator that is typically utilised where there is a risk of oil and fuel spills, with the oils and hydrocarbons are treating to achieve EPA standards prior to the flows being subsequently discharged into the stormwater network.

3.7.4 It is noted that, generally, the refuelling areas will need to be structurally isolated from the stormwater system and ultimately connected to the Westernport Water sewer system.

3.7.5 The level design of the relevant areas will need do consider a pavement ridge line of a minimum 50mm to facilitate the required structural isolation.

3.7.6 Additionally, the structurally isolated areas will be further protected through the introduction of HVTS oil water separators for the applicable areas, refer to Figure 21.

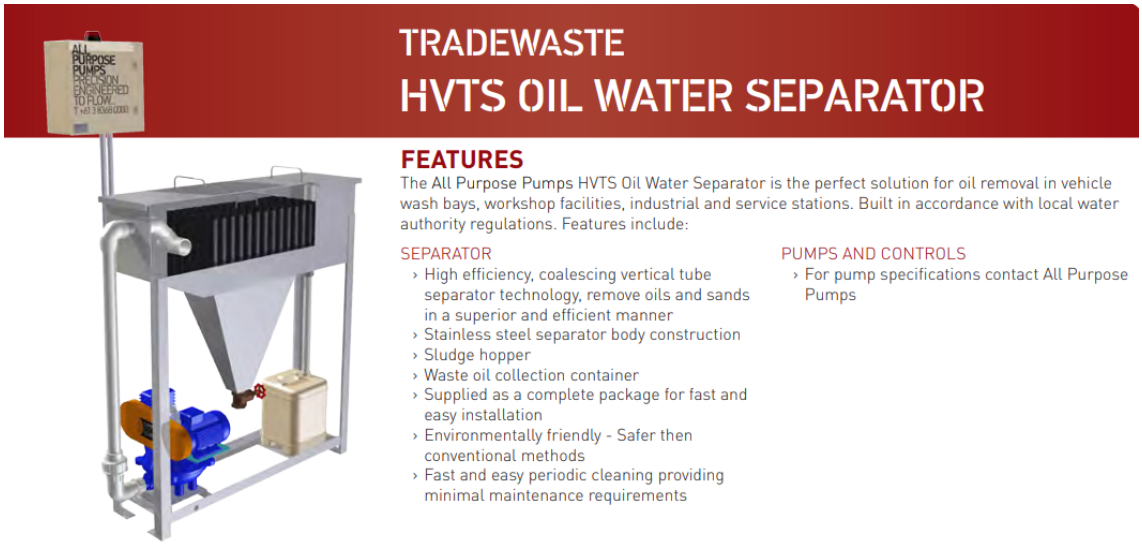


Figure 21 – Tradewaste HVTS oil water separator proposed for refuelling areas

3.7.7 In accordance with the requirements, the nominated HVTS oil water separators will be connected directly into the sewer system.

3.8 Key Drainage Requirements – SPEL Ecoceptor & Hydrosystem

3.8.1 In addition to the SPEL Puraceptor, the proposed site is subject to treatment via a SPEL Ecoceptor and subsequently a SPEL Hydrosystem.

3.8.2 The SPEL Ecosystem is essentially a GPT equivalent device which can act the primary/secondary treatment device and ensures that hard litter and other gross pollutants such as sediment, silt, total suspended solids (TSS) are removed. Additionally, oil and grease are captured and contained for all flow events.

3.8.3 The SPEL Hydrosystem is a tertiary treatment device that utilises cartridge filters to further treat stormwater, using a combination of sedimentation, filtration, adsorption, and precipitation.

3.8.4 Both SPEL systems proposed are widely use and recognised within the industry as some of leading proprietary stormwater treatment devices available.

3.8.5 It is recognised and noted by DPM that the acceptance of these treatment devices is highly variable depending on the location of the project, the jurisdiction of the relevant drainage authority and the preferences of the local council authority.

3.8.6 On this basis, the sole reliance on proprietary treatment devices is often considered insufficient, and the implementation of proprietary stormwater treatment devices should be undertaken in combination with more traditional Water Sensitive Urban Design (WSUD) solutions.

3.8.7 This is discussed further within the Integrated Water Management section of this report.

3.9 Pre-developed conditions

3.9.1. A RORB model of the pre-developed catchment has been prepared by DPM in order to inform the hydraulic model and to determine the flood impact assessment of the proposed development (refer to section 4.0).

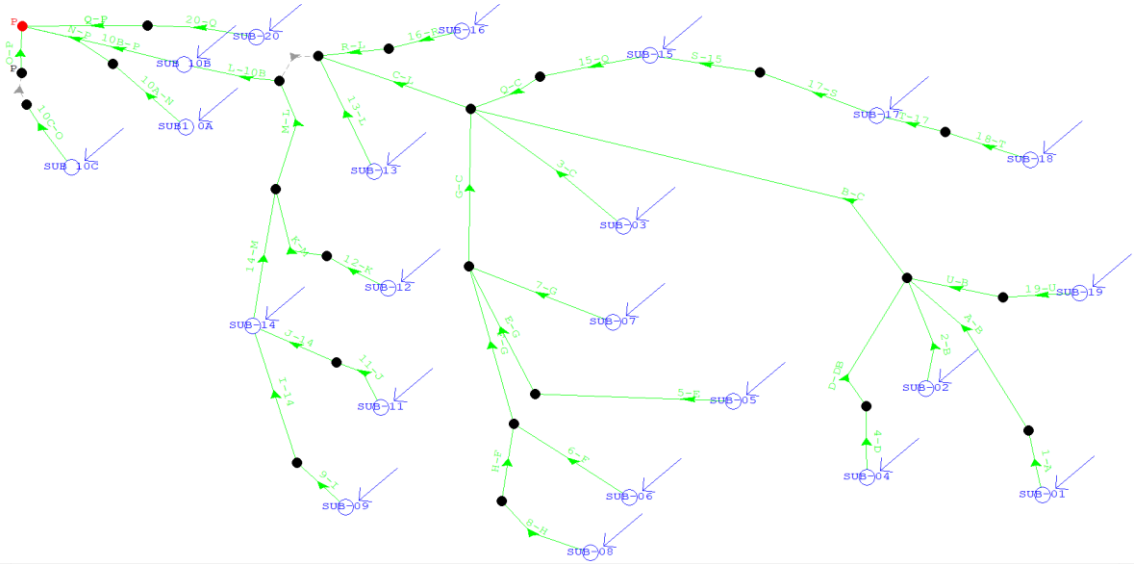


Figure 22 – Extract of the RORB model geometry for the post-developed catchment

3.9.2. Figure 23 shows the inflow hydrographs obtained with the hydrological model which have been considered as boundary conditions in the hydraulic model (TUFLOW).

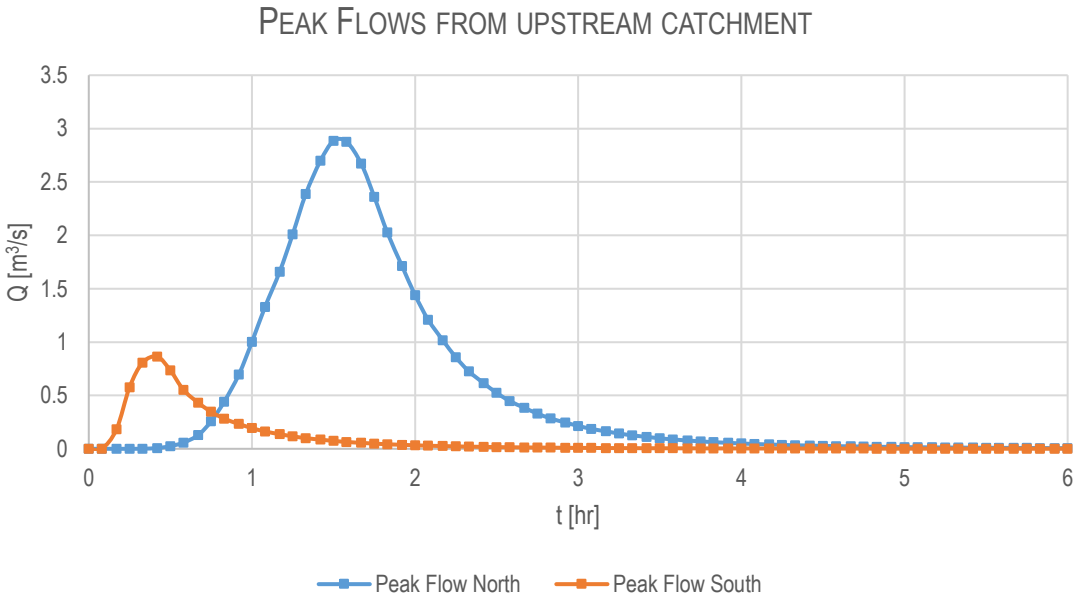


Figure 23 – Inflow hydrographs considered in the hydraulic model

3.9.3. The peak flow originated from the upstream catchment and contributing to the flow upstream of Grantville-Glen-Alvie Road is approximately **2.71 m³/s** (duration t=1.5 hours, TP27).

3.9.4. Conversely, the flow from the south-east part of the catchment is approximately **0.85 m³/s** (duration t=45 minutes, TP26).

3.9.5. The total flow at the confluence with Bass Highway is **3.43 m³/s** (duration t=1.5 hours, TP27).

3.10 Post-developed conditions

3.10.1. DPM have prepared a RORB model for the post-developed catchment in order to determine the excess of rainfall to be considered within the hydraulic model and the hydrograph to be considered as upstream boundary conditions to the site.

3.10.2. A copy of the RORB model is shown in Figure 24.

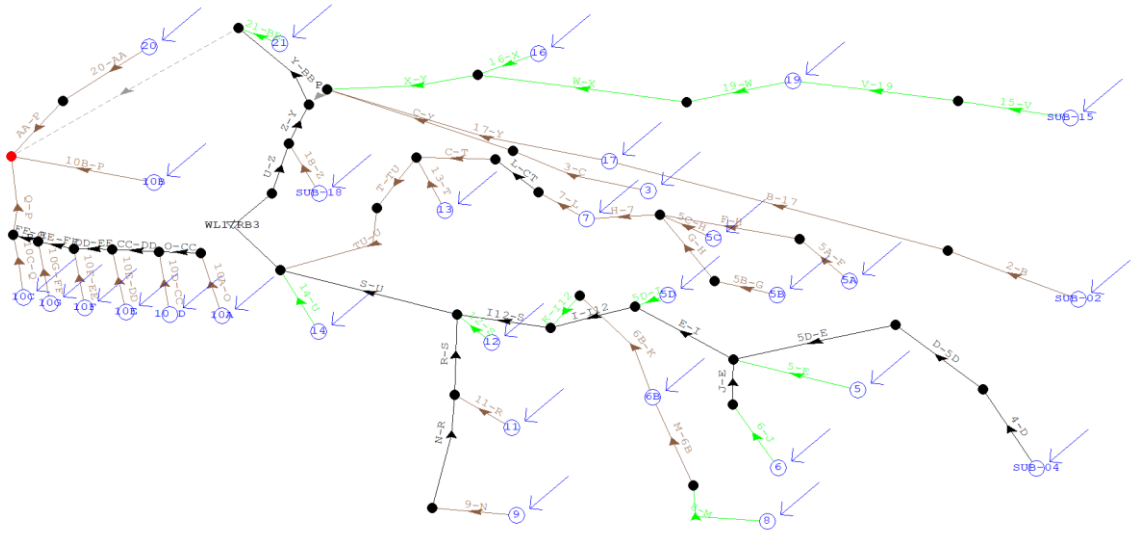


Figure 24 – Extract of the RORB model geometry for the post-developed catchment

3.10.3. As discussed within section 3.2 of the report, the proposed drainage scheme pipes to the north of the site have to be sized to cater for the 1% AEP flow.

3.10.4. DPM acknowledge that, in accordance with the SWMS prepared by KLM, a 1200x600 box culvert with a grade of 1 in 300 is proposed as the drainage scheme pipe R6-R7 and R7-103VR based on a 1% AEP peak flow of 1.05 m^3/s.

3.10.5. A copy of the proposed drainage scheme pipe longitudinal section included in the KLM SWMS have been provided in Figure 25.

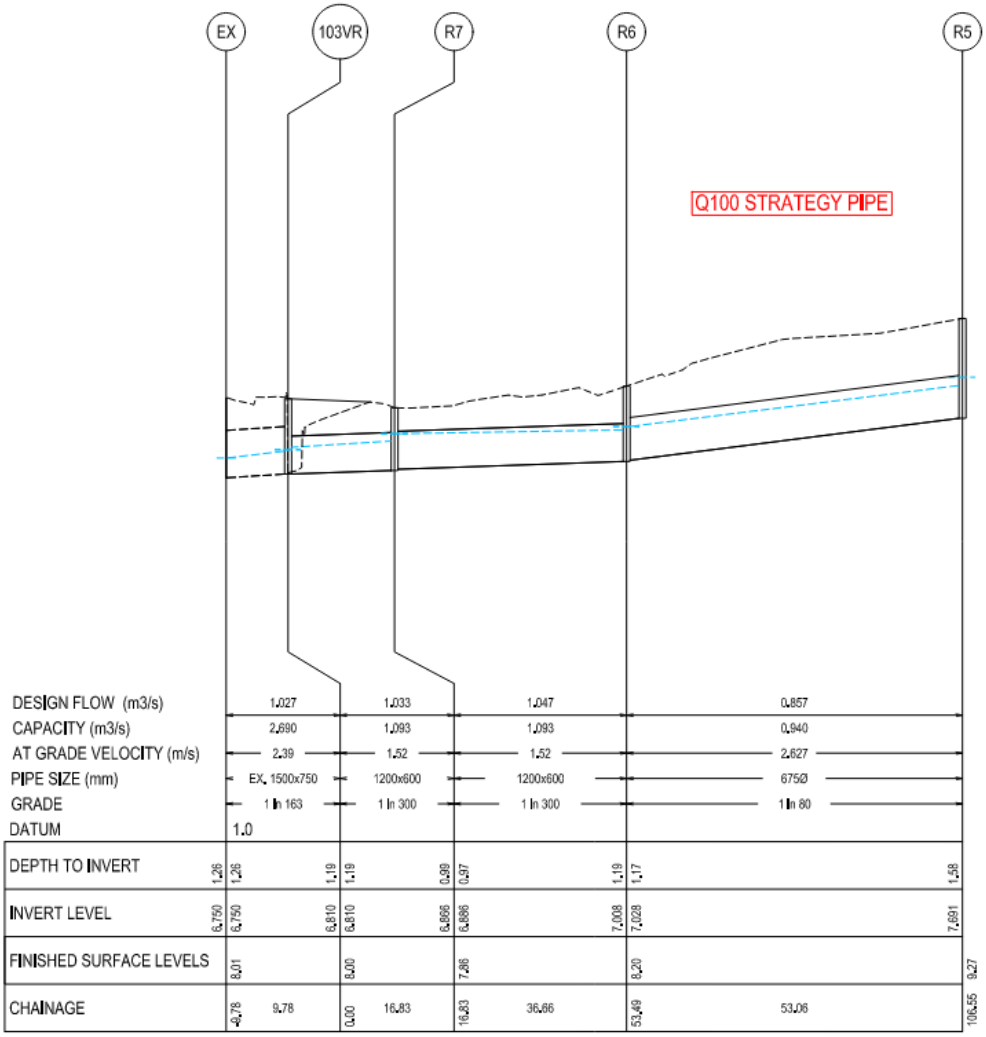


Figure 25 – Proposed drainage scheme pipe longitudinal section in accordance with KLM SWMS (August 2021)

3.10.6. In accordance with the flow obtained from the post-developed RORB model (noting that no attenuation has been considered under this scenario), the 1% AEP peak flow at the upstream of the proposed drainage scheme pipe on the north of the site (location R6) is approximately **1.64 m³/s**.

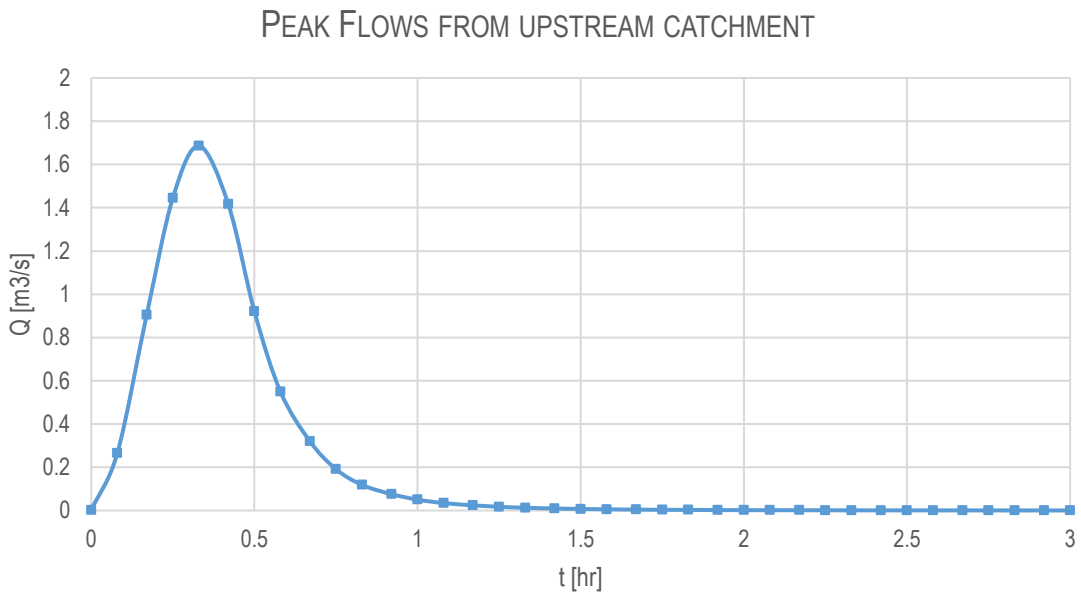


Figure 26 – Inflow hydrograph considered in the hydraulic model

3.10.7. It is noted that there is an increase of approximately 56% compared to the flow included in the KLM SWMS. DPM have made considerations to the impact of climate change on the intensity of rainfall, and it is understood that the use of Type 3 reaches in RORB might provide an overestimate of the peak flows at the LPOD.

3.10.8. Notwithstanding the above, DPM have used the peak flows obtained from the RORB model to preliminary design the drainage scheme pipe R7-103VR.

3.10.9. Maintaining a grade of 1 in 300, the delivery of a 1.5x0.75 m box culvert is required to safely conveyed the 1% AEP peak flow downstream to the existing culvert crossing at the intersection between Bass Highway and Grantville-Glen Alvie Road (see Figure 27).

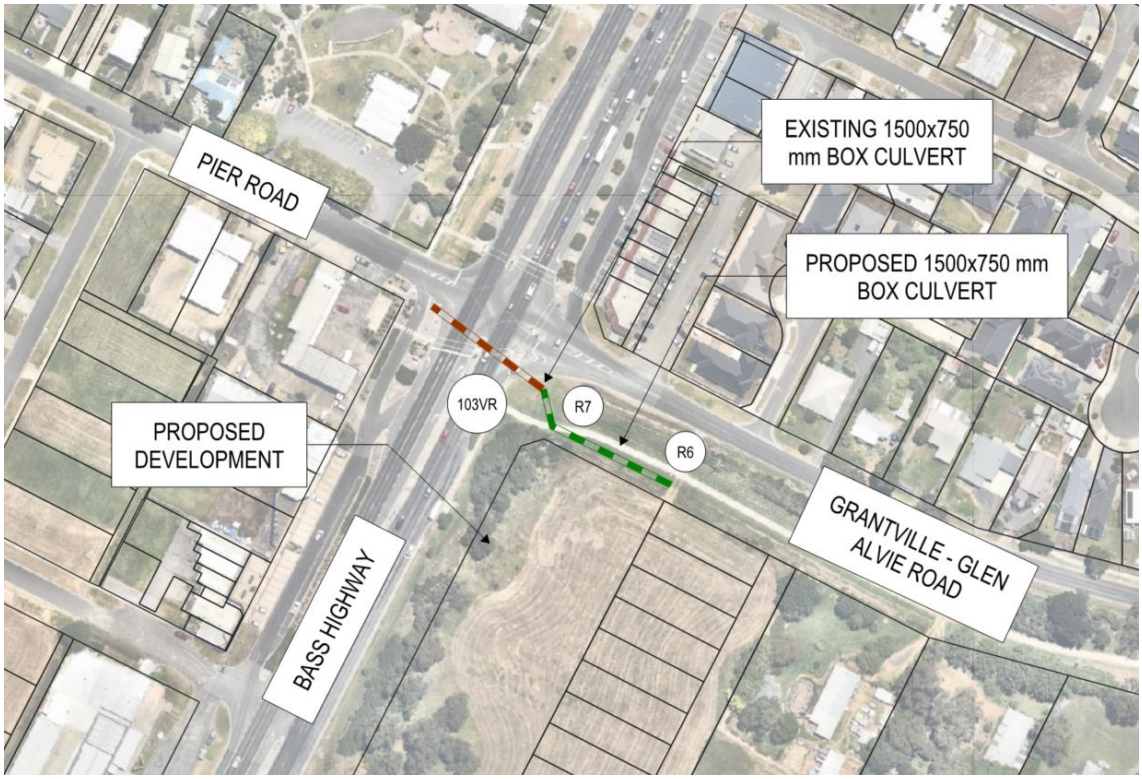


Figure 27 – Preliminary sizing o the proposed drainage scheme pipelines

3.10.10. The new box culvert will need to be connected to the existing 1.5x0.75 m box culvert crossing the intersection; therefore, removal of the existing headwall and construction of a 2.0x2.0 m junction pit will be required.

3.10.11. In accordance with the MW Grantville Township Strategy Creek DSS (see section 3.2) it is understood that the existing culvert crossing might be upgraded along with the delivery of a 1% AEP drainage scheme pipe delivered within the road reserve of Grantville – Glen Alvie Road.

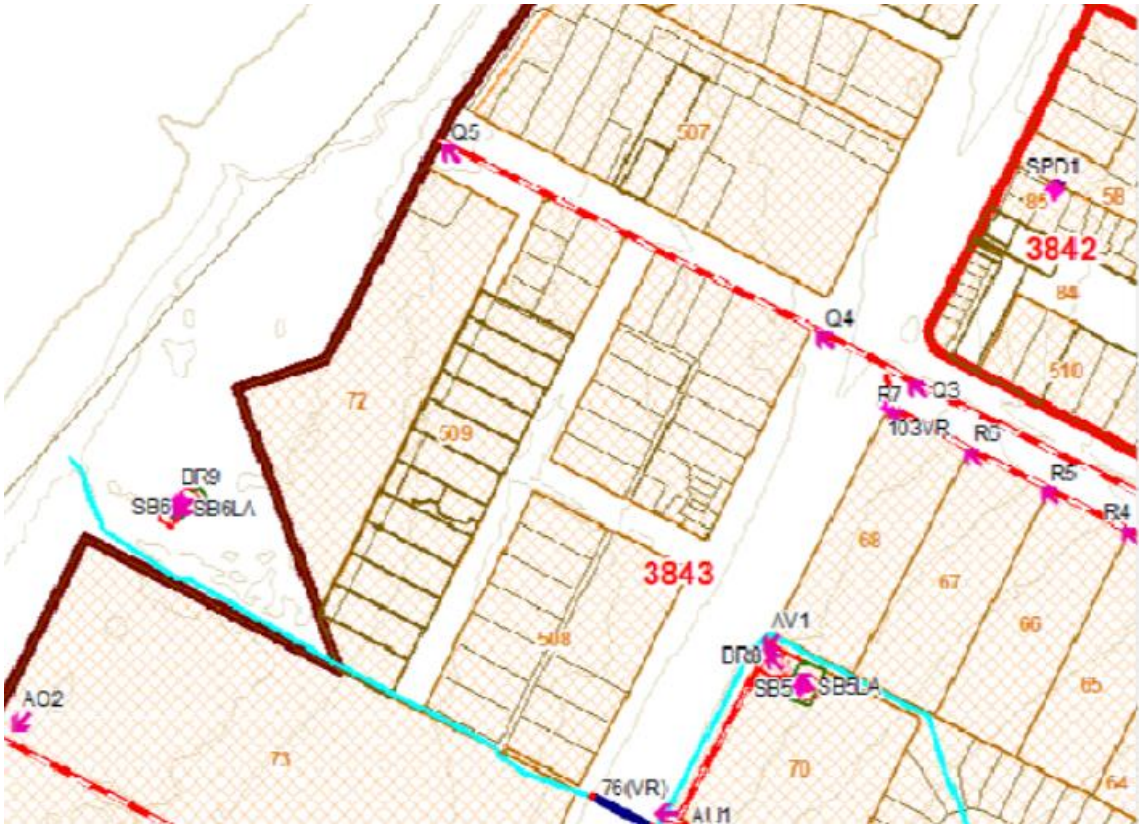


Figure 28 – MW Grantville Township Strategy DSS (KLM, 2021)

3.10.12. At the time of this report, DPM were not aware of any timing on design and delivery of the Q2-Q5 drainage scheme pipes; therefore, it is understood that these assets, if not already constructed, might be delivered in the future as part of a possible upgrade works of Grantville – Glen Alvie Road.

3.10.13. Conversely, considering the inclusion of the underground tank for the proposed development and assuming that the developments upstream will be providing attenuation of the peak flows to pre-developed conditions, the maximum peak flow at the existing culvert crossing at the intersection between Bass Highway and Grantville-Glen Alvie Road is **1.04 m³/s**.

3.10.14. Considering the uncertainty regarding the upgrade of the culvert crossing at the intersection between Bass Highway and Grantville-Glen Alvie Road and the lack of response from Melbourne Water, for the purpose of this report, DPM have conservatively assumed that the maximum flow at the existing 1500x750 box culvert to be **1.64 m³/s**.

3.10.15. Finally, in accordance with the MW Colbert Creek DSS, DPM have preliminary sized the future drainage scheme asset WL3/RB1 located upstream of Tatiana Road. The intent of the drainage asset is to attenuate the post-developed flows to pre-developed conditions with a peak flow at the inlet of 3.83 m³/s and a flow at the outlet of 0.86 m³/s directed north towards Colbert Creek.

3.10.16. The storage required for attenuation purposes is approximately 6,500 m³ as highlighted within Figure 29.

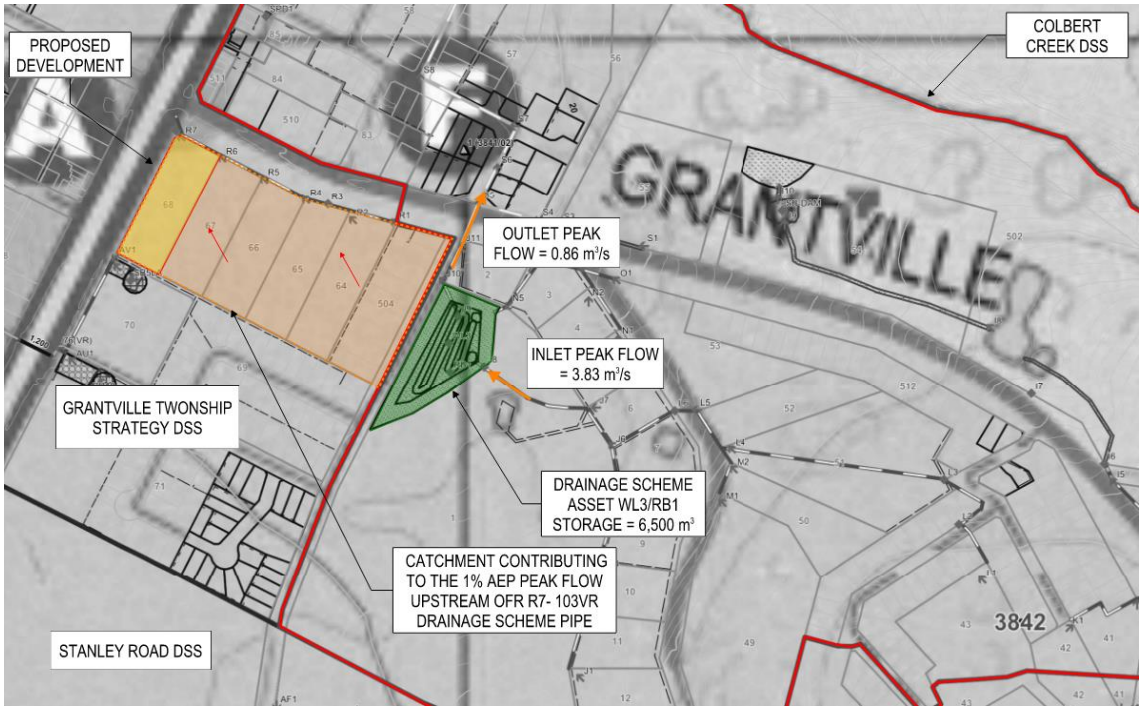


Figure 29 – Preliminary sizing of drainage scheme asset WL3/RB1

3.11 Design Flows

3.11.1. The design flows obtained from the pre-developed and post-developed models have been summarised in

Table 4 – Summary of the design flows which inform the hydraulic model

Scenario	1% AEP Peak Flow			
	Intersection Grantville-Glen Alvie Rd/Tatiara Dr	Upstream Tatiara Dr	Bass Highway	LPOD of proposed development
Rural Conditions	/	/	2.45	/
Pre-Developed Conditions	2.71	0.85	3.43	/
Post-Developed Conditions	1.69	/	4.61	0.268
Post-Developed Conditions with TRB	1.69	/	3.97	0.05

3.11.2. DPM note how the 1% AEP peak flows at the intersection between Grantville – Glen Alvie Rd and Tatiara Rd decrease from 2.71 m^3/s under pre-developed conditions to approximately 1.69 m^3/s.

3.11.3. The flow of 1.69 m^3/s would likely be even lower as we expect that the upstream catchment would be almost fully directed to the proposed drainage scheme asset WL3/RB1.

3.11.4. For the purpose of this report the aforementioned flows has been considered to size the future drainage scheme pipe Q2-Q5 which is assumed to be a 1200 dia mm (or equivalent) with a grade of 1 in 500.

3.11.5. The proposed drainage scheme pipes will be included in the post-developed hydraulic model as described in section 4.0 of this report.

3.11.6. Figure 30 and Figure 31 shows the design flow and the location within the catchment where the flows are applied in the hydraulic model, noting that the excess of rainfall is applied to the area downstream of Tatiara Drive.



Figure 30 – Design flows to inform the hydraulic model under pre-developed conditions

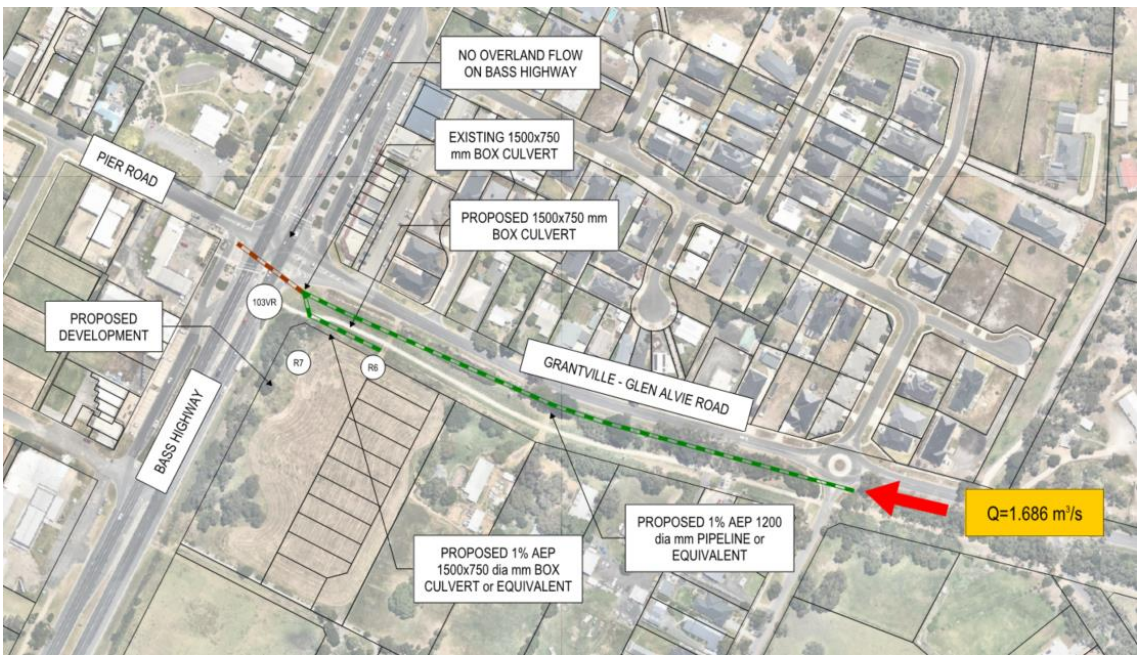


Figure 31 – Design flows to inform the hydraulic model under post-developed conditions

3.11.7. Finally, as requested by Council, Table 5 shows a summary of the pre-developed and post-developed flows upstream of the existing 1500x750 box culvert at the intersection between Bass highway and Grantville-Alvie Road.

Table 5 – Summary of the design flows for the development and upstream of culvert crossing

	1% AEP Peak Flow	
Scenario	**LPOD of proposed development**	**Upstream of existing 1500x750**
Pre-developed conditions	0.05	3.78
Post-Developed Conditions	0.268	3.36
Post-Developed Conditions with TRB	0.05	2.84

3.11.8. Considering that the maximum capacity of the culvert crossing is 3.0 m^3/s (see section 2.4 of this report) and conservatively assuming the flow of 2.84 m^3/s at the proposed culvert crossing, the capacity of the existing 1500x750 box culvert is verified.

3.11.9. It needs to be noted that, in accordance with the MW Grantville Township DSS, the flows originated by the eastern catchment upstream of Tatiara Drive are expected to be safely conveyed across the intersection of Bass Highway and Grantville-Glen Alvie Road via 1% AEP drainage pipe. Therefore, the existing culvert crossing 1500x750 should not be considered these flows.

3.11.10. For the purpose of this report, we have conservatively assumed that the flows from the eastern catchment are conveyed to the existing 1500x750 box culvert and it was confirmed that, under this scenario, there is enough capacity to safely convey the flows across the intersection.

4.0 Flood Impact assessment

4.1 Introduction

4.1.1. It is understood that a hydraulic modelling for the site to the north of the proposed development has been prepared by Engeny (2021) for Melbourne Water determining a 1% AEP Flood Depth as per Figure 32.

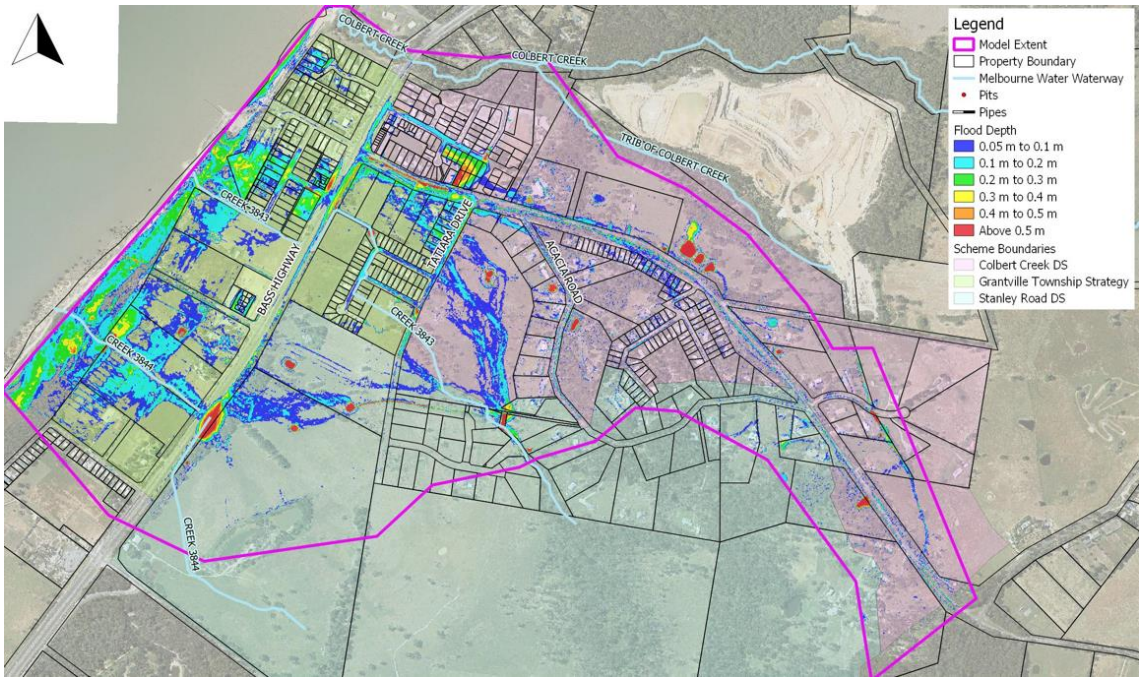


Figure 32 – 1% AEP Flood Depth Layout Plan (Engeny, 2021)

4.1.2. DPM have requested the existing hydraulic model for the site and any additional information related to the upstream developments which may have an impact on the subject site.

4.1.3. No document has been received to date and a PreDevelopment Advice (PDA) has been lodged with Melbourne Water awaiting further information.

4.1.4. Based on the flood depth information shown in Figure 32, it appears that the site is subject to flooding with water depth ranging from 0.1-0.3 m at the north-east corner of the site to 0.3-0.4 m within the western part of the site facing Bass Highway.

4.1.5. It is also noted that Engeny has not considered the 1500x750 existing box culvert crossing at Bass Highway as shown in the Feature & Level (F&L) Survey (see Figure 33). Therefore, it is expected that the flood depths shown in Figure 32 would decrease under pre-developed conditions.

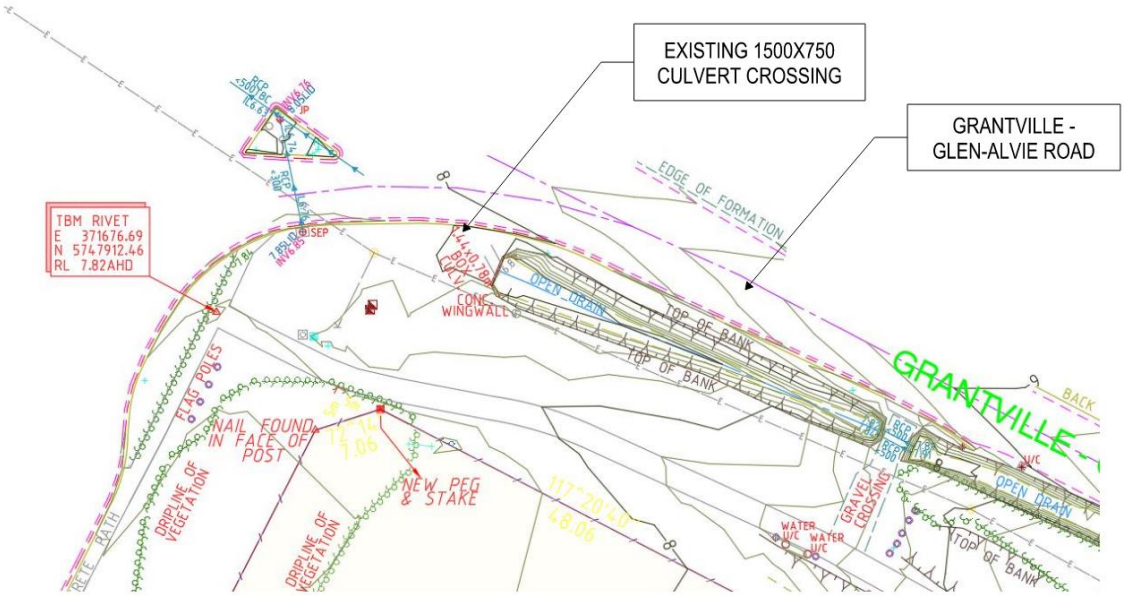


Figure 33 – Extract of the F&L Survey showing the existing 1500x750 box culvert

4.2 Assumptions

4.2.1. Due to the lack of information available, DPM have aimed to reproduce the results obtained by Engeny and shown within 1% AEP Flood Depth Layout Plan (Figure 32).

4.2.2. Based on the hydrological model prepared by DPM, it has been calculated that the 1% AEP flow under pre-developed conditions from the external catchment is approximately 2.71 m^3/s and 0.85 m^3/s, respectively from the east and south-east part of the catchment.

4.2.3. For the purpose of this report and in line with the work completed by Engeny, DPM have not considered the existing 1500x750 mm box culvert at Bass Highway located to the north-west corner of the site under pre-developed conditions.

4.2.4. Conversely, the peak flows from the eastern catchment under post-developed conditions is 1.69 m^3/s, as highlighted in the previous sections of the report.

4.2.5. The proposed drainage scheme pipes and the existing culvert crossing at the intersection between Bass Highway and Grantville – Glen Alvie Road have been included in the post-developed hydraulic model.

4.3 Model topography and cell size

4.3.1. The TUFLOW model topography has been created based on the 1 m LiDAR contours obtained from the Department of Environment, Land, Water and Planning and the survey prepared for the proposed development.

4.3.2. A grid cell size of 5 m has been adopted for the hydraulic model, using the Sub-Grid Sampling (SGS) feature with TUFLOW HPC.

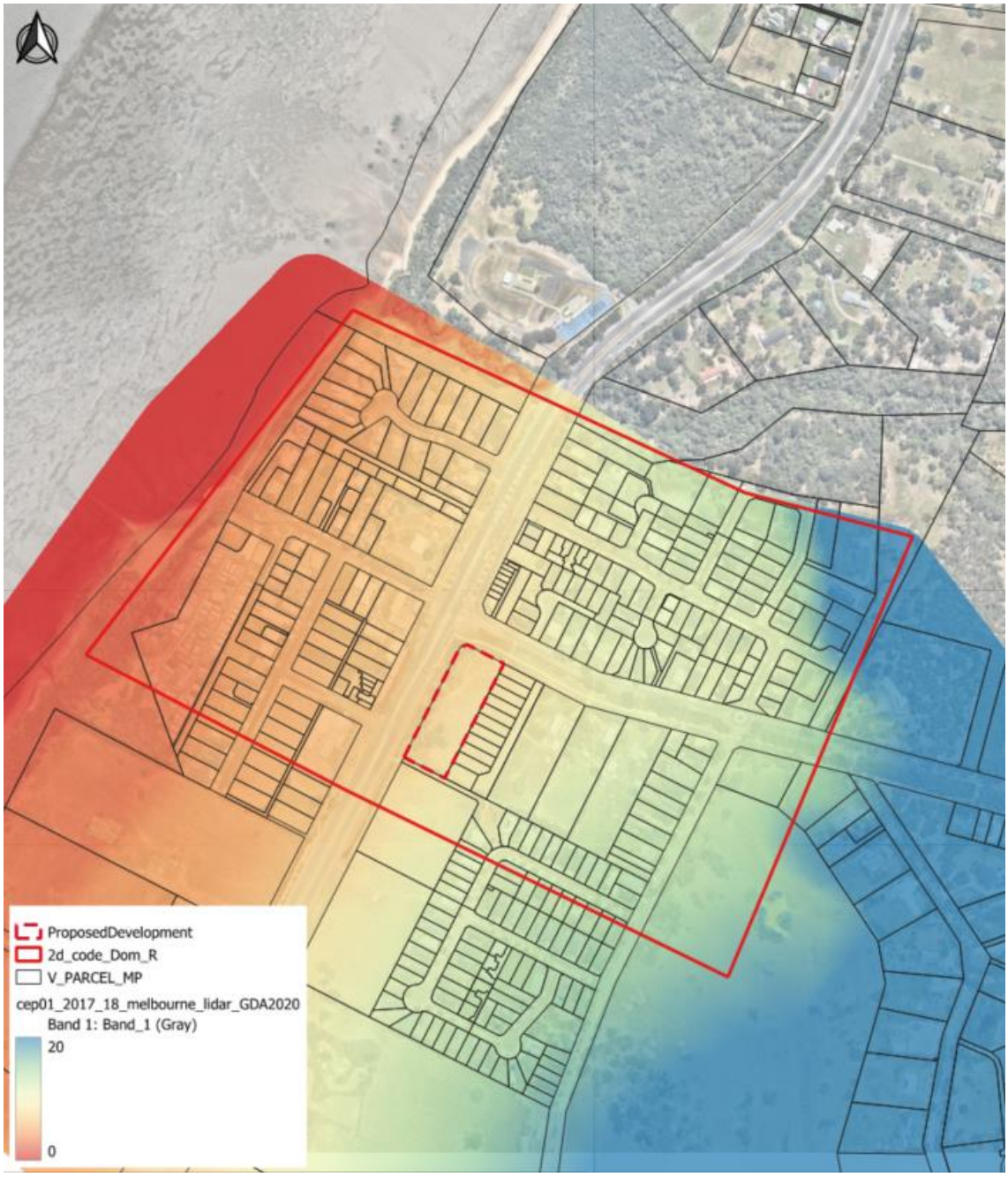


Figure 34 – Hydraulic model boundary extent and topography of the site

4.4 Blockage

4.4.1. Blockage was considered within the hydraulic model prepared by DPM in accordance with the Australian Rainfall & Runoff 2019 (AR&R19).

4.4.2. DPM acknowledge that the AR&R19 suggest the blockage analysis of two different scenarios (design blockage and severe blockage).

4.4.3. However, considering the purpose of this report, the type of structures considered within the hydraulic model (i.e. box culverts) and the likelihood of sediment transport within the subject area, DPM have considered a 50% blockage at the culvert crossing within the considered domain.

4.5 Drainage features

4.5.1. The drainage pipelines and pits have been included in the hydraulic model based on the information obtained from the F&L Survey.

4.5.2. It is noted that pipes and pits have missing information (i.e. invert levels, size of the pits etc.), therefore DPM have used the existing surface levels as the invert levels for the pipes and assumed the pit dimensions based on the size of the existing pipes.

4.5.3. The proposed internal drainage infrastructure of the development will be designed during the functional and detailed design, while the proposed drainage scheme pipes have been sized in accordance with section 3.0 of this report.

4.6 Boundary conditions

4.6.1. As discussed within section 3.9.3 and 3.10.6, under pre-developed conditions a 1% AEP peak flow of 2.71 m^3/s and 0.85 m^3/s were applied at the upstream side of the hydraulic model boundary, along, respectively, Grantville – Glen Alvie Road and upstream of Tatiara Drive.

4.6.2. Conversely, under post-developed conditions a 1% AEP peak flow of 1.69 m^3/s was applied along Grantville – Glen Alvie Road, noting that the peak flows originated from the remaining part of the catchment is conveyed to the north and ultimately to Colbert Creek (see section 3.2).

4.6.3. The pre-developed and post-developed models include the rainfall excess from the different sub-catchments (see Appendix C – Pre-developed Catchment Plan and Appendix D – Post-developed Catchment Plan) in order to determine the flows originated from the from the subject site and the adjacent external catchment.

4.6.4. The pre-developed and post-developed models include a boundary condition at the downstream end of the catchment which is based on the existing fall of the land (approximately 1 in 50).

4.7 Calibration of the model

4.7.1. As mentioned in the previous sections, no information was provided in relation to the existing hydraulic model completed by Engeny for the subject area.

4.7.2. DPM have completed the calibration of the hydraulic model based on the work completed by Engeny (May 2021).

4.7.3. The calibration was driven by the objective of replicating the results obtained by Engeny in relation to the maximum flood depths within the subject area, noting that both the hydrological and hydraulic models prepared by Engeny wer not available at the time of this report.

4.7.4. The hydraulic Manning's roughness has been created based on aerial imaginary and the results of the Feature and Level survey.

Land Use	Manning's value
Building	0.5
Carpark	0.02
Short grass	0.03
Pavement	0.02
Trees, little undergrowth	0.035
Driveway	0.02
Road	0.02

4.8 Pre-developed conditions

4.8.1. A copy of the results for the site under pre-developed conditions have been included in Figure 35 (maximum flood depths), Figure 36 (Maximum Velocities) and Figure 37 (Maximum Flood Hazard) and included in Appendix E – Hydraulic model results.

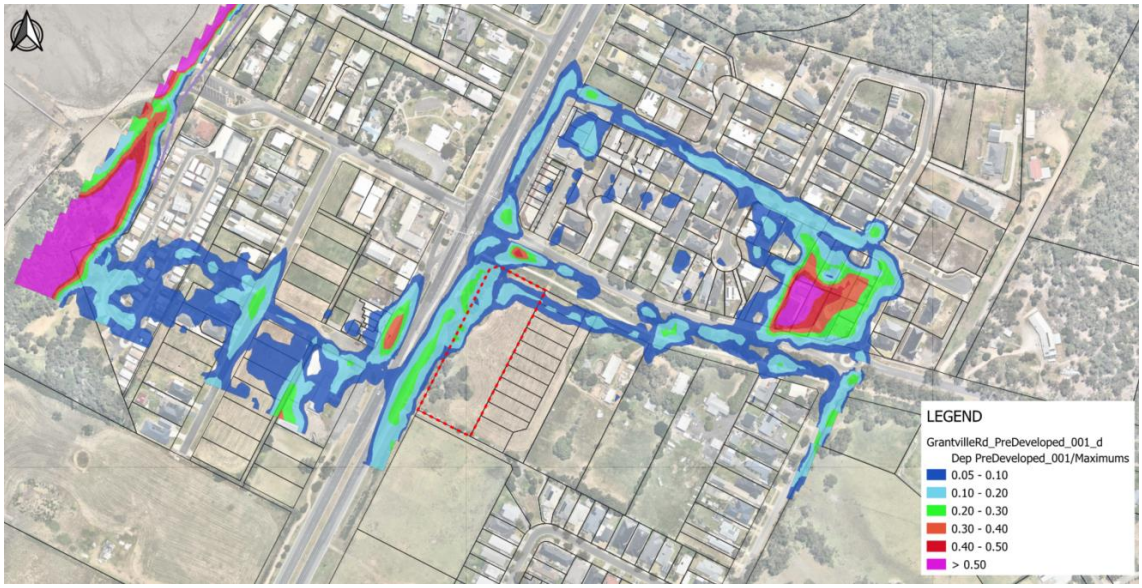


Figure 35 – Pre-developed 1% AEP maximum depths

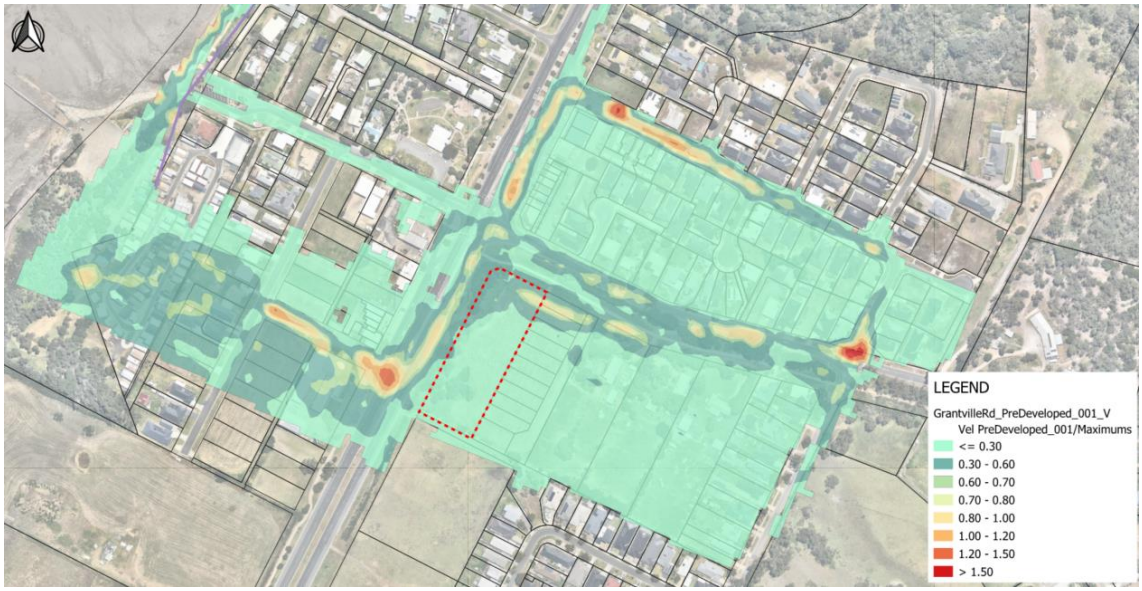


Figure 36 – Pre-developed 1% AEP maximum velocities



Figure 37 – Pre-developed 1% AEP maximum flood hazard

4.8.2. It is noted how the maximum flood depths along Bass Highway and Grantville-Glen Alvie Road are similar to the values shown in the 1% AEP layout flood depths by Engeny.

4.8.3. The northern part of the proposed development presents maximum flood depths ranging from 0.1 m to a maximum of 0.21 m, while the western part of the site has maximum flood depths between 0.05 m and 0.22 m.

4.8.4. Velocities within the site are generally below 0.2 m/s, with localised areas within the northern part of the site which presents velocities between 0.3 m/s and 0.8 m/s.

4.8.5. It is noticeable how the overall site doesn't present any potential flood hazard (considered as the product between the flood depth and velocity) with only a localised area along Bass Highway to the west of the proposed development where a value of 0.15-0.2 m^2/s is shown.

4.8.6. Further discussions are included within section 4.9.2

4.9 Post-developed conditions

4.9.1. A copy of the results for the site under post-developed conditions have been included in Figure 38, Figure 39 and Figure 40.

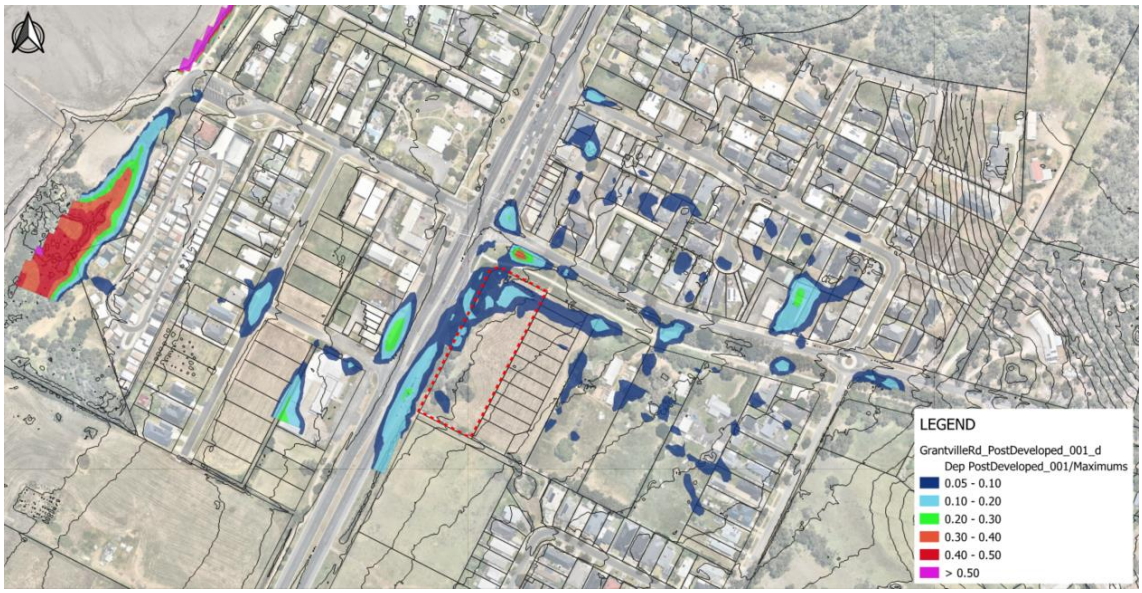


Figure 38 – Post-developed 1% AEP maximum depths



Figure 39 – Post-Developed 1% AEP maximum velocities

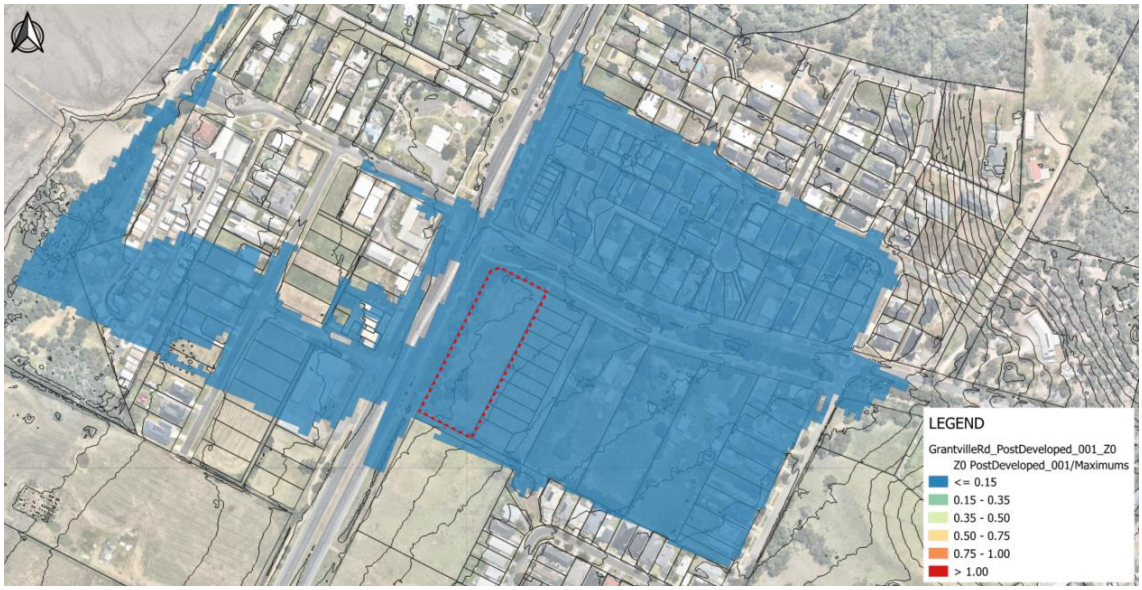


Figure 40 – Post-Developed 1% AEP maximum flood hazard

4.9.2. A significant improvement of the flooding conditions within the proposed development is noticeable, with a reduction of depths and velocities which, however, still lead to a localised area characterised by a flood depth ranging between 0.05 and 0.15 m.

4.9.3. It is noted that the peak flows from the upstream catchment are safely conveyed downstream via the proposed 1200 dia mm drainage scheme pipeline along Grantville – Glen Alvie Road.

4.9.4. The flooding occurring within the northern and north-west corner of the site is of minor magnitude and it will be completely captured by the proposed drainage scheme pipes at the northern side of the development once the site will be constructed.

4.9.5. Please refer to section 4.10 to further discussion regarding the FFL of the proposed carpark and building within the proposed development.

4.9.6. Notwithstanding the above, it is noted that the flood hazard within the development is negligible in accordance with the results provided within Figure 40 and the requirements included within the Guidelines for Development in Flood Affected Areas (DELWP, 2019) are addressed.

4.10 Flood impact assessment

4.10.1. The Guidelines for Development in Flood Affected Areas (DELWP, 2019) outlines four key objectives against which proposed developments are assessed. The objectives are as follows:

- Protect human life and health and provide safety from flood hazard;
- Minimise flood damage to property and associated infrastructure;

- Maintain free passage and temporary storage of floodwaters; and,
- Protect and enhance the environmental features of waterways and floodplains.

4.10.2. The aforementioned key objectives are discussed within the next section of this report.

Objective 1 –Safety

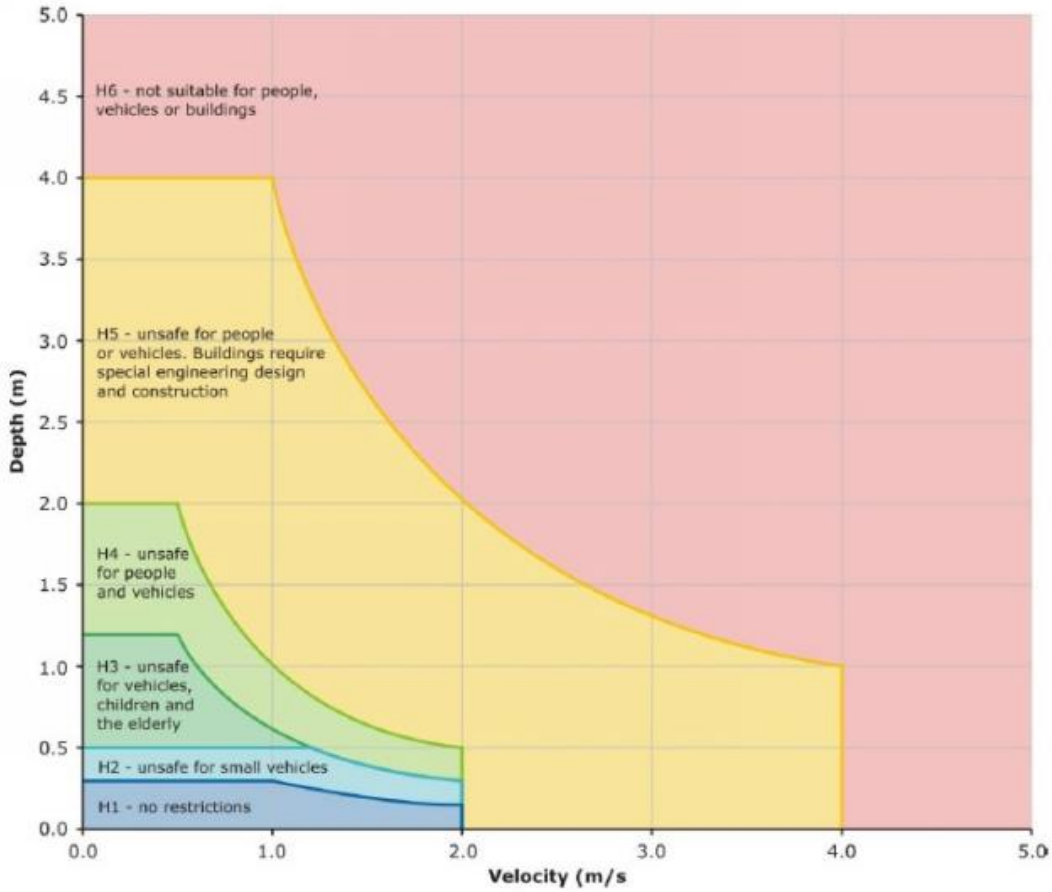
4.10.3. Development should not be allowed on properties where the depth and flow of floodwaters would be hazardous to people or vehicles entering and leaving the properties.

4.10.4. Figure 41 shows flood risk within the subject site and its vicinity for ultimate developed conditions based on the Flood hazard category as outlined by Australian Emergency Management Institute in 2014, noting that a small area to the north of the site falls under category 1 as shown in dark blue.



Figure 41 – Flood Hazard based on Australian Management Institute (2014)

4.10.5. Figure 41 shows how the access to the development is characterised by category H1 access ("No restrictions"), in accordance with the Flood Hazard category from the Australian Emergency Management Institute (2014) shown in Figure 42.



Hazard Classification	Description
H1	Relatively benign flow conditions. No vulnerability constraints.
H2	Unsafe for small vehicles.
H3	Unsafe for all vehicles, children and the elderly.
H4	Unsafe for all people and all vehicles.
H5	Unsafe for all people and all vehicles. Buildings require special engineering design and construction.
H6	Unconditionally dangerous. Not suitable for any type of development or evacuation access. All building types considered vulnerable to failure.

Figure 42 - Flood Hazard category (Australian Emergency Management Institute, 2014)

4.10.6. It is also noted that the flood impact assessment for the proposed development falls under the Guidelines for Development in Flood Affected Areas (DELWP, 2019) whereby the residential development needs to address the requirement of Table 2 – Safety Criteria for subdivision of land as outlined in Table 6.

Table 6 – Safety Criteria for subdivision of land (DELWP, 2019)

Type	Maximum depth (D), velocity (V) and product (VD)			Applicable to
	D max metres	V max metres/second	VD max metres2/sec	
Greenfield residential	0.3	2.0	0.3	Entrance to lots and accessway
Other residential	0.3	2.0	0.3	Lots (including entrance) and accessway
Commercial or industrial	0.5	2.0	0.4	Lots (including entrance) and accessway
Agricultural, if it involves a proposal to construct a new dwelling	0.5	2.0	0.4	Entrance to lots

4.10.7. Accordingly, DPM have prepared a Flood Hazard Map shown in Figure 43.



Figure 43 – Flood Hazard based on Melbourne Water FM&M Technical Specifications (2008) to quantify Risk in Roads

4.10.8. Figure 43 based on Melbourne Water FM&M Technical Specifications (2008) to quantify Risk in Roads. The logic used is as follows:

Table 7 – Melbourne Water FM&M Technical Specification

Depth * Velocity [D*V]	Depth D	Category
< 0.2	< 0.2	Category 1
< 0.4	< 0.4	Category 2
< 0.6	< 0.6	Category 3
< 0.84	< 0.84	Category 4
> 0.84	> 0.84	Category 5

4.10.9. Based on Figure 43 and Table 7, it is noted that the access to the development falls under category 1 or lower, with maximum velocities at the access of the lots of approximately 0.1-0.2 m/s, maximum flood depths of 0.05 m and maximum product D*V below the threshold of 0.3 m^2/s.

4.10.10. Therefore, in accordance with Figure 43, the proposed access to the development from Grantville – Glen Alvie Road and Bass Highway is not subject to hazardous flood conditions under a 1% AEP flood event.

4.10.11. The flood assessment has demonstrated that the proposed development will not increase flood risk across the subject land.

4.10.12. Additionally, in accordance with the results shown in Figure 44, the product of depth d and velocity V is within the threshold of 0.3 m^2/s of the DEECA (ex. DELWP) guidelines and it considered safe to access the properties.

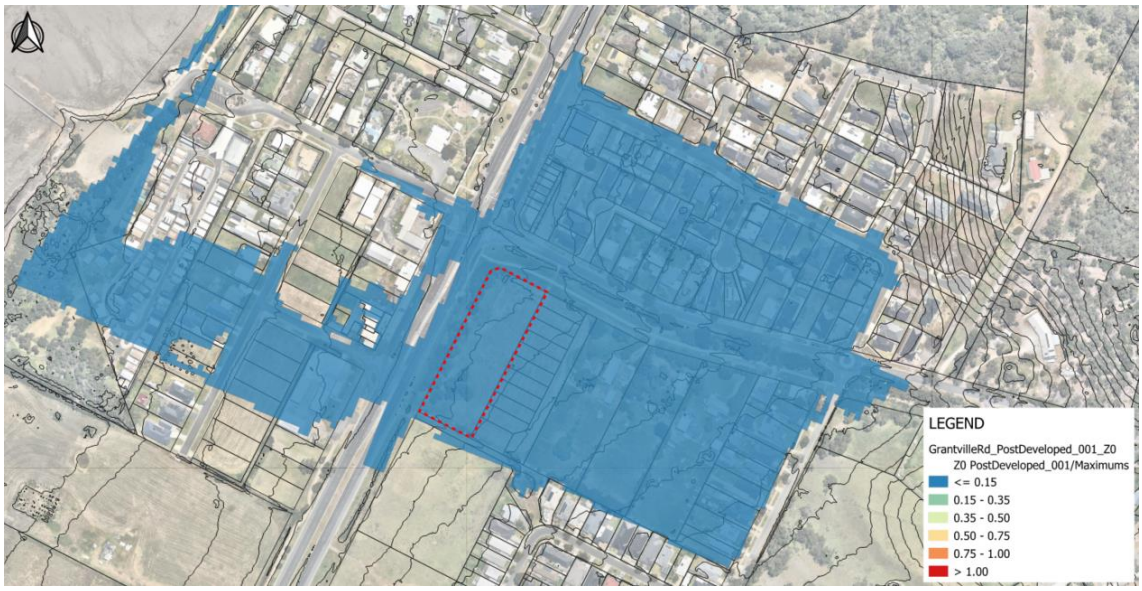


Figure 44 – Developed 1% AEP – product of depth d and velocity V

4.10.13. In accordance with Objective One of the Guidelines for Development in Flood Affected Area, DPM have summarised the results obtained from the hydraulic model against the guiding principles as per Table 8.

Table 8 – Objective One: Protect human life and health, and provide safety from flood hazard

Guiding Principle	Assessment Criteria	Achieved [Y/N]
Site and access safety must not be compromised	1.1. **Depth and flow**. Development should not be allowed on properties where the depth and flow of floodwaters would be hazardous to people or vehicles entering and leaving the properties.	Y
Development must be located on sites of lowest overall hazard.	1.2. **Siting**. Development and access should be located on land with the lowest overall hazard.	Y
Greenfield development sites must be designed to be safe from flood impacts.	1.3. **Greenfield development**. Greenfield development sites should either be flood free or contain building envelopes filled to the Nominal Flood Protection Level (NFPL - the 1% AEP flood level plus freeboard).	Y
Hazardous materials must not contaminate floodwater.	1.4. **Hazardous materials**. Developments and uses which involve the storage or disposal of hazardous materials must not be located on floodplains unless the materials are totally isolated from floodwaters.	Y
Vulnerable people must not be exposed to floods and facilities providing vital community or emergency services must be operational during floods.	1.5. **Vulnerability**. Buildings housing vulnerable people, community services facilities and emergency services should be sited outside the 1% AEP flood extent and, where possible, at levels above the height of the probable maximum flood.	Y

Objective 2 – Flood damage

4.10.14. This objective outlines the necessity to minimise flood damage to property and associated infrastructure.

4.10.15. Typically, it is required that any building floor level adjacent to a Melbourne Water waterway be 600mm above flood level; adjacent to a road with a Melbourne Water pipeline the freeboard is 300mm and adjacent to a roadway acting as a floodway, Council require 150mm freeboard.

4.10.16. Considering the proposed development, 300mm freeboard is considered appropriate.

4.10.17. It is noted that the drainage scheme pipes to the north of the site are proposed to be delivered as part of the development, but a detention storage is required for the site to attenuate the flows to pre-developed conditions until the ultimate drainage infrastructure further downstream is constructed.

4.10.18. Therefore, in order to protect the site until the delivery of the ultimate infrastructure, DPM have proposed to set up the Finished Floor Levels (FFL) of the buildings above the flood levels obtained from the hydraulic model.

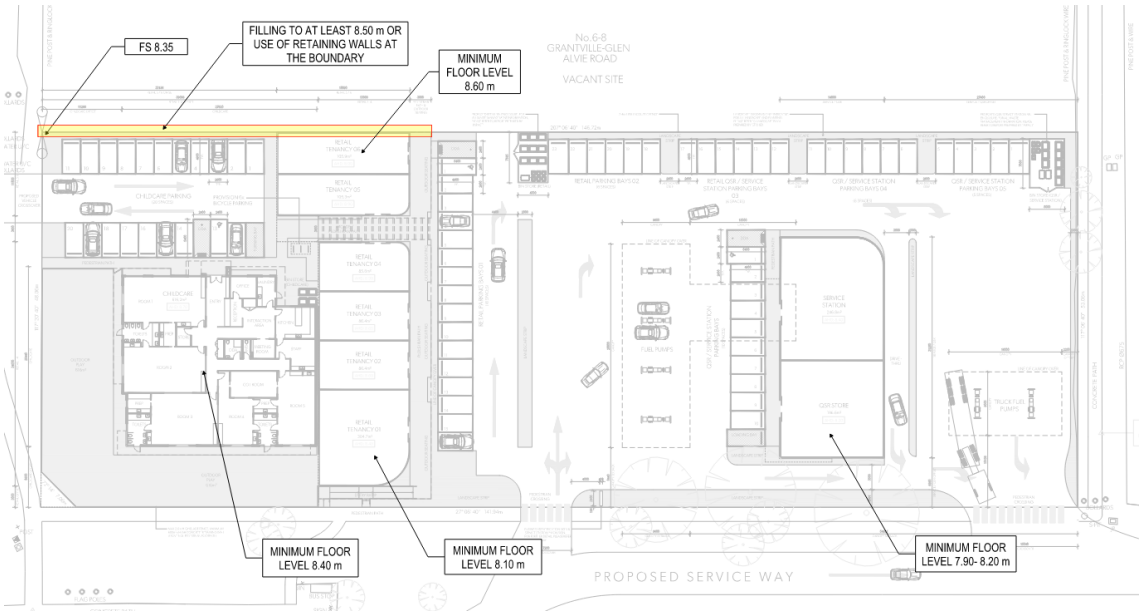


Figure 45 – Indicative minimum FFL for the carpark areas and building within the site

4.10.19. The FFL indicated in Figure 46 generally reflect the provision of 300 mm freeboard, with localised levels provided at each corner of the site. The levels of the outsides of the buildings don't have to meet the freeboard level and can be generally at least 50-150mm below the nominated floor levels.

4.10.20. DPM note that as existing levels along Bass Highway to the west of the property are below flood level, any level design from the road reserve to the accesses into the site will need to provide ramped grades to get above flood levels. Disabled access from the footpaths around the site will also need to meet the relevant Australian Standards.

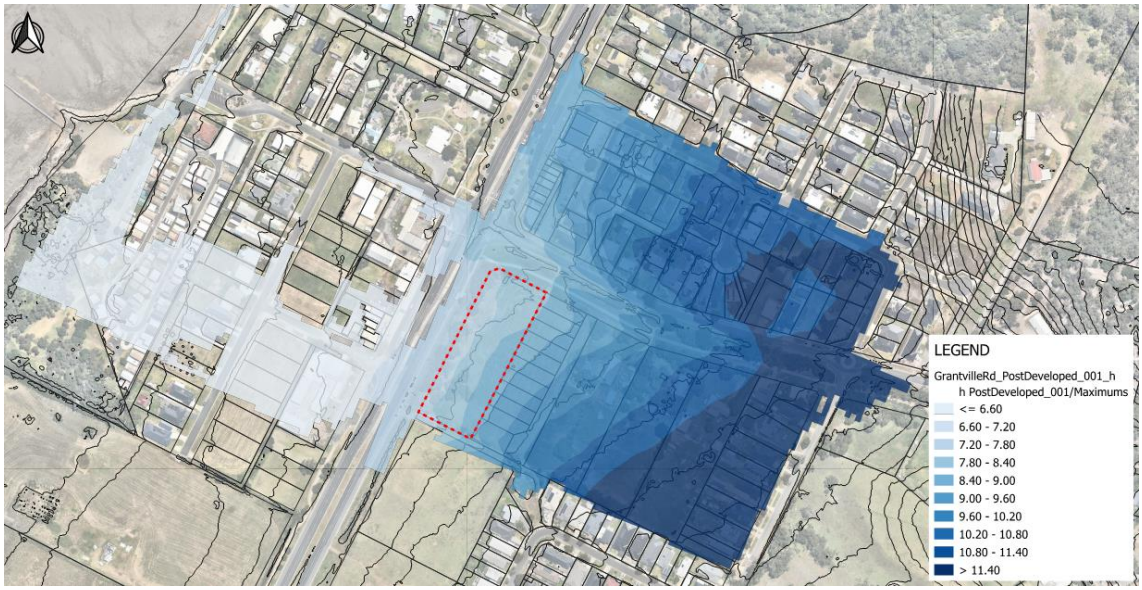


Figure 46 – Maximum flood level within the proposed development and adjacent areas

4.10.21. In accordance with Objective Two of the Guidelines for Development in Flood Affected Area, DPM have summarised the results obtained from the hydraulic model against the guiding principles as per Table 9.

Table 9 – Objective Two: Minimise flood damage to property and associated infrastructure

Guiding Principle	Assessment Criteria	Achieved [Y/N]
Buildings must not interfere with existing or proposed water, sewer or drainage services	2.1. **Water services**. Buildings and building envelopes should be located sufficiently away from a water, sewer or drainage asset to enable that asset to be serviced.	Y
Buildings must be designed to avoid significant financial impacts of flood damage.	2.2. **Floor levels**. The floor levels of buildings should be set in accordance with Tables 4 to 6 (Guidelines for Development in Flood Affected Areas, DELWP)	Y
The basements of any new buildings must not flood.	2.3. **Basements**. Basements should be designed to be protected from flooding.	Y
Those parts of buildings affected by flooding must be able to withstand the effects of inundation.	2.4. **Materials**. Any building or portion of a building below the 1% AEP flood level should be constructed from flood-resistant materials	Y
Services to a building must be capable of functioning during and after a flood.	2.5. **Building services**. Essential services to a building should be flood proofed or raised above the NFPL.	Y

Objective 3 – Offsite impacts

4.10.22. It is necessary to maintain free passage and temporary storage of floodwaters.

4.10.23. In accordance with Objective Three of the Guidelines for Development in Flood Affected Area, DPM have summarised the results obtained from the hydraulic model against the guiding principles as per Table 10.

Table 10 – Objective Three: Maintain free passage and temporary storage of floodwaters

Guiding Principle	Assessment Criteria	Achieved [Y/N]
The natural function of floodplains and overland flow paths to convey and store floodwater must not be compromised.	3.1. **Flow diversion**. Development (including earthworks) should not divert floodwaters to the detriment of any adjoining property	Y
	3.2. **Velocity impact**. Development (including earthworks) should not increase the flood velocity on any adjoining	Y

	property	
	3.3. **Flood level impact**. Development (including earthworks) should not increase flood levels on any adjoining properties.	Y
	3.4. **Flood storage**. Earthworks and buildings should not result in a detrimental loss of flood storage.	Y

Objective 4 – Waterway and floodplain protection

4.10.24. This objective outlines the requirement to protect and enhance the environmental features of waterways and floodplains.

4.10.25. In accordance with Objective Four of the Guidelines for Development in Flood Affected Area, DPM have summarised the results obtained from the hydraulic model against the guiding principles as per Table 11.

Table 11 – Objective Four: Protect and enhance the environmental features of waterways and floodplains

Guiding Principle	Assessment Criteria	Achieved [Y/N]
Development impacting on waterways and floodplains must consider their environmental qualities.	4.1. **Waterway and floodplain condition**. Development should maintain or improve waterway and floodplain conditions.	Y
	4.2. **Access to riparian corridors**. Development should allow access to maintain riparian corridors.	Y
	4.3. **Water quality**. Development should maintain or improve water quality	Y
	4.4. **Natural function**. Development should maintain (by avoidance or offset) the natural function of floodplains and waterways in storing and conveying floodwater.	Y
	4.5. **Amenity**. Development should retain or improve significant vistas or landscapes within the riparian corridor.	Y

4.11 Model Stability

4.12.1. Assessing the stability of the model is fundamental in order to understand the robustness of the hydraulic model and the ability to simulate flood events accurately.

4.12.2. The stability of the model in TUFLOW Classic is determined by the cumulative mass error of the model as well as the warnings output provided by the model during the simulation.

4.12.3. To provide further details in specific areas of interest and a more efficient computational time, DPM have carried out the hydraulic modelling with TUFLOW Heavy Parallelized Computing (HPC).

4.12.4. It is noted that TUFLOW HPC uses adaptive time-stepping to maintain stability and there are three primary processes that determine the maximum timestep that an explicit solution to the Shallow Water Equations (SWE) can use: the Courant Number N_U, the Celerity Number N_C and the Diffusivity Number N_D.

4.12.5. Ensuring that the Courant number N_U is below the limit of 1.0, guarantees that the cell can't be depleted to zero volume in a single timestep. This is achieved in the pre-developed and post-developed conditions for the 1% AEP models.

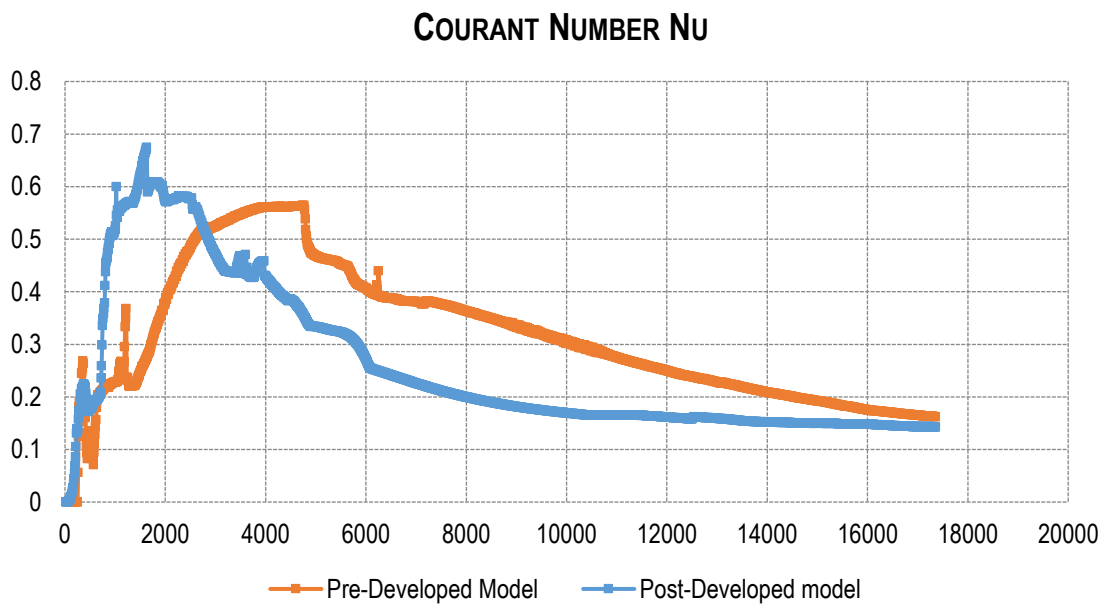


Figure 47 – Courant Number Nu for 1% AEP event for pre & post-developed models

4.12.6. The Shallow Wave Celerity Number N_C is derived from the fluid flow equations to represent long waves and it has a control number limit of 1.0. This condition is achieved for the two hydraulic models.

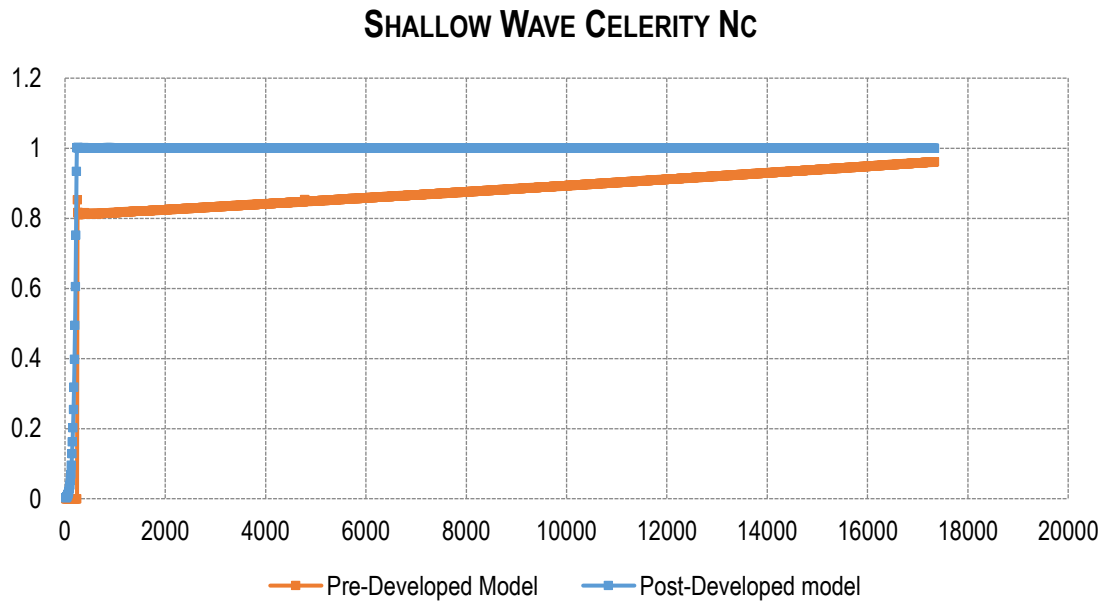


Figure 48 – Shallow Wave Celerity Number Nc for 1% AEP for pre & post-developed models

4.12.7. The diffusion number relates to the sub-grid scale eddy viscosity term which causes diffusion of momentum. To maintain stability, the Diffusion number must remain below the limit of 0.3. This condition is achieved for the pre-developed and post-developed models for the 1% AEP rainfall event.

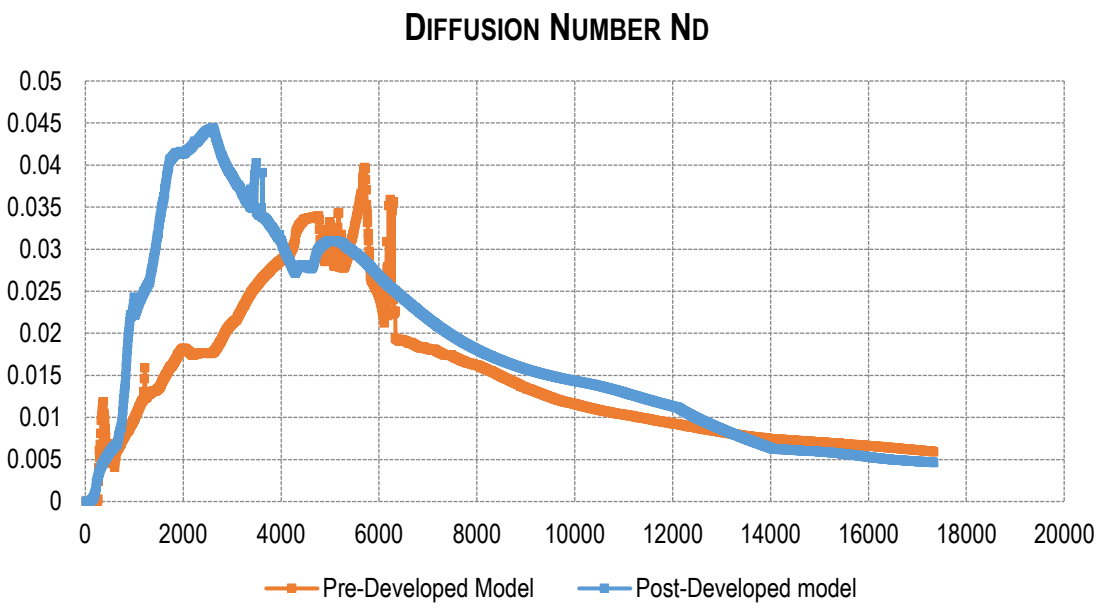


Figure 49 – Diffusion Number Nc for 1% AEP for pre & post-developed models

5.0 Integrated Water Management

5.1 Introduction

5.1.1. DPM have investigated the possibility to deliver innovative solutions within the proposed development to contribute and align with the objectives of the Integrated Water Management Plan – 2020 prepared by Bass Coast Shire Council.

5.1.2. For a development of this size, identifying opportunities that target for fit-for-purpose water usage, cooler greener micro climates and improved water quality for cleaner and healthy waterways would be well suited. The Developer is open to exploring opportunities that help achieve this with Council.

5.1.3. Further discussion with Council will need to be entertained to understand the feasibility of the integrated water management solutions proposed and the advantageous impact on the ultimate point of discharge further downstream.

5.2 WSUD Feasibility assessment

5.2.1. DPM have undertaken a review of the available integrated water management options typically deemed acceptable and which could be considered for the proposed development

5.2.2. A summary of DPM's findings is included in Table 12, with justifications provided where techniques are deemed feasible.

Table 12 - WSUD Feasibility Assessment

IWM TECHNIQUE	CAN THEY BE FEASIBLY INCORPORATED INTO THE SITE?	REASON
Green roofs	X	Not suitable for industrial land use, more suited to lower order industrial uses (offices, commercial, etc)
Basins, wetlands and ponds	X	The highly impervious nature of the site, and significant space limitations mean that this cannot be readily incorporated into the site
Tree Pits	✓	Swales may be used to convey and/or attenuate surface water prior to discharge offsite.
Infiltration techniques	X	It is not thought that infiltration is viable due to the underlying ground conditions (significant rock at shallow depths)
Permeable surfaces and filter drains	X/✓	Permeable surfacing could be proposed in communal and parking areas, however, due to the expected pollution loads generated by proposed service stations this has been deemed not suitable
Rainwater harvesting/Stormwater reuse	✓	Rainwater tanks may be incorporated within the development to provide a small element of storage and harvesting.

Tanked systems	✓	Geo-Cellular or similar storage tank systems could be used to attenuate water prior to discharge offsite
Proprietary treatment devices	✓	Multiple SPEL units have been included in the proposed design, including the following: – SPEL Ecoceptor (GPT) - SPEL Hydrosystem (tertiary treatment) – SPEL Puraceptor (hydrocarbon management)

5.2.3. DPM believe that the implementation of passive irrigation measures such as Tree Pits or retrofitted simple filter drains are a low cost but effective means of providing an initial water quality treatment option to supplement the proprietary products, refer to Figure 50, Figure 51 and Figure 52.

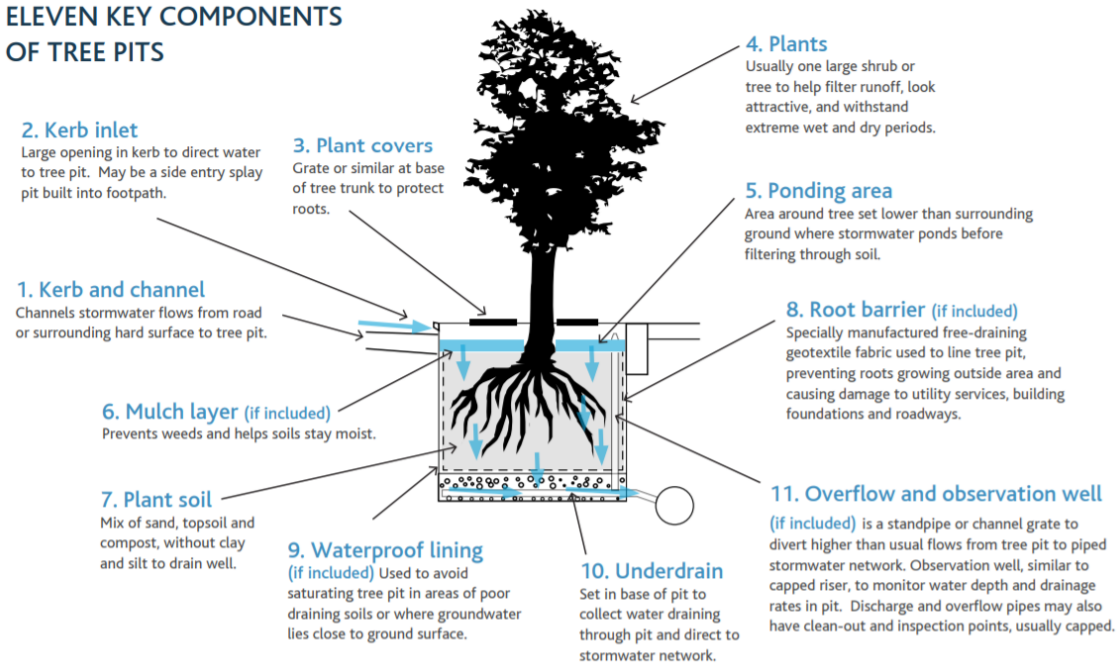


Figure 50 - Key components of tree pits (Tree pits – Operations & Maintenance Guide, Auckland Council)

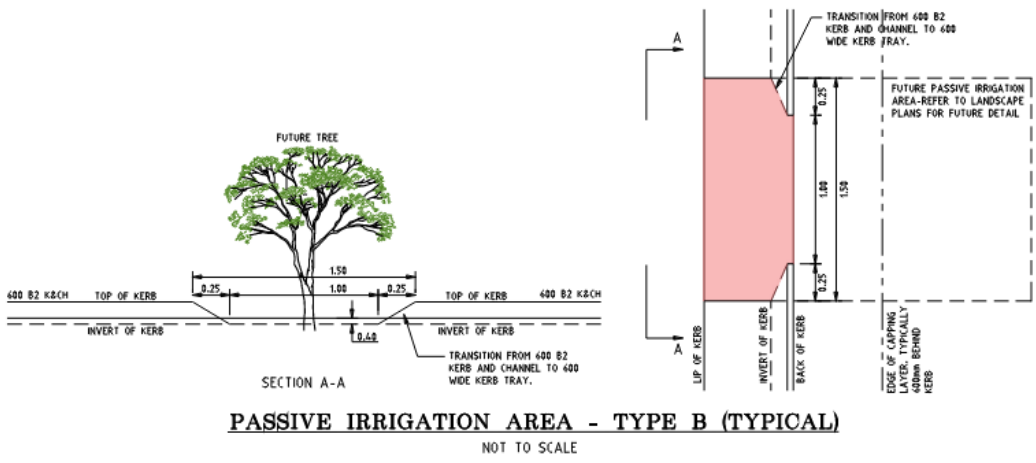


Figure 51 - Example of a tree pit detail

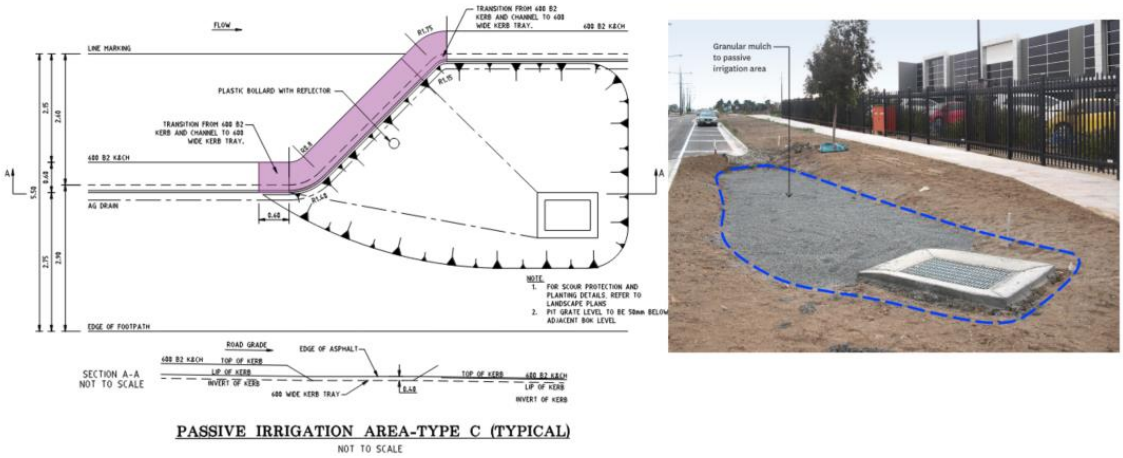


Figure 52 - Example of passive irrigation planted channel

5.3 WSUD Maintenance

5.3.3. To ensure that the proposed surface water drainage strategy continues to operate to design performance standards, regular maintenance will need to be implemented.

5.3.4. As the system might comprise of tree pits, a detention storage, rainwater tanks and proprietary devices, specific maintenance regimes will need to be defined and implemented to the respective components of the system.

5.3.5. Consistent with published and acceptance guidance (i.e. Melbourne Water's WSUD maintenance guidelines) on the types of operational and maintenance requirements which are deemed appropriate to ensure the efficient use of the different solutions, DPM have completed a maintenance guideline to maintain the tree pits (refer to Table 13 for further information).

Table 13 - Proposed maintenance regime for tree pits

MAINTENANCE SCHEDULE	REQUIRED ACTION	TYPICAL FREQUENCY
Regular Maintenance	Ensure adequate mulch cover is provided to prevent scouring	Every three months or immediately after a storm event
	Remove leaf litter and gross pollutants	Every three months or immediately after a storm event
	Monitor ponding depths to ensure soil media is providing adequate infiltration rates	Every three months or immediately after a storm event
	If necessary, remove excess sediment or replace the top later of soil media and re-mulch	Every three months or immediately after a storm event
	Ensure plant life is healthy	Every three months or immediately after a storm

		event
	Remove all weeds	Every three months or immediately after a storm event
	Water as necessary	Seasonal activity
Occasional Maintenance	Inspect all structural elements to ensure structural integrity	Annually
	Flush underdrain pipe systems	Annually
	Ensure all inlets and outlets of the system are free from debris	Annually
Remedial Actions	Repair erosion or other damage by reseeding or re-turfing	As required
	Realignment of rip-rap	As required
	Repair/rehabilitation of inlets, outlets and overflows	As required
	Relevel uneven surfaces and reinstate design levels	As required

5.4 Stormwater treatment

5.4.1. DPM have completed a MUSIC model for the proposed development contributing to the flows at Grantville-Glen Alvie Road.

5.4.2. DPM have proposed a stormwater quality treatment train consistent with the expectations of Bass Coast Shire Council, which looks to utilise a combination of WSUD elements, coupled with suitable and reputable proprietary treatment train options. Refer to Figure 53 for further information.



Figure 53 – DPM's proposed stormwater quality treatment train

5.4.3. The provision of tree pits and a 2.5 kL rainwater tank servicing the Childcare Centre within the development has the potential of reducing demand on potable water and provide an additional opportunity to treat stormwater.

5.4.4. In relation to the rainwater tank, it is assumed a daily internal use of 1.64 KL/day (i.e. 20 person/day, 20 L/person/day x 4 flush - use for toilet flushing + 40 L/s for irrigation) for each rainwater tank.

5.4.5. Figure 54 Shows an indicative allocation of the different areas within the development treated by the combination of WSUD solution and proprietary devices.

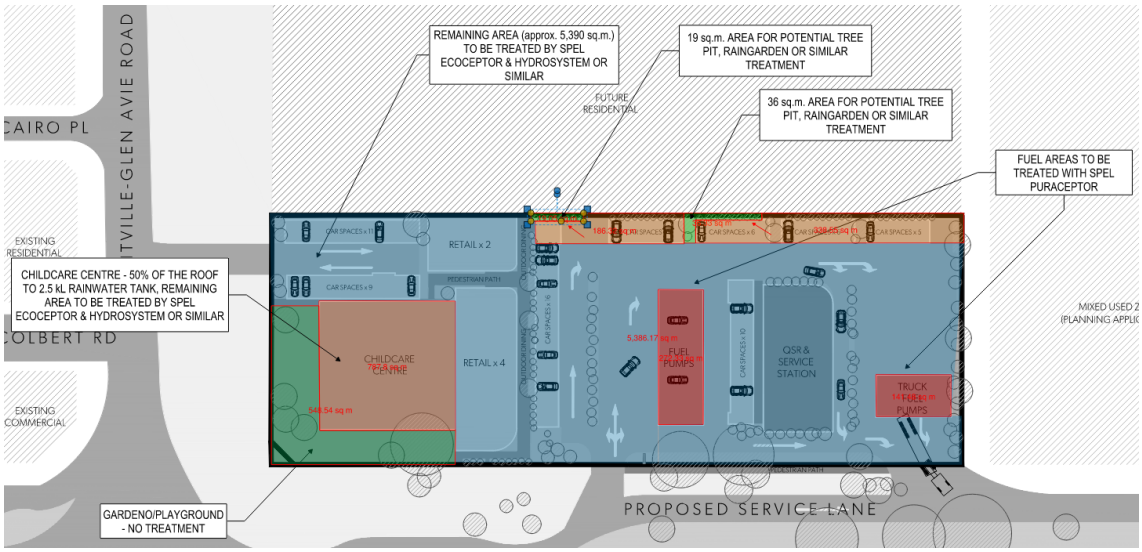


Figure 54 – Indicative area allocation for stormwater treatment

5.4.1. The MUSIC model used to determine the treatment train effectiveness of the proposed development has been shown in Figure 55 and a copy of the model has been provided as part of the submission of this report.

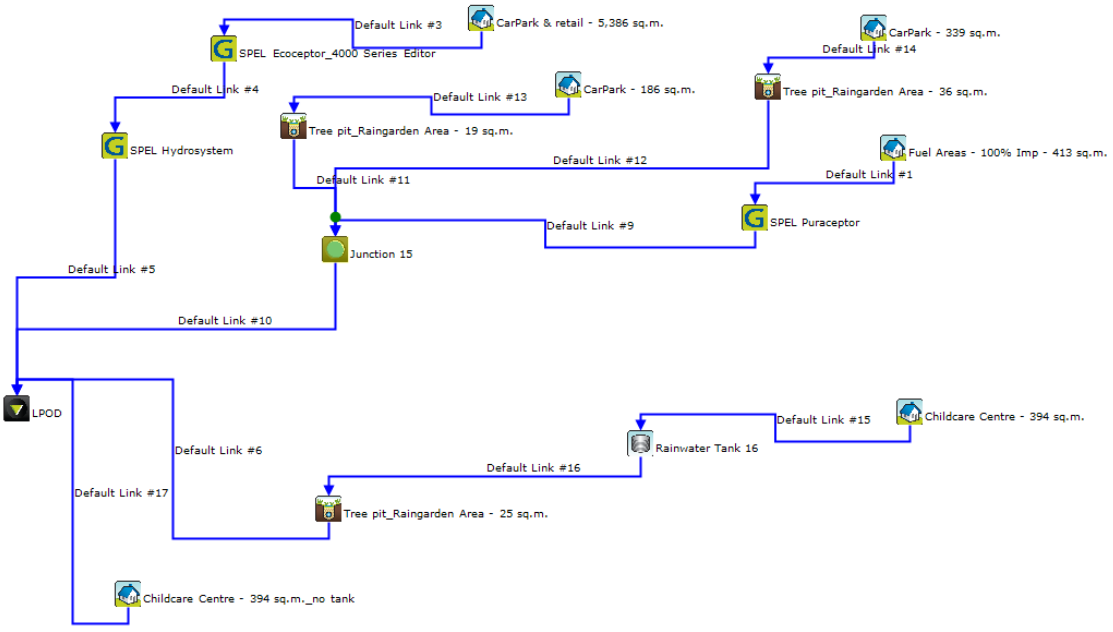


Figure 55 – MUSIC model for the proposed development

5.4.2. The provision of the WSUD solutions and the proprietary devices achieves the following results:

Table 14 – Summary of the MUSIC results

	Proposed Development	BPEMG
TSS reduction [%]	87.59%	80%
TP reduction [%]	76.38%	45%
TN reduction [%]	62.36%	45%

5.4.3. Table 14 highlights that the proposed WSUD solutions and proprietary products are able to offer satisfying treatment train effectiveness with the reductions of Total Suspended Solid, Total Phosphorous and Total Nitrogen as required by the Victoria Planning Provision Clause 53.18.

5.4.4. It is noted that the location and supplier of the proposed WSUD solutions (i.e. rainwater tank and raingardens) and proprietary products are indicative only and they will need to be further detailed and confirm at functional and detailed design.

6.0 Overland Flow

6.1.1. The overland flow paths of the proposed development have been analysed based on the existing contours levels and assuming a main overland flow path directed from the main accesses to the final outfall.

6.1.2. Figure 56 shows the main overland flow paths within the proposed development.

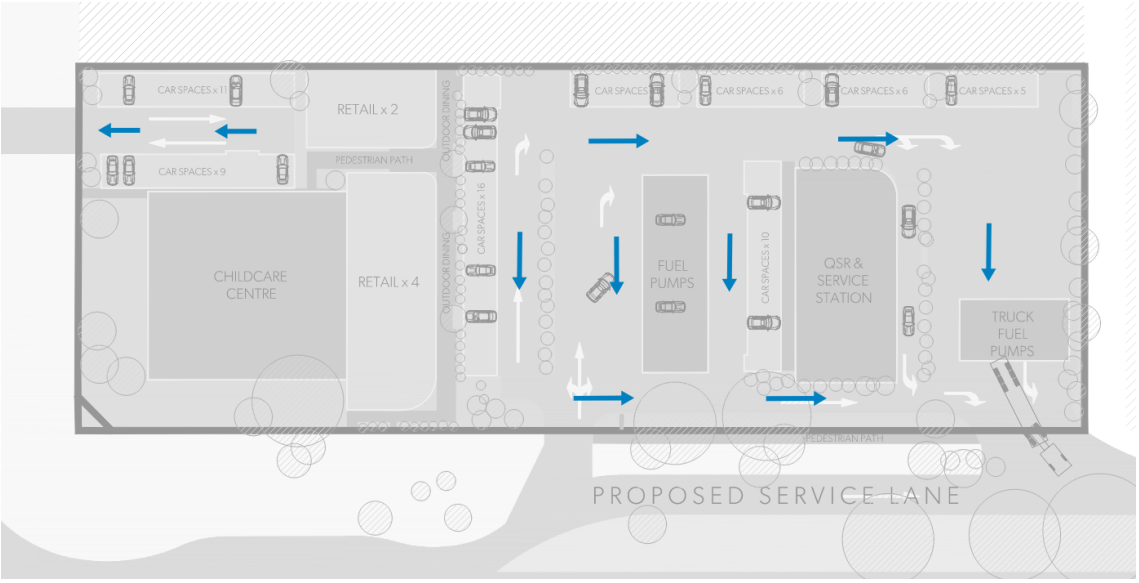


Figure 56 – Overland Flow path of the proposed development

6.1.3. The overland flow originated from the proposed development is conveyed to the detention storage for the attenuation of the peak flows to pre-developed conditions.

6.1.4. The final outfall of the proposed development is located to the north of the site, with the provision of the construction of the drainage scheme pipeline in accordance with the MW Grantville Township Strategy DSS.

6.1.5. Considering the magnitude of the peak flows and the size of the proposed development no issues are expected for the safe conveyance of the overland flows within the site.

6.1.6. This has been confirmed by the hydraulic results included within section 4.0 of this report, confirming that the requirements contained within the DEECA (ex. DELWP)'s Guidelines for Development in Flood Affected Areas are addressed.

7.0 Conclusion

7.1.1. DPM Consulting Group have completed a Stormwater Management Strategy for the proposed development at 1517-1529 Bass Highway, Grantville and have confirmed via assessment of the site's topography, flood modelling and subdivisional layout that the proposed development can achieve the key objectives required by the Bass Coast Shire Council and the Melbourne Water.

7.1.2. The report has identified the Legal al Point of Discharge to be the existing open drain along Grantville – Glen Alvie Road on the northern side of the proposed development.

7.1.3. The attenuation of the post-developed flows to pre-developed conditions will be undertaken with the provision of a detention storage with an approximate volume of 270 m^3, located to the north-east corner of the site or at the south-west corner (or both locations), with details to be provided during the functional and detail design of the development.

7.1.4. Hydraulic modelling of the pre-developed and post-developed conditions have been undertaken confirming that the hydraulic conditions of the site are not negatively impacted by the proposed development.

7.1.5. Stormwater Quality modelling using MUSIC has demonstrated that the combination between the proposed WSUD solutions and proprietary devices meet the BPEMG of Victoria Planning Provision Clause 53.18.

7.1.6. DPM have proposed the use of proprietary products within the site, noting that equivalent systems can be used as long as treatment train effectiveness are adequately addressed.

7.1.7. It has been confirmed via hydraulic modelling that the requirements within the DEECA (ex.DELWP)'s Guidelines for Development in Flood Affected Areas have been addressed.

7.1.8. Further hydraulic modelling of the site can be provided upon design of the development and prior to Statement Of Compliance is achieved in order to confirm the findings of this report.

7.1.9. Following the comments received on the 13.11.2024 and to facilitate Council's review of the amended document, DPM have provided a response to the outstanding RFIs raised as outlined within Table 15:

Table 15 – Response to Counci's RFIs received on the 13.11.2024

ID	Council's RFI	Response	Section in the report
1a	Amend the Stormwater Management Plan to address the following: a) Demonstrate that redirecting some of the catchment can be achieved and the attenuation devices put in place are sufficient to retard flows to predevelopment flows. Computational content is to be	This has been included in the amended report submitted in October: pre-developed catchment plan (included in Appendix C) and hydrological modelling were amended accordingly and additional sections in the report have been included	Section 3.6

	provided to substantiate the claims. NOTES: The submitted Stormwater Strategy (dated 18 October 2024) fails to identify that the entire site doesn't drain to the corner of Bass Highway and Grantville-Glen Elvie Road. The report maintains that the entire site drains towards the nominated Legal Point of Discharge (LPOD), which is not the case. Only a third of the site drains towards this corner. The rest of the site sheet flows into the overland swale. An application fee of $0.00.		
1b-i	Amended calculations: b) i. Capacity calculations for the existing culvert across the Bass Highway proposed as the LPOD for the site. Include consideration of existing flows coming down Grantville Glen-Alvie Road from upstream.	Capacity of the existing culvert crossing has been obtained from the previous SWMS prepared by KLM, with capacity to be 2.69 m3/s. DPM have carried out a capacity check using the Headwater depth for concrete box culverts with inlet control, in accordance with the Guide for Road Design Part 5B: Drainage - Open Channels, Culverts and Floodway Crossings and confirming a maximum flow capacity of 3.0 m^3/s.	Section 2.4
1b-ii	c) Re-Calculation of the permissible site discharge (PSD) based on the existing predeveloped discharge into the proposed culvert across Bass Highway & the available capacity of the culvert. NOTES: There is no evidence provided to suggest there is any capacity within the underground culverts beneath Bass Highway.	In accordance with the MW Grantville Township DSS, the flows from Grantville Glen-Alvie Road and upstream catchments will be conveyed via 1% AEP drainage pipe across the intersection between Bass Highway and Grantville Glen-Alvie Road. However, for the purpose of this report, it was conservatively assumed that those flows are directed to the 1500x750 box culvert. The maximum flow at the culvert is 2.84 m^3/s, which is lower than the estimated capacity of the culvert of 3.0 m^3/s.	Section 3.11
1c	Reference to the Colbert Creek drainage scheme and divulged in terms of what it involves - this should be included in the overarching strategy that the SWMS is striving for. NOTES: The current SWMS does not mention anything about Melbourne Water assets on the frontage of Grantville-Glen Alvie Road.	We have made reference to the Grantville Township Strategy (refer to section 3.2 of the report) and prepare the SWMS in accordance with the Colbert DSS. This is confirmed throughout the report with preliminary attenuation requirements determined for the proposed wetland/retarding basin WL3/RB1. A copy of the DSS has been included in Appendix as well.	Section 3.2
1d	Submit a cut and fill plan. NOTES: A cut and fill plan is required in	Cut and Fill plan included in appendix B as part of the development layout plan and	Appendix B

	order to provide an understanding of how the overland flow path functions can be gained.	town planning set. As discussed, we are proposing to condition this item and provide further information as required as part of the civil design	

All further enquiries can be made directly to:-



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22 Business Park Drive, Notting Hill Victoria 3168 Australia

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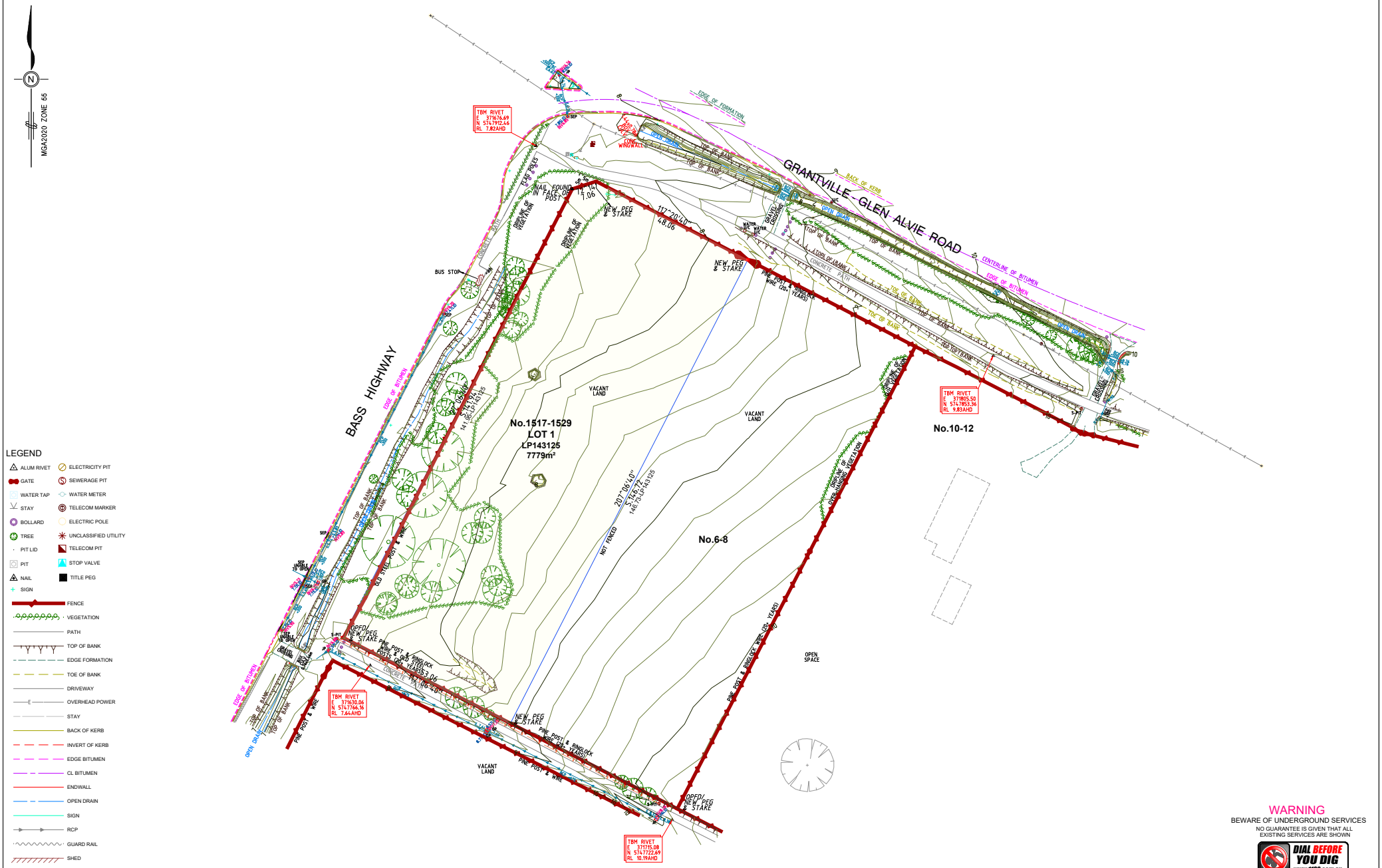
Babister, M., Trim, A., Testoni, I. & Retallick, M. 2016. The Australian Rainfall & Runoff Datahub, 37th Hydrology and Water Resources Symposium Queenstown NZ

Bass Coast Integrated Water Management Plan 2020 – Strategy Document, May 2020

The State of Victoria Department of Environment, Land, Water and Planning 2017 Integrated Water Management Framework for Victoria

Appendix A - Existing Site Survey



WARNING
BEWARE OF UNDERGROUND SERVICES
NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN
DIAL BEFORE YOU DIG www.1100.com.au

71-73 McBride Avenue Wonthaggi Vic 3995
p: (03)5672 5117 e: dave@rasosurvey.com.au
52 Main Street Foster Vic 3960
p: (03)5682 2661 e: foster@rasosurvey.com.au

DATE	REV.No.	COMMENTS
9/11/2020	B	Culvert Details
6/11/2020	A	Provisional - client review

SURVEYOR	CL/JO/BS
UAV OPERATOR	----
DRAWN & CHECKED	CL / D.F.R.
DATE OF SURVEY	2.11.2020
LEVEL DATUM	A.H.D
CONTOUR INTERVAL	0.20

Important Note:
1. All title boundaries shown herein are the result of a title re-establishment survey conducted by this office. Refer to RE Plan for results of Survey.
2. Level datum is AHD from Corinella PM173 RL14.855 and verified to known AHD marks as surveyed by this office which are tied to Corinella PM51

COUNTY OF MORNINGTON
PARISH OF CORINELLA
CROWN ALLOTMENTS 95 & 179 (PARTS)
LAST PLAN REF: LOTS 1 & 2 ON LP143125
TITLE REF: L1/ VOLUME 09527 FOLIO 967

PROJECT :
PLAN OF FEATURES & LEVELS SURVEY
PROJECT ADDRESS:
1517-1529 BASS HIGHWAY GRANTVILLE 3984

CLIENT:
1517 BASS HIGHWAY Pty. Ltd

SCALE: 1:500 (0 5 10 15 20 25 LENGTHS ARE IN METRES)
RCS-JOB REFERENCE: W1915
DRAWING No. W1915-F&L.01.dwg
SHEET 1 OF 1
A1

Appendix B – Development Layout Plan & Town Planning Set

LEGEND

- CHILDCARE CENTRE
- RETAIL
- QUICK SERVICE RETAIL (QSR) & SERVICE STATION
- PARKING SPACES
- PROPOSED PEDESTRIAN PATHS AND SEATING
- PROPOSED LANDSCAPED AREAS
- EXISTING LANDSCAPE AREAS
- PROPOSED BUSINESS IDENTIFICATION & PYLON SIGN
- TREE PLANTING / LANDSCAPE OPPORTUNITIES
- PROPOSED VEHICLE MOVEMENT
- PROPOSED BICYCLE PARKING
- EXISTING COMMERCIAL SITES
- EXISTING RESIDENTIAL SITES
- EXISTING MIXED USE SITE / PLANNING APPLICATION
- INDICATIVE SITE DRAINAGE
- PEDESTRIAN PATH

BUSHFIRE HAZARD NOTES

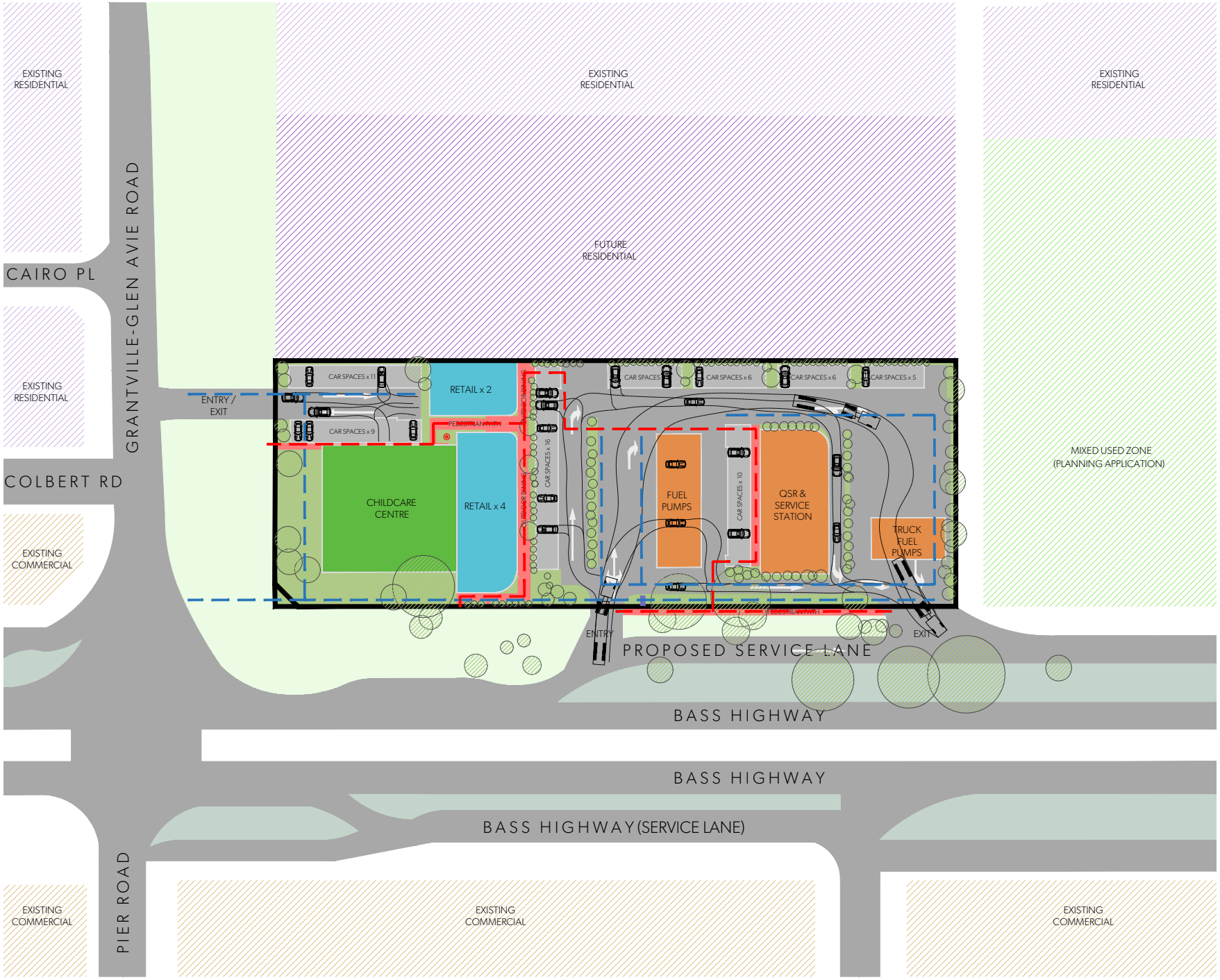
- TO ENSURE THE BUSHFIRE RISK TO LIFE AND PROPERTY ON THE FUTURE RESIDENTIAL AREA IS REDUCED TO AN ACCEPTABLE LEVEL, ANY FUTURE PLANNING PERMIT APPLICATION MUST INCLUDE A BUSHFIRE MANAGEMENT PLAN. THE BUSHFIRE MANAGEMENT PLAN MUST BE PREPARED TO THE SATISFACTION OF THE RESPONSIBLE AUTHORITY AND ENDORSED TO FORM PART OF ANY APPROVED PLANNING PERMIT.
- A BUSHFIRE HAZARD ASSESSMENT WILL BE REQUIRED AS PART OF ANY SUBSEQUENT PLANNING PERMIT.

TRAFFIC NOTE

- REFER TO REPORT 'IMP2302059TTA01F01' PREPARED BY 'IMPACT' FOR ALL TRAFFIC RELATED INFORMATION / DETAILS.

WASTE MANAGEMENT NOTE

- REFER TO REPORT 'IMP2302059WMP01D01' PREPARED BY 'IMPACT' FOR ALL WASTE MANAGEMENT RELATED INFORMATION / DETAILS.



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Rev	Description	Date
A	Development Plan	26.07.2023

N

Project Number: 2223
Drawing Title: Proposed Development Plan
Project Address: 1517 - 1529 Bass Highway, Grantville

TP 01
Scale: 1:400
Rev: A

1517 - 1529 BASS HIGHWAY, GRANTVILLE

PROPOSED DEVELOPMENT (RETAIL / CONVENIENCE RESTAURANT / SERVICE STATION / CHILDCARE)

DRAWING NO.	DRAWING TITLE
TP00	COVER SHEET
TP01	EXISTING SITE PLAN
TP02	PROPOSED SITE PLAN
TP02.1	FOOTPATH & FENCING PLAN
TP02.2	PROPOSED CUT & FILL PLAN
TP03	GROUND FLOOR PLAN
TP04	FIRST FLOOR PLAN
TP05	SIGNAGE & ROOF PLAN
TP06	ELEVATIONS (NORTH & EAST)
TP07	ELEVATIONS (SOUTH & WEST)
TP08	ARTIST IMPRESSION - OVERALL RENDER LOCATIONS
TP09	ARTISTS IMPRESSION - RENDERS 1-4
TP10	ARTISTS IMPRESSION - RENDERS 5-8
TP11	ARTISTS IMPRESSION - RENDERS 9-12
TP12	ARTISTS IMPRESSION - RENDERS 13-16
TP13	ARTISTS IMPRESSION - RENDERS 17-20

DEVELOPMENT SUMMARY	
TOTAL SITE AREA (m^2):	7779m^2
TOTAL GROSS FLOOR AREA (m^2):	1196.4m^2
PERMEABLE AREA (m^2):	1274.5m^2
SITE COVERAGE (m^2):	2605m^2
TOTAL PARKING BAYS:	69



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A	Site Layout Plan - Preliminary ISS	03.05.2023
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F	Service Lane and Referral Amendments	07.02.2024
G	RFI Response	04.10.2024

Project Number: 2223
Drawing Title:
Cover Page
Project Address:
1517 - 1529 Bass Highway, Grantville

TP 00
Rev: G



LEGEND

- EXISTING SITE TREES TO REMAIN
- EXISTING SITE TREES TO BE REMOVED
- EXISTING SITE VEGETATION TO BE REMOVED
- EXISTING SITE VEGETATION TO BE RETAINED
- EXISTING NEIGHBOURING BUILDING
- SUBJECT SITE

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G	RFI Response	04.10.2024

N

Project Number: 2223
Drawing Title:
Existing Conditions Plan
Project Address:
1517 - 1529 Bass Highway, Grantville

TP 01
Scale: 1:500
Rev: G



LEGEND

- EXISTING SITE TREES TO REMAIN
- EXISTING SITE VEGETATION TO BE REMOVED
- EXISTING NEIGHBOURING BUILDING
- SUBJECT SITE
- CHILDCARE CENTRE
- RETAIL x 6
- SERVICE STATION / CONVENIENCE RESTAURANT
- ON-SITE PARKING BAYS

DEVELOPMENT SUMMARY / AREA SCHEDULE

SUBJECT SITE:	NO. 1517-1529 - LOT 1 LP1431
TOTAL SITE AREA (m²):	7779m²
TOTAL GROSS FLOOR AREA (m²):	1196.4m²
PERMEABLE AREA (m²):	1274.5m²
SITE COVERAGE (m²):	2605m²
TOTAL PARKING BAYS:	69

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G	RFI Response	04.10.2024

N

Project Number: 2223
Drawing Title:
Proposed Site Plan
Project Address:
1517 - 1529 Bass Highway, Grantville

TP 02
Scale: 1:500
Rev: G



LEGEND - PROPOSED FENCING

- HEIGHT AS INDICATED ACOUSTIC FENCE 'MODULAR WALL - ACOUSTIC MAX' OR SIMILAR
- 2.1m HIGH TIMBER PALING FENCE
- 2.1m HIGH ALUMINIUM BLADE FENCE
- 2.1m HIGH COLORBOND FENCE
- 2.1m HIGH TIMBER BATTEN FENCE / SCREENING

LEGEND - PROPOSED / EXISTING FOOTPATHS

- EXISTING FOOTPATH
- PROPOSED FOOTPATH
- PROPOSED CROSSOVER

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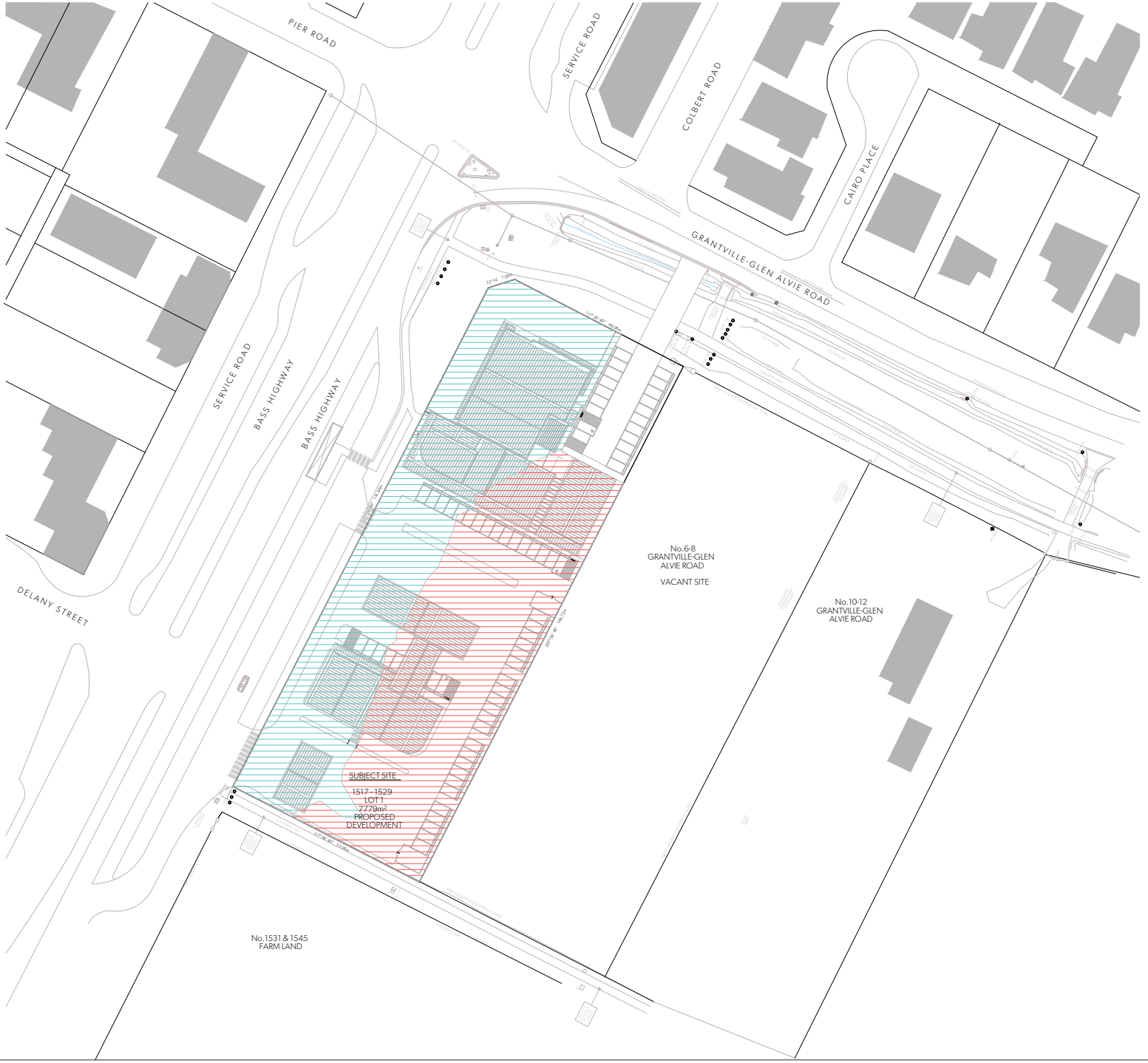
G	RFI Response	04.10.2024

N

Project Number: 2223
Drawing Title:
Footpath & Fencing Plan
Project Address:
1517 - 1529 Bass Highway, Grantville

TP 02.1
Scale: 1:500
Rev: G



LEGEND - PROPOSED FENCING

PROPOSED SITE FILL

PROPOSED SITE CUT

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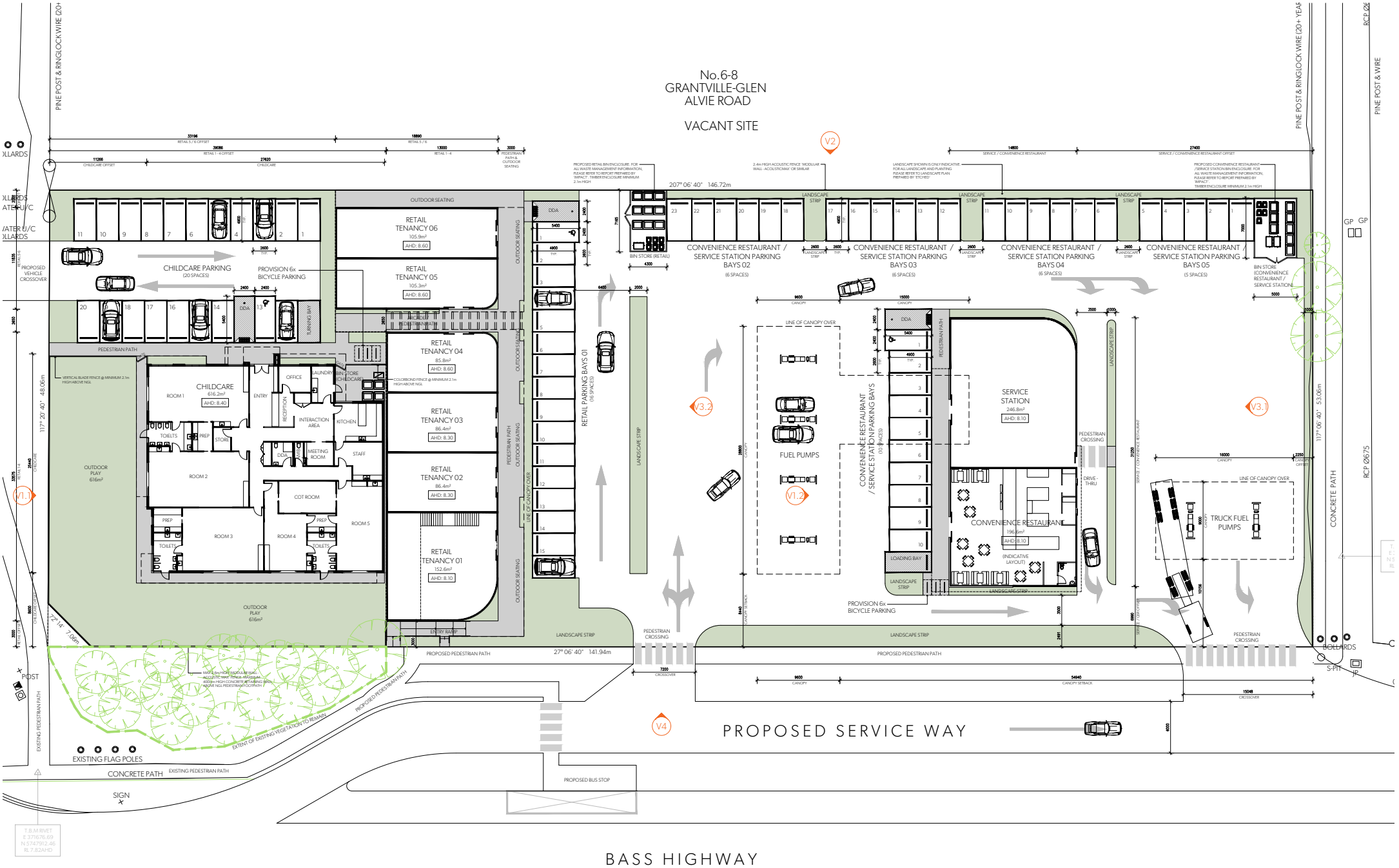
G	RFI Response	04.10.2024

N

Project Number: 2223
Drawing Title:
Proposed Cut & Fill Plan
Project Address:
1517 - 1529 Bass Highway, Grantville

TP 02.2
Scale: 1:500
Rev: G



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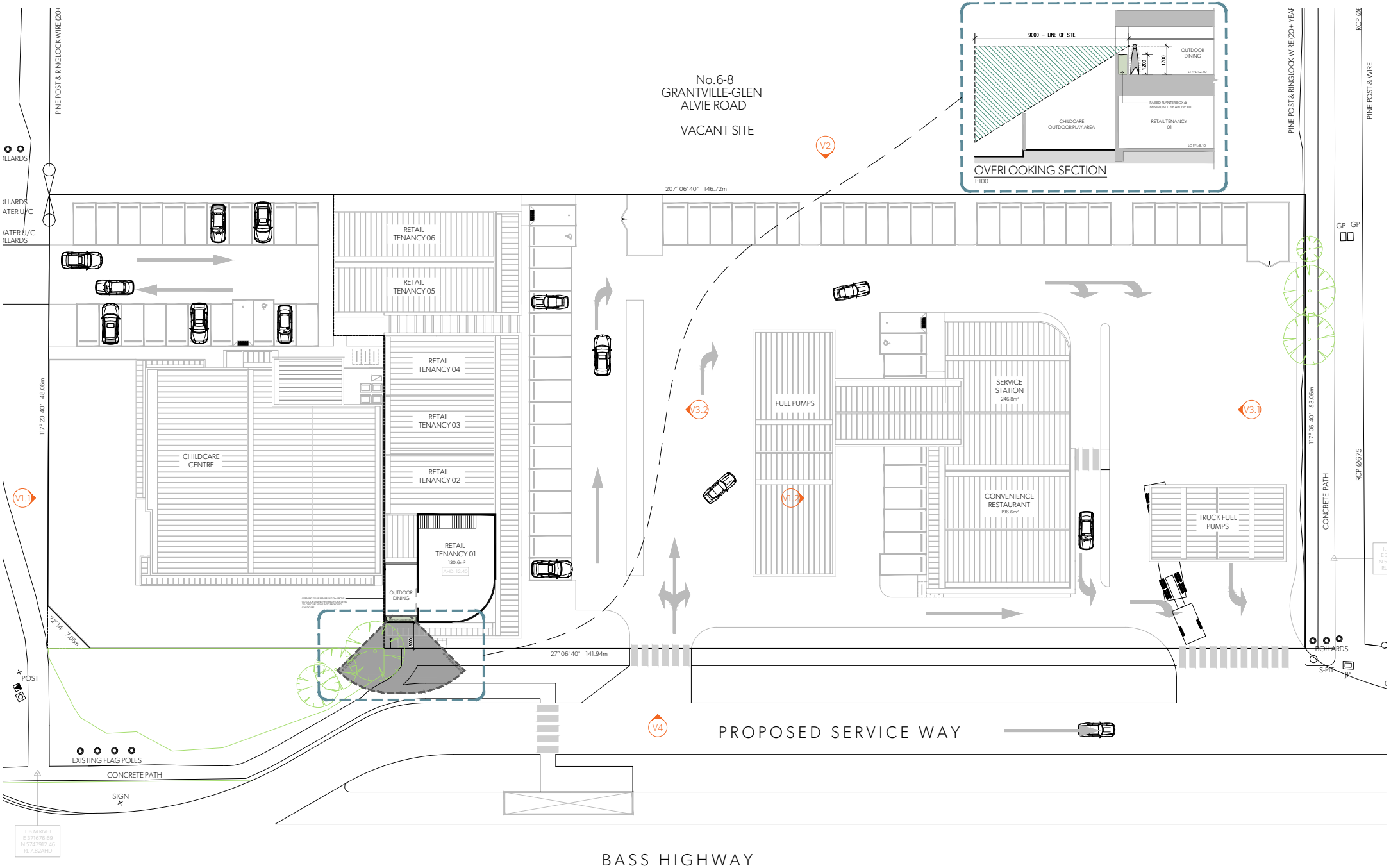
G	RFI Response	04.10.2024

N

Project Number: 2223
Drawing Title:
Site Layout & Ground Floor Plan
Project Address:
1517 - 1529 Bass Highway, Grantville

TP 03
Scale: 1:200
Rev: G



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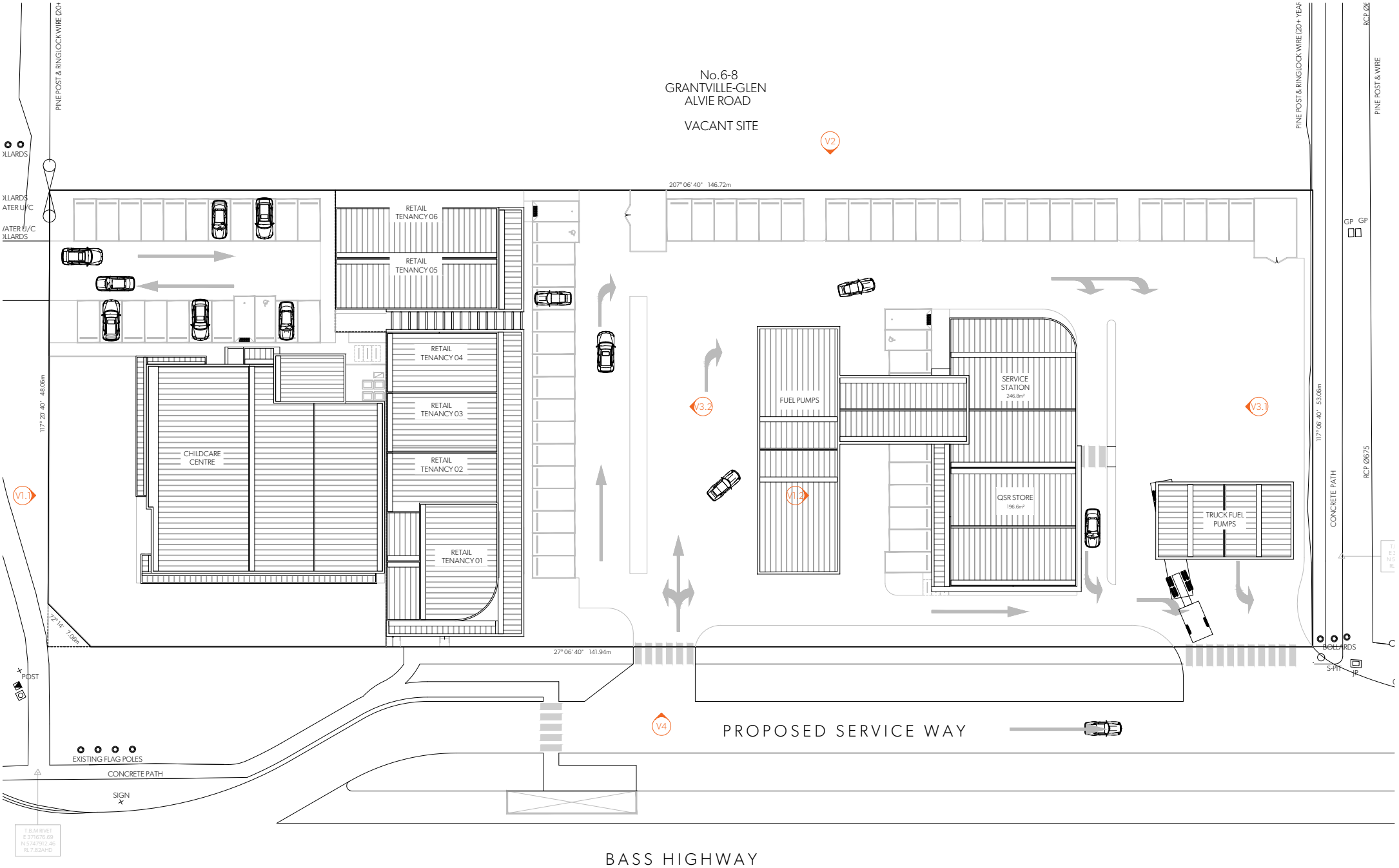
G	RFI Response	04.10.2024

N

Project Number: 2223
Drawing Title:
Site Layout & First Floor Plan
Project Address:
1517 - 1529 Bass Highway, Grantville

TP 04
Scale: 1:200
Rev: G



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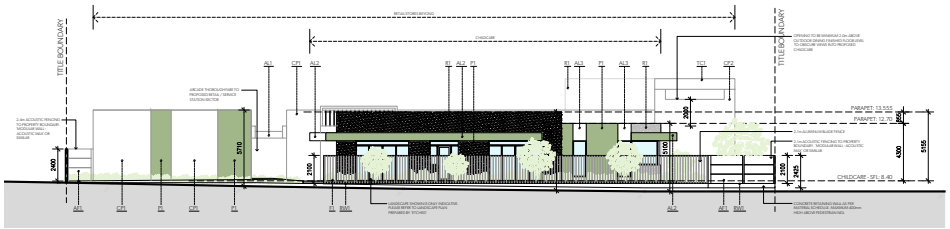
G	RFI Response	04.10.2024

N

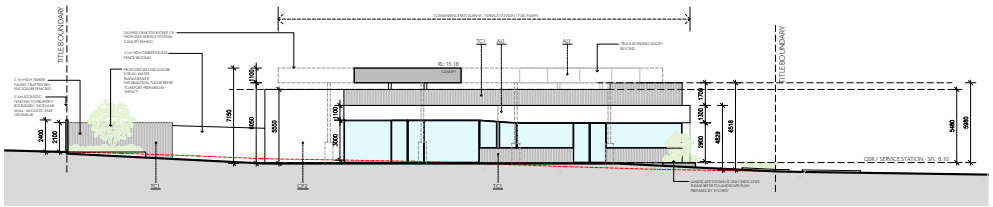
Project Number: 2223
Drawing Title:
Site Layout / Roof & Signage Plan
Project Address:
1517 - 1529 Bass Highway, Grantville

TP 05
Scale: 1:200
Rev: G



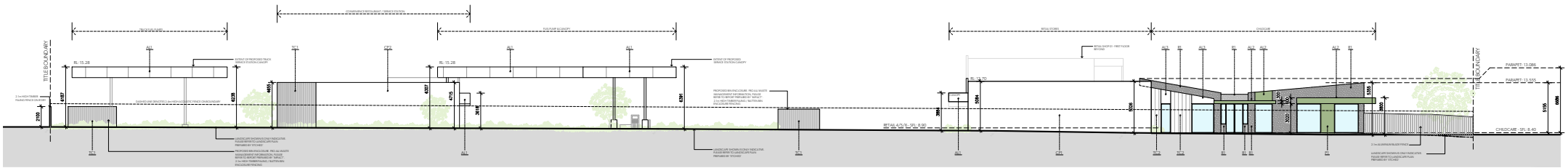
NORTH ELEVATION (VIEW OF CHILDCARE AND REAR OF RETAIL - FACING FROM GRANTVILLE-GLEN ALVIE ROAD)

1:200 - V1.1



NORTH ELEVATION INTERNAL (VIEW OF CONVENIENCE RESTAURANT & SERVICE STATION ENTRY)

1:200 - V1.2



EAST ELEVATION (VIEW OF FUEL PUMPS / CONVENIENCE RESTAURANT / SERVICE STATION / RETAIL STORES / CHILDCARE ENTRY)

1:200 - V2



AF1
LIGHT GREY ACOUSTIC FENCING - MODULAR WALL 'ACOUSTICMAX' OR



AL1
WHITE ALUMINIUM



AL2
GREEN ALUMINIUM



AL3
BLACK ALUMINIUM



CP1
CONCRETE PANEL MATTE



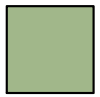
CP2
CONCRETE PANEL GLOSS



F1
BLACK ALUMINIUM BLADE FENCE



MS1
WHITE VERTICAL ALUMINIUM SCREEN



P1
GREEN PAINT FINISH



R1
LIGHT GREY RENDER



R1
LIGHT GREY RENDER



RW1
CONCRETE RETAINING WALL



TC1
VERTICAL TIMBER



TC2
WHITE VERTICAL BOARDS

FINISHES SCHEDULE

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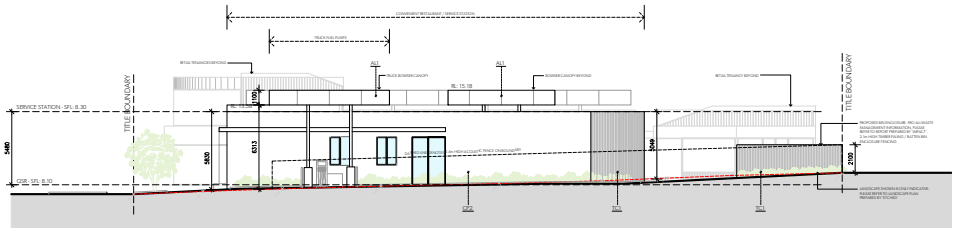
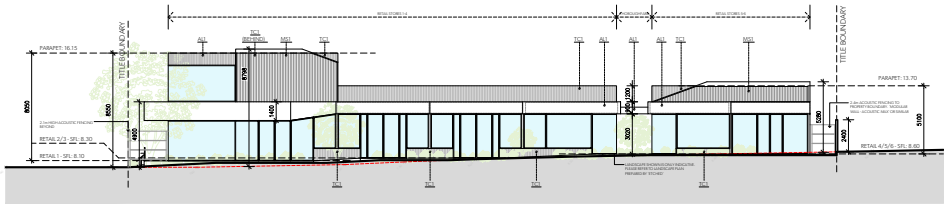
Project Number: 2223
Drawing Title:
Elevations (North & East)
Project Address:
1517 - 1529 Bass Highway, Grantville

TP 06
Scale: 1:200
Rev: G



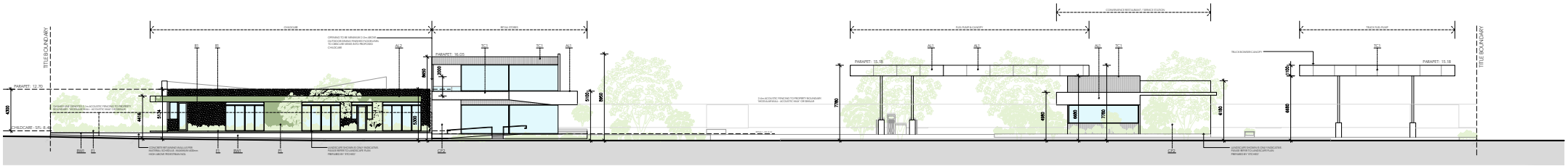
SOUTH ELEVATION (VIEW OF TRUCK FUEL PUMPS AND REAR OF CONVENIENT RESTAURANT)

1:200 V3.1



SOUTH ELEVATION INTERNAL (VIEW OF RETAIL STORES)

1:200 V3.2



WEST ELEVATION - BASS HWY (VIEW OF CHILDCARE FUEL PUMPS / RETAIL STORES / CONVENIENCE RESTAURANT / SERVICE STATION / TRUCK FUEL PUMPS)

1:200 V4



AF1
LIGHT GREY ACOUSTIC FENCING - MODULAR WALL 'ACOUSTICMAX' OR

AL1
WHITE ALUMINIUM

AL2
GREEN ALUMINIUM

AL3
BLACK ALUMINIUM

CP1
CONCRETE PANEL MATTE



CP2
CONCRETE PANEL GLOSS

F1
BLACK ALUMINIUM BLADE FENCE

MS1
WHITE VERTICAL ALUMINIUM SCREEN

P1
GREEN PAINT FINISH

R1
LIGHT GREY RENDER



R1
LIGHT GREY RENDER

RW1
CONCRETE RETAINING WALL

TC1
VERTICAL TIMBER

TC2
WHITE VERTICAL BOARDS

FINISHES SCHEDULE

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G	RFI Response	04.10.2024

Project Number: 2223
Drawing Title:
Elevations (South & West)
Project Address:
1517 - 1529 Bass Highway, Grantville

TP 07
Scale: 1:200
Rev: G



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Project Number: 2223
Drawing Title:
Artists Impressions - Overall Render Locations
TP 08
Project Address:
1517 - 1529 Bass Highway, Grantville
Rev: G

RENDER 01 - CHILDCARE CENTRE 1



RENDER 02 - CHILDCARE CENTRE 2



RENDER 03 - CHILDCARE CENTRE 3



RENDER 04 - CHILDCARE CENTRE 4



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Project Number: 2223

Drawing Title:
Artists Impressions - Renders 1-4

Project Address:
1517 - 1529 Bass Highway, Grantville

TP 09

Rev: G

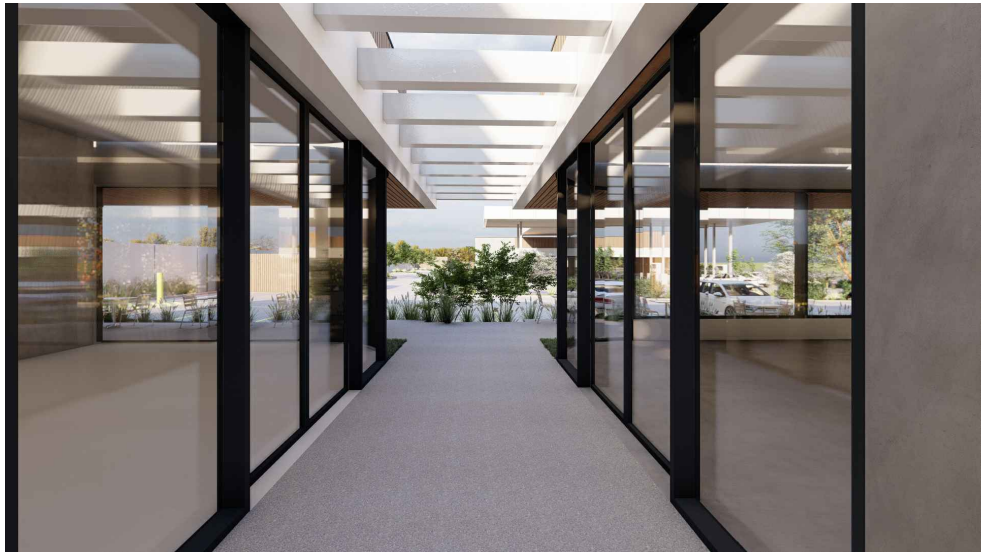
RENDER 05 - CHILDCARE CENTRE 5



RENDER 06 - CHILDCARE SECTOR / COMMERCIAL ENTRY 6



RENDER 07 - ARCADE 7



RENDER 08 - RETAIL / SERVICE STATION & QSR 8



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Project Number: 2223
Drawing Title:
Artists Impressions - Renders 5-8
Project Address:
1517 - 1529 Bass Highway, Grantville

TP 10
Rev: G

RENDER 09 - RETAIL / SERVICE STATION & QSR 9



RENDER 10 - RETAIL 10



RENDER 11 - SERVICE STATION & QSR 11



RENDER 12 - RETAIL / SERVICE STATION & QSR 12



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Project Number: 2223
Drawing Title:
Artists Impressions - Renders 9-12
Project Address:
1517 - 1529 Bass Highway, Grantville

TP 11
Rev: G

RENDER 13 - RETAIL 13



RENDER 14 - RETAIL / SERVICE STATION & QSR 14



RENDER 15 - SERVICE STATION & QSR 15



RENDER 16 - RETAIL 16



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Rev	Description	Date
A	Site Layout Plan - Preliminary ISS	03.05.2023
B	Site Layout Plan - Re-ISS to Traffic	29.05.2023
C	Site Layout Plan - Re-ISS to Traffic (AMENDMENTS)	14.06.2023
D	Town Planning Application	26.07.2023
E	TP Development Plan Amendments	17.11.2023
F	Service Lane and Referral Amendments	07.02.2024
G	RFI Response	04.10.2024

Project Number: 2223
Drawing Title:
Artists Impressions - Renders 13-16
Project Address:
1517 - 1529 Bass Highway, Grantville

TP 12
Rev: G

RENDER 17 - RETAIL / SERVICE STATION & QSR 17



RENDER 18 - SERVICE STATION & QSR 18



RENDER 19 - SERVICE STATION & QSR 19



RENDER 20 - SERVICE STATION & QSR 20



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projects@risearchitecure.com.au
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Rev	Description	Date
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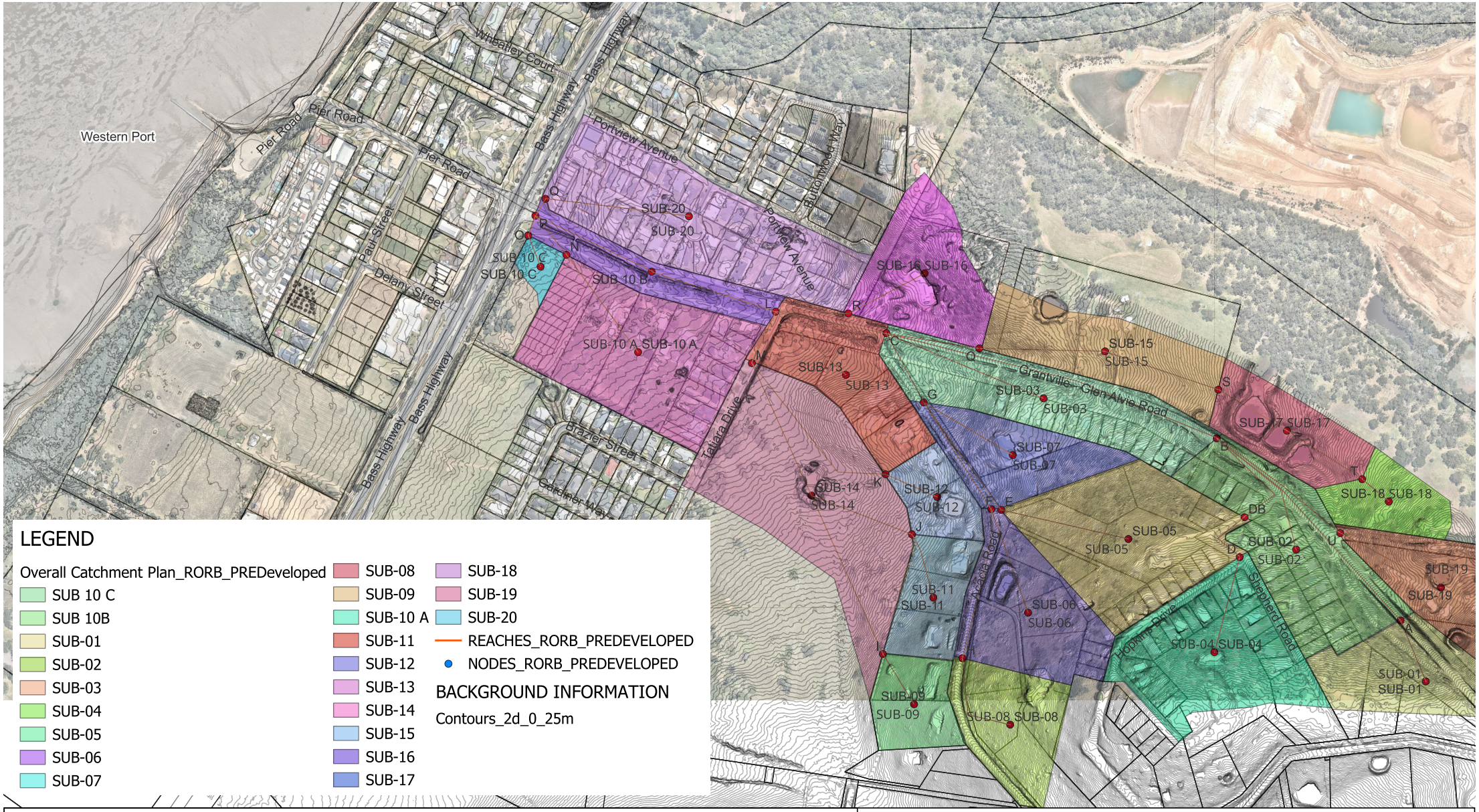
E	TP Development Plan Amendments	17.11.2023
F	Service Lane and Referral Amendments	07.02.2024
G	RFI Response	04.10.2024

Project Number: 2223
Drawing Title:
Artists Impressions - Renders 17-20
Project Address:
1517 - 1529 Bass Highway, Grantville

TP 13
Rev: G

Appendix C – Pre-developed Catchment Plan

1512-1529 BASS HIGHWAY, GRANTVILLE



LEGEND

Overall Catchment Plan_RORB_PREDeveloped

- SUB 10 C
- SUB 10B
- SUB-01
- SUB-02
- SUB-03
- SUB-04
- SUB-05
- SUB-06
- SUB-07
- SUB-08
- SUB-09
- SUB-10 A
- SUB-11
- SUB-12
- SUB-13
- SUB-14
- SUB-15
- SUB-16
- SUB-17
- SUB-18
- SUB-19
- SUB-20
- REACHES_RORB_PREDEVELOPED
- NODES_RORB_PREDEVELOPED

BACKGROUND INFORMATION

Contours_2d_0_25m

1517-1529 BASS HIGHWAY, GRANTVILLE

Catchment Plan - Rural conditions

Hydrological model set up

Job Number: 3207/M/C
Revision: P1
Designed: DM
Checked: DM
Project Manager: DM
Date: 24.08.2024

MAP A1

0 250 500 m

Map Projection: Tranverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Vertical Datum: Australia Height Datum
Grid: GDA2020, MGA 55

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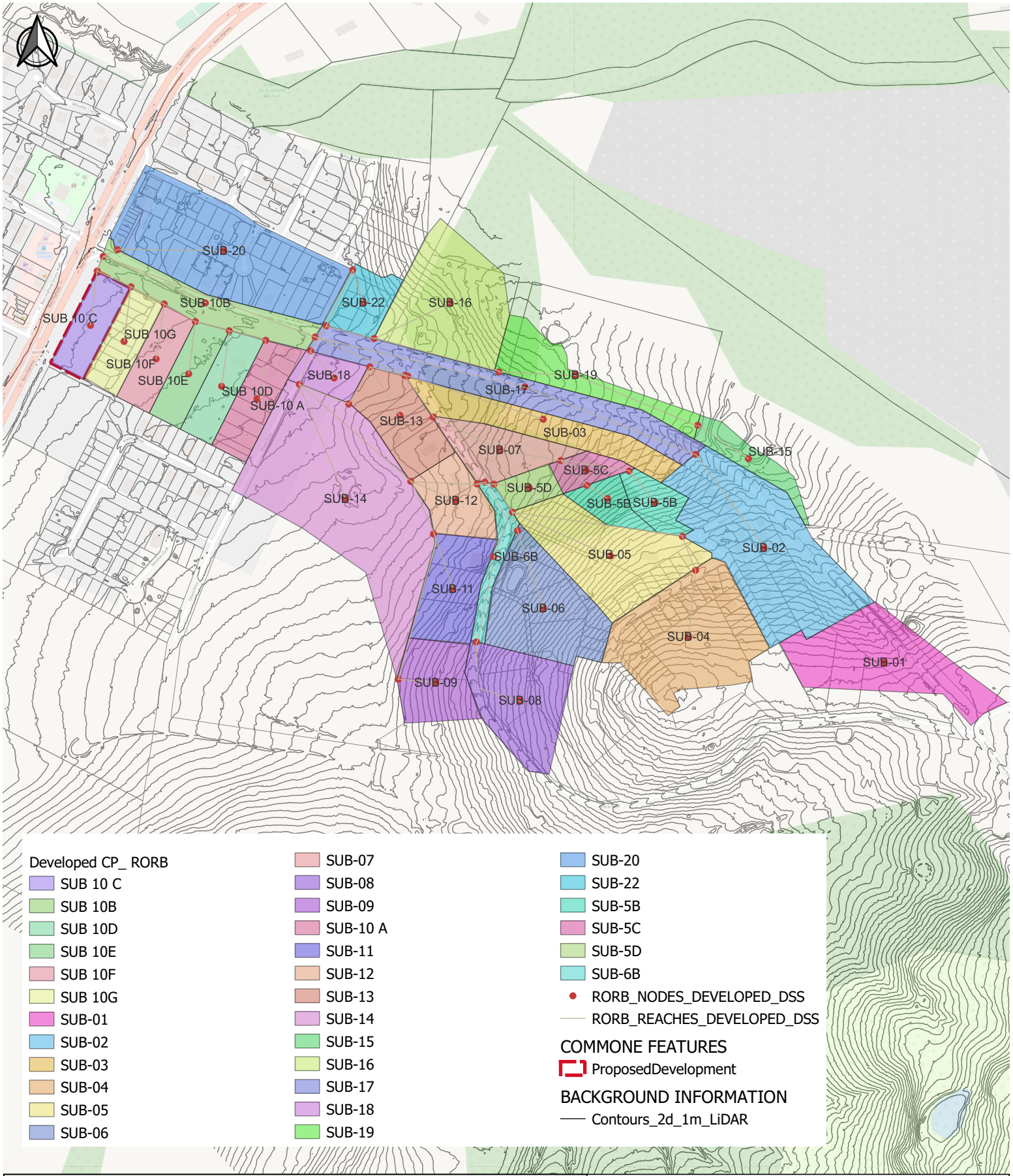
Appendix D – Post-developed Catchment Plan

1517-1529 BASS HIGHWAY, GRANTVILLE



Developed CP_ RORB

- SUB 10 C
- SUB 10B
- SUB 10D
- SUB 10E
- SUB 10F
- SUB 10G
- SUB-01
- SUB-02
- SUB-03
- SUB-04
- SUB-05
- SUB-06
- SUB-07
- SUB-08
- SUB-09
- SUB-10 A
- SUB-11
- SUB-12
- SUB-13
- SUB-14
- SUB-15
- SUB-16
- SUB-17
- SUB-18
- SUB-19
- SUB-20
- SUB-22
- SUB-5B
- SUB-5C
- SUB-5D
- SUB-6B
- RORB_NODES_DEVELOPED_DSS
- RORB_REACHES_DEVELOPED_DSS

COMMONE FEATURES

- ProposedDevelopment

BACKGROUND INFORMATION

- Contours_2d_1m_LiDAR

1517-1529 BASS HIGHWAY, GRANTVILLE

Post-developed Catchment Plan

Job Number: 3207/M/C
Revision: P1
Designed: DM
Checked: DM
Project Manager: DM
Date: 31.07.2023

0 100 200 m

Map Projection: Tranverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Vertical Datum: Australia Height Datum
Grid: GDA2020, MGA 55

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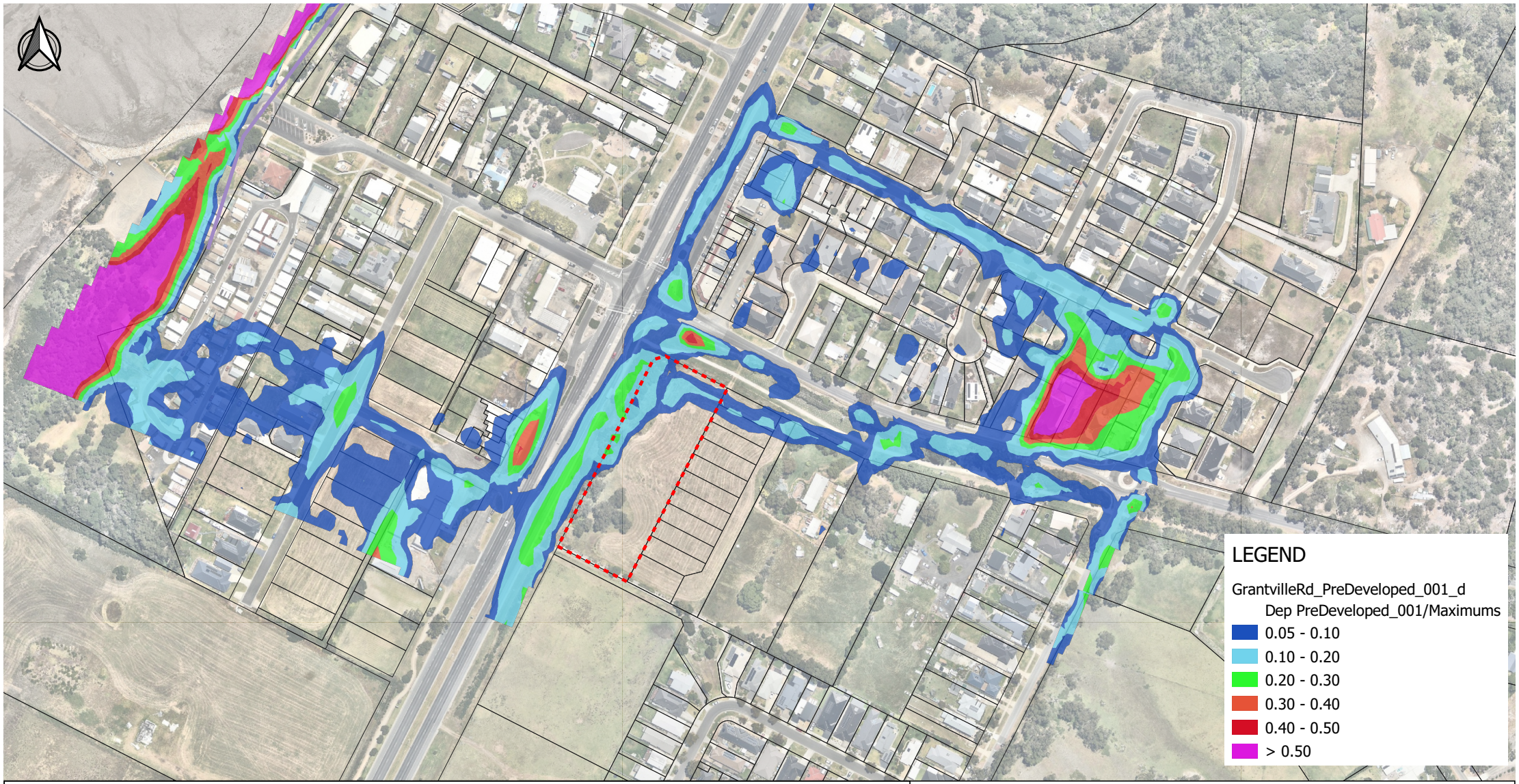
Appendix E – Hydraulic model results

1517-1529 BASS HIGHWAY, GRANTVILLE



1517-1529 BASS HIGHWAY, GRANTVILLE

Pre-developed conditions - 1% AEP Rainfall Event

Maximum Flood Depths

Job Number: 3207/M/C
Revision: P1
Designed: DM
Checked: DM
Project Manager: DM
Date: 31.07.2023

0 100 200 m

Map Projection: Tranverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Vertical Datum: Australia Height Datum
Grid: GDA2020, MGA 55

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1517-1529 BASS HIGHWAY, GRANTVILLE



1517-1529 BASS HIGHWAY, GRANTVILLE

Pre-developed conditions - 1% AEP Rainfall Event

Maximum Velocities

Job Number: 3207/M/C
Revision: P1
Designed: DM
Checked: DM
Project Manager: DM
Date: 31.07.2023

0 100 200 m

Map Projection: Tranverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Vertical Datum: Australia Height Datum
Grid: GDA2020, MGA 55

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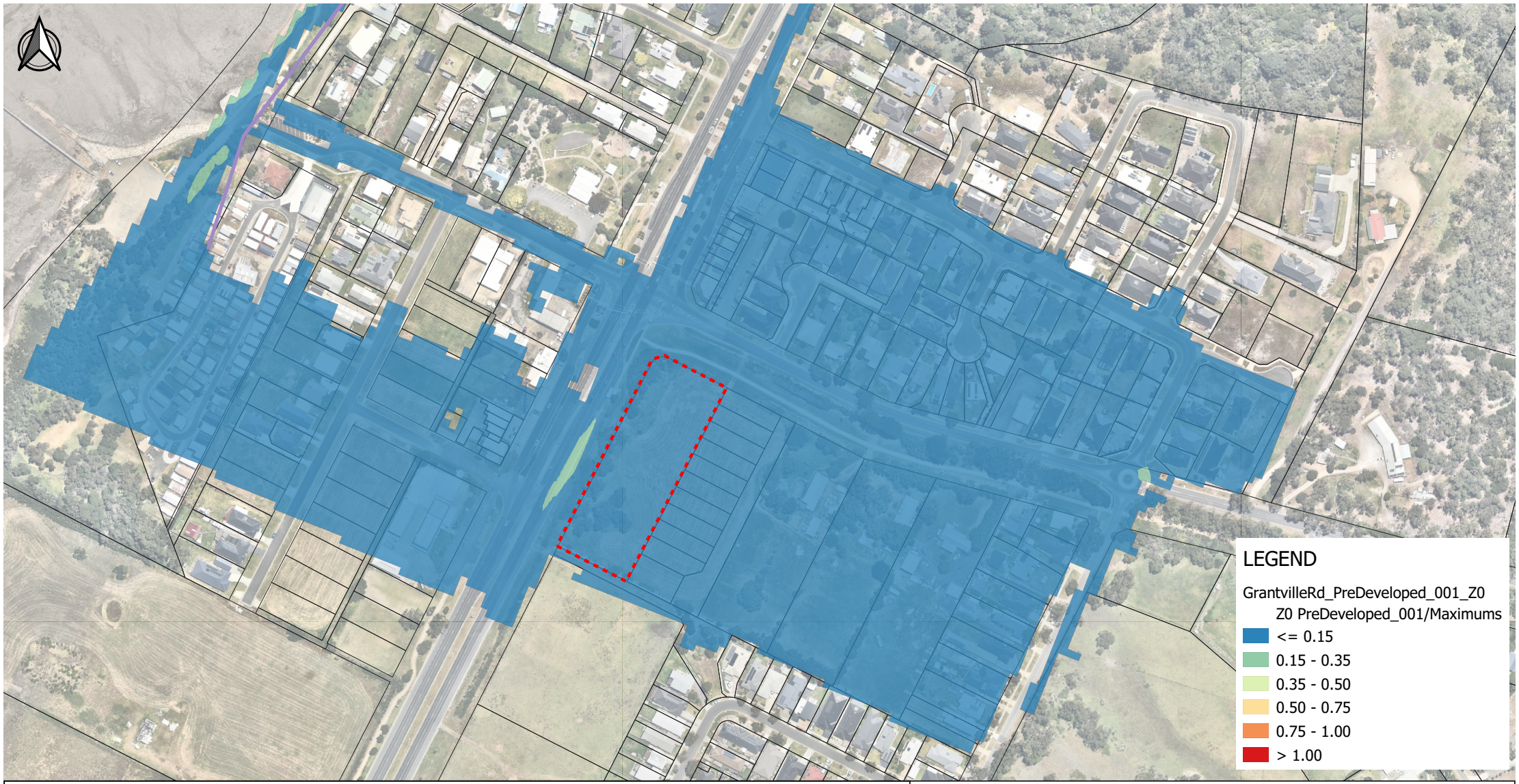
1517-1529 BASS HIGHWAY, GRANTVILLE



1517-1529 BASS HIGHWAY, GRANTVILLE

Pre-developed conditions - 1% AEP Rainfall Event

Maximum Depth x Velocitiy

Job Number: 3207/M/C
Revision: P1
Designed: DM
Checked: DM
Project Manager: DM
Date: 31.07.2023

0 100 200 m

Map Projection: Tranverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Vertical Datum: Australia Height Datum
Grid: GDA2020, MGA 55

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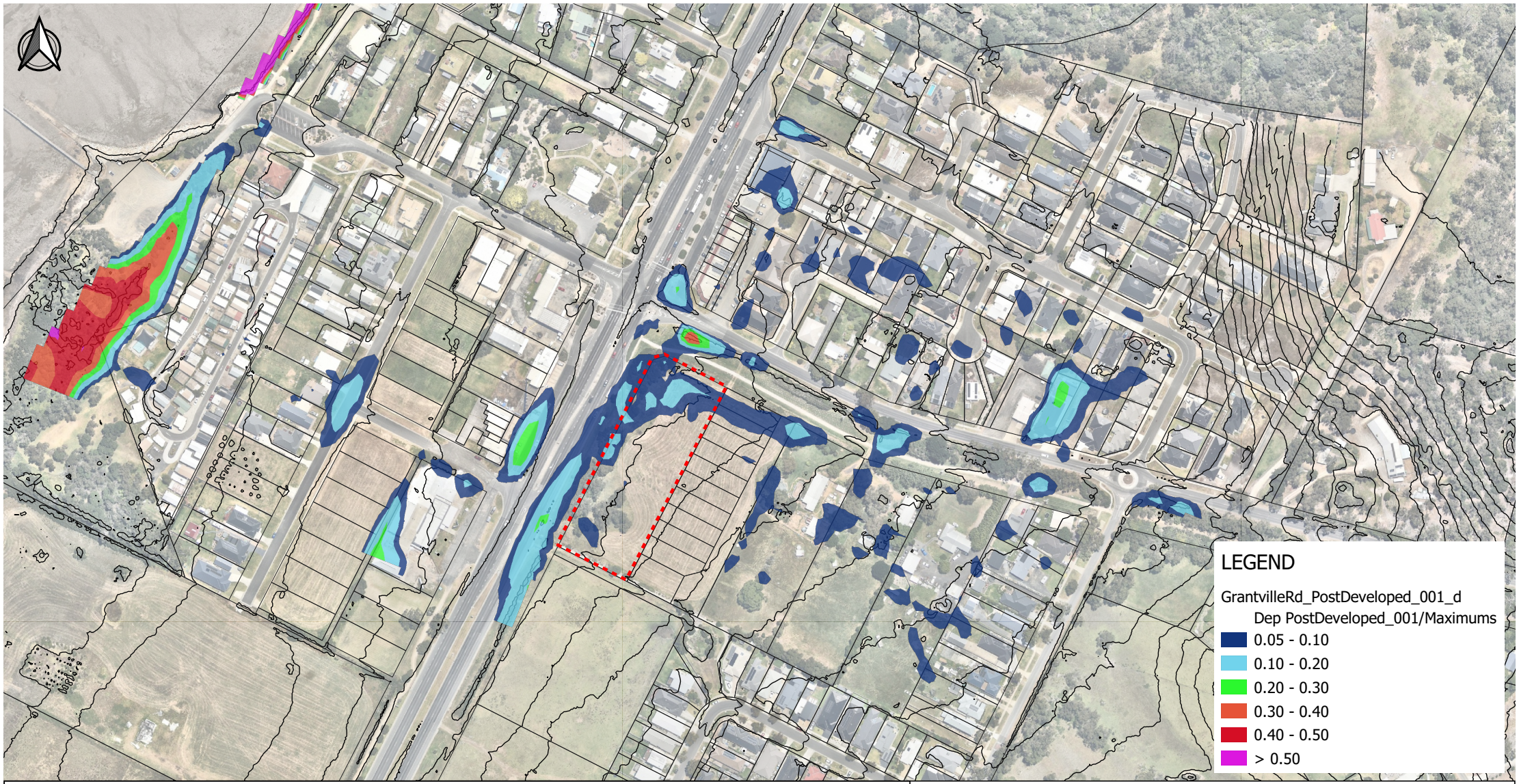
1517-1529 BASS HIGHWAY, GRANTVILLE



1517-1529 BASS HIGHWAY, GRANTVILLE

Post-developed conditions - 1% AEP Rainfall Event

Maximum Flood Depths

Job Number: 3207/M/C
Revision: P1
Designed: DM
Checked: DM
Project Manager: DM
Date: 31.07.2023

0 100 200 m

Map Projection: Tranverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Vertical Datum: Australia Height Datum
Grid: GDA2020, MGA 55

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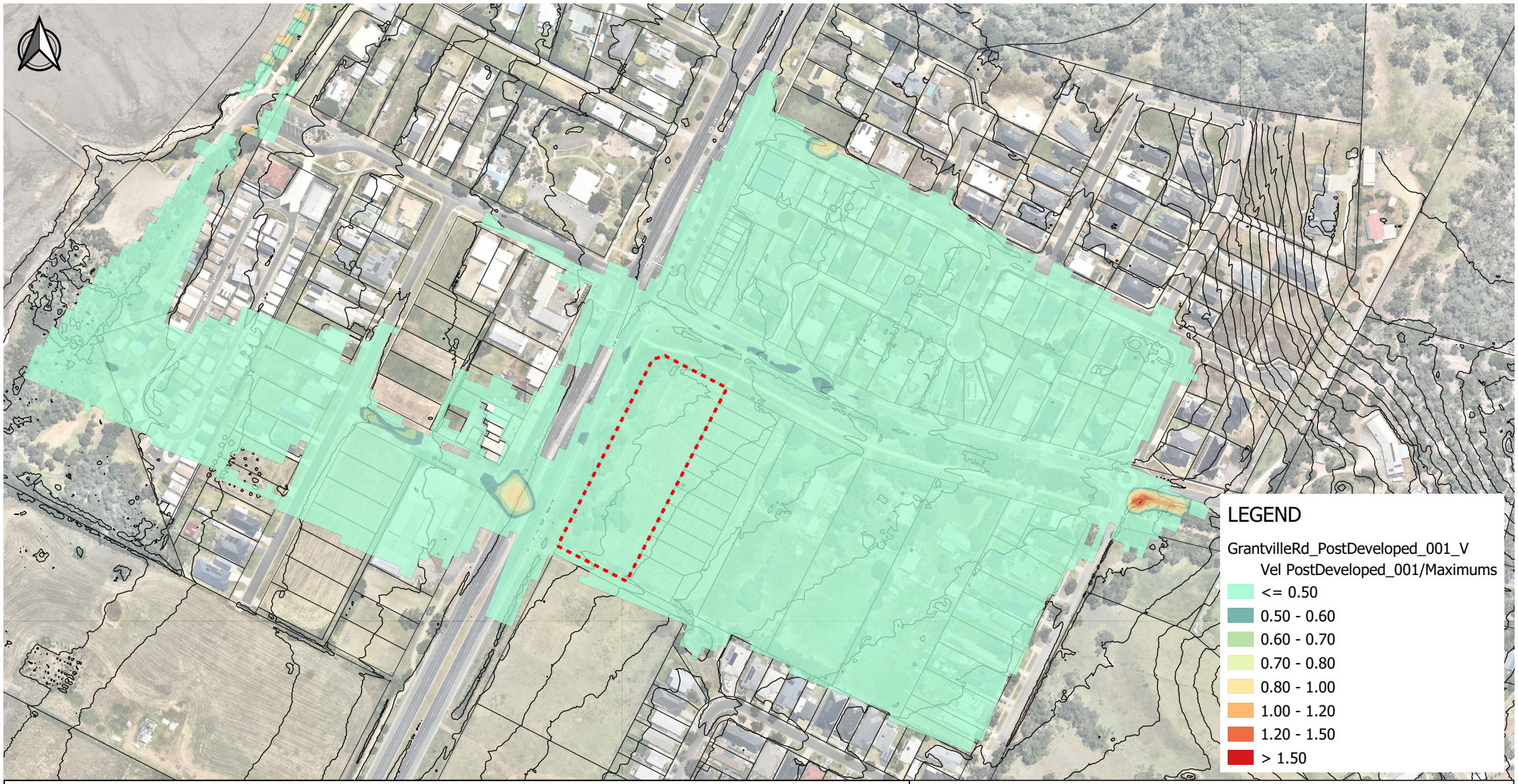
1517-1529 BASS HIGHWAY, GRANTVILLE



1517-1529 BASS HIGHWAY, GRANTVILLE

Post-developed conditions - 1% AEP Rainfall Event

Maximum Velocities

Job Number: 3207/M/C
Revision: P1
Designed: DM
Checked: DM
Project Manager: DM
Date: 31.07.2023

0 100 200 m

Map Projection: Tranverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Vertical Datum: Australia Height Datum
Grid: GDA2020, MGA 55

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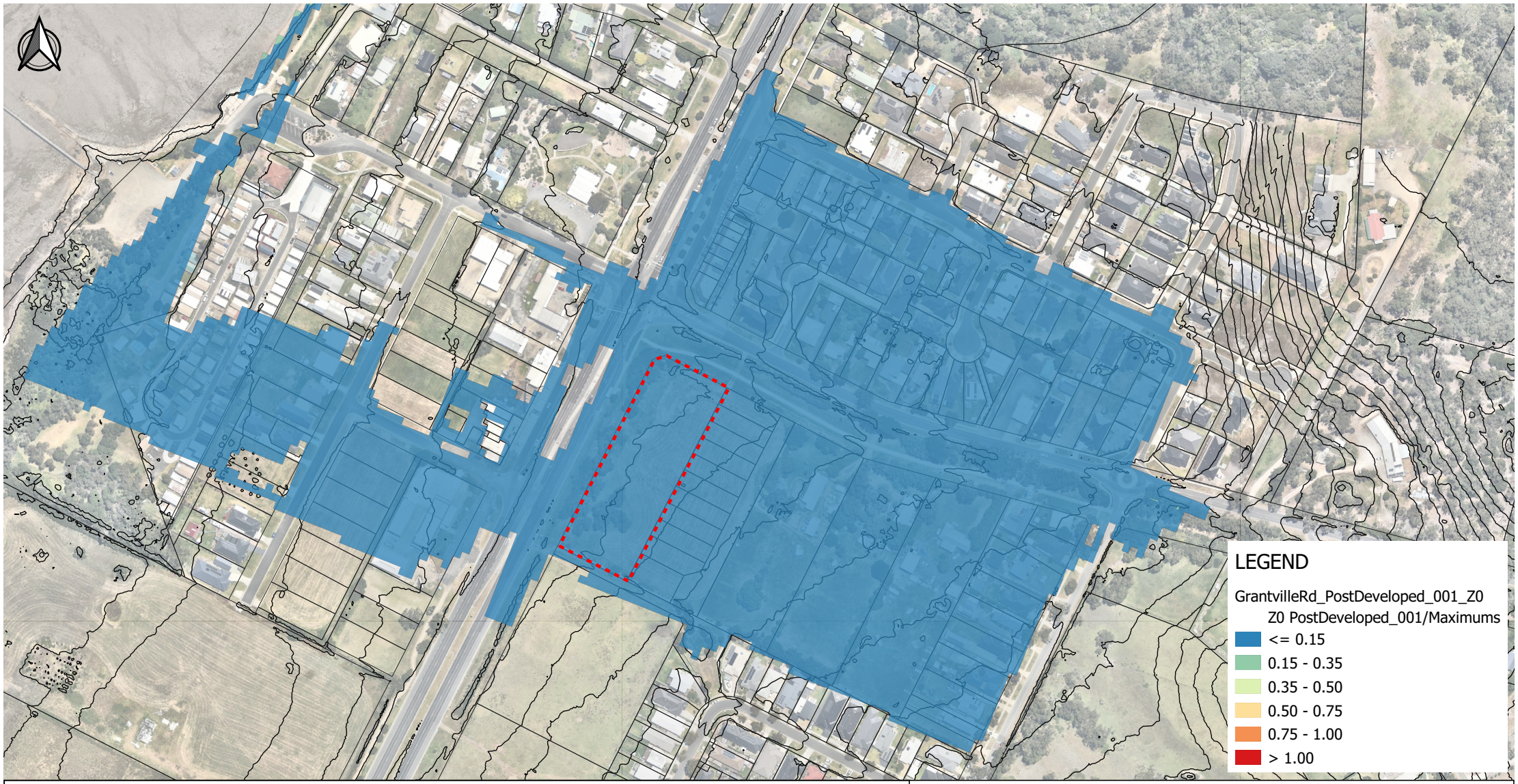
1517-1529 BASS HIGHWAY, GRANTVILLE



1517-1529 BASS HIGHWAY, GRANTVILLE

Post-developed conditions - 1% AEP Rainfall Event

Maximum Depth x Velocitiy

Job Number: 3207/M/C
Revision: P1
Designed: DM
Checked: DM
Project Manager: DM
Date: 31.07.2023

0 100 200 m

Map Projection: Tranverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Vertical Datum: Australia Height Datum
Grid: GDA2020, MGA 55

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1517-1529 BASS HIGHWAY, GRANTVILLE



1517-1529 BASS HIGHWAY, GRANTVILLE

Post-developed conditions - 1% AEP Rainfall Event

Flood Hazard as per Australian Management Institute (2014)

Job Number: 3207/M/C
Revision: P1
Designed: DM
Checked: DM
Project Manager: DM
Date: 31.07.2023

0 100 200 m

Map Projection: Tranverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Vertical Datum: Australia Height Datum
Grid: GDA2020, MGA 55

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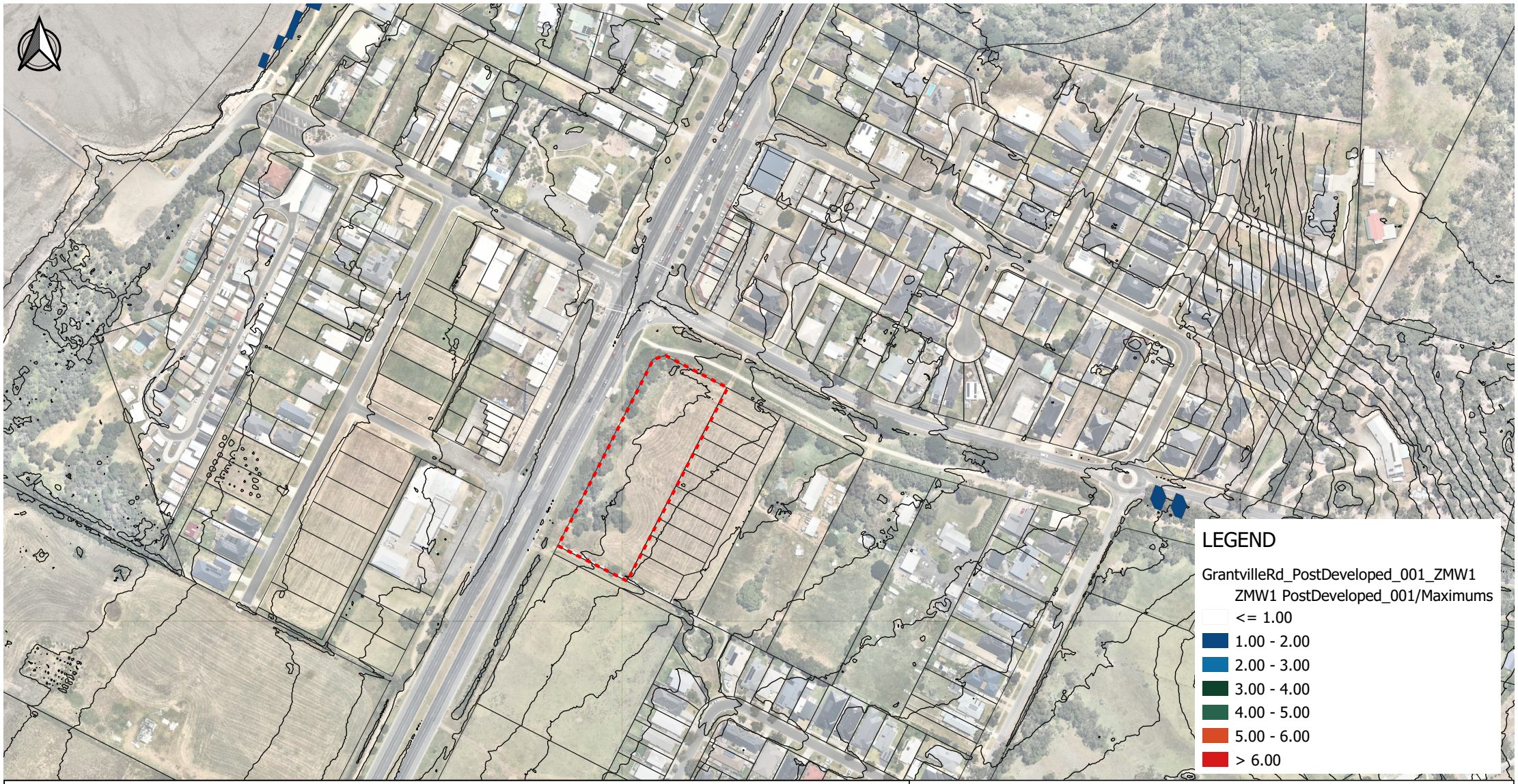
1517-1529 BASS HIGHWAY, GRANTVILLE



1517-1529 BASS HIGHWAY, GRANTVILLE

Post-developed conditions - 1% AEP Rainfall Event

Flood Hazard as per Melbourne Water FM&M Technical Specifications (2008)

Job Number: 3207/M/C
Revision: P1
Designed: DM
Checked: DM
Project Manager: DM
Date: 31.07.2023

0 100 200 m

Map Projection: Tranverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Vertical Datum: Australia Height Datum
Grid: GDA2020, MGA 55

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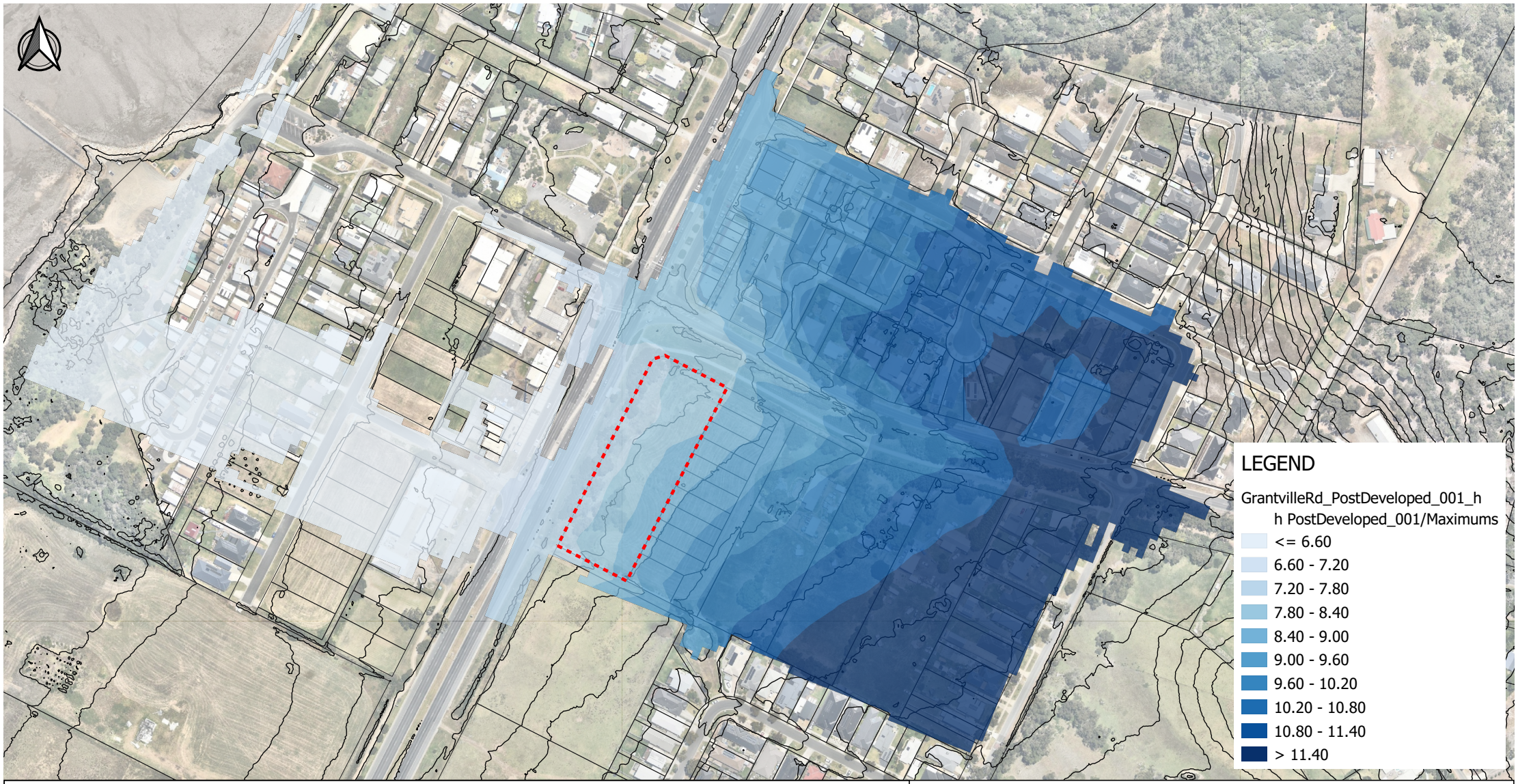
1517-1529 BASS HIGHWAY, GRANTVILLE



1517-1529 BASS HIGHWAY, GRANTVILLE

Post-developed conditions - 1% AEP Rainfall Event

Maximum Flood Levels

Job Number: 3207/M/C
Revision: P1
Designed: DM
Checked: DM
Project Manager: DM
Date: 31.07.2023

0 100 200 m

Map Projection: Tranverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Vertical Datum: Australia Height Datum
Grid: GDA2020, MGA 55

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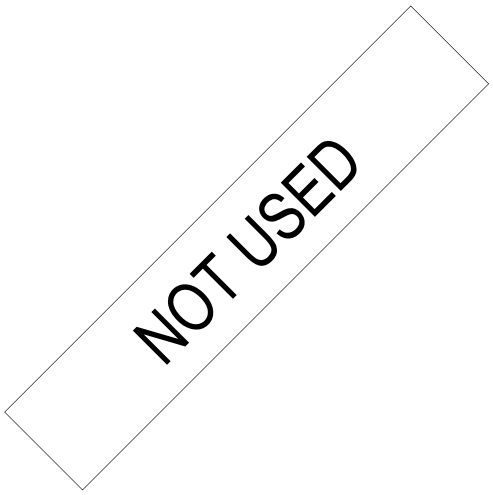
Appendix F – Overland Flow Capacity



Appendix G – Previous Planning Permit Issued for the site

PLANNING PERMIT

PERMIT No. **: 210196**

PLANNING SCHEME **: BASS COAST PLANNING SCHEME**

RESPONSIBLE AUTHORITY **: BASS COAST SHIRE COUNCIL**

ADDRESS OF THE LAND

1517-1529 Bass Highway, Grantville VIC 3984 Lot 1 LP143125

THE PERMIT ALLOWS

Use and development of land for service station, convenience restaurant, and retail premises, and subdivision of land into 7 lots in MUZ and DPO3, removal of native vegetation under clause 52.17, erection of signage, and altering access to a RZ1 Category 1 in accordance with the endorsed plans.

THE FOLLOWING CONDITIONS APPLY TO THIS PERMIT

Amended Plans

1. Prior to the commencement of building works, amended plans to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. The plans must be drawn to scale with dimensions and three copies must be provided. When approved, the plans will be endorsed and will then form a part of the permit. The plans must be generally in accordance with the plans submitted with the application prepared by IDLE Architecture Studio, Revision B but modified to show:
   a. Pedestrian footpath along the entire western frontage linking the bus stop and connecting to pedestrian footpath on northern frontage.
   b. Signage plans revised as follows:
      i. Both Sign 01 signs to be a maximum height of no more than 7 metres from ground level
      ii. Include a schedule of total signage area per sign
   c. A stormwater management strategy in accordance with Condition 41
   d. Amended Waste Management Plan in accordance with Condition 43
   e. Amended landscape plan in accordance with condition 10
   f. A Construction Management Plan in accordance with condition 55

2. The use, building, works and layout as shown on the endorsed plans shall not be altered or modified except with the written consent of the Responsible Authority.
3. The subdivision as shown on the endorsed plans must not be altered without the prior written consent of the Responsible Authority.
4. Once the use, development and subdivision has commenced, it must be continued and completed to the satisfaction of the Responsible Authority.
5. The location and details of the signs, including those of the supporting structure, must be in accordance with the endorsed plans, unless otherwise agreed in writing by the Responsible Authority.

Hours of Operation

6. Except with the written consent of the Responsible Authority, the use of Convenience Restaurant may operate 24 hours a day, seven days a week.
7. Except with the written consent of the Responsible Authority, the use of the land for the service station and convenience restaurant may operate 24 hours a day, seven days a week.
8. Except with the written consent of the Responsible Authority, the use of the land for the retail premises (Tenancies 1-5) may operate only between the hours of:
    a. 6.00am – 12.00am, seven days a week.
9. A maximum number of 100 patrons may be allowed in the Convenience Restaurant premises at any one time, unless with the written consent of the Responsible Authority.

Landscaping

10. Prior to the commencement of buildings and works, an amended detailed landscape plan generally in accordance with the assessed landscape plan prepared by John Patrick Landscape Architects (Job ref: 20-540-L Dated May 2021)and to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. The plans must be drawn to scale with dimensions must be provided. When approved, the plans will be endorsed and will then form a part of this permit. The landscaping plan must be amended to show:
    a. A planting schedule of all proposed trees, shrubs and ground covers, including botanical names, common names, pot sizes, sizes at maturity, and quantities of each plant
    b. Landscaping and planting within all open areas of the site
    c. The extent of any cut, fill, embankments or retaining walls associated with the landscape treatment of the site
    d. Details of all proposed hard surface materials including pathways, patio or decked areas
    e. Include at least 6 canopy trees within the title boundary
    f. A minimum of 70% of species included must be indigenous to Bass Coast

11. Before the use commences or by such later date as is approved in writing by the Responsible Authority, the landscaping works shown on the endorsed plans must be carried out and completed to the satisfaction of the Responsible Authority.
12. The landscaping shown on the endorsed plans must be maintained to the satisfaction of the Responsible Authority and used for no other purpose, including that any dead, diseased or damaged plants are to be replaced.

Car Parking, Bicycle Facilities and Loading:

13. Prior to the use commencing, areas set aside for parked vehicles, bicycles and associated facilities and access lanes as shown on the endorsed plans must be:
    a. Constructed;
    b. Properly formed to such levels that they can be used in accordance with the plans;
    c. Surfaced with an all-weather sealcoat;
    d. Drained and maintained;
    e. Line marked to indicated each car space and all access lanes; and
    f. Properly lit.
14. The loading and unloading of vehicles must be carried out entirely within the site at all times and must not interfere with other traffic, to the satisfaction of the Responsible Authority.
15. The areas shown on the approved plan for car parking, access and landscaping must not be used for any other purpose and maintained to the satisfaction of the Responsible Authority.
16. The dimensions and layout of the proposed access and parking areas for cars must be in accordance with the requirements of Clause 52.06 of the Bass Coast Planning Scheme.

General Conditions:

17. All works must be undertaken in a manner that minimises soil erosion, and any exposed areas of soil must be stabilised to prevent soil erosion, to the satisfaction of the Responsible Authority.
18. Once buildings and works have commenced, they must be completed to the satisfaction of the Responsible Authority.
19. Upon completion of the buildings and works, the site must be cleared of all excess and unused building materials and debris to the satisfaction of the Responsible Authority.

Amenity

20. The operator (including all occupiers of businesses operating at the premises) must ensure that litter is not deposited beyond the boundary of the premises.

21. The amenity of the area must not be detrimentally affected by the use or development through the:
    a. Transport of materials, goods or commodities to or from the land;
    b. Appearance of any building, works or materials;
    c. Emission of noise, artificial light, vibration, smell, fumes, smoke, vapour, steam, soot, ash, dust, wastewater, waste products, grit or oil; or
    d. Presence of vermin.
22. Displaced petrol fumes must be collected with a vapour recovery system.
23. There must be no emissions of spray paint or dust beyond the boundary of the premises.
24. Spray booths must be fitted with an air extraction and treatment system to remove all paint particles before discharge of treated air into the atmosphere.
25. Outdoor spray painting and/or abrasive blasting is not permitted.
26. The exterior colour and cladding of the building must not result in any adverse visual impact on the environment of the area and all external cladding and trim of buildings must be of a non-reflective nature to the satisfaction of the Responsible Authority.
27. External lighting of the areas set aside for car parking, access lanes and driveways must be designed, baffled and located to the satisfaction of the Responsible Authority to prevent any adverse effect on adjoining land.
28. No external sound amplification equipment or loudspeakers are to be used for the purpose of announcements, broadcasts, playing of music or similar purposes.
29. Without further written consent of the Responsible Authority, any use established within the building must not be used for the purpose shown with a Note 1 or Note 2 in table to Clause 53.10 of the Bass Coast Planning Scheme.
30. Noise emitted from the premises must not exceed limits prescribed by the State Environmental Protection Policy (Control of Noise from commerce, Industry and Trade) No. N-1.
31. All external lighting must be appropriately baffled so as not to have a detrimental impact on adjoining or nearby properties.
32. No plant, equipment, services or architectural features other than those shown on the endorsed plans are permitted above the roof level of the building(s) without the prior written consent of the Responsible Authority.
33. All plant and equipment (including air-conditioning units) shall be located or screened so as to minimise visibility from any of the surrounding footpaths and from overhead views and shall be baffled so as to minimise the emission of unreasonable noise to the environment in accordance with Section 48A of the Environment Protection Act 1970 to the satisfaction of the Responsible Authority.

34. Nuisance dust and/or airborne particles must not be discharged beyond the boundaries of the premises.
35. The permit holder must ensure that litter originating from the premises is not present beyond the boundaries of the premises.
36. Pollution control devices must be installed to prevent the transportation of waste to the environment and stormwater system.
37. The permit holder must not contaminate land or groundwater.
38. Offensive odours must not be discharged beyond the boundaries of the premises.
39. Prior to the occupation of the building/ commencement of use, the walls on the boundary of the adjoining properties must be cleaned and finished to the satisfaction of the Responsible Authority.

Storm Water Management

40. All stormwater runoff from the proposed building/s and development hereby permitted must be disposed of to the satisfaction of the Responsible Authority.
41. Before the commencement of any works and before the endorsement of the civil design plans, an amended stormwater management strategy (SWMS) must be submitted to the satisfaction of the Responsible Authority for endorsement by the Responsible Authority. The plan must be generally be in accordance with the SWMS (prepared by KLM Spatial Dated May 2021) submitted but amended to show, as a minimum:
    a. Catchment map of the site showing sub-catchments and the split of existing sheet flow to the Bass Highway swale and existing culvert at the Bass Highway.
    b. Capacity calculations for the existing culvert across the Bass Highway proposed as the LPOD for the site. Include consideration of existing flows coming down Grantville Glen-Alvie Road from upstream.
    c. Re-calculation of the permissible site discharge (PSD) based on the existing pre-developed discharge into the proposed culvert across Bass Highway & the available capacity of this culvert.
42. When approved, the plan will be endorsed and will then form part of the permit. stormwater management strategy must be in accordance with the plan, to the satisfaction of the Responsible Authority.

Waste Management

43. Before the commencement of any works and concurrent with the endorsement of plans, a Waste Management Plan must be submitted to and approved by the Responsible Authority. The Waste Management Plan must include:
    a. Dimensions of waste areas
    b. The number of bins to be provided

c. Method of waste and recyclables collection

d. Hours of waste and recyclables collection NB. These should correspond with our Local Laws

e. Method of presentation of bins for waste collection

f. Strategies for how the generation of waste and recyclables from the development will be minimized

44. When approved, the plan will be endorsed and will then form part of the permit. Waste collection from the development must be in accordance with the plan, to the satisfaction of the Responsible Authority.

45. All wastewater must be discharged into the reticulated sewerage system to the satisfaction of the Responsible Authority.

46. All waste bins containing food waste must be collected by a waste collection contractor at a minimum of once per week, so as to not cause overflow to the satisfaction of the Responsible Authority.

47. An adequate number of bins for the storage of waste created by the food businesses must be provided to the satisfaction of the Responsible Authority.

48. An area must be provided for the storage of garbage bins and recycling services. This area must be:

a. paved;

b. screened and constructed; and

c. maintained in a clean and tidy state free from offensive odours; to the satisfaction of the Responsible Authority.

49. All bins and receptacles used for the collection and storage of garbage, bottles and other solid wastes shall be kept in a storage area screened from view to the satisfaction of the Responsible Authority.

Subdivision

50. The owner of the land must enter into an agreement with:

a. a telecommunications network or service provider for the provision of telecommunication services to each lot shown on the endorsed plan in accordance with the provider's requirements and relevant legislation at the time; and

b. a suitably qualified person for the provision of fibre ready telecommunication facilities to each lot shown on the endorsed plan in accordance with any industry specifications or any standards set by the Australian Communications and Media Authority, unless the applicant can demonstrate that the land is in an area where the National Broadband Network will not be provided by optical fibre.

51. Before the issue of a Statement of Compliance for any stage of the subdivision under the Subdivision Act 1988, the owner of the land must provide written confirmation from:

    a. a telecommunications network or service provider that all lots are connected to or are ready for connection to telecommunications services in accordance with the provider's requirements and relevant legislation at the time; and

    b. a suitably qualified person that fibre ready telecommunication facilities have been provided in accordance with any industry specifications or any standards set by the Australian Communications and Media Authority, unless the applicant can demonstrate that the land is in an area where the National Broadband Network will not be provided by optical fibre.

52. The plan of subdivision submitted for certification under the Subdivision Act 1988, must show appropriate easements set aside for drainage purposes, to the satisfaction of the Responsible Authority.

53. Before a statement of compliance is issued under the Subdivision Act 1988, a sum equivalent to 5% of the site value of all the subject land in the subdivision must be paid to the Responsible Authority.

54. Unless otherwise approved in writing by the responsible authority, before a statement of compliance is issued under the Subdivision Act 1988:

    a. The development approved by Planning Permit 210196 must be substantially complete (i.e. lockup stage as a minimum) in accordance with the endorsed plans forming part of that planning permit (or any amendment to that permit) to the satisfaction of the responsible authority. Evidence must be submitted which demonstrates that the development is substantially complete to the satisfaction of the responsible authority;

    OR

    b. The owner of the land must enter into an under Section 173 of the Planning and Environment Act 1987 with the responsible authority. The agreement must be in a form to the satisfaction of the responsible authority, and the owner/applicant must be responsible for the expense of the preparation and registration of the agreement, including the responsible authority's reasonable costs and expense (including legal expenses) incidental to the preparation, registration and enforcement of the agreement. The agreement must contain covenants to be registered on the Title of the property so as to run with the land, and must provide for the following:

        i. All development on the subject land must be in accordance with the endorsed plans forming part of Planning Permit [insert permit number] (or any amendment to that permit) or any subsequent planning permit issued by the responsible authority, unless otherwise agreed in writing by the responsible authority.

        ii. The agreement will be registered on Title in accordance with Section 181 of the Planning and Environment Act 1987.

Engineering Conditions

55. Before the issue of Certification for the plan of subdivision, a landscape plan must be prepared by a landscape architect or suitably qualified person/company and must be submitted to and approved by the Responsible Authority. The plans must be prepared to the satisfaction of the Responsible Authority. When approved, the plans will be endorsed and form part of the permit. The plans must be drawn to scale with dimensions. An electronic copy (PDF) must be provided. The plans must show:

    a. Existing vegetation to be retained and removed;

    b. Proposed street trees at approximately 10 m intervals where appropriate;

    c. A schedule of proposed species that are to be planted on the site including scientific names;

    d. The incorporation of locally indigenous species;

    e. Quantities of all species to be planted on site including their size when mature;

    f. A notation on the landscape plan providing that the permit holder will maintain all landscaping (including any replacement of dead or diseased plants) as per the endorsed landscape plan for a period of two years to the satisfaction of the Responsible Authority;

    g. The type of species to be used for street tree planting. All proposed street-tree planting to use semi-advanced trees, with minimum container size of 45 litres; and

    h. Access to each lot in the subdivision.

56. Before certification of the Plan of Subdivision and commencement of any works, detailed civil construction plans must be prepared to the satisfaction of the Responsible Authority for endorsement by the Responsible Authority. All construction plans submitted for approval must be consistent with this permit and must conform with the requirements of all relevant servicing and road authorities, and in particular water, sewerage, drainage, telephone, gas and power authorities, DoT (VicRoads) and Council.

    The plans must be drawn to scale with dimensions. An electronic copy (PDF) must be provided. The plans must show:

    a. Drainage of the subject land, including levels or contours of the land (including relevant external catchments) and all hydraulic computations. The drainage plan must be prepared in accordance with the requirements of the Infrastructure Design Manual (IDM) as amended and must provide for the following:

        i. How the land including all buildings, open space and paved areas will be drained for a 10% AEP storm event to the legal point of discharge.

        ii. An underground pipe drainage system conveying stormwater to the legal point of discharge and connecting into Bass Coast Shire Council's stormwater drainage system.

iii. The provision of a drainage retardation system within the site and prior to the point of discharge into Bass Coast Shire Council's drainage system. The stormwater retardation system must be designed to ensure that stormwater discharges arising from the proposed development of the land are restricted to pre-development flow rates for storm events up to and including the 1% AEP. Retardation should also be in accordance with the capacity of the existing culvert discharging across Bass Highway.

iv. Proposed Council drainage assets on the new service road and connection into existing drainage system.

v. Delivery of the Melbourne Water scheme assets on the frontage of Grantville-Glen Alvie Road.

vi. Provision of over-land surcharge routes for all storm events up to and including the 1% AEP. This must include associated infrastructure for the safe and effective passage of stormwater flows arising from areas upstream of the subject land discharging into Bass Coast Shire Council's drainage system.

vii. Compliance with the Best Practice Environmental Management Guidelines for Urban Stormwater including any quality treatments proposed in accordance with these Guidelines and Clause 22.01 of the Bass Coast Planning Scheme.

b. Vehicle and pedestrian access and car parking in accordance with IDM standards and to the satisfaction of the Responsible Authority, including:

i. Engineering plans and specifications of the proposed works including all roads, intersections, traffic calming, traffic circulation, signage, footpaths and pedestrian linkages.

ii. All public roads to have asphalt wearing course pavement with kerb and channel; Proposed Service Road must be sealed throughout (including any interim treatment until the land to the south has been developed).

iii. Intersection treatments for traffic channelization including entry threshold treatments with Statcon signage, splitter islands and turn lanes.

iv. Roads to have a carriageway width in accordance with the road hierarchy in the IDM.

v. Concrete footpaths in accordance with the endorsed development plan including all path linkages to existing network.

c. Standard street lighting to be provided in accordance with IDM requirements.

All works must be constructed or carried out in accordance with those plans before the issue of Statement of Compliance for the Plan of Subdivision.

Construction Management Plan

57. Before certification of the Plan of Subdivision and commencement of any works, a Construction Management Plan (CMP) must be prepared to the satisfaction of the Responsible Authority for endorsement by the Responsible Authority. The plans must be drawn to scale with dimensions. An electronic copy (PDF) must be provided. The plan must address, but not be limited to following:

    a. Address occupational health and safety, traffic management, environmental controls and cultural protection measures to the satisfaction of the responsible authority.

    b. Include the proposed route for construction vehicle access to the site including a program for the upgrade and maintenance works required along this route while works are in progress.

    c. Include measures to reduce the impact of noise, dust and other emissions created during the construction process.

    d. Demonstrate all environmental and cultural protection measures identified on a drawing(s) drawn to scale and prepared in accordance with Melbourne Water standards for such drawings.

    e. Measures to ensure that no mud, dirt, sand, soil, clay or stones are washed into or allowed to enter the storm water drainage system.

    f. Include means by which foreign material will be restricted from being deposited on public roads by vehicles associated with the building and works on the land to the satisfaction of the responsible authority.

    g. Address any recommendations of any approved Cultural Heritage Management Plan applying to the land.

    h. Identify the location and method of any Tree Protection Zones.

    i. All machinery bought on the site must be weed and pathogen free.

    j. A truck wheel-wash must be installed and used or a similar arrangement employed so vehicles leaving the site do not deposit mud or other materials on roadways. All machinery wash down, lay down and personnel rest areas must be clearly fenced and located in disturbed areas.

    k. Contractors working on the site must be inducted into an environmental management program for construction works.

    l. Best practice erosion and sediment control techniques must be used to protect any native flora and fauna.

    m. Appropriate mechanisms for protecting environmental and heritage assets during the construction phase of subdivision.

    n. landscaping, re-vegetation and construction works carried out on the site must be supervised by a person with recognised environmental qualifications.

o. hours of construction work. The CMP must provide that such hours are to be 7.00am to 6.00pm Monday to Friday and 7.00am to 1.00pm Saturday, with no construction on Sunday or public holidays. The CMP must provide that the hours of construction from Monday to Saturday (inclusive) may be extended with the consent of the Responsible Authority provided all adjoining residents are notified prior to the extended hours of construction. All deliveries, unloading and collection of materials associated with the construction phase of the development must occur within the hours of construction work, unless further permission is given in writing by the Responsible Authority.

p. location of the construction workers compound. The compound must be located a reasonable distance from any neighbouring residence to minimise amenity impacts. The compound must be used for the storage of building materials, parking for construction workers and as the location for the site offices and amenities.

q. management of all building and construction waste, including any measures to recycle materials generated during construction.

r. locations of cut and fill stockpiles.

s. the gravel and any other approved soil-derived material used in the construction of pedestrian links and paths must be guaranteed Phytophthora free.

t. a liaison officer for contact by residents and the Responsible Authority in the event of relevant queries or problems experienced.

u. timing of bulk earth works. The CMP must detail conditions that will cause bulk earth works to be suspended (for example after significant and prolonged rain event).

v. reporting requirements to demonstrate compliance with the latest revision of the following documents:

   i. EPA guidelines for Major Construction Sites and Techniques for Sediment Pollution Control and other provisions of the approved EMP;

   ii. Best Practice Environmental Management Guidelines for Urban Stormwater;

   iii. Environmental Guidelines for Urban Stormwater (EPA Publication)

   iv. Construction Techniques for Sediment Pollution Control (EPA Publication)

The Construction Management Plan, once endorsed, will form part of the permit. All works constructed or carried out must be in accordance with the approved Construction Management Plan. All care must be taken to minimise the effect of construction activity on the amenity of the surrounding neighbourhood. Once endorsed the Construction Management Plan must not be altered except with the written consent of the Responsible Authority.

58. Before the issue of a Statement of Compliance and commencement of use, all works must be completed in accordance with IDM standard drawings to the satisfaction of the Responsible Authority including:
    a. All roads, paths, drainage and any public infrastructure in accordance with the endorsed civil design plans.
    b. redundant infrastructure must be removed and the area reinstated to the satisfaction of the Responsible Authority including appropriate kerb and channeling, footpath and landscaping;
    c. standard street lighting must be provided in accordance with the IDM and the endorsed civil design plans;
    d. all landscaping works in accordance with the endorsed landscape plan.
59. Before the issue of a Statement of Compliance and commencement of use, the following must be provided to the responsible authority:
    a. CCTV footage of the Council drainage assets in accordance with the IDM.
    b. Copies of the "as constructed" engineering roads, drainage, lighting, water reticulation and landscaping drawings as follows:
    c. One A1 film tracing per drawing.
    d. Collated electronic PDF format.
    e. "As constructed" digital data measurements of the drainage works in a GIS ready format. The format required is:
    f. ESRI Shapefile format complying with Council's template (subset of A-Spec Digital Data Specification).
    g. Horizontal Datum: GDA94 on MGA94 Zone 55.
    h. Vertical Datum: AHD.
    i. Location of any permanent survey marks.

Civil Works Fees

60. Before the issue of a Statement of Compliance and commencement of use, the developer must pay:
    a. 0.75% of the total estimated cost of the public civil and landscaping works of the project for the checking of engineering plans associated with the development by this permit; and
    b. 2.5% of the total estimated cost of the public civil and landscaping works of the project for the supervision of works associated with the development approved by this permit.

c. A refundable bond of 5% of the total estimated cost of the public civil works of the project for the purposes of ensuring any works defects are rectified during the 12 month defects liability period.

d. A refundable bond of 35% of the total cost of the public landscaping works for the purposes of ensuring soft engineering (e.g. plantings) are maintained including weeding and replacement of missing plants during the 12 month defect liability period.

Signage

61. The location and details of the signs, including those on the supporting structure, as shown on the endorsed plans, must not be altered without the written consent of the Responsible Authority.

62. The advertising signs must not:

    a. Dazzle or distract drivers due to any colouring;

    b. be able to be mistaken for a traffic signal because it has for example, red circles, octagons, crosses or triangles; and

    c. be able to be mistaken as an instruction to drivers.

63. The signs must not be animated, electronic or contain any flashing light.

64. The signage lighting must be designed, baffled and located to prevent any adverse effect on adjoining land to the satisfaction of the Responsible Authority.

65. The signs must be constructed and maintained to the satisfaction of the Responsible Authority.

Native Vegetation

66. Before the commencement of any works, the permit holder must advise all persons undertaking the vegetation removal or works on site of all relevant permit conditions and associated statutory requirements or approvals.

Endorsed plans

67. The Department of Environment, Land, Water and Planning Native vegetation report (ID: 304- 20210826-007, dated 26/08/2021) included with the application will be endorsed and form part of this permit.

68. Before any native vegetation removal/works start, plan(s) to the satisfaction of the responsible authority must be submitted to and approved by the responsible authority. When approved, the responsible authority will endorse the plan(s), which will then form part of this permit. The plan must be:

    a. drawn to scale with a key, north point, dimensions and georeferences (such as VicGrid94 co-ordinates), that clearly shows:

        i. the location and identification of the land affected by this permit, including standard parcel identifiers for the affected and adjacent land

ii. the location and area of all native vegetation present, including large trees within patches and scattered trees, that are permitted to be removed under this permit

iii. all areas of native vegetation to be retained

iv. the tree protection zones of all native trees to be retained

b. of a scale which enables the responsible authority to locate the native vegetation permitted to be removed and audited for compliance. For large or linear projects, the plan must include a master plan and detailed subplans to the satisfaction of the responsible authority.

Protection of retained native vegetation

69. Before any native vegetation removal begins/works start, plans to the satisfaction of the responsible authority must be submitted to and approved by the responsible authority. When approved, the responsible authority will endorse the plans, which will then form part of this permit. The plans must include:

a. a detailed description of the measures to be implemented to protect the native vegetation to be retained during construction works, and the person/s responsible for implementation and compliance. These measures must include the erection of a native vegetation protection fence around all native vegetation to be retained on site and within the adjacent road reserves, to the satisfaction of the responsible authority, including the tree protection zones of all native trees to be retained. All tree protection zones must comply with AS 4970-2009 Protection of Trees on Development Sites.

70. Except with the written consent of the responsible authority, within the area of native vegetation to be retained and any tree or vegetation protection zone associated with the permitted use and/or development, the following is prohibited:

a. vehicular or pedestrian access

b. trenching or soil excavation

c. storage or dumping of any soils, materials, equipment, vehicles, machinery or waste

d. entry and exit pits for the provision of underground services

e. any other actions or activities that may result in impacts to retained native vegetation.

Native vegetation permitted to be removed, destroyed or lopped

71. The native vegetation permitted to be removed, destroyed or lopped under this permit is 0.264 hectares of native vegetation, which is comprised of:

a. two patches of native vegetation including 3 large trees, with a strategic biodiversity value of 0.400

b. one large scattered tree

c. eight small scattered trees.

Native vegetation offsets

72. To offset the removal of 0.264 hectares of native vegetation, the permit holder must secure the following native vegetation offset in accordance with Guidelines for the removal, destruction or lopping of native vegetation (DELWP 2017:

    a. a general offset of 0.078 general habitat units:

        i. located within the Port Phillip and Westernport Catchment Management boundary or Bass Coast municipal area

        ii. with a minimum strategic biodiversity value of at least 0.320. The offset(s) secured must also protect four (4) large trees.

73. Before any native vegetation is removed, evidence that the required offset has been secured must be provided to the satisfaction of the responsible authority. This evidence must be one or both of the following:

    a. an established first party offset site including a security agreement signed by both parties, and a management plan detailing the 10-year management actions and ongoing management of the site, and/or

    b. credit extract(s) allocated to the permit from the Native Vegetation Credit Register.

Offset evidence

74. A copy of the offset evidence will be endorsed by the responsible authority and form part of this permit. Within 30 days of endorsement of the offset evidence, a copy of the endorsed offset evidence must be provided to Planning & Approvals at the Department of Environment, Land, Water and Planning Gippsland regional office by email at Gippsland.Planning@delwp.vic.gov.au.

First party offset reporting

75. Where the offset includes a first party offset, the permit holder must provide an annual offset site report to the responsible authority by the anniversary date of the execution of the offset security agreement, for a period of 10 consecutive years. After the tenth year, the landowner must provide a report at the reasonable request of a statutory authority.

Cultural Heritage Management Plan

76. With reference to section 63(1)(a)(i) of the Aboriginal Heritage Act 2006 (Act), the Bunurong Land Council Aboriginal Corporation as the Registered Aboriginal Party (RAP) have approved the Cultural Heritage Management Plan (CHMP) 18294 (prepared by Heritage Insight, 13 December 2021) which must comply with all conditions as set out within the CHMP and to the satisfaction of the Responsible Authority.

    (Please note: All activities carried out on the site must comply with the approved Cultural Heritage Management Plan 18294).

CFA

Hydrants

77. Prior to the issue of a Statement of Compliance under the Subdivision Act 1988 the following requirements must be met to the satisfaction of the CFA:

    a. Above or below ground operable hydrants must be provided. The maximum distance between these hydrants and the rear of all building envelopes (or in the absence of building envelopes, the rear of the lots) must be 120 metres and the hydrants must be no more than 200 metres apart. These distances must be measured around lot boundaries.

    b. The hydrants must be identified with marker posts and road reflectors as applicable to the satisfaction of the Country Fire Authority.

    Note: CFA's requirements for identification of hydrants are specified in 'Identification of Street Hydrants for Firefighting Purposes' available under publications on the CFA website (www.cfa.vic.gov.au).

Department of Transport

78. Access to the Bass Highway must be from the interim service road as shown on O'Brien Traffic drawing 21055008 dated 11 August 2021. The service road must extend a minimum of 30m past the existing median opening on the Bass Highway and be constructed to enable the completion of the ultimate service road as shown on the endorsed DPO3.

79. Access to the service road from the common property, must be in the form of concrete crossovers to the satisfaction of the Responsible Authority and the Head, Transport for Victoria.

80. Provide V3 roadway lighting on the Bass Highway to the satisfaction of and at no cost to the Head, Transport for Victoria.

81. Prior to the certification of the subdivision, detailed functional layout plans of the service road must be submitted and approved by the Head, Transport for Victoria. The plans are to be in accordance with Gippsland Regions Developer funded checklists.

82. Prior to statement of compliance for stage 1, detailed design plans of the service road and the required roadworks must be submitted and approved by the Head, Transport for Victoria. The plans are to be in accordance with Gippsland Regions Developer funded checklists.

83. Prior to the statement of compliance for stage 1 herby approved, the service road and associated roadway modifications must be completed at no cost and to the satisfaction of the Head, Transport for Victoria.

84. Prior to plans being drafted, the applicant's consultants must attend a pre-design meeting with Gippsland Region. The consultants must be listed on the pre-qualified list of consultants appropriate for the design level.

85. The subdivision must proceed in the order of stages as shown on the endorsed plan unless otherwise agreed in writing by the Responsible Authority and the Head, Transport for Victoria.

86. Prior to the construction and signage installation, a Lighting Impact Assessment Report must be submitted, to the Head, Transport for Victoria for assessment. The Lighting Impact Assessment Report must be undertaken by a suitably qualified lighting consultant to assess the proposed signage against the Road Corporation's luminance criteria. The Lighting Impact Assessment Report must include the following:

    a. A detailed description of the proposed signage, including location, dwell time, lighting specification details, dimming/control functionality and hours of operation.

    b. A plan drawn to scale showing the proposed sign in elevation and plan view (including which signs are electronic and which are static).

    c. Photomontage images showing the proposed sign from a driver's perspective (with approximate distances) at locations where drivers would be most impacted by the proposed sign.

    d. Specify the existing night-time lighting condition as either High District Brightness, Medium District Brightness or Low District Brightness, and justify this decision.

    e. The proposed maximum luminance of the sign for each lighting condition, with detailed calculations provided to demonstrate compliance with the criteria outlined in Table 1. Calculations must use the definitions and methodology as described in AS4282 where relevant. A maintenance factor of 1 is to be used for all calculations.

    f. Where the graphical content or colours can change (such as for digital/electronic signage), a statement that the average luminance shall change by less than 30%.

    g. A certification, signed by a suitably qualified Lighting Consultant, stating that the design complies with the Department of Transport's Policy and Guidelines for Illuminated Outdoor Advertising Signage.

87. Prior to commencement of the development herby approved a truck wheel-wash must be installed at the property boundary to enable all mud and other tyre borne debris from vehicles to be removed prior to exiting the land.

88. The truck wheel-wash must be maintained in good order during the construction phase of the development and may be removed at the end of the construction phase of the development with the prior approval of the Head, Transport for Victoria.

Melbourne Water

89. Prior to the issue of a Statement of Compliance, the Owner shall enter into and comply with an agreement with Melbourne Water Corporation for the acceptance of surface and stormwater from the subject land directly or indirectly into Melbourne Water's drainage systems and waterways, the provision of drainage works and other matters in accordance with the statutory powers of Melbourne Water Corporation.

90. Pollution and sediment laden runoff shall not be discharged directly or indirectly into Melbourne Water's drains or watercourses. Prior to the issue of a Statement of Compliance, a Site Management Plan detailing pollution and sediment control measures must be submitted to Melbourne Water.

91. Prior to Certification, the Plan of Subdivision must be referred to Melbourne Water, in accordance with Section 8 of the Subdivision Act 1988.

92. Prior to Certification, a drainage strategy must be submitted to Melbourne Water. The drainage strategy must include details on outfall. The drainage strategy must be to the satisfaction of Melbourne Water and Council.

93. Stormwater runoff from the subdivision must achieve State Environment Protection Policy (Waters of Victoria) objectives for environmental management of stormwater as set out in the 'Urban Stormwater Best Practice Environmental Management Guidelines (CSIRO) 1999'.

94. Prior to the issue of a Statement of Compliance for the subdivision, engineering plans of the subdivision (in electronic format) must be submitted to Melbourne Water for our records. These plans must show road and drainage details and any overland flow paths for the 1% AEP storm event. A Certified Survey Plan may be required following our comments on the engineering drawings.

95. Alignment of roads and reserves with any adjoining estates must ensure continuity and provide uninterrupted conveyance of overland flows.

96. The subdivision is to make provision for overland flows from the upstream catchment utilising roads and/or reserves.

97. Any road or access way intended to act as a stormwater overland flow path must be designed and constructed to comply with the floodway safety criteria outlined in section 8 of the Guidelines for Development in Flood Affected Areas (DELWP 2019), or where appropriate to Council's requirements and standards.

98. All new lots must achieve appropriate freeboard in relation to local overland flow paths to Council's satisfaction.

99. Local drainage must be to the satisfaction of Council.

100. Any temporary or ultimate outfall is to be arranged to the satisfaction of Melbourne water and Council. Approval is to be forwarded to Melbourne Water for our records prior to certification of the first stage of subdivision.

101. Prior to the commencement of works, a separate application, direct to Melbourne Water, must be made for any works on or around our mains, drains and waterways. Applications shall be made online via the Melbourne Water website. Prior to the issue of a Statement of Compliance, copies of all relevant signed practical completion forms from Asset Services must be submitted.

Ausnet

102. The plan of subdivision submitted for certification must be referred to AusNet Electricity Services Pty Ltd in accordance with Section 8 of the subdivision Act 1988.

The applicant must –

a) Enter into an agreement with AusNet Electricity Services Pty Ltd for the extension, upgrading or rearrangement of the electricity supply to lots on the plan of subdivision. A payment to cover the cost of such work will be required.

b) Provide electricity easements internal and external to the subdivision in favour of AusNet Electricity Services Pty Ltd to service the lots on the plan of subdivision and/or abutting lands as required by AusNet Electricity Services Pty Ltd. The provision of reserves for electricity substations may also be required.

Westernport Water

103. Pursuant to Section 56(1)(b) of the Planning and Environment Act, the Corporation does not object to the granting of a permit, subject to the following specific conditions being placed on the permit:

a. Payment of a New Customer Contribution Fees and distribution contribution for water supply for the development, such amount being determined by the Corporation at the time of payment;

b. Provision of a reticulated water supply and associated construction works to each allotment within the development, at the developers expense, in accordance with standards of construction adopted by and to the satisfaction of Westernport Region Water Corporation;

c. Payment of any outstanding contributions towards existing water schemes, such amount being determined by the Corporation at the time of payment;

d. Provision of separate water services and individual water supply meters including testable backflow prevention devices to each allotment within the development.

e. Provision for grease trap installations that comply with Westernport Region Water Corporation's trade waste framework;

f. Any existing water service which crosses any of the proposed allotment boundaries within the proposed development must be disconnected and re-located at the developer's expense, to be wholly within one allotment only and to the satisfaction of Westernport Region Water Corporation;

g. Payment of a New Customer Contribution Fees and trunk sewer contribution for sewerage services to the development, such amount being determined by the Corporation at the time of payment;

h. Provision of reticulated sewerage and associated construction works to each allotment within the development, at the developer's expense, in accordance with standards of

construction adopted by and to the satisfaction of Westernport Region Water corporation;

i. Payment of any outstanding contributions towards existing sewerage schemes, such amount being determined by the Corporation at the time of payment;

j. Disconnection of any existing house connection drain crossing over proposed allotment boundaries, and each allotment to be independently and directly connected to a sewer main of Westernport Region Water Corporation;

k. Provision of easements in favour of Westernport Region Water Corporation over all existing and proposed sewer mains located within private property, and denoted for the purpose as Sewerage.

l. A notation is to be placed on the plan of subdivision to note that pursuant to Section 12(2) of the Subdivision Act 1988, there exists "implied easements" over all of the allotments and the common property within the development;

m. Alternatively, the developer is to provide a two metre wide easement over the common portion of the house connection drain, in favour of the benefiting land, to the satisfaction of Westernport Water Region Water Corporation;

n. Pursuant to Section 36 of the Subdivision Act 1988, Westernport Region Water Corporation considers that for the economical and efficient subdivision and servicing of the land covered by the Application for Permit it requires the owner of the land to acquire an easement over other land in the vicinity, namely any land not owned by the Developer through which a sewerage extension to service the development is to be located. The easements shall be created at the developers expense and shall be in favour of Westernport Region Water Corporation;

o. Preparation of a digitised plan of subdivision and ancillary requirements in accordance with the Corporations drafting standards and practices;

p. The operator under this permit must enter into an Agreement with Westernport Region Water Corporation relating to the design and construction of any sewerage or water works required to service the proposed development;

q. The form of such Agreement shall be to the satisfaction of Westernport Region Water Corporation. A copy of the format of the Agreement will be provided on request;

r. The plan of subdivision lodged for certification is to be referred to Westernport Water Region Water Corporation pursuant to Section 8(1) of the Subdivision Act 1988.

We (Westernport Water) further advise that this Corporation will not consent to the issue of a Statement of Compliance until the conditions in Planning Permit 210196 have been met.

Expiry of a Permit

104. This permit expires if:

Development

a. the development does not start within two (2) years after the issue of the permit; or

b. the development is not completed within four (4) years after the issue of the permit; or

Use

c. the use does not start within two (2) years after the completion of the development; or

d. the use is discontinued for a period of two (2) years; or

Subdivision

e. The subdivision is not certified within two years of the date of this permit; or

f. The registration of the subdivision is not completed within five years of the date of certification; or

Signage

g. A permit for a sign other than a major promotion sign expires on the date specified in the permit. If no date is specified, the expiry date is 15 years from the date of issue of the permit; or

h. Upon expiry of the permit, the signage and any structures built specifically to support and illuminate it must be removed.

Native vegetation removal

i. The removal, destruction or lopping of native vegetation does not start within two years of the date of this permit; or

j. The removal, destruction or lopping of native vegetation is not completed within ten years of the date of this permit; or

In accordance with Section 69 of the Planning and Environment Act 1987, an application may be submitted to the Responsible Authority for an extension of the periods referred to in this condition.

Notes:

- This permit does not constitute any authority to carry out any building works or occupy the building or part of the building unless all relevant building permits are obtained.

- As the development is to be used for a commercial enterprise involving handling of food or drink, then the applicant must contact Council's Environmental Health Department for further advice concerning legislative requirements.
- Permission given under planning legislation cannot be construed as permission relating to any other legislation under Council jurisdiction, such as Public Health & Wellbeing, Food or Tobacco Acts.

Asset Protection Permit

- Unless exempted by the Bass Coast Shire, an Asset Protection Permit must be obtained prior to the commencement of any proposed building works, as defined by Local Law No. 1 Neighbourhood Amenity 2012. Bass Coast Shire Council's Asset Protection Officer must be notified in writing at least 7 days prior to the building works commencing or prior to the delivery of materials/equipment to the site.

Road Occupation Permit

- A Bass Coast Shire Road Occupation Permit must be obtained prior to the commencement of the construction of all new vehicle crossings and for the upgrading, alteration or removal of existing vehicle crossings. The relevant fees, charges and conditions of the Road Occupation Permit will apply to all vehicle crossing works. It is a requirement that all vehicle crossing works be inspected by Bass Coast Shire Council's Asset Protection Officer.

Stormwater Discharge Point

- A Bass Coast Stormwater Discharge Point must be obtained prior to the connection of all new stormwater drainage into Bass Coast Council's stormwater drainage system. All new stormwater drainage connections must be inspected by Bass Coast Council's Asset Protection Officer before any backfilling of the connection is undertaken.

Memorandum of Authorisation

- Pursuant to Regulations under Part 2 – Installation of Traffic Control Devices – of the Road Safety (Traffic Management) Regulations 2009, the permit operator will need to apply to Council's Operations Team for authorisation to erect, display, place, remove or alter Traffic Control Devices.

CFA

- CFA also consents under Section 9 of the Subdivision Act to the Certification of the Plan of Subdivision. CFA does not require the Plan of Subdivision for this planning permit application to be referred under Section 8 of the Subdivision Act.

- CFA does not consent to the Statement of Compliance for Subdivision at this stage.

AUSNET

- It is recommended that, at an early date the applicant commences negotiations with AusNet Services for a supply of electricity in order that supply arrangements can be worked out in detail, so prescribed information can be issued without delay (the release to the municipality enabling a Statement of Compliance with the conditions to be issued).

- Arrangements for the supply will be subject to obtaining the agreement of other Authorities and any landowners affected by routes of the electric power lines required to supply the lots and for any tree clearing.

- Prospective purchasers of lots on this plan should contact this office to determine the availability of a supply of electricity. Financial contributions may be required.

DELWP

- Before any works on public land start, the permit holder must obtain a permit to take protected flora under the Flora and Fauna Guarantee (FFG) Act 1988. To obtain an FFG permit or further information, please contact the Gippsland Natural Environment Program on (03) 5172 2111 or email Gippsland.Environment@delwp.vic.gov.au

IMPORTANT INFORMATION ABOUT THIS PERMIT

WHAT HAS BEEN DECIDED?

The Responsible Authority has issued a permit

(Note: This is not a permit granted under Division 5 or 6 of Part 4 of the **Planning and Environment Act 1987**.) **Sch. 1**

CAN THE RESPONSIBLE AUTHORITY AMEND THIS PERMIT?

The Responsible Authority may amend this permit under Division 1A of Part 4 of the **Planning and Environment Act 1987**.

WHEN DOES A PERMIT BEGIN?

A permit operates:

- from the date specified in the permit; or
- if no date is specified, from—
  - (i) the date of the decision of the Victorian Civil and Administrative Tribunal, if the permit was issued at the direction of the Tribunal; or
  - (ii) the date on which it was issued, in any other case.

WHEN DOES A PERMIT EXPIRE?

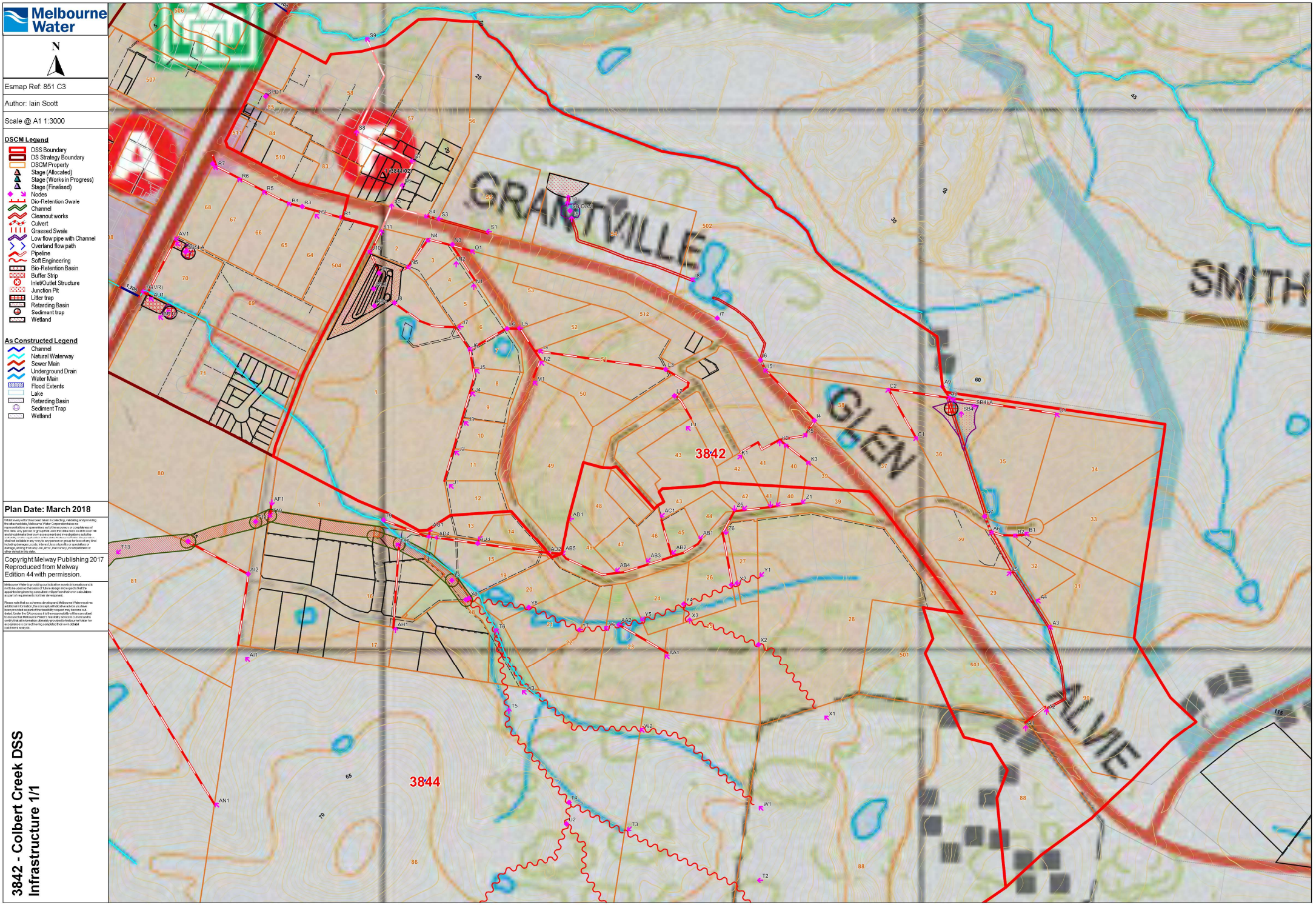
1. A permit for the development of land expires if—
   - the development or any stage of it does not start within the time specified in the permit; or
   - the development requires the certification of a plan of subdivision or consolidation under the **Subdivision Act 1988** and the plan is not certified within two years of the issue of the permit, unless the permit contains a different provision; or
   - the development or any stage is not completed within the time specified in the permit, or, if no time is specified, within two years after the issue of the permit or in the case of a subdivision or consolidation within 5 years of the certification of the plan of subdivision or consolidation under the **Subdivision Act 1988**.
2. A permit for the use of land expires if—
   - the use does not start within the time specified in the permit, or if no time is specified, within two years after the issue of the permit; or
   - the use is discontinued for a period of two years.
3. A permit for the development and use of land expires if—
   - the development or any stage of it does not start within the time specified in the permit; or
   - the development or any stage of it is not completed within the time specified in the permit, or, if no time is specified, within two years after the issue of the permit; or
   - the use does not start within the time specified in the permit, or, if no time is specified, within two years after the completion of the development; or
   - the use is discontinued for a period of two years.

4. If a permit for the use of land or the development and use of land or relating to any of the circumstances mentioned in section 6A(2) of the **Planning and Environment Act 1987**, or to any combination of use, development or any of those circumstances requires the certification of a plan under the **Subdivision Act 1988**, unless the permit contains a different provision—
    - the use or development of any stage is to be taken to have started when the plan is certified; and
    - the permit expires if the plan is not certified within two years of the issue of the permit.
5. The expiry of a permit does not affect the validity of anything done under that permit before the expiry.

WHAT ABOUT REVIEWS?

- The person who applied for the permit may apply for a review of any condition in the permit unless it was granted at the direction of the Victorian Civil and Administrative Tribunal, in which case no right of review exists.
- An application for review must be lodged within 60 days after the permit was issued, unless a notice of decision to grant a permit has been issued previously, in which case the application for review must be lodged within 60 days after the giving of that notice.
- An application for review is lodged with the Victorian Civil and Administrative Tribunal.
- An application for review must be made on the relevant form which can be obtained from the Victorian Civil and Administrative Tribunal, and be accompanied by the applicable fee.
- An application for review must state the grounds upon which it is based.
- A copy of an application for review must also be served on the responsible authority.
- Details about applications for review and the fees payable can be obtained from the Victorian Civil and Administrative Tribunal.

Appendix H – Melbourne Water Colbert Creek Development Services Scheme



Melbourne Water

N

Esmap Ref: 851 C3

Author: Iain Scott

Scale @ A1 1:3000

DSCM Legend

- DSS Boundary
- DS Strategy Boundary
- DSCM Property
- Stage (Allocated)
- Stage (Works in Progress)
- Stage (Finalised)
- Nodes
- Bio-Retention Swale
- Channel
- Cleanout works
- Culvert
- Grassed Swale
- Low flow pipe with Channel
- Overland flow path
- Pipeline
- Soft Engineering
- Bio-Retention Basin
- Buffer Strip
- Inlet/Outlet Structure
- Junction Pit
- Litter trap
- Retarding Basin
- Sediment trap
- Wetland

As Constructed Legend

- Channel
- Natural Waterway
- Sewer Main
- Underground Drain
- Water Main
- Flood Extents
- Lake
- Retarding Basin
- Sediment Trap
- Wetland

Plan Date: March 2018

Whilst every effort has been taken in collecting, validating and providing the attached data, Melbourne Water Corporation takes no representations or guarantees as to the accuracy or completeness of the data and accepts no responsibility for any errors in the data. The data is provided on an 'as is' basis and should make their own assessment and investigations as to the suitability, quality, application of the data. Melbourne Water, their employees, shall not be liable in any way to any person or group for loss of any kind including damages, costs, interest, loss of profits or specialises or damage, arising from any use, error, inaccuracy, incompleteness or discrepancy in the data.

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Melbourne Water is providing our indicative assets information and is not to be used as the basis of future design and expects that the appointed engineering consultant will perform their own calculations as part of requirements for their development.

Please note that as schemes develop and Melbourne Water receives additional information, the conceptual/indicative advice you have been provided as part of the feasibility request may become out-dated. Under the DA process it is the responsibility of the consultant to ensure that Melbourne Water's feasibility advice is current and to certify that all information ultimately provided to Melbourne Water for approval is correct and may completely from their own assumptions and forward analysis.

3842 - Colbert Creek DSS
Infrastructure 1/1

Appendix I – Comments from Bass Coast Shire Council

23 July 2024

Taylors Development Strategists C/- Mark Stubbs
PO Box 938
MOUNT WAVERLEY VIC 3149

Dear Sir/Madam,

Property Address:	**1517-1529 Bass Hwy GRANTVILLE** **Lot 1 143125 SP 0**
Application No.:	**PDPLANPER-2024/001870**
Description:	**Use and development of land for service station, convenience restaurant, and retail premises, and childcare centre in a Mixed Use Zone (MUZ1), altering access to a TRZ2 and removal of native vegetation**

ADDITIONAL and AMENDED Request for Further Information

I refer to the above planning permit application received on 10-Jun-2024. In accordance with Section 54 of the *Planning and Environment Act 1987*, **you are required to provide the following additional information by 06/09/2024** so that Council may properly consider your application:

This Further Information Requests updates and supersedes the request of the 8 July 2024, to delete the request under point 5, and include additional information requested by Councils Development Services Team.

Policy response

1) A written statement which explains how the amenity of the proposed childcare centre, with it's outdoor open play area which fronts both Bass Highway and Grantville Glen Alvie Road, with highly permeable fencing at the boundary is impacted in terms of noise, pollution and safety from these roads and their use, which should be considered under policy 13.05-1S, 13.06-S 13.07-1S

   Note: The submitted report appears to consider the impact and layout of the proposed child care centre on the surrounding area without addressing the suitability of the location of such a use given the surrounding land use/transport/activity (ie. the impacts of the surrounds on the child care centre).

Arboricultural assessment, Vegetation Removal and Landscaping

2) The applicant seeks to retain vegetation and has not adequately outlined how the vegetation can be retained with the proposed development. The Landscape Plan indicates that a footpath will run through the retained vegetation including canopy trees structural root zones. Therefore an arborist report will need to satisfactorily demonstrate that these trees will remain viable otherwise additional offsets will be required due to consequential loss.

   THEREFORE

   Provide a written arboricultural impact assessment, prepared by a suitably qualified Arborist (Diploma in Arboriculture AQF Level 5 or higher relevant qualification) which must include:

   a) Cover page with report title, the client who commissioned the report and the address of the site to which the report relates.

   b) A Summary of the report (Executive Summary).

   c) Introduction which includes the brief for undertaking the report and date of the site inspection.

   d) Description - background information relevant to the report (Le., previous site use or condition).

   e) Methodology - the Methods orTechniques used in data collection required for the report.

   f) A Site map/plan with aerial image or survey of the site showing the location of all trees referred to in the report and giving them an individual identifying reference number. This reference number is to be used to identify the tree within the text of the report.

   g) Tree Data and Observations Table - each tree is to be identified by both common name and botanical name, Tree Physical Dimensions: - height, canopy spread and diameter at breast height (DBH taken at 1.30 metres above ground), Useful Life Expectancy (ULE), Tree Protection Zone (TPZ) , Structural Root Zone (SRZ) measurements and encroachment percentages.

   h) Analysis of the data collected, where collected data is discussed. This may include detailed information regarding structural dysfunctions, wounds, impacts on root zones, pests, and diseases, etc.

   i) Discussion on analysis of the potential effects of a proposed development on existing and proposed trees based on the recorded tree data covering impacts to tree health, modifications to habit (Le., canopy modifications) and or root zones.

j) Recommendations for methods to avoid or minimise potential damage to trees on the site and, where appropriate, on immediately adjoining properties. This would include, but is not Limited to recommendations on the following issues:

   i. Specification of design alterations and/or construction methods which will be employed to avoid or minimise impacts to trees being retained such as the use of pier and beam construction as opposed to strip footings.
   ii. Specification of trees being retained, and trees being removed.
   iii. Tree Protection and Management Programme addressing the following subsections:
   iv. Proposed construction methods to minimise damage to identified trees e.g., use of pier and beam construction as opposed to strip footings.
   v. Specifications for tree protection measures should be applied as prescribed in AS 4970-2009.
   vi. Specification of remedial tree works pre and post development compliant with AS 4373-2007 and AS 4970-2009, if necessary, and in line with recommendations.
   vii. Proposed inspection schedule to assess tree health for the various stages of development such as site establishment, construction work, hard and soft landscaping practical completion.

k) Specification and scheduling of necessary tree care/maintenance required before, during and post construction (such as watering and fertilising trees).

3) Where the arboricultural impact assessment required by point 2, cannot demonstrate the trees retained will remain viable, the offsets within the ecology report and native vegetation removal report will require amending.

4) Amend the Landscape Plan to:

   a) Incorporate the planting of large native canopy trees;

   b) Plantings that reflect the character of the area and are cognizant of wind exposure and coastal character.
   https://www.basscoast.vic.gov.au/services/environment/native-vegetation-lists

Note: The proposes the use of small to medium canopy trees. Councils Arborist has assessed the proposal and considers that large trees can be incorporated into the design. Lagerstroemia sp., Olea sp, Tristaniopsis laurina, Zelcova serrataare not suitable plantings for the coastal environment. The Town Planning report states the proposal seeks to reflect the coastal setting, however the Landscape Plan does not indicate any coast trees or plants are to be planted.

5) * DELETED 23/7/24***.**

Information required in relation to the Site Plans/Floor Plans

6) Amend the submitted plans to show:

a) The Convenience Restaurant clearly identified and including internal layout (labelled)

Note: The plans refer to a QSR store with no explanation of what this is on the plans or within the town planning report (though it appears to be a company). It would appear to be the site used for a proposed convenience restaurant that is applied for.

b) The extent of all internal and boundary fencing

Note: The submitted plans do not clearly identify the extent of any proposed and/or existing fencing. Annotation has been used, but the extent of fencing is unclear. This must be shown on the Landscape Plan also.

c) Annotate the flagpoles as 'existing'

Note: The submitted plans show 4 x flagpoles within the road reserve which appear to be existing, but not annotated as such, as has been done with other works such as the 'existing pedestrian path'.

Information required in relation to the Elevation Plans

7) Amend the submitted Elevation Plans to show:

a) Titles of all internal elevations to identify the use/building to which the elevation represents

b) Overall building height from natural and finished ground level for each building/structure in each elevation.

c) Boundary fencing height outlined on each elevation, where applicable.

Car Parking and Bicycle Requirements

8) Amend the report to accurately address the car parking requirements and bicycle requirements for Retail Premises and Convenience Restaurant. This includes:

   a) Addressing the car parking and bicycle requirements for Retail Premises rather than Shop (or inclusion of the land use term Shop).

      The application is applying for retail premises, and although no tenants are currently proposed, it would appear that one of the premises is likely a food and drink premises as it shows outdoor dining areas on the development plans. As such, unless the application is to be amended to apply for the land uses of Shops and Food and Drink Premises, then the proposed land use is considered as Retail Premises.

   b) Provide the floor area on which the calculations are based for both car parking and bicycle requirements.

   c) Provide the floor area of the Convenience Restaurant available to the public, on which the calculations are based.

   d) Amend the requisite development plans to show the internal layout of the proposed convenience restaurant, with the public area clearly demarcated.

Note: IF following the above requirements of point X of this letter, a planning permit is required for a waiver of bicycle requirements, the application must be amended.

Additional Requests 23/7/24 - Development Services Requirements (point 9)

9) Amend the **Stormwater Management Plan** (SWMP) as follows:

   a) The SWMP submitted for the development fails to identify that the entire site doesn't drain to the corner of Bass Highway and Grantville Glen Alvie Road, but only a section of it. The report maintains that the entire site drains towards the nominated LPOD when really this is not the case. Only a third of the site drains towards the corner of Bass Highway and Grantville Glen Alvie road. The rest of the site sheet flows into the overland swale.

      Therefore, the SWMP will need to be revised to demonstrate that redirecting some of the catchment can be achieved and that the attenuation devices put in place are sufficient to retard flows to predevelopment flows. Computational content should be provided to substantiate the claims.

   b) It's unclear how the retarding devices generally function. Part of the SWMP will need to explain the general anatomy of the device and elaborate how runoff enters and exits the

device while being attenuated. Both major, minor and gap flows should be addressed when entering this device.

c) Section 1.2 of the report mentions Colac road and a temporary retarding basin. This should be amended accordingly as it seems to be irrelevant and does not pertain to the development application at hand.

d) Provide a **Cut and Fill Plan** that demonstrates how the overland flow path functions.

While the submitted SWMP mentions the overland flow path is part of this strategy, it does not detail how this is to be achieved.

If your plans are amended to alter the design of the development, ensure all supporting documentation (e.g. written responses/reports, design response, shadow diagrams) is modified accordingly to ensure consistency.

ADDITIONAL Preliminary Design Concerns

Following a preliminary assessment of your planning permit application a number of issues have been identified including the following:

1) While the upper level of the retail premises abutting the south wall of the child care centre has provided a sill height of 2m to prevent overlooking into the outdoor play area, the 45 degree horizontal view plan from the south facing open elevation of this area still has visual access into the outdoor play area. Consideration should be given to additional screening to prevent overlooking.

2) There is greater opportunity for screening/buffer planting between the car parking of the retail premises and service station.

3) While the permeable fencing along the child care boundaries provides for a more active frontage to both roads, there are concerns over the traffic impact (noise) on the amenity of the outdoor play area. Consideration should be given to clear/solid infill to reduce noise and pollution along the Bass Highway frontage

4) A Tree Removal and Retention Plan which clearly outlines which trees are to be retained and which trees are to be removed would likely be required as a condition of any permit issued. Consideration should be given to submitting as part of the application (Arborist Report) *[additional point added 23/7/24].*

It is recommended that you address the above concerns prior to the notification process of your application.

Should the application be amended, either voluntarily or in response to the further information requested above, the requirements of Section 50/Section 50A/Section 57A of the Act apply. This includes a requirement that Council is advised that the landowner/s has been made aware of the amended application. This can be provided in the form of the owner's signature or a declaration from the applicant that the owner has been notified.

If amendments are made prior to public notice, then there is no additional fee to pay for those amendments. Where amendments are made after public notice, an additional fee is required at the time of request. Additional fees may also be required depending on the scope of the amendments.

UPDATED Referrals

Please be informed that your planning permit application **has** been referred to:

- **Waste Management Team and Environmental Health Team**
- **EPA, CFA, Melbourne Water, Westernport Water, VicRoads, Earth Resources,.**

You will be notified of any responses should they affect your proposal.

Responding to this letter

Please provide the above requested information to Council via email correspondence to ANNETTE.GUILFOYLE@BASSCOAST.VIC.GOV.AU by no later than 06/09/2024.

The requested information must be submitted by the date mentioned above. If the information is not provided within this timeframe, your application will lapse without recourse. If you allow this application to lapse, you will need to submit a new application and provide the applicable fees again.

Should you need more time to provide the information a request must be submitted in writing to Council for consideration before the lapse date. Please ensure you provide the proposed new date you seek to submit the information as well as justification to enable a consideration of your request noting that Council has the right to refuse the request.

We are unable to further process your permit application until we receive this information. On receipt of the information, we will decide as to whether the owners and occupiers of nearby properties must be notified of your permit application.

Further questions

If you require further assistance, please contact me on 0455 525 897 or by email at ANNETTE.GUILFOYLE@BASSCOAST.VIC.GOV.AU

Yours faithfully



Annette Guilfoyle
Statutory Planner

13 November 2024

Taylors Development Strategists C/- Jack Manion
PO Box 938
MOUNT WAVERLEY VIC 3149

Dear Sir/Madam,

Property Address:	**1517-1529 Bass Hwy GRANTVILLE** **Lot 1 143125 SP 0**
Application No.:	**PDPLANPER-2024/001870**
Description:	**Use and development of land for service station, convenience restaurant, retail premises, and childcare centre in the Mixed Use Zone (MUZ1); alteration of access to a road in the Transport Zone 2 (TRZ2); and removal of native vegetation**

Request for Further Information

I refer to the above planning permit application received on 10-Jun-2024. In accordance with Section 54 of the *Planning and Environment Act 1987*, **you are required to provide the following additional information by 13/12/2024** so that Council may properly consider your application:

Stormwater Management

1) Amend the Stormwater Management Plan to address the following:
    a) Demonstrate that redirecting some of the catchment can be achieved and the attenuation devices put in place are sufficient to retard flows to predevelopment flows. Computational content is to be provided to substantiate the claims.

    NOTES: The submitted Stormwater Strategy (dated 18 October 2024) fails to identify that the entire site doesn't drain to the corner of Bass Highway and Grantville-Glen Elvie Road. The report maintains that the entire site drains towards the nominated Legal Point of Discharge (LPOD), which is not the case. Only a third of the site drains towards this corner. The rest of the site sheet flows into the overland swale. An application fee of $0.00.

b) Amended calculations:

i. Capacity calculations for the existing culvert across the Bass Highway proposed as the LPOD for the site. Include consideration of existing flows coming down Grantville Glen-Alvie Road from upstream.

ii. Re-Calculation of the permissible site discharge (PSD) based on the existing predeveloped discharge into the proposed culvert across Bass Highway & the available capacity of the culvert.

NOTES: There is no evidence provided to suggest there is any capacity within the underground culverts beneath Bass Highway.

c) Reference to the Colbert Creek drainage scheme and divulged in terms of what it involves - this should be included in the overarching strategy that the SWMS is striving for.

NOTES: The current SWMS does not mention anything about Melbourne Water assets on the frontage of Grantville-Glen Alvie Road.

d) Submit a cut and fill plan.

NOTES: A cut and fill plan is required in order to provide an understanding of how the overland flow path functions can be gained.

OFFICER COMMENT:

It is strongly advised that to ensure the above Stormwater Management requirements are sufficiently addressed before resubmission, please correspond directly with Council's Development Services Team. In particular, please contact the following engineering officer:

Janahan Karunaharan

Development Engineer

MOB 0466 861 304| f (03) 5671 2222 |e janahan.karunaharan@basscoast.vic.gov.au

If your plans are amended to alter the design of the development, ensure all supporting documentation (e.g. written responses/reports, design response, shadow diagrams) is modified accordingly to ensure consistency.

Referrals

Please be informed that your amended planning permit application **has** been referred to the following teams/authorities, and where no response has as yet been received by Council:

- **Melbourne Water**
- **Country Fire Authority (CFA)**
- **Department of Energy, Environment and Climate Action**
- **Department of Transport and Planning**
- **Resources Victoria**

You will be notified of any responses should they affect your proposal. It is advisable to wait for referral responses prior to submitting a response to this letter as feedback received may impact the final design outcome.

Responding to this letter

Please provide the above requested information to Council via email correspondence to ANNETTE.GUILFOYLE@BASSCOAST.VIC.GOV.AU by no later than 13/12/2024.

The requested information must be submitted by the date mentioned above. If the information is not provided within this timeframe, your application will lapse without recourse. If you allow this application to lapse, you will need to submit a new application and provide the applicable fees again.

Should you need more time to provide the information a request must be submitted in writing to Council for consideration before the lapse date. Please ensure you provide the proposed new date you seek to submit the information as well as justification to enable a consideration of your request noting that Council has the right to refuse the request.

We are unable to further process your permit application until we receive this information. On receipt of the information, we will decide as to whether the owners and occupiers of nearby properties must be notified of your permit application.

Further questions

If you require further assistance, please contact me on 0455 525 897 or by email at ANNETTE.GUILFOYLE@BASSCOAST.VIC.GOV.AU

Yours faithfully

Annette Guilfoyle

Statutory Planner

Appendix J – KLM SWMS (2021)

Stormwater Management Strategy

1517-1529 Bass Highway & 6-8 Grantville-Glen Alvie Road

For 1517 Bass Hwy Pty Ltd

August 2021

KLM SPATIAL

LAND DEVELOPMENT INTELLIGENCE

1517-1529 Bass Highway & 6-8 Grantville-Glen Alvie Road

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Document Control

Date Prepared	Version Number	Author	Reviewed	Distributed
16/08/21	D	S.Young	B.Girgis	Internal Client Council

1.0 Introduction

This report has been prepared by KLM Spatial on behalf of 1517 Bass Hwy Pty Ltd to assess stormwater management requirements for a proposed mixed-use development at 1517-1529 Bass Highway and 6-8 Grantville-Glen Alvie Road.

The assessment has been conducted by experienced engineers from KLM Spatial with consideration to the existing conditions, proposed site usage and layout, surrounding drainage scheme and relevant feedback/advice from Melbourne Water and Bass Coast Shire Council who are the responsible catchment management authorities.

The report considers the following elements of stormwater management relevant to development of the site:

- Drainage Catchments and Scheme
- Stormwater Quantity & Quality Management
- Proposed Drainage Network

2.0 Site and Surrounds

The subject site comprises two existing vacant lots, rectangular in shape and 0.78ha in area (1.56ha total).

The site is bound by Bass Hwy to the west, Grantville-Glen Alvie Road to the north and existing rural residential to the east and south.

The site grades from east to west, with a moderate grade of approximately 1:50.

Figure 1: Melways Image of Site and Surrounds

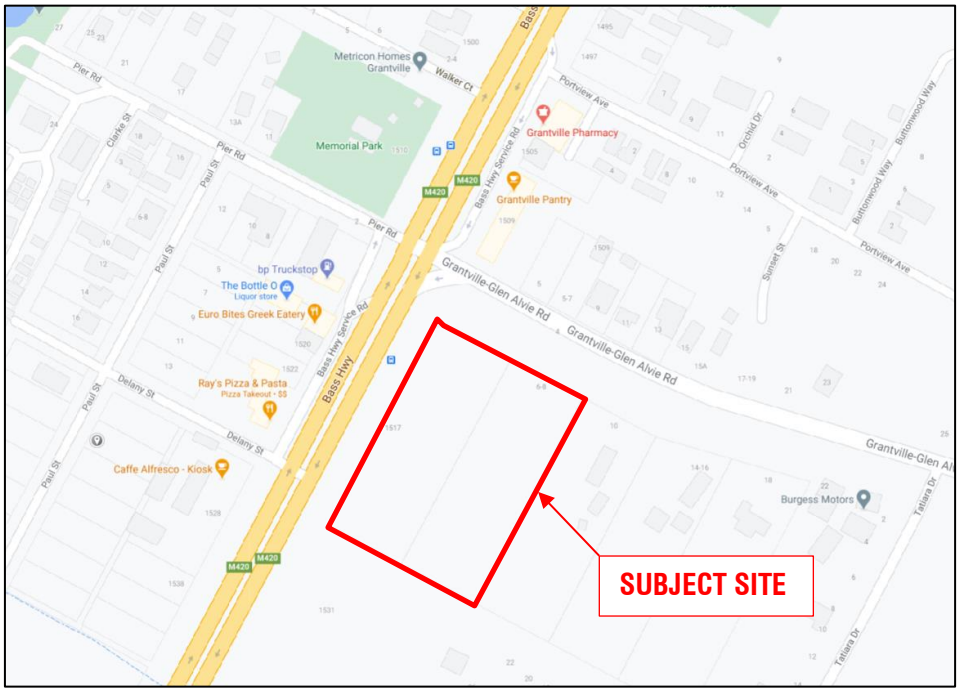


Figure 2: Aerial Image of Site and Surrounds



3.0 Proposed Development

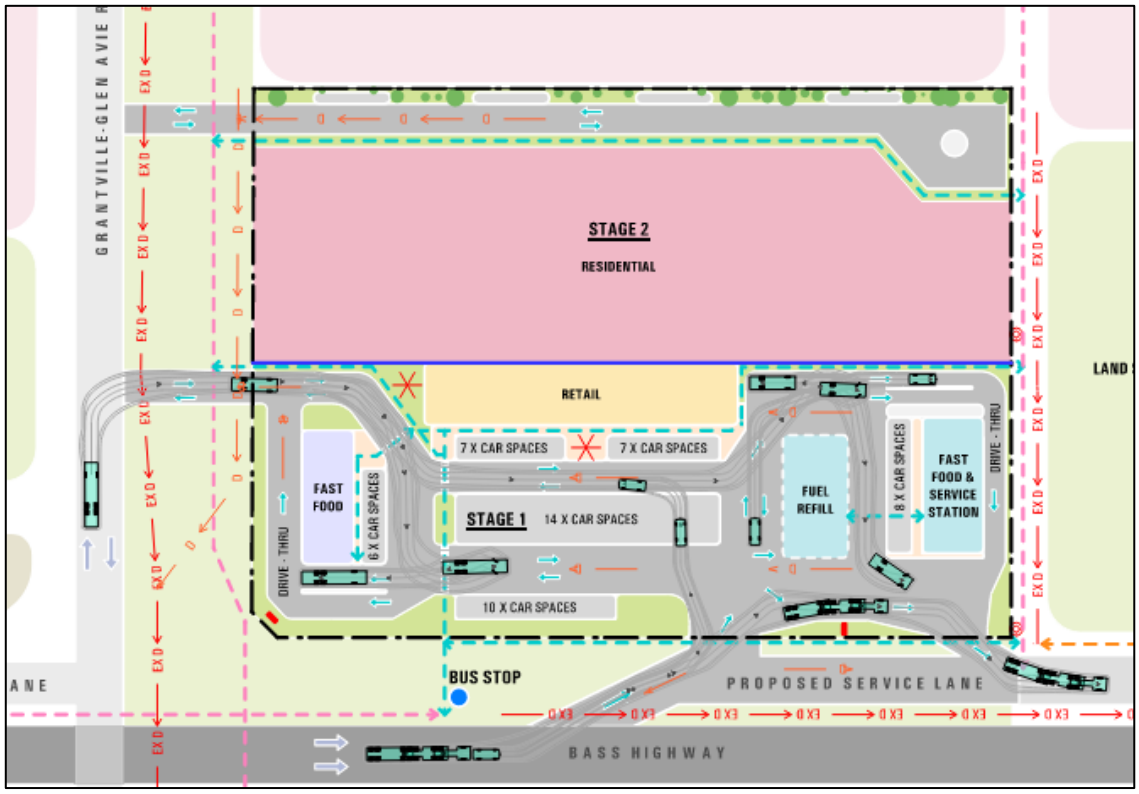
It is proposed to develop the two sites together, but to remain on separate titles.

The 1517-1529 Bass Highway Site (known as Stage 1 from herein) will be developed into a multi-use body corporate for commercial usage including a petrol station, food/retail, drive-thru and associated access ways and car parking.

The 6-8 Grantville-Glen Alvie Road Site (known as Stage 2 from herein) will be developed into body corporate residential lots. There will be a single private carriageway along the southern boundary for access.

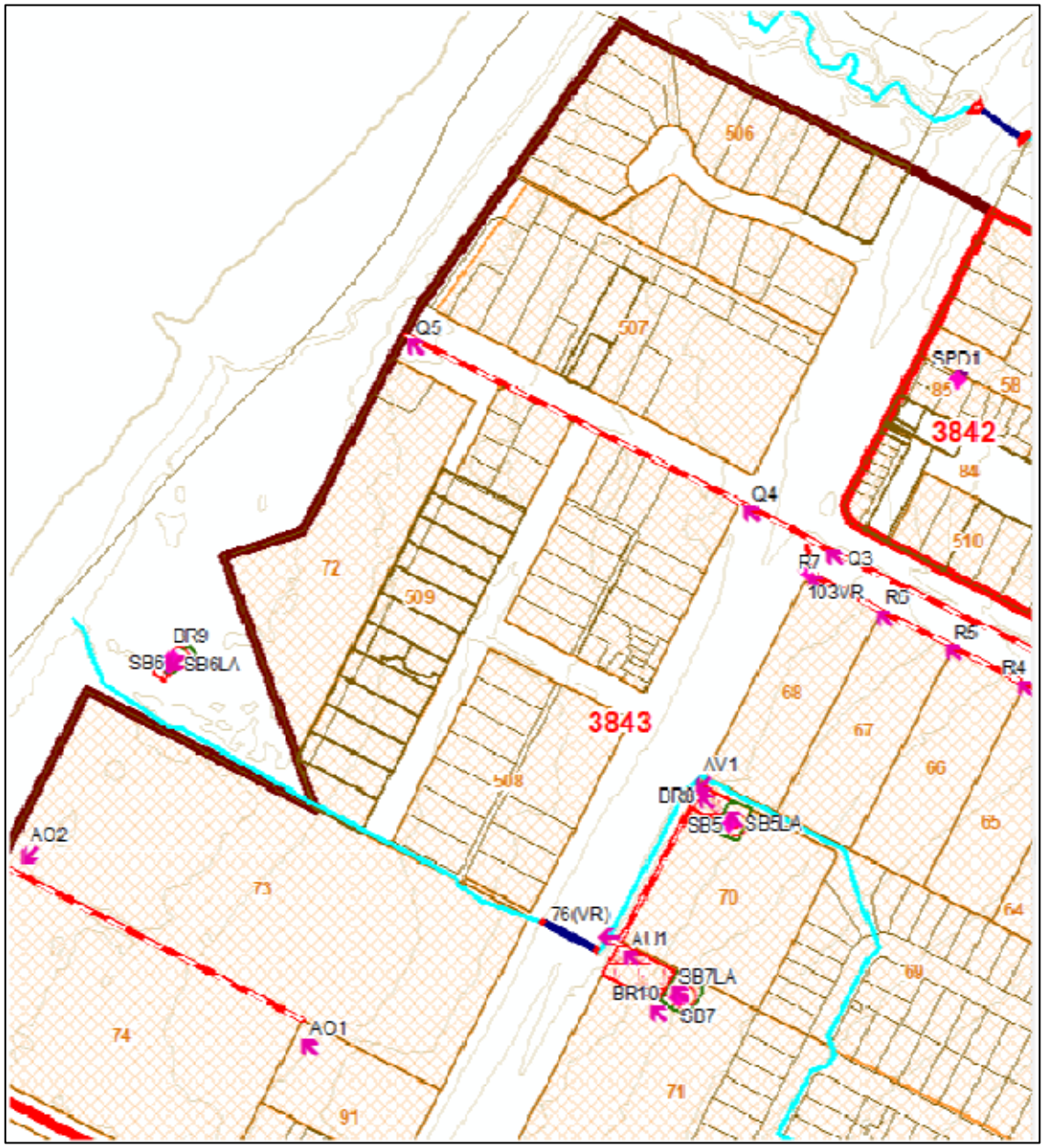
Please find a snapshot of the proposal below, the complete architectural plan can be found in *Appendix A*.

Figure 3: Proposed Layout Plan



The development falls within the Grantville Township Strategy (3843) an extract of which can be found below, a full map can be found in *Appendix B* alongside Melbourne Water preliminary servicing advice.

Figure 4: Glasscocks Road West DSS (0706)



Pipeline R7-R5 along the site frontage will need to be constructed as a part of this development. The pipe will be sized for the major or 1% AEP storm event.

The ultimate outlet for the subject site will be the Pipeline Q5-Q3, however, this will be constructed in the future by others at an unknown time. Accordingly, a temporary outlet for the development will be required.

The scheme will provide sufficient hydraulic capacity for the site in its ultimate state, however, there has been no treatment allowed for under the scheme.

Contributions will not be payable for the development to the scheme; however, the aforementioned scheme works will need to be funded by the developer.

4.0 Hydrology

Analysis has been undertaken to calculate existing and developed flows for the subject site in both the minor and major storm events.

Rainfall data has been sourced from the Bureau of Metrology Design Rainfall Data System (2016) and has been included in *Appendix C* for information.

Time of concentration for the catchments has been calculated using the sheet flow equation.

$$Tc = (108(n)\ L_f \wedge^{1/3}) / S \wedge^{1/5}$$

4.1. Minor Storm Event

The minor storm event includes rainfall events up to and including the 10% AEP storm for commercial areas and 20% AEP storm for residential catchments.

Please find below flow calculation for the minor storm event.

Minor (10%/20% AEP) Storm - Existing Flow Calculations								
Catchment	Area (ha)	L (m)	Slope (%)	n	tc (mins)	C	I (mm/hr)	Q (m3/s)
1	0.78	150	0.5	0.035	23	0.35	52.2	0.04
2	0.78	150	1	0.035	20	0.35	46.9	0.04

Minor (10%/20% AEP) Storm - Developed Flow Calculations								
Catchment	Area (ha)	L (m)	Slope (%)	n	tc (mins)	C	I (mm/hr)	Q (m3/s)
1	0.78	150	0.5	0.013	9	0.9	84.7	0.17
2	0.78	150	1	0.013	7	0.9	79.7	0.16

4.2. Major Drain Network

The major storm event includes rainfall events up to and including the 1% AEP storm for industrial catchments.

Please find below flow calculation for the major storm event.

Major (1% AEP) Storm - Existing Flow Calculations								
Catchment	Area (ha)	L (m)	Slope (%)	n	tc (mins)	C	I (mm/hr)	Q (m3/s)
1	0.78	150	0.5	0.035	23	0.35	84.2	0.06
2	0.78	150	1	0.035	20	0.35	91.2	0.07

Major (1% AEP) Storm - Developed Flows Calculations								
Catchment	Area (ha)	L (m)	Slope (%)	n	tc (mins)	C	I (mm/hr)	Q (m3/s)
1	0.78	150	0.5	0.013	9	0.9	135	0.26
2	0.78	150	1	0.013	7	0.9	150	0.29

5.0 Proposed Drainage Network

The drainage network for the development will be designed to safely convey stormwater runoff and provide protection from flooding in a 1% AEP storm event.

5.1. Minor Drainage Network

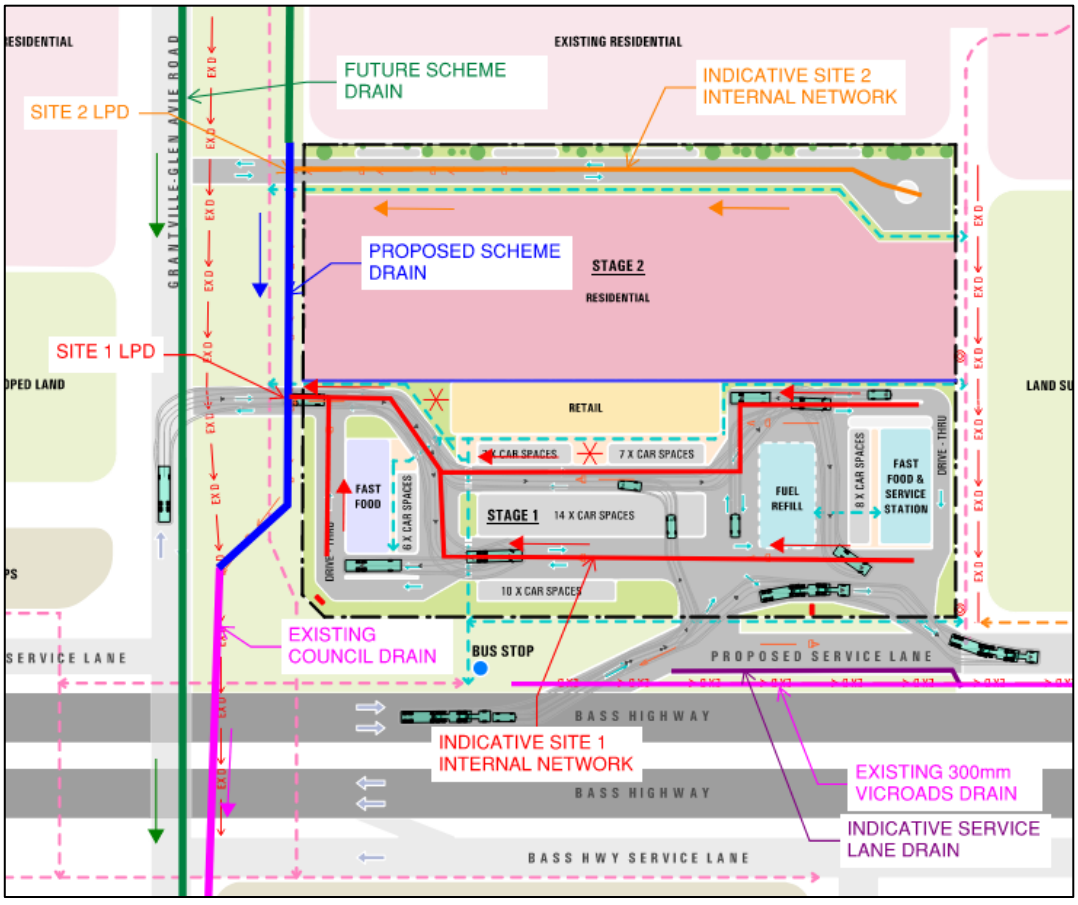
The minor drainage system will consist of a subsurface pipe network designed to capture and convey all stormwater runoff generated from the catchment for rainfall events up to and including the 10% AEP storm for commercial catchments and 20% AEP storm for residential catchments. The system will be designed in accordance with the Infrastructure Design Manual.

Scheme drain R5-R7 will be constructed as a part of this development and act as the sites legal point of discharge. This will ultimately connect to scheme drain Q5-Q3, however, as this will not be constructed at the time of development an interim connection will need to be made. Scheme drain R5-R7 will be temporarily connected to the existing council owned 1500x750mm dia. boxed culvert crossing the Bass Hwy until a time that the ultimate drainage is constructed. Please refer to *Appendix D* for existing council drainage plan and *Appendix G* for functional scheme pipe design. As the interim outfall has only be sized to allow for the existing development, on site retention will be required. Please refer *Section 5.3* for calculations.

External to the site, there will be a small service lane constructed on the Bass Highway. The minor drainage for this system will be connected back to the existing Bass Highway council drainage.

Internally, a pit and pipe network will be installed to convey stormwater flows from the minor storm event. Please find below schematic pit and pipe network diagram.

Figure 5: Proposed Minor Drainage Network



5.2. Major Drainage Network

The major drainage system will utilise the roadways and hardstand areas to safely convey gap flows between the minor (20%/10%) and major (1%) AEP storm overland in accordance with Melbourne Water Flood Safety Criteria for industrial streets used as floodway's, which includes the requirements:

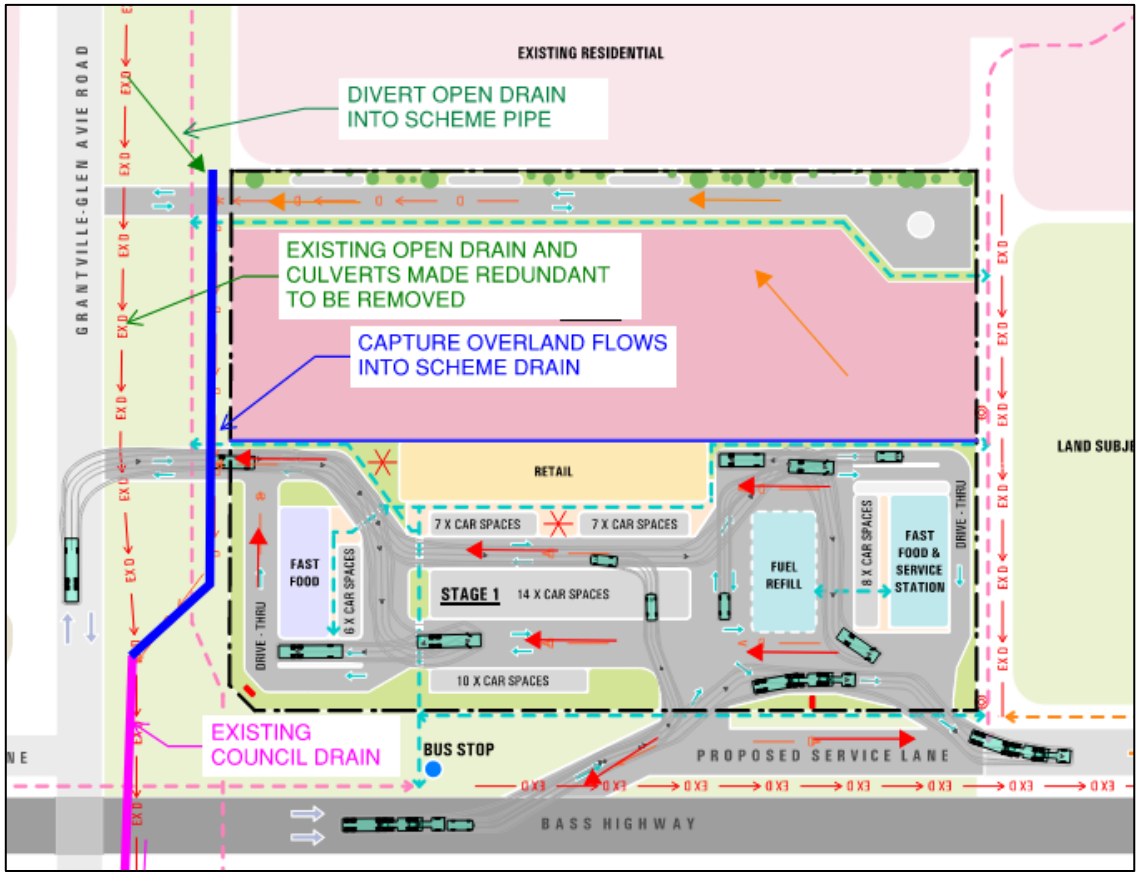
- Vav.Dav <= 0.35m2/s
- Dav <=0.30m
- Dmax = 0.42m
- Freeboard > 150mm

Major flows need to be captured into the drainage system before existing the site and will discharge into the proposed scheme pipe which is sized to take the major flows ultimately.

Culverts will need to be installed below the proposed driveway to allow flows within the existing open drain to traverse the proposed pavement.

Please find a diagram below indicating grading to convey gap flows to the legal point of discharge.

Figure 6: Proposed Major Drainage Network



Until a time that the rural properties to the east are developed, there will be a minor sheet flow into the eastern boundary of the subject site. To cater for any small flows which may enter the site and to not create a bunding effect in the neighbour's property, the access road along the boundary will be set below existing so the underground pipeline and overland flows path of the road can be utilised.

5.3. Storage and Retention

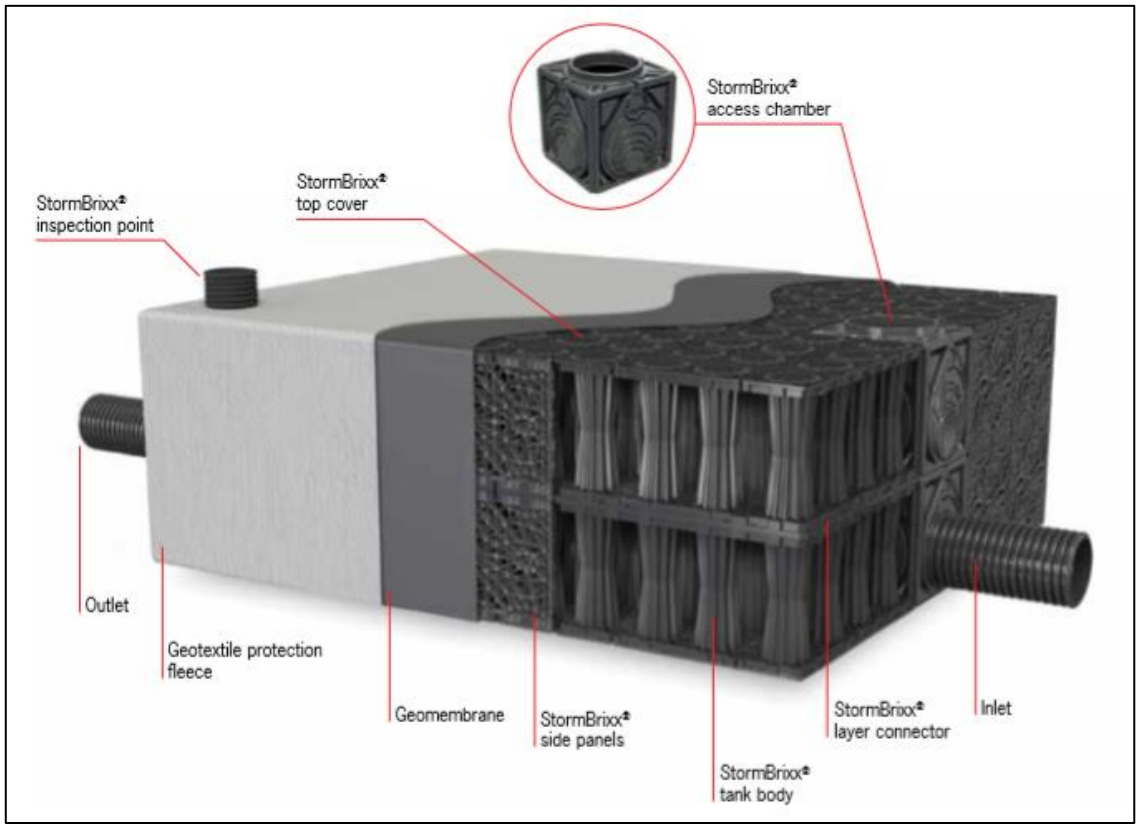
As noted previously in section 5.1, the interim outfall has only been sized to cater for the existing magnitude of flow. The increase imperviousness of the proposed development will increase the magnitude of flow from the site and as such, retention must be provided to restrict flow back to existing prior to discharge from the site.

Boys formula has been utilised to calculate storage volumes required for storing the developed 1% AEP storm back to the existing 1% AEP storm, please refer *Appendix E* for storage calculations. Calculated volumes:

- Site 1: 145cu.m
- Site 2: 131cu.m

The storage volume required will be too large to utilise pipe storage and there is insufficient space to provide an above ground basin. It is suggested that ACO Stormbrixx or a similar product is utilised to provide storage beneath the proposed pavements in the road and hardstands.

Figure 7: ACO Stormbrixx



6.0 Water Quality

It is required that stormwater quality measures are applied to this site in accordance with the Clause 44 of the State Environmental Protection Policy (SEPP). To meet minimum SEPP requirements, developments should meet the Best Practice Environmental Management Guidelines for Urban Stormwater, available from CSIRO Publishing. Best practice stipulates the following outcomes for both construction, and post-construction phases of the project:

Construction Phase

Pollutant type	Receiving water objective	Current best practice performance objective
Suspended solids	Comply with SEPP	Effective treatment of 90% of daily run-off events (e.g. <4 months ARI). Effective treatment equates to a 50 percentile suspended solids concentration of 50 mg/L. This can be achieved by installing a sediment ponds to remove 95% of sediment down to 125 µm for a 1 year ARI.
Litter	Comply with SEPP	Prevent litter from entering the stormwater system. This requirement extends until 95% of the lots are constructed or a period of two years has passed.
Other pollutants	Comply with SEPP	Limit the application, generation and migration of toxic substances to the maximum extent practicable.

Post-construction Phase

Pollutant type	Receiving water objective	Current best practice performance objective
Suspended solids (SS)	Comply with SEPP (not to exceed the 90th percentile of 80 mg/L) (1)	80% retention of the typical urban annual load
Total phosphorus (TP)	Comply with SEPP (base flow concentration not to exceed 0.08 mg/L) (2)	45% retention of the typical urban annual load
Total nitrogen (TN)	Comply with SEPP (base flow concentration not to exceed 0.9 mg/L) (2)	45% retention of the typical urban annual load
Litter	Comply with SEPP (No litter in waterways) (1)	70% reduction of typical urban annual load (3)
Flows	Maintain flows at pre-urbanisation levels	Maintain discharges for the 1.5 year ARI at pre-development levels

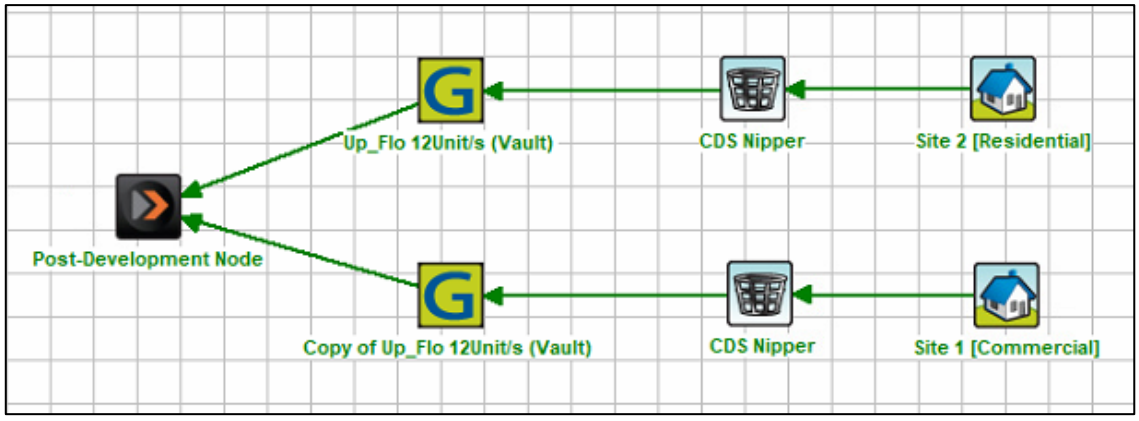
There is no treatment proposed under the Melbourne Water Drainage Scheme external to our site so treatment will need to be provided internally to meet best practise.

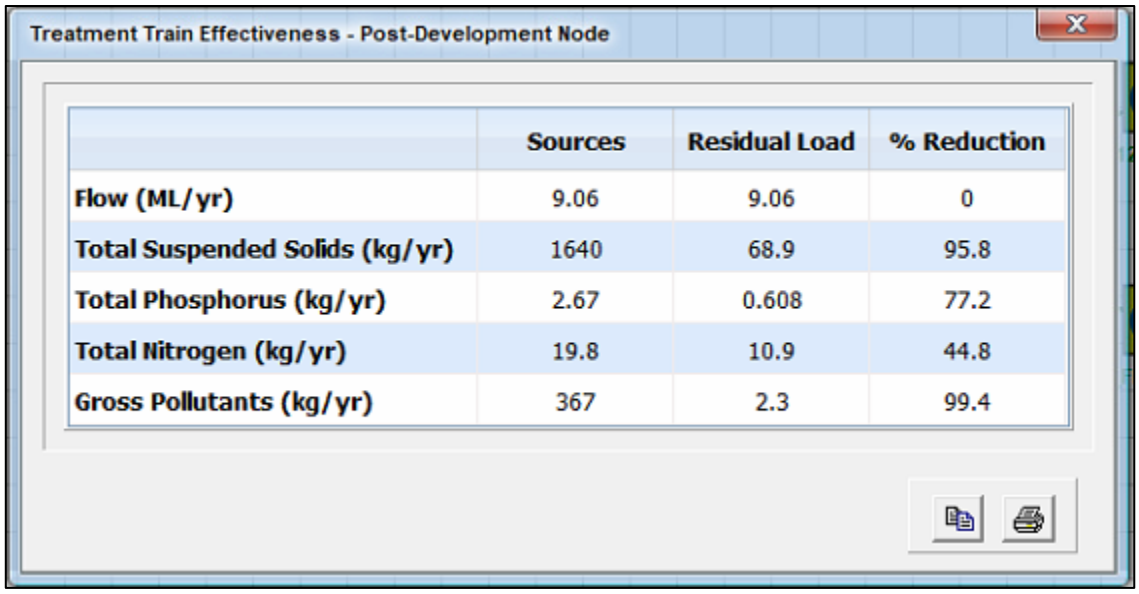
It is proposed to install treatment pits on the outlet of each site prior to discharging from the site:

- ROCLA CDS Separator – Model Nipper 0506
- ROCLA Up-Flo Filter – Model Standard

The system was modelled in MUSIC as below to demonstrate treatment objectives have been met for the site.

Figure 10: MUSIC Modelling





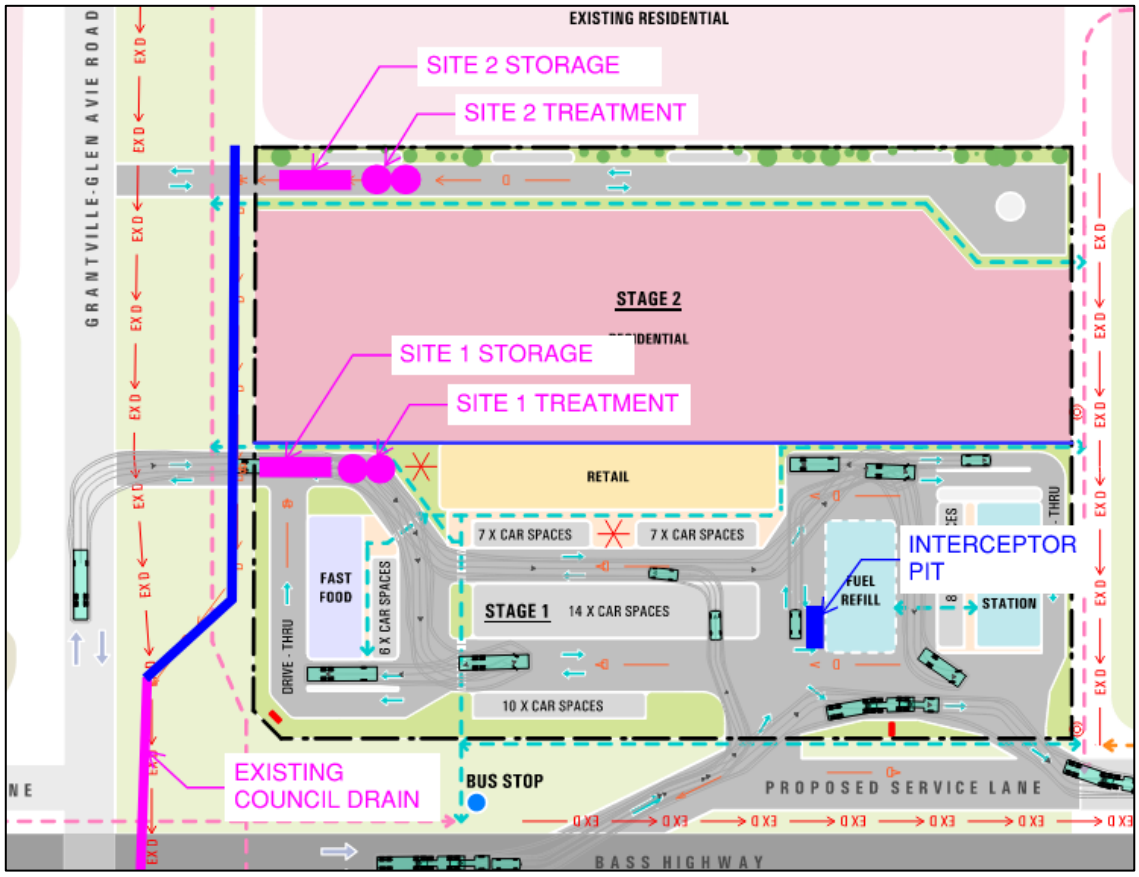
	Sources	Residual Load	% Reduction
Flow (ML/yr)	9.06	9.06	0
Total Suspended Solids (kg/yr)	1640	68.9	95.8
Total Phosphorus (kg/yr)	2.67	0.608	77.2
Total Nitrogen (kg/yr)	19.8	10.9	44.8
Gross Pollutants (kg/yr)	367	2.3	99.4

This brand and model have been specified to demonstrate the adequacy to meet treatment objectives through MUSIC modelling, however, similar alternatives manufactured by other brand such as SPEL & Humes can also meet the same objectives. Please refer *Appendix F* for product brochures which include information on maintenance requirements.

Due to possible risk of spills of hydrocarbons within the petrol station, refuelling areas will require special treatment over and above the aforementioned treatment pits. Refuelling areas must be covered and isolated from the surrounding site by grading and/or bunding. Stormwater collected from the refuelling area will be treated by a triple interceptor pit to remove any hydrocarbons prior to entering the internal drainage network.

Please find below locations for the proposed treatment and storage infrastructure.

Figure 11: Treatment and Storage Locations



7.0 Conclusion

This report makes the following general conclusions:

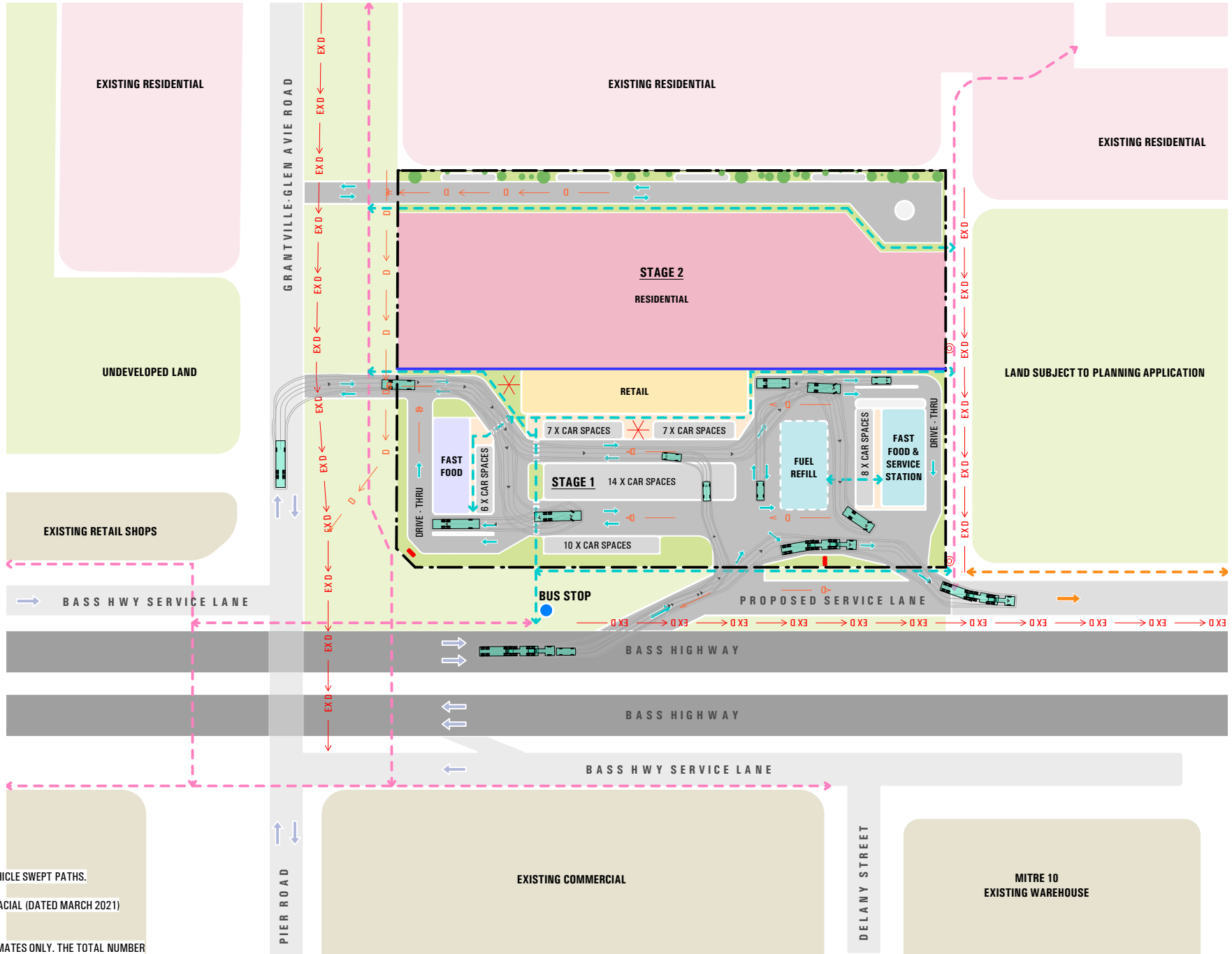
- The site falls within the Melbourne Water Colbert Creek DSS (3842), which will ultimately provide an outfall for the site, but no treatment. The scheme is yet to be finalised.
- The proposed drainage strategy for the site will safely convey stormwater runoff and provide protection from flooding in a 1% AEP storm event.
- Retention will be provided internally to limit flows to existing magnitudes so the existing outfall drain is not over capacity in the interim.
- Treatment will be provided internally to the site using GPTs and Filter pits to meet best practise prior to discharge to the LPD.

Appendix A

Development Layout

LEGEND

- LANDSCAPING OPPORTUNITIES
- CARPARK ZONE
- FUEL & CONVENIENCE ZONE
- RETAIL / FOOD ZONE
- COMMON MOVEMENT
- FUTURE RESIDENTIAL AREA
- EXISTING LANDSCAPING / FARM / VACANT LAND
- EXISTING RETAIL / INDUSTRIAL ZONE
- EXISTING RESIDENTIAL AREA
- EX D EXISTING DRAINAGE
- D PROPOSED DRAINAGE
- EXISTING SEWER PIT
- EXISTING PEDESTRIAN PATH
- PROPOSED PEDESTRIAN PATH
- FUTURE PEDESTRIAN PATH - NOT PART OF THIS DEVELOPMENT
- EXISTING VEHICLE MOVEMENT
- PROPOSED VEHICLE MOVEMENT
- FUTURE VEHICLE MOVEMENT - NOT PART OF THIS DEVELOPMENT
- PROPOSED ROAD / DRIVEWAY
- ROAD - HIGHWAY
- ROAD - STREET
- BICYCLE RACKS
- PYLON SIGN
- TREES
- BUS STOP
- 2.2m HIGH ACOUSTIC FENCE
- SITE BOUNDARY



TRAFFIC NOTE:
REFER TO DWG NO. 21055003 (DATED 23/03/21)
BY O'BRIEN TRAFFIC FOR FURTHER DETAILS ON INTERNAL VEHICLE SWEPT PATHS.

DRAINAGE NOTE:
REFER TO THE STORMWATER MANAGEMENT PLAN BY KLM SPACIAL (DATED MARCH 2021)
FOR FURTHER DETAILS.

CAR PARKING NOTE:
THE NUMBER OF CAR SPACES SHOWN ON THE PLAN ARE ESTIMATES ONLY. THE TOTAL NUMBER OF ESTIMATED CARPARKS IS 52.

IDLE ARCHITECTURE STUDIO

NO.	DATE	REVISION	BY
A	12/11/20	PRELIMINARY ISSUE	IAS
B	17/03/21	PRELIMINARY ISSUE	IAS
C	23/03/21	RESPONSE TO COUNCIL RFI	IAS
D	21/05/21	REVISED STAGE 2 LAYOUT	IAS

T / 613 9428 5202 // www.idlearch.com.au // 15 Cubitt Street Cremorne 3121 Victoria

PROJECT: Mixed Use Development
ADDRESS: 1517-1529 Bass Hwy, Grantville VIC 3984
CLIENT:

DRAWING: Development Plan
SCALE: NTS
PRINT DATE: 21/05/2021

DRAWING NUMBER: TP 1.11
REVISION: D

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Appendix B

Melbourne Water Servicing Advice

26 March 2021

Bassim Grigis
KLM Spatial
Suite 1 Building 2 3 Ordish Road
Dandenong South VIC 3175

Dear Bassim,

Proposal: Pre-development advice
Site location: 1517-1529 Bass Highway & 6-8 Grantville-Glen Alvie Road Grantville

Melbourne Water reference: MWA-1201683
Other/Your reference: 10214
Date referred: 25/02/2021

Development Services Scheme: Grantville Township Strategy, Bass Coast Shire

Thank you for your application requesting pre-development information for the above mentioned property. The following development advice is applicable to the property :

Drainage Agreement

Prior to the issue of a Statement of Compliance, the Owner must enter into and comply with an agreement with Melbourne Water Corporation, under the Water Act 1989, for the provision of drainage works and the acceptance of surface and storm water from the subject land directly or indirectly into Melbourne Water's drainage system. The agreement may include the following components.

Drainage Contributions

A drainage agreement usually includes the payment of drainage contributions, where a property is being developed. However, as this site is within a strategy, all works must be fully funded by the developer in lieu of contributions.

Stormwater Quality SWQ

The Urban Stormwater Best Practice Environmental Management Guidelines require that runoff from all new developments (including redevelopments) are treated to comply with the following targets:

- 80% Total Suspended Solids reduction
- 45% Total Phosphorus reduction
- 45% Total Nitrogen reduction

Stormwater quality performance (targets) is assessed by using specialist software. Usually the Model for Urban Stormwater Improvement Conceptualisation (MUSIC) is

Melbourne Water ABN 81 945 386 953
990 La Trobe Street Docklands VIC 3008
PO Box 4342 Melbourne VIC 3001 Australia
T 131 722 F +61 3 9679 7099
melbournewater.com.au

used for developments within schemes. Please refer to the end of this document for links to Melbourne Water's guidelines for the use of MUSIC.

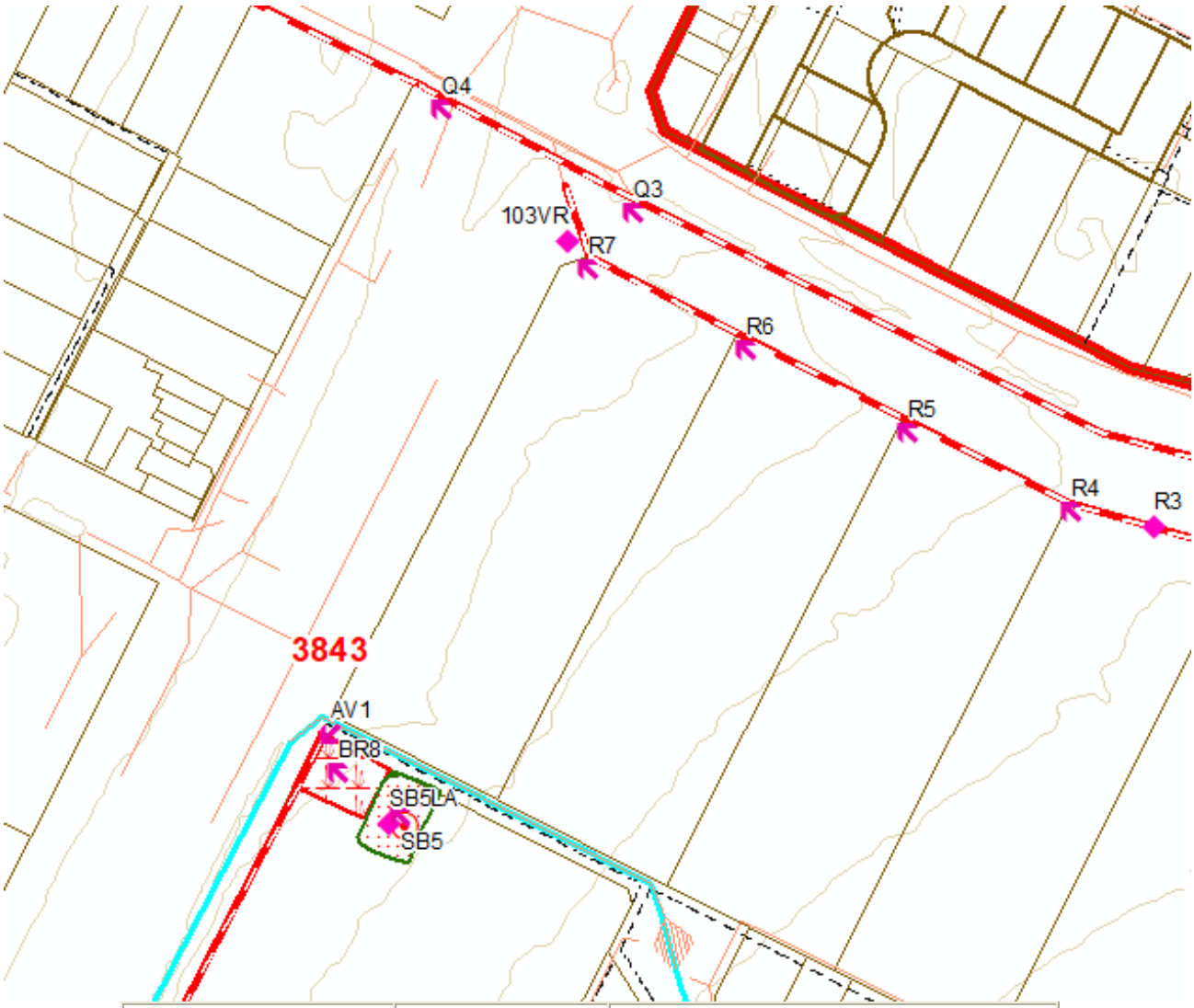
Non-compliance with best practice objectives for stormwater quality will require the payment of a stormwater quality offset. Contributions collected for stormwater quality, can be applied for as a grant from Melbourne Water by council's to construct stormwater quality works elsewhere in the catchment.

Drainage Scheme Works

A drainage agreement usually requires the construction of permanent works in conjunction with the development as outlined by the appropriate Development Services Scheme. A review of the Grantville Township Strategy, Bass Coast Shire Development Services Scheme has identified that there are permanent Melbourne Water works to be constructed on this property.

Such works may require that several land surveys be undertaken to determine the most efficient and environmentally friendly design outcomes. These may include, but are not limited to, a Flora & Fauna Assessment and an Archaeological Investigation, which would guide the most appropriate design. Design approval from Melbourne Water and any other relevant authorities will be required prior to commencement of the drainage works.

Please refer to the attached plans for a layout of the proposed works and any overland flow paths, which must be catered for by the development. The following table details the expected drainage works and design criteria for their sizing.



Node Ref.	Length(m)	Comments/Ownership
R5 to R6	52 metres	Q100 Council pipeline
R6 to R7	48 metres	Q100 Council pipeline
R7 to 103VR	22 metres	Q100 Council pipleine

Please be advised that this information may be refined and/or modified upon any application for a works or Non-works offer.

Specific Property Advice

- To achieve appropriate outfall for this development, temporary works may be required as part of the drainage agreement. If the development proceeds out of sequence then the developer must fund the costs of these temporary works.
- The developer must negotiate any temporary works with downstream landowner(s) and authorities to obtain a free draining outfall solution through their properties. Approval must be granted and forwarded to Melbourne Water before construction of the drainage works commences.
- All new lots are to be filled to a minimum of either 300mm above the 1% AEP flood level associated with an existing or proposed Melbourne Water pipeline or 600mm above the 1% AEP flood level associated with an existing or proposed Melbourne Water waterway, wetland or retarding basin whichever one is greater.
- Prior to the commencement of works, a separate application direct to Melbourne Water must be made for the approval of any new or modified stormwater connection Melbourne Water's drains or watercourses.
- Where required the Owner must arrange and fully fund fencing along the common boundary with the Melbourne Water reserve to the satisfaction of Melbourne

Water.

- The subdivision is to make provision for overland flows from the upstream catchment utilising roads and/or reserves. Alignment of roads and reserves with any adjoining estates must ensure continuity and provide uninterrupted conveyance of overland flows.
- Any road or access way intended to act as a stormwater overland flow path must be designed and constructed to comply with the floodway safety criteria outlined in section 8 of the Guidelines for Development in Flood Affected Areas (DELWP 2019).
- The property is subject to external rural overland inflows, and as part of any application for proposed subdivision or development of the site, the Owner/Developer will need to engage a suitably qualified engineer to undertake the preparation of a Stormwater Management Strategy. The strategy should provide a technical hydrologic and hydraulic assessment of the internal site and external catchment and provide an engineered solution to convey external flows through the site in a safe manner consistent with existing guidelines and standards.
- Details on the alignment and catchment for the scheme pipes will be required to be included within the SWMS. Council's acceptance for the proposed alignment will be required to be submitted to Melbourne Water.
- Functional designs and initial cost estimates (along with any relevant downstream landowner or other authority approvals) will be required to be submitted to the satisfaction of Melbourne Water prior to consideration to a works offer. Applications for functional design review can be made through the Planning and Building page of the Melbourne Water website.
- Council acceptance of any proposed interim drainage solutions must be forwarded to Melbourne Water prior to the issue of consent to a planning permit.
- Please note that Council may have preferences to only allow a certain percentage of the site to develop until the ultimate downstream infrastructure is complete.
- Stormwater runoff from the subdivision must achieve State Environmental Protection Policy (Waters of Victoria) objectives for environmental management of stormwater as set out in the 'Urban Stormwater Best Practice Environmental Management Guidelines (CSIRO) 1999'
- Melbourne Water requires evidence demonstrating that appropriate interim drainage solutions (retardation and sediment control) have been implemented to mitigate the risk to downstream landowners. Council acceptance of any temporary drainage infrastructure should be forwarded to Melbourne Water; and for any works proposed around our mains, drains and waterways, a separate application must be made direct to Melbourne Water's Asset Services Team.

Overland Flow Paths

Melbourne Water expects that upon any application for certification of any subdivision plan associated with the property, due consideration must be given to the alignment of roads and reserves with any adjoining estates, to ensure continuity and provide uninterrupted conveyance of overland flows. These overland flow paths must be designed in accordance with the safety criteria outlined in the Standards and Specifications section on the Planning and Building of Melbourne Water's website.

Before starting any works, a separate application, direct to Melbourne Water, must be made for any new or modified storm water connection to Melbourne Water's drains or watercourses. Before accepting an application, evidence must be provided demonstrating that council has considered that it is not feasible to connect to the local drainage system.

Water Sensitive Urban Design WSUD

WSUD is a design process that enables localised collection and treatment of stormwater runoff. Melbourne Water acknowledges the potential for WSUD to be incorporated into the development to enable sustainable management of stormwater across the property and to compliment the social and environmental values of the area.

Melbourne Water recommends that initiatives such as sediment ponds, bio-filtration systems, grassed swales, grey water re-use, rainwater tanks and porous soils be considered in the design of the development. Stormwater runoff from paved areas can also be a valuable resource for irrigating trees, grassed areas and landscaped garden beds.

Offer Application

Prior to any application for an offer of drainage conditions, Melbourne Water requests that you forward a drainage strategy demonstrating that the proposed drainage plan for the property coincides with the intent of Melbourne Water's Grantville Township Strategy, Bass Coast Shire Development Services Scheme and the local Precinct Structure Plan, if relevant.

The following information should be included within the strategy:

- General site information
- Options for the proposed drainage of the property
- Consideration for Water Sensitive Urban Design

Advice Links

For further information on Melbourne Water's role in planning please refer to the following links:

- Contribution Rates: https://www.melbournewater.com.au/planning-and-building/developer-guides-and-resources/drainage-schemes-and-contribution-rates-0-2

- Drainage Schemes: https://www.melbournewater.com.au/planning-and-building/developer-guides-and-resources/drainage-schemes-and-contribution-rates

- Water Sensitive Urban Design- https://www.melbournewater.com.au/planning-and-building/stormwater-management/introduction-wsud

- Reducing Water Quality Contributions/Stormwater Offset Rate review - https://www.melbournewater.com.au/planning-and-building/developer-guides-and-resources/drainage-schemes-and-contribution-rates-0-3

- Overland Flow Paths (These overland flow paths will need to be designed in accordance with the safety criteria outlined in the Standards and Specifications section of Melbourne Water's Planning and Building website found on https://www.melbournewater.com.au/planning-and-building/developer-guides-and-resources/standards-and-specifications

- Working near or Connection to MW assets- https://www.melbournewater.com.au/planning-and-building/work-or-build-near-our-assets-or-easements

- Stormwater Quality: The Urban Stormwater Best Practice Environmental

Management Guidelines require that runoff from all new developments (including redevelopments) be treated to comply with the following, 'Best Practice' standards criteria: Removal of 80% of the suspended solid annual load, 45% of total phosphorus and 45% of total nitrogen annual loads.
http://www.publish.csiro.au/book/2190

Disclaimers

The feasibility information provided in this email is conceptual/indicative only and must be used in conjunction with an informed catchment analysis when undertaking the detailed design.

Under the QA process the consultant is required to perform their own informed catchment analysis and calculations for the design of scheme assets which reflects the actual development and on ground conditions. As a part of the functional design process your calculations, assumptions, models and catchment analysis are to be submitted for our acceptance/records.

Please note that as schemes develop and Melbourne Water receives additional information, the conceptual/indicative advice you have been provided as part of the feasibility request may now be outdated. Under the QA process it is the responsibility of the consultant to certify that all information provided to Melbourne Water is correct having completed their own detailed catchment analysis.

This information is preliminary and forms no contractual agreement between your company and Melbourne Water. Melbourne Water reserves the right to alter any or all of the information provide in this letter.

For general development enquiries contact our Customer Service Centre on 131 722.

Regards,



Lachie Glascodine
Urban Growth Services

Appendix C

Rainfall Data

RAINFALL DATA

SOURCE: BUREAU OF METEOROLOGY DESIGN RAINFALL DATA SYSTEM (2016)

DATE ACCESSED: 22/03/21

	Exceedance per Year (EY)							
Duration	**12EY**	**6EY**	**4EY**	**3EY**	**2EY**	**1EY**	**0.5EY#**	**0.2EY***
1 min	37.1	41.9	51.0	58.0	68.8	90.5	114	145
2 min	35.0	39.3	47.5	53.8	63.6	82.9	104	131
3 min	30.6	34.5	41.8	47.4	56.0	73.0	91.6	116
4 min	27.3	30.8	37.3	42.3	50.1	65.3	82.0	104
5 min	24.8	27.9	33.9	38.5	45.5	59.3	74.6	94.5
6 min	22.8	25.7	31.2	35.4	41.9	54.6	68.7	87.2
7 min	21.3	24.0	29.1	33.0	39.0	50.8	63.9	81.3
8 min	20.0	22.6	27.3	31.0	36.6	47.6	60.0	76.4
9 min	18.9	21.4	25.8	29.3	34.6	44.9	56.6	72.2
10 min	18.0	20.3	24.6	27.8	32.8	42.6	53.7	68.5



	Annual Exceedance Probability (AEP)						
Duration	**63.2%**	**50%#**	**20%***	**10%**	**5%**	**2%**	**1%**
1 min	90.5	103	142	170	199	238	270
2 min	82.9	93.7	129	154	178	204	224
3 min	73.0	82.5	113	135	157	181	200
4 min	65.3	73.9	102	121	141	165	183
5 min	59.3	67.2	92.7	111	129	152	170
6 min	54.6	61.9	85.5	102	119	142	159
7 min	50.8	57.6	79.7	95.3	111	133	150
8 min	47.6	54.0	74.9	89.6	105	126	142
9 min	44.9	51.0	70.7	84.7	99.0	119	135
10 min	42.6	48.4	67.2	80.5	94.1	114	129
11 min	40.6	46.1	64.1	76.8	89.9	109	124
12 min	38.8	44.1	61.3	73.6	86.1	104	119
13 min	37.3	42.3	58.9	70.7	82.7	100	114
14 min	35.8	40.7	56.7	68.1	79.7	96.5	110
15 min	34.6	39.3	54.7	65.7	76.9	93.2	106
16 min	33.4	38.0	52.9	63.5	74.4	90.1	103
17 min	32.3	36.8	51.2	61.5	72.1	87.3	99.6
18 min	31.4	35.7	49.7	59.7	69.9	84.7	96.6
19 min	30.5	34.6	48.3	58.0	67.9	82.2	93.8
20 min	29.6	33.7	46.9	56.4	66.1	80.0	91.2
21 min	28.9	32.8	45.7	54.9	64.4	77.8	88.7
22 min	28.1	32.0	44.6	53.5	62.7	75.8	86.4
23 min	27.5	31.2	43.5	52.2	61.2	73.9	84.2
24 min	26.8	30.5	42.5	51.0	59.8	72.2	82.2
25 min	26.2	29.8	41.5	49.9	58.4	70.5	80.2
26 min	25.7	29.2	40.6	48.8	57.2	68.9	78.4
27 min	25.1	28.6	39.8	47.8	55.9	67.4	76.6
28 min	24.6	28.0	38.9	46.8	54.8	66.0	75.0
29 min	24.2	27.4	38.2	45.9	53.7	64.6	73.4
30 min	23.7	26.9	37.4	45.0	52.7	63.3	71.9

Appendix D

Existing Council Drainage



Vicmap property data is supplied by the Department of Environment Lands, Water & Planning (DELWP).
Mapping data provided in this map combines Vicmap data with mapping data supplied by Bass Coast Shire.

Horizontal Datum: Australian Geocentric Datum of Australia 1994
MGA Zone 55
Verticqal Dataum: Australian Height Datum based on Mean sea level

NOTE: All Map Data should be used for planning purposes only and should be verified on site

Bass Coast Shire Council

Scale: **1:750**
Print date: **14/10/2020**
Original at A3 Portrait

BASS COAST

N

Appendix E

Storage Calculations

Storage Calculation - Site 1

Storage Volume Calculation - 1% AEP Storm Event					
Area	0.780	Developed C	0.900	CA	0.702
Duration	I	I_p	Q_p	V_1	S_{max}
(mins)	(mm/hr)	(m^3/s)	(m^3/s)	(m^3)	(m^3)
10	129.000	0.252		150.930	115
11	124.000	0.242		159.588	120
12	119.000	0.232		167.076	124
13	114.000	0.222		173.394	127
14	110.000	0.215		180.180	130
15	106.000	0.207		186.030	132
16	103.000	0.201		192.816	135
17	99.600	0.194		198.104	137
18	96.600	0.188		203.440	139
19	93.800	0.183		208.517	140
20	91.200	0.178	0.060	213.408	141
21	88.700	0.173		217.936	142
22	86.400	0.168		222.394	143
23	84.200	0.164		226.582	144
24	82.200	0.160		230.818	144
25	80.200	0.156		234.585	145
26	78.400	0.153		238.493	145
27	76.600	0.149		241.979	145
28	75.000	0.146		245.700	145
29	73.400	0.143		249.046	145
30	71.900	0.140		252.369	144
				STORAGE REQUIRED	145

Storage Calculation - Site 2

Storage Volume Calculation - 1% AEP Storm Event					
Area	0.780	Developed C	0.900	CA	0.702
Duration	I	I_p	Q_p	V_1	S_{max}
(mins)	(mm/hr)	(m^3/s)	(m^3/s)	(m^3)	(m^3)
10	129.000	0.252		150.930	109
11	124.000	0.242		159.588	113
12	119.000	0.232		167.076	117
13	114.000	0.222		173.394	119
14	110.000	0.215		180.180	121
15	106.000	0.207		186.030	123
16	103.000	0.201		192.816	126
17	99.600	0.194		198.104	127
18	96.600	0.188		203.440	128
19	93.800	0.183		208.517	129
20	91.200	0.178	0.070	213.408	129
21	88.700	0.173		217.936	130
22	86.400	0.168		222.394	130
23	84.200	0.164		226.582	130
24	82.200	0.160		230.818	130
25	80.200	0.156		234.585	130
26	78.400	0.153		238.493	129
27	76.600	0.149		241.979	129
28	75.000	0.146		245.700	128
29	73.400	0.143		249.046	127
30	71.900	0.140		252.369	126
				STORAGE REQUIRED	131

Appendix F

Product Brochures

PRODUCT
BROCHURE



CDS® SEPARATOR

Rocla®

131 004
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CDS® SEPARATOR

CDS® Separator are designed to capture and retain gross pollutants, litter, grit, sediments and associated oils, utilising patented CDS® indirect screening technology.

Rocla offers a complete design service for CDS® products that takes into account the catchment's characteristics, pollution load, hydraulic site constraints and opportunities, system capacities, velocity, backwater, as well as the location of services and access for cleaning.

Hydraulic reports are available on request and are automatically carried out for larger units.





CHARACTERISTICS

- Non-blocking functionality
- 95% capture of gross pollutants >1mm
- 95% sediment capture >200µm
- Captures organics and oils
- Captures adsorbed toxics and nutrients
- Can treat any pipe or multiple pipes
- Various sump sizes available
- Customised bypass requirements
- Underground - small footprint
- Easy installation
- No moving parts
- Lowest life cycle costs
- More water treated than comparable treatment designs
- Pollutants stored in the sump, not the screens

BENEFITS

- Subdivisions and roads
- Residential, commercial and industrial developments
- Car parks and shopping centres
- Pre-treatment for wetlands
- Pre-treatment for reuse applications
- Pipes, channels, culverts and creeks

Other CDS® models are available for non-stormwater applications involving high flow solids/ liquids separation, such as industrial processes and sewer overflows.

CDS® CONTINUOUS DEFLECTIVE SEPARATION

The CDS® Separator utilises the energy of the inflow to create a vortex flow regime within the CDS® screening chamber.

The CDS® Separator simply creates a whirlpool that draws all the deflected and settling pollutants to the centre of the screening chamber where they fall out into the storage sump below.

The pollutant storage sump located below the screening chamber allows pollutants to be removed from the flow path and away from the screens, thus maintaining a reliable treatment efficiency.

The unique CDS® technology is the most reliable way to effectively and efficiently treat gross pollutants in stormwater drainage systems.

One of the leading storm water traps

CDS® UNIT MODELS

The size and type of CDS® separator required depends on catchment area, flows, pollution loads, performance requirements, maintenance method, hydraulic limitations and site constraints.

Visit the Rocla website for a sizing request form. Details submitted with this form provide all the information needed to calculate the size of device most applicable for the site.

CDS® Separator Model No.[4]	Overall Dia[1] (mm)	Treatment[3] Flow (L/s)	Weir Height[2] (mm)	Minimum DTI[5] (mm)
Nipper 0506	1300	20-22	300	1035
CDS 0708	1750	50-55	400	1105
CDS 0708Maxi	2600	50-55	400	1185
CDS 1009	1950	100-110	500	1610
CDS 1012	1950	140-150	600	1610
CDS 1015	1950	180-200	700	1610
CDS 1512	2600	220-250	650	1610
CDS 1518	2600	350-400	800	1610
CDS 2018	3400	500-600	900	1610
CDS 2028	3400	800-900	1100	1610
CDS 3018	5000	800-900	900	1610
CDS 3024	5000	1250-1400	1000	1610
CDS 3030	5000	1750-1900	1200	1800

1: Excludes Diversion Chamber except for models 0506, 0708 & 0708M
2: Measured from outlet invert with no tailwater
3: CDS treatment flows are indicative only
4: Model sizing is undertaken independently from the bypass hydraulics of the diversion chamber
5: In most cases minimum DTI is determined by diversion chamber depth

CDS® SEPARATOR PERFORMANCE	
Gross Pollutant Removal	98% (>3mm)
Sediments Capture	>80% (>75µm)
TSS Removal	>70% (d_{50} = 106µm)
Total Phosphorous (TP) Removal	>30% (at 70% TSS removal)
Hydrocarbon Capture	80-90% 'at typical stormwater concentrations for free oil

MAINTAINING CDS® SEPARATOR

The CDS® Separator has the lowest life-cycle costs due to its non-blocking functionality, large off-line storage and multiple cleaning options. There are 3 methods of emptying CDS® Separators:

- Removable basket
- Material grab
- Suction method

With no requirement to unblock screens, confined space entry is minimised. Large off-line sump volumes (up to 10m3 available) also minimise cleaning frequency.

CDS® CONTINUOUS DEFLECTIVE SEPARATION

It has long been acknowledged that best management practice for stormwater pollutant traps involves locating the devices off-line.

- GPTs located on-line suffer badly from turbulence and eddies, often resulting in the re-suspension and loss of previously captured pollutants.
- GPTs which store pollution in the screening area suffer decreasing screen area and therefore decreasing flow rates, as they fill up.
- GPTs which function by direct filtration have a treatable flow rate decay that is proportional to the percentage of screen blockage.
- GPTs that utilise a vortex only, without a screen, cannot guarantee neutrally buoyant pollution removal.

Only CDS® Separators combine the advantages of being off-line, having non-blocking functionality, vortex forces and storing pollution outside the screening area. For these reasons, no other device is “equivalent” to a CDS® Separator.

DIVERSION CHAMBER

Precast diversion chambers can be manufactured to suit most typical installations, or chambers can be tailored to meet the hydraulic limitations of the site.

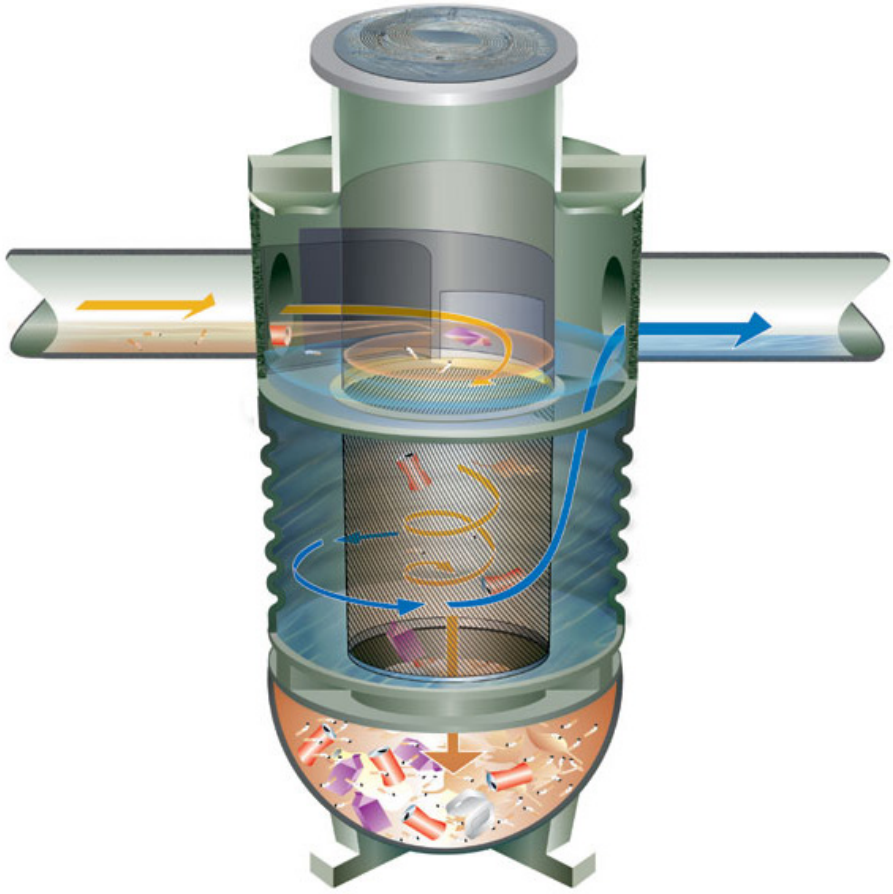
The diversion chamber has the capacity to cater for the highest possible flow in the stormwater system. The chamber is configured on the assumption that the CDS® Separator has not been maintained and there is no flow passing through the unit.

A weir is located within the diversion chamber to create a driving head and direct the majority of flows into the CDS® GPT.

CHAMBER OPTIONS

The CDS® Separator and diversion chamber design depends on the system capacity and site constraints. Rocla will design the most suitable CDS® Separator configuration to meet project requirements.

- Precast diversion chambers
- Semi-precast diversion chambers
- Customised designs for multiple pipes, drops and bends
- In-situ channel designs
- Fixed or collapsible weirs
- Any flow capacity
- No flooding







CDS® 0506 Separator

The PL0506 in-line CDS® Unit, known as the Nipper, is the smallest in the CDS® range of gross pollutant traps. It provides the fully proven performance of CDS® Separators in a pint-sized polymer unit.

The Nipper is ideally suited for installation at the collection source in small catchment areas of less than a hectare and is designed to remove gross pollutants, organic waste, silt, sediment and oils.

Manufactured from strong, lightweight polymer material, the CDS® 0506 is delivered to site in one piece, making it easy to install and cost-effective.

CDS® 0506 PERFORMANCE

Pipe Flows	Treatment 25 L/s Max 150 L/S
Gross Pollutant Removal	98% (>3mm)
Sediments Capture	>80% (>75µm)
TSS Removal	>70% (d_{50} = 106µm)
Total Phosphorous (TP) Removal	>30% (at 70% TSS removal)
Hydrocarbon Capture	80-90% 'at typical stormwater concentrations for free oil
Free Oil Storage Capacity	150 litres

PRODUCT APPLICATION DESIGN (PAD) SERVICES

Rocla offers a full design and drafting service in support of its water quality products, including the CDS® separator.

These service are available to all customers. To see how Rocla can assist you with your water sensitive urban design (WSUD) solutions please visit the Rocla website or call your local sales represenative on 131 004.

SPECIFICATIONS

Storage
- 0.72 cubic metres

Weight
- 140 kilograms

Footprint
- 1050mm diameter

Material
- High density polyethylene

Treatment
- Self-cleaning screens, vortex and gravity

Screens
- 2.4mm stainless steel

Inlet Size
- Up to 375mm diameter

APPLICATIONS

- Small subdivisions
- Bus and train stations
- Pre-screening bio- retention systems
- Pre-screening construction wetlands
- Packaging warehouses
- Roadside drains
- Car parks



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Certified System
Quality
ISO 9001

PRODUCT
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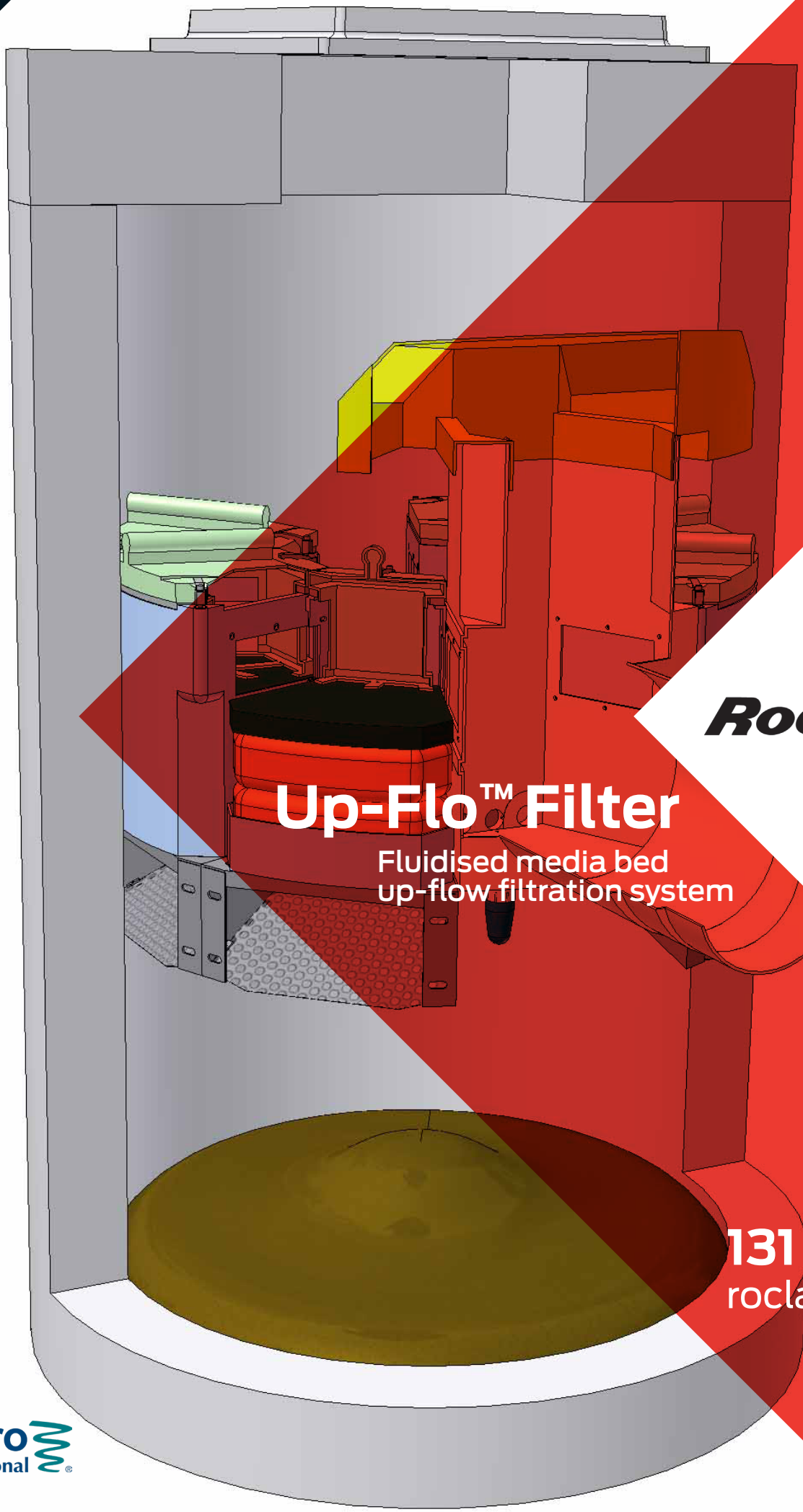

Rocla

Up-Flo™ Filter

Fluidised media bed up-flow filtration system

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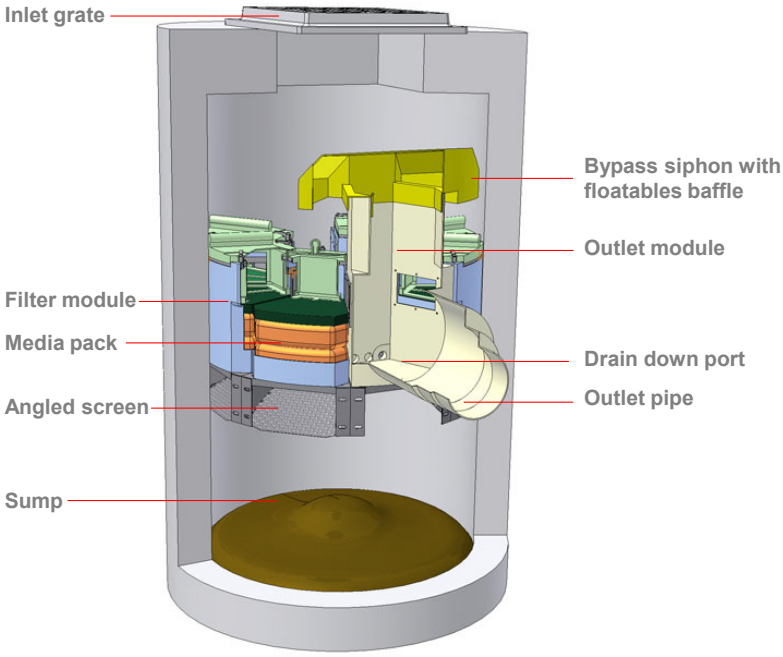
rocla.com.au

Hydro International

FLUIDISED MEDIA BED UP-FLOW FILTRATION SYSTEM

The Rocla Up-Flo™ Filter is the most efficient high-rate stormwater filtration technology available for the removal of sediments, nutrients, metals and hydrocarbons from stormwater runoff.

As the industry's only fluidized bed upflow filtration technology, the Up-Flo™ Filter provides a higher level of treatment, a higher rate of filtration, longer life of filter media and a longer maintenance cycle than other filter systems.



APPLICATIONS

- New developments
- Industrial and commercial facilities
- Source control
- Sediment and hydrocarbon control
- Nutrient control
- Heavy metal control
- Wetlands protection
- Retrofit

ADVANTAGES

- Available in multiple configurations
- Small footprint
- Removes >70% total suspended solids (TSS) with a mean particle size of 20 microns
- Low head requirements
- Higher flow capacity resulting in smaller footprint
- Includes a 4mm pre-screening
- Uses a patented CPZ™ media
- Patented drain-down prevents media degradation
- Long media life and maintenance cycle
- Easy installation
- Low maintenance

HOW IT WORKS

During a storm event, stormwater enters the chamber via an inlet pipe or inlet grate and fills the chamber, as flow is directed up through the angled screen and filter modules. Flow is evenly distributed across the media for maximum treatment.

Gross debris and sediment settle out in the sump. Oil and floatables rise to the surface of the water.

Treated water flows out of the filter module to the outlet module and into the outlet pipe.

Excess flows are discharged to the outlet using a siphon bypass, which also acts as a floatables baffle, preventing the escape of oil and floatable trash.

To guard against pollutant leaching and filter media degradation between storm events, water drains out of the chamber through the filtered drain-down port as the storm subsides.

CPZ™ MIX

- Over 70% removal of metals, nutrients & TSS
- TSS removal down to 1 micron particle
- 1.6 l/s per module

The industry's only fluidised bed upflow filtration technology

PRODUCT SELECTION TABLE

UFF Model Type	Chamber Size	Number of Modules	Maximum Treatment Flow (L/s)	Peak Syphonic Bypass Flow (L/s)	Min Standard Headloss (mm)	Sump Storage Capacity (Litres)
Standard	DN1200	1 - 6	9.6	170	500	700
Small Vault	DN1800	7 - 8	12.8	225	500	1580
Medium Vault	DN2400	9 - 14	22.4	400	500	2800
Large Vault	DN2700	15 - 19	30.4	535	500	3550
Special	As required	>19	>30.4	>535	500	As designed

FILTER MODULES

Each filter module has a typical treatment flow rate of 1.6 L/sec.

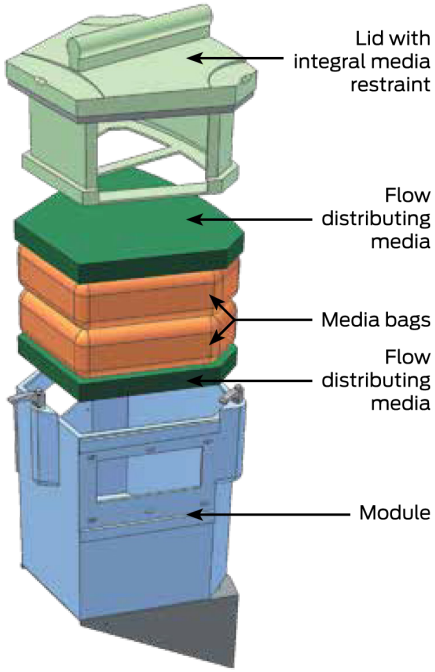
SIZING AND DESIGN

The Rocla Up-Flo™ Filter is sized to treat a specified runoff area or a design flow rate for a water quality design storm.

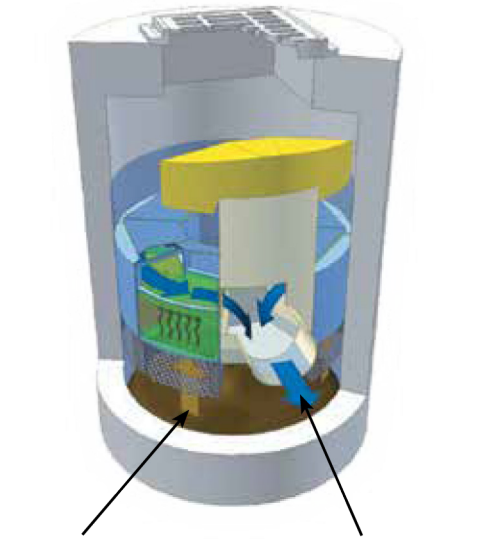
The number of modules is determined by the treatment objectives and the size of the runoff area. This is based on each individual filter module treatment flowrate.

The flexibility of the system allows effective design for sites with low hydraulic drops. Rocla Water Quality's expert PAD engineering team can assist in designing a system that is right for each situation.

To allow easier access to the individual modules the design includes removeable lids that can be temporarily stacked adjacent to the inlet.



Design developed at the University of Alabama. Data is collected through extensive field testing by the University of Alabama. No chemical exhaustion of media after 12 months of field testing.



Flow is directed upwards through angled screen and filter modules

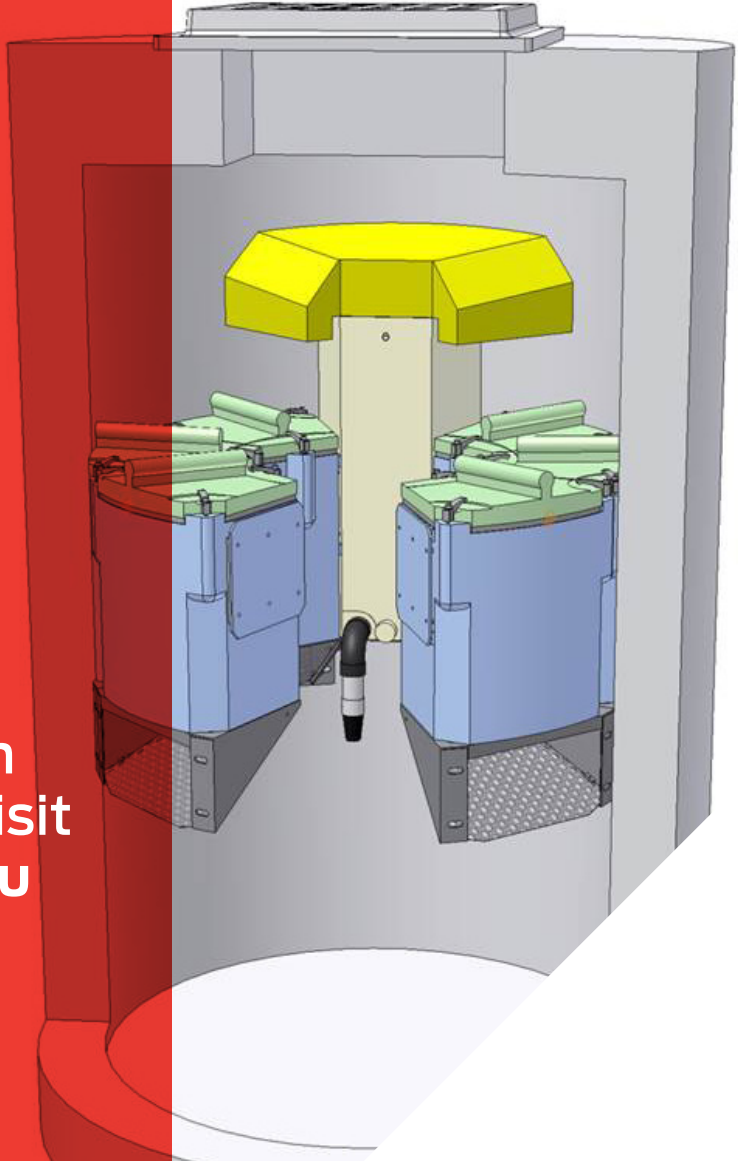
Treated stormwater flows through a conveyance channel to an outlet module, where it leaves the chamber

INSTALLATION

Installing a Rocla Up-Flo™ Filter is as simple as installing a standard precast pit and connecting to the stormwater system.

MAINTENANCE

Maintenance is simple, with easy access to the sump and replaceable media packs. A vacuum truck is used to remove sediment and other pollutants from the sump and the media packs are replaced manually. Unlike other filtration systems, no specialised heavy lifting equipment is needed.



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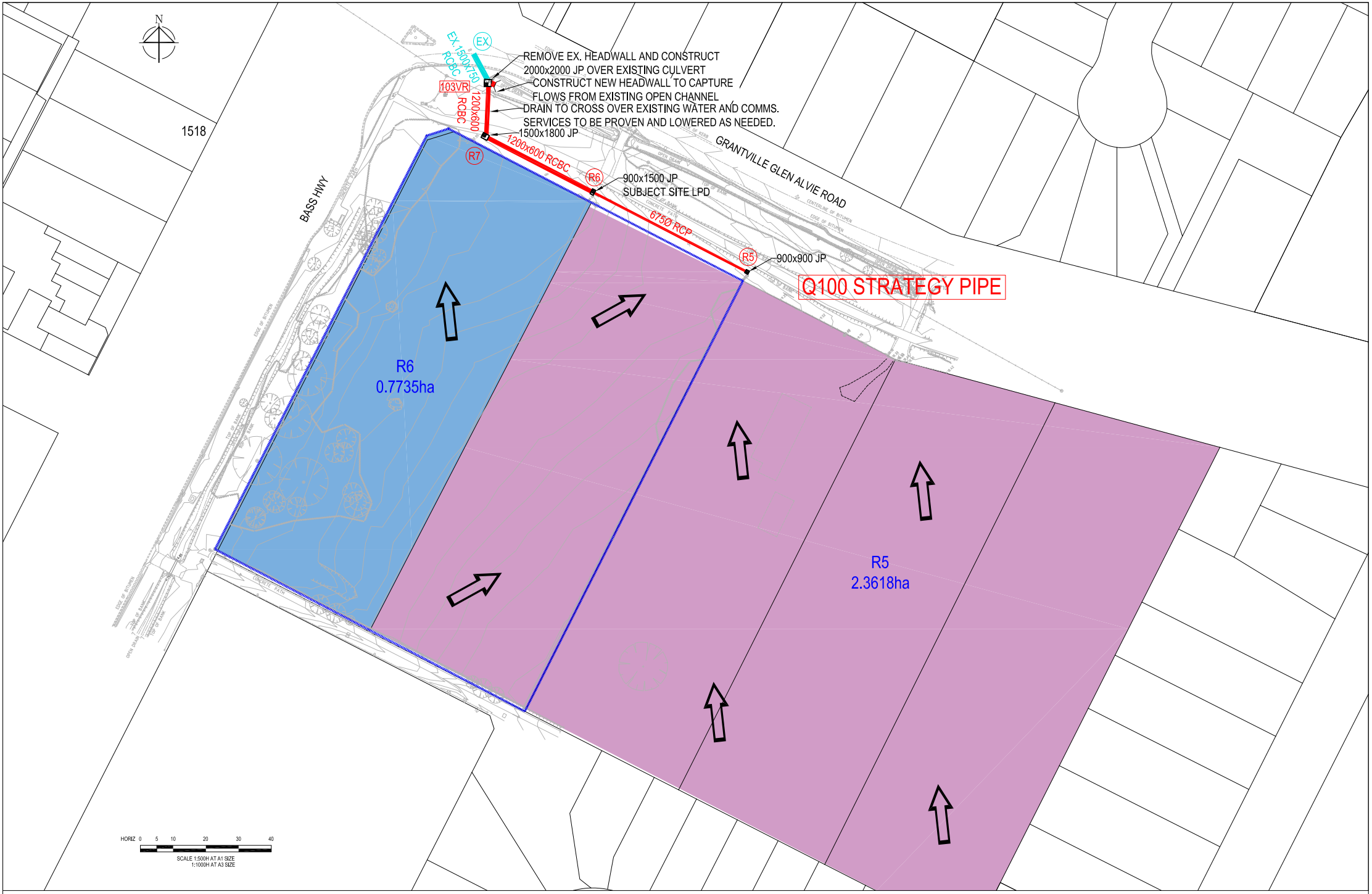
Appendix G

Scheme Pipe Functional Design



DRAINAGE PLAN

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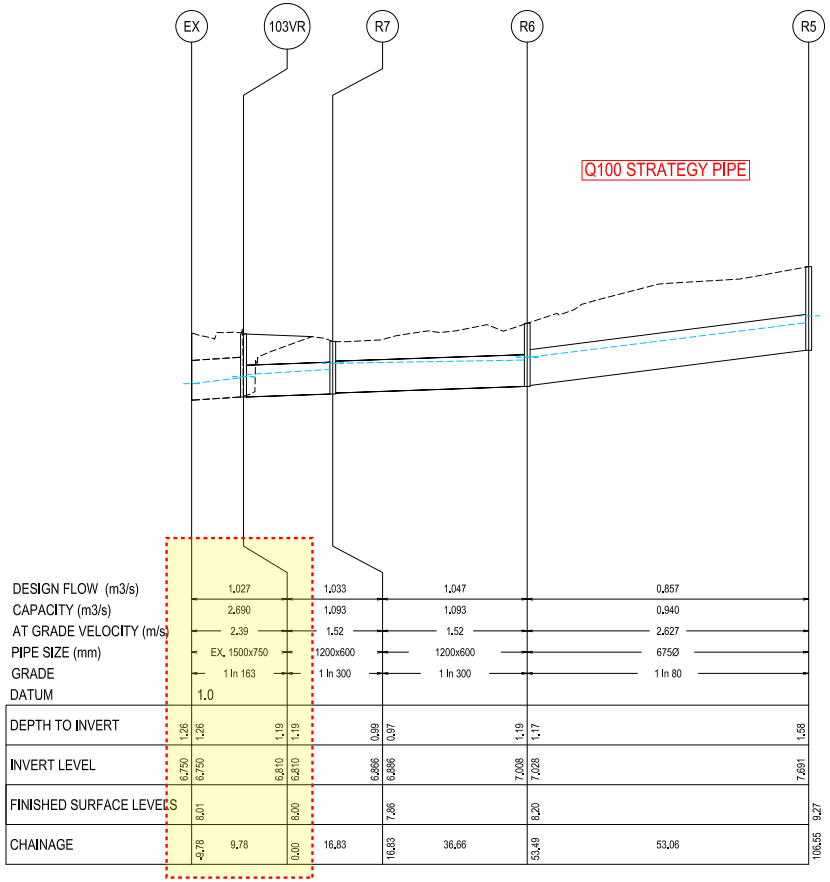

12D MODEL - HYDROLOGY CALCULATIONS

Node	Node	Setout	Setout	Setout	Catch	Time	Intensity	Runoff	Area	Full	Full	Full	Partial	Partial	Partial	Approach
Name	Type	Easting	Northing	RL	ID	Tc	I	C	A	CA	Sum CA	Qc=CIA	CA	Sum CA	Qc=CIA	Flow Qa
(-)	(-)	(m)	(m)	(m)	(-)	(min)	(mm/hr)	(-)	(ha)	(ha)	(ha)	(L/s)	(ha)	(ha)	(L/s)	(L/s)
EX	EP	371701.28	5747925.29	8.01												
1	JP	371705.91	5747916.68	8												0
2	JP	371705.15	5747899.87	7.86												0
3	JP	371737.71	5747883.03	8.2	1P	9	127.05	0.9	0.7735	0.6961	0.6961	245.7	0.6961	0.6961	245.7	245.7
4	JP	371784.84	5747858.66	9.27	1P	12	109.08	0.9	3.1441	2.8297	2.8297	857.4	2.8297	2.8297	857.4	857.4

12D MODEL - HYDRAULIC CALCULATIONS

Pipe	Pipe	Pipe	Pipe	Full Pipe	Pipe	Pipe	Full-area	Full-area	Full-area	Full-area	Part-area	Part-area	Part-area	Part-area	Pipe	Capacity	Q/Qcap	Full Pipe	Norm Depth	Crit Depth	Capacity Vel	US Node	Pipe	Pipe	DS Node	Cover	Pipe	Pipe	US Node	Pipe	P'head Loss	Pipe	US Node	Pipe	Pipe	DS Node	HGL	HGL	F'board
ID	Type	Length	Size	Area Af	Grade	Grade	Tct	I	Sum CA	Qc=CIA	Tct	I	Sum CA	Qc=CIA	Flow Q	Flow Qcap	Ratio	Vel Vf=Q/Af	Vel Vn=Q/An	Vel Vc=Q/Ac	Vcap=Qcap/Af	Grate RL	US IL	DS IL	Grate RL	Min	DS Bend	DS Drop	Ku	V'head	(Ku.V'head)	T'head Loss	HGL	HGL	HGL	HGL	Grade	Grade	US
(-)	(-)	(m)	(mm)	(sq.m)	(%)	(1 in)	(min)	(mm/hr)	(ha)	(L/s)	(min)	(mm/hr)	(ha)	(L/s)	(L/s)	(L/s)	(-)	(m/s)	(m/s)	(m/s)	(m/s)	(m)	(m)	(m)	(m)	(m)	(deg)	(m)	(-)	(m)	(m)	(m)	(m)	(m)	(m)	(m)	(%)	(1 in)	(m)
1 to EX	PVC	9.78	1500x750	1.125	0.61	163	12.89	104.82	3.5258	1026.6	9.45	123.95	2.7141	934.5	1026.6	2690.3	0.38	0.91	2.2	1.89	2.39	8	6.81	6.75	8.01	-0.75	0		0.5	0.04	0.02	0.05	7.19	7.17	7.06	7.06	1.14	87.8	0.81
2 to 1	PVC	16.83	1200x600	0.72	0.33	300.3	12.75	105.47	3.5258	1033	9.31	124.91	2.7141	941.7	1033	1093	0.95	1.43	1.83	2.04	1.52	7.86	6.87	6.81	8	-0.57	30.9	0	1.1	0.11	0.12	0.06	7.45	7.33	7.23	7.19	0.59	170.5	0.41
3 to 2	PVC	36.66	1200x600	0.72	0.33	300.3	12.44	106.91	3.5258	1047.1	9	127.05	2.7141	957.8	1047.1	1093	0.96	1.45	1.83	2.04	1.52	8.2	7.01	6.89	7.86	0.36	-65.3	0.02	0.5	0.11	0.05	0.09	7.56	7.51	7.45	7.45	0.17	605.3	0.64
4 to 3	PVC	53.06	675	0.358	1.25	80	12	109.08	2.8297	857.4	12	109.08	2.8297	857.4	857.4	940.2	0.91	2.4	2.98	2.62	2.63	9.27	7.69	7.03	8.2	0.52	0	0.02	0.5	0.29	0.15	0.65	8.42	8.27	7.56	7.56	1.34	74.7	0.85

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LONGITUDINAL SECTION AND CALCULATIONS



Bushfire Planning Considerations Report 1517-1529 Bass Highway Grantville 3984

Traditionally the land of the Bunurong People

June 4th, 2024. Version 1.1

Euca Planning Pty Ltd

PO Box 570, Warragul 3820.

Phone: 0418 597 662 Email: info@eucaplanning.com.au

Director & Principal Consultant: Deanne Smith

Qualifications/Accreditations:

- Masters of Planning (Professional) – Deakin University
- Postgraduate Certificate in Bushfire Planning and Management – The University of Melbourne (2013)
- Graduate Diploma of Applied Science (Agricultural Studies) – Charles Sturt University
- Graduate Certificate in Public Sector Management – Flinders University
- Bachelor of Science – University of Melbourne (1996)

Memberships

- Member of Planning Institute of Australia (MPIA)
- Corporate Bronze Member of Fire Protection Association of Australia

Acknowledgement of Country

Euca Planning would like to acknowledge the Gurnaikurnai people as the Traditional owners of the unceded land that we conduct our business on. We pay our Respects to their Elders past, present, and future.

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Requirements detailed in this document do not guarantee survival of the buildings or the occupants. The client is strongly encouraged to develop and practice a bushfire survival plan.

Information and assistance including a template for a Bushfire Survival Plan is provided as part of the 'Fire Ready Kit' available through the CFA website at www.cfa.vic.gov.au or through your local CFA Regional office.

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Version Control

	Name	Date Completed	Comments
Field Assessment	Katelyn Balfour	30 May 2024	
Mapping	Deanne Smith	3 June 2024	
Report	Deanne Smith	4 June 2024	
Revision 1.1	Deanne Smith	5 June 2024	Edits

Executive Summary

This Report has been prepared to respond to a request from Bass Coast Shire Council for the consideration of Clause 13.02-1S of the Bass Coast Planning Scheme as part of the Development Plan (Project 2223 TP01 Rev E, Prepared by Rise Architecture) for a development at Lot 1 LP143125 at 1517-1529 Bass Highway Grantville. This report has been prepared at the request of the applicant to address the requirement of the proposed Development Plan under Development Plan Overlay – Schedule 3 to prepare a Bushfire Management Plan and Hazard Assessment.

The study area and locality

The subject site is at 1517-1529 Bass Highway Grantville, more particularly described as Lot 1 on Lodged Plan 143125. The site is in the Mixed Use Zone.

Landscape bushfire considerations

The primary bushfire risk to the study area is from grassfire. There is no potential for extreme fire behaviour due to the lack of rugged, forested terrain.

The methodology for a bushfire hazard landscape assessment set out in Planning Permit Applications Bushfire Management Overlay Technical Guide (DELWP,2017) identifies four landscape typologies to provide a framework for identifying landscape risk consistently across Victoria. This methodology can be used in areas that are not contained in the Bushfire Management Overlay. Landscape type one most closely aligns with the landscape around the study area given the grassland in one direction only. That being said, this is one of the lowest bushfire hazard locations for coastal settlement development.

Site based exposure

An assessment of site-based exposure has been prepared as part of this report (Section 4.5) to consider the site-based exposure elements of Clause 13.02-1S. It is demonstrated that the proposed Commercial development can be undertaken with the site-based exposure remaining less than 12.5kW/m^2.

Compliance with Clause 13.02-1S and Clause 13.02-1L Bushfire

In addition to landscape and site-based considerations, the proposal is also consistent with the bushfire policies and directions contained in the planning scheme. There is no planning scheme bushfire factor that would warrant the proposal not proceeding. The proposed landscaped and built form of the development indicates that no further mitigation is required to address Clause 13.02-1L.

Compliance with National Construction Code (NCC)

It is recommended that this BAL determination be considered in conjunction with the recent changes for this building class in the National Construction Code (NCC) to fully understand the bushfire mitigation measures and building design elements required for the child care centre and adjacent retail. This BAL determination translates to 'low risk' in the NCC Specification 43 enabling BAL12.5 construction unless individual elements of Specification 43 require otherwise.

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1.0 Introduction

This Report has been prepared to respond to a request from Bass Coast Shire Council for the consideration of Clause 13.02-1S of the Bass Coast Planning Scheme as part of the Development Plan (Project 2223 TP01 Rev E, Prepared by Rise Architecture) at 1517-1529 Bass Highway Grantville. This report has been prepared at the request of the applicant to address the requirement of the proposed Development Plan under Development Plan Overlay – Schedule 3 to prepare a Bushfire Management Plan and Hazard Assessment.

The report has been presented consistent with the content of the Bass Coast Planning Scheme, in particular Clause 13.02. The report establishes the context by providing information which is important when considering the way bushfire considerations may impact on the future use of the land. A structured approach to risk identification and management follows which can be used to provide decision makers with information to explain the bushfire risk and inform future design response to that risk.

2.0 Locality and Site Description

The subject site is 1517-1529 Bass Highway Grantville more particularly described as Lot 1 on Lodged Plan 143125. The site is in the Mixed Use Zone.

The application relates to the parcel of land that has Grantville-Glen Alvie Road along the north boundary, Bass Highway along the western boundary, residential land under development to the east, and currently undeveloped grassland to the south. The land is bounded by Mixed Use Zone to the south and west, and roads to the north and west. The site is relatively clear and comprises vacant grassland.

The subject land comprises is depicted in **Figure 1** below.

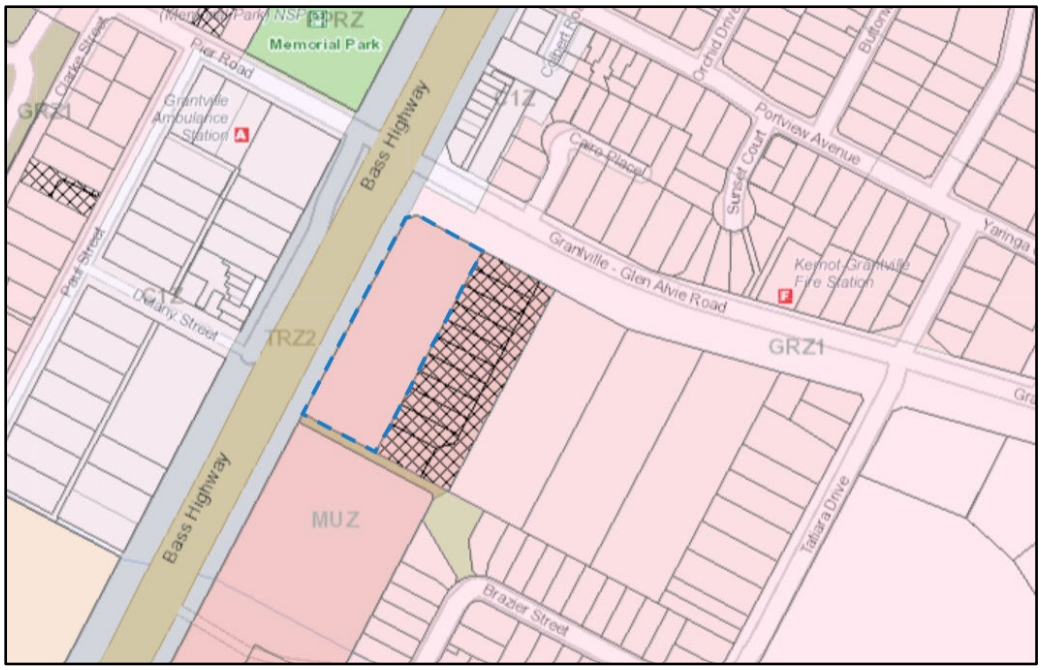

Figure 1 Site Context Plan

Grantville is a rapidly developing coastal township in Bass Coast Shire and this proposal is in the mixed-use zone area in the central part of town, as depicted in **Figure 2** below.



Figure 2 Location of site with reference to Grantville (Near map, 2024)

3.0 Planning Policy

3.1 State Planning Policy Overview

The planning assessment and response provided for the proposal needs to be considered against the State Planning Policy Framework in relation to bushfire. This consideration is provided below.

Clause 71.02-3 (integrated decision making) of the Planning Scheme was introduced through Amendment VC140 in December 2017 and reflects the policy settings that were recommended in 2011 by the *2009 Victorian Bushfire Royal Commission*, specifically amended and provides that:

> *Planning authorities and responsible authorities should endeavour to integrate the range of policies relevant to the issues to be determined and balance conflicting objectives in favour of net community benefit and sustainable development for the benefit of present and future generations. However, in bushfire affected areas, planning authorities and responsible authorities must prioritise the protection of human life over all other policy considerations.*

Clause 13.02 (Bushfire) of the Planning Scheme applies to all decision making and seeks:

*To strengthen the resilience of settlements and communities to bushfire through **risk-based planning** that prioritises the protection of human life.*

[Emphasis added]

Clause 13.02-1S includes a number of strategies to achieve that objective. Broadly these strategies include:

- prioritising the protection of human life;
- requiring a robust assessment of the bushfire hazard and risk assessment before any strategic or statutory decision is made; and
- directing population growth and new settlements to low risk locations.

Importantly in relation to settlement planning, clause 13.02-1S includes the following requirements:

- *Directing population growth and development to low risk locations, being those locations assessed as having a radiant heat flux of less than 12.5 kilowatts/square metres under AS 3959-2018 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2018).*
- *Ensuring the availability of, and safe access to, areas assessed as a BAL-LOW rating under AS 3959-2018 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2018) where human life can be better protected from the effects of bushfire.*
- *Ensuring the bushfire risk to existing and future residents, property and community infrastructure will not increase as a result of future land use and development.*
- *Achieving no net increase in risk to existing and future residents, property and community infrastructure, through the implementation of bushfire protection measures and where possible reduce bushfire risk overall.*
- *Assessing and addressing the bushfire hazard posed to the settlement and the likely bushfire behaviour it will produce at a landscape, settlement, local, neighborhood and site scale, including the potential for neighborhood-scale destruction.*
- *Assessing alternative low risk locations for settlement growth on a regional, municipal, settlement, local and neighborhood basis*.
- *Not approving any strategic planning document, local planning policy, or planning scheme amendment that will result in the introduction or intensification of development in an area that has, or will on completion have, more than a BAL-12.5 rating under AS 3959-2018.*

When these strategies are read together it is clear that the fire risk is a consideration for development. The purpose of this report is to undertake such an assessment for the proposal, including an assessment of the likely fire behaviour and the risk to future occupants.

In the context of planning decisions, these strategies need to be read as on balance and consider the '*net increase in risk to existing and future residents*'. As it relates to the objectives at Clause 13.02 of the Planning Scheme, it is necessary to ensure that the protection of human life is prioritised when decisions are made. However, the strategies listed at Clause 13.02-1S in the Planning Scheme are not 'mandatory requirements' and it is not necessary to 'tick every box'. It is more important to ensure that decisions are consistent with the State policy objectives and build

resilient communities.

3.2 State Planning Policy Assessment

3.2.1 Objective

Clause 13.02-1S seeks to '*strengthen the resilience of settlements and communities to bushfire through risk-based planning that prioritises the protection of human life*'.

3.2.2 Application

The policy must be applied to all planning and decision making under the Planning and Environment Act 1987 relating to land which is within a designated bushfire prone area; or subject to a Bushfire Management Overlay.

Bushfire Prone Area

The planning proposal area is included in the Bushfire Prone Area (BPA) as depicted in Figure 3. As described in Planning Advisory Note 46 (2013), the BPA is a building regulation tool that identifies where moderate bushfire hazard can be expected. It applies to areas subject to the BMO, and to areas that experience a lower head fire intensity modelled to be between 4,000kW/m and 30,000kW/m. This level of hazard informs areas declared as bushfire prone in the building system. Areas at the upper end of the bushfire intensity range (that is 28,000kW/m and above and referred to as BHL1b) are considered, where appropriate, for applying the BMO based on the advice of the relevant fire authority.

The entire planning proposal site is subject to the BPA. The greater surrounding area is also in the BPA reflecting the moderate bushfire hazard that can be expected from the grassland.

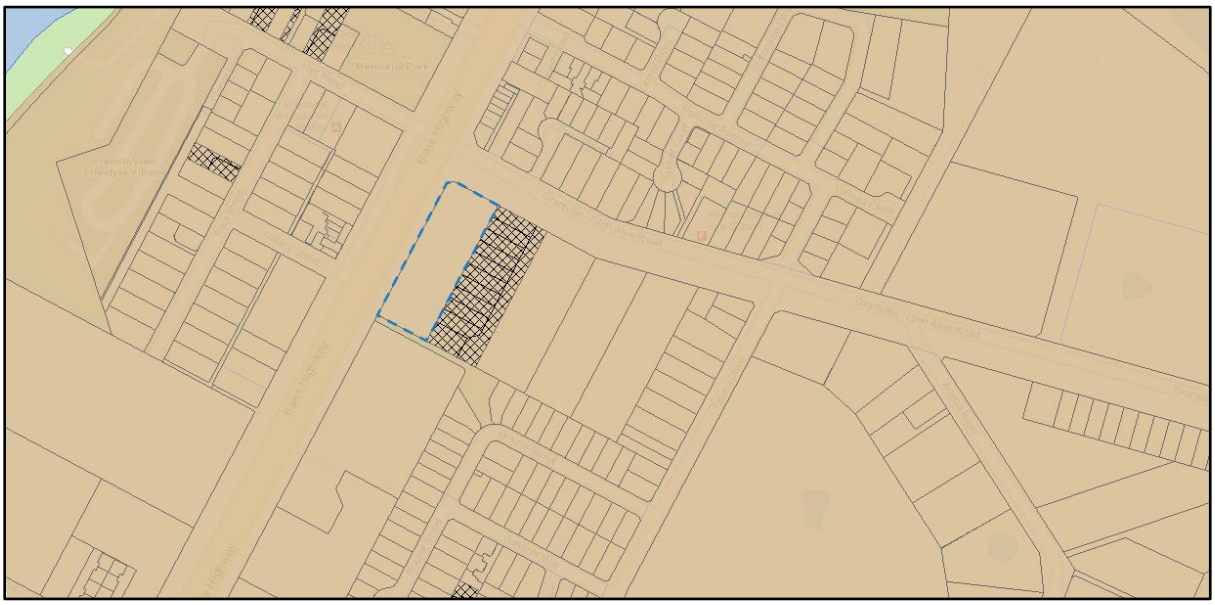

Figure 3 Extent of the Bushfire Prone Area across the site and in the vicinity (VicPlan, 2024).

In December 2018, Clause 13.02-1S of the Bass Coast Planning Scheme was amended to specifically refer to Bushfire Prone Areas and to strengthen the consideration of bushfire risk in all planning decisions. As the site is fully contained within the Bushfire Prone Area, the minimum level of construction for all future dwellings is BAL 12.5, and this bushfire risk must be considered.

Bushfire Management Overlay

There is no Bushfire Management Overlay on the site but there is some in the local area as depicted in **Figure 4**.

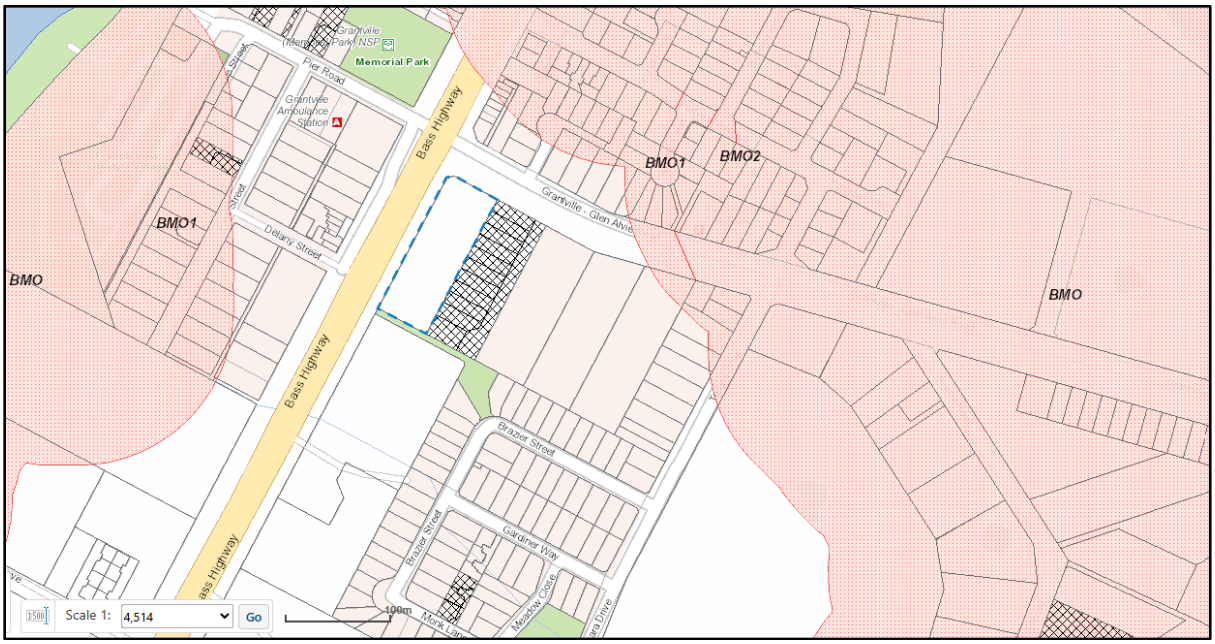

Figure 4 Current extent of Bushfire Management Overlay nearby (VicPlan, 2024).

As described in Planning Advisory Note 46 (2013), the BMO is a planning scheme provision used to guide the development of land in areas of high bushfire hazard. The location, design and construction of development and the implementation of bushfire protection measures must be considered under a BMO. The BMO applies to areas where there is potential for extreme bushfire behaviour, such as a crown fire and extreme ember attack and radiant heat.

The most significant bushfire hazard where head fire intensity is modelled to be 30,000kW/m or more informed where the BMO should apply. Inputs to this calculation included physical characteristics including vegetation, topography and separate fire behaviour models appropriate to the vegetation classification. Whilst areas of contiguous vegetation of less than 4Ha were excluded, buffers within 150 metres of vegetation were included in recognition of research that 92% of house loss occurs within this distance (Blanchi, Lucas, Leonard, & Finkele, 2010).

Initiated by a recommendation of the 2009 Victorian Bushfires Royal Commission, the BMO was mapped using hazard data developed by the Department of Environment and Primary Industries (DEPI). Revised mapping was verified by Councils during 2016 and 107 and then gazetted on October 3rd, 2017. As a result, the consideration of bushfire risk has informed this proposal.

3.2.3 Strategies

Strategic considerations: Protection of human life

Give priority to the protection of human life by:	*Response*
Prioritising the protection of human life over all other policy considerations	• The land is void of dwellings or outbuildings. • The proposed use is for the development of an early childhood centre, shops and service station in a coastal township area. • The National Construction Code will further address bushfire protection, as advised by the architect.
Directing population growth and development to low-risk locations and ensuring the availability of, and safe access to, areas where human life can be better protected from the effects of bushfire.	• The surrounding landscape is characterized by a residential and commercial zone. Bass Highway dissects the Commercial Zone. Grantville-Glen Alvie Road abuts the northern boundary and Bass Highway Intensifying, and new residential lots abut the eastern area. • The subject land is contained in the bushfire prone area with grassland as the vegetation which has the lowest area of coastal risk.
Reducing the vulnerability of communities to bushfire through the consideration of bushfire risk in decision-making at all stages of the planning process.	• The proposed development has interface to low threat vegetation or grassland that has Column A separation in all directions.

<u>Landscape considerations: Bushfire hazard identification and assessment</u>

Identify bushfire hazard and undertake appropriate risk assessment by:	*Response*
Applying the best available science to identify vegetation, topographic and climatic conditions that create a bushfire hazard.	The Bass Coast Planning Scheme requires the proposal to respond to bushfire based on current assessment methods. Clauses 13.02, and 53.02 are considered for the land with the importance of bushfire planning being strengthened by Clause 71.02-3 *Integrated Decision Making.* The assessment method aligns with AS3959-2018 and is provided in this report (see Section 4).
Considering the best available information about bushfire hazard including the map of designated bushfire prone areas prepared under the Building Act 1993 or regulations made under that Act.	Consistent with the revised Clause 13.02, the proposal must respond to the Bushfire Prone Area. A compliant BAL has been undertaken in addition to mapping the local and neighbourhood area to assist with hazard analysis.
Applying the Bushfire Management Overlay in	It is demonstrated that the land is 'Landscape

planning schemes to areas where the extent of vegetation can create an extreme bushfire hazard	Type One' having vegetation influence in the form of grassland from one direction only, reinforcing why the land does not meet the criteria for application of the Bushfire Management Overlay.
Considering and assessing the bushfire hazard on the basis of: • Landscape conditions - meaning the conditions in the landscape within 20 kilometres and potentially up to 75 kilometres from a site; • Local conditions - meaning conditions in the area within approximately 1 kilometre from a site; • Neighbourhood conditions - meaning conditions in the area within 400 metres of a site; and, • The site for the development	An assessment is provided in Section 4.0 of this report. Three scales of consideration are applied - Landscape conditions at 20km, Local conditions at 10 km, and Neighbourhood conditions at 1km. The site conditions are considered through the Bushfire Hazard Site Assessment.
Consulting with emergency management agencies and the relevant fire authority early in the process to receive their recommendations and implement appropriate bushfire protection measures.	CFA have considered the referral from Council, provided advice dated 28 December 2003 and it is expected will be re-referred this report by Council.
Ensuring that strategic planning documents, planning scheme amendments, planning permit applications and development plan approvals properly assess bushfire risk and include appropriate bushfire protection measures	The content of this report provides a solid foundation for the proposal to proceed.
Not approving development where a landowner or proponent has not satisfactorily demonstrated that the relevant policies have been addressed, performance measures satisfied or bushfire protection measures can be adequately implemented.	This element of the revised Clause 13.02 is the most important element and empowers the Responsible Authority to not approve a permit application until it is satisfied with the bushfire protection measures being implemented.

<u>Site based exposure: Settlement Planning</u>

Plan to strengthen the resilience of settlements and communities and prioritise protection of human life by:	*Response*
Directing population growth and development to low-risk locations, being those locations assessed as having a radiant heat flux of less than 12.5 kilowatts/square metres under AS 3959-2009 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2009).	This location is primarily grassland and is not in the BMO which makes it one of the lower risk sites comprising either low threat vegetation and grassland that meets Column A separation. The heat influx for the entire development is an exposure to radiant heat of 12.5 kW/m^2 or less.
Ensuring the availability of, and safe access to, areas assessed as a BAL-LOW rating under AS	The land is located immediately in the Grantville township. The surrounding area is

3959-2009 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2009) where human life can be better protected from the effects of bushfire	undergoing residential development and will provide additional BAL-LOW areas in addition to the NSP-PLR for Grantville that exists north of the commercial area.
Ensuring the bushfire risk to existing and future residents, property and community infrastructure will not increase as a result of future land use and development.	Application of AS3959 and the National Construction Code will address the bushfire risk to the buildings. Both uses of the land for an early childhood centre and service station, require Emergency Management Plans prior to opening as part of their regulations for operation.
Achieving no net increase in risk to existing and future residents, property and community infrastructure, through the implementation of bushfire protection measures and where possible reduce bushfire risk overall.	The development is central to the commercial area and removes one of the remaining grassland parcels from existence.
Assessing and addressing the bushfire hazard posed to the settlement and the likely bushfire behaviour it will produce at a landscape, settlement, local, neighbourhood and site scale, including the potential for neighbourhood-scale destruction	An assessment is provided in Section 4.0 of this report. Three scales of consideration are applied- Landscape conditions at 20km, Local conditions at 10 km, and Neighbourhood conditions at 1km. The site conditions are considered through the Bushfire Hazard Site Assessment.
Assessing alternative low risk locations for settlement growth on a regional, municipal, settlement, local and neighbourhood basis.	The site is located in the central part of Grantville outside the BMO and is considered as a low threat location based on the surrounding vegetation and has been identified for development.
Not approving any strategic planning document, local planning policy, or planning scheme amendment that will result in the introduction or intensification of development in an area that has, or will on completion have, more than a BAL-12.5 rating under AS 3959-2009.	The proposed Commercial Development must be generally in accordance with the Development Plan under Development Plan Overlay – Schedule 3, which endorses the subject site for mixed use development, subject to the provision of a Bushfire Management Plan and Hazard Assessment.

<u>Areas of high biodiversity conservation value</u>

Ensure settlement growth and development approvals can implement bushfire protection measures without unacceptable biodiversity impacts by discouraging settlement growth and development in bushfire affected areas that are of high biodiversity conservation value.

Response: The site has vegetation along the Bass Highway frontage that is being addressed through the Development Plan and will become landscaped. The Biodiversity Assessment provided in relation to the proposed Commercial Development confirms the extent of vegetation loss as a result of the proposal is minimised by utilizing already-cleared land. The Assessment further confirms that it is highly unlikely that any threatened flora or fauna species remain within the study area or would be impacted by the proposal.

Use and development control in a Bushfire Prone Area

In a bushfire prone area designated in accordance with regulations made under the Building Act 1993, bushfire risk should be considered when assessing planning applications for accommodation.

Response: The greatest separation has been provided to ensure a radiant heat flux does not exceed 12.5kW/m^2.

When assessing a planning permit application for the above uses and development:	Response
Consider the risk of bushfire to people, property and community infrastructure.	This report provides the consideration.
Require the implementation of appropriate bushfire protection measures to address the identified bushfire risk.	This report provides the consideration.
Ensure new development can implement bushfire protection measures without unacceptable biodiversity impacts.	This report provides the consideration.

3.2.4 Policy guidelines

Planning must consider as relevant:	Response
Any relevant approved State, regional and municipal fire prevention plan.	This has been considered in this report which can be used to inform future planning permit application assessments.
AS 3959-2009 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2009).	This is relevant through the derivation of Bushfire Attack Levels and is considered when referring to the Bushfire Attack Level.
Building in bushfire-prone areas - CSIRO & Standards Australia (SAA HB36-1993, May 1993).	This is the handbook to AS3959-2009 and does not need to be considered directly by the proposal.
Any Bushfire Prone Area map prepared under the Building Act 1993 or regulations made under that Act.	The updated Bushfire Prone Area map has been considered in this report.

4.0 Bushfire Risk

An assessment on bushfire risk consistent with Clauses 13.02 is provided. Three scales of consideration are applied - Landscape conditions at 20km, Local conditions at 10 km, and Neighbourhood conditions at 1km. The site conditions are considered through the Bushfire Hazard Site Assessment.

4.1 Landscape Conditions

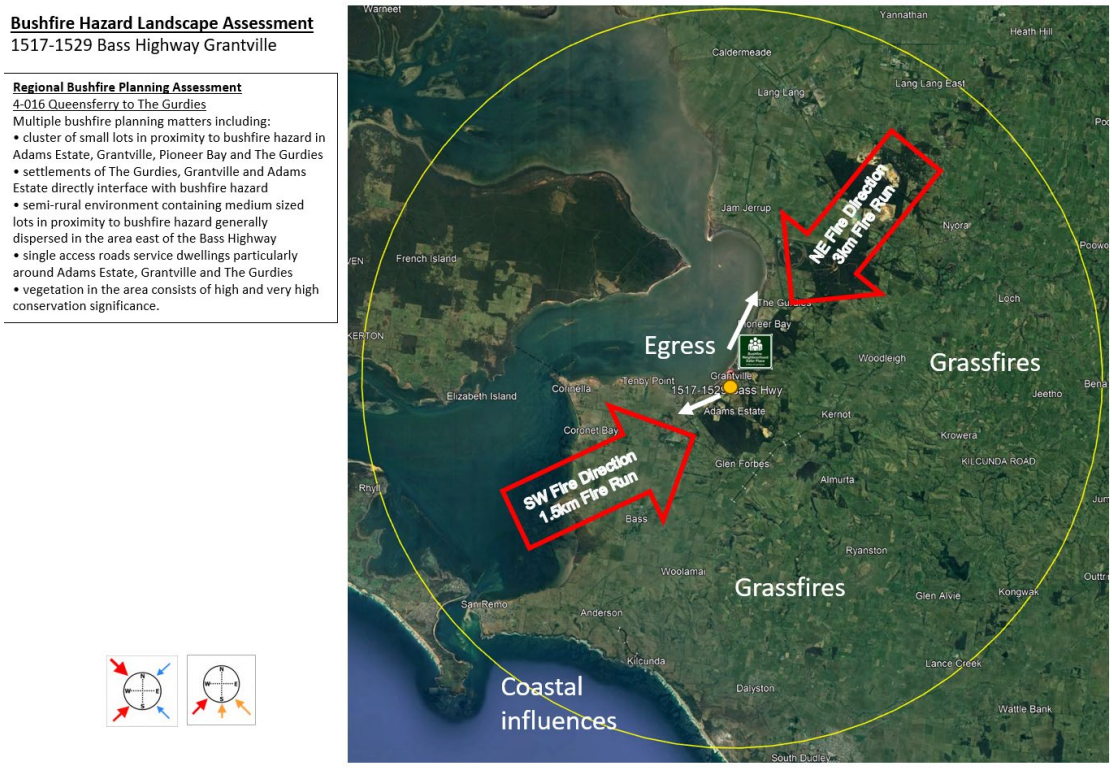

Figure 5 Location within the context of 20km radius from subject land (Google Earth, 2024)

The landscape risk of a site is an important consideration when mitigating bushfire hazards. The landscape risk is the combination of a number of elements in the surrounding landscape. These relate to the vegetation extent, the area available to a landscape bushfire, the orientation of the ridgelines and the steepness of the terrain, the accessibility to low threat areas and the quality of the road networks surrounding the site.

Within 20 kilometres of the subject land area, key features include:

- Westernport Bay to the west and Bass Strait to the south;
- Grazing lands to the far north, east and south;
- Limited tree vegetation

This site is positioned well beyond the extremity of the forest tracts to the south and the north. The vegetation in the broader landscape is isolated areas of forest and extensive farming grasslands. The location has a lower risk of bushfire due to the coast to the west and intensive farming. There are limited fire run in the greater areas to the north, whereas the grassland fire runs would be dependent upon land use and wind directions.

4.2 Local Conditions

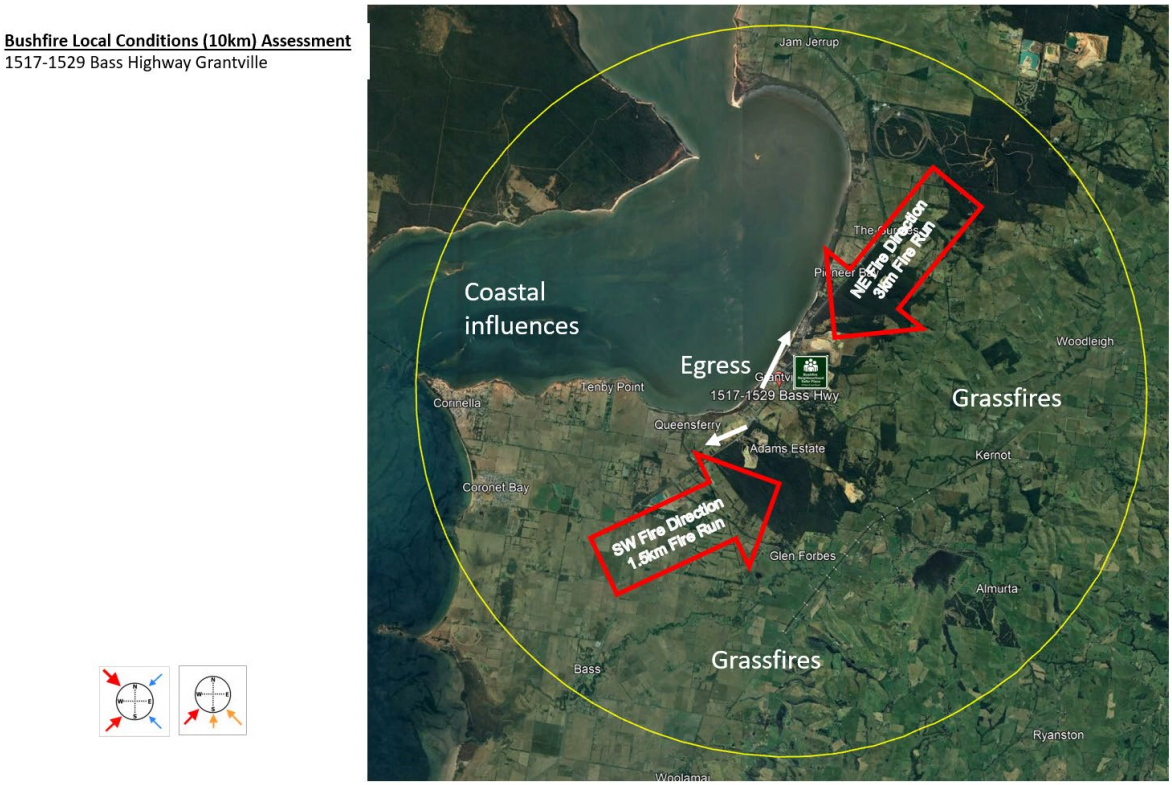

Figure 6 Location within the context of 10km radius from subject land (Google Earth, 2024)

Within 10 kilometres of the development plan area, key features include:

- The urban town of Grantville, Corinella and Lang Lang and Coronet Bay
- The Bass Highway extending north to south being the main route through the area;
- Extensive farming grassland
- The vegetation contained the Lang Lang Proving Ground in the north and the reserve in the south.

4.3 Neighbourhood Conditions

Key features located within 1 kilometre of the subject land area include:

- The Bass Highway running north-south
- Intensifying residential development, particularly in the south-east
- Neighbourhood Safer Place – Place of Last Resort (NSP-PLR) in the north with the township centre (and this site) now providing better protection than the NSP-PLR

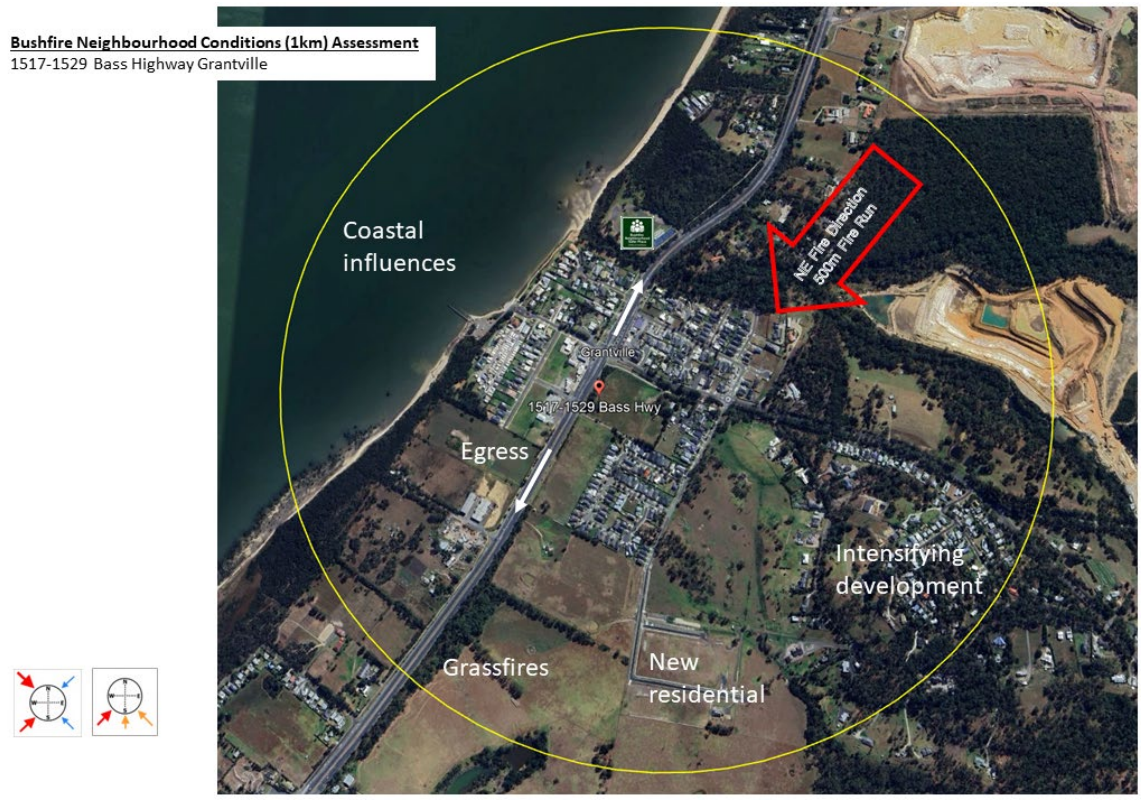

Figure 7 Location within the context of 1km radius from subject land (Google Earth, 2024)

4.4 Bushfire Scenarios

Scenario 1 – Localised grassfire from the south

Grassfire can approach from the south. It is a limited fire run and some is already zoned for development. This fire is likely to have minimal impact on the development, presenting only minimal radiant heat.

Scenario 2 – Northern fire approach

A short 500 metre fire run occurs directly to the north of Grantville. Grassfire can approach from the south. It is a limited fire run and some is already zoned for development. This fire is likely to have minimal impact on the development, presenting only minimal radiant heat.

4.5 Bushfire Hazard Site Assessment

The vegetation within the 150-metre assessment was classified according to AS 3959:2018, Technical Guide: Planning Permit Applications Bushfire Management Overlay (DELWP, 2017) and the Overall Fuel Hazard Assessment Guide (DSE, 2010). The AS 3959:2018 approach uses a generalised description of vegetation based on the AUSLIG (Australian Natural Resources Atlas" No.7 Native Vegetation) classification system. According to this method, vegetation can be classified into seven categories. Each category indicates a particular type of fire behaviour and these categories or classifications are then used to determine bushfire intensity. An indication of the Ecological Vegetation Classes in the landscape is provided below in **Figure 8**.

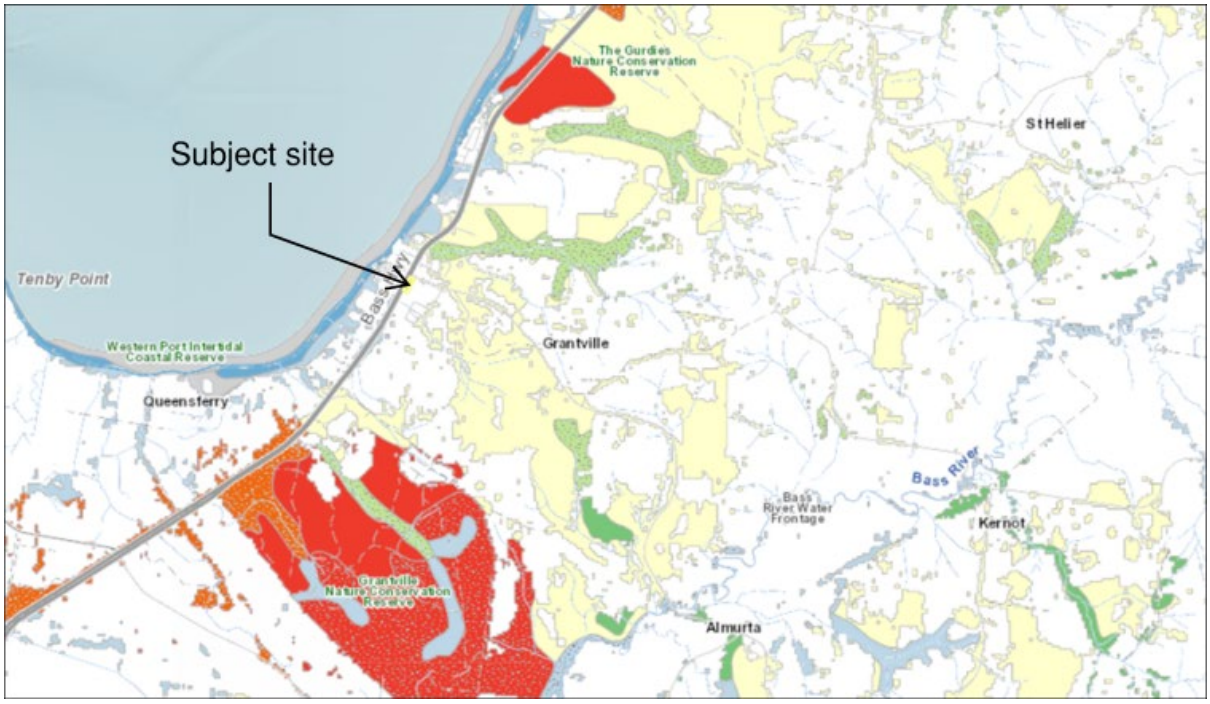

Figure 8 Vegetation in the area – Heathy Woodland (red), Grassy Woodland (orange), Damp Forest (green), Lowland Forest (yellow) (Source: Naturekit, 2024)

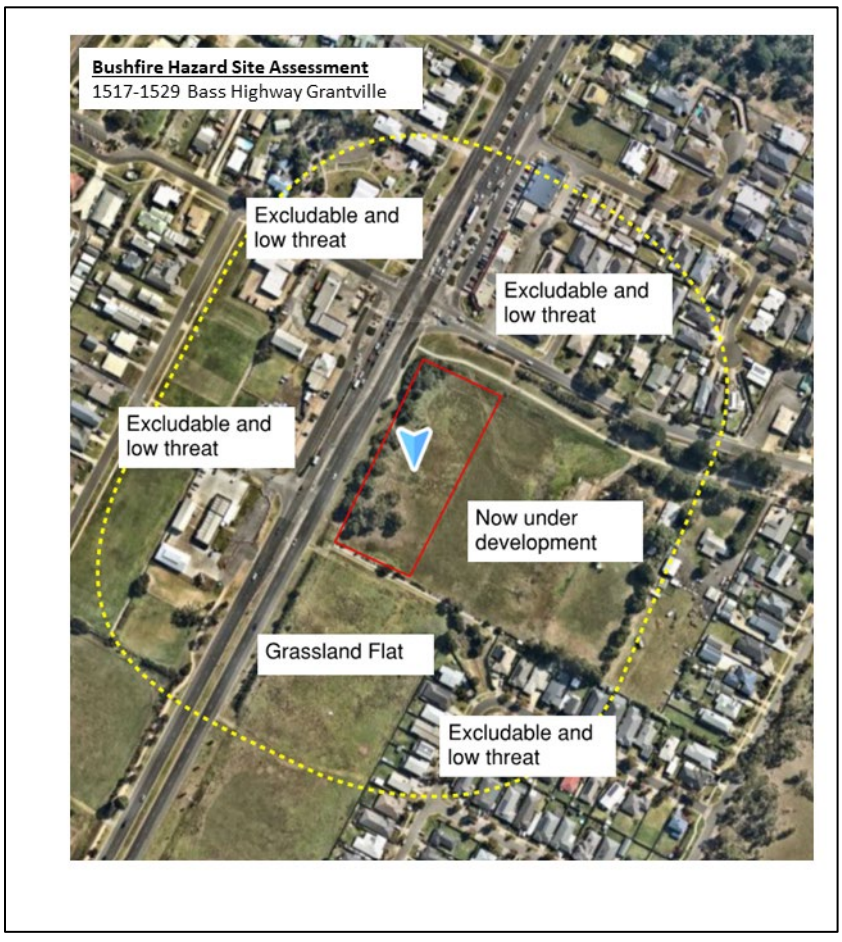

Figure 9 Bushfire Hazard Site Assessment for the subject land

4.5.1 Vegetation

The AS 3959 approach uses a generalised description of vegetation based on the AUSLIG (Australian Natural Resources Atlas" No.7 Native Vegetation) classification system. According to this method, vegetation can be classified into seven categories. Each category indicates a particular type of fire behaviour and these categories or classifications are then used to determine bushfire intensity. The vegetation classifications applied are listed below and the Bushfire Hazard Site Assessment is shown in **Figure 9**.

Vegetation Classification: Grassland

AS3959:2018 Definition:

All forms, including situations with shrubs and trees, if the over-storey foliage cover is less than 10%.

Site Description:

The proposed development site has grassland to the south. The land is flat. A Council path with mown edges separates the grassland from the development site.





Images: Grassland, photo taken looking south-east into the grassland, and the path that separates the grassland from the site.

4.5.2 Topography

The land is flat. Rising land occurs further east.

4.5.3 Separation from the hazard

The bushfire attack level (BAL) is a means of measuring the severity of a building's potential exposure to ember attack, radiant heat and direct flame contact, using increments of radiant heat expressed in kilowatts per metre squared. The BAL is also the basis for establishing the requirements for construction to improve protection of building elements from attack by bushfire.

An assessment of the site conditions without modification was made and informs the BAL assessment (see Table 1).

Table 1 – Separation from the Hazard Assessment (without modification)

Orientation	Highest threat vegetation	Average slope under classifiable vegetation	Separation distance	Bushfire Attack Level (BAL)
North	Excludable and low threat	Flat	0 metres	BAL12.5
East	Excludable and low threat	Flat	0 metres	BAL12.5
South	Grassland	Flat	30 metres	BAL12.5
West	Excludable and low threat	Flat	0 metres	BAL12.5

Based on the proposed layout (Figure 10) the separation of the final design was determined (Table 2). The linear vegetation along Bass Highway is altered and provides landscaping and excludable.



Figure 10 Extract from Development Plan

Table 2 – Separation determination

Orientation	Highest threat vegetation	Average slope under classifiable vegetation	Separation distance currently	Separation achieved
North	Excludable and low threat	Flat	0 metres	Table 2 BAL12.5
East	Excludable and low threat	Flat	0 metres	Table 2 BAL12.5
South	Grassland	Flat	30 metres	Column A
West	Excludable and low threat	Flat	0 metres	Table 2 BAL12.5

In determining the defendable space to be established the following principles have been applied:

- The highest threat vegetation will be used to determine the defendable space in each direction.
- Only the southern aspect needs to respond to classifiable vegetation – grassland flat.

- The service station building is set approximately 25 metres from the southern boundary and 30 metres from the grassland when the established Council path is considered. This separation exceeds the minimum of 19 metres required to achieve a development exposed to no greater than 12.5kW/m^2.

Table 3 – BAL determination (for conversion from AS3959 Assessment to NCC Specification 43) for the childcare building

Orientation	Highest threat vegetation	Average slope under classifiable vegetation	Table S43C2 Risk	Minimum BAL
North	Low threat	Not applicable	<Low risk	BAL12.5
East	Low threat	Not applicable	<Low risk	BAL12.5
South	Grassland	Flat	Low risk	BAL12.5
West	Low threat	Not applicable	<Low risk	BAL12.5

In determining the defendable space to be established the following principles have been applied:

- The initial assessment (Table 1) was undertaken using AS3959:2018 to assess if the proposal is exposed to 12.5kW/m2 of radiant heat flux to comply with Clause 13.02-1S of the Bass Coast Planning Scheme.
- Table 2 demonstrates the compliance with Clause 13.02-1S.
- Table 3 was undertaken to convert the assessment undertaken using AS3959:2018 to that required by Specification 43 of the NCC (S43C2) demonstrating the site is low risk and has at least 30 metres to the classified grassland in the south. The childcare building satisfies S43C2 of Specification 43 of the NCC. No other elements of Specification 43 have been considered in this report as they are the responsibility of the architect.

4.6 Other considerations in relation to bushfire

The Regional Bushfire Planning Assessment (RBPA) for the Gippsland Region (2012) provides a high level analysis of locations where the bushfire hazard may impact on planning objectives. The RBPA provides information where a range of land use planning matters intersect with a bushfire hazard to influence the level of risk to life and property from bushfire. This information is required to be used as part of strategic land use and settlement planning at the regional, municipal and local levels.

> *"The RBPA is not a statutory planning provision and does not directly translate into planning schemes. However, it complements planning scheme provisions such as the Bushfire Management Overlay (BMO) by providing spatial and qualitative information from a variety of sources which together can inform considerations about where bushfire should be assessed early in the strategic planning process."* RBPA – Gippsland Region (2012).

Of particular note, the area falls in a broad mention:

4-016 Queensferry to The Gurdies - Multiple bushfire planning matters including:

- cluster of small lots in proximity to bushfire hazard in Adams Estate, Grantville, Pioneer Bay and The Gurdies
- settlements of The Gurdies, Grantville and Adams Estate directly interface with bushfire

hazard

- semi-rural environment containing medium sized lots in proximity to bushfire hazard generally dispersed in the area east of the Bass Highway
- single access roads service dwellings particularly around Adams Estate, Grantville and The Gurdies
- vegetation in the area consists of high and very high conservation significance.

4.7 Surrounding Road network

The subject site has access to the Bass Highway and Grantville-Glen Alvie Road. These are both main roads providing movement into Grantville. Bass Highway provides egress north to the NSP-PLR; and egress to the north and south out of Grantville. The surrounding road network is supports this Commercial Development in the Bushfire Prone Area.

5.0 Summary and recommendations

5.1 Strategic policy assessment

An assessment of the proposal against policy contained within Clause 13.02-1S is contained in Section 3.2. It is demonstrated that the proposal meets the policy. One of the key strategies contained in Clause 13.02-1S is "*Not approving any strategic planning document, local planning policy, or planning scheme amendment that will result in **the introduction or intensification of development** in an area that has, or will on completion have, more than a BAL-12.5 rating under AS 3959-20*09 [text emphasis added in bold]. This proposal is for 'development' and comprises a proposed Commercial Development of the subject site. It is demonstrated in Section 4 that it satisfies the threshold of Clause 13.02-1S.

5.2 Landscape bushfire considerations

This land is Landscape Type 2 according to landscape typologies identified for the Bushfire Management Overlay (BMO) simply due to the presence of grassland in the south (one direction only). The land is not in the Bushfire Management Overlay and has exposure to limited ember attack from forest fire at a distance of kilometres away rather than metres.

The primary bushfire risk to the study area is from grassfire. There is no potential for extreme fire behaviour due to the lack of rugged, forested terrain.

The methodology for a bushfire hazard landscape assessment set out in Planning Permit Applications Bushfire Management Overlay Technical Guide (DELWP,2017) identifies four landscape typologies to provide a framework for identifying landscape risk consistently across Victoria. This methodology can be used in areas that are not contained in the Bushfire Management Overlay. Landscape type two most closely aligns with the landscape around the study area given the grassland in one direction only. This is one of the lowest bushfire hazard locations for this development in a town centre.

5.3 Site based exposure

A bushfire hazard site assessment has been prepared for the subject land. The assessment calculations are shown in **Table 1** and the associated diagram in **Figure 9**. The assessment shows

that the site can achieve exposure of less than 12.5kw/m^2 on all aspects. Table 3 converts the assessment to an exposure less than 10kW/m^2 to satisfy part of Specification 43.

5.3 Bushfire mitigation measures

The site is suitable for the proposed Commercial Development. The proposal can easily provide for bushfire mitigation measures within the National Construction Code regulations, regulations for operation of a childcare centre and service station. The childcare centre and service station are regulated to provide an Emergency Management Plan prior to (and for continuity of) operations. In the absence of other regulation, the retail shops may require a condition of a Bushfire Emergency Plan to be placed on any permit issued. However, if this was to be applied more broadly this would be of no concern.

Inherent design features by virtue of what is proposed include:

- Existing perimeter roads on the north and south
- Separation for all development that achieves no more than 10kW/m2 of radiant heat flux (minimum 30 metres from the southern grassland)
- Industry regulation for operations – childcare centre and service station
- National Construction Code, all buildings including Specification 43 for the childcare, as considered by the architect.
- Hard paved surfaces and detailed landscaping of retained and planted vegetation.
- Emergency planning for the childcare centre and service station prior to operation, as required to meet their operational regulations.

6.0 References

AN68 Bushfire State Planning Policy VC140

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LEGEND

- CHILDCARE CENTRE
- RETAIL
- QUICK SERVICE RETAIL (QSR) & SERVICE STATION
- PARKING SPACES
- EXISTING PEDESTRIAN PATHS
- PROPOSED PEDESTRIAN PATHS AND SEATING
- PROPOSED LANDSCAPED AREAS
- EXISTING LANDSCAPE AREAS
- PROPOSED BUSINESS IDENTIFICATION & PYLON SIGN
- TREE PLANTING / LANDSCAPE OPPORTUNITIES
- PROPOSED VEHICLE MOVEMENT
- PROPOSED BICYCLE PARKING
- EXISTING BUS STOP
- EXISTING COMMERCIAL SITES
- EXISTING RESIDENTIAL SITES
- EXISTING MIXED USE SITE / PLANNING APPLICATION
- PROPOSED LOADING BAY
- PROPOSED PEDESTRIAN PATH

BUSHFIRE HAZARD NOTES

- TO ENSURE THE BUSHFIRE RISK TO LIFE AND PROPERTY ON THE FUTURE RESIDENTIAL AREA IS REDUCED TO AN ACCEPTABLE LEVEL, ANY FUTURE PLANNING PERMIT APPLICATION MUST INCLUDE A BUSHFIRE MANAGEMENT PLAN. THE BUSHFIRE MANAGEMENT PLAN MUST BE PREPARED TO THE SATISFACTION OF THE RESPONSIBLE AUTHORITY AND ENDORSED TO FORM PART OF ANY APPROVED PLANNING PERMIT.
- A BUSHFIRE HAZARD ASSESSMENT WILL BE REQUIRED AS PART OF ANY SUBSEQUENT PLANNING PERMIT.

TRAFFIC NOTE

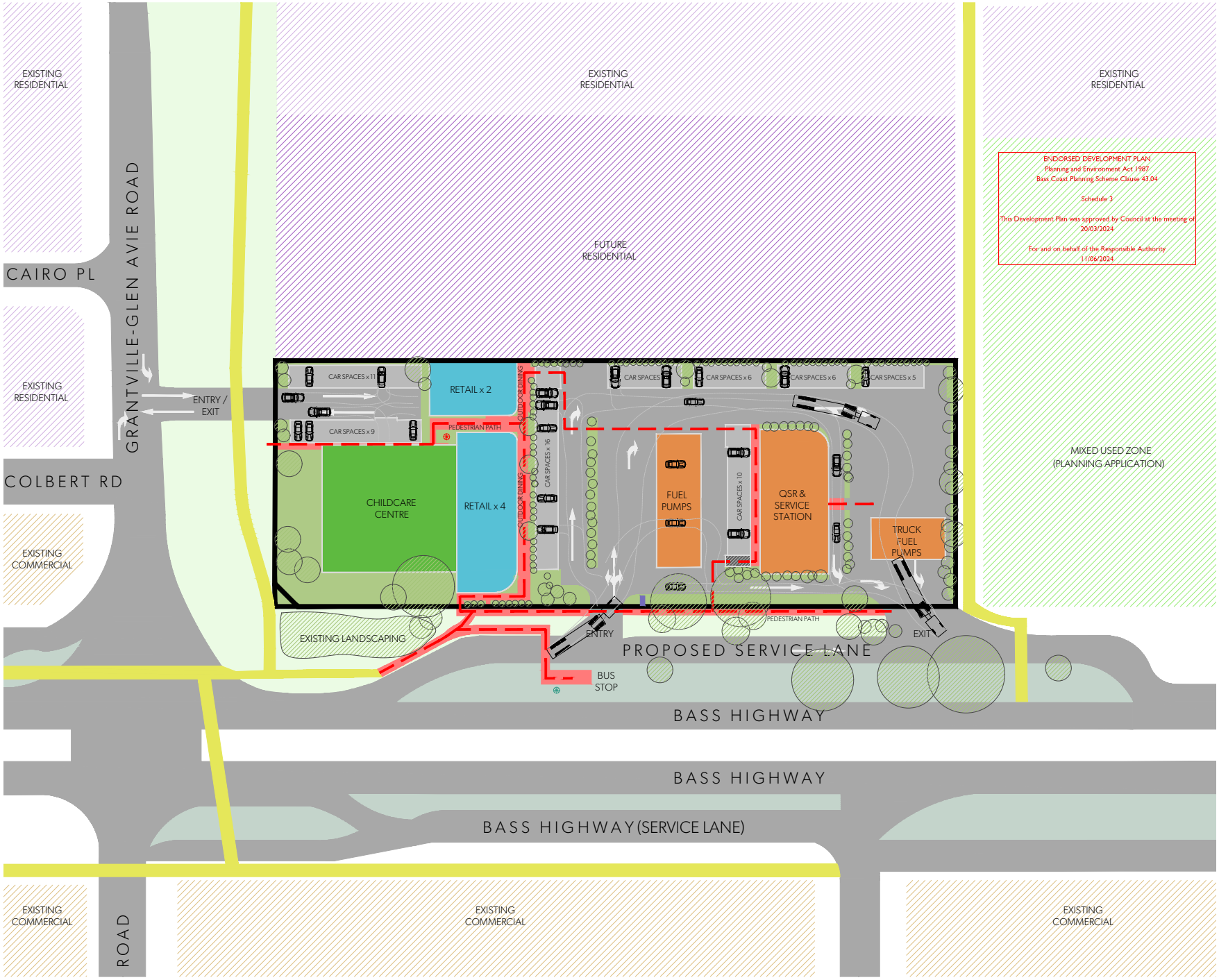
- REFER TO REPORT 'IMP23020591TA01F01' PREPARED BY 'IMPACT' FOR ALL TRAFFIC RELATED INFORMATION / DETAILS.

WASTE MANAGEMENT NOTE

- REFER TO REPORT 'IMP2302059WMP01D01' PREPARED BY 'IMPACT' FOR ALL WASTE MANAGEMENT RELATED INFORMATION / DETAILS.

MELBOURNE WATER NOTE

- THE INDICATIVE BUILDING FOOTPRINTS AND LOCATIONS ARE SUBJECT TO CHANGE DEPENDENT ON FLOOD MODELLING THAT MUST BE SUBMITTED AS A PART OF THE STORMWATER MANAGEMENT STRATEGY THAT ACCOMPANIES ANY FUTURE PLANNING PERMIT APPLICATION.
- ANY FUTURE PLANNING PERMIT APPLICATIONS MUST BE IN ACCORDANCE WITH THE APPLICABLE STORMWATER MANAGEMENT STRATEGY BY DPM DATED 26 JULY 2023 (OR AS AMENDED FROM TIME TO TIME) TO THE SATISFACTION OF THE RELEVANT DRAINAGE AND FLOODPLAIN MANAGEMENT AUTHORITY.



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Rev	Description	Date
A	Development Plan	26.07.2023
B	Development Plan - RFI Amendments	17.11.2023
C	Service Lane and Referral Amendments	07.02.2024
D	Drainage Removal	04.03.2024
E	Melbourne Water Referral Notations	08.04.2024

N

Project Number: 2223
Drawing Title:
Proposed Development Plan
Project Address:
1517 - 1529 Bass Highway, Grantville

TP 01
Scale: 1:400
Rev: E