

Form 2

NOTICE OF AN APPLICATION FOR PLANNING PERMIT

The land affected by the application is located at:	413 Esplanade LAKES ENTRANCE 3909 Lot: 1 TP: 515758, Lot: 1 TP: 612671
The application is for a permit to:	Use and Development of a Service Station with Car Wash, Alteration of accesses to a road in a Transport Zone 2 and Display of Electronic, Internally Illuminated and Business Identification Signage
The applicant for the permit is:	PC Infrastructure Pty Ltd
The application reference number is:	5.2023.206.1
You may look at the application and any documents that support the application on the website of the responsible authority.	COVID-19 Omnibus (Emergency Measures) Bill 2020 now modifies the requirement of Form 2 so that <i>Planning documents previously required to be physically available to view at local government offices are now only required to be available for online inspection.</i>

This can be done anytime by visiting the following website:

<https://www.eastgippsland.vic.gov.au/building-and-development/advertised-planning-permit-applications>

Any person who may be affected by the granting of the permit may object or make other submissions to the responsible authority.

An objection must

- ♦ be made to the Responsible Authority in writing,
- ♦ include the reasons for the objection, and
- ♦ state how the objector would be affected.

The Responsible Authority will not decide on the application before:	Subject to applicant giving notice
--	------------------------------------

If you object, the Responsible Authority will tell you its decision.

The responsible authority must make a copy of every objection available at its office for any person to inspect during office hours free of charge until the end of the period during which an application may be made for review of a decision on the application.

REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

Page 1 of 3

VOLUME 03425 FOLIO 866

Security no : 124106279178H
Produced 22/05/2023 04:48 PM

LAND DESCRIPTION

Lot 1 on Title Plan 515758D.
PARENT TITLE Volume 02554 Folio 602
Created by instrument 0623698 14/06/1910

REGISTERED PROPRIETOR

Estate Fee Simple
Sole Proprietor
SAMAD (LAKES ENTRANCE) PTY LTD of 35 MARKET STREET SOUTH MELBOURNE VIC 3205
AW198364N 25/10/2022

ENCUMBRANCES, CAVEATS AND NOTICES

MORTGAGE AW561392K 17/02/2023
CBA CORPORATE SERVICES (NSW) PTY LTD

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section 24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION

SEE TP515758D FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NUMBER		STATUS	DATE
AW561392K (E)	MORTGAGE	Registered	17/02/2023

-----END OF REGISTER SEARCH STATEMENT-----

Additional information: (not part of the Register Search Statement)

Street Address: 413 ESPLANADE LAKES ENTRANCE VIC 3909

ADMINISTRATIVE NOTICES

NIL

eCT Control 19436D KING & WOOD MALLESONS
Effective from 17/02/2023

DOCUMENT END

Imaged Document Cover Sheet

ADVERTISED
This copied document is made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright.

The document following this cover sheet is an imaged document supplied by LANDATA®, Secure Electronic Registries Victoria.

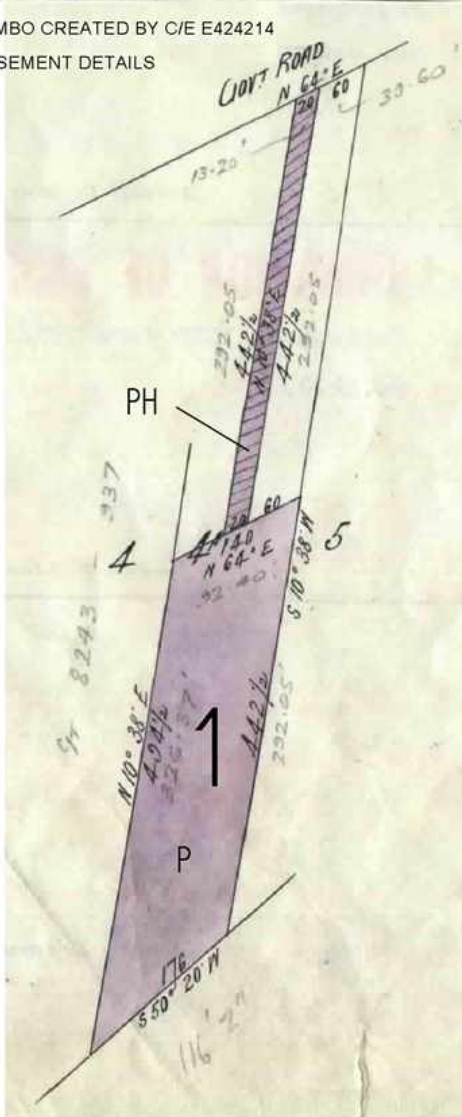
Document Type	Plan
Document Identification	TP515758D
Number of Pages (excluding this cover sheet)	2
Document Assembled	22/05/2023 16:52

Copyright and disclaimer notice:

© State of Victoria. This publication is copyright. No part may be reproduced by any process except in accordance with the provisions of the Copyright Act 1968 (Cth) and for the purposes of Section 32 of the Sale of Land Act 1962 or pursuant to a written agreement. The information is only valid at the time and in the form obtained from the LANDATA® System. None of the State of Victoria, LANDATA®, Secure Electronic Registries Victoria Pty Ltd (ABN 86 627 986 396) as trustee for the Secure Electronic Registries Victoria Trust (ABN 83 206 746 897) accept responsibility for any subsequent release, publication or reproduction of the information.

The document is invalid if this cover sheet is removed or altered.

This copied document is made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright.

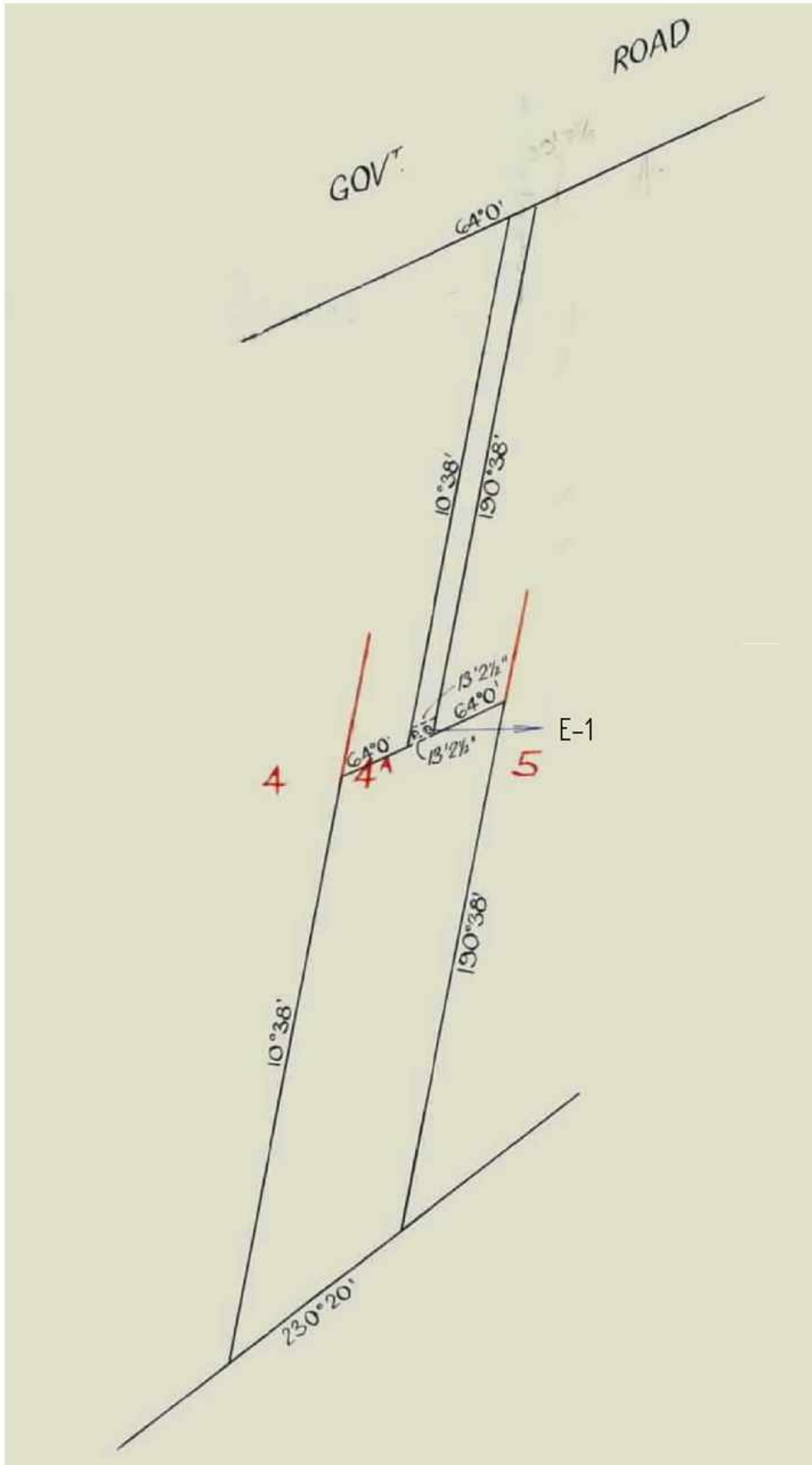
TITLE PLAN		EDITION 1	TP 515758D						
Location of Land Parish: COLQUHOUN Township: LAKES ENTRANCE Section: 7 Crown Allotment: 4A(PT) Crown Portion: Last Plan Reference: Derived From: VOL 3425 FOL 866 Depth Limitation: 50 FEET		Notations ANY REFERENCE TO MAP IN THE TEXT MEANS THE DIAGRAM SHOWN ON THIS TITLE PLAN							
Description of Land / Easement Information <i>All that piece of Land, delineated and coloured purple and purple-hatched on the map in the margin, being part of Crown allotment Four A Section Seven Township of Lakes Entrance. Parish of Colquhoun. County of Tambo. Together with the rights of the owner under subsection (2) of section 11 of the Land Act 1891</i>		THIS PLAN HAS BEEN PREPARED FOR THE LAND REGISTRY, LAND VICTORIA, FOR TITLE DIAGRAM PURPOSES AS PART OF THE LAND TITLES AUTOMATION PROJECT COMPILED: 02/06/2000 VERIFIED: GB							
E-1 = EASEMENT TO SHIRE OF TAMBO CREATED BY C/E E424214 SEE SHEET 2 FOR FURTHER EASEMENT DETAILS		ENCUMBRANCES REFERRED TO: <i>As to the land colored purple-hatched the easements created by Instruments of Easement Nos 569197 and 618298 in the Register Book</i>							
		COLOUR CODE P, E-1 = PURPLE H, E-1 = HATCHED							
<table border="1"><thead><tr><th colspan="2">TABLE OF PARCEL IDENTIFIERS</th></tr></thead><tbody><tr><td colspan="2">WARNING: Where multiple parcels are referred to or shown on this Title Plan this does not imply separately disposable parcels under Section 8A of the Sale of Land Act 1962</td></tr><tr><td colspan="2">PARCEL 1 = CA 4A (PT)</td></tr></tbody></table>				TABLE OF PARCEL IDENTIFIERS		WARNING: Where multiple parcels are referred to or shown on this Title Plan this does not imply separately disposable parcels under Section 8A of the Sale of Land Act 1962		PARCEL 1 = CA 4A (PT)	
TABLE OF PARCEL IDENTIFIERS									
WARNING: Where multiple parcels are referred to or shown on this Title Plan this does not imply separately disposable parcels under Section 8A of the Sale of Land Act 1962									
PARCEL 1 = CA 4A (PT)									
LENGTHS ARE IN LINKS		Metres = 0.3048 x Feet Metres = 0.201168 x Links	Sheet 1 of 2 sheets						

ADVERTISED

This copied document is made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright.

TP 515758D

TITLE PLAN



Printed 16/11/2023
Page 5 of 119

LENGTHS ARE IN
FEET & INCHES

Metres = 0.3048 x Feet
Metres = 0.201168 x Links

Sheet 2 of 2 sheets

REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958

Page 1 of 3

VOLUME 03667 FOLIO 272

Security no : 124106279313L

Produced 22/05/2023 04:51 PM

LAND DESCRIPTION

Lot 1 on Title Plan 612671A.
PARENT TITLE Volume 02116 Folio 021
Created by instrument 0705371 22/01/1913

REGISTERED PROPRIETOR

Estate Fee Simple
Sole Proprietor
SAMAD (LAKES ENTRANCE) PTY LTD of 35 MARKET STREET SOUTH MELBOURNE VIC 3205
AW198364N 25/10/2022

ENCUMBRANCES, CAVEATS AND NOTICES

MORTGAGE AW561392K 17/02/2023
CBA CORPORATE SERVICES (NSW) PTY LTD

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section 24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan set out under DIAGRAM LOCATION below.

DIAGRAM LOCATION

SEE TP612671A FOR FURTHER DETAILS AND BOUNDARIES

ACTIVITY IN THE LAST 125 DAYS

NUMBER		STATUS	DATE
AW561392K (E)	MORTGAGE	Registered	17/02/2023

-----END OF REGISTER SEARCH STATEMENT-----

Additional information: (not part of the Register Search Statement)

Street Address: 413 ESPLANADE LAKES ENTRANCE VIC 3909

ADMINISTRATIVE NOTICES

NIL

eCT Control 19436D KING & WOOD MALLESONS
Effective from 17/02/2023

DOCUMENT END

Imaged Document Cover Sheet

ADVERTISED
This copied document is made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright.

The document following this cover sheet is an imaged document supplied by LANDATA®, Secure Electronic Registries Victoria.

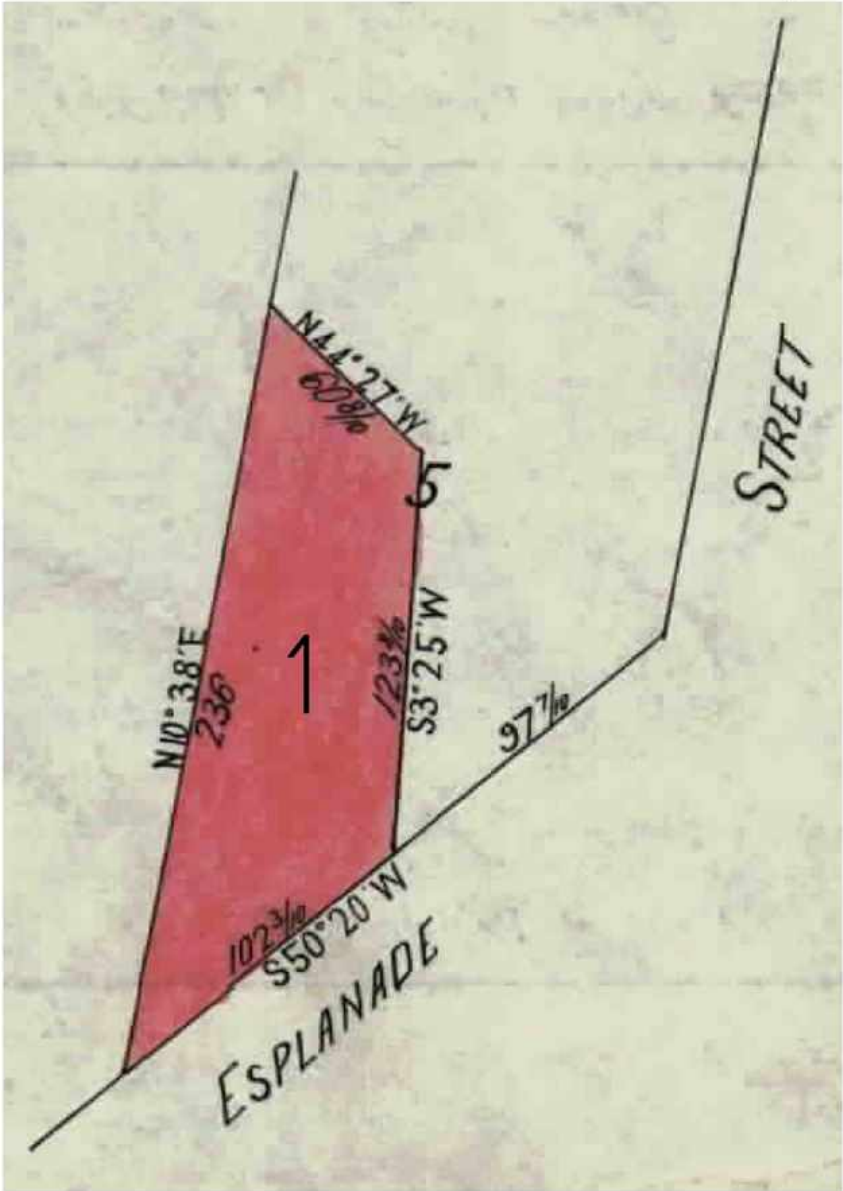
Document Type	Plan
Document Identification	TP612671A
Number of Pages (excluding this cover sheet)	1
Document Assembled	22/05/2023 16:56

Copyright and disclaimer notice:

© State of Victoria. This publication is copyright. No part may be reproduced by any process except in accordance with the provisions of the Copyright Act 1968 (Cth) and for the purposes of Section 32 of the Sale of Land Act 1962 or pursuant to a written agreement. The information is only valid at the time and in the form obtained from the LANDATA® System. None of the State of Victoria, LANDATA®, Secure Electronic Registries Victoria Pty Ltd (ABN 86 627 986 396) as trustee for the Secure Electronic Registries Victoria Trust (ABN 83 206 746 897) accept responsibility for any subsequent release, publication or reproduction of the information.

The document is invalid if this cover sheet is removed or altered.

This copied document is made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright.

TITLE PLAN		EDITION 1	TP 612671A			
Location of Land Parish: COLQUHOUN Township: LAKES ENTRANCE Section: 7 Crown Allotment: 5(PT) Crown Portion: Last Plan Reference: Derived From: VOL 3667 FOL 272 Depth Limitation: NIL		Notations ANY REFERENCE TO MAP IN THE TEXT MEANS THE DIAGRAM SHOWN ON THIS TITLE PLAN				
Description of Land / Easement Information		THIS PLAN HAS BEEN PREPARED FOR THE LAND REGISTRY, LAND VICTORIA, FOR TITLE DIAGRAM PURPOSES AS PART OF THE LAND TITLES AUTOMATION PROJECT COMPILED: 25/08/2000 VERIFIED: CP				
						
<table border="1"><thead><tr><th>TABLE OF PARCEL IDENTIFIERS</th></tr></thead><tbody><tr><td>WARNING: Where multiple parcels are referred to or shown on this Title Plan this does not imply separately disposable parcels under Section 8A of the Sale of Land Act 1962</td></tr><tr><td>PARCEL 1 = CA 5 (PT)</td></tr></tbody></table>				TABLE OF PARCEL IDENTIFIERS	WARNING: Where multiple parcels are referred to or shown on this Title Plan this does not imply separately disposable parcels under Section 8A of the Sale of Land Act 1962	PARCEL 1 = CA 5 (PT)
TABLE OF PARCEL IDENTIFIERS						
WARNING: Where multiple parcels are referred to or shown on this Title Plan this does not imply separately disposable parcels under Section 8A of the Sale of Land Act 1962						
PARCEL 1 = CA 5 (PT)						
LENGTHS ARE IN LINKS	Metres = 0.3048 x Feet Metres = 0.201168 x Links	Printed 16/11/2023 Page 8 of 119 Sheet 1 of 1 sheets				



22 May 2023

East Gippsland Shire Council - For online lodgement -

Dear Sir or Madam,

Application for planning permit – Proposed buildings and works for construction of service station at 413 Esplanade, Lakes Entrance VIC 3909

This letter and the accompanying material comprise the planning permit application by PC Infrastructure Pty Ltd for the development of a service station at the above-mentioned land. The site has recently been demolished but was formally used as a service station. The accompanying material comprises:

- The Planning Report set out as Annexure A to this letter.
- Certificate of Title search for the land in Certificates of Title Volume 03425 Folio 866 and Volume 03667 Folio 272 (being the subject land).
- Application drawings prepared by ADS Architects and comprising:
 - Site Plan
 - Elevations (three sheets)
 - Signage Elevations
- Traffic Impact Assessment (Modus, dated April 2023).
- Environmental Noise Assessment (Marshall Day Acoustics, dated June 23).
- Landscape Plan (Oxigen Landscape Architects, to be provided shortly)
- Civil and stormwater design (TMK Engineering Consultancy Services, to be provided shortly)

I trust that the information provided will assist in the assessment of the proposed development. Please advise of applicable lodgement fees and we will arrange for payment.

If you require any further information, please do not hesitate to contact me on 0439 883 977 or by email at t.beazley@peregrine.com.au

Yours Sincerely

Tim Beazley
Senior Town Planner
Peregrine Corporation

Annexure A – Planning Report

Description of subject land and locality

The subject land comprises the following lot:

Street address	Lot/Plan reference	Certificate of Title
413 Esplanade Lakes entrance VIC 3909	Lot 1 on TP 612671A Lot 1 on TP 515758D	Volume 03667 Folio 272 Volume 03425 Folio 866

The subject land in its local context is depicted in [Figure 1 – Locality Plan](#).

The subject land has an irregular shape with frontages of 56 metres to The Esplanade on its southern boundary and 3.5 metres to Church Street on its northern boundary and a total area of 3853m². For the purposes of this assessment the subject land and development site will be limited to the wider southern portion of the land comprising a total land area of approximately 2,558m².

The subject land is currently vacant with the former service station control building, fuel canopy and associated fuel infrastructure having been demolished. Concrete foundations from the control building and forecourt handstand are all that remain on site. The northern portion of the land is sparsely vegetated with grass, weeds and small trees. Vehicle access is provided via two separate crossovers on The Esplanade.

The locality is dominated by the Lakes Entrance foreshore and Coastal Reserve adjacent the subject land on the southern side of The Esplanade. The Coastal Reserve includes, carparking, open recreational areas and walking paths. North the locality is characterised by existing residential properties and short-term rental accommodation. To the east a mix of existing commercial land uses with residential properties beyond and to the west a large retail shopping and commercial development.

The Esplanade is a Transport Road 2 (TR22) road. Where it passes the subject land, The Esplanade accommodates a single trafficable lane each direction. Kerbside parallel parking is permitted on both sides of the road.

Applicable planning controls

The subject land is within the area covered by the East Gippsland Planning Scheme. The zoning applicable to the subject land is depicted in [Figure 2 – Zone Plan](#).

The subject land is completely within the Commercial 1 Zone (C2Z) and schedule 1 thereunder. The Erosion Management Overlay and Schedule thereunder (EMO), Land Subject to Inundation Overlay and Schedule thereunder (LSIO) apply to the subject land.

The Esplanade, where it forms the south-eastern boundary of the subject land, is in the Transport Zone 2 (TR22).

Planning assessment of proposed development

Description of proposed development

The proposed development is for the construction of a service station on land formally used for that purpose comprising:

- *Buildings and works on land in the Commercial 1 Zone.*

A service station will be constructed on the subject land comprising:

- A control building of 270m² gross floor area including retail display, sales and storage areas and customer amenities.

- A drive-through facility to the control building, including vehicle driveway and customer order and pick-up points.
- A fuel canopy providing 6 fuelling positions and offering 3 grades of unleaded fuel, plus diesel, in each position.
- An auto carwash facility, associated plantroom and 2 vacuum bays
- A slatted timber refuse enclosure.
- 10 car parking spaces including 1 disabled car parking space.
- 1 EV changing bay.
- Two underground fuel storage tanks of 70kL litres providing a total capacity of 140kL.
- Signage as shown in the signage elevations sheet accompanying this application.
- Site landscaping, outdoor seating, vehicle manoeuvring and access ways.
- The modification of two existing vehicle crossovers on The Esplanade.
- *Modification of accesses to a road in a Transport Zone 2.*
- *Display of signs in a Category 1 area.*

The subject land has recently been cleared but was formally used as a service station. The subject land's use rights as a service station have lapsed after the demolition of the land. The application therefore seeks to establish the right to operate a service station on the land.

Under Clause 73.03 of the Planning Scheme, the defined land use term "service station" means land used to sell motor vehicle fuel from bowzers, and lubricants. It may include other activities, including (at paragraph (b) of the definition) the selling of food, drinks and other convenience goods.

Motor vehicle fuel will be sold from 6 fuelling positions on the subject land following the proposed development. The retail product range which will be sold includes coffee, juice and other beverages, prepared foods such as sandwiches, pies, salads and wraps and other snacks, and convenience grocery items. "Branded" fast-food items such as KFC, McDonalds and Hungry Jacks will not be provided at all on the site. The sale of fuel and retail goods is proposed to occur on a 24-hour per day, 7 day per week basis.

The proposed use of land is therefore correctly and completely classified as a service station as defined in Clause 73.03.

As outlined in the Environmental Noise Assessment accompanying this application, fuel and store deliveries and waste collection will occur during restricted hours as specified on page 9 of that report.



Figure 1 – Locality Plan (base: VicPlan)

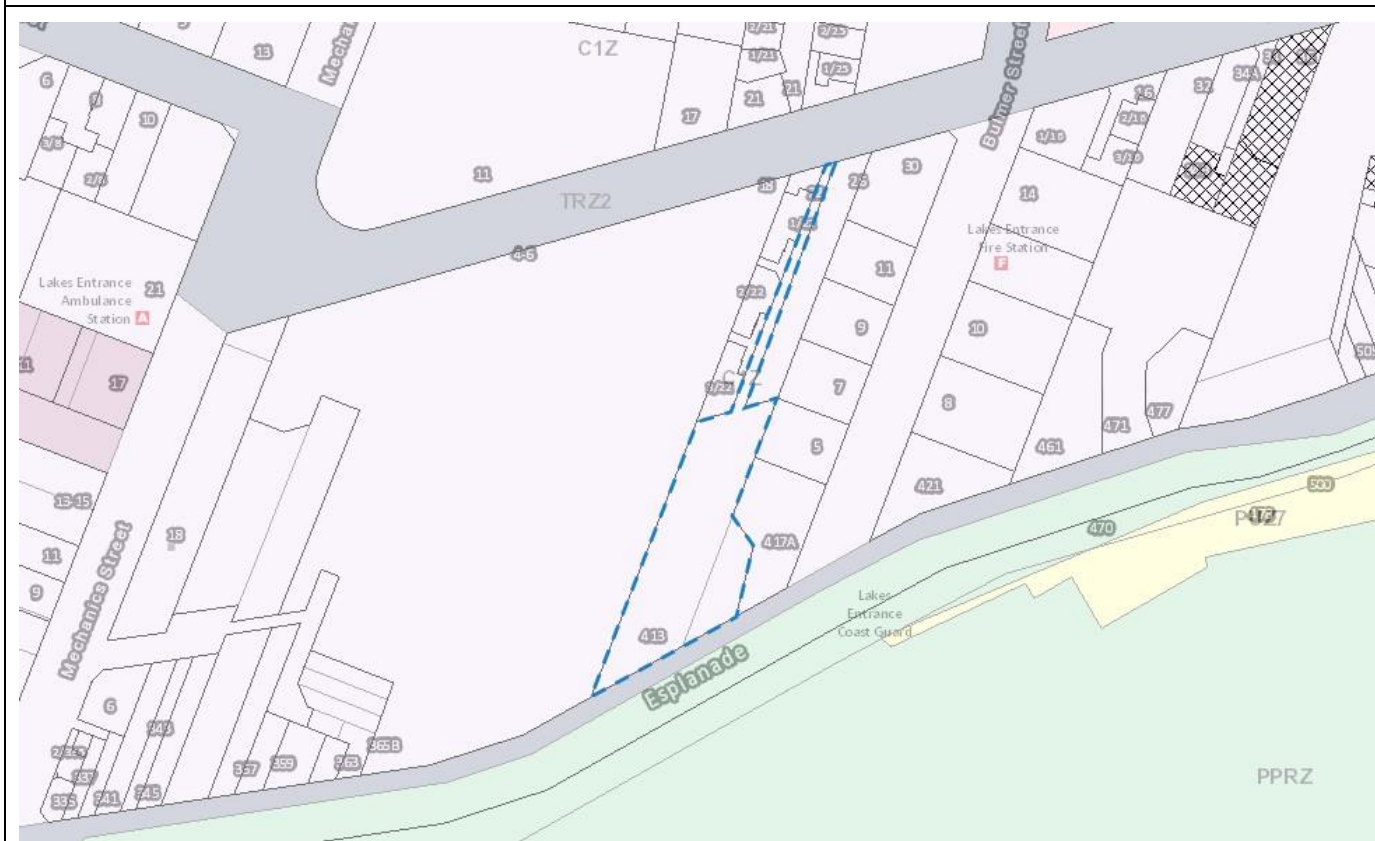


Figure 2 – Zone Plan (source: VicPlan)

Planning assessment of proposed development

1. Planning Policy Framework

Within the Planning Policy Framework, the following provisions are relevant to the proposed development:

- Clause 13.05-1S – Noise abatement, which seeks to ensure that development is not prejudiced, and community amenity and human health is not adversely impacted by noise emissions, using a range of building design, urban design and land use separation techniques as appropriate to the land use functions and character of the area. Consideration should be given to the noise requirements in accordance with the Environmental Protection Regulations under the *Environment Protection Act 2017* and *Noise Limit and Assessment Protocol for the Control of Noise from Commercial, Industrial and Trade Premises and Entertainment Venues* (Publication 1826.2, Environment Protection Authority, May 2021).
- Clause 15.01-2S – Building Design, which encourages development outcomes that contribute positively to the local context and enhance the public realm, minimising the detrimental impact of development on neighbouring properties and by ensuring that the form, scale, and appearance of development enhances the function and amenity of the public realm.
- Clause 17.02-1S – Business, which encourages development that meets the community's needs for retail and other commercial services, and which encourages the provision of new convenience shopping facilities to provide for the needs of the local population within, or immediately adjacent to, existing commercial centres; and the provision of small-scale shopping opportunities that meet the needs of local residents and workers in convenient locations.

The proposed development complies with and contributes to relevant objectives and strategies within the Planning Policy Framework by:

- Providing for investment and employment in the local economy through the remediation and recommencement of commercial land and former service station that will better allow it to meet the day-to-day grocery, convenience and fuel needs of the local community, that is located within a recognised commercial zone and that will activate an underutilised site on a 24-hour per day, 7-day per week basis.
- The proposed development will result in the improved visual amenity of working environments by facilitating the redevelopment of disused commercial land with a new modern architecturally designed control building and fuel canopy. The built form will utilise a range of colours and materials to create visual interest. The development will employ the latest environmental safeguards to protect the site and locality from spills and odours.

Acoustic impact and abatement

In relation to Clause 13.05-1S, the applicant has engaged Marshall Day to measure the existing acoustic environment in the locality of the subject land, to consider any potential acoustic impact of the proposed development, and to recommend any measures that are appropriate for ameliorating such impacts.

An acoustic assessment accompanies this application and finds that the proposed development is expected to comply with applicable legislation and guidelines, provided specified design measures and managerial controls are implemented.

In making this finding, the Acoustic Assessment is based on noise source data from current operational sites and other measured noise sources. The report notes or assumes that the following noise mitigation features are included in the design of the proposed development:

- 1.8 metre high fences to portion of north and east site boundaries, meeting a surface density requirement of 12 kg/m² minimum and otherwise complying with standards set out in Appendix E to the report.
- Automatic doors and acoustic insulation to be installed to the auto carwash in accordance with the standards specified in the report.
- Full perimeter screening of all mechanical services on the roof of the control building (packaged air conditioning units, refrigeration condenser units and exhaust cowls etc) to standards specified in the report.

As far as relevant these features are included in the application drawings. If the proposed development is approved, all of these measures will be part of the detailed design drawings submitted for building certification.

The report recommends the following managerial controls and measures in relation to the proposed development:

- Fuel and store deliveries to occur only during daytime or evening hours between 7:00am and 10:00pm, Monday to Sunday (not including public holidays).
- Waste collection to occur only during the day period, Monday to Saturday between 7:00am and 6:00pm (excluding public holidays).
- Design of driveways to minimise the likelihood of wheel impact noise from irregularities on the driveway itself or from any service opening cover plates etc.
- Appropriate management controls such as signage for patrons to consider neighbours and leave the premises quietly, especially at night.
- Any amplified music played on the premises to be set at a level which is inaudible at the property boundary.
- Application of EPA 1254.2 Noise Control Guidelines "best practices" for waste collection and deliveries.

The applicant will adopt these design and operational measures. To that end, if Council decides to issue a planning permit for the proposed development, the applicant would comply with any permit conditions reflecting the recommendations of the Acoustic Assessment.

Impacts to neighbouring properties

The proposed new buildings are consistent in design, scale and appearance with the character and streetscape of the area. The landscape plan currently under preparation and traffic and noise reports which accompany this application demonstrate how the proposed development will integrate with and complement the character of the locality without creating any adverse amenity impacts.

Lighting standards are uniform across the OTR network and while light spill is occasionally raised as a pre-development issue, it is invariably resolved and does not cause further concern. All external lighting is designed with the use of spill guards to direct light within the site and away from properties adjacent the site on the west north and east. The maximum light spill on all boundaries of the site including from the proposed 9 metre pylon will be installed and operated to comply with the criteria outlined in the applicable Australian Standard. The Australian Standard recommends that a dimmable controller be installed to

the pylon sign lighting, with the lighting of this sign dimmed to comply with pre-curfew and curfew hours. These recommendations will be adopted when completing the design and installation of lighting and signage at the site. The applicant would be prepared to accept a suitably worded condition to this affect attached to any subsequent Planning Permit approval. The amenity impact ought to be assessed having regard to existing factors which arise from the locality of the site, such as lighting generated by street lighting and other commercial properties which operate throughout the night within the Commercial 1 Zone along the Esplanade, which creates ambient lighting conditions that are higher than one would expect to occur within other parts of a residential zone.

The proposal incorporates best environmental practices with respect to the management and operation of a service station. The development application proposes measures that will be taken to ensure that there is no material adverse impact from odour or pollution risk from the delivery, storage, and dispensing of fuel on the site. These measures include:

- Provision of vapour recovery systems to fuel storage tanks to capture any emissions arising upon delivery of fuel to the site.
- Double-walled fiberglass fuel and LPG tanks that comply with applicable Australian/New Zealand Standards.
- Ongoing monitoring of fuel variances to detect potential leakage, and use of automatic tank gauging to detect discrepancies in tank levels.
- Double-walled fuel lines from the underground storage tanks to the dispensers, and dispensers fitted with a mechanical pressure leakage detection mechanism, which automatically shuts off the fuel pump in the case of pressure anomalies to minimise any potential for fuel leakage.
- Ongoing visual inspection of the single-walled fuel line from the tanker fill box to the underground storage tanks, to ensure that the potential for leakage and spill is monitored when fuel is delivered to the site, and submission of daily fuel reconciliation data for reconciliation analysis to be undertaken by a qualified third party.

These measures, developed by Peregrine and applied systematically and effectively at OTR sites across South Australia and interstate, enable the risk of any adverse environmental consequences to be identified, monitored, minimised and addressed.

Built Form and Design

The design of the proposed development includes a mix of architectural elements and high-quality materials and finishes which will provide a high standard of presentation and visual interest to its street frontage. It will be a modern, contemporary facility that also includes elements that reflect the character and built form of the locality, for example through the use of a muted colour palate and non-reflective material finishes that are designed to blend in with their surroundings, and through the use of timber screening to the fuel canopy columns.

Signage elements of the proposed development have been carefully considered as being appropriate for the site and its context. The proposed signage is orderly and integrated with the built form proposed for the subject land, and is limited to what is reasonable for informing customers and passers-by of the on-site offer.

On the southern and western elevations of the control building and fuel canopy (facing outward from the site to the Esplanade a minimal level of signage required to identify the business is proposed. No signage is proposed to be displayed on the northern and eastern elevation of the control building facing adjoining land uses.

The signage proposed will not dominate the locality nor does it result in visual disorder or clutter of signs. Those signage elements which are illuminated will not interfere with or obstruct drivers' lines of sight at any intersection, and will not be mistaken for a traffic control device. There will be no hazard to vehicles or pedestrians.

Where signage is back-illuminated, it will be illuminated with side-mounted LED strips which have a 160-degree beam angle and which will provide no direct glare to the signage panel and a softer and even light to the signage box.

The single 9-metre pylon sign is comparable to pylon signage at other service stations at sites throughout Victoria. The pylon will be provided with a dimmable controller and will be dimmed to comply with pre-curfew and curfew hours.

Overall, the proposed development will make a significant and positive contribution to locality by facilitating the replacement of a longstanding service station which prior to its demolition was poorly maintained over many years and detracted from the amenity of the locality. The redevelopment including a mix of sympathetic materials and finishes will result in a vast improvement to the visual appearance of the land.

2. Zone

Commercial 1 Zone (C1Z) (Clause 34.01) and Schedule 1 (C1Z)

C1Z has purposes including the implementation of the Municipal Planning Strategy and the Planning Policy Framework; and to create vibrant mixed-use commercial centres for retail, business and other uses.

Under Clause 34.01-4 a planning permit is required to construct a building or construct or carry out works, with certain exceptions that do not apply to the proposed development.

The proposed development furthers the purposes of C1Z by contributing to relevant outcomes of the Municipal Planning Strategy and the Planning Policy Framework, as set out in the previous section; and by contributing to the vibrancy of the surrounding "economic and activity centre" through the provision of a range of retail goods and services on a 24-hour per day, 7-day per week basis.

Under Clause 34.01-06, an application must be accompanied by information including the likely effects on adjoining land, including noise levels, traffic, hours of delivery and despatch of goods and materials, the hours of operation and light spill, solar access and glare.

Noise impacts have been considered and addressed in the sections above and below.

The Traffic Impact Assessment accompanying this application finds that:

- The proposed parking layout and site access arrangements are consistent with the dimensional requirements set out in the East Gippsland Planning Scheme and Australian/New Zealand Standards for Off Street Car Parking.
- Swept path assessments have been completed and demonstrate that key vehicle movements can be complete throughout the site, with adequate clearance to adjacent structures, including customer vehicles to the fuel dispensers; a 19 metre fuel tanker for delivery of fuel to the site; and a 8.8 metre medium rigid vehicle (MRV) for waste collection.
- The provision of 10 car parking spaces, as proposed, is considered to meet the anticipated car parking demand, and is considered to be satisfactory.
- SIDRA analysis was conducted to assess the impact of the development on the external road network for the year opening in 2024 and 2034 design horizon. All assessed intersections are within acceptable performance thresholds and no mitigation works are required.

Further in relation to car parking and bicycle facilities, refer to discussion on Clauses 52.06 and 52.34 under heading 5, below.

3. Overlays

Erosion Management Overlay (EMO) (Clause 44.01) and schedule 1

The Erosion Management Overlay has purposes to protect areas prone to erosion, landslip, other land degradation or coastal processes by minimising land disturbance and inappropriate development. The extent of any earthworks, cut and fill and or the retention of land will be described in detail on the civil drawings which are currently under preparation. The civil design will be provided to Council shortly.

Land Subject to Inundation Overlay (Clause 44.04) and Schedule 1

The Land Subject to Inundation Overlay has purposes to ensure that development maintains the free passage and temporary storage of floodwaters, minimises flood damage, responds to the flood hazard and local drainage conditions and will not cause any significant rise in flood level or flow velocity. To minimise the potential flood risk to life, health and safety associated with development. To ensure that development maintains or improves river, marine, coastal and wetland health, waterway protection and floodplain health.

A qualified civil engineer has been engaged to prepare a stormwater management plan to ensure that any additional stormwater generated by the development is managed appropriately. Civil and stormwater details for the site have been included with this application.

The proposal incorporates best environmental practices with respect to the management and operation of a service station. The section 1 above outlines the significant measures that will be taken to ensure that there is no material adverse impact or pollution risk from the delivery, storage and dispensing of fuel on the site. These measures, developed by the applicant and applied systematically and effectively at OTR sites across the national network, enable the risk of any adverse environmental consequences to be identified, monitored, minimised and addressed.

Particular Provisions

Signs (Clause 52.05)

The Commercial 1 Zone which applies to the subject land is in Category 1 for signage requirements. Under Clause 52.05-11, Category 1 is a commercial area, with minimum limitation on signage and the purpose of providing signs for identification and promotion that add vitality and colour to commercial areas.

Signage elements which are part of the proposed redevelopment are depicted in the Site Plan and the Elevations which accompany this letter and are the subject of a separate set of signage elevations.

The following table describes the signage elements which are part of the proposed development by reference to the defined Sign Terms set out in Clause 73.02.

Sign Reference (from Signage Elevations)	Dimensions (w x h x d) (m ²)	Illumination?	Type of sign (as per Clause 73.02)	Permit required / Permit not required
S1	3.30 x 0.350 x 0.05 (1.15m ²)	Back illuminated	Internally illuminated	Permit required
S2	2.625 x 4.16 x 0.05 (10.92m ²)	Non-illuminated	Business identification	Permit required
S3	1.48 x 0.97 x 0.05	Non-illuminated	Promotional sign	Permit not required

	(1.43m ²)			
S4	1.44 x 0.774 x 0.05 (1.11m ²)	Non-illuminated	Business identification	Permit not required
S5	4.0 x 1.5 x 0.05 (6.0m ²)	Digital LED	Electronic sign	Permit required
S6	0.76 x 1.388 x 0.05 (1.05m ²)	Non-illuminated	Promotional sign	Permit not required
S7	0.71 x 1.98 x 0.05 (0.6m ²)	Digital LED	Electronic sign	Permit required
S8	2.26 x 1.4 x 0.05 (3.16m ²)	Back illuminated	Internally illuminated	Permit required
S9	1.5 x 1.7 x 0.05 (2.55m ²)	Back illuminated	Internally illuminated	Permit required
S10	1.785 x 0.885 x 0.05 (1.58m ²)	Back illuminated	Internally illuminated	Permit required
S11 Pylon Sign	2.1 x 9.0 x 0.5 (19.96m ²)	Back illuminated	Internally illuminated	Permit required
S10 Pylon LED screen	2.0 x 2.5 x 0.05 (5m ²)	Digital LED	Electronic sign	Permit required

The display of the proposed signage is a Section 2 – Permit required for display of sign in a Category 1 area under the tables in Clause 52.05-13 where the total area of internally illuminated signage exceeds 1.5m² and where business identification and promotional signage exceeding 1.5m² or are located more than 3.7 metres above pavement level. Electronic signage is not listed in either section 1 or 3 and therefore defaults to section 2 - permit required.

The proposed signage is orderly and integrated within the proposed architecturally designed control building and is limited to what is reasonable for informing customers and passers-by of the on-site offer.

On the southern primary and western elevations of the control building (facing outward from the site to the Esplanade a minimal level of signage required to identify the business is proposed. No signage is proposed to be displayed on the eastern and northern elevations of the control building facing the adjoining allotments, all be it most of these being non-residential land-uses.

The signage proposed is broadly commensurate to the other contemporary service station signage in similarly localities and will not dominate the locality nor does it result in visual disorder or clutter of signs. Those signage elements which are illuminated will not interfere with or obstruct drivers' lines of sight at any intersection, and will not be mistaken for a traffic control device. There will be no hazard to vehicles or pedestrians.

Where signage is back illuminated, it will be illuminated with side-mounted LED strips which have a 160-degree beam angle and which will provide no direct glare to the signage panel and a softer and even light to the signage box.

The proposed pylon sign will be provided with a dimmable controller and will be dimmed to a pre-curfew hours maximum of 5 lux across the boundary line, and a maximum of 1 lux (light output to the roadway) during curfew hours.

Car Parking (Clause 52.06)

Clause 52.06 seeks to ensure the provision of an appropriate number of car parking spaces, having regard to likely demand, the activities on the land and the nature of the locality.

Clause 52.06 applies to a new use, an increase in the floor area or site area of an existing use, or an increase to an existing use by the measure specified in Column C of Table 1 in Clause 52.06-5 for that use.

While there is no car parking requirement specified in Table 1 in relation to the use of land as a service station, the Transport Impact Assessment accompanying this application considers in general terms the acceptability of car parking provision and finds that:

- The proposed development does not generate a statutory car parking requirement, so car parking must be provided to the satisfaction of Council (as responsible authority).
- The proposal will generate a similar parking demand to a convenience store which according to *Table 1: Car Parking Requirements* of the East Gippsland Planning Scheme generates a demand of 10 parking spaces per premise.
- The proposed provision of 10 car parking spaces (including one designated disabled car parking space with adjoining shared space) will meet the anticipated car parking demand and is considered to be satisfactory.
- Users of the car wash will not require any additional car parking, as vehicles will move continually into and through the car wash before leaving the site, again without the need for a formal car parking space.
- The proposed parking layout and site access arrangements are consistent with the dimensional requirements set out in the East Gippsland Planning Scheme and Australian/New Zealand Standards for Off Street Car Parking.

Land Adjacent to a Principle Road Network (Clause 52.29)

Clause 52.29 gives rise to a permit requirement where access to a Transport Zone Road 2, is created or altered. The proposed development involves the amendment of two existing crossovers providing vehicle movements to and from the Esplanade along the south-eastern boundary of the site.

The Traffic Impact Assessment accompanying this application considers the effect of the proposed development on the operation of the Esplanade and on public safety and finds that the road network can accommodate the predicted traffic demand.

Bicycle Facilities (Clause 52.34)

Clause 52.34 seeks to encourage cycling as a mode of travel, through the provision of appropriate bicycle parking and other facilities. While it includes statutory requirements for bicycle facilities for a range of land uses, Clause 52.34 does not include any statutory requirements that apply to the proposed development.

Notwithstanding that there is no statutory requirement, a single bicycle loop providing two bicycle parking spaces can be provided adjacent the entrance to the control building as part of the development.

Stormwater Management in Urban Development (Clause 53.18)

Clause 53.18 sets out Objectives and Standards intended to ensure that stormwater in urban development is managed to mitigate the impacts of stormwater on the environment, property and public safety, and to provide cooling, local habitat and amenity benefits.

Clause 53.18-5 sets out Stormwater management objectives for buildings and works, including to encourage stormwater management that maximises the retention and reuse of stormwater; that reduces the impact of stormwater on the drainage system and filters sediment and waste from stormwater prior to discharge from the site; and to ensure that industrial and commercial chemical pollutants and other toxicants do not enter the stormwater system.

Standard W2 sets out requirements to meet the objective, including that the stormwater management system should be designed to meet current best practice objectives as set out in the *Urban Stormwater – Best Practice Environmental Management Guidelines*, and to minimise the impact of chemical pollutants and other toxicants through measures such as bunding, covering or roofing of storage, loading and works areas.

The civil drawings and stormwater calculations (currently under preparation) to be provided with this application will demonstrate how the proposed development will comply with the Objectives and Standards of Clause 53.18-5, including by:

- Demonstrating pre-development and post-development stormwater discharge from the subject land.
- Showing gradients and drainage pits that will direct runoff from areas potentially affected by pollutant spillage to an on-site wastewater filtration system, preventing any toxicants from entering the stormwater system.
- Providing for the required level of on-site stormwater detention.

Conclusion

The proposed development is for the use of land and buildings and works on land in the Commercial 1 Zone. Following completion of the proposed development, the former use of the subject land as a service station will be reinstated. The proposed development also involves the display of signs in a Category 1 area and modifications to existing crossovers providing access to a road in a Transport Zone 2.

Taking into consideration the site and its association with surrounding land uses, the proposed development will contribute significantly to the achievement of strategic objectives within the Municipal Planning Strategy and the Planning Policy Framework. It will provide for investment and employment in the local economy through the remediation and modernisation of vacant and underutilised site formally developed as a service station.

The development will provide a convenient way for local residents to meet their day-to-day small scale retail needs in a way that will supports the overall function and purpose of the Commercial 1 Zone.

The design of the proposed development includes a mix of architectural elements and high-quality materials and finishes which will provide a high standard of presentation and visual interest to its street frontages. It will be a modern, contemporary facility that also includes elements that reflect the character of the area, for example through the use of a muted colour palate and non-reflective material finishes that are designed to blend in with their surroundings, and through the use of timber screening to the fuel canopy columns.

Overall, the proposed development will make a significant and positive contribution to locality by facilitating the remediation and replenishment of vacant commercial land, which currently detracts from the amenity of the locality. The redevelopment including a mix of sympathetic materials, finishes and landscaping will result in a vast improvement to the visual appearance of the land.

Signage elements of the proposed development are consistent with the classification of the site as part of a Category 1 – commercial (minimum signage limitation) area and will not

contribute to visual distraction or clutter and will not interfere with, obstruct or distract drivers' lines of sight or unreasonably impact on the amenity of nearby residential land uses.

The applicant's traffic consultants have found that the proposed provision of on-site car parking is sufficient to meet demand, that the dimensions and layout of on-site parking and vehicle manoeuvring areas are satisfactory for all kinds of vehicles that will access the site, and that the proposed site crossovers will improve on current conditions by minimising conflict and improving road safety. The proposed will not adversely affect the performance of the surrounding road network.

The applicant's acoustic consultants have measured existing noise conditions on and around the subject land and have determined that the proposed development will comply with applicable legislation and guidelines, provided specified design measures and operational controls are implemented. These are identified in the Acoustic Assessment accompanying this application and will be adopted and complied with if a planning permit is issued for the proposed development.

Preliminary advice from the project engineer indicates the application will demonstrate that stormwater from the proposed development will not contribute to any adverse impacts on the environment, on property or on public safety.

The landscape plan which is currently under preparation will show landscaping designed to improve the presentation of the subject land to its street frontages and will soften and enhance the built form elements of the proposed development.

The proposed development complies with all relevant provisions of the East Gippsland Planning Scheme and merits the issue of a planning permit.

MARSHALL DAY
Acoustics



413 ESPLANADE, LAKES ENTRANCE
ENVIRONMENTAL NOISE ASSESSMENT

Rp 018 20200693 | 2 June 2023

Marshall Day Acoustics Pty Ltd
ABN: 53 470 077 191
31 Vardon Avenue
Adelaide SA 5000
Australia
T: +618 6189 1400
www.marshallday.com

Project: 413 Esplanade, Lakes Entrance

Prepared for: PC Infrastructure Group Pty Ltd
270 The Parade
Kensington SA 5068

Attention: Tim Beazley

Report No.: Rp 018 20200693

Disclaimer

Reports produced by Marshall Day Acoustics Pty Ltd are based on a specific scope, conditions and limitations, as agreed between Marshall Day Acoustics and the Client. Information and/or report(s) prepared by Marshall Day Acoustics may not be suitable for uses other than the specific project. No parties other than the Client should use any information and/or report(s) without first conferring with Marshall Day Acoustics.

The advice given herein is for acoustic purposes only. Relevant authorities and experts should be consulted with regard to compliance with regulations or requirements governing areas other than acoustics.

Copyright

The concepts and information contained in this document are the property of Marshall Day Acoustics Pty Ltd. Use or copying of this document in whole or in part without the written permission of Marshall Day Acoustics constitutes an infringement of copyright. Information shall not be assigned to a third party without prior consent.

Document Control

Status:	Ver:	Comments	Date:	Author:	Reviewer:
final	-	Issued	2 June 2023	A. Morabito	T. Hancock

TABLE OF CONTENTS

1.0	INTRODUCTION	4
2.0	PROJECT DESCRIPTION.....	4
2.1	Site location.....	4
2.2	Proposed development.....	5
3.0	VICTORIAN LEGISLATION AND GUIDELINES	7
3.1	Overview	7
3.2	Identification of noise sources and applicable noise limits/design targets.....	8
3.2.1	EP Regulations noise limits	8
3.2.2	Sleep disturbance.....	9
4.0	NOISE MITIGATION AND MANAGEMENT MEASURES	9
5.0	NOISE ASSESSMENT	10
5.1	Operational scenarios and assumptions.....	10
5.2	Noise source data	11
5.3	Predicted noise levels.....	11
5.4	Sleep disturbance	13
6.0	SUMMARY.....	13
APPENDIX A GLOSSARY OF TERMINOLOGY		
APPENDIX B ZONING MAP		
APPENDIX C LEGISLATION AND GUIDELINES		
APPENDIX D NOISE MODELLING		
APPENDIX E BOUNDARY ACOUSTIC FENCE CONSTRUCTION		

1.0 INTRODUCTION

It is proposed to develop a new service station in Lakes Entrance, Victoria (the proposed site).

Marshall Day Acoustics Pty Ltd (MDA) has been engaged to undertake an environmental noise assessment for the proposed redevelopment.

This report details the relevant regulatory environmental noise requirements, calculated noise levels from proposed site operations and recommended noise mitigation.

A glossary of acoustic terminology is provided in Appendix A.

2.0 PROJECT DESCRIPTION

2.1 Site location

The proposed site is located at 413 Esplanade, Lakes Entrance, bounded as follows:

- North: Existing residential properties and short term rental accommodation
- South: Esplanade Street, with a two-way Average Annual Daily Traffic (AADT) estimate of 4,500 vehicles¹
- East: Existing commercial uses with residential properties beyond
- West: Existing shopping centre/commercial development

A summary of the nearest noise sensitive areas (receivers) considered in the assessment are detailed in Table 1.

An aerial photograph of the proposed site and surrounds is provided in Figure 1.

Table 1: Nearest noise sensitive premises

Reference	Address	Description
R1	7 Bulmer Stret	Existing single storey residential dwelling
R2	5 Bulmer Stret	Existing single storey residential dwelling (currently used as commercial premise)
R3	26 Church Street	Existing single storey residential dwelling (currently used for short term accommodation)
R4	22 Church Street	Existing single storey residential unit complex

The proposed site and immediate surrounds are zoned Commercial 1 (C1Z).

A zoning map is provided in Appendix B.

¹ Traffic Volumes for Freeways and Arterial Roads, Department of Transport, <https://vicroadsopendata-vicroadsmaps.opendata.arcgis.com/datasets/traffic-volume>, accessed 6 April 2023

Figure 1: Site location and surrounds (Image: Nearmap)



2.2 Proposed development

The proposed site operations are summarised as follows:

Customer Services

- Fuel filling area to the south of the site
- Convenience store at the east end of the site, including drive through facility and customer ordering device on eastern side of the main building
- Auto carwash, and vacuum at north end of the site.

Commercial delivery and waste vehicles expected to access the site:

- Fuel delivery by semi-trailer
- Store deliveries by Small Rigid vehicle (SRV)
- Waste collection by Medium Rigid vehicle (MRV); waste area at the west of site.

Major mechanical services are to be situated as follows:

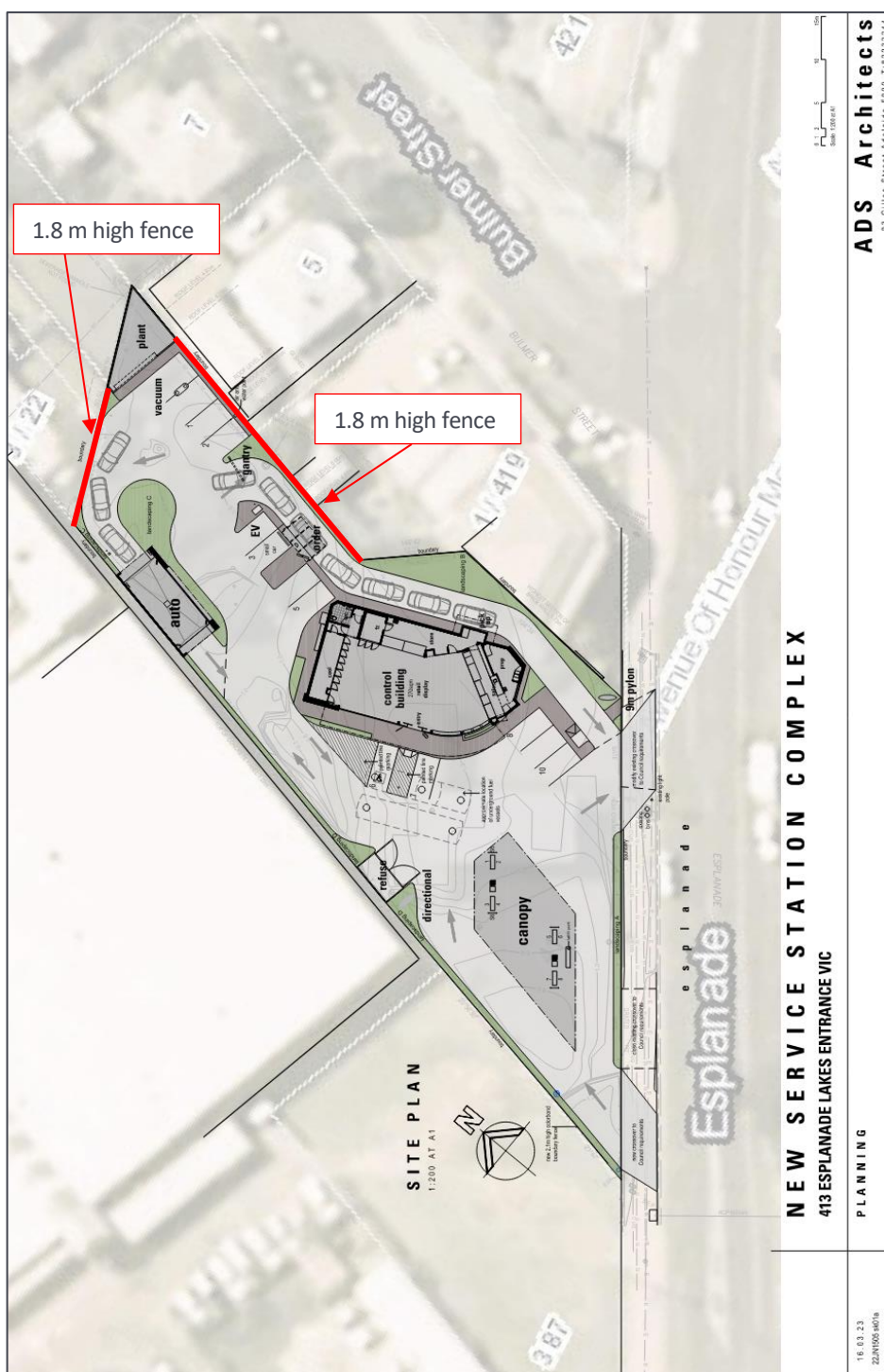
- Air conditioning, refrigeration and ventilation systems situated on the roof of the main building

The development proposes to operate 24-hours a day, 7 days a week. Site access would be via the Esplanade, single entry and exit points.

Based on the proposed site operations, noise sources considered in the assessment include on site commercial vehicle movements (delivery and waste), use of the drive through/customer ordering device, carwash facilities, and mechanical services. Night-time activity associated with patrons and vehicles has also been considered.

The assessment has been based on drawings prepared by ADS Architects (reference 22JN1505 sk01a, dated 16.03.2023). A layout of the proposed development, including acoustic fencing recommended is provided in Figure 2.

Figure 2: Proposed site layout



3.0 VICTORIAN LEGISLATION AND GUIDELINES

3.1 Overview

A summary of the key noise legislation and related guidelines and standards commonly referenced in Victorian noise assessments is provided in Table 2, with further details in Appendix C.

Table 2: Key Victorian noise legislation/guidelines

Document	Overview
<i>Environment Protection Act 2017</i> (EP Act)	<p>The EP Act provides the overarching legislative framework for the protection of the environment in Victoria. It establishes a general environmental duty to minimise the risks of harm to human health or the environment from pollution or waste, including noise, so far as reasonably practicable.</p> <p>The EP Act does not specify noise limit values but prohibits the emission of unreasonable or aggravated noise from non-residential premises.</p> <p>The EP Act provides general definitions of unreasonable and aggravated noise; definitions that are specific to commercial, industrial and trade premises are provided in supporting publications (see below).</p> <p>Section 93 of the EP Act provides for the creation of an environmental reference standard to be used to assess and report on environmental conditions in the whole or any part of Victoria.</p>
<i>Environment Protection Regulations 2021</i> (EP Regulations)	<p>The objectives of the EP Regulations are to further the purposes of, and give effect to, the EP Act.</p> <p>Part 5.3 of the EP Regulations sets out requirements that are specific to environmental noise. It states that the prediction, measurement, assessment, or analysis of noise within a noise sensitive area for the purposes of the EP Act or the Regulations, must be conducted in accordance with the Noise Protocol (see below).</p> <p>Division 3, Part 5.3 stipulate requirements specific to commercial, industrial and trade premises. Noise from these types of premises is prescribed as unreasonable if it exceeds a noise limit or alternative criterion determined in accordance with the Noise Protocol.</p> <p>Additional matters addressed in this Division include assessment time periods, minimum noise limit values, management of cumulative noise from multiple premises, noise sensitive areas where assessment requirements apply, definition of frequency spectrum as a prescribed factor, and a definition for aggravated noise.</p>
<i>EPA Publication 1826 Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues</i> (Noise Protocol)	<p>The Noise Protocol defines the method for setting the noise limits for new and existing commercial, industrial and trade premises and entertainment venues in Victoria. The noise limits for commercial, industrial and trade premises are determined based on land use zoning and background noise levels, and are separately defined for day, evening and night periods.</p> <p>It outlines the steps that must be followed to undertake an assessment (measurement or prediction) of the effective noise level within a noise sensitive area or at an alternative assessment location. A comparison between the effective noise level and the relevant noise limit or the relevant alternative assessment criterion will determine whether the noise that is emitted from the premises is unreasonable under the Regulations.</p>
<i>EPA Publication 1254.2 Noise Control Guidelines</i>	Provides an overview of noise policies and legislation in Victoria for a range of different noise sources and provides supplementary guidance for situations where there is no policy or legislation.

Other standards and guidelines considered as part of this noise assessment are provided in Table 3.

Table 3: General standards and Guidelines

Document	Overview
NSW Environmental Protection Agency <i>Road Noise Policy 2011</i>	<p>While an NSW publication, the provisions of the document are often referred to in Victoria for general guidance on potential for sleep disturbance.</p> <p>The NSW policy notes that from the research on sleep disturbance to date, it can be concluded that:</p> <ul style="list-style-type: none"> <i>maximum internal noise levels below 50 – 55 dB L_{Amax} are unlikely to awaken people from sleep</i> <i>one or two noise events per night, with maximum internal noise levels of 65 – 70 dB L_{Amax}, are not likely to affect health and wellbeing significantly.</i> <p>It is generally accepted that windows partially open provide approximately 10 dB noise reduction from outside to inside. It is recommended that maximum noise levels from proposed night time site activities not exceed 60 - 65 dB L_{Amax} outside an openable window of existing or future residential dwellings.</p>

3.2 Identification of noise sources and applicable noise limits/design targets

Table 4 details the relevant legislation or guideline applicable for the assessment of each of the identified noise sources associated with proposed site operations.

Table 4: Potential noise impacts and assessment criteria

Potential noise impact	Source of assessment criteria	Status
Mechanical services noise	Noise Protocol	Legislation - mandatory
Customer ordering device	Noise Protocol	Legislation - mandatory
Deliveries and waste collection	Noise Protocol	Legislation – mandatory
	EPA Victoria Publication 1254.2	Guidelines – best practice
Late night customer vehicles and carpark activity	Sleep disturbance	Industry accepted guideline

3.2.1 EP Regulations noise limits

The EP Regulations design noise limits for the proposed site are detailed in Table 5, with further details provided in Appendix C3.

Table 5: EP Regulations noise limits, dB $L_{Aeq,30min}$

Period	Day of week	Start time	End time	Limit
Day	Monday - Saturday	7 am	6 pm	58
Evening	Monday - Saturday	6 pm	10 pm	52
	Sunday, Public holidays	7 am	10 pm	
Night	Monday - Sunday	10 pm	7 am	47

3.2.2 Sleep disturbance

The sleep disturbance design target is presented in Table 6, applicable outdoors at receiver locations.

Table 6: Sleep disturbance design target, dB L_{Amax}

Description	Design target
Short-term maximum noise levels	60 - 65

4.0 NOISE MITIGATION AND MANAGEMENT MEASURES

Under the EP Act 2017, operators of the proposed site have a general environmental duty, to minimise the risk of harm, which includes noise, as far as reasonably practicable.

Determining if a given measure is reasonably practicable requires consideration of disciplines outside of acoustics (e.g. traffic ingress/egress, cost, safety, visual amenity etc.).

The following noise mitigation design features measures, have been included in this planning assessment, determined through iterative noise modelling to demonstrate the feasibility of site operations to achieve practicable compliance with design noise limits.

- Provision of a 1.8 m high fence to north and east site boundaries, refer extent in Figure 2
The construction of the fence may vary but would need to meet a minimum surface density requirement of 12 kg/m². Further details as to suggested/example construction and best practices to be effective as a noise barrier are provided in Appendix E.
- The auto carwash includes the following design features:
 - Entry and exit doors to the wash tunnel automatically close for the full wash and dry cycle during the night period. The doors to meet a minimum sound insulation rating of R_w 33. As an example, articulated shutter door design constructed of 10 mm laminate glass that incorporates full perimeter compression seals so as there are no gaps at the building junction.
 - The walls of the auto carwash enclosure and plantroom to meet a minimum sound insulation rating of R_w 45. Example, 90 mm thick precast concrete panel
 - The roof of the auto carwash enclosure to meet a minimum sound insulation rating of R_w 40. Example construction sheet metal (minimum 0.5 mm BMT) with a 9 mm thick fibre cement ceiling at minimum 100 mm cavity, with insulation in the cavity (90 mm 11 kg/m³)
- Provision of full perimeter screening of all mechanical services installed on the roof that extends a minimum of 1 m above the highest point on any given unit. The construction of the screening may vary but would need to meet a surface density requirement of 12 kg/m² minimum, with the inside face lined with a suitable weatherproof sound absorbing material (NRC 0.7). Other treatment may also include the provision of attenuators, acoustic lined duct etc. as required.

In addition to the physical mitigation measures, the following non-exhaustive, list of example noise management measures are recommended for consideration as the development progresses throughout design phase:

- Selection of low noise fixed mechanical plant and services equipment
- Ongoing maintenance of fixed noise generating equipment
- Appropriate managerial controls are implemented such as signage for patrons to consider neighbours and leave the premises as quietly as possible, most especially during the night
- The driveways are designed to minimise the likelihood of any wheel impact noise from irregularities on the driveway itself or from any service opening cover plates etc.

- Any amplified music played on the premises should be set to a level which is inaudible at the property boundary.
- Encouraging suppliers to adopt broadband reversing beepers on third party trucks
- Timing of deliveries and waste collection:
 - Waste collections occur during the day period, Monday to Saturday, 7 am - 6 pm (not including public holidays)
 - Fuel deliveries and store deliveries occur during the day and/or evening periods, Monday to Sunday, 7 am - 10 pm (not including public holidays)
- Consistent with EPA 1254.2 *Noise Control Guidelines*, the following recommended best practices should be applied for waste collections and deliveries:
 - Refuse bins should be located at sites that provide minimal annoyance to residential premises
 - Compaction should be carried out while the vehicle is moving
 - Bottles should not be broken up at the collection site
 - Routes which service predominantly residential areas should be altered regularly to reduce early morning disturbances
 - Noisy verbal communication between drivers and operators should be avoided where possible
 - Any truck mounted refrigeration motors on delivery trucks/vehicles must be turned off whilst the vehicle is on site.

5.0 NOISE ASSESSMENT

5.1 Operational scenarios and assumptions

The procedures of the Noise Protocol require that the “typical worst-case noise scenario” over any given 30-minute period is considered for the respective day, evening and night operations.

Accordingly, the assessment assumes the following 30-minute operational scenarios:

Day period typical worst-case 30-minute operational scenario

- 1 x fuel delivery
- 1 x waste truck and collection
- 1 x store delivery, including unloading
- Use of auto car wash and vacuum units
- Drive through activity and associated use of customer ordering device (COD) unit
- Continuous operation of mechanical services.

Evening period typical worst-case 30-minute operational scenario

- 1 x fuel delivery
- 1 x store delivery, including unloading
- Use of auto car wash (doors closed) and vacuum units
- Drive through activity and associated use of COD unit
- Continuous operation of all mechanical services.

Night period typical worst-case 30-minute operational scenario

- Use of auto car wash (doors closed) and vacuum units
- Drive through activity and associated use of COD unit
- Continuous operation of mechanical services.

The following assumptions have been made with respect to the various activities:

- On site delivery and waste truck movements are assumed to move at 5-10 km/h
- An allowance of 2 minutes for the waste collection operation
- Auto carwash operation for up to 20 minutes in a given 30 minute period (3 cycles)
- Vacuum operation for up to 6 minutes in a given 30 minute period (3 cycles at 2 minutes each)
- Unloading operations associated with store deliveries utilises electric pallet jack (no motorised forklift).
- Mechanical plant and services equipment associated with the development could operate 24 hours per day. Equipment is likely to include packaged air conditioning units, refrigeration condenser units and exhaust fans etc. situated either on the roof or at ground of the main store building.

Based on experience with other similar developments, the estimated drive through patronage and associated use of COD unit patterns is as follows:

- Peak drive-through rates are approximately 38 vehicles per hour between 7 am and 10 pm, and 7 vehicles per hour between 10 pm and 7 am.

The average time that the COD is in operation per order is approximately 16 seconds.

- A 30-minute day and evening-time period (based on above peak drive-through rates) will therefore include a total of 5 minutes of COD activity
- A 30-minute night-time period (based on above peak drive-through rates) will therefore include a total of 1 minute of COD activity.

5.2 Noise source data

The noise source data utilised for the assessment has been based on a combination of noise data supplied by the client (measurements from other similar developments) and previously measured by MDA.

Details of the source noise data used for this assessment are provided in Appendix D2.

5.3 Predicted noise levels

Based on the above operational scenarios/assumptions and the noise mitigation considered in the design (see Section 4.0), noise levels have been determined and the results are summarised in the following sections.

Details regarding the noise modelling method are provided in Appendix D1.

Table 7 to Table 9 detail the assessment of the total noise levels expected from the proposed site operations with respect to the day, evening and night noise limits.

A +2 dB adjustment has been included for the day period to account for potential tonality from the site (e.g. reversing beepers on waste collection vehicle).

Table 7: Day period noise assessment, dB L_{Aeq}

Item	R1	R2	R3	R4
Fuel delivery, store delivery and unloading, waste and collection	33	26	32	33
Auto carwash (doors open), vacuum unit	46	41	42	51
COD	28	24	17	28
Mechanical services	37	34	34	39
Tonality adjustment	2	2	2	2
Effective noise level, ENL	49	44	45	53
Noise limit, Day, dB L _{Aeq,30min}	58	58	58	58
Complies	✓	✓	✓	✓

Table 7 shows that noise levels from day operations can achieve the noise limits, based on a worst-case assumption that a fuel delivery and waste collection occur in the same half hour period.

Table 8: Evening period noise assessment, dB L_{Aeq}

Item	R1	R2	R3	R4
Fuel delivery, store delivery and unloading	30	24	30	32
Auto carwash (doors open), vacuum unit	46	41	42	51
COD	28	24	17	28
Mechanical services	37	34	34	39
Effective noise level, ENL	47	42	43	51
Noise limit, Evening, dB L _{Aeq,30min}	52	52	52	52
Complies	✓	✓	✓	✓

Table 8 shows that noise levels from evening operations can achieve the noise limits.

Table 9: Night period noise assessment, dB L_{Aeq}

Item	R1	R2	R3	R4
Auto carwash (doors closed), vacuum unit	29	23	16	25
COD	21	17	10	21
Mechanical services	37	34	34	39
Effective noise level, ENL	38	34	34	39
Noise limit, Night, dB L _{Aeq,30min}	47	47	47	47
Complies	✓	✓	✓	✓

Table 9 shows that noise levels from night operations can achieve the noise limits.

5.4 Sleep disturbance

The predicted maximum noise levels from night-time activities on-site are provided in Table 10.

Table 10: Predicted maximum noise levels at nearest noise sensitive receivers, dB L_{Amax}

Source	R1	R2	R3	R4
Car pass by (drive through)	45	44	37	49
Normal car (inc. door slam)	53	46	40	52
Worst-case car (inc. door slam)	61	53	46	60
Conversation	56	47	39	55
COD	54	48	42	52

The predicted levels meet the recommended sleep disturbance level of 60-65 dB L_{Amax} at the nearest residences.

In the case of patron vehicles which are driven in a manner considered worst-case for noise, it is recommended that appropriate managerial controls are reviewed and implemented such as signage for patrons to consider neighbours and leave the premises as quietly as possible.

6.0 SUMMARY

It is proposed to develop a service station and convenience store at 737-757 Sydney Road, Coburg North.

Marshall Day Acoustics has assessed noise expected from the proposed site in accordance with the relevant Victorian EPA legislation, guidelines, and accepted industry practice.

This assessment is based on:

- Noise source data obtained from the Client and previous noise level measurements by MDA; and
- A detailed 3-dimensional acoustic model of the site and surrounding environment, accounting for typical worst-case day, evening and night operational scenarios and atmospheric conditions which favour the propagation of sound.

The proposed site operations have been demonstrated that relevant design noise limits can be practicably achieved, with the following measures implemented:

- Noise mitigation features included in the design, as outlined in Section 4.0
- Waste collection to occur during the day period:
 - Monday to Saturday, 7 am – 6 pm
- Fuel and Store deliveries to occur during the day and/or evening period:
 - Monday to Sunday, 7 am – 10 pm
- Appropriate managerial controls are implemented such as signage for patrons to consider neighbours and leave the premises as quietly as possible.

APPENDIX A GLOSSARY OF TERMINOLOGY

Ambient	The ambient noise level is the noise level measured in the absence of the intrusive noise or the noise requiring control. Ambient noise levels are frequently measured to determine the situation prior to the addition of a new noise source.
A-weighting	The process by which noise levels are corrected to account for the non-linear frequency response of the human ear.
dB	Decibel: The unit of sound level. Expressed as a logarithmic ratio of sound pressure P relative to a reference pressure of $P_r=20 \mu\text{Pa}$ i.e. $\text{dB} = 20 \times \log(P/P_r)$
Frequency	The number of pressure fluctuation cycles per second of a sound wave. Measured in units of Hertz (Hz).
Hertz (Hz)	Hertz is the unit of frequency. One hertz is one cycle per second. One thousand hertz is a kilohertz (kHz).
L_{A90}	The A-weighted noise level exceeded for 90% of the measurement period, measured in dB. This is commonly referred to as the background noise level.
$L_{Aeq}(t)$	<p>The equivalent continuous (time-averaged) A-weighted sound level. This is commonly referred to as the average noise level.</p> <p>The suffix "t" represents the time period to which the noise level relates, e.g. (8 h) would represent a period of 8 hours, (15 min) would represent a period of 15 minutes and (2200-0700) would represent a measurement time between 10 pm and 7 am.</p>
L_{Amax}	The A-weighted maximum noise level. The highest noise level which occurs during the measurement period.
Effective noise level, ENL	The effective noise level of commercial or industrial noise determined in accordance with EPA publication 1826 – <i>Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues</i> (Noise protocol) This is the L_{Aeq} noise level over a half-hour period, adjusted for the character of the noise.
L_w	Sound Power Level. A logarithmic ratio of the acoustic power output of a source relative to 10^{-12} watts and expressed in decibels. Sound power level is calculated from measured sound pressure levels and represents the level of total sound power radiated by a sound source.

APPENDIX B ZONING MAP



APPENDIX C LEGISLATION AND GUIDELINES

C1 Environment Protection Act 2017

The *Environment Protection Act 2017* (EP Act) does not specify noise limit values or technical aspects of environmental noise but sets out legal requirements to comply with the Environment Protection Regulations described below. Clause 166 of the Act essentially places the onus of achieving compliance with noise limits on the commercial premises.

The Regulations and the Noise Protocol set noise limits that must not be exceeded. The noise limits are not intended to be levels one can 'pollute up to' and must not to be interpreted as noise levels below which no action is required. This is because the duty holder is required under the general environmental duty to minimise risks so far as reasonably practicable.

The general environmental duty is outlined in Part 3.2 of the *EP Act*, that requires anyone engaging in an activity posing a risk of harm to human health and/or the environment from pollution (including noise) and waste, to minimise those risks to prevent harm as far as reasonably practicable.

C2 Environment Protection Regulations 2021

The EP Act does not specify noise limit values or technical aspects of environmental noise but sets out legal requirements to comply with the *Environment Protection Regulations 2021* (EP Regulations). Clause 166 of the EP Act essentially places the onus of achieving compliance with noise limits on the commercial premises.

The Regulations are made under section 465 of the EP Act and impose obligations in relation to environmental protection, including noise. The Regulations state that a person who conducts a prediction, measurement, assessment or analysis of noise within a noise sensitive area must do so in accordance with the Noise Protocol. Noise from industrial, commercial and trade premises or entertainment venues or events is prescribed as unreasonable if it exceeds a noise limit or alternative criterion determined in accordance with the Noise Protocol.

Key matters addressed in the regulations include:

- Definition of commercial, industrial and trade premises, which is essentially any premises that is not a residential premises, a road or a railway.
- Definition of an indoor music entertainment venue
- Definition of noise sensitive areas where the noise limits are assessed, which broadly include:
 - a residential building
 - temporary accommodation
 - hospital corrective institution
 - retirement or residential village
 - A room for learning in a child care centre, kindergarten or school
 - A tourist establishment, campground or caravan park
- Assessment time periods
- Noise sources that must not be taken into account
- Minimum noise limit values
- Management of cumulative noise from multiple premises.

Table 11 presents a summary of the relevant Divisions and Regulations from Part 5.

Printed 16/11/2023

Page 37 of 119

Table 11: Summary of relevant provisions Part 5.3 – Noise

Section	Description
Division 1, Regulation 113	States that <i>a person who conducts a prediction, measurement, assessment or analysis of noise within a noise sensitive area for the purposes of the Act or these Regulations, must conduct the prediction, measurement, assessment or analysis in accordance with the Noise Protocol.</i>
Division 3	Applies to noise from commercial, industrial and trade premises
Regulation 116	<p>Defines the day, evening and night period as follows:</p> <ul style="list-style-type: none"> Day: 7 am to 6 pm, Monday – Saturday Evening: 6 pm to 10 pm, Monday – Saturday 7 am to 10 pm, Sunday and Public Holidays Night: 10 pm to 7 am the next day, Monday – Sunday
Regulation 117	<p>In this Division, when the level of noise emitted from commercial, industrial and trade premises is assessed, the following sources of noise that could be expected at the proposed facility must not be taken into account:</p> <ul style="list-style-type: none"> Voices Construction or demolition activity on building sites Intruder, emergency or safety alarms or sirens Equipment used in relation to an emergency Non-commercial vehicles (except for maintenance activities).
Regulation 118	<p>Defines noise as being unreasonable if it exceeds the Noise Protocol limits or the alternative assessment criteria that apply at an alternative assessment location.</p> <p>Defines the lowest base noise limits as follows:</p> <ul style="list-style-type: none"> Major urban area: Day: 45 dB LAeq Evening: 40 dB LAeq Night: 35 dB LAeq <p>The noise limit for commercial, industrial and trade premises for the night period must not exceed 55 dB LAeq.</p>
Regulation 119	If multiple existing or proposed premises emit noise that contributes to the effective noise level at a noise sensitive receiver, all reasonable steps must be taken by the premises' management to ensure the combined noise level does not exceed the noise limit.
Regulation 120	This regulation essentially identifies that tonal aspects of noise must be considered when considering unreasonable noise for section 3(1)(a)(v) of the Act. The Noise Protocol provides a method of assessing tonal characteristics of noise from commercial, industrial and trade premises, with additional guidance on low frequency noise available in EPA Victoria Publication 1996 <i>Noise guideline – assessing low frequency noise</i> .
Regulation 121	<p>Noise emitted from commercial, industrial and trade premises is prescribed to be aggravated noise if it exceeds the noise limits by more than 15 dB, or the following if lower:</p> <ul style="list-style-type: none"> 75 dB LAeq during the day, 70 dB LAeq during the evening, or 65 dB LAeq during the night.

C3 EPA Victoria Publication 1826 – The Noise Protocol

As per the Division 1, Regulation 113 of the Regulations, assessment of noise within a sensitive area must be conducted in accordance with EPA Victoria Publication 1826 *Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues* (the Noise Protocol). The Noise Protocol outlines the EPA's required approach to the determination of noise limits and to the measurement, prediction and analysis of noise.

C3.1 Section A – Determining noise limits for commercial, industrial and trade premises

The Noise Protocol provides two methods for deriving the relevant noise limits, the Urban area method, and the Rural area method. The proposed development is within a major urban area and therefore the Urban area method is applicable.

The noise limits are calculated taking into account land 'zoning types' within a 70 m and 200 m radius of a noise sensitive receiver. The Noise Protocol categorises land zones as type 1, 2 or 3.

Zone type designations consider the nature of the permitted land uses and are generally as follows:

- areas such as residential, rural and open space are type 1;
- areas such as commercial, business and light industry are type 2; and
- areas such as general industry and major roads are type 3.

A prescribed formula is used to calculate a corresponding Zoning Level. Greater areas of type 2 and 3 land within a 200 m radius of a noise sensitive site result in higher Zoning Levels than a site with respectively larger areas of type 1 land.

The noise limit is equal to the 'zoning level' unless the background level at the noise sensitive site is categorised as low or high according to clause 4 of the Policy. If the background level is low or high, the Noise Limit is calculated from a formula taking into account both the Zoning Level and the Background Level.

The current land use zones around the subject site are shown in the planning map, refer Appendix B.

Background noise levels have not been measured and design noise limits have therefore been based on zoning levels only, i.e. background noise levels that would result in neutral noise limits. This is a likely conservative basis, as it is expected actual background noise levels at residences would be greater, due to local traffic on the Esplanade, that would result in higher noise limits.

The design noise limits applicable to this assessment are shown in Table 12.

Table 12: EP Regulations noise limits

Period	Day	Time	Zoning level	Background range (neutral), dB LA90	Noise limit, dB LAeq,30min
Day	Monday – Saturday	7 am – 6 pm	58	46 – 52	58
Evening	Monday – Saturday	6 pm – 10 pm	52	43 – 49	52
	Sunday and Public Holidays	7 am – 10 pm			
Night	Monday – Sunday	10 pm – 7 am	47	38 – 44	47

C3.2 Section B – Assessing noise from commercial, industrial and trade premises

Noise from the facility that exceeds the noise limits is prescribed to be unreasonable by the Regulations. Part 7.6 of the EP Act in conjunction with Regulation 166 places the onus of compliance on industry by prohibiting the emission of unreasonable or aggravated noise.

For the purposes of this report and assessment of predicted noise levels, the noise limits apply up to 10 m from a dwelling, but within the property boundary.

Once a noise limit is established, an equivalent noise level (L_{Aeq}) due to the operation of the commercial premises is measured or predicted for a 30 minute operating period during the day, evening and night period as appropriate. If necessary, the L_{Aeq} noise level is adjusted for duration and noise character (tonality, impulsiveness, and intermittency) to give the effective noise level.

Consideration must be given to existing and future noise sensitive areas, factors that influence the propagation of sound (including atmospheric effects) and the cumulative contribution of noise from multiple existing and proposed sites.

C4 EPA Victoria Publication 1254.2 Noise Control Guidelines

C4.1 Waste collection

The following recommendations for industrial waste collections are outlined in the guideline:

- *Refuse bins should be located at sites that provide minimal annoyance to residential premises*
- *Compaction should be carried out while the vehicle is moving*
- *Bottles should not be broken up at the collection site*
- *Routes which service predominantly residential areas should be altered regularly to reduce early morning disturbances*
- *Noisy verbal communication between operators should be avoided where possible.*

The guidelines state:

Early-morning collections should be restricted to non-residential areas to minimise early morning disturbances. Where a residential area is impacted by noise from the collection of refuse, then collections should be restricted to the times contained within the schedule.

Schedule: Industrial waste collection

One collection per week

6:30am-8pm Monday to Saturday

9am-8pm Sunday and Public Holidays

Two or more collections per week

7am-8pm Monday to Saturday

9am-8pm Sunday and Public Holidays.

C4.2 Deliveries

The following items regarding deliveries to shops, supermarkets, and service stations are outlined in the guideline:

Where a residential area will be impacted by noise from deliveries, the deliveries should be inaudible in a habitable room of any residential premises (regardless of whether any door or window giving access to the room is open) outside the hours contained in the schedule

Schedule: Deliveries to shops, supermarkets & service stations

7am - 10pm Monday to Saturday

9am - 10pm Sunday and Public Holidays.

APPENDIX D NOISE MODELLING

D1 Calculation method

A 3-dimensional computer acoustic model of the site was created in the environmental noise modelling program SoundPLAN v9 to predict noise levels from the proposed operations to the noise affected premises in the vicinity of the site. The noise model has been used to calculate noise levels in accordance with ISO-9613-2:1996 *Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation* (ISO 9613-2). The noise model enables the calculation of noise levels over a wide area, and accounts for key considerations including site arrangement, terrain and atmospheric conditions.

The ISO 9613-2 standard specifies an engineering method for calculating noise at a known distance from a variety of sources under meteorological conditions that are favourable to sound propagation. The standard defines favourable conditions as downwind propagation where the source blows from the source to the receiver within an angle of +/-45 degrees from a line connecting the source to the receiver, at wind speeds between approximately 1 m/s and 5 m/s, measured at a height of 3 m to 11 m above the ground. Equivalently, the method accounts for average propagation under a well-developed moderate ground based thermal inversion.

Accordingly, predictions on the basis of ISO 9613-2 account for the instances when local atmospheric conditions at the site favour the propagation of sound to surrounding receptor locations. Under alternative atmospheric conditions, such as when the wind is blowing from a receiver location to the development site, the noise levels would be lower than calculated.

To calculate far-field noise levels according to the ISO 9613-2, the noise levels of each source are firstly characterised in the form of octave band frequency levels. A series of octave band attenuation factors are then calculated for a range of effects including:

- Geometric divergence
- Air absorption
- Reflecting obstacles
- Screening
- Ground reflections.

The octave band attenuation factors are then applied to the noise data to determine the corresponding octave band and total calculated noise level at relevant receiver locations.

Geometry data for the model has been sourced from public aerial photography, and building heights defined on the basis of standard assumed heights per floor level. The geometries in the model are simplified representations of the built environment that have been configured to a level of detail that is appropriate for noise calculation purposes.

The following inputs have been referenced in the noise model to predict noise levels from site activities.

- Receivers at 1.5 m (single storey) and 4.5 m (two storey) above ground level
- Receiver locations positioned according to public aerial imagery (sourced from Nearmap)
- Noise source data as detailed in Appendix D2
- Noise levels calculated to the receiver building facade, i.e., free-field noise levels in accordance with EPA Guidelines.

D2 Noise source data

Table 13: Noise source data utilised for assessment

Category	Source	Sound Power Level, dB L _{WA}	Parameter
Carpark activity	Normal patron car (incl. car door slam)	95	L _{max}
	Worst-case patron car (incl. car door slam)	103	L _{max}
	Patron voices	98	L _{max}
	Patron vehicle pass-by	92	L _{max}
Commercial vehicle movements	Fuel delivery vehicle	106	L _{eq}
	Waste collection vehicle	96	L _{eq}
	Store delivery vehicle (SRV)	93	L _{eq}
Activities	Waste collection	96	L _{eq}
	Unloading operation (electric pallet jack)	80	L _{eq}
Carwash facilities	Auto wash – wash and blow dry full cycle	92 (Reverberant sound pressure level inside)	L _{eq}
	Vacuum unit in loaded operation	82	L _{eq}
Drive through	Customer ordering device (COD) speaker	84	L _{eq}
	Customer ordering device (COD) speaker	100	L _{max}
	Vehicle pass-by (drive through)	92	L _{max}
Mechanical plant and services	Exhaust fan with attenuator x2	72	L _{eq}
	Small PAC unit	76	L _{eq}
	Large PAC unit	81	L _{eq}
	Small AC unit	59	L _{eq}
	Evaporative cooling unit	80	L _{eq}
	Large Freezer condenser unit	85	L _{eq}
	Small freezer condenser unit	75	L _{eq}
	Large cool room condenser unit	80	L _{eq}
	Small cool room condenser unit	76	L _{eq}
	Amenity exhaust fan	67	L _{eq}

APPENDIX E BOUNDARY ACOUSTIC FENCE CONSTRUCTION

The proposed boundary acoustic fencing must be constructed to provide adequate noise attenuation. The fence material should be constructed from a material of minimum surface density of 12 kg/m² and must be free of holes or gaps. Some suitable materials include the following:

- 30 mm thick timber
- 10 mm laminate glass
- 18 mm thick Perspex
- 9 mm thick compressed fibre-cement sheet.
- Concrete, brick, proprietary wall panels or any other material that meets the minimum surface density can also be used.

Alternatively, a Colorbond style fence can be used, double skinned sheet steel, either side of a frame, example as shown Figure 3.

Figure 3: Double skinned Colorbond fence (source: Department for Infrastructure and Transport)



It is particularly important to ensure that there is no gap at the bottom of the acoustic fence. It is common practice to require that a portion of the bottom of the barrier (10-20 cm) be buried in the ground.

Other considerations include:

- Life expectancy: it is common to specify 20 years for life expectancy
- Wind loading: assessed by a suitably qualified engineer
- Resistance to vandalism, including graffiti
- Maintenance requirements
- Flammability.

Traffic Impact Assessment

Project:

413 Esplanade, Lakes Entrance



Contact Information

Altus Traffic Pty Ltd ABN 84 102 768 061	310 Edward Street Brisbane City QLD 4000 Australia www.modusengineering.com.au Phone 0486017007
---	---

Document Information

Prepared for PC Infrastructure Pty Ltd	Job Reference TIA - Peregrine - 413 ESPLANADE-Lakes Entrance
Project: 413 Esplanade, Lakes Entrance	

Document Control

Version	Date	Description of Revision	Prepared by	Approved By
D1	07/02/2023	DRAFT for review and comments	CS	TA (RPEQ: 28656)
F1	20/04/2023	Final	AS	TA (RPEQ: 28656)

Altus Traffic Pty Ltd - The information contained in this document is intended solely for the use of the client identified on the report cover for the purpose for which it has been prepared and no representation is made or is to be implied as being made to any third party. Other than for the exclusive use of our client, no part of this report may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying or otherwise, without the prior written permission of Altus Traffic Pty Ltd.

Table of Contents

1	Introduction	- 6 -
1.1	Overview	- 6 -
2	Existing Situation	- 7 -
2.1	Site Location	- 7 -
2.2	Existing Road Network	- 8 -
2.3	Active Transport Network	- 9 -
2.4	Public Transport Network	- 9 -
2.5	Existing Access Arrangements	- 9 -
3	Proposed Development	- 10 -
3.1	Proposed Yield	- 10 -
4	Design Considerations	- 11 -
4.1	Relevant Standards	- 11 -
4.2	Access Arrangement	- 12 -
4.3	Crossover Design	- 13 -
4.4	Parking Provision	- 13 -
4.5	Carpark Design	- 15 -
4.6	Queueing Impacts	- 16 -
4.7	Servicing Arrangements	- 17 -
5	Traffic Assumptions and Characteristics	- 19 -
5.1	Study Intersections	- 19 -
5.2	Background Traffic Volumes	- 19 -
5.3	Traffic Growth	- 20 -
6	Traffic Generation	- 21 -
6.1	Trip Type	- 21 -
6.2	Cross-utilisation	- 22 -
6.3	External Trip Distribution	- 22 -
6.4	Internal Trip Distribution	- 23 -
7	Traffic Assessment Criteria	- 24 -
7.1	Assessment Scenarios	- 24 -
7.2	Assessment Criteria	- 24 -
7.3	Intersection 1: The Esplanade / Bulmer Street	- 26 -
7.4	Intersection 2: The Esplanade / Western Site Access	- 27 -
7.5	Intersection 3: The Esplanade / Eastern Site Access	- 28 -
8	Conclusions and Recommendations	- 29 -

Tables

Table 2-1 Key Road Characteristics.....	- 8 -
Table 3-1 Total Development Yield	- 10 -
Table 4-1 Crossover Design	- 13 -
Table 4-2 Car Parking Requirements	- 13 -
Table 4-3 Bicycle Parking Requirements	- 14 -
Table 4-4 Car Park Design Compliance	- 15 -
Table 5-1 Study Intersections	- 19 -
Table 5-2 Assessment Peak Periods	- 20 -
Table 6-1 Adopted Generation Rates.....	- 21 -
Table 6-2 Proportion of Drop-in Trips.....	- 21 -
Table 6-3 Trip Proportions by Type.....	- 22 -
Table 6-4 Directional Distribution	- 23 -
Table 6-5 Directional Trips	- 23 -
Table 7-1 Assessment Scenarios.....	- 24 -
Table 7-2 Adopted Intersection Performance Threshold – Degree of Saturation.....	- 24 -
Table 7-3 The Esplanade / Bulmer Street intersection - SIDRA Analysis Summary (Saturday) -	26 -
Table 7-4 The Esplanade / Bulmer Street intersection - SIDRA Analysis Summary (Thursday) -	26 -
Table 7-5 The Esplanade / Western Site Access intersection - SIDRA Analysis Summary (Saturday)	- 27 -
Table 7-6 The Esplanade / Western Site Access intersection - SIDRA Analysis Summary (Thursday)	- 27 -
Table 7-7 The Esplanade / Eastern Site Access intersection - SIDRA Analysis Summary (Saturday)	- 28 -
Table 7-8 The Esplanade / Eastern Site Access intersection - SIDRA Analysis Summary (Thursday)	- 28 -

Figures

Figure 2-1 Site Location	- 7 -
Figure 2-2 Site Location	- 8 -
Figure 2-3 Existing Access Arrangements	- 9 -
Figure 3-1 Proposed Development Layout.....	- 10 -
Figure 4-1 Proposed Access Locations.....	- 12 -
Figure 4-2 Servicing Routes and Areas.....	- 18 -
Figure 5-1 Study Intersections	- 19 -
Figure 7-1 The Esplanade / Bulmer Street intersection - SIDRA Layout.....	- 26 -
Figure 7-2 The Esplanade / Western Site Access intersection - SIDRA Layout.....	- 27 -
Figure 7-3 The Esplanade / Eastern Site Access intersection - SIDRA Layout.....	- 28 -

1 Introduction

1.1 Overview

Modus has been engaged by PC Infrastructure Pty Ltd to prepare a Traffic Impact Assessment (TIA) in support of the proposed service station precinct located at 413 Esplanade, Lakes Entrance.

The site is defined as a Commercial 1 Zone and is adjacent to the Lakes Entrance Shopping Centre. The proposed development has frontage on The Esplanade which provides a major east-west function for the surrounding transport network.

The proposed development will include a service station precinct which comprises a fuel station, convenience store, takeaway café with a drive through and an automatic car wash facility.

2 Existing Situation

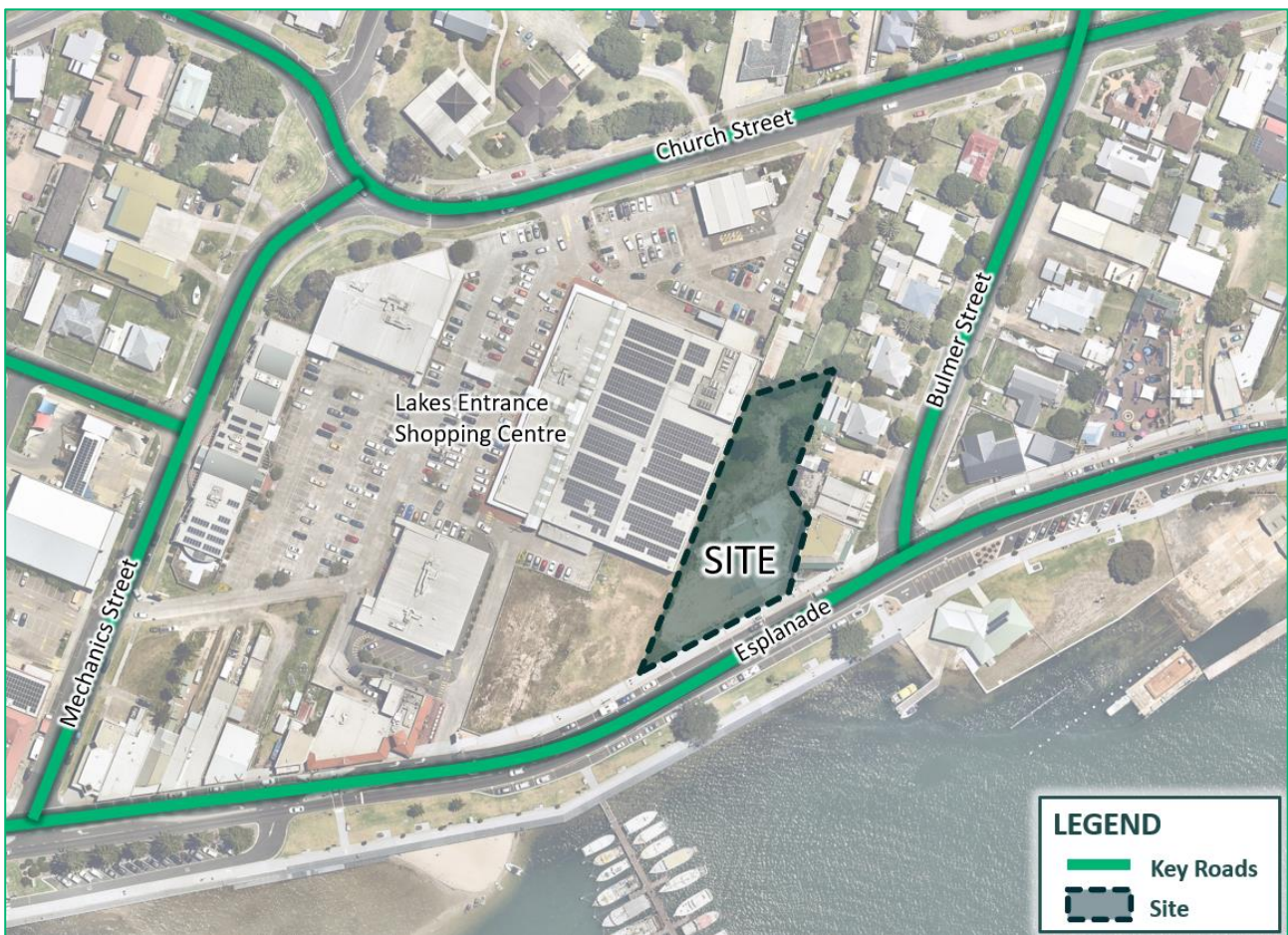
2.1 Site Location

The development site is bound by the Esplanade to the south and is directly adjacent to the Lakes Entrance Shopping Centre to the west. The existing site is currently a vacant lot. Several formal on-street parking spaces are also located along the site boundary of The Esplanade.

The development is identified as a Commercial 1 Zone within Vic Plan and is surrounded by similar land uses in all directions.

The site location is illustrated in Figure 2-1.

Figure 2-1 Site Location

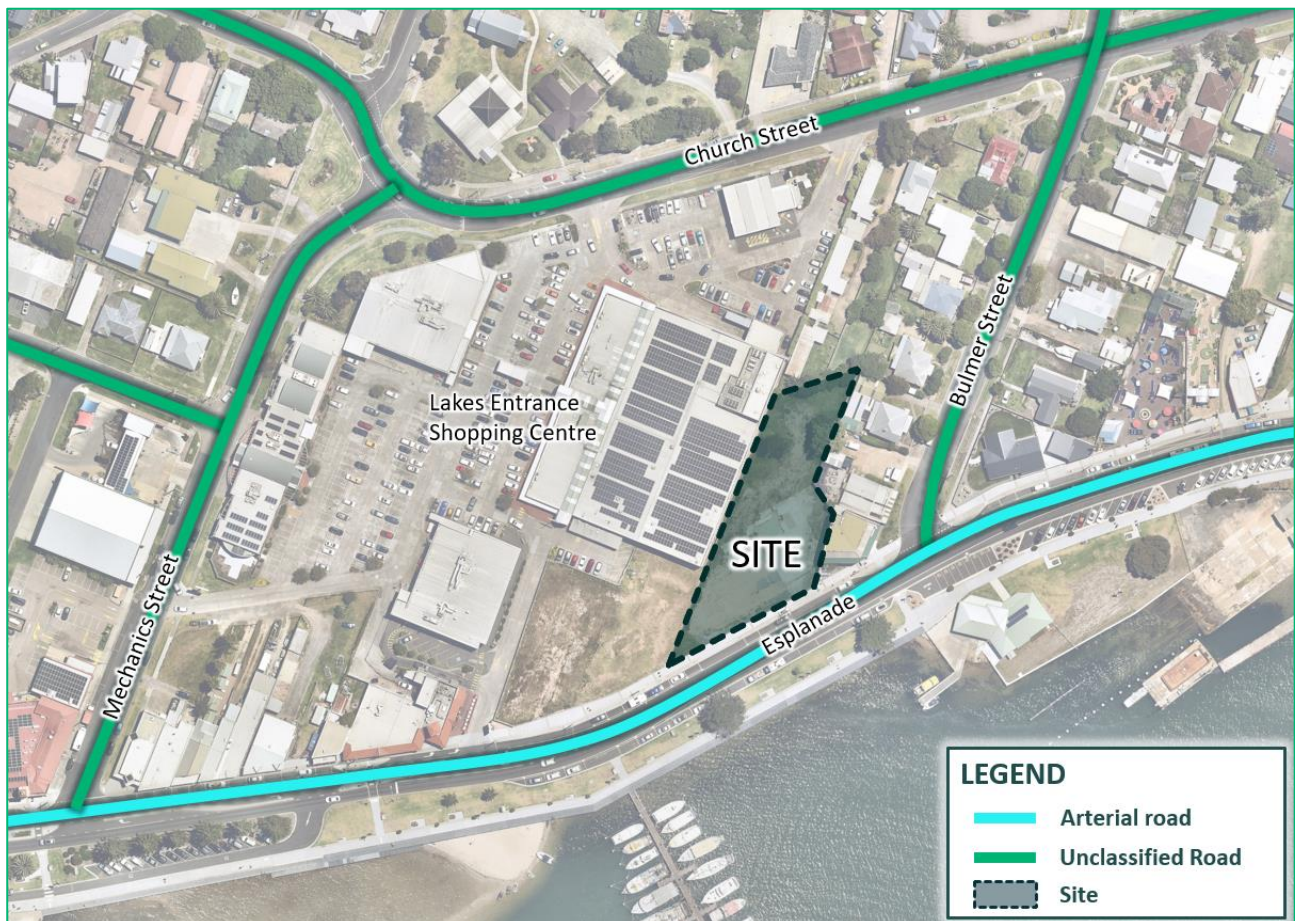


Source: Nearmap

2.2 Existing Road Network

Figure 2-2 and Table 2-1 outline characteristics of the existing road network near the proposed development site.

Figure 2-2 Site Location



Source: NearMap

Table 2-1 Key Road Characteristics

Road	Hierarchy	Speed Limit	Typical Form
Esplanade	Arterial	40km/h	Two lanes, undivided
Mechanics Street	Unclassified	50km/h	Two lanes, undivided
Church Street	Unclassified	50km/h	Two lanes, undivided
Bulmer Street	Unclassified	50km/h	Two lanes, undivided

2.3 Active Transport Network

Both verges of The Esplanade have best-practice 3-4m wide shared paths which provide comfortable use by all user groups for both cycling and walking. These paths connect to local routes throughout the road network surrounding the site.

Additionally, the recreational route along the foreshore is identified within Vic Plan as a Principal Bicycle Route. Cycling is also supported on-road along The Esplanade through the available parking shoulder.

Safe and frequent signalised pedestrian crossing facilities are also present along The Esplanade to connect the site to the surrounding amenity.

2.4 Public Transport Network

The nearest bus stop is located approximately 200m east of the proposed development. The bus route serviced by the number 2 route.

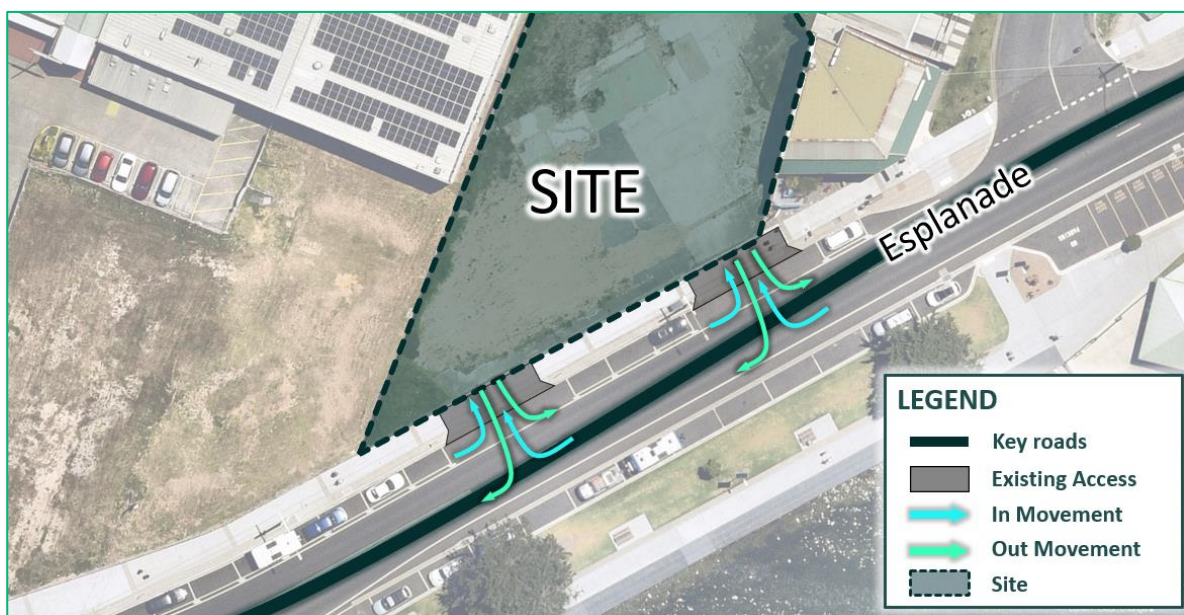
There are also two bus stops located adjacent the Lakes Entrance Shopping Centre, along Church Street. In total there are three bus stops located within a comfortable 400m walking radius of the site. All three bus stops are serviced by two local bus routes.

2.5 Existing Access Arrangements

The site has two existing crossovers, located along the west and east boundaries of the site. Both access locations permit vehicle movements from all directions.

The access locations and permitted movements are shown on Figure 2-3.

Figure 2-3 Existing Access Arrangements



Source: Nearmap

3 Proposed Development

3.1 Proposed Yield

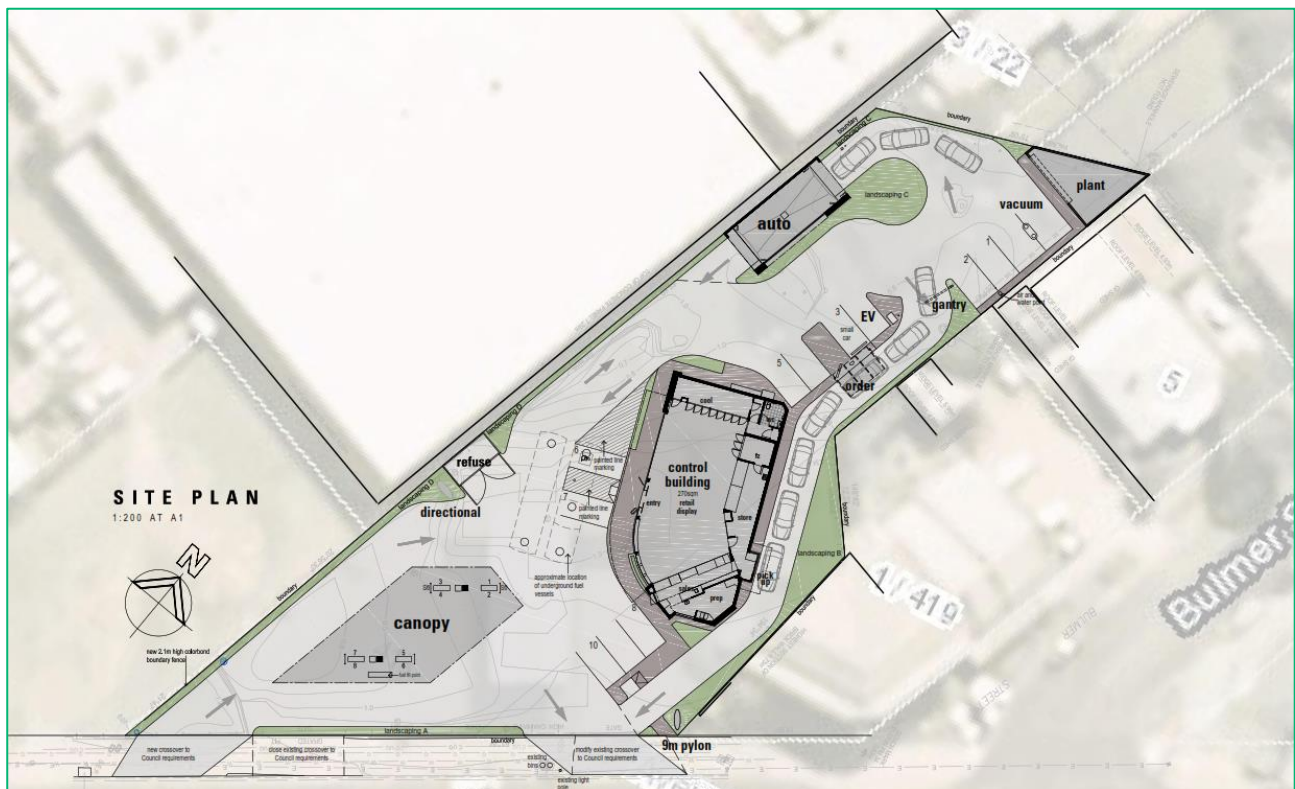
The development proposes to construct a new convenience precinct comprising of a fuel services station with convenience store, a drive-through cafe and an automatic drive-through car wash facility with dedicated vacuum bays.

The proposed Gross Floor Area (GFA) has been outlined in Table 3-1. Figure 3-1 illustrates the concept layout for the site and car parking plan, a copy of the development plans can be found at **Appendix A**.

Table 3-1 Total Development Yield

Land use	Yield
Service Station with Convenience Store/drive-through Café	8 fuel bowsers + 270 sq.m
Car Wash	1 automatic car wash (63 sq.m) + 2 vacuum bays

Figure 3-1 Proposed Development Layout



Source: ADS Architects, 22JN1505 SK01a

4 Design Considerations

4.1 Relevant Standards

A detailed review of the layout of the proposed development has been conducted in adherence to the relevant standards and guidelines, these include:

- ▶ East Gippsland Planning Scheme, 2022, (EG PS)
- ▶ Australian Standards, AS2890.1:2004 Parking Facilities Part 1: Off-Street Car Parking, 2004 (AS2890.1)
- ▶ Australian Standards, AS2890.2:2004 Parking Facilities Part 2: Off-Street Commercial Vehicle Facilities, 2002 (AS2890.2)
- ▶ Roads and Traffic Authority, Guide to Traffic Generating Developments, 2013 Update, (RTA GTGD)
- ▶ Institute of Transportation Engineers 10th Edition, Common Trip Generation Rates, 2017 (ITE CTGR)

The review focused on site access, parking provision, traffic flow, carpark design and servicing arrangements.

4.2 Access Arrangement

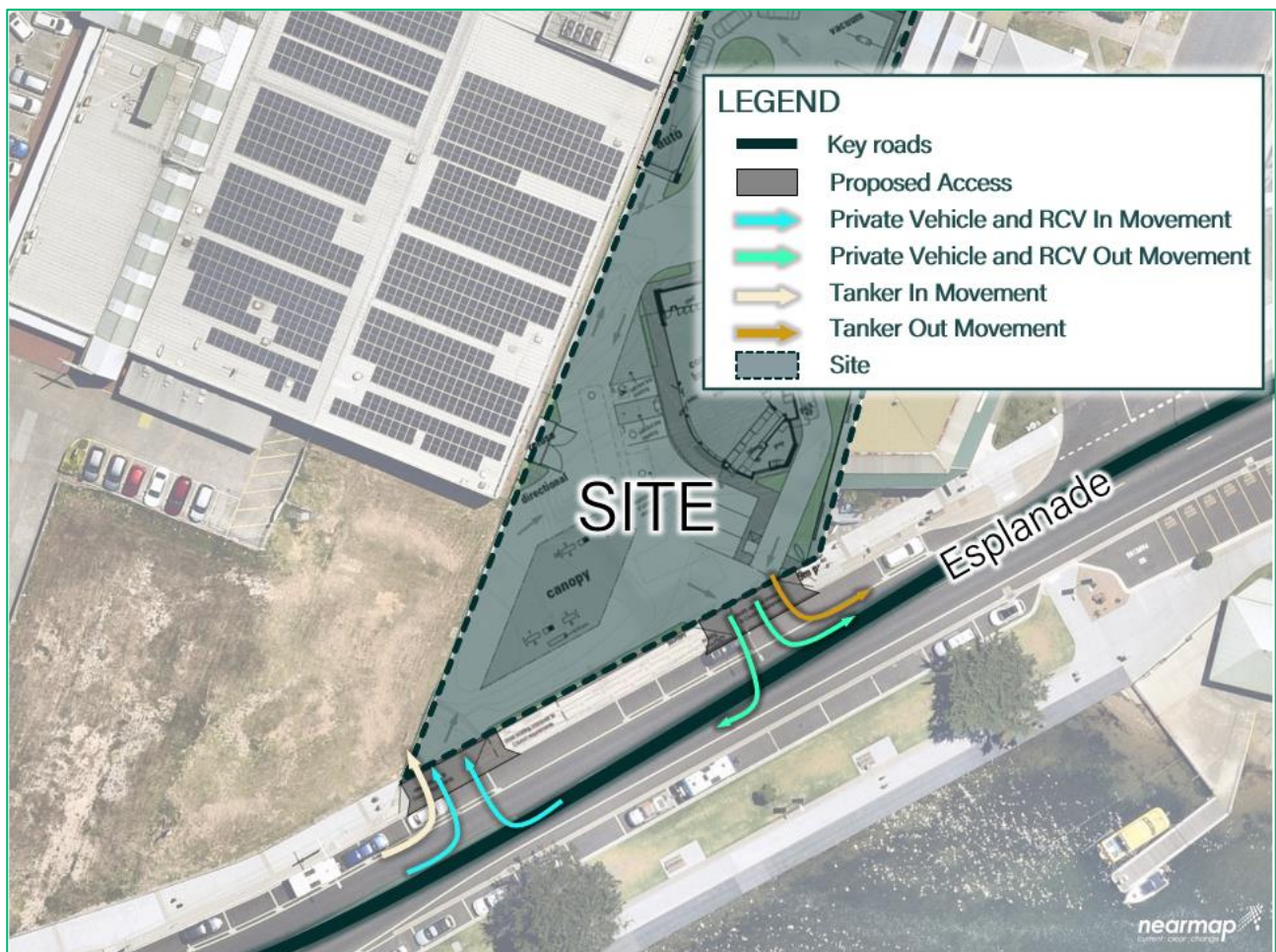
Both crossover locations are proposed to be modified to allow for safe and comfortable ingress/egress by the design vehicle.

Each crossover will remain majorly in the same location and the width of each access will be increased. As such, no increase in crossover locations will be proposed along The Esplanade, although formal on-street parking will need to be relocated to allow for the proposed crossovers. Available kerbside for parking relocation is present between the proposed crossovers.

Entry for the Double Fuel Tanker (Tanker) design vehicle will be restricted to left-in entry only.

The proposed crossover locations and permitted vehicle movements are illustrated on Figure 4-1.

Figure 4-1 Proposed Access Locations



Source: ADS Architects, 22JN1505 SK01a, Nearmap

4.3 Crossover Design

The largest vehicle expected to access the site is a Tanker which will conduct refuelling activities on site for the Service Station.

The design of the access driveways is outlined below in Table 4-1.

Table 4-1 Crossover Design

Access	Vehicle Type	Proposed Design
Western (Entry)	Fueler	11.7m width
Eastern (Exit)	Fueler	11.5m width

AS2890.2 states the driveway width will depend on the design vehicle requiring ingress/egress to the site. As such, to confirm the adequacy of the proposed driveway widths, a swept path assessment has been conducted for the Tanker which confirms the vehicle can safely and efficiently manoeuvre on/off the site in a forward gear using the separate entry and exit driveway locations. A copy of these swept paths can be found at **Appendix B**.

4.4 Parking Provision

4.4.1 Car Parking Requirements

The car parking rates and requirements summarised in Table 4-2 are in accordance with *Table 1: Car parking requirement* of the EG PS.

Table 4-2 Car Parking Requirements

Land use	Yield	Car Parking Rate	Car Parking Required
Service Station + Convenience Store/Café	8 fuel bowzers + 270 sq.m	10 parking spaces per premise	10 spaces
Car Wash	1 automatic car wash bay + 2 vacuum bays	N/A	0 spaces
TOTAL			10 spaces

4.4.2 Adequacy of Car Parking

The proposed development has provided a **total of 10 car parking spaces** including one Person with Disability (PWD) parking space. One Electric Vehicle (EV) charging bay and two vacuum bays have also been provided.

The development requires 10 paces including one PWD space, therefore proposed provision is considered adequate to cater for the expected demands.

It is noted that the car wash provides an ancillary function to the greater development and is not expected to generate additional parking demand. The parking allowed for the car wash is provided through the three unimpeded queue storage bays behind the car wash facility and the two vacuuming bays, this is further outlined in **Section 4.6 Queueing Impacts**. These proposed parking/waiting areas are considered adequate to cater for the expected demands of the car wash facility.

4.4.3 Bicycle Parking Requirements

The bicycle parking required for the development were calculated in accordance with *Table 1 to Clause 52.34-5 Bicycle spaces* of the EG Planning Scheme. The parking rates and provisions are summarised in Table 4-3.

Table 4-3 Bicycle Parking Requirements

Land use	Yield	Bicycle Parking Rate	Bicycle Parking Required
Convenience Store	270 sq.m	Staff: 1 per 600 sq.m of Leasable Floor Area (LFA) if >1,000 sq.m Visitor: 1 per 500 sq.m LFA if >1,000 sq.m	N/A
Car Wash	N/A	Not required	N/A
TOTAL			0 Bicycle spaces

4.4.4 Adequacy of Bicycle Parking

As shown in Table 4-3, application of the above bicycle parking rates indicates that the proposed development does not require bicycle parking due to the nature of the proposed land uses.

Although, to cater for a potential uptake in active transport mode share for the development and surrounding area, **1 bicycle parking rail** has been provided near the entry to the building.

It is to be noted, one dedicated bicycle parking rail provides parking for 1 bicycle on either side for a total of 2 per rail. Therefore, one rail is recommended to provide parking for 2 bicycles. Bicycle parking rails have been spaced at 1m centres in accordance with AS2890.3 to allow comfortable and functional operation.

4.5 Carpark Design

Modus has reviewed the car park changes against the relevant design guidelines, and the compliance has been summarised in Table 4-4.

Table 4-4 Car Park Design Compliance

Design Criteria Description	AS2890.1 Standard / EG PS	Proposed Design	Compliant
Car Parking			
Bay length	4.9m	4-9 - 5.4m	✓
Bay width	2.6m	2.6m	✓
Bay length (PWD)	5.4m	5.4m	✓
Bay width (PWD)	2.4m with 2.4m shared area	2.4m with 2.4m shared area	✓
Drive-through circulation width	3m	3.5m min	✓
Aisle width	5.8m	6m – 8m	✓
Servicing			
Height Clearance	>4.5m	>4.5m	✓

As shown in Table 4-4, the proposed car park design satisfies the minimum requirements. It is noted that 0.6m end overhang has been provided to proposed parking spaces.

4.6 Queueing Impacts

Separate queueing impact assessments have been calculated for the car wash, drive-through and service station land uses to determine the compliance of the design.

Car Wash

The East Gippsland Planning Scheme does not specify waiting area requirements for car wash facilities.

The car wash waiting area has been designed to allow for comfortable queueing of three vehicles additional to the vehicle utilising the car wash facility. There are also two vacuum bays provided adjacent to the car wash.

The queue length is considered above average when compared to similar development sites and is in alignment with industry knowledge for service station car wash queueing. As such, Modus is of the belief that the waiting area is adequate to cater for the expected demands of the area.

Drive-through

The East Gippsland Planning Scheme does not specify waiting area requirements for drive-through shops. It is also to be noted that the drive-through will be used for a takeaway café land use for coffee and light refreshments. As such, the demand for the drive-through is not anticipated to be as high as typical fast-food restaurants such as McDonalds and KFC.

The design has allocated seven car spaces from the delivery window to the circulation road. Considering the expected demand associated with the takeaway café, Modus is of the belief that a waiting queue of seven vehicles is adequate cater for these demands.

Service Station

The East Gippsland Planning Scheme does not specify waiting area requirements for service stations.

Each fuel bowser has been designed to allow for one vehicle to refuel and two vehicles to wait. Therefore, as the development proposes eight fuel bowsers, there are eight vehicle spaces available for waiting vehicles to store within the property boundary of the development.

Furthermore, the queueing distance required wholistically for the development is calculated in accordance with AS2890.1. It is measured between the end of the queueing area and the first conflict point with the passing traffic flow.

The queueing required for the proposed developments is two vehicles (using a standard vehicle length of 6m) which are able to be stored safely within the development.

4.7 Servicing Arrangements

4.7.1 Design Vehicle Requirement

Information from the client and industry knowledge has been used to determine the largest commercial design vehicles and refuse collection vehicle required for the site, these vehicles are as follows:

Commercial Servicing

- ▶ 19m Double Fuel Tanker (Tanker)

Refuse Collection

- ▶ 8.8m MRV Rear loading Refuse Collection Vehicle (RCV)

4.7.2 Servicing Provision

Commercial Servicing

The Tanker will enter the site from the west, via the western access and refuel at the designated fuel refill point. After refuelling, the Tanker will exit the site from the eastern crossover.

It is understood that the Tanker will not be conducting servicing activities during the same time as other commercial servicing or refuse collection, thus reducing the impact to the proposed development.

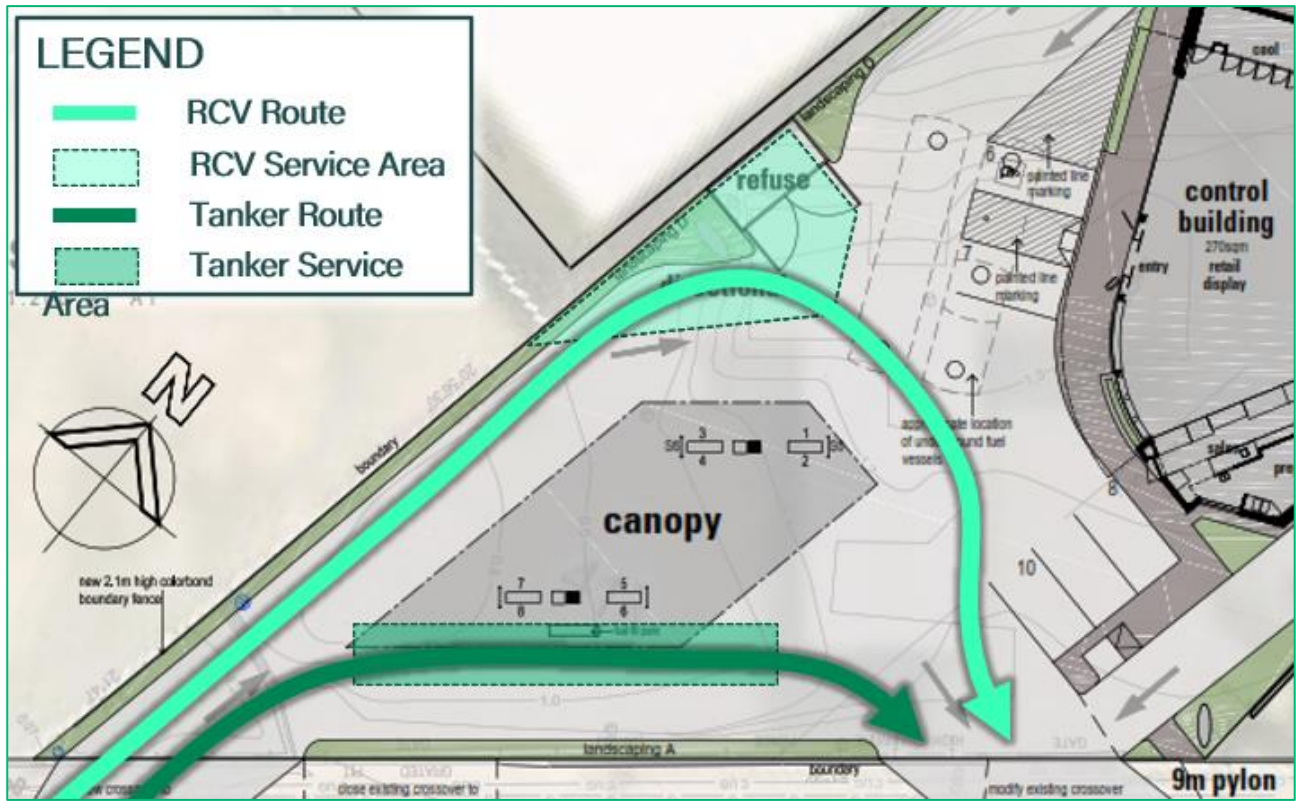
Refuse Collection

A dedicated refuse collection area has been located on the western perimeter of the site. This area is also accessed by the RCV via the western access. The vehicle will traverse the service aisle, conduct refuse servicing activities and safely exit via the eastern access.

Refuse activities are not expected to significantly reduce the operation of the transport network as servicing activities are proposed to occur outside of regular trading hours. Additionally, as mentioned above, the RCV will conduct servicing outside of when the Tanker will conduct refuelling.

The servicing areas and travel paths for both commercial and refuse activities are shown in Figure 4-2 and in the concept plans at **Appendix A**.

Figure 4-2 Servicing Routes and Areas



Source: ADS Architects, 22JN1505 SK01a

4.7.3 Swept Path Assessment

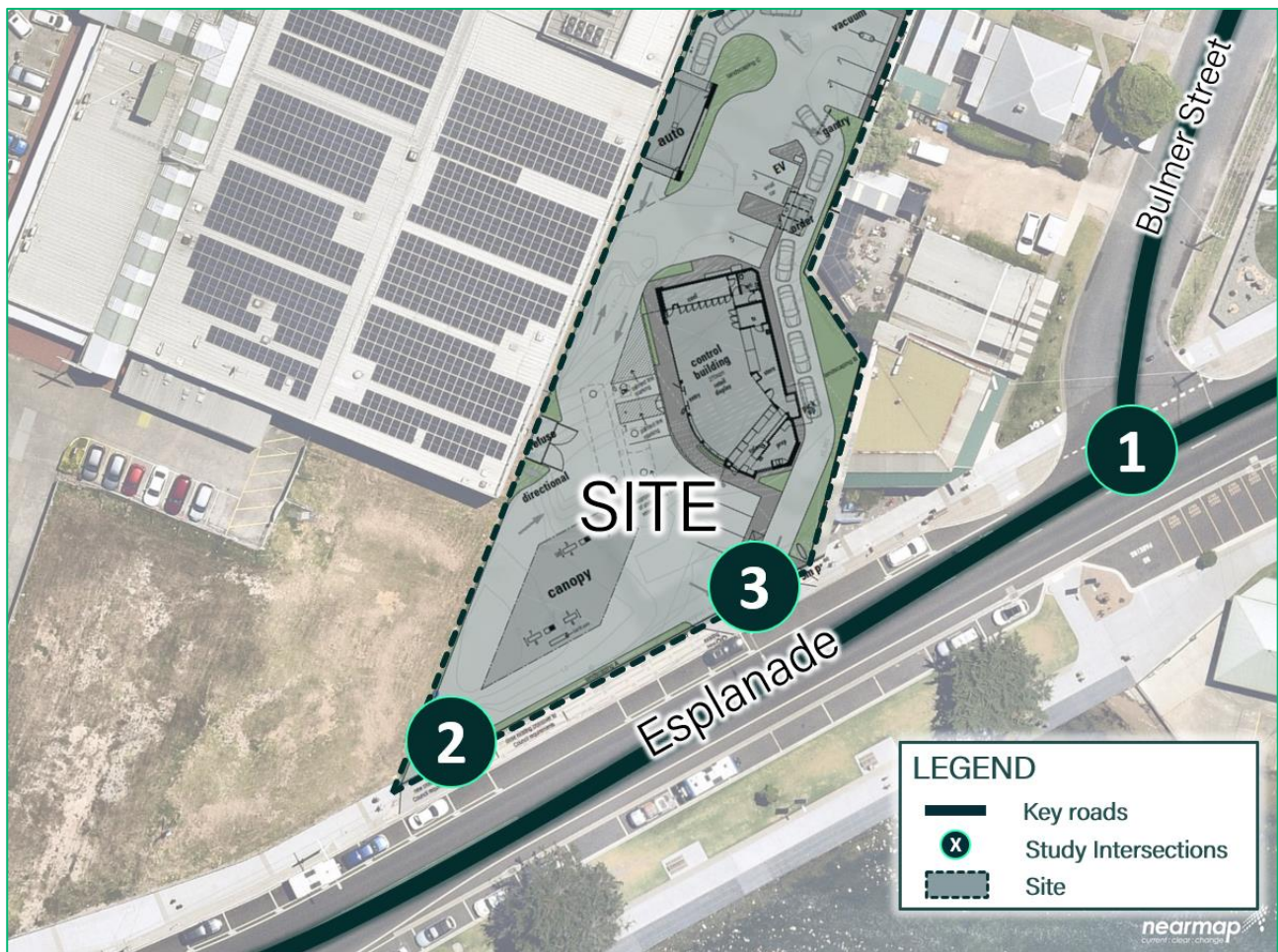
A swept path assessment has been undertaken for the Tanker and RCV vehicles to confirm the adequacy of the site. The swept paths indicate that all vehicles can safely enter, conduct servicing activities and exit the site safely and comfortably. The swept paths can be found at **Appendix B**.

5 Traffic Assumptions and Characteristics

5.1 Study Intersections

Figure 5-1 illustrates the intersections to be investigated, further detail is provided in Table 5-1.

Figure 5-1 Study Intersections



Source: Nearmap

Table 5-1 Study Intersections

Intersection ID	Intersection	Control
1	The Esplanade / Bulmer Street	Priority-controlled Intersection
2	The Esplanade / Western Site Access	Priority-controlled Intersection
3	The Esplanade / Eastern Site Access	Priority-controlled Intersection

5.2 Background Traffic Volumes

To understand the existing traffic conditions, an intersection count was commissioned by Trans Traffic Survey for the 3-hour AM and PM peaks on the 18th of January 2023. Data was collected for the Esplanade / Bulmer Street intersection.

A copy of the traffic survey data is enclosed in **Appendix C**.

The intersections peaks have been summarised in Table 5-2.

Table 5-2 Assessment Peak Periods

Intersection ID	Surveyed Peak Period	
	AM	PM
The Esplanade / Bulmer Street	9:00 – 10:00am	3:00 – 4:00pm

5.3 Traffic Growth

To gain an understanding of traffic growth within the broader transport network in close proximity to the development site, the Victorian Department of Transport (DOT) Traffic Volume Data Set was used which detail the Average Annual Daily Traffic (AADT) growth experienced on State roads across Victoria.

The traffic growth was taken from the section of road from The Princess Highway (Esplanade) between Lake Bunga Beach Road and Hunters Lane (Object ID: 6,636). This section of road fronts the development site.

The last available data point from the site was during 2020 which showed a traffic growth of 1.1% from the 2019 volumes. As there are many factors to include since 2020 such the COVID-19 pandemic, a conservative **2%** growth rate has been adopted for this assessment which is considered the industry standard and is deemed appropriate for the site.

6 Traffic Generation

In order to determine the existing traffic demand of the proposed development, reference has been made to the Institute of Transportation Engineers 10th Edition (ITE) Common Trip Generation Rates (CTGR) and RTA GTGD August 2013 updated version.

Table 6-1 summarises the adopted trip generation rates for the land uses.

Table 6-1 Adopted Generation Rates

Land Use	Yield	Trip Generation Rates		Trip Generation		Source
		AM	PM	AM	PM	
Service Station + Shop	270 sq.m	66vph/100sq.m	66vph/100sq.m	178 vph	178 vph	RTA
Automated Car Wash	63 sq.m	15.28 trips per 100 sq.m	15.28 trips per 100 sq.m	10 vph	10 vph	ITE
Proposed Total				188 vph	188 vph	

6.1 Trip Type

As the proposed development is located within a well-developed area, it is expected that not all trips generated by the development will be new trips

TMR's Preconstruction Processes Manual (PPM) provides guidance on the different trip types and their impact on the development. It is acknowledged that while this document has now been withdrawn, the theory outlined within the manual is still relevant, particularly with regards to providing an indication of trip distribution patterns for different land uses. Due to the type of development, not all trips generated by the site will be new.

New trips are those that would not have appeared on the road network had the development not opened. Therefore, they are purely traffic generated by the development. Drop-in trips are linked trips which would have appeared in the local network, irrespective of whether the development exists. Table 5-2 outlines the TMR PPM or ITE CTGR proportion of drop-in trips for the proposed land uses.

Table 6-2 Proportion of Drop-in Trips

Land use	Trip Type	Proportion of Trips		Source
		AM	PM	
Service Station + Shop	New Trip	30%	30%	TMR PPM
	Drop-In Trip	70%	70%	
Automated Car Wash	New Trip	40%	40%	ITE CTGR
	Drop-In Trip	60%	60%	

Therefore, a drop-in rate of 70% has been adopted for the Service Station and 60% drop-ins for the car was as this is the proportion of trips which are only being taken for one purpose, which is most likely to be done as part of an existing trip. As the site is located along a VicRoads Arterial Road, the

development is expected to provide a higher drop-in rate and the adopted drop-in rates are considered conservative

6.2 Cross-utilisation

Cross-utilisation trips occur as a result of users travelling between land uses within the same precinct, conducting visits to several land uses during the same trip. As the proposed development is situated will have complementary land uses which are commonly visited within the same trip, it is reasonable to assume a lot of trips to the proposed development will visit more than one of the proposed land uses.

Table 6-3 summarises the proportions of cross-utilisation adopted for the proposed land uses

Table 6-3 Trip Proportions by Type

Land Use	Shared Trip
Service Station + Shop	30%
Automated Car Wash	0%

6.3 External Trip Distribution

Vehicle trip distribution on the external road network has been adopted based on the travel patterns recorded from the traffic surveys conducted of traffic along The Esplanade from the Esplanade / Bulmer Street intersection. The calculated directional splits have been adopted as follows:

- ▶ Westbound: 48% of vehicle trips enter the site from The Esplanade east
- ▶ Eastbound: 52% of vehicle trips enter the site from The Esplanade west

6.4 Internal Trip Distribution

Table 6-4 and Table 6-5 shows the peak hour traffic directional distribution and the resulting directional trips for the proposed development.

Table 6-4 Directional Distribution

Land Use	AM Peak		PM Peak	
	IN	OUT	IN	OUT
Service Station + Shop	50%	50%	50%	50%
Automated Car Wash	50%	50%	50%	50%

Table 6-5 Directional Trips

Land Use	AM Peak		PM Peak	
	IN	OUT	IN	OUT
Service Station + Shop	18.7 vph	18.7 vph	18.7 vph	18.7 vph
Automated Car Wash	1.5 vph	1.5 vph	1.5 vph	1.5 vph
TOTAL PEAK TRAFFIC	41 vph		41 vph	

As indicated in Table 6-5, the proposed development is anticipated to generate in the order of 41 vph in both the AM and PM peak periods.

7 Traffic Assessment Criteria

7.1 Assessment Scenarios

To determine the impact of proposed development on the existing road network, each intersection has been analysed for the AM and PM peak periods, assessing the proposed yields detailed in Table 7-1.

Full SIDRA Results and layouts are provided in **Appendix D**.

Modus have undertaken a conservative approach in assessing the impact of the study intersections. The 10-year design horizon has been assessed for both site intersections and external intersections. The adopted year of opening is 2024.

Table 7-1 summarises the impact assessment scenarios.

Table 7-1 Assessment Scenarios

Impact Assessment Scenario	Study Intersections
2024 BG (Year of opening)	All
2034 BG (10 years after opening)	All
2024 BG + Dev (Year of opening)	All
2034 BG + Dev (10 years after opening)	All

Note: BG = **B**ackground, Dev = **D**evelopment Traffic

7.2 Assessment Criteria

7.2.1 Intersection Degree of Saturation

The performance of each study intersection has been analysed using SIDRA Intersection 9.0 (SIDRA). SIDRA is the primary industry modelling software that estimates the capacity and performance of intersections. SIDRA analyses an intersection's Degree of Saturation (DOS), queues and delays. DOS is a measure of the proportion of traffic entering an intersection relative to the intersection's capacity. Table 7-2 provides the DOS thresholds defined by TMR.

Table 7-2 Adopted Intersection Performance Threshold – Degree of Saturation

Intersection Treatment	DOS Threshold
Priority-controlled Intersections	Less than or equal to 0.80

Source: TMR Guidelines for Assessment of Road Impacts Development

If DOS exceeds the values in Table 7-2 it indicates the intersection is nearing its practical capacity and upgrade works may be required. Above these threshold values, users of the intersection are likely to experience increasing delays and queueing.

7.2.2 Intersection Delay

The TMR *Guide to Traffic Impact Assessments* (GTIA) recognises the intersection delay as a greater indicator of intersection performance in comparison to the previous TMR *Guidelines for Assessment of Road Impacts of Development* (GARID) significance on the degree of saturation (DOS).

For priority-controlled intersections and roundabouts, where the average peak hour delays for any movement exceeds 42 seconds, as outlined in the GTIA, the intersection should be upgraded for safety reasons. For signalised intersections, given the delay is dependent on the cycle length and phasing arrangement, the DOS is still considered.

7.2.3 95th Percentile Queuing

The 95th percentile queue relates to the queue length which 95% of all observed queue lengths during the assessment hour fall under, or in other terms, the length which 5% of all observed queues exceed. This provides an indication of the maximum queue length which should be designed for such that upstream lanes are not adversely impacted.

7.3 Intersection 1: The Esplanade / Bulmer Street

The Esplanade / Bulmer Street intersection is a priority-controlled intersection as shown in Figure 7-1. Results from the SIDRA analysis are summarised in Table 7-3 and Table 7-4.

Figure 7-1 The Esplanade / Bulmer Street intersection - SIDRA Layout

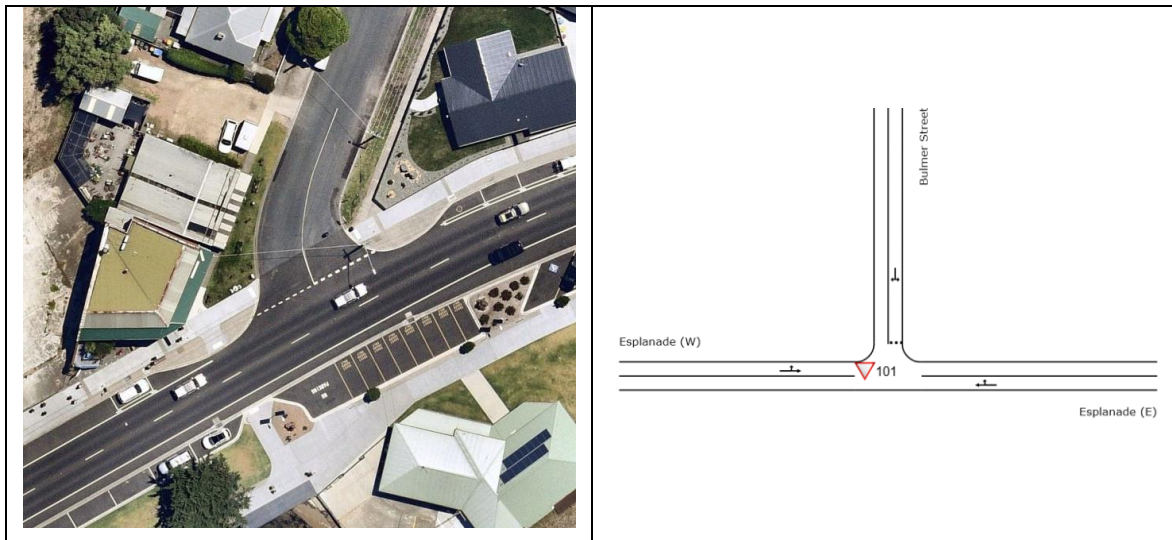


Table 7-3 The Esplanade / Bulmer Street intersection - SIDRA Analysis Summary (Saturday)

Scenario	DOS	Critical Delay	95th %ile Queue	Critical Movement
2024 BG	0.179	8.1 sec	0.7m	Northern right
2024 BG + Dev	0.196	8.5 sec	0.9m	Northern right
2034 BG	0.219	9.1 sec	1.0m	Northern right
2034 BG + Dev	0.235	9.6 sec	1.1m	Northern right

Table 7-4 The Esplanade / Bulmer Street intersection - SIDRA Analysis Summary (Thursday)

Scenario	DOS	Critical Delay	95th %ile Queue	Critical Movement
2024 BG	0.235	8.9 sec	0.8m	Northern right
2024 BG + Dev	0.253	9.5 sec	0.9m	Northern right
2034 BG	0.286	10.4 sec	1.1m	Northern right
2034 BG + Dev	0.305	11.1 sec	1.3m	Northern right

The results presented in Table 7-3 and Table 7-4 above suggest that the intersection is within acceptable performance thresholds for a priority controlled intersection (i.e. DOS less than 0.8) in all assessment scenarios.

7.4 Intersection 2: The Esplanade / Western Site Access

The Esplanade / Western Site Access intersection is a three-way priority-controlled intersection as shown in Figure 7-2. Results from the SIDRA analysis is summarised in Table 7-5 and Table 7-6.

Figure 7-2 The Esplanade / Western Site Access intersection - SIDRA Layout

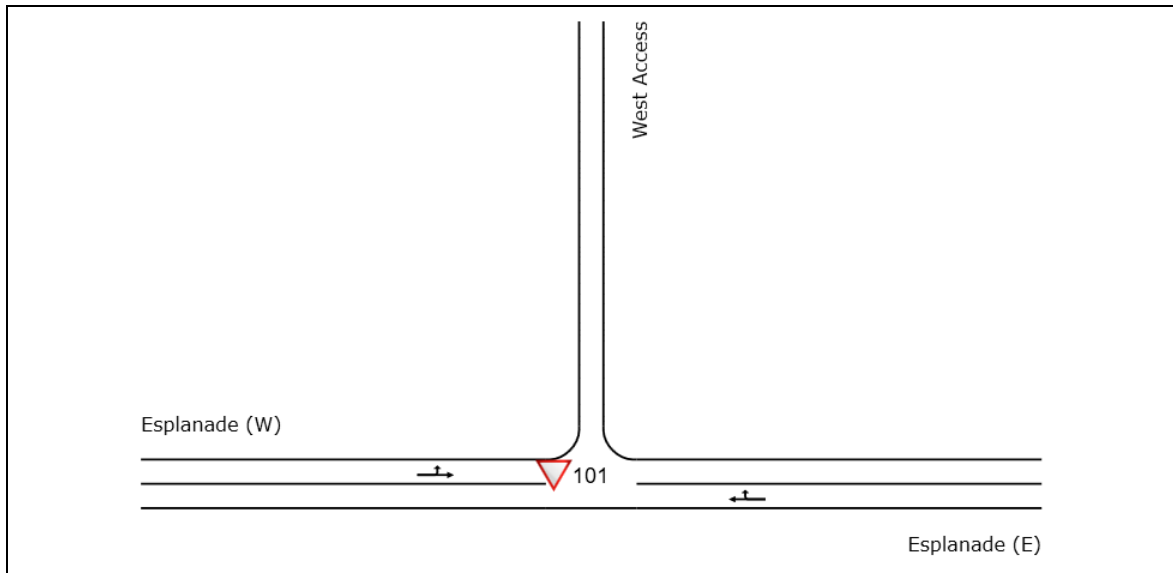


Table 7-5 The Esplanade / Western Site Access intersection - SIDRA Analysis Summary (Saturday)

Scenario	DOS	Critical Delay	95th %ile Queue	Critical Movement
2024 BG + Dev	0.214	6.5 sec	2.3m	Eastern right
2034 BG + Dev	0.256	7.1 sec	2.6m	Eastern right

Table 7-6 The Esplanade / Western Site Access intersection - SIDRA Analysis Summary (Thursday)

Scenario	DOS	Critical Delay	95th %ile Queue	Critical Movement
2024 BG + Dev	0.254	7.3 sec	2.6m	Eastern right
2034 BG + Dev	0.306	8.2 sec	3.1m	Eastern right

The results presented in Table 7-5 and Table 7-6 above suggest that the intersection is within acceptable performance thresholds for a priority controlled intersection (i.e. DOS less than 0.8) in all assessment scenarios.

7.5 Intersection 3: The Esplanade / Eastern Site Access

The Esplanade / Eastern Site Access intersection is a three-way priority-controlled intersection as shown in Figure 7-3. Results from the SIDRA analysis is summarised in Table 7-7 and Table 7-8.

Figure 7-3 The Esplanade / Eastern Site Access intersection - SIDRA Layout

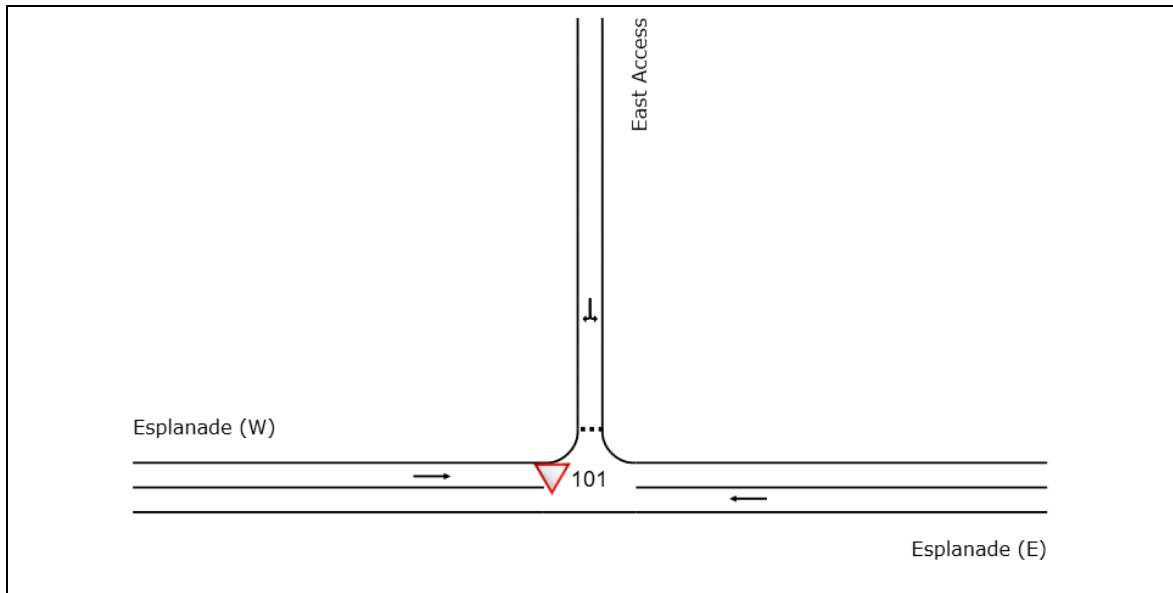


Table 7-7 The Esplanade / Eastern Site Access intersection - SIDRA Analysis Summary (Saturday)

Scenario	DOS	Critical Delay	95th %ile Queue	Critical Movement
2024 BG + Dev	0.200	6.3 sec	2.1m	Northern right
2034 BG + Dev	0.240	7.5 sec	2.3m	Northern right

Table 7-8 The Esplanade / Eastern Site Access intersection - SIDRA Analysis Summary (Thursday)

Scenario	DOS	Critical Delay	95th %ile Queue	Critical Movement
2024 BG + Dev	0.234	7.1 sec	2.3m	Northern right
2034 BG + Dev	0.286	8.7 sec	2.6m	Northern right

The results presented in Table 7-7 and Table 7-8 above suggest that the intersection is within acceptable performance thresholds for a priority controlled intersection (i.e. DOS less than 0.8) in all assessment scenarios.

8 Conclusions and Recommendations

Modus has been commissioned by PC Infrastructure Pty Ltd to provide traffic engineering advice in relation to a proposed service station precinct located at 413 Esplanade, Lakes Entrance. Modus has the following findings:

Existing Conditions

- ▶ The development site is situated within an established transport network.
 - All surrounding verges are equipped with high-quality pedestrian and cyclist shared paths which provide safe and comfortable connection to the surrounding bus stops

Proposed Development

- ▶ The development proposes to construct a service station with attached convenience store/café and a separate automatic drive-through car wash.

Access

- ▶ The existing access locations will be slightly shifted and widened to allow comfortable and safe access by the largest design vehicle.
- ▶ The adequacy of each crossover location has been assessed through a swept path assessment, attached at **Appendix B**.

Parking Design and Provision

- ▶ The proposed parking design layout complies with relevant Australian Standards.
- ▶ The development provides 10 parking spaces (including one PWD space) and 1 EV parking space. This proposed provision meets the Council requirements and expected demand.

Commercial and Refuse Servicing

- ▶ Servicing vehicles (Tanker, RCV, MRV and SRV) will access ingress/egress the site using the same arrangements.
- ▶ The Tanker will park at the designated fuel fill point, this bay does not block the traffic lane and allows comfortable vehicle passing.
- ▶ Refuse collection vehicles will utilise the dedicated collection area and is expected to service the development outside of trading hours.
- ▶ Swept paths confirming the adequacy of the largest service vehicle movements are shown on **Appendix B**.

Traffic Generation

- ▶ Traffic volumes were sourced Trans Traffic Survey for the intersection of The Esplanade / Bulmer Street
- ▶ SIDRA analysis was conducted to assess the impact of the development on the external road network for the year of opening in 2024 and 2034 design horizon. All assessed intersections are within acceptable performance thresholds and no mitigation works are required.

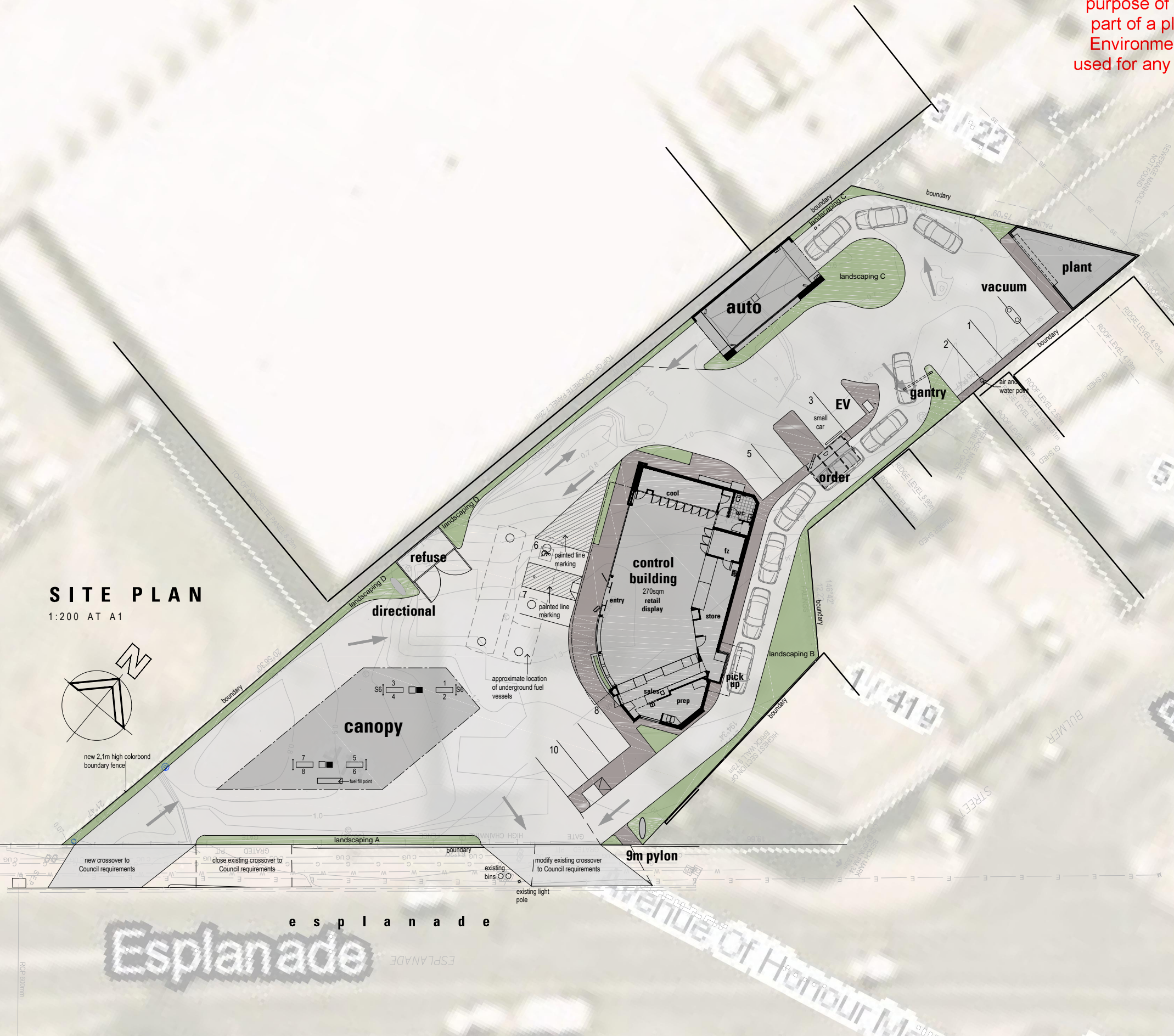
Based on our review, the proposed development is compliant with relevant codes and standards.

APPENDIX A

DEVELOPMENT PLANS

SITE PLAN

1:200 AT A1



NEW SERVICE STATION COMPLEX

413 ESPLANADE LAKES ENTRANCE VIC

PLANNING

16.03.23
22JN1505 sk01a

Printed 16/11/2023
Page 74 of 119

ADS Architects

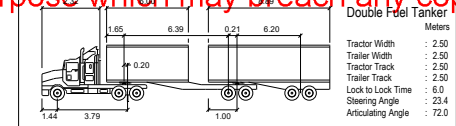
93 Gilles Street Adelaide 5000 T:82232244

APPENDIX B

SWEPT PATH ASSESSMENT

This copied document is made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright.

VEHICLE USED IN SIMULATION



SWEPT PATH LEGEND

- VEHICLE BODY
- FRONT TIRES
- VEHICLE PATH
- VEHICLE CLEARANCE (500mm)
- VEHICLE



PROJECT

413 ESPLANADE, LAKES ENTRANCE

CLIENT

PC INFRASTRUCTURE PTY LTD

DRAWING TITLE

DOUBLE TANKER INGRESS/EGRESS

DRAWING NUMBER

SK01

DATE

20 APR 2023

REVISION

B

REV	DRAWN BY	APPROVED	DATE	AMENDMENT DETAILS
A	C.S	T.A	18/01/23	DESIGN REVIEW
A	C.S	T.A	20/04/23	DESIGN REVIEW

MODUS

Transport and Traffic Engineering

Printed 16/11/2023

Page 76 of 119

ABN 84 102 758 061
310 Edward Street, Melbourne VIC 3000
T: 1300 606 408 E: marketing@moduseng.com.au
W: www.modusengineering.com.au



PRELIMINARY ADVICE ONLY

NOT TO BE USED FOR CONSTRUCTION

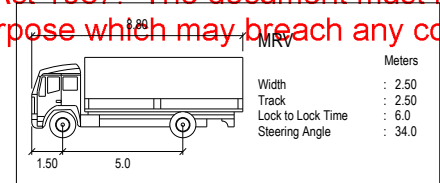
MODUS ENGINEERING ALL RIGHTS RESERVED. THIS DOCUMENT IS PRODUCED BY MODUS ENGINEERING SOLELY FOR THE BENEFIT OF AND USE BY THE CLIENT IN ACCORDANCE WITH THE TERMS OF THE RETAINER. MODUS ENGINEERING DOES NOT AND SHALL NOT ASSUME ANY RESPONSIBILITY OR LIABILITY WHATSOEVER TO ANY THIRD PARTY ARISING OUT OF ANY USE OR RELIANCE BY THIRD PARTY ON THE CONTENT OF THIS DOCUMENT.

GENERAL NOTES:

- 1.PRELIMINARY DESIGN ISSUED FOR COMMENT ONLY.
- 2.ALL DIMENSIONS ARE PROVIDED IN METERS UNLESS NOTED OTHERWISE.

This copied document is made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright.

VEHICLE USED IN SIMULATION



SWEPT PATH LEGEND

- VEHICLE BODY
- FRONT TIRES
- VEHICLE PATH
- VEHICLE CLEARANCE (500mm)
- VEHICLE



PROJECT

413 ESPLANADE, LAKES ENTRANCE

CLIENT

PC INFRASTRUCTURE PTY LTD

DRAWING TITLE

REFUSE COLLECTION
VEHICLE INGRESS/EGRESS

DRAWING NUMBER

SK02

DATE

20 APR 2023

REVISION

B

REV	DRAWN BY	APPROVED	DATE	AMENDMENT DETAILS
A	C.S	T.A	18/01/23	DESIGN REVIEW
B	C.S	T.A	20/04/23	DESIGN REVIEW

MODUS

Transport and Traffic Engineering

Printed 16/11/2023

Page 77 of 119

ABN 84 102 758 061
310 Edwards Road, Lakes Entrance VIC 3659
T: 1300 606 408 E: marketing@moduseng.com.au
W: www.modusengineering.com.au



PRELIMINARY ADVICE ONLY
NOT TO BE USED FOR CONSTRUCTION

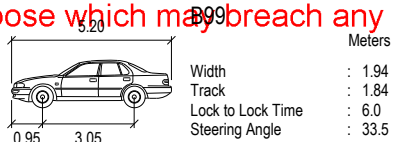
MODUS ENGINEERING ALL RIGHTS RESERVED. THIS DOCUMENT IS PRODUCED BY MODUS ENGINEERING SOLELY FOR THE BENEFIT OF AND USE BY THE CLIENT IN ACCORDANCE WITH THE TERMS OF THE RETAINER. MODUS ENGINEERING DOES NOT AND SHALL NOT ASSUME ANY RESPONSIBILITY OR LIABILITY WHATSOEVER TO ANY THIRD PARTY ARISING OUT OF ANY USE OR RELIANCE BY THIRD PARTY ON THE CONTENT OF THIS DOCUMENT.

GENERAL NOTES:

- PRELIMINARY DESIGN ISSUED FOR COMMENT ONLY.
- ALL DIMENSIONS ARE PROVIDED IN METERS UNLESS NOTED OTHERWISE.

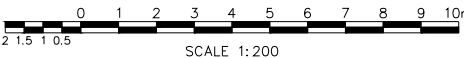
This copied document is made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright.

VEHICLE USED IN SIMULATION



SWEPT PATH LEGEND

- VEHICLE BODY
- FRONT TIRES
- VEHICLE PATH
- VEHICLE CLEARANCE (300mm)
- VEHICLE



413 ESPLANADE, LAKES ENTRANCE

CLIENT

PC INFRASTRUCTURE PTY LTD

DRAWING TITLE

LEFT: DRIVE-THROUGH
RIGHT: CAR WASH

DRAWING NUMBER

SK03

DATE

20 APR 2023

REVISION

B

REV	DRAWN BY	APPROVED	DATE	AMENDMENT DETAILS
A	C.S	T.A	18/01/23	DESIGN REVIEW
B	C.S	T.A	20/04/23	DESIGN REVIEW

MODUS

Transport and Traffic Engineering

Printed 16/11/2023

Page 78 of 119

ABN 84 102 758 061
310 Edwards Road, Warragul VIC 3100
T: 1300 606 408 E: marketing@moduseng.com.au
W: www.modusengineering.com.au



PRELIMINARY ADVICE ONLY

NOT TO BE USED FOR CONSTRUCTION

MODUS ENGINEERING ALL RIGHTS RESERVED. THIS DOCUMENT IS PRODUCED BY MODUS ENGINEERING SOLELY FOR THE BENEFIT OF AND USE BY THE CLIENT IN ACCORDANCE WITH THE TERMS OF THE RETAINER. MODUS ENGINEERING DOES NOT AND SHALL NOT ASSUME ANY RESPONSIBILITY OR LIABILITY WHATSOEVER TO ANY THIRD PARTY ARISING OUT OF ANY USE OR RELIANCE BY THIRD PARTY ON THE CONTENT OF THIS DOCUMENT.

GENERAL NOTES:

- 1.PRELIMINARY DESIGN ISSUED FOR COMMENT ONLY.
- 2.ALL DIMENSIONS ARE PROVIDED IN METERS UNLESS NOTED OTHERWISE.

APPENDIX C

TRAFFIC COUNTS

This copied document is made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright.

TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY

trafficsurvey.com.au


Intersection of Esplanade and Bulmer St, Lakes Entrance

GPS -37.880502, 147.988350

Date:	Wed 18/01/23
Weather:	Overcast
Suburban:	Lakes Entrance
Customer:	MODUS

North:	Bulmer St
East:	Esplanade
South:	N/A
West:	Esplanade

Survey Period	AM: 7:00 AM-10:00 AM
	PM: 3:00 PM-6:00 PM
Traffic Peak	AM: 9:00 AM-10:00 AM
	PM: 3:00 PM-4:00 PM

All Vehicles

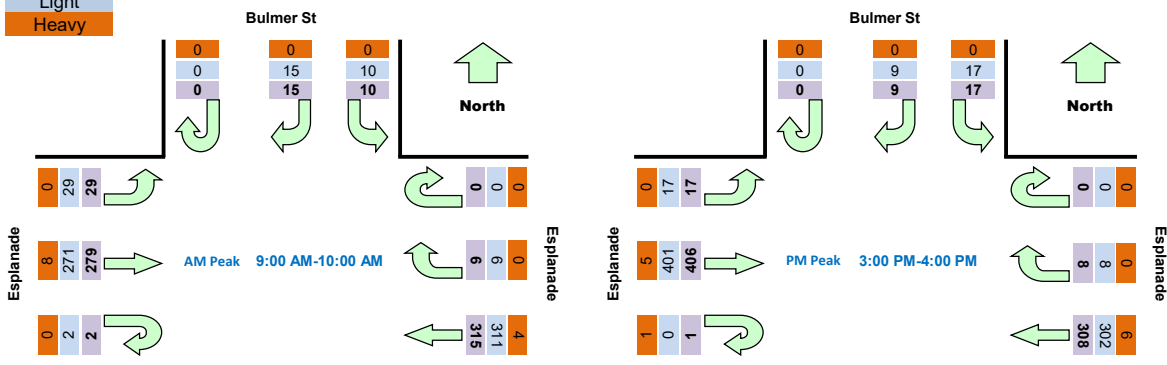
Time		North Approach Bulmer St			East Approach Esplanade			West Approach Esplanade			Hourly Total	
Period Start	Period End	U	R	L	U	R	WB	U	EB	L	Hour	Peak
7:00	7:15	0	3	0	0	0	30	0	28	0	327	
7:15	7:30	0	0	0	0	0	40	0	35	2	370	
7:30	7:45	0	1	2	0	0	36	0	49	0	379	
7:45	8:00	0	0	1	0	0	59	0	41	0	423	
8:00	8:15	0	1	1	0	0	47	0	52	3	460	
8:15	8:30	0	1	0	0	0	44	0	39	2	484	
8:30	8:45	0	0	0	0	2	55	0	70	5	563	
8:45	9:00	0	1	3	2	2	70	0	58	2	600	
9:00	9:15	0	2	3	0	2	60	0	57	4	656	Peak
9:15	9:30	0	1	0	0	2	86	0	68	8		
9:30	9:45	0	5	1	0	2	77	1	77	6		
9:45	10:00	0	7	6	0	0	92	1	77	11		
15:00	15:15	0	2	6	0	2	80	0	94	7	766	Peak
15:15	15:30	0	3	6	0	2	75	1	111	4	758	
15:30	15:45	0	2	2	0	3	85	0	96	4	724	
15:45	16:00	0	2	3	0	1	68	0	105	2	707	
16:00	16:15	0	0	6	1	1	72	0	98	5	682	
16:15	16:30	0	2	3	0	2	58	1	94	8	655	
16:30	16:45	0	2	1	0	1	66	0	102	3	634	
16:45	17:00	0	1	3	0	1	59	0	87	5	620	
17:00	17:15	0	0	8	0	4	60	0	82	2	608	
17:15	17:30	0	0	5	0	4	52	1	84	1		
17:30	17:45	0	1	5	2	7	44	0	95	7		
17:45	18:00	0	5	7	1	11	57	0	58	5		

Peak Time		North Approach Bulmer St			East Approach Esplanade			West Approach Esplanade			Peak total
Period Start	Period End	U	R	L	U	R	WB	U	EB	L	
9:00	10:00	0	15	10	0	6	315	2	279	29	656
15:00	16:00	0	9	17	0	8	308	1	406	17	766

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic

Total
Light
Heavy



APPENDIX D

SIDRA RESULTS

SITE LAYOUT

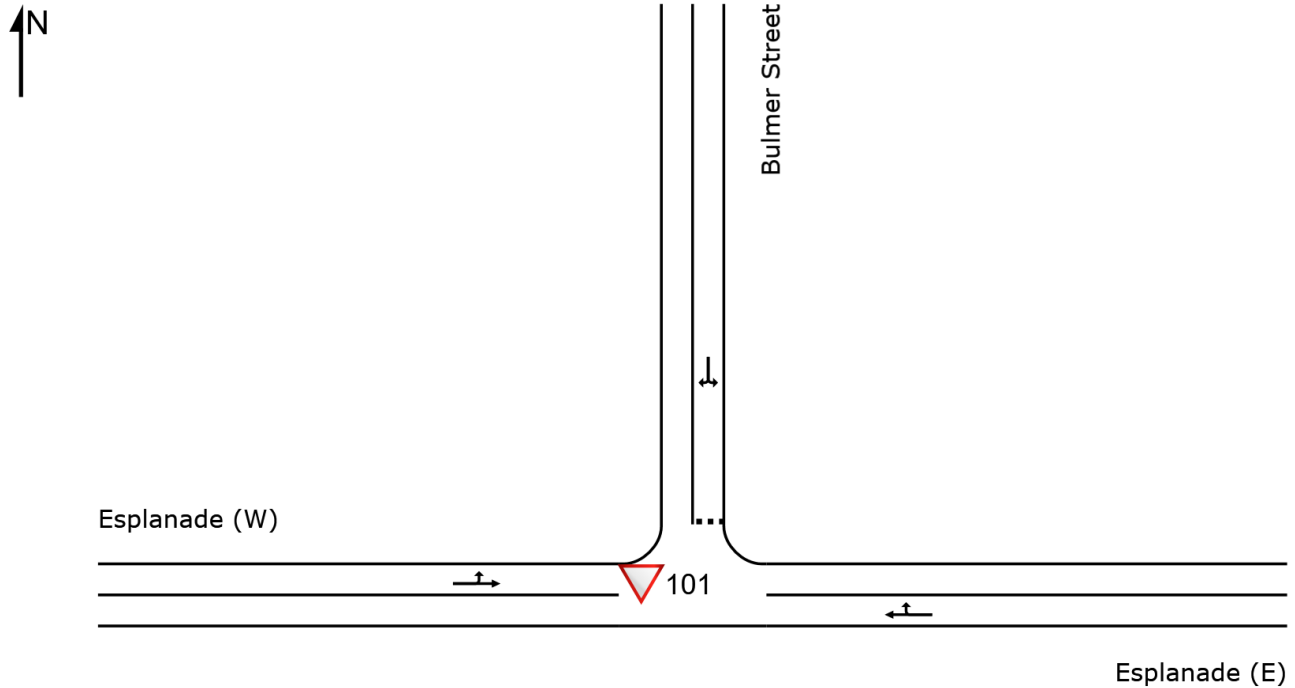
▽ Site: 101 [2024 BG AM - Esplanade / Bulmer (Site Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

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



SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: ALTUS TRAFFIC | Licence: NETWORK / 1PC | Created: Monday, 6 February 2023 4:43:49 PM

Project: C:\Users\casey.schackow.ALTUS\Altus Traffic Pty Ltd\Engineering - Documents\General\Projects 2022-2023\NAT\ALT221322NAT - Peregrine\413 ESPLANADE-Lakes Entrance-VIC\Project Analysis\413 ESPLANADE-Lakes Entrance-VIC.sip9

MOVEMENT SUMMARY

Site: 101 [2024 BG AM - Esplanade / Bulmer (Site Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
v/csec														
East: Esplanade (E)														
5	T1	321	1.0	338	1.0	0.179	0.0	LOSA	0.1	0.4	0.02	0.01	0.02	59.6
6	R2	6	1.0	6	1.0	0.179	6.9	LOSA	0.1	0.4	0.02	0.01	0.02	53.9
Approach		327	1.0	344	1.0	0.179	0.2	NA	0.1	0.4	0.02	0.01	0.02	59.6
North: Bulmer Street														
7	L2	10	0.0	11	0.0	0.030	6.5	LOSA	0.1	0.7	0.40	0.64	0.40	43.2
9	R2	15	0.0	16	0.0	0.030	8.1	LOSA	0.1	0.7	0.40	0.64	0.40	44.8
Approach		25	0.0	26	0.0	0.030	7.5	LOSA	0.1	0.7	0.40	0.64	0.40	44.2
West: Esplanade (W)														
10	L2	30	0.0	32	0.0	0.174	5.6	LOSA	0.0	0.0	0.00	0.06	0.00	55.6
11	T1	285	3.0	300	3.0	0.174	0.0	LOSA	0.0	0.0	0.00	0.06	0.00	58.9
Approach		315	2.7	332	2.7	0.174	0.6	NA	0.0	0.0	0.00	0.06	0.00	58.6
All Vehicles		667	1.8	702	1.8	0.179	0.6	NA	0.1	0.7	0.02	0.06	0.02	58.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: ALTUS TRAFFIC | Licence: NETWORK / 1PC | Processed: Monday, 6 February 2023 4:27:20 PM

Project: C:\Users\casey.schackow.ALTUS\Altus Traffic Pty Ltd\Engineering - Documents\General\Projects 2022-2023\NAT\ALT221322NAT - Peregrine\413 ESPLANADE-Lakes Entrance-VIC\Project Analysis\413 ESPLANADE-Lakes Entrance-VIC.sip9

MOVEMENT SUMMARY

Site: 101 [2024 BG PM - Esplanade / Bulmer (Site Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	[HV %]	[Total veh/h]	[HV %]	v/c	sec		[Veh. veh]	[Dist m]				km/h
East: Esplanade (E)														
5	T1	314	2.0	331	2.0	0.179	0.1	LOS A	0.1	0.6	0.03	0.02	0.03	59.5
6	R2	8	0.0	8	0.0	0.179	7.5	LOS A	0.1	0.6	0.03	0.02	0.03	53.9
Approach		322	2.0	339	2.0	0.179	0.3	NA	0.1	0.6	0.03	0.02	0.03	59.4
North: Bulmer Street														
7	L2	17	0.0	18	0.0	0.031	7.1	LOS A	0.1	0.8	0.46	0.65	0.46	42.9
9	R2	9	0.0	9	0.0	0.031	8.9	LOS A	0.1	0.8	0.46	0.65	0.46	44.5
Approach		26	0.0	27	0.0	0.031	7.7	LOS A	0.1	0.8	0.46	0.65	0.46	43.5
West: Esplanade (W)														
10	L2	17	0.0	18	0.0	0.235	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	56.2
11	T1	414	1.0	436	1.0	0.235	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.5
Approach		431	1.0	454	1.0	0.235	0.3	NA	0.0	0.0	0.00	0.02	0.00	59.3
All Vehicles		779	1.3	820	1.3	0.235	0.5	NA	0.1	0.8	0.03	0.04	0.03	58.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: ALTUS TRAFFIC | Licence: NETWORK / 1PC | Processed: Monday, 6 February 2023 4:27:21 PM

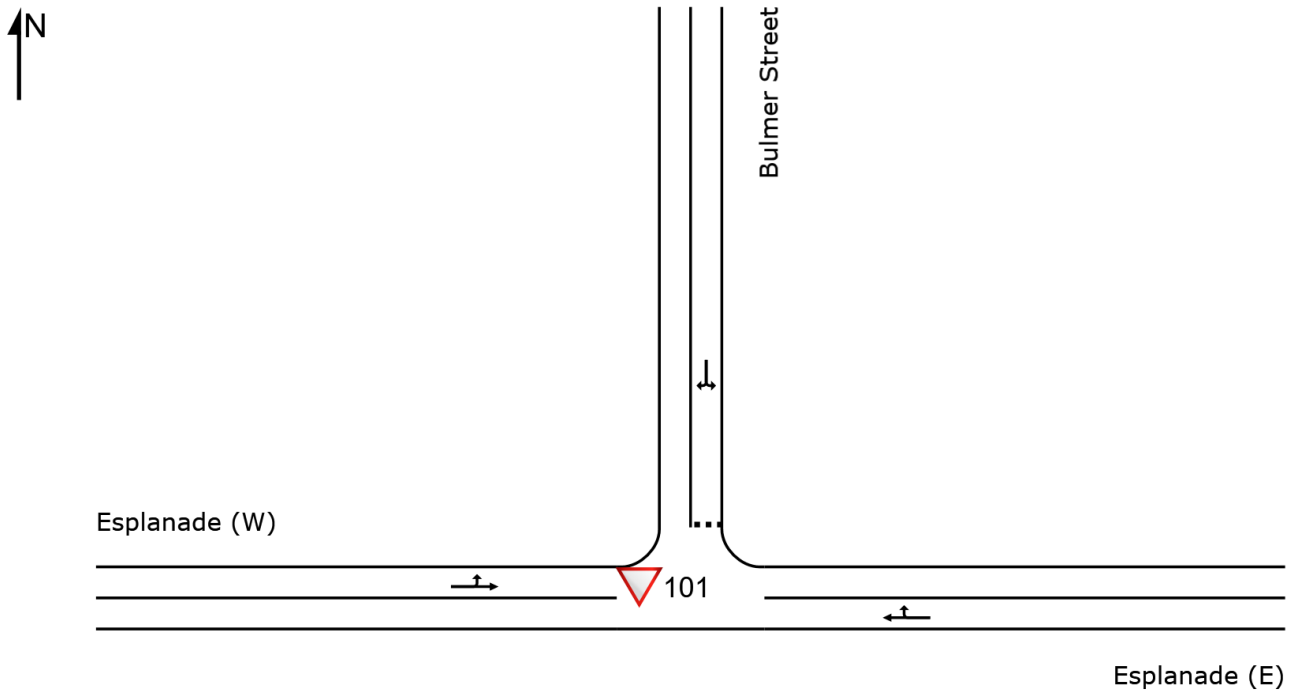
Project: C:\Users\casey.schackow\ALTUS\Altus Traffic Pty Ltd\Engineering - Documents\General\Projects 2022-2023\NAT\ALT221322NAT - Peregrine\413 ESPLANADE-Lakes Entrance-VIC\Project Analysis\413 ESPLANADE-Lakes Entrance-VIC.sip9

SITE LAYOUT

▽ Site: 101 [2024 BG AM + DEV - Esplanade / Bulmer (Site Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

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



SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: ALTUS TRAFFIC | Licence: NETWORK / 1PC | Created: Monday, 6 February 2023 4:43:49 PM

Project: C:\Users\casey.schackow.ALTUS\Altus Traffic Pty Ltd\Engineering - Documents\General\Projects 2022-2023\NAT\ALT221322NAT - Peregrine\413 ESPLANADE-Lakes Entrance-VIC\Project Analysis\413 ESPLANADE-Lakes Entrance-VIC.sip9

MOVEMENT SUMMARY

Site: 101 [2024 BG AM + DEV - Esplanade / Bulmer (Site Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total HV] veh/h %		DEMAND FLOWS [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. Dist] veh m		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Esplanade (E)														
5	T1	351	1.0	369	1.0	0.196	0.0	LOSA	0.1	0.5	0.02	0.01	0.02	59.7
6	R2	6	1.0	6	1.0	0.196	7.1	LOSA	0.1	0.5	0.02	0.01	0.02	53.9
Approach		357	1.0	376	1.0	0.196	0.2	NA	0.1	0.5	0.02	0.01	0.02	59.6
North: Bulmer Street														
7	L2	10	0.0	11	0.0	0.035	6.7	LOSA	0.1	0.9	0.43	0.66	0.43	42.7
9	R2	17	0.0	18	0.0	0.035	8.5	LOSA	0.1	0.9	0.43	0.66	0.43	44.4
Approach		27	0.0	28	0.0	0.035	7.8	LOSA	0.1	0.9	0.43	0.66	0.43	43.8
West: Esplanade (W)														
10	L2	32	0.0	34	0.0	0.192	5.6	LOSA	0.0	0.0	0.00	0.05	0.00	55.6
11	T1	316	3.0	333	3.0	0.192	0.0	LOSA	0.0	0.0	0.00	0.05	0.00	58.9
Approach		348	2.7	366	2.7	0.192	0.5	NA	0.0	0.0	0.00	0.05	0.00	58.6
All Vehicles		732	1.8	771	1.8	0.196	0.6	NA	0.1	0.9	0.03	0.06	0.03	58.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: ALTUS TRAFFIC | Licence: NETWORK / 1PC | Processed: Monday, 6 February 2023 4:32:41 PM

Project: C:\Users\casey.schackow.ALTUS\Altus Traffic Pty Ltd\Engineering - Documents\General\Projects 2022-2023\NAT\ALT221322NAT - Peregrine\413 ESPLANADE-Lakes Entrance-VIC\Project Analysis\413 ESPLANADE-Lakes Entrance-VIC.sip9

MOVEMENT SUMMARY

Site: 101 [2024 BG PM + DEV - Esplanade / Bulmer (Site Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total HV] veh/h %		DEMAND FLOWS [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. Dist] veh m		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Esplanade (E)														
5	T1	344	2.0	362	2.0	0.196	0.1	LOSA	0.1	0.7	0.03	0.01	0.03	59.5
6	R2	8	0.0	8	0.0	0.196	7.8	LOSA	0.1	0.7	0.03	0.01	0.03	53.9
Approach		352	2.0	371	2.0	0.196	0.3	NA	0.1	0.7	0.03	0.01	0.03	59.4
North: Bulmer Street														
7	L2	17	0.0	18	0.0	0.036	7.3	LOSA	0.1	0.9	0.48	0.67	0.48	42.4
9	R2	11	0.0	12	0.0	0.036	9.5	LOSA	0.1	0.9	0.48	0.67	0.48	44.1
Approach		28	0.0	29	0.0	0.036	8.1	LOSA	0.1	0.9	0.48	0.67	0.48	43.1
West: Esplanade (W)														
10	L2	20	0.0	21	0.0	0.254	5.6	LOSA	0.0	0.0	0.00	0.03	0.00	56.1
11	T1	446	1.0	469	1.0	0.254	0.0	LOSA	0.0	0.0	0.00	0.03	0.00	59.4
Approach		466	1.0	491	1.0	0.254	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.3
All Vehicles		846	1.3	891	1.3	0.254	0.5	NA	0.1	0.9	0.03	0.04	0.03	58.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: ALTUS TRAFFIC | Licence: NETWORK / 1PC | Processed: Monday, 6 February 2023 4:32:42 PM

Project: C:\Users\casey.schackow.ALTUS\Altus Traffic Pty Ltd\Engineering - Documents\General\Projects 2022-2023\NAT\ALT221322NAT - Peregrine\413 ESPLANADE-Lakes Entrance-VIC\Project Analysis\413 ESPLANADE-Lakes Entrance-VIC.sip9

SITE LAYOUT

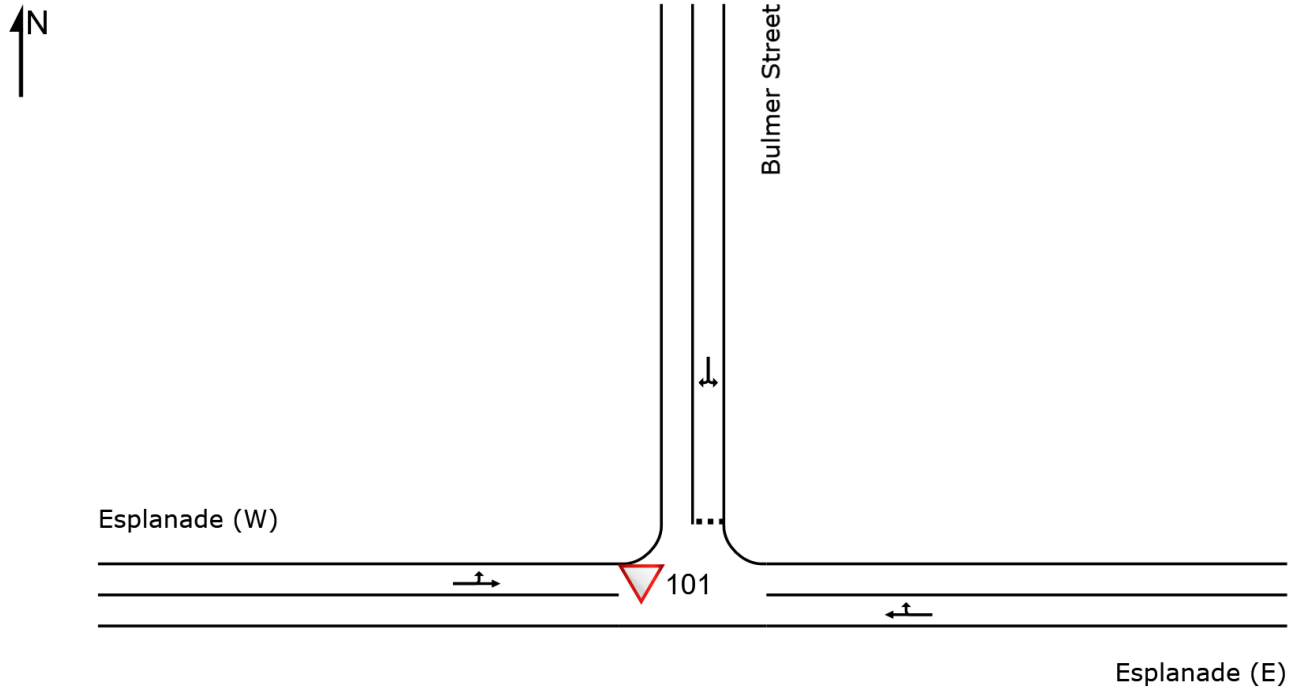
▽ Site: 101 [2034 BG PM - Esplanade / Bulmer (Site Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

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



SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: ALTUS TRAFFIC | Licence: NETWORK / 1PC | Created: Tuesday, 7 February 2023 8:37:49 AM

Project: C:\Users\casey.schackow.ALTUS\Altus Traffic Pty Ltd\Engineering - Documents\General\Projects 2022-2023\NAT\ALT221322NAT - Peregrine\413 ESPLANADE-Lakes Entrance-VIC\Project Analysis\413 ESPLANADE-Lakes Entrance-VIC.sip9

MOVEMENT SUMMARY

Site: 101 [2034 BG AM - Esplanade / Bulmer (Site Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	[HV %]	[Total veh/h]	[HV %]	v/c	sec		[Veh. veh]	[Dist m]				km/h
East: Esplanade (E)														
5	T1	392	1.0	413	1.0	0.219	0.1	LOS A	0.1	0.6	0.02	0.01	0.02	59.6
6	R2	7	1.0	7	1.0	0.219	7.4	LOS A	0.1	0.6	0.02	0.01	0.02	53.8
Approach		399	1.0	420	1.0	0.219	0.2	NA	0.1	0.6	0.02	0.01	0.02	59.5
North: Bulmer Street														
7	L2	12	0.0	13	0.0	0.042	6.8	LOS A	0.1	1.0	0.46	0.68	0.46	42.2
9	R2	19	0.0	20	0.0	0.042	9.1	LOS A	0.1	1.0	0.46	0.68	0.46	43.9
Approach		31	0.0	33	0.0	0.042	8.2	LOS A	0.1	1.0	0.46	0.68	0.46	43.3
West: Esplanade (W)														
10	L2	36	0.0	38	0.0	0.211	5.6	LOS A	0.0	0.0	0.00	0.06	0.00	55.6
11	T1	347	3.0	365	3.0	0.211	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	58.9
Approach		383	2.7	403	2.7	0.211	0.6	NA	0.0	0.0	0.00	0.06	0.00	58.6
All Vehicles		813	1.8	856	1.8	0.219	0.7	NA	0.1	1.0	0.03	0.06	0.03	58.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: ALTUS TRAFFIC | Licence: NETWORK / 1PC | Processed: Monday, 6 February 2023 4:27:22 PM

Project: C:\Users\casey.schackow.ALTUS\Altus Traffic Pty Ltd\Engineering - Documents\General\Projects 2022-2023\NAT\ALT221322NAT - Peregrine\413 ESPLANADE-Lakes Entrance-VIC\Project Analysis\413 ESPLANADE-Lakes Entrance-VIC.sip9

MOVEMENT SUMMARY

Site: 101 [2034 BG PM - Esplanade / Bulmer (Site Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
East: Esplanade (E)														
5	T1	383	2.0	403	2.0	0.220	0.1	LOS A	0.1	1.0	0.04	0.02	0.04	59.3
6	R2	10	0.0	11	0.0	0.220	8.4	LOS A	0.1	1.0	0.04	0.02	0.04	53.7
Approach		393	1.9	414	1.9	0.220	0.3	NA	0.1	1.0	0.04	0.02	0.04	59.2
North: Bulmer Street														
7	L2	21	0.0	22	0.0	0.044	7.6	LOS A	0.2	1.1	0.51	0.70	0.51	41.8
9	R2	11	0.0	12	0.0	0.044	10.4	LOS B	0.2	1.1	0.51	0.70	0.51	43.6
Approach		32	0.0	34	0.0	0.044	8.6	LOS A	0.2	1.1	0.51	0.70	0.51	42.5
West: Esplanade (W)														
10	L2	21	0.0	22	0.0	0.286	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	56.1
11	T1	505	1.0	532	1.0	0.286	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	59.4
Approach		526	1.0	554	1.0	0.286	0.3	NA	0.0	0.0	0.00	0.02	0.00	59.3
All Vehicles		951	1.3	1001	1.3	0.286	0.6	NA	0.2	1.1	0.03	0.04	0.03	58.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: ALTUS TRAFFIC | Licence: NETWORK / 1PC | Processed: Monday, 6 February 2023 4:27:23 PM

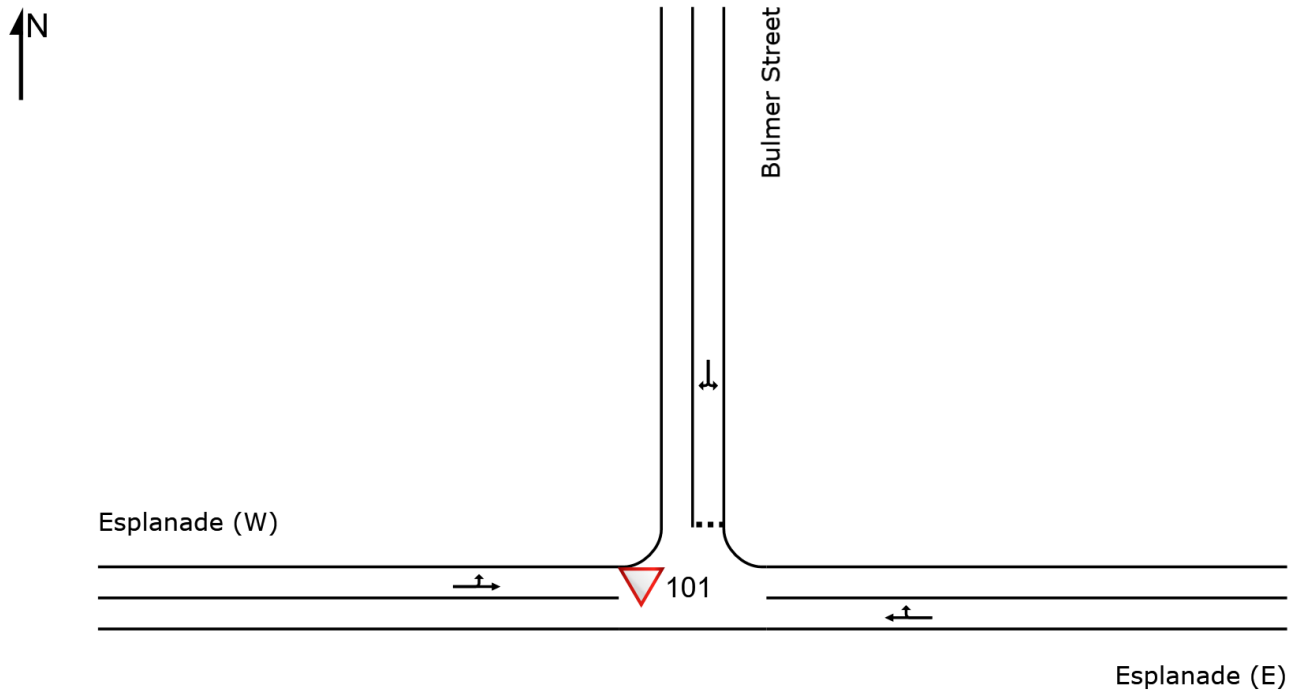
Project: C:\Users\casey.schackow.ALTUS\Altus Traffic Pty Ltd\Engineering - Documents\General\Projects 2022-2023\NAT\ALT221322NAT - Peregrine\413 ESPLANADE-Lakes Entrance-VIC\Project Analysis\413 ESPLANADE-Lakes Entrance-VIC.sip9

SITE LAYOUT

▽ Site: 101 [2034 BG AM + Dev - Esplanade / Bulmer (Site Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

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



SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: ALTUS TRAFFIC | Licence: NETWORK / 1PC | Created: Monday, 6 February 2023 4:43:49 PM

Project: C:\Users\casey.schackow.ALTUS\Altus Traffic Pty Ltd\Engineering - Documents\General\Projects 2022-2023\NAT\ALT221322NAT - Peregrine\413 ESPLANADE-Lakes Entrance-VIC\Project Analysis\413 ESPLANADE-Lakes Entrance-VIC.sip9

MOVEMENT SUMMARY

Site: 101 [2034 BG AM + Dev - Esplanade / Bulmer (Site Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
East: Esplanade (E)														
5	T1	421	1.0	443	1.0	0.235	0.1	LOSA	0.1	0.6	0.02	0.01	0.02	59.6
6	R2	7	1.0	7	1.0	0.235	7.7	LOSA	0.1	0.6	0.02	0.01	0.02	53.9
Approach		428	1.0	451	1.0	0.235	0.2	NA	0.1	0.6	0.02	0.01	0.02	59.6
North: Bulmer Street														
7	L2	12	0.0	13	0.0	0.047	7.0	LOSA	0.2	1.1	0.49	0.70	0.49	41.7
9	R2	20	0.0	21	0.0	0.047	9.6	LOSA	0.2	1.1	0.49	0.70	0.49	43.5
Approach		32	0.0	34	0.0	0.047	8.6	LOSA	0.2	1.1	0.49	0.70	0.49	42.9
West: Esplanade (W)														
10	L2	38	0.0	40	0.0	0.230	5.6	LOSA	0.0	0.0	0.00	0.05	0.00	55.6
11	T1	379	3.0	399	3.0	0.230	0.0	LOSA	0.0	0.0	0.00	0.05	0.00	58.9
Approach		417	2.7	439	2.7	0.230	0.5	NA	0.0	0.0	0.00	0.05	0.00	58.6
All Vehicles		877	1.8	923	1.8	0.235	0.7	NA	0.2	1.1	0.03	0.06	0.03	58.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: ALTUS TRAFFIC | Licence: NETWORK / 1PC | Processed: Monday, 6 February 2023 4:32:35 PM

Project: C:\Users\casey.schackow.ALTUS\Altus Traffic Pty Ltd\Engineering - Documents\General\Projects 2022-2023\NAT\ALT221322NAT - Peregrine\413 ESPLANADE-Lakes Entrance-VIC\Project Analysis\413 ESPLANADE-Lakes Entrance-VIC.sip9

MOVEMENT SUMMARY

Site: 101 [2034 BG PM + Dev - Esplanade / Bulmer (Site Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
						v/c	sec							km/h
East: Esplanade (E)														
5	T1	413	2.0	435	2.0	0.236	0.1	LOSA	0.1	1.0	0.04	0.01	0.04	59.3
6	R2	10	0.0	11	0.0	0.236	8.7	LOSA	0.1	1.0	0.04	0.01	0.04	53.7
Approach		423	2.0	445	2.0	0.236	0.4	NA	0.1	1.0	0.04	0.01	0.04	59.2
North: Bulmer Street														
7	L2	21	0.0	22	0.0	0.051	7.8	LOSA	0.2	1.3	0.54	0.73	0.54	41.2
9	R2	13	0.0	14	0.0	0.051	11.1	LOS B	0.2	1.3	0.54	0.73	0.54	43.0
Approach		34	0.0	36	0.0	0.051	9.1	LOSA	0.2	1.3	0.54	0.73	0.54	42.0
West: Esplanade (W)														
10	L2	23	0.0	24	0.0	0.305	5.6	LOSA	0.0	0.0	0.00	0.02	0.00	56.1
11	T1	537	1.0	565	1.0	0.305	0.1	LOSA	0.0	0.0	0.00	0.02	0.00	59.4
Approach		560	1.0	589	1.0	0.305	0.3	NA	0.0	0.0	0.00	0.02	0.00	59.3
All Vehicles		1017	1.3	1071	1.3	0.305	0.6	NA	0.2	1.3	0.03	0.04	0.03	58.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: ALTUS TRAFFIC | Licence: NETWORK / 1PC | Processed: Monday, 6 February 2023 4:32:36 PM

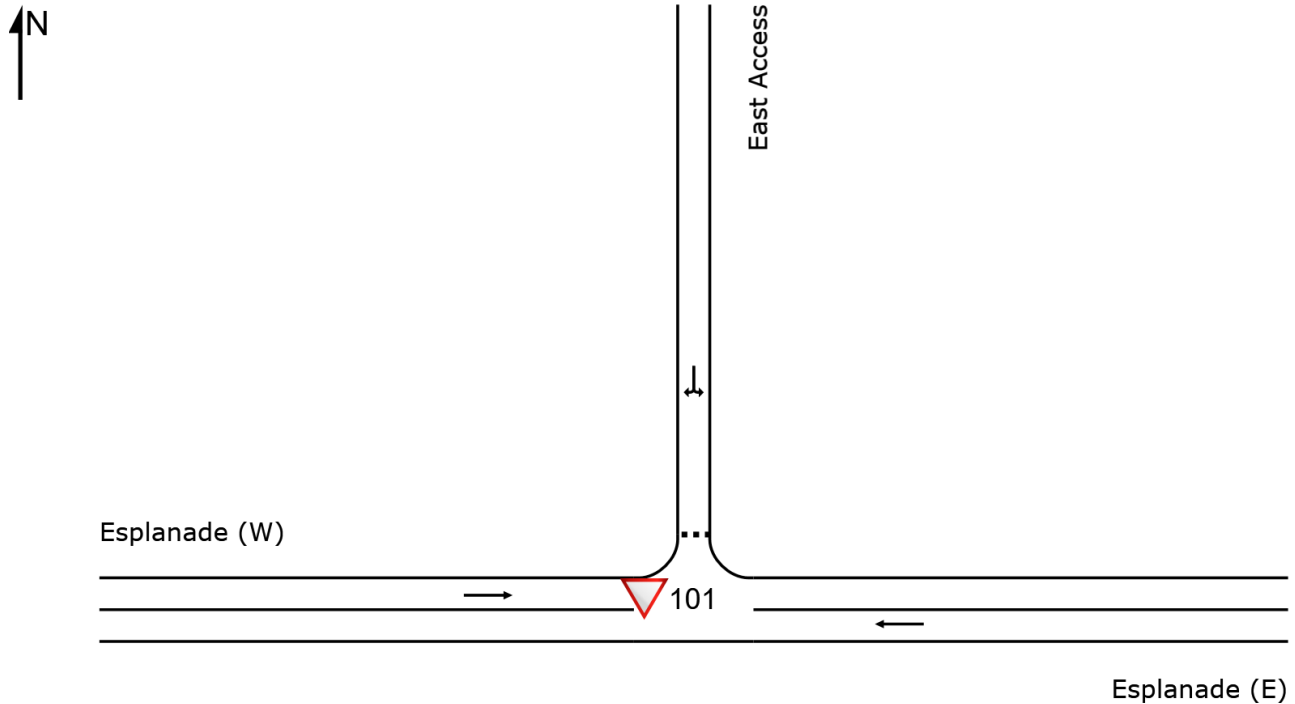
Project: C:\Users\casey.schackow.ALTUS\Altus Traffic Pty Ltd\Engineering - Documents\General\Projects 2022-2023\NAT\ALT221322NAT - Peregrine\413 ESPLANADE-Lakes Entrance-VIC\Project Analysis\413 ESPLANADE-Lakes Entrance-VIC.sip9

SITE LAYOUT

▽ Site: 101 [2024 BG PM + Dev - Esplanade / East Access (Site Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

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



SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: ALTUS TRAFFIC | Licence: NETWORK / 1PC | Created: Monday, 6 February 2023 4:43:49 PM

Project: C:\Users\casey.schackow\ALTUS\Altus Traffic Pty Ltd\Engineering - Documents\General\Projects 2022-2023\NAT\ALT221322NAT - Peregrine\413 ESPLANADE-Lakes Entrance-VIC\Project Analysis\413 ESPLANADE-Lakes Entrance-VIC.sip9

MOVEMENT SUMMARY

Site: 101 [2024 BG AM + Dev - Esplanade / East Access (Site Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total HV] veh/h %		DEMAND FLOWS [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. Dist] veh m		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Esplanade (E)														
5	T1	368	1.0	387	1.0	0.200	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		368	1.0	387	1.0	0.200	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
North: East Access														
7	L2	34	0.0	36	0.0	0.078	4.3	LOS A	0.3	2.1	0.42	0.65	0.42	22.8
9	R2	32	0.0	34	0.0	0.078	6.3	LOS A	0.3	2.1	0.42	0.65	0.42	42.3
Approach		66	0.0	69	0.0	0.078	5.3	LOS A	0.3	2.1	0.42	0.65	0.42	36.1
West: Esplanade (W)														
11	T1	314	3.0	331	3.0	0.173	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		314	3.0	331	3.0	0.173	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
All Vehicles		748	1.8	787	1.8	0.200	0.5	NA	0.3	2.1	0.04	0.06	0.04	57.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: ALTUS TRAFFIC | Licence: NETWORK / 1PC | Processed: Monday, 6 February 2023 4:32:36 PM

Project: C:\Users\casey.schackow.ALTUS\Altus Traffic Pty Ltd\Engineering - Documents\General\Projects 2022-2023\NAT\ALT221322NAT - Peregrine\413 ESPLANADE-Lakes Entrance-VIC\Project Analysis\413 ESPLANADE-Lakes Entrance-VIC.sip9

MOVEMENT SUMMARY

Site: 101 [2024 BG PM + Dev - Esplanade / East Access (Site Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %	v/c	sec		[Veh. veh	Dist] m				km/h
East: Esplanade (E)														
5	T1	355	2.0	374	2.0	0.194	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		355	2.0	374	2.0	0.194	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
North: East Access														
7	L2	34	0.0	36	0.0	0.088	4.8	LOS A	0.3	2.3	0.49	0.70	0.49	21.5
9	R2	32	0.0	34	0.0	0.088	7.1	LOS A	0.3	2.3	0.49	0.70	0.49	41.2
Approach		66	0.0	69	0.0	0.088	5.9	LOS A	0.3	2.3	0.49	0.70	0.49	34.9
West: Esplanade (W)														
11	T1	431	1.0	454	1.0	0.234	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		431	1.0	454	1.0	0.234	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
All Vehicles		852	1.3	897	1.3	0.234	0.5	NA	0.3	2.3	0.04	0.05	0.04	57.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: ALTUS TRAFFIC | Licence: NETWORK / 1PC | Processed: Monday, 6 February 2023 4:32:37 PM

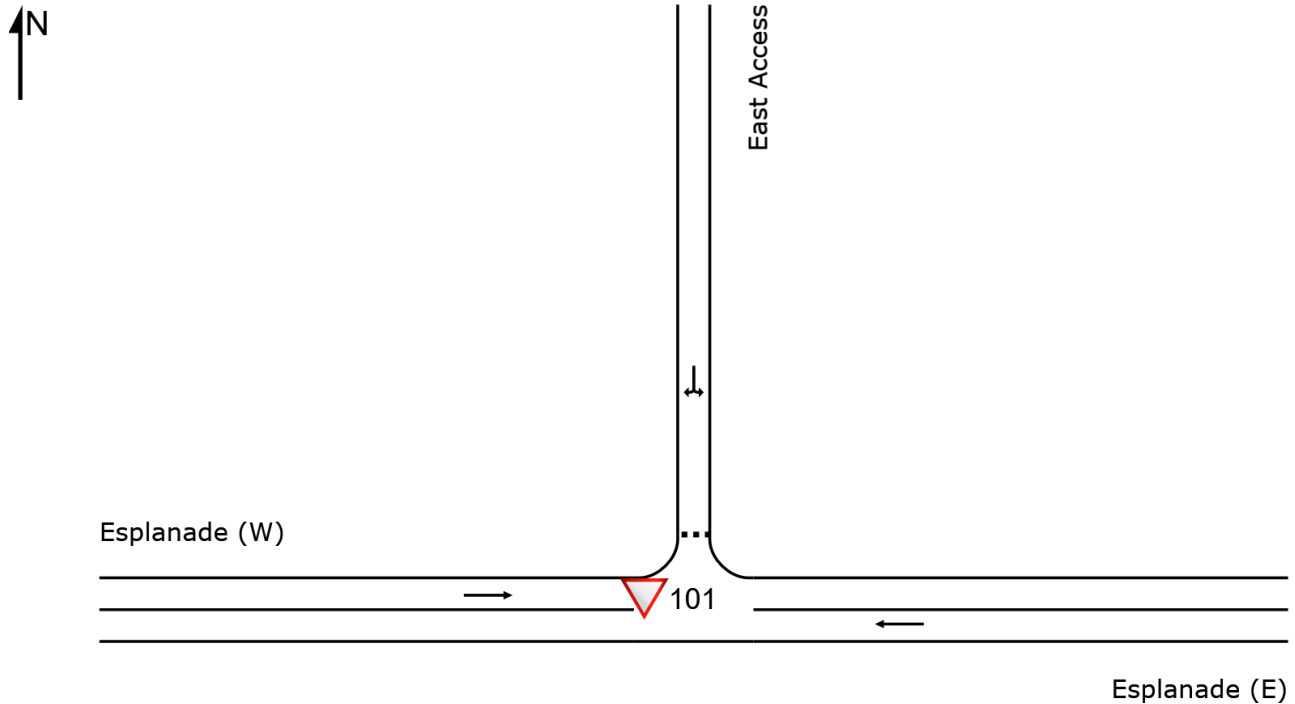
Project: C:\Users\casey.schackow.ALTUS\Altus Traffic Pty Ltd\Engineering - Documents\General\Projects 2022-2023\NAT\ALT221322NAT - Peregrine\413 ESPLANADE-Lakes Entrance-VIC\Project Analysis\413 ESPLANADE-Lakes Entrance-VIC.sip9

SITE LAYOUT

▽ Site: 101 [2034 BG PM + Dev - Esplanade / East Access (Site Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

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



SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: ALTUS TRAFFIC | Licence: NETWORK / 1PC | Created: Tuesday, 7 February 2023 8:38:54 AM

Project: C:\Users\casey.schackow.ALTUS\Altus Traffic Pty Ltd\Engineering - Documents\General\Projects 2022-2023\NAT\ALT221322NAT - Peregrine\413 ESPLANADE-Lakes Entrance-VIC\Project Analysis\413 ESPLANADE-Lakes Entrance-VIC.sip9

MOVEMENT SUMMARY

Site: 101 [2034 BG AM + Dev - Esplanade / East Access (Site Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %	v/c	sec		[Veh. veh	Dist] m				km/h
East: Esplanade (E)														
5	T1	442	1.0	465	1.0	0.240	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		442	1.0	465	1.0	0.240	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
North: East Access														
7	L2	34	0.0	36	0.0	0.089	4.6	LOS A	0.3	2.3	0.48	0.69	0.48	21.5
9	R2	32	0.0	34	0.0	0.089	7.5	LOS A	0.3	2.3	0.48	0.69	0.48	41.2
Approach		66	0.0	69	0.0	0.089	6.0	LOS A	0.3	2.3	0.48	0.69	0.48	34.8
West: Esplanade (W)														
11	T1	383	3.0	403	3.0	0.211	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		383	3.0	403	3.0	0.211	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
All Vehicles		891	1.8	938	1.8	0.240	0.5	NA	0.3	2.3	0.04	0.05	0.04	57.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: ALTUS TRAFFIC | Licence: NETWORK / 1PC | Processed: Monday, 6 February 2023 4:32:38 PM

Project: C:\Users\casey.schackow.ALTUS\Altus Traffic Pty Ltd\Engineering - Documents\General\Projects 2022-2023\NAT\ALT221322NAT - Peregrine\413 ESPLANADE-Lakes Entrance-VIC\Project Analysis\413 ESPLANADE-Lakes Entrance-VIC.sip9

MOVEMENT SUMMARY

Site: 101 [2034 BG PM + Dev - Esplanade / East Access (Site Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total HV] [Veh. %] veh/h		DEMAND FLOWS [Total HV] [Veh. %] veh/h		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. Dist] veh m		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Esplanade (E)														
5	T1	425	2.0	447	2.0	0.232	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		425	2.0	447	2.0	0.232	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
North: East Access														
7	L2	34	0.0	36	0.0	0.104	5.4	LOS A	0.4	2.6	0.55	0.74	0.55	19.8
9	R2	32	0.0	34	0.0	0.104	8.7	LOS A	0.4	2.6	0.55	0.74	0.55	39.7
Approach		66	0.0	69	0.0	0.104	7.0	LOS A	0.4	2.6	0.55	0.74	0.55	33.1
West: Esplanade (W)														
11	T1	526	1.0	554	1.0	0.286	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		526	1.0	554	1.0	0.286	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.8
All Vehicles		1017	1.4	1071	1.4	0.286	0.5	NA	0.4	2.6	0.04	0.05	0.04	58.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: ALTUS TRAFFIC | Licence: NETWORK / 1PC | Processed: Monday, 6 February 2023 4:32:38 PM

Project: C:\Users\casey.schackow.ALTUS\Altus Traffic Pty Ltd\Engineering - Documents\General\Projects 2022-2023\NAT\ALT221322NAT - Peregrine\413 ESPLANADE-Lakes Entrance-VIC\Project Analysis\413 ESPLANADE-Lakes Entrance-VIC.sip9

SITE LAYOUT

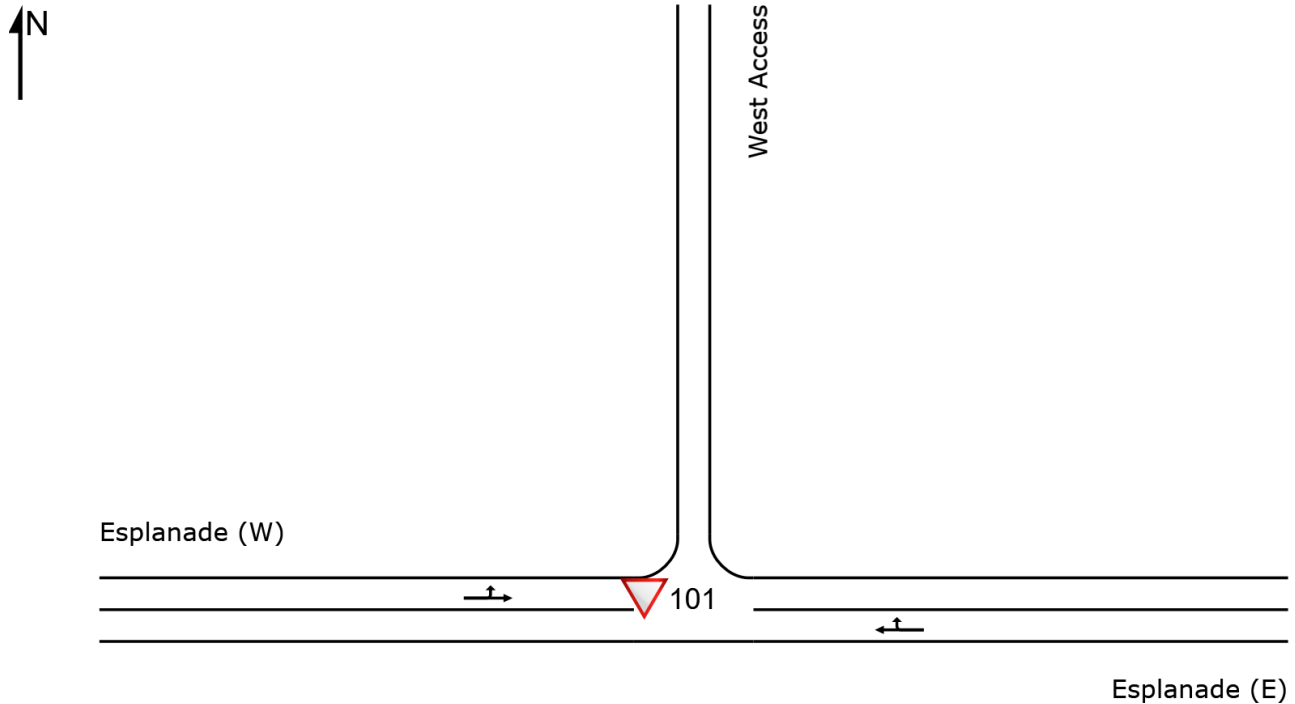
▽ Site: 101 [2024 BG PM + Dev - Esplanade / West Access (Site Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

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



SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: ALTUS TRAFFIC | Licence: NETWORK / 1PC | Created: Monday, 6 February 2023 4:43:49 PM

Project: C:\Users\casey.schackow\ALTUS\Altus Traffic Pty Ltd\Engineering - Documents\General\Projects 2022-2023\NAT\ALT221322NAT - Peregrine\413 ESPLANADE-Lakes Entrance-VIC\Project Analysis\413 ESPLANADE-Lakes Entrance-VIC.sip9

MOVEMENT SUMMARY

▽ Site: 101 [2024 BG AM + Dev - Esplanade / West Access (Site Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %				[Veh. veh	Dist] m				
East: Esplanade (E)														
5	T1	347	1.0	365	1.0	0.214	0.2	LOS A	0.3	2.3	0.09	0.05	0.09	57.4
6	R2	31	0.0	33	0.0	0.214	6.5	LOS A	0.3	2.3	0.09	0.05	0.09	41.0
Approach		378	0.9	398	0.9	0.214	0.7	NA	0.3	2.3	0.09	0.05	0.09	56.7
West: Esplanade (W)														
10	L2	35	3.0	37	3.0	0.190	5.6	LOS A	0.0	0.0	0.00	0.06	0.00	41.0
11	T1	314	0.0	331	0.0	0.190	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	58.0
Approach		349	0.3	367	0.3	0.190	0.6	NA	0.0	0.0	0.00	0.06	0.00	56.0
All Vehicles		727	0.6	765	0.6	0.214	0.7	NA	0.3	2.3	0.05	0.06	0.05	56.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: ALTUS TRAFFIC | Licence: NETWORK / 1PC | Processed: Monday, 6 February 2023 4:32:39 PM

Project: C:\Users\casey.schackow.ALTUS\Altus Traffic Pty Ltd\Engineering - Documents\General\Projects 2022-2023\NAT\ALT221322NAT - Peregrine\413 ESPLANADE-Lakes Entrance-VIC\Project Analysis\413 ESPLANADE-Lakes Entrance-VIC.sip9

MOVEMENT SUMMARY

▽ Site: 101 [2024 BG PM + Dev - Esplanade / West Access (Site Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %				[Veh. veh	Dist] m				
						v/c	sec							km/h
East: Esplanade (E)														
5	T1	334	2.0	352	2.0	0.212	0.4	LOSA	0.4	2.6	0.11	0.06	0.11	56.7
6	R2	31	0.0	33	0.0	0.212	7.3	LOSA	0.4	2.6	0.11	0.06	0.11	40.1
Approach		365	1.8	384	1.8	0.212	1.0	NA	0.4	2.6	0.11	0.06	0.11	55.9
West: Esplanade (W)														
10	L2	35	0.0	37	0.0	0.254	5.6	LOSA	0.0	0.0	0.00	0.04	0.00	41.3
11	T1	431	1.0	454	1.0	0.254	0.0	LOSA	0.0	0.0	0.00	0.04	0.00	58.4
Approach		466	0.9	491	0.9	0.254	0.4	NA	0.0	0.0	0.00	0.04	0.00	56.9
All Vehicles		831	1.3	875	1.3	0.254	0.7	NA	0.4	2.6	0.05	0.05	0.05	56.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: ALTUS TRAFFIC | Licence: NETWORK / 1PC | Processed: Monday, 6 February 2023 4:32:39 PM

Project: C:\Users\casey.schackow.ALTUS\Altus Traffic Pty Ltd\Engineering - Documents\General\Projects 2022-2023\NAT\ALT221322NAT - Peregrine\413 ESPLANADE-Lakes Entrance-VIC\Project Analysis\413 ESPLANADE-Lakes Entrance-VIC.sip9

SITE LAYOUT

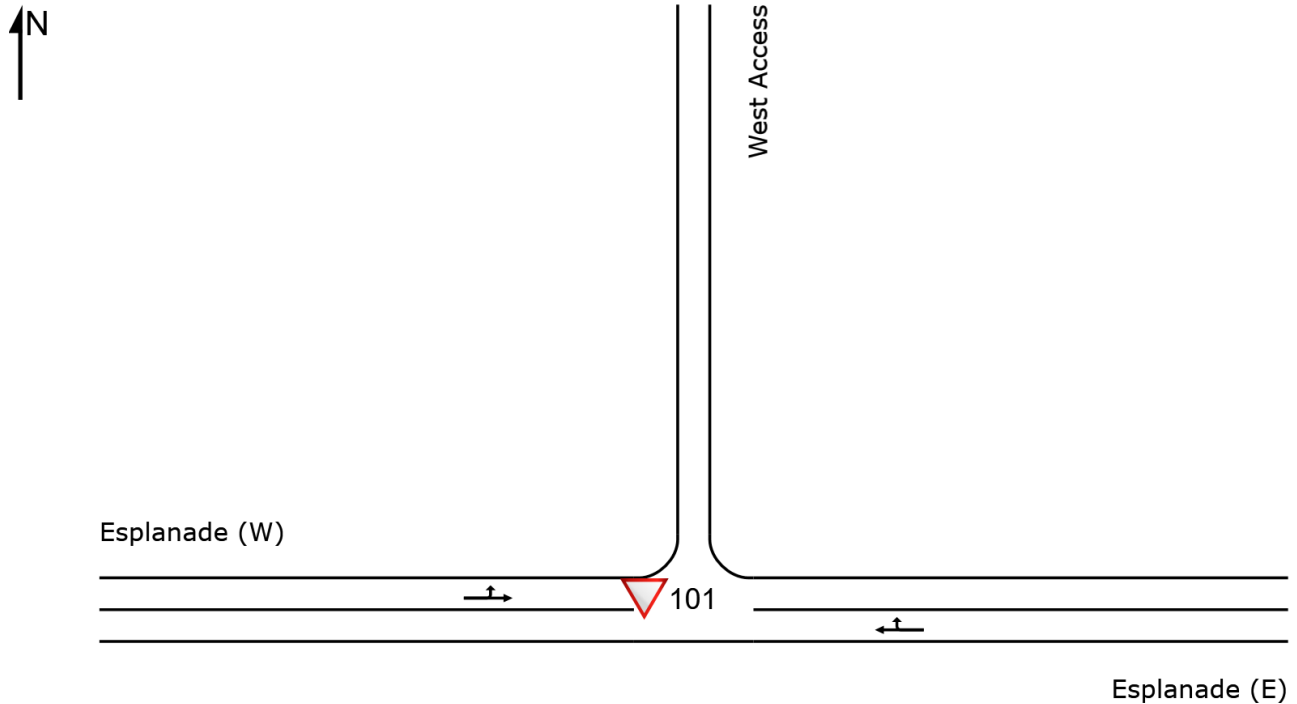
▽ Site: 101 [2034 BG PM + Dev - Esplanade / West Access (Site Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

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



SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: ALTUS TRAFFIC | Licence: NETWORK / 1PC | Created: Tuesday, 7 February 2023 8:38:54 AM

Project: C:\Users\casey.schackow.ALTUS\Altus Traffic Pty Ltd\Engineering - Documents\General\Projects 2022-2023\NAT\ALT221322NAT - Peregrine\413 ESPLANADE-Lakes Entrance-VIC\Project Analysis\413 ESPLANADE-Lakes Entrance-VIC.sip9

MOVEMENT SUMMARY

Site: 101 [2034 BG AM + Dev - Esplanade / West Access (Site Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %				[Veh. veh	Dist] m				
						v/c	sec							km/h
East: Esplanade (E)														
5	T1	421	1.0	443	1.0	0.256	0.3	LOSA	0.4	2.6	0.09	0.05	0.09	57.5
6	R2	31	0.0	33	0.0	0.256	7.1	LOSA	0.4	2.6	0.09	0.05	0.09	41.0
Approach		452	0.9	476	0.9	0.256	0.7	NA	0.4	2.6	0.09	0.05	0.09	56.8
West: Esplanade (W)														
10	L2	35	3.0	37	3.0	0.227	5.6	LOSA	0.0	0.0	0.00	0.05	0.00	41.2
11	T1	383	0.0	403	0.0	0.227	0.0	LOSA	0.0	0.0	0.00	0.05	0.00	58.3
Approach		418	0.3	440	0.3	0.227	0.5	NA	0.0	0.0	0.00	0.05	0.00	56.6
All Vehicles		870	0.6	916	0.6	0.256	0.6	NA	0.4	2.6	0.05	0.05	0.05	56.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: ALTUS TRAFFIC | Licence: NETWORK / 1PC | Processed: Monday, 6 February 2023 4:32:40 PM

Project: C:\Users\casey.schackow.ALTUS\Altus Traffic Pty Ltd\Engineering - Documents\General\Projects 2022-2023\NAT\ALT221322NAT - Peregrine\413 ESPLANADE-Lakes Entrance-VIC\Project Analysis\413 ESPLANADE-Lakes Entrance-VIC.sip9

MOVEMENT SUMMARY

▽ Site: 101 [2034 BG PM + Dev - Esplanade / West Access (Site Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %				[Veh. veh	Dist] m				
East: Esplanade (E)														
5	T1	405	2.0	426	2.0	0.254	0.5	LOS A	0.4	3.1	0.11	0.05	0.11	56.6
6	R2	31	0.0	33	0.0	0.254	8.2	LOS A	0.4	3.1	0.11	0.05	0.11	39.9
Approach		436	1.9	459	1.9	0.254	1.0	NA	0.4	3.1	0.11	0.05	0.11	55.9
West: Esplanade (W)														
10	L2	35	0.0	37	0.0	0.306	5.6	LOS A	0.0	0.0	0.00	0.04	0.00	41.4
11	T1	526	1.0	554	1.0	0.306	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	58.6
Approach		561	0.9	591	0.9	0.306	0.4	NA	0.0	0.0	0.00	0.04	0.00	57.3
All Vehicles		997	1.3	1049	1.3	0.306	0.7	NA	0.4	3.1	0.05	0.04	0.05	56.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com

Organisation: ALTUS TRAFFIC | Licence: NETWORK / 1PC | Processed: Monday, 6 February 2023 4:32:41 PM

Project: C:\Users\casey.schackow.ALTUS\Altus Traffic Pty Ltd\Engineering - Documents\General\Projects 2022-2023\NAT\ALT221322NAT - Peregrine\413 ESPLANADE-Lakes Entrance-VIC\Project Analysis\413 ESPLANADE-Lakes Entrance-VIC.sip9



N E W S E R V I C E S T A T I O N C O M P L E X
413 ESPLANADE LAKES ENTRANCE VIC

P L A N N I N G

17.08.23
22JN1505 sk06

0 1 2 5 10 15m
Printed 16/11/2023
Page 106 of 119

ADS Architects
93 Gilles Street Adelaide 5000 T:82232244



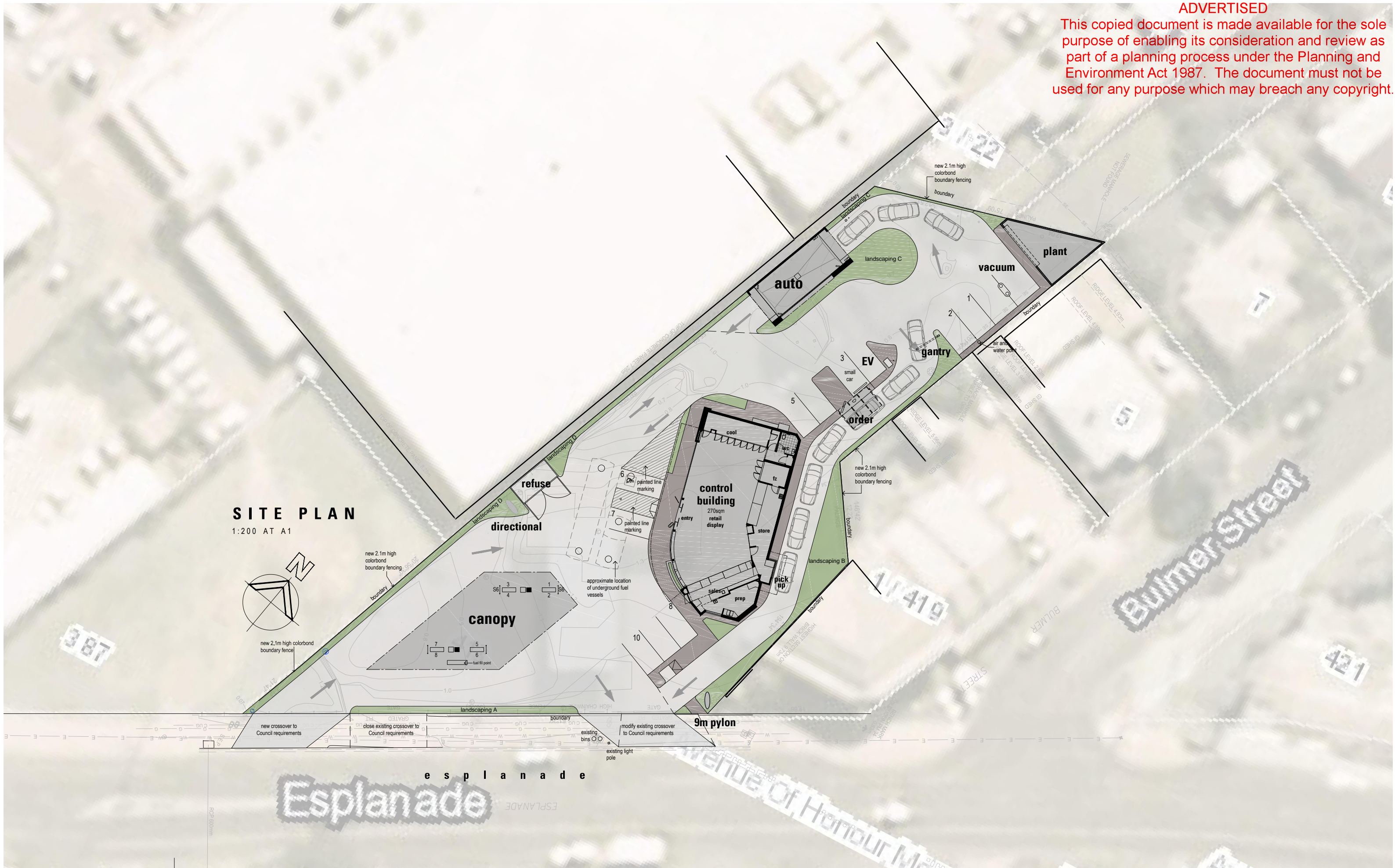
NEW SERVICE STATION COMPLEX
413 ESPLANADE LAKES ENTRANCE VIC

PLANNING

17.08.23
22JN1505 sk07

0 1 2 5 10 15m
Printed 16/11/2023
Page 107 of 119

This copied document is made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright.

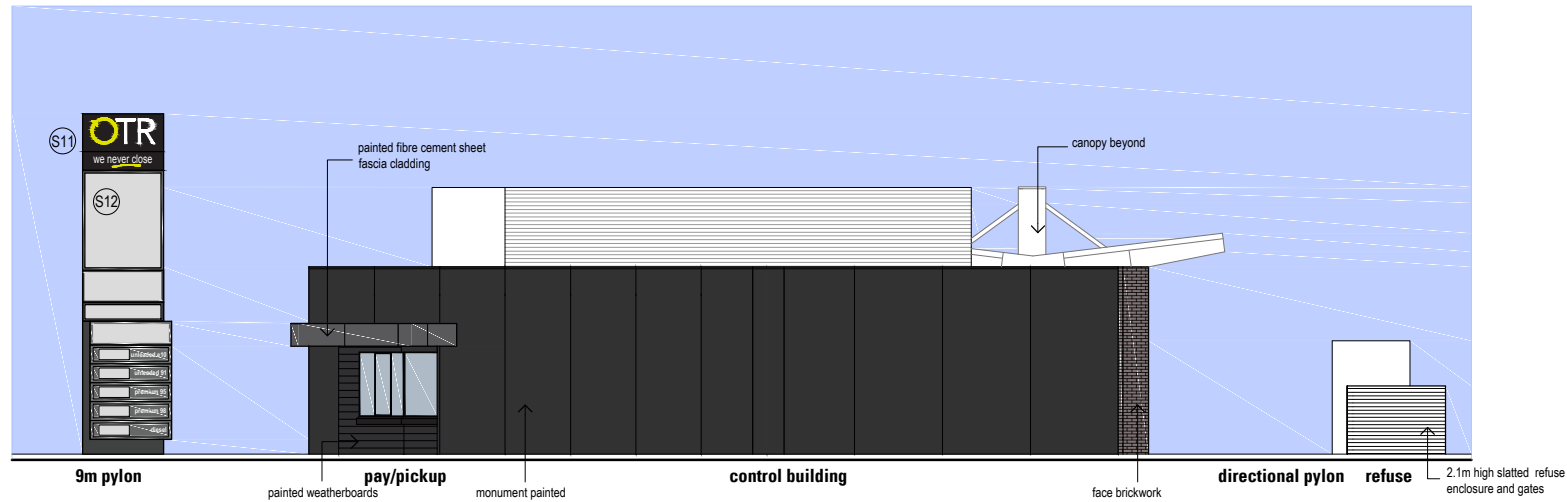


NEW SERVICE STATION COMPLEX

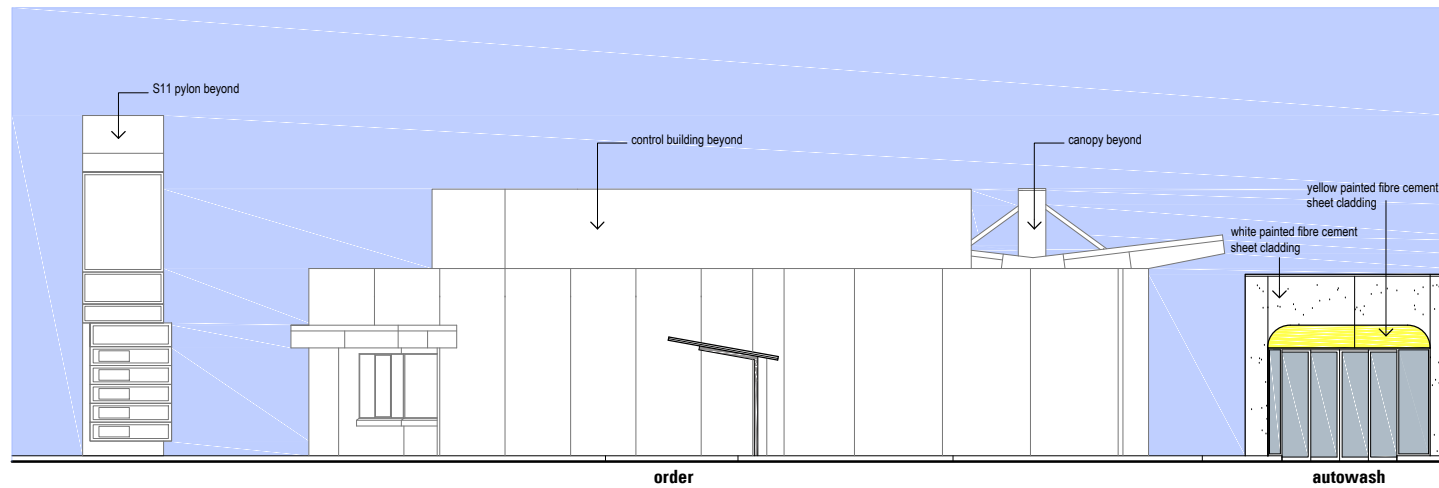
413 ESPLANADE LAKES ENTRANCE VIC

PLANNING

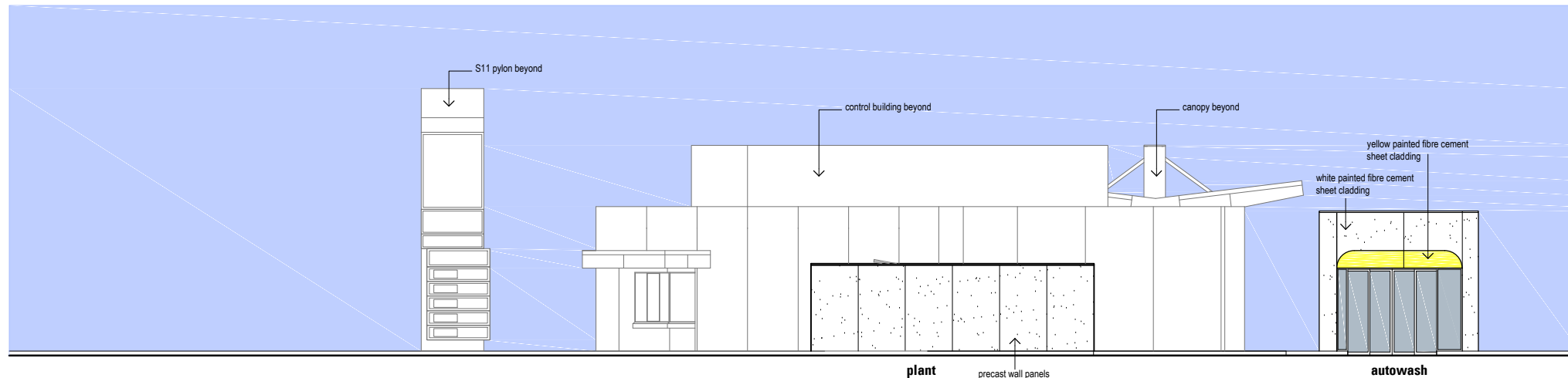
28.04.23
22JN1505 sk01b



NORTH ELEVATION
1:100 AT A1



NORTH ELEVATION
1:100 AT A1

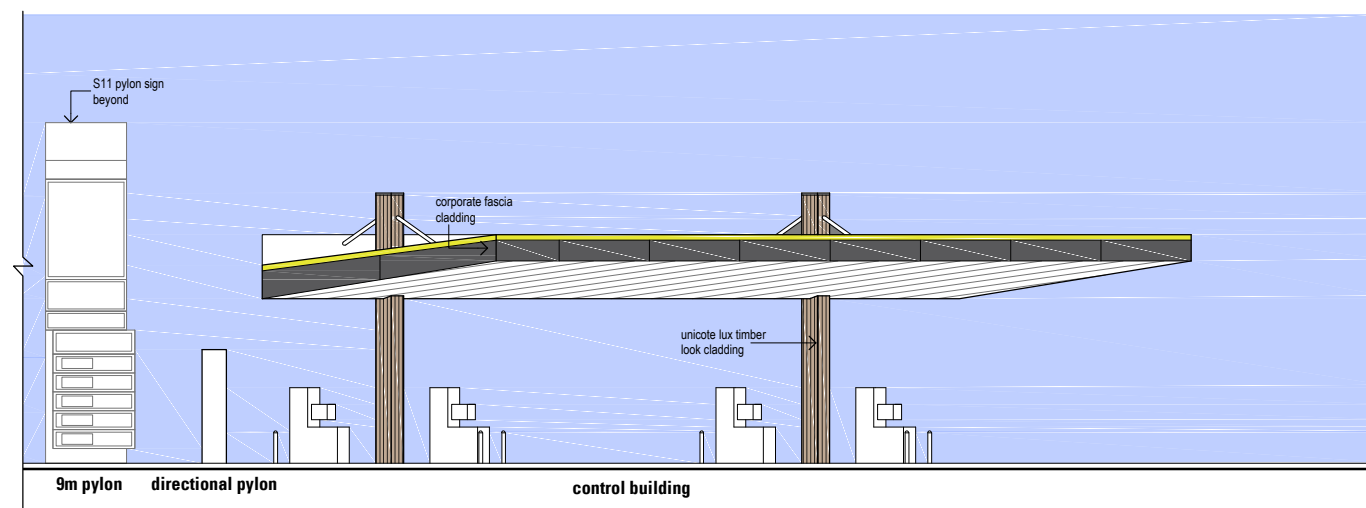
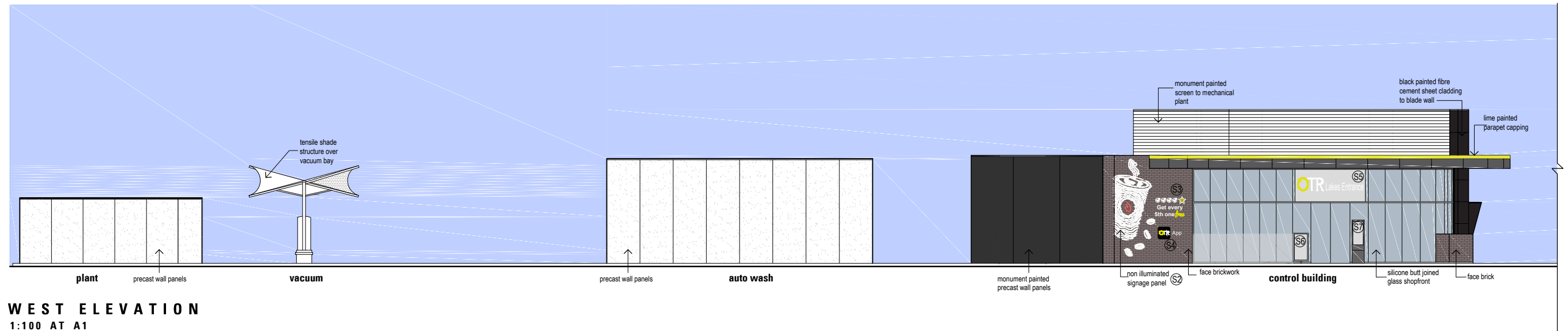


NORTH ELEVATION
1:100 AT A1

NEW SERVICE STATION COMPLEX

413 ESPLANADE LAKES ENTRANCE VIC

PLANNING

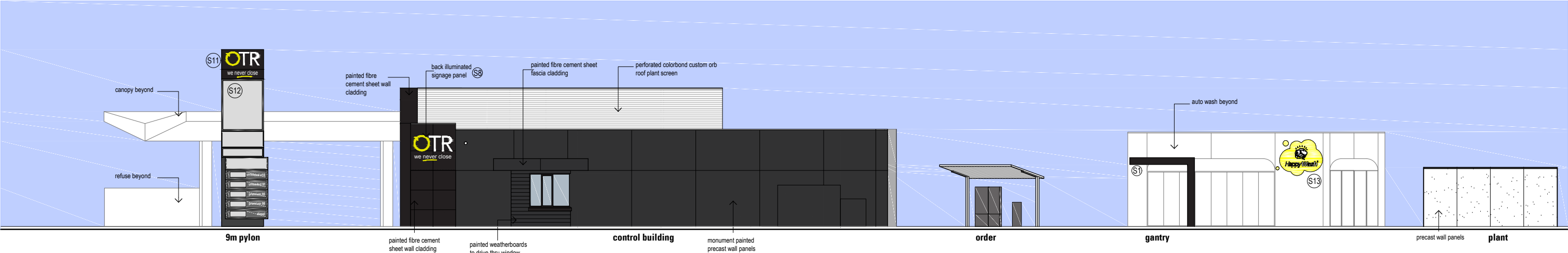


NEW SERVICE STATION COMPLEX

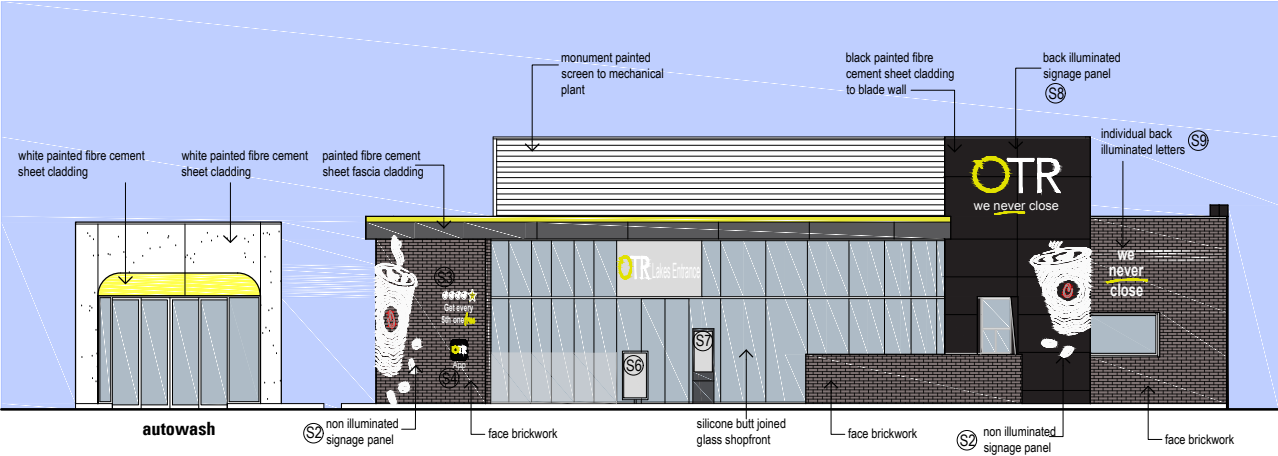
413 ESPLANADE LAKES ENTRANCE VIC

PLANNING

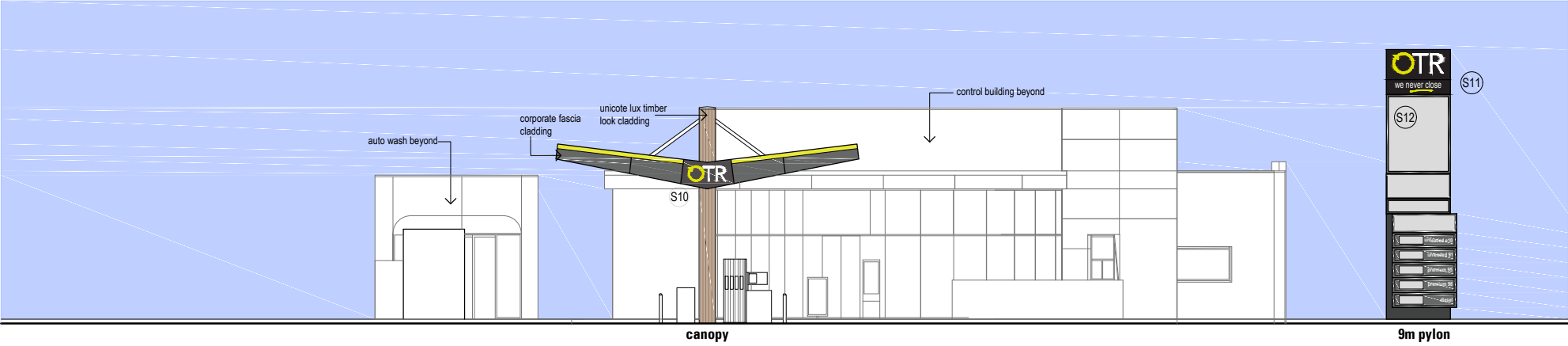
This copied document is made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright.



EAST ELEVATION
1:100 AT A1



SOUTH ELEVATION
1:100 AT A1



SOUTH ELEVATION
1:100 AT A1

NEW SERVICE STATION COMPLEX

413 ESPLANADE LAKES ENTRANCE VIC






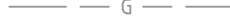



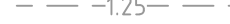
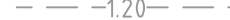











PLANNING

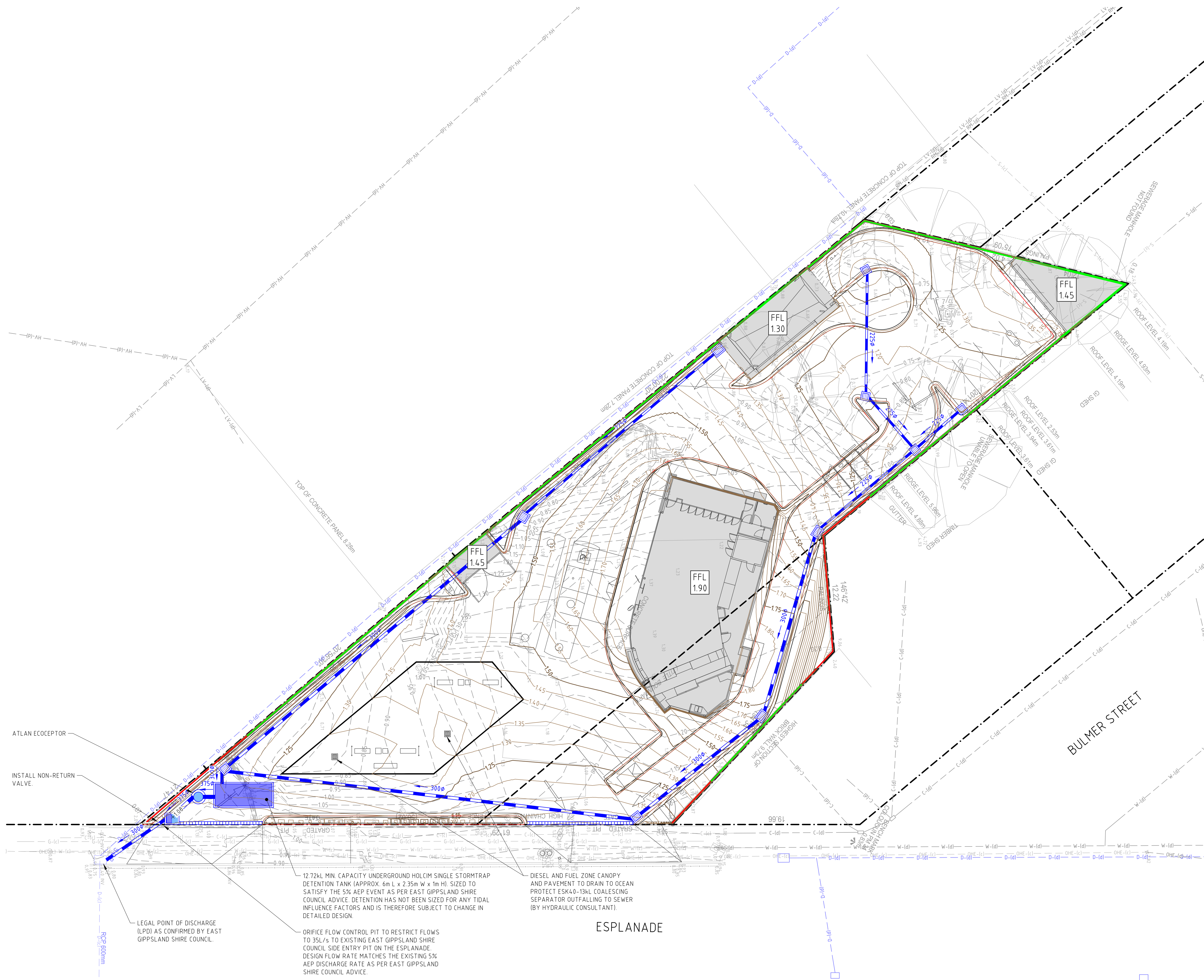
17.08.23
22JN1505 sk04b

NOTES:

1. GRATED COVERS TO COMPLY WITH PLANNING PROCESS UNDER THE PLANNING AND ENVIRONMENT ACT 1987. THE DOCUMENT MUST NOT BE USED FOR ANY PURPOSE WHICH MAY BREACH ANY COPYRIGHT.
2. ALL DOWNPipe CONNECTIONS TO BE MINIMUM 100% OR EQUAL TO DOWNPipe DRAINAGE, UNLESS OTHERWISE NOTED AND LOCATIONS TO BE CONFIRMED BY HYDRAULIC ENGINEER.
3. ALL INLET PITS TO BE FITTED WITH ATLAN STORM SACKS.

LEGEND

- | | |
|---|--|
|  | EXISTING DRAINAGE |
|  | EXISTING WATER |
|  | EXISTING ELECTRICAL HIGH VOLTAGE |
|  | EXISTING ELECTRICAL LOW VOLTAGE |
|  | EXISTING ELECTRICAL OVERHEAD |
|  | EXISTING GAS |
|  | EXISTING TELECOMMUNICATIONS |
|  | EXISTING SEWER |
|  | EXISTING SEWER RISING MAIN |
|  | EXISTING MAJOR CONTOUR |
|  | EXISTING MINOR CONTOUR |
|  | MAJOR CONTOUR |
|  | MINOR CONTOUR |
|  | KERB & TYPE |
|  | KERB & TYPE |
|  | CANOPY EXTENT |
|  | FENCE KICKBOARD (≤300mm LEVEL DIFFERENCE) |
|  | PROPOSED CONCRETE SLEEPER RETAINING WALL (>300mm LEVEL DIFFERENCE) |
|  | PROPOSED STORMWATER PIT AND DRAIN |
|  | PROPOSED GRATED PIT |
|  | GRATED PIT CONNECTED TO SEWER (BY HYDRAULIC CONSULTANT) |
|  | PROPOSED ACO S200K TRENCH GRATE |



SCHEMATIC DESIGN

NOT FOR CONSTRUCTION

B A	13/10/2023	PRELIMINARY ISSUE	DWG WXH	EVP EVP		 1 : 200 (A1) 1 : 400 (A3)	ALL DIMENSIONS SHOWN ARE IN METRES UNLESS NOTED OTHERWISE	CLIENT: DEV. NO.	SURVEYED	COUNCIL	 MELBOURNE Level 5, 93 William Street, Melbourne VIC 3000 T 61 3 9249 5555 www.fyfe.com.au	OTR LAKES ENTRANCE 413 ESPLANADE LAKES ENTRANCE, VICTORIA STORMWATER DRAINAGE PLAN	GAD REF: 52416-1-SK-500.DWG Printed 16/11/2023 Page 113 of 119	
	4/10/2023	PRELIMINARY ISSUE							DRAWN	DRAFTING CHECK				DESIGNED
REV.	DATE	DESCRIPTION	DRN.	APPD.					ZKHC	DD-MM-YY			52416-1-SK-500	B

13/10/2023 11:48:26 AM P:\MELBOURNE\500000\52000\52416\52416-1-OTR LAKES ENTRANCE\03 CAD\0802 CVST\090203 WORKING\DRAWINGS\SKETCHES\52416-1-SK-102.DWG



- NOTES:**
- ADVERTISED**
This copied document is made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright.
- ALL LEVELS ARE IN METRES UNLESS NOTED OTHERWISE.
 - MGA CO-ORDINATES
 - DATUM GDA 2020
 - NATURAL SURFACE LEVELS ARE INDICATIVE ONLY. EXISTING SERVICES MAY EXIST THAT ARE NOT SHOWN AND MAY EXIST IN LOCATIONS DIFFERING FROM LOCATIONS SHOWN.
 - LOCATIONS AND ALIGNMENTS OF EXISTING SERVICES SHOWN ON DRAWINGS ARE INDICATIVE ONLY. EXISTING SERVICES MAY EXIST THAT ARE NOT SHOWN AND MAY EXIST IN LOCATIONS DIFFERING FROM LOCATIONS SHOWN.
 - PRIOR TO COMMENCING WORKS THE CONTRACTOR IS REQUIRED TO COMPLETE THEIR OWN BEFORE YOU DIG AUSTRALIA SEARCH AND ASCERTAIN THE PRECISE LOCATION OF ALL EXISTING SERVICES THAT COULD BE AFFECTED BY THE WORKS. METHOD OF LOCATING SERVICES MAY INCLUDE EXPLORATORY EXCAVATION OR NON DESTRUCTIVE SEARCH TECHNIQUES SUCH AS GROUND PENETRATING RADAR OR OTHER MEANS AS REQUIRED.
 - FYFE ACCEPTS NO RESPONSIBILITY IN RELATION TO EXTENT AND LOCATION OF EXISTING SERVICES IN THE VICINITY OF THE SITE.
 - WHERE THE WORKS ARE FOUND TO BE IN CLASH WITH EXISTING SERVICES THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING THE SUPERINTENDENT AND LIAISING WITH RELEVANT SERVICE AUTHORITIES TO ARRANGE DIVERSION OR PROTECTION WORKS THAT ARE REQUIRED. THE AUTHORITY CHARGES RELATING TO THESE SHALL BE AT THE EXPENSE OF THE PRINCIPAL. THE CONTRACTOR SHALL BE REQUIRED TO SEEK CLEARANCE, PROGRAM AND COORDINATE THESE WORKS WITH THE RELEVANT SERVICE AUTHORITY AND THEIR CONTRACTORS. THE CONTRACTOR MUST ALSO ARRANGE FOR RELOCATION AND / OR PROTECTION OF EXISTING SERVICES AS REQUIRED TO SUIT SURROUNDING NEW WORK, CONSTRUCTION LOADINGS AND TO SUIT FINAL FINISHED SURFACE LEVELS AND GRADES.
 - REFER TO ARBORIST'S AND LANDSCAPE ARCHITECT'S DOCUMENTATION FOR EXISTING TREE RETENTION, PROTECTION MEASURES AND REMOVALS PLAN.
 - CLASSIFICATION OF SUBSURFACE UTILITY INFORMATION IS DOCUMENTED IN ACCORDANCE WITH ASS488.1:2022, AND ADHERES TO THE FOLLOWING TABLE:

	QUALITY LEVEL A	QUALITY LEVEL B	QUALITY LEVEL C	QUALITY LEVEL D
DESCRIPTION	EXPOSED AND VISIBLE	ELECTRONICALLY LOCATED, INCLUDING DETAIL ON DEPTH	INFORMATION OBTAINED THROUGH ASSET PLANS, EXISTING RECORDS ETC. AND ALIGNED USING KNOWN LOCATION OF SURFACE FEATURES	ALIGNED BASED ON PLANS, EXISTING RECORDS, BYDA
ACCURACY	ABSOLUTE SPATIAL POSITION (HORIZONTAL AND VERTICAL) ±50mm	HORIZONTAL ± 300mm VERTICAL ± 500mm	HORIZONTAL ± 300mm VERTICAL INDICATIVE ONLY	INDICATIVE ONLY

EXISTING SERVICE CLASSIFICATION (ASS488)

X-(a) — QUALITY LEVEL CLASS 'A'
X-(b) — QUALITY LEVEL CLASS 'B'
X-(c) — QUALITY LEVEL CLASS 'C'
X-(d) — QUALITY LEVEL CLASS 'D'

9. THE PROJECT AREA CONTAINS THE FOLLOWING SERVICES. FOR ASSISTANCE IN LOCATING ASSETS OR IN AN EMERGENCY CONTACT:

AUTHORITY	SERVICE	TELEPHONE
AUSNET ELECTRICITY SERVICES	ELECTRICITY	1800088208
EAST GIPPSLAND SHIRE COUNCIL	STORMWATER	0351539500
EAST GIPPSLAND WATER	WATER / SEWER	1300720700
GAS NETWORKS VICTORIA	GAS	0363369350
NBN CO VICTAS	COMMS	1800687626
Telstra VIC TAS	COMMS	1800653935

- LEGEND**
- D — EXISTING DRAINAGE
 - W — EXISTING WATER
 - HV — EXISTING ELECTRICAL HIGH VOLTAGE
 - LV — EXISTING ELECTRICAL LOW VOLTAGE
 - OHE — EXISTING ELECTRICAL OVERHEAD
 - G — EXISTING GAS
 - C — EXISTING TELECOMMUNICATIONS
 - S — EXISTING SEWER
 - RM — EXISTING SEWER RISING MAIN
 - 1.25 — EXISTING MAJOR CONTOUR
 - 1.20 — EXISTING MINOR CONTOUR

SCHEMATIC DESIGN
NOT FOR CONSTRUCTION

Printed 16/11/2023
Page 114 of 119

SCHEMATIC DESIGN

DRAWING No. 52416-1-SK-102

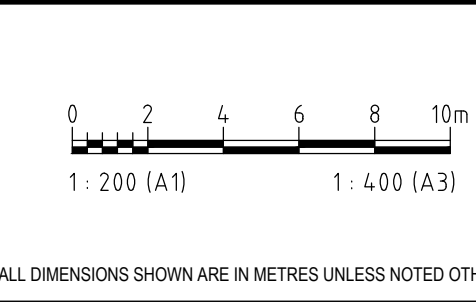
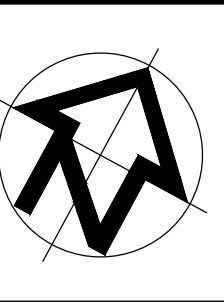
REV B

REV.

DATE

DESCRIPTION

DWG
EVP
EVP
DRN.
APP'D.



ALL DIMENSIONS SHOWN ARE IN METRES UNLESS NOTED OTHERWISE

CLIENT:



DEV. NO.

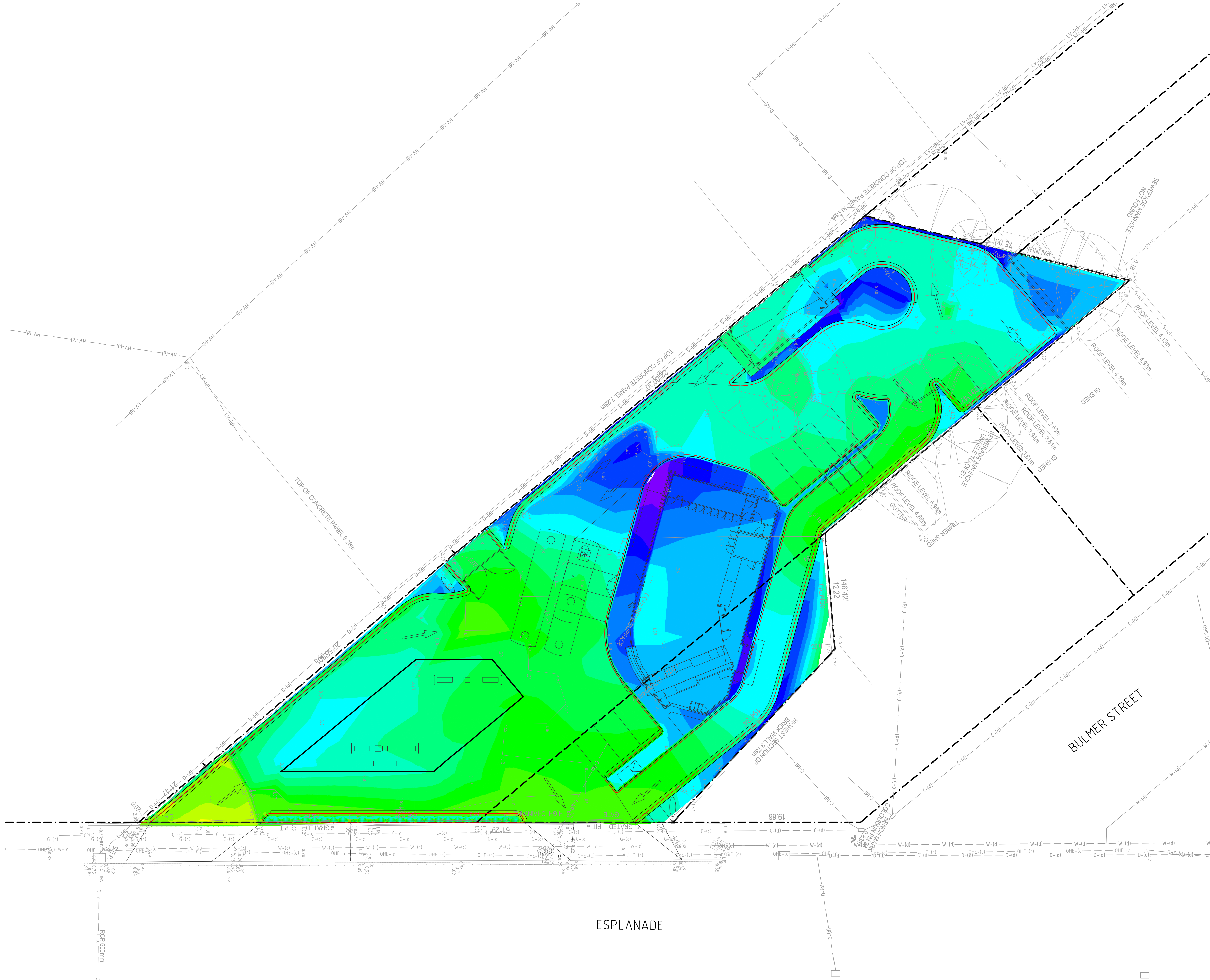
SURVEYED
FYFE
DRAWN
VRC
DESIGNED
EVP
APP'D.
ZKHC

COUNCIL
EAST GIPPSLAND SHIRE
DRAFTING CHECK
DWG
DESIGN CHECK
CSR
APP'D. DATE
DD-MM-YY



OTR LAKES ENTRANCE
413 ESPLANADE
LAKES ENTRANCE, VICTORIA
EXISTING CONDITIONS PLAN

13/10/2023 11:48:34 AM P:\MELBOURNE\50000\52000\52416\16-1 OTR LAKES ENTRANCE\03_CAD\0902_CV\ST090203_WORKING\DRAWINGS\SKETCHES\52416-1-SK-103.DWG



- NOTES:**
- ADVERTISED**
This copied document is made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright.
- BULK EARTHWORKS ARE BASED ON THE FOLLOWING ASSUMPTIONS:
 - CONCRETE PAVEMENT
 - BUILDING SLAB 300mm
 - FOOTPATH PAVEMENT 175mm
 - APPROXIMATE BULK EARTHWORK VALUES AS FOLLOWS:
 - CUT 43.71 cu.m
 - FILL 637.65 cu.m
 - BALANCE 593.94 cu.m
 - SITE STRIPPING VOLUMES HAVE NOT BEEN INCLUDED IN ABOVE CALCULATIONS. THE APPROXIMATE VOLUMES OF TOPSOIL / UNSUITABLE MATERIAL TO BE STRIPPED FROM THE WORKS AREA IS: 283m³. THIS IS BASED ON AN AVERAGE STRIPPING DEPTH OF 100mm WHICH IS TO BE CONFIRMED FOLLOWING THE RESULTS OF AN INTRUSIVE GEOTECHNICAL INVESTIGATION.
 - THE EXTENT OF CUT AND FILL SHOWN IS FOR PRELIMINARY COST BUDGETING ONLY AND SHOULD NOT BE RELIED UPON FOR DETAILED COST ESTIMATES OR CONSTRUCTION PURPOSES.
 - THE EARTHWORKS DEPTHS SHOWN REPRESENT THE DIFFERENCE BETWEEN THE EXISTING SURFACE AND THE PROPOSED SUBGRADE LEVEL. THE GRAPHICAL REPRESENTATION INCLUDES THE DEPTH OF MATERIAL TO BE STRIPPED FROM THE EXISTING SURFACE AND THE DEPTHS OF CUT AND FILL REQUIRED TO REACH THE DESIRED SUBGRADE LEVELS. THE DRAWING DOES NOT SHOW THE ADDITIONAL FILL DEPTH NEEDED FOR THE PROPOSED PAVEMENT, HARD PAVING, OR SOFT LANDSCAPING BUILD-UPS.
 - CUT TO FILL MODELING ASSUMES A 1:1 COMPACTION RATIO AND THAT ALL EXCAVATED MATERIAL IS SUITABLE FOR REUSE. NOTE ALL VOLUMES DEPICTED ARE SOLID VOLUMES ONLY AND MAY NOT REFLECT DETAILED EARTHWORKS. IT IS THE CONTRACTORS RESPONSIBILITY TO MAKE ADEQUATE ALLOWANCE IN THEIR TENDER PRICE FOR ALL BULKING FACTORS ASSOCIATED WITH THE IN-SITU MATERIALS. (FOR ENGINEER TO CONSIDER).
 - NO ALLOWANCE HAS BEEN MADE FOR DETAILED EARTHWORKS, ie SERVICE TRENCHING, DETAILED EXCAVATION, FOOTINGS, RETAINING WALLS AND THE LIKE.
 - THE CONTRACTOR SHALL USE FINAL SURFACE LEVELS AND TYPICAL PAVEMENT DETAILS FOR ACTUAL EARTHWORKS VOLUMES.
 - EXTENT OF CUT AND FILL SHOWN IS FOR PRELIMINARY COST BUDGETING ONLY AND SHOULD NOT BE RELIED UPON FOR DETAILED COSTING OR CONSTRUCTION PURPOSES.

- LEGEND**
- D ——— EXISTING DRAINAGE
 - W ——— EXISTING WATER
 - HV ——— EXISTING ELECTRICAL HIGH VOLTAGE
 - LV ——— EXISTING ELECTRICAL LOW VOLTAGE
 - OHE ——— EXISTING ELECTRICAL OVERHEAD
 - G ——— EXISTING GAS
 - C ——— EXISTING TELECOMMUNICATIONS
 - S ——— EXISTING SEWER
 - RM ——— EXISTING SEWER RISING MAIN
 - 1.25 ——— EXISTING MAJOR CONTOUR
 - 1.20 ——— EXISTING MINOR CONTOUR

CUT / FILL DEPTH RANGE			
No.	LOWER VALUE	UPPER VALUE	COLOUR
1	-1.00	-0.90	
2	-0.90	-0.80	
3	-0.80	-0.70	
4	-0.70	-0.60	
5	-0.60	-0.50	
6	-0.50	-0.40	
7	-0.40	-0.30	
8	-0.30	-0.20	
9	-0.20	-0.10	
10	-0.10	0.00	
11	0.00	0.10	
12	0.10	0.20	
13	0.20	0.30	
14	0.30	0.40	
15	0.40	0.50	
16	0.50	0.60	
17	0.60	0.70	
18	0.70	0.80	
19	0.80	0.90	
20	0.90	1.00	

REV.	B A	13/10/2023 4/10/2023	PRELIMINARY ISSUE PRELIMINARY ISSUE	DWG WXH	EVP EVP		 1: 200 (A1) 1: 400 (A3)	CLIENT: PEREGRINE CORPORATION	SURVEYED FYFE	COUNCIL EAST GIPPSLAND SHIRE	 MELBOURNE Level 5 91 William Street, Melbourne VIC 3000 T 61 3 9249 5555 www.fyfe.com.au	OTR LAKES ENTRANCE 413 ESPLANADE LAKES ENTRANCE, VICTORIA CUT AND FILL PLAN	Printed 16/11/2023 Page 115 of 119 SCHEMATIC DESIGN DRAWING No. 52416-1-SK-103	REV B
	DATE	DESCRIPTION	DRN.	APP'D.	DESIGNED EVP				APP'D. ZKHC	DRAFTING CHECK DWG		DESIGN CHECK CSR		


























NOTES:

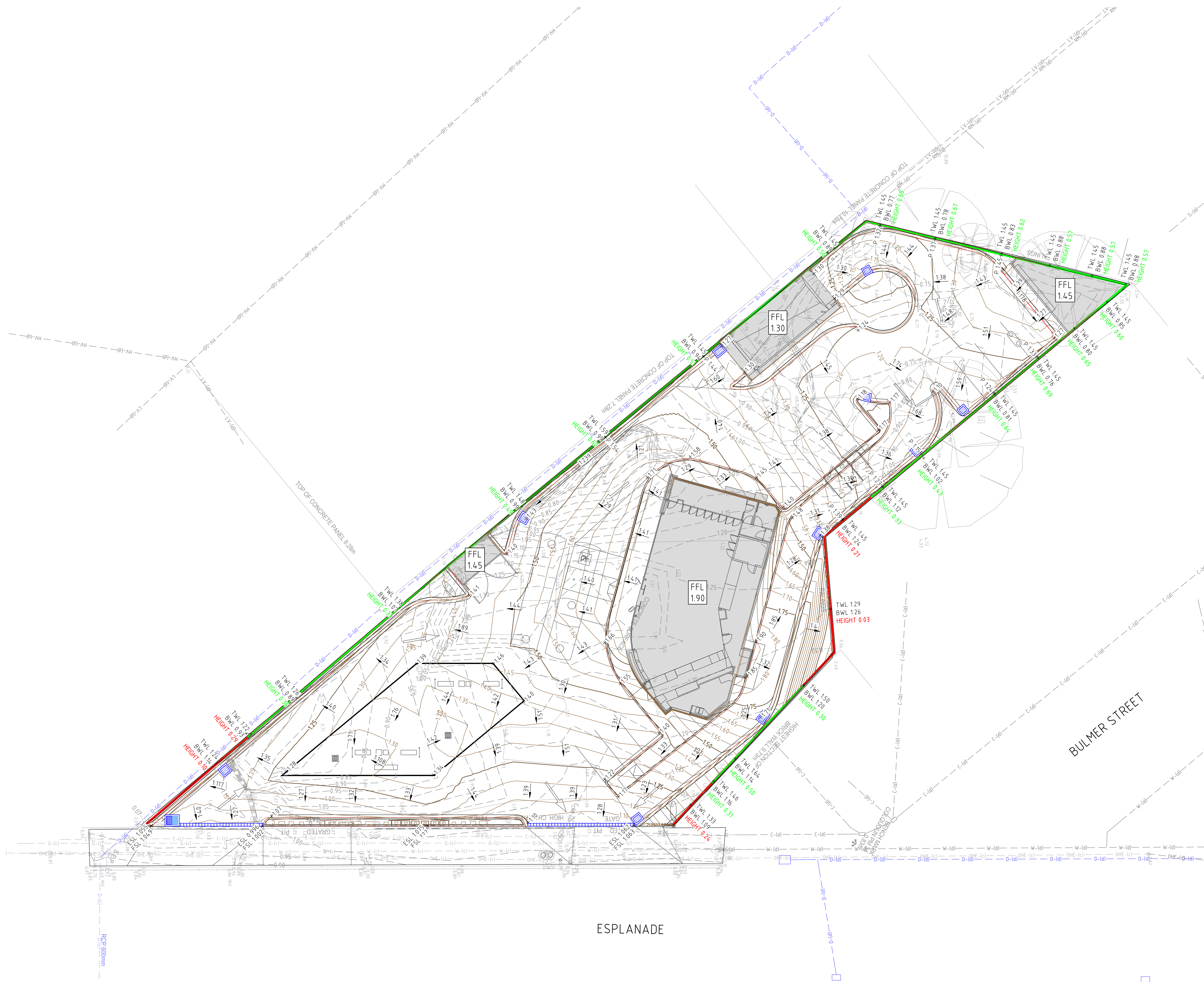
ADVERTISED

This copied document is made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1997. The document must not be used for any purpose which may breach any copyright.

- LEVELS WHICH ARE NOT PART OF THE PLANNING PROCESS UNDER THE PLANNING AND ENVIRONMENT ACT 1997. THIS DOCUMENT MUST NOT BE USED FOR ANY PURPOSE WHICH MAY BREACH ANY COPYRIGHT.
- DESIGN LEVELS ARE TO BE COORDINATED WITH ADS ARCHITECTS AND SPECIALITY SERVICE STATION OPERATORS REQUIREMENTS.
- ALL SOFT LANDSCAPING AREAS SHALL GRADE AT A MAXIMUM OF 1:4 TO SUIT LANDSCAPE ARCHITECTS PLANNING REQUIREMENTS.

LEGEND

- | | |
|---|--|
|  | EXISTING DRAINAGE |
|  | EXISTING WATER |
|  | EXISTING ELECTRICAL HIGH VOLTAGE |
|  | EXISTING ELECTRICAL LOW VOLTAGE |
|  | EXISTING ELECTRICAL OVERHEAD |
|  | EXISTING GAS |
|  | EXISTING TELECOMMUNICATIONS |
|  | EXISTING SEWER |
|  | EXISTING SEWER RISING MAIN |
|  | EXISTING MAJOR CONTOUR |
|  | EXISTING MINOR CONTOUR |
|  | PROPOSED MAJOR CONTOUR |
|  | PROPOSED MINOR CONTOUR |
|  | EXISTING SURFACE LEVEL |
|  | FINISHED SURFACE LEVEL |
|  | KERB & TYPE |
|  | KERB & TYPE |
|  | CANOPY EXTENT |
|  | FENCE KICKBOARD (≤300mm LEVEL DIFFERENCE) |
|  | PROPOSED CONCRETE SLEEPER RETAINING WALL (<300mm LEVEL DIFFERENCE) |
|  | PROPOSED GRATED PIT |
|  | PROPOSED JUNCTION PIT |
|  | PROPOSED SIDE ENTRY PIT |
|  | PROPOSED ACO S200K TRENCH GRATE |
|  | TRENCH GRATE CONNECTED TO SEWER (BY HYDRAULIC CONSULTANT) |



SCHEMATIC DESIGN

NOT FOR CONSTRUCTION

Printed 16/11/2023
Page 116 of 119

DRAWING No.	REV
52416-1-SK-104	B

B A	13/10/2023	PRELIMINARY ISSUE	DWG WXH	EVP EVP		 1 : 200 (A1) 1 : 400 (A3)	CLIENT: DEV. NO.	SURVEYED	COUNCIL	 MELBOURNE Level 5, 93 William Street, Melbourne VIC 3000 T 61 3 9249 5555 www.fyfe.com.au	OTR LAKES ENTRANCE 413 ESPLANADE LAKES ENTRANCE, VICTORIA FINISHED LEVELS PLAN	GAD REF: 52416-1-SK-104.DWG Printed 16/11/2023 Page 116 of 119	
	4/10/2023	PRELIMINARY ISSUE						DRAWN	DRAFTING CHECK				DESIGNED
REV.	DATE	DESCRIPTION	DRN.	APPD.		ALL DIMENSIONS SHOWN ARE IN METRES UNLESS NOTED OTHERWISE		ZKHC	DD-MM-YY			52416-1-SK-104	B

02 October 2023

Our Ref: 1231573-1

Fyfe Pty Ltd
Attention: Zach Collins
Level 2 / 14 South Terrace
ADELAIDE SA 5000

Dear Mr Collins,

RE: 413 Esplanade LAKES ENTRANCE

Civiltest have been engaged to provide a desktop assessment regarding the potential to waive the requirement for a 'geotechnical risk assessment' for 413 Esplanade LAKES ENTRANCE. The proposed development consists of a new service station complex including a canopy, underground tanks, control building, auto car wash, and associated plant, structures, and pavements.

1. SITE HISTORY:

There was no readily available documentation on the history of slope instability at the subject site. Available aerial and street view photos did not identify any evidence of a previous slope failure on this site or within the relevant surrounding areas.

2. SITE GEOLOGY:

Geological maps of the area suggest that the site is in an area of Quaternary Sediment belonging to the coastal dune deposits informal formation.

3. TOPOGRAPHY:

The site has a negligible slope and is relatively level throughout. This is consistent with surrounding areas in all directions. The surrounding area to the south remains relatively level across the Esplanade/Princes Highway to the low wall forming the coastline.

The ground cover within the front/south portion of the site consists of surfacings remaining following demolition of the previously existing service station. The ground cover within the rear/north portion of the site consists of lawn grasses, and medium size trees.

4. SUBSURFACE SOIL PROFILE:

The subsurface soil profile is likely to predominantly consist of natural sand soil. Shallow pavements and shallow and/or isolated concrete footings are expected to exist in the area of the previous service station. Backfill is expected to exist in the area of the underground tanks associated with the previous service station.

A groundwater table is likely to be present at this site close to the sea-level. This would be approximately 1 to 2 metres below the existing surface.

Printed 16/11/2023

Page 117 of 119

5. CONCLUSION:

The existing site presents a very low risk for all types of slope failure. This is principally due to the site having a negligible slope.

The excavation for remediation or installation of underground tanks presents a risk to localised slope stability. This excavation should be managed consistent with industry practise and health and safety regulations. This excavation is not expected to present any geotechnical risk outside of the immediate vicinity of the excavation.

The proposed development, consisting of a new service station complex, generally presents a very low risk for all types of slope failure. It is therefore expected that the development may proceed utilising conventional methods of construction and site management for a development of this type. The findings of this desktop assessment therefore demonstrate that a geotechnical risk assessment is not relevant to the assessment of an application for the proposed development of the site.

Any recommendations provided by Civiltest herein must be checked by the client to ensure they do not contradict the project design drawings and/or specifications. If a contradiction exists, the principal project engineer must review and approve of the recommendations provided by Civiltest.

Any levels referred to in Civiltest reports should be regarded as general and are not to be interpreted as surveyed confirmed levels. All levels should be checked and confirmed by a licensed surveying organisation or qualified personnel.

No responsibility will be taken for this document if it is altered in any way, or not reproduced in full.

Should you require any further information regarding this matter, please do not hesitate to contact me at our Mornington office.

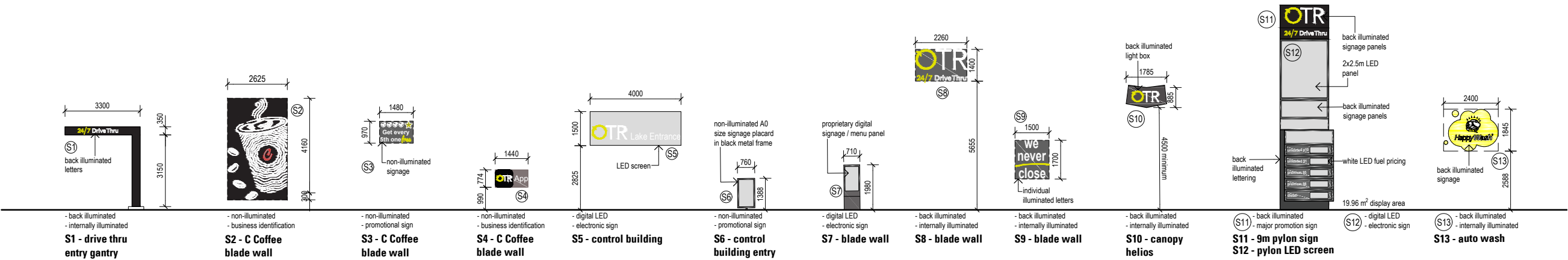
Yours faithfully



LIAM COX
SENIOR GEOTECHNICAL ENGINEER
MIEAust CPEng NER RPEV
CIVILTEST PTY LTD

REF: LC/th

This copied document is made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright.



SIGNAGE ELEVATIONS 1:100 AT A1

SIGN REFERENCE	DIMENSIONS (w x h x d) (m²)	ILLUMINATION?	TYPE OF SIGN	PERMIT REQUIRED?
S1	3.30 X 0.350 X 0.05 (1.15M²)	BACK ILLUMINATED	INTERNALLY ILLUMINATED	PERMIT REQUIRED
S2	2.625 X 4.16 X 0.05 (10.92M²)	NON-ILLUMINATED	BUSINESS IDENTIFICATION	PERMIT REQUIRED
S3	1.48 X 0.97 X 0.05 (1.43M²)	NON-ILLUMINATED	PROMOTIONAL SIGN	PERMIT NOT REQUIRED
S4	1.44 X 0.774 X 0.05 (1.11M²)	NON-ILLUMINATED	BUSINESS IDENTIFICATION	PERMIT NOT REQUIRED
S5	4.0 X 1.5 X 0.05 (6.0M²)	DIGITAL LED	ELECTRONIC SIGN	PERMIT REQUIRED
S6	0.76 X 1.388 X 0.05 (1.05M²)	NON-ILLUMINATED	PROMOTIONAL SIGN	PERMIT NOT REQUIRED
S7	0.71 X 1.98 X 0.05 (0.6M²)	DIGITAL LED	ELECTRONIC SIGN	PERMIT REQUIRED
S8	2.26 X 1.4 X 0.05 (3.16M²)	BACK ILLUMINATED	INTERNALLY ILLUMINATED	PERMIT REQUIRED
S9	1.5 X 1.7 X 0.05 (2.55M²)	BACK ILLUMINATED	INTERNALLY ILLUMINATED	PERMIT REQUIRED
S10	1.785 X 0.885 X 0.05 (1.58M²)	BACK ILLUMINATED	INTERNALLY ILLUMINATED	PERMIT REQUIRED
S11 - PYLON SIGN	2.1 X 9.0 X 0.5 (19.96M²)	BACK ILLUMINATED	MAJOR PROMOTION SIGN	PERMIT REQUIRED
S12 - PYLON LED SCREEN	2.0 X 2.5 X 0.05 (5M²)	DIGITAL LED	ELECTRONIC SIGN	PERMIT REQUIRED
S13	2.40 X 1.845 X 0.05 (4.42M²)	BACK ILLUMINATED	INTERNALLY ILLUMINATED	PERMIT REQUIRED

Total area of signage requiring a permit by category:

Internally illuminated: 12.86sqm

Business identification: 10.92sqm

Electronic sign: 6.6sqm

Major promotional sign: 19.96sqm

NEW SERVICE STATION COMPLEX
413 ESPLANADE LAKES ENTRANCE VIC

PLANNING