Morgan Street Redevelopment
Traffic Impact Assessment

Wathaurong Aboriginal Co-operative

04 March 2024

→ **The Power of Commitment**

Project name	Wathaurong Hub Redevelopment					
Document title	Morgan Street Redevelopment | Traffic Impact Assessment					
Project number	12613952					
File name	12613952-RPT_Wathaurong_Hub_Redevelopment_TIA.docx					
Status Code	Revision	Author	Reviewer		Approved for issue		
			Name	Signature	Name	Signature	Date
S4	0						22/09/23
S4	1						04/03/24

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1. Introduction

1.1 Purpose of this report

The purpose of this report is to assess the potential traffic impacts associated with the proposed re-development of 62 Morgan Street, Norlane (often referred to by the owner as North Geelong), 43 The Boulevard, Norlane, and the leased portion of 21 Birdwood Avenue, Norlane, in the context of the existing local road network. This report will assess the proposed design against the relevant standards of the Greater Geelong Planning Scheme.

1.2 Scope and limitations

This report: has been prepared by GHD for Wathaurong Aboriginal Co-operative and may only be used and relied on by Wathaurong Aboriginal Co-operative for the purpose agreed between GHD and Wathaurong Aboriginal Co-operative.

GHD otherwise disclaims responsibility to any person other than Wathaurong Aboriginal Co-operative arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Wathaurong Aboriginal Co-operative and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

1.3 References

The following documents and sources have been used in the preparation of this report:

- Guide to Traffic Generating Developments Updated traffic surveys (TDT 2013/04), RMS, 2013
- Guide to Traffic Generating Developments, RTA, 2002
- Traffic Volume Open Data Hub, Department of Transport and Planning, accessed July 2022
- Guide to Road Design Part 3, Austroads, 2020
- Guide to Road Design Part 4a, Austroads, 2021
- Guide to Traffic Management Part 6, Austroads 2020
- Victorian Planning Scheme, Department of Transport and Planning, 2023

2. Existing conditions

2.1 Subject site

The subject site is located on the southeast side of Morgan Street, North Geelong, as shown in Figure 2.1. The site is currently occupied by the existing Wathaurong Aboriginal Corporation (WAC) buildings which are serviced by an at-grade car park comprising a total of 37 spaces. Adjacent sites in the area typically comprise light industrial uses.

Access to the site is currently provided by a culvert bridge from Morgan Street, across Cowies Creek at the southwest corner of the site. The bridge has a width of 4.1m and therefore cannot accommodate simultaneous two-way traffic movements and operates as a single lane bridge with passive control.

There is no formal vehicle access to The Boulevard site, which is currently vacant, however there is a cycle lane which enters and traverses both this site, and the WAC site.

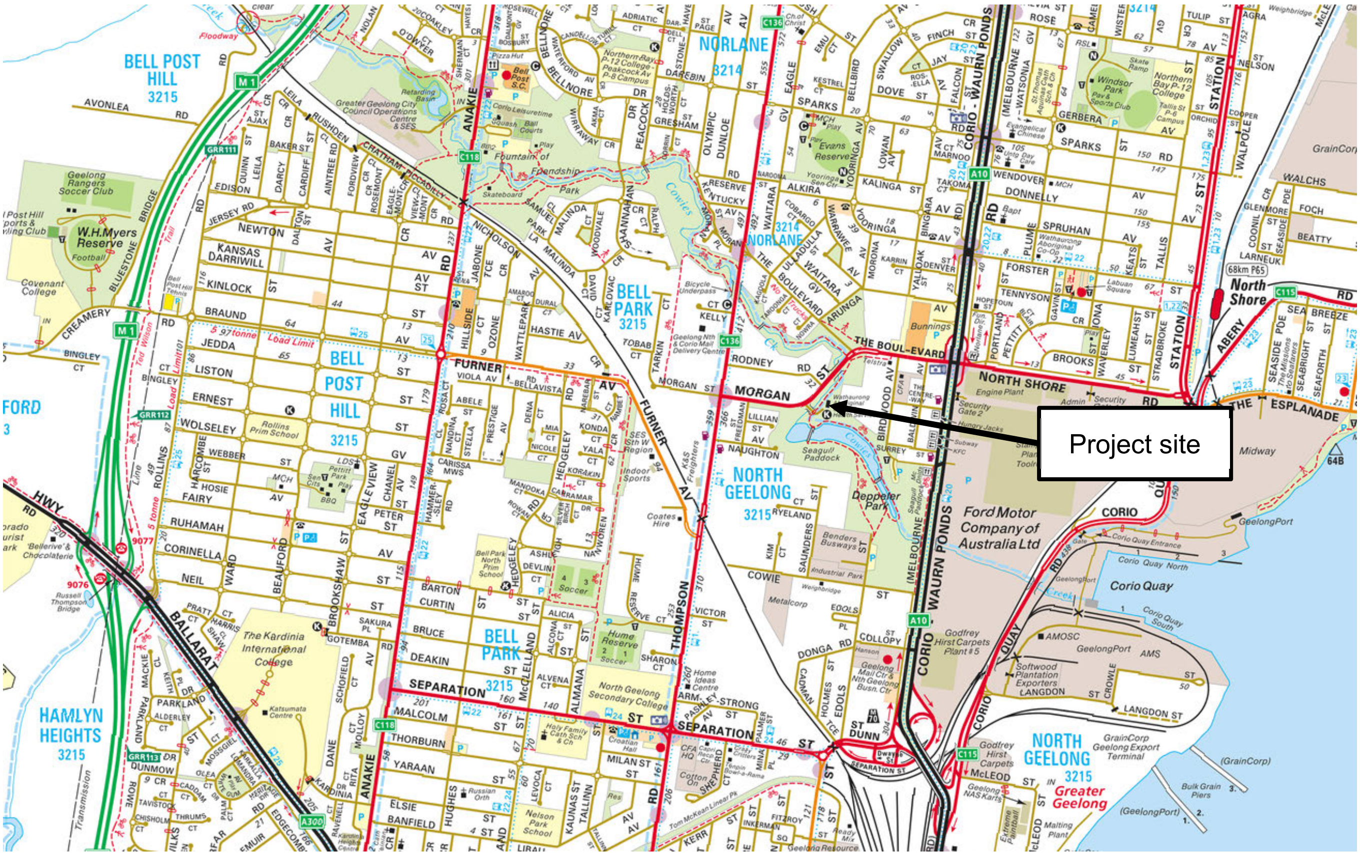


Figure 2.1 Site location

Source: Melways Publishing

An aerial view of the subject site is provided in Figure 2.2, illustrating the various land titles across which the project site sits. The site comprises land titled 60-62 Morgan Street and 43 The Boulevard, North Geelong as well as the western portion of 21 Birdwood Avenue, Norlane.

It is noted that the lot at 43 The Boulevard currently extends across Morgan Street. This block will be formally subdivided as part of this Planning Application. Furthermore, the land located on the lot at 21 Birdwood Avenue is currently leased, this agreement will continue following the redevelopment.

Figure 2.2 Aeriel view of project site and context

Source: MetroMap

2.2 Planning Zones

The project site is shown in Figure 2.3. In this regard, 60-61 Morgan Street and 43 The Boulevard titles are currently located within a Public Park and Recreation Zone (PPRZ), while the land located on 21 Birdwood Avenue is located within an Industrial 1 Zone (IN1Z). Additionally, the site abuts Morgan Street which is within a Transport Zone 2 (TRZ2). Surrounding lots are mainly located within an Industrial 1 Zone (IN1Z).

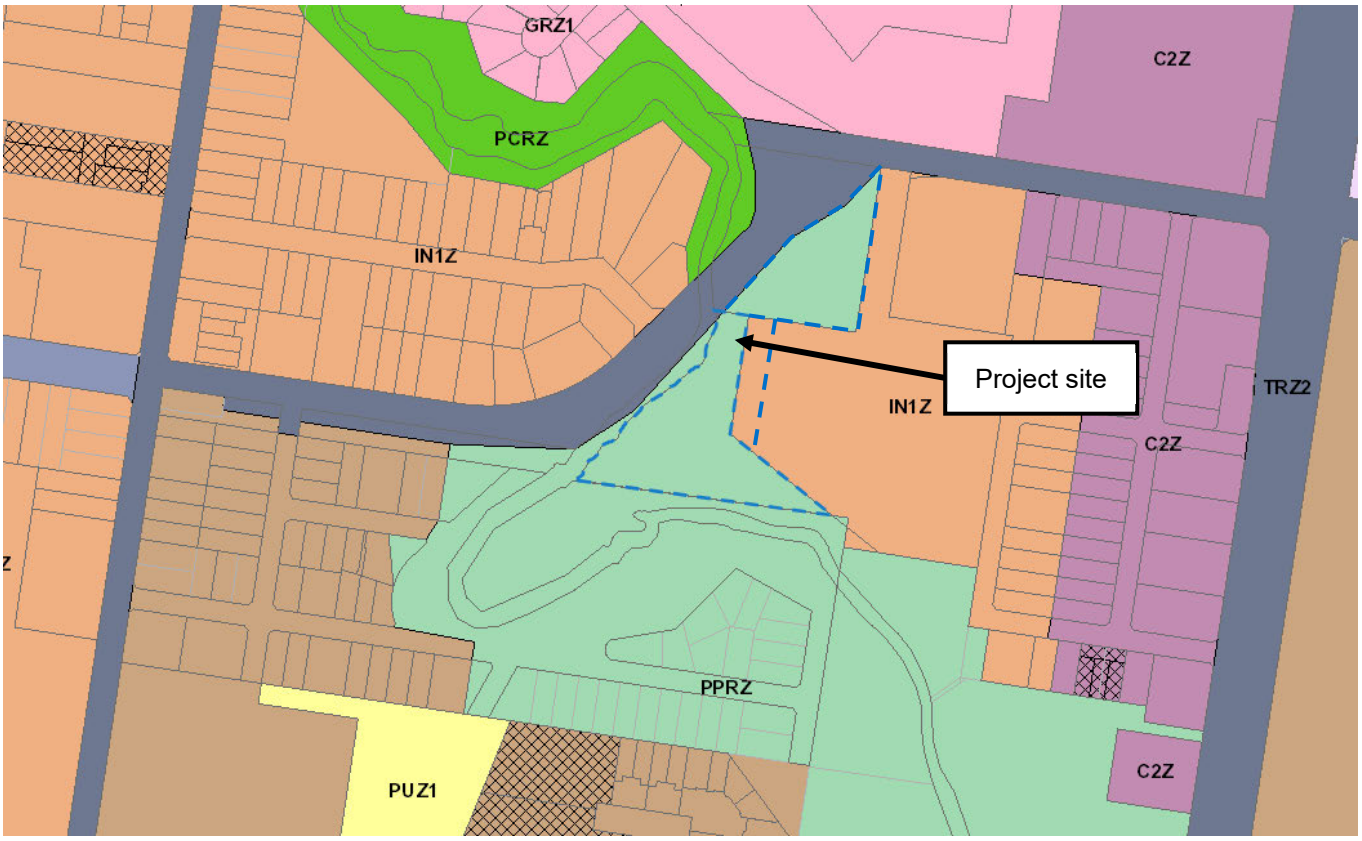


Figure 2.3 Planning Scheme zones

Source: Vicplan

2.3 Road network

2.3.1 Morgan Street

Morgan Street is a Department of Transport and Planning (DTP) controlled arterial road which runs generally east-west between Tarkin Court in the west and The Boulevard in the east.

Morgan Street is a two-lane two-way road with a varying carriageway width of approximately 8.8-14.4m. Parallel kerbside parking is provided along the north side of Morgan Street, while the south side comprises a shoulder which is currently covered in a combination of grass and gravel and is being used for informal parking. It is noted that staff and visitors to the WAC and surrounding business and the surrounding businesses, consistently utilise the shoulder to the west of the access bridge for parking.

There are limited footpaths and no bicycle lanes along the length of Morgan Street, with the exception of the shared path which runs northeast from the north of the subject site, through to The Boulevard and a section of footpath along the north side of the street, to the west of Thompson Road.

Morgan Street has a posted speed limit of 60km/h.

The view of the Morgan Street is shown in Figure 2.4 and Figure 2.5.

Figure 2.4 Site access/Morgan Street intersection, looking west

Figure 2.5 Morgan Street, looking northeast

2.3.2 The Boulevard

The Boulevard runs east-west between Morgan Street in the west and Prices Highway in the east and is a DTP controlled Arterial Road. The Boulevard has two distinct segments, with the eastern portion forming an extension of Morgan Street through the intersection with Princes Highway (where it becomes North Shore Road) and the north-western portion being a local Council controlled access road.

To the east of Morgan Street, The Boulevard provides two lanes in the westbound direction and one lane in the eastbound direction, while to the northwest of Morgan Street, The Boulevard is configured as a two-lane two-way road. No parking is permitted on either side of The Boulevard to the east of Morgan Street, with the exception of some parallel kerbside parking on the north side of the street, adjacent Bunnings which is restricted to two-hour parking between 7:00 and 18:00. Kerbside parallel parking is unrestricted along the Boulevard to the northwest of Morgan Street.

The Boulevard has a posted speed limit of 60km/h to the east of Morgan Street where it functions as an arterial, while the Council controlled section to the northwest has a 50km/h speed limit.

Figure 2.6 shows the road configuration looking north at the intersection of Morgan Street and The Boulevard. In this regard, Morgan Street is at the left, while the legs of the intersection generally at the centre and right are the northwest and east sections of The Boulevard.

Figure 2.6 Morgan Street/The Boulevard intersection, looking north

2.4 Sustainable transport

2.4.1 Public transport

Public transport in the vicinity of the site is moderate. There are three bus routes, the Route 1, Route 20 and Route 22, with stops located within 1km/15-minutes' walk of the site. In addition, North Shore train station is located approximately 1.7km/22-minutes' walk from the site and provides a variety of regional services between Geelong and Melbourne.

The network full network in the vicinity of the site is shown in Figure 2.7.

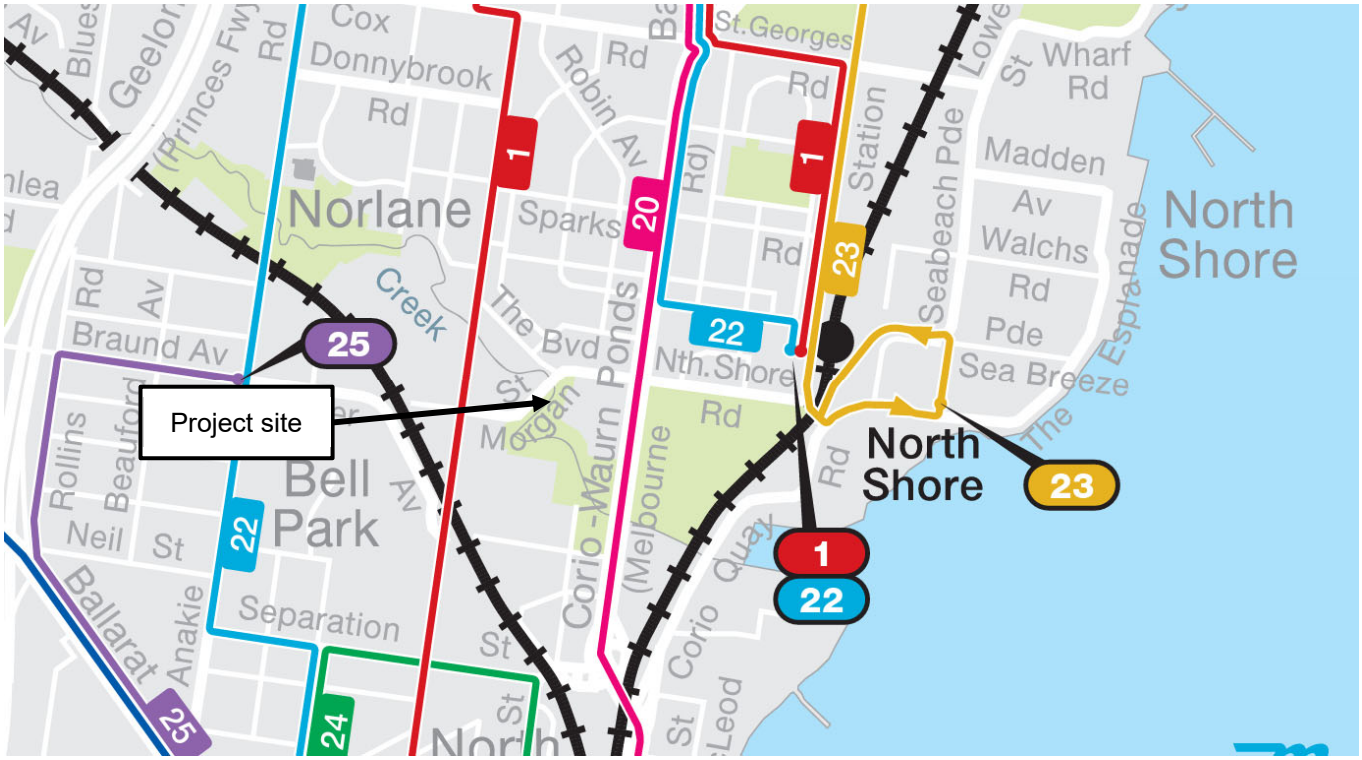


Figure 2.7 Public transport provision

Source: Public Transport Victoria

2.4.2 Pedestrian path network

Pedestrians are able to access the site via the Cowies Creek Trail which runs alongside the Cowies Creek and through the project site. The Cowies Creek Trail connects the site from Cowie Street in the south, through the site, across Morgan Street, all the way northwest through the Fountain of Friendship Park to the Ted Wilson Trail. Accordingly, residents from neighbouring areas are able to join the trail to the site.

While the Cowies Creek Trail connects through to footpaths along The Boulevard to the northeast of the site, there are no footpaths provided along Morgan Street up to the intersection with Thompson Road at the west.

2.4.3 Cycle network

The subject site has good access to the surrounding Principal Bicycle Network (PBN). Adjacent to the subject site, Morgan Street, The Boulevard and The Cowies Creek Trail indicated as PBN within City of Greater Geelong's Principal Bicycle Network Plan as shown in Figure 2.8 and provides connection to surrounding major locations such as Corio, Norlane, Geelong etc. While is noted that Morgan Street is a PBN, there is no off-road separated bicycle infrastructure available, and cyclist expected to share the road with motor vehicles.

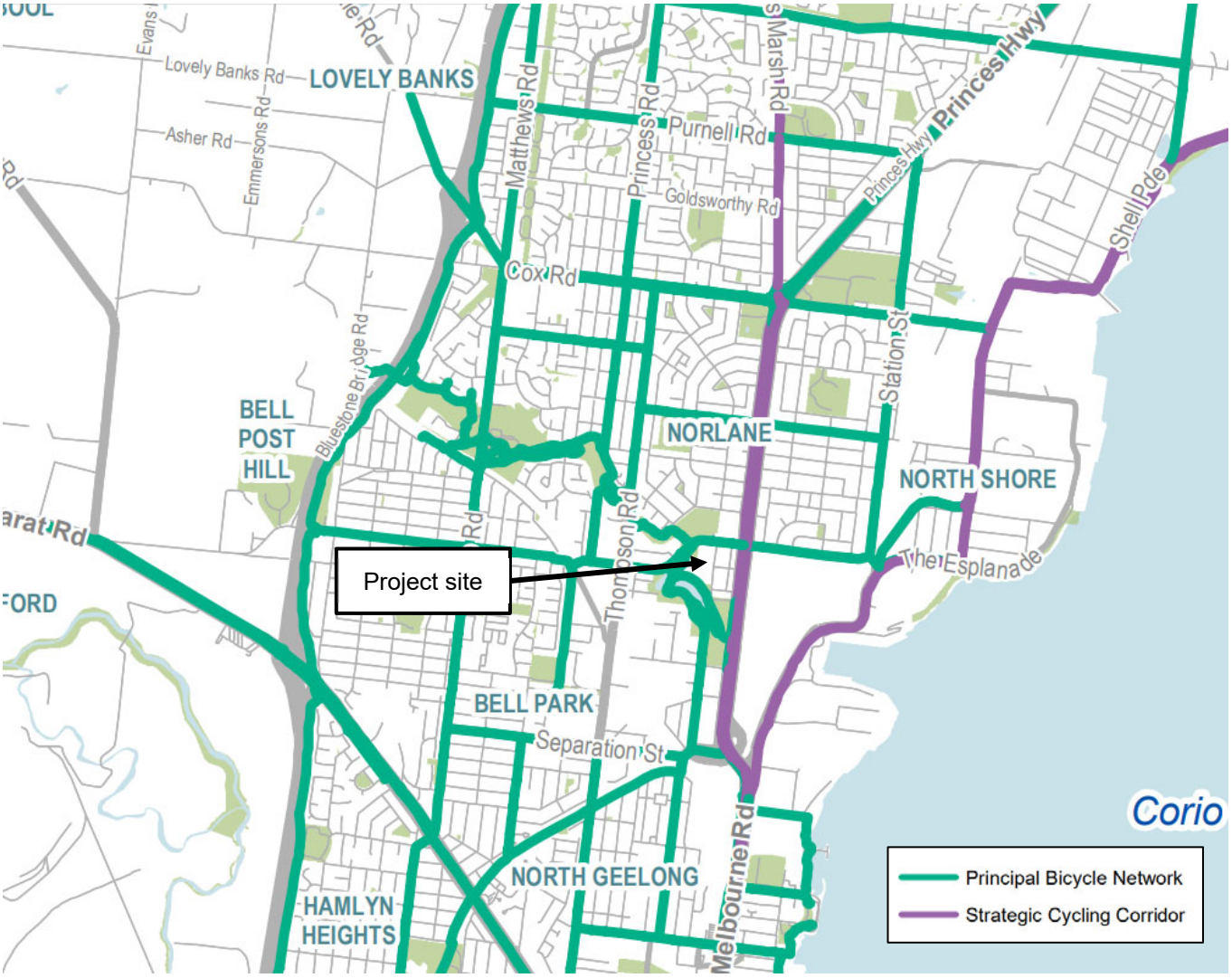


Figure 2.8 Principal Bicycle Network City of Greater Geelong

Figure 2.9 shows the Strava Heatmap for the area surrounding the site. This map is based on two years of aggregated cycling trip data posted to Strava. In this regard, whiter colours represent the routes with the highest usage while reddish colours represent routes with lower usage. Due to the nature of reporting, it is noted that Strava is skewed towards sports cyclists compared to commuters.

Based on the Heatmap, the key routes in and out of the site include:

- The Cowies Creek Trail
- Morgan Street (east-west)
- The Bay Trail (shown at the bottom right corner)

Figure 2.9 Strava cycling Heatmap

Image source: Strava

2.5 Crash history

Road crash history for the 6-year period from January 2016 to December 2021 was obtained from the Department of Transport 'Road Crashes for five years Victoria'. Within this period, there were a total of 5 recorded crashes. A summary of the extracted crash data is provided in Table 2.2.1 and Figure 2.10.

The crash at Morgan Street/Thompsons Road occurred at night-time, while the remaining crashes occurred during daylight hours. The serious injuries included a pedestrian being hit on The Boulevard from the left and the night-time vehicle collision at the Morgan Street/Thompsons Road. Notably, there were no crashes recorded near the site access point.

Table 2.2.1 Summary of five-year crash data

Location	Number of crashes				Dominant crash type(s)
	Fatal	Serious	Other	Total	
Midblock					
The Boulevard	0	1	2	3	Pedestrian hit from left (1), right through (1), rear end (1)
Intersection					
Morgan Street/Thompsons Road	0	1	0	1	Collision with vehicle (1)
Melbourne Road/The Boulevard	0	0	1	1	Collision with a fixed object (1)
Total	**0**	**2**	**3**	**5**	

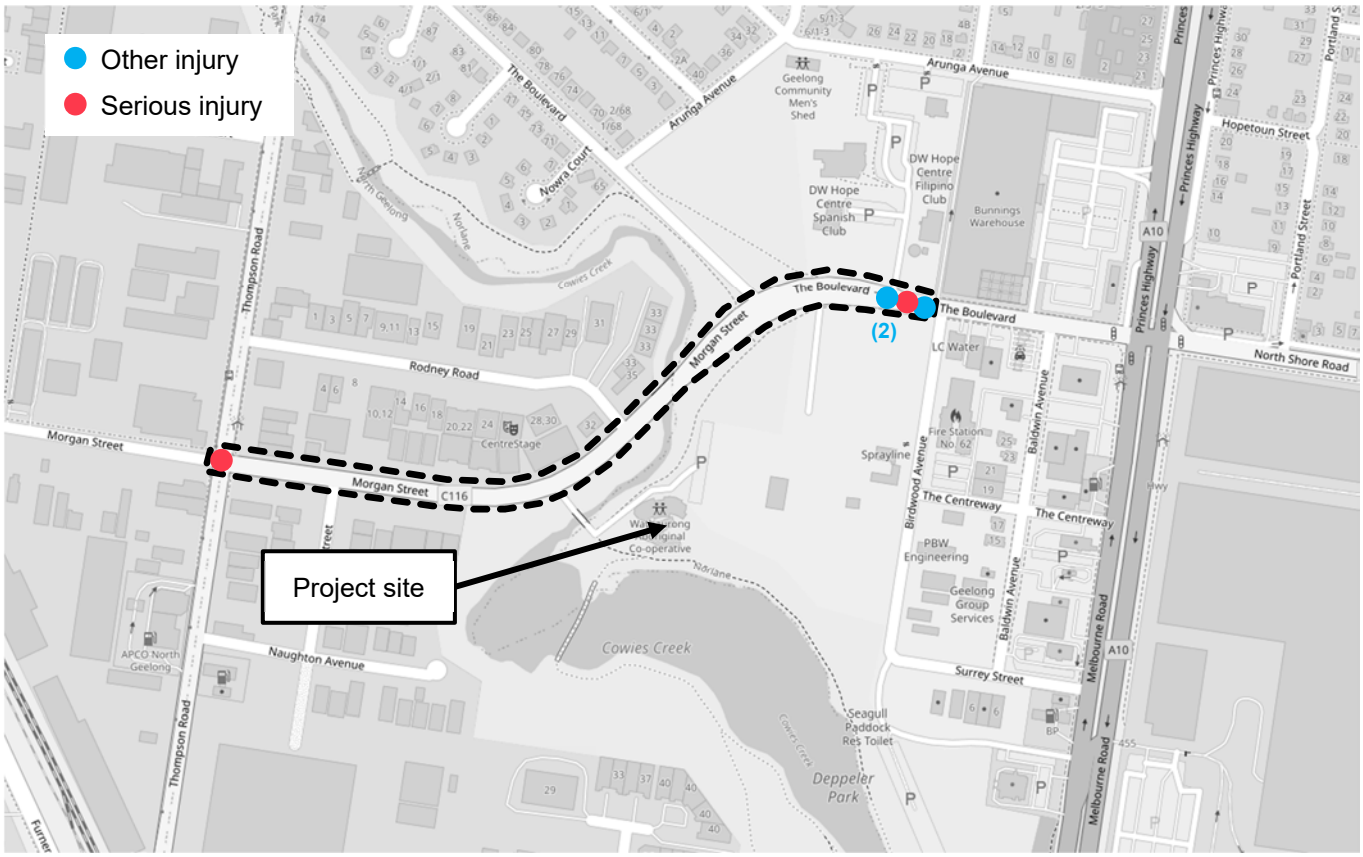


Figure 2.10 Crash history within vicinity of the site

Image source: Open Street Map, accessed June 2022

2.6 Traffic surveys

GHD commissioned Matrix Traffic and Transport Data (Matrix) to undertake a tube count survey on Morgan Street at the site frontage, as well as turning movement counts at the intersections of the Wathaurong site access/Morgan Street and The Boulevard/Morgan Street, as shown in Figure 2.11 below.

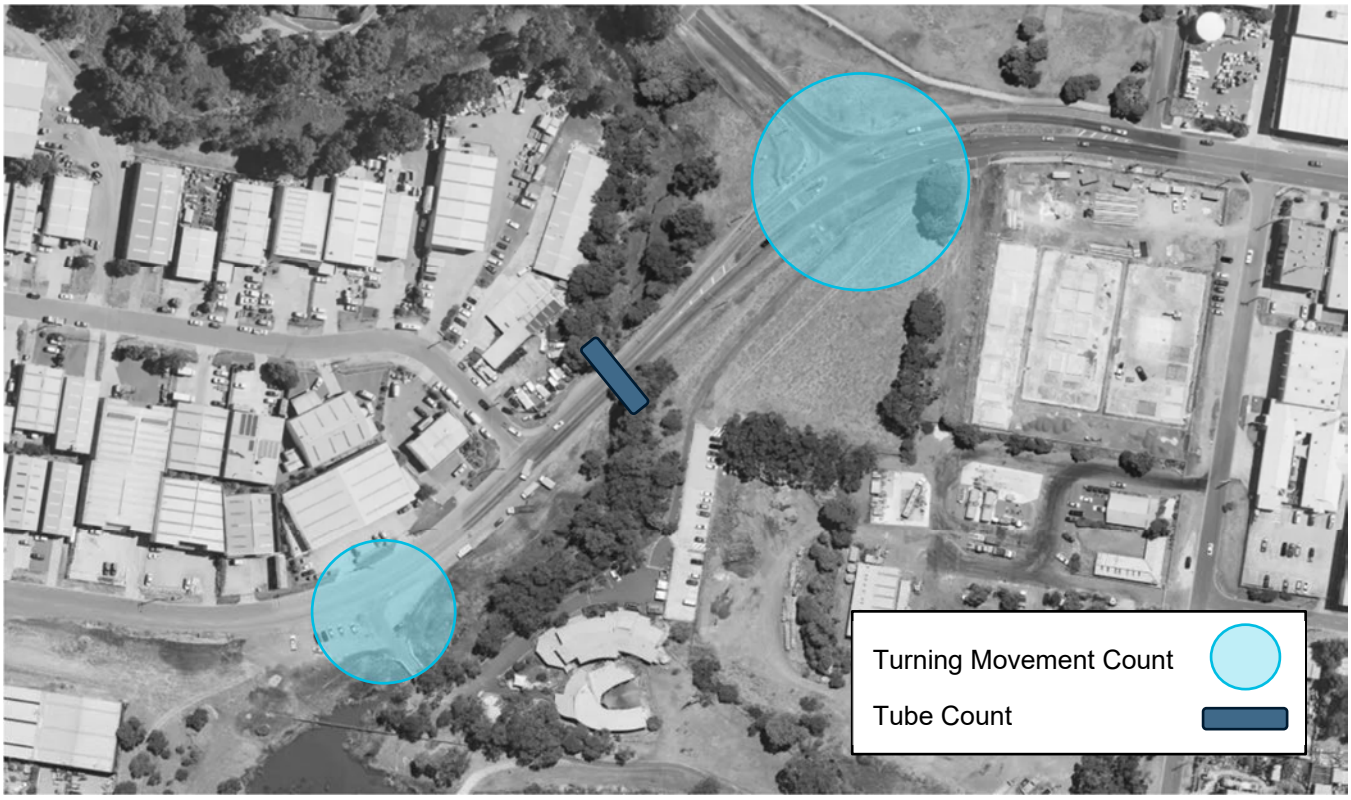


Figure 2.11 Survey locations

Base map source: Metromap, accessed July 2022

2.6.1 Tube count survey results

The tube counter was installed for a week from Saturday 18 June 2022 to Friday 24 June 2022. As shown in Table 2.2.2, the data demonstrated the 85th percentile speed recorded was below the posted speed limit of 60km/h.

Table 2.2.2 Tube count data

Survey period	Vehicles per day (two way)	Average Speed	85th Percentile Speed
7-days	9,221	50.6 km/h	56.2 km/h
Weekdays	9,552	50.0 km/h	55.8 km/h

Figure 2.12 shows the hourly traffic profile across the average weekday period, from Monday to Friday. While the traffic profile shows AM and PM peaks in the westbound direction, traffic is generally steady across the day.

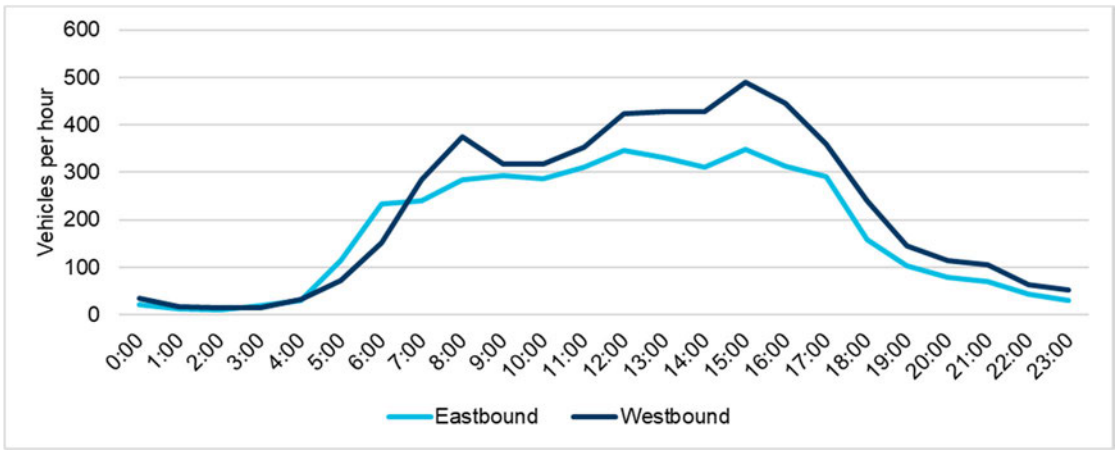


Figure 2.12 Morgan Street - Weekday hourly traffic volumes

2.6.2 Turning movement counts

The turning movement counts captured 12 hours of vehicle movements, from 07:00-19:00. Based on the captured movements, the road network peak hours occurred between:

– 08:00-09:00
– 15:15-16:15

The peak hour turning movements are shown below in Figure 2.13.

Figure 2.13 Peak hour turning movements

Base map source: Metromap, accessed July 2022

It is noted that the traffic movements to/from WAC via the access road bridge were relatively steady across the day, peaking between 16:30-17:30. Furthermore, based on all movements recorded to/from WAC over the survey period, approximately 65% were directed to/from the east with the remaining 35% directed to/from the west.

All traffic movements recorded in and out of Wathaurong are shown below in Figure 2.14 across the full 12-hour survey period.

Figure 2.14 12-hour traffic movements

Base map source: Metromap, accessed July 2022

3. Proposal

3.1 General

It is proposed to redevelop the site for purposes as a mixed-use complex operated by the Wathaurong Aboriginal Corporation. The proposed development would all be housed within a 3-storey building which will be located in the southern portion of the site.

Vehicular access to the site will be provided from a new accessway from Morgan Street, at the north of the site. The new access will allow left-in and right-in movements, while outbound movements will be restricted to left-out only. The existing bridge at the southwest of the site will be used predominantly for pedestrian and cyclist access. The Wathaurong owned mini-bus, and other vehicles on occasion, will be able to exit the site via the bridge, noting bollards will need to be removed to permit access through to the southwest.

The new building will both consolidate WAC's organisations various sites in the Geelong region and allow for an expansion of the services currently offered. A summary of the proposed uses is provided in Table 3.3.1 below.

Table 3.3.1 Development summary

Use	No. / Area
Medical Centre	21 practitioners
Office	1463 m^2 / 121 staff
Conference / function space	418 m^2 / maximum 420 patrons
Café	80 m^2

In addition to each of the proposed uses listed above WAC own and store fleet vehicles on-site. It is understood that WAC currently own 44 fleet vehicles, with this number expected to increase by 25% to 55 vehicles to meet future demands.

The proposed site layout is included below in Figure 3.1.

3.2 Car parking

As part of the proposal, it is proposed to provide a total of 164 on-site car parking spaces, including 28 spaces within an under-croft car park inside the building footprint and 136 at-grade spaces to the north east of the building, including the triangle lot known as 43 The Boulevard. In addition, one short term drop-off space will be provided on-site, adjacent to the accessible parking spaces on the 21 Birdwood Avenue site.

Two electric vehicle (EV) charging spaces are initially to be provided at the at-grade car park. The site will be future proofed as per National Construction Code 2022 requirements including both private indoor and additional outdoor EV charging spots added to as demand increases.

Based on information from WAC it is understood that 11 of the fleet vehicles would not require an on-site parking space and would not typically visit the site during the day, with the responsible staff conducting work elsewhere. The remaining 44 fleet vehicles will however require an on-site parking space.

Table 3.2 Summary of car parking provision

Location	Car Parking Provision
On-site under-croft car park	28 spaces
On-site at-grade car park	136 spaces
Total	**164 spaces**

3.3 Bicycle parking

Staff bicycle parking and end-of-trip facilities are provided at ground floor level on the northern side of the building, with provision for 12 bicycles (8 in vertical wall racks, and 4 on floor mounted racks). Two private showers and changing areas are provided adjacent to the bike storage area.

Visitor bicycle parking is provided in two locations close to the building entrance. At each location there are three ground-mounted racks. Each rack provides parking for two bikes. Therefore, total of 12 visitor bicycle spaces are provided.

3.4 Bus parking

An indented bus bay is provided off the internal access road on the portion of 21 Birdwood Avenue that is leased to WAC, while a second indented mini-bus bay is provided at the immediate northwest of the WAC building. Each mini-bus bay has been designed to accommodate coaster buses with length of approximately 7m (22-seater Toyota coaster).

The mini-buses will enter via the access at the north of the site. The vehicle using the northern bus bay will use the loading bay to turn around (if empty) and exit back to Morgan Street via the WAC access. Alternatively, they will continue to the south exiting to Morgan Street via the existing bridge. Mini-buses who use the southern bus bay will also exit via the bridge. It is noted that bollards will need to be removed to provide access to the bridge.

3.5 Loading

A dedicated loading area is provided off the main access road which consists of two loading bays. The proposed design of the loading bays has been tested with swept paths, and the analysis demonstrates this area can accommodate simultaneous loading by one 8.8m service vehicle and 5.2m long van.

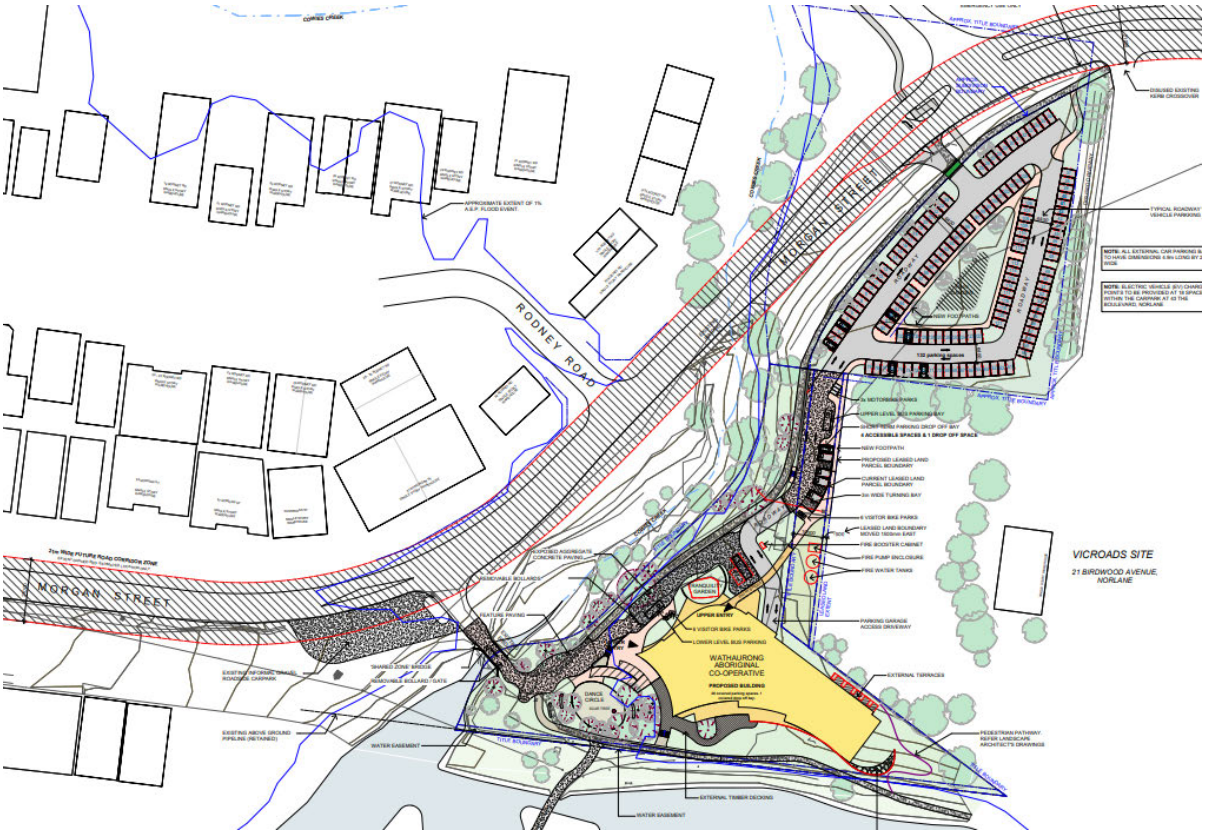


Figure 3.1 Current proposed site layout

Source: Woods Bagot; Project Number:130882; Sheet number:A-TP-1101; Rev:E; Date:11/02/24

4. Design assessment

4.1 Planning Scheme assessment

The proposed car parking design and layout has been assessed below in accordance with the relevant requirements specified in Clause 52.06-9 of the Greater Geelong Planning Scheme.

4.1.1 Design Standard 1 – Accessways

Table 4.1 summarises the requirements outlined within Design Standard 1.

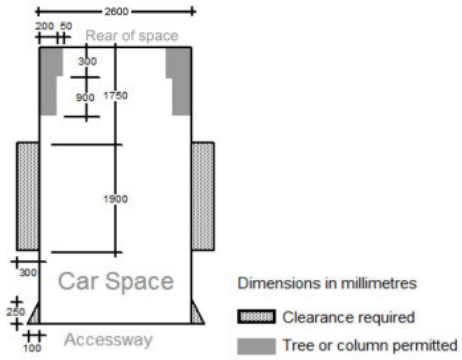
Table 4.1 Clause 52.06-9 Design Standard 1 – Accessways

Planning Scheme requirement	Design response
Accessways must:	
Be at least 3 metres wide	**Satisfied:** All accessways are wider than 3 metres.
Have an internal radius of at least 4 metres at changes of direction or intersection or be at least 4.2 metres	**Satisfied:** Accessways have been designed with gentle horizontal curves, all of which provide an internal radius of more than 4 metres or more than 4.2m wide.
Allow vehicles parked in the last space of a dead-end accessway in public car parks to exit in a forward direction with one manoeuvre.	**Satisfied:** Vehicles parked in the dead-end aisle at the northern end of the site can exit in a forward direction with one turning manoeuvre.
Provide at least 2.1 metres headroom beneath overhead obstructions, calculated for a vehicle with a wheel base of 2.8 metres.	**Satisfied:** All car parking provided in the under-croft area has a headroom of no less than 2.1m.
If the accessway serves four or more car spaces or connects to a road in a Transport Zone 2 or Transport Zone 3, the accessway must be designed so that cars can exit the site in a forward direction.	Morgan Street is classified as a Transport Zone 2. **Satisfied:** The site layout ensures that all vehicles can exit the site in a forward direction.
Provide a passing area at the entrance at least 6.1 metres wide and 7 metres long if the accessway serves ten or more car parking spaces and is either more than 50 metres long or connects to a road in a Transport Zone 2 or Transport Zone 3.	**Satisfied:** The proposed accessway from Morgan Street provides two-way access with a width of 6.4m. Within the site all accessways facilitate two-way traffic.
Have a corner splay or area at least 50 per cent clear of visual obstructions extending at least 2 metres along the frontage road from the edge of an exit lane and 2.5 metres along the exit lane from the frontage, to provide a clear view of pedestrians on the footpath of the frontage road. The area clear of visual obstructions may include an adjacent entry or exit lane where more than one lane is provided, or adjacent landscaped areas, provided the landscaping in those areas is less than 900 mm in height.	**Satisfied:** The existing access point to Morgan Street provides a corner splay adjacent the exit lane which exceeds the minimum dimensions. Where the shared use trail crosses the site accessway the path will continue as a raised table, encouraging vehicles to slow down and demarcating the pedestrian priority.
If an accessway to four or more car parking spaces is from land in a Transport Zone 2 or Transport Zone 3, the access to the car spaces must be at least 6 metres from the road carriageway. If entry to the car space is from a road, the width of the accessway may include the road.	Morgan Street is classified as a Transport Zone 2. **Satisfied:** All car spaces are more than 6 metres from the road carriageway.

4.1.2 Design Standard 2 – Car parking spaces

Table 4.2 summarises the requirements outlined within Design Standard 2.

Table 4.2 Clause 52.06-09 Design Standard 2 – Car parking spaces

<table>
<tr><th>Planning Scheme requirement</th><th>Design response</th></tr>
<tr><td>Car parking spaces and accessways must have the minimum dimensions as outlined in Table 2.
Minimum dimensions for 90-degree parking spaces from Table 2 are:
<table>
<tr><th>Accessway width</th><th>Car space width</th><th>Car space length</th></tr>
<tr><td>6.4 metres</td><td>2.6 metres</td><td>4.9 metres</td></tr>
<tr><td>5.8 metres</td><td>2.8 metres</td><td>4.9 metres</td></tr>
<tr><td>5.2 metres</td><td>3.0 metres</td><td>4.9 metres</td></tr>
<tr><td>4.8 metres</td><td>3.2 metres</td><td>4.9 metres</td></tr>
</table></td><td>Satisfied: All car parking spaces have been designed to have minimum dimensions of 2.6 metres in width and 4.9 metres in length with an accessway of at least 6.4 metres. These dimensions meet the dimensions outlined within Table 2 of this design standard and therefore considered to be satisfactory.</td></tr>
<tr><td>A wall, fence, column, tree, tree guard or any other structure that abuts a car space must not encroach into the area marked ‘clearance required’ on Diagram 1, other than:
– A column, tree or tree guard, which may project into a space if it is within the area marked ‘tree or column permitted’ on Diagram 1.
– A structure, which may project into the space if it is at least 2.1 metres above the space
Diagram 1 Clearance to car parking spaces
 
</td><td>Satisfied: All car spaces including with the undercroft are clear of any encroachments within the area marked as ‘Clearance Required’ within Diagram 1 of Clause 52.06-9 of the Planning Scheme.</td></tr>
<tr><td>Car spaces in garages or carports must be at least 6 metres long and 3.5 metres wide for a single space and 5.5 metres wide for a double space measured inside the garage or carport</td><td>Not applicable: There are no car garages or car ports proposed within the site.</td></tr>
<tr><td>Where parking spaces are provided in tandem (one space behind the other) an additional 500 mm in length must be provided between each space.</td><td>Not applicable: No tandem car parking spaces are proposed within the site.</td></tr>
<tr><td>Where two or more car parking spaces are provided for a dwelling, at least one space must be under cover.</td><td>Not applicable: No spaces are proposed for residents.</td></tr>
<tr><td>Disabled car parking spaces must be designed in accordance with Australian Standard AS2890.6-2009 (disabled) and the Building Code of Australia. Disabled car parking spaces may encroach into an accessway width specified in Table 2 by 500 mm.</td><td>Satisfied: All accessible parking spaces proposed will have dimensions of 2.6 metres in width and 4.9 metres in length with an adjacent shared area of the same dimensions. It is noted that the accessible spaces and their respective shared areas will encroach into the adjacent aisle in order to provide the required length of 5.4m.
As required by AS2890.6, a bollard is also proposed within the shared area of the accessible space.</td></tr>
</table>

4.1.3 Design Standard 3 – Gradients

Table 4.3 summarises the requirements outlined in Design Standard 3.

Table 4.3 Clause 52.06-09 Design Standard 3 – Gradients

<table>
<tr><th>Planning Scheme requirement</th><th>Design response</th></tr>
<tr><td>Accessway grades must not be steeper than 1:10 (10 per cent) within 5 metres of the frontage to ensure safety for pedestrians and vehicles. The design must have regard to the wheelbase of the vehicle being designed for; pedestrian and vehicular traffic volumes; the nature of the car park; and the slope and configuration of the vehicle crossover at the site frontage. This does not apply to accessways serving three dwellings or less.</td><td>Satisfied: The proposed new accessway at the north of the site will not have grades in excess of 1:10 for the first 5 metres.</td></tr>
<tr><td>Ramps (except within 5 metres of the frontage) must have the maximum grades as outlined in Table 3 and be designed for vehicles travelling in a forward direction.
Table 3 ramp gradients:
<table>
<tr><th>Type of car park</th><th>Length of ramp</th><th>Maximum grade</th></tr>
<tr><td rowspan="2">Public car parks</td><td>20 m or less</td><td>1:5 (20%)</td></tr>
<tr><td>Longer than 20 m</td><td>1:6 (16.7%)</td></tr>
<tr><td rowspan="2">Private or residential car parks</td><td>20 m or less</td><td>1:4 (25%)</td></tr>
<tr><td>Longer than 20 m</td><td>1:5 (20%)</td></tr>
</table></td><td>Satisfied: The grades of the proposed vehicular accessway are in accordance with the Planning Scheme requirements, with no grade exceeding 1:5, and no sections longer than 20m exceeding a grade of 1:6.</td></tr>
<tr><td>Where the difference in grade between two sections of ramp or floor is greater that 1:8 (12.5 per cent) for a summit grade change, or greater than 1:6.7 (15 per cent) for a sag grade change, the ramp must include a transition section of at least 2 metres to prevent vehicles scraping or bottoming.</td><td>Satisfied: All grades along the proposed access road shall be designed to ensure appropriate transitions are provided.</td></tr>
<tr><td>Plans must include an assessment of grade changes of greater than 1:5.6 (18 per cent) or less than 3 metres apart for clearances, to the satisfaction of the responsible authority.</td><td>Not applicable: The accessway has been designed to minimise grade changes over short distances and therefore does not propose any changes of greater than 1:5.6 over 3m.</td></tr>
</table>

4.2 Bicycle parking

The staff bicycle parking spaces have been provided in a combination of ground-mounted hoops and Ned Kelly style vertical systems. The vertical racks are proposed with a length of 1.86m and a separation between spaces of 0.5m. The ground-mounted hoops provide 1.8m in length and a 1m separation between hoops. The adjacent aisle has a width of 1.5m satisfying the requirement of AS 2890.3 and providing a more comfortable manoeuvring area. Using these parking systems, 33% of bicycle spaces are provided in ground-mounted racks, exceeding the Australian Standard requirements.

The access path to the staff spaces is generally more than 1.5m wide which exceeds the Australian Standards requirements.

The visitor bicycle spaces have been provided in ground mounted hoops located in two locations close to the building entrance. The visitor hoops have all been designed in accordance with the Australian Standards; specifically, they are provided at one metre centres, with an envelope of 1.8m and a 1.5m access aisle.

4.3 Loading

Proposed loading area has been designed with two docks which can accommodate an 8.8m service vehicle and a 5.2m long van simultaneously. On entry, both vehicles will reversing back to the loading dock. On egress, vehicles will drive forward and turn right to exit the site to Morgan Street in a forward direction.

Swept paths showing the loading vehicle access are attached in Appendix A.

5. Car parking assessment

5.1 Statutory requirements

5.1.1 Clause 52.06 requirements

The car parking requirements for the proposed development are set out in Clause 52.06-05 of the Greater Geelong Planning Scheme. Based on application of the Column A rates, the statutory car parking requirements for the site are outlined below in Table 5.1.

Table 5.1 Clause 52.06 car parking requirements

Use	No/Area	Rate	Car parking requirement	Total
Food and drink	80 m^2	4	To each 100 sq m of leasable floor area	3
Medical centre	21	5	To the first person providing health services plus	65
		3	To every other person providing health services	
Office	1463 m^2	3.5	To each 100 sq m of net floor area	51
Place of assembly	420	0.3	To each patron permitted	126
Total				**245**

Based on the above calculations, a total of 245 car parking spaces are required for the proposed development under Clause 52.06 of the Greater Geelong Planning Scheme.

5.1.2 Car parking provision

It is proposed to provide a total of 164 car parking spaces on-site, including 29 spaces within an under-croft car park and 135 at-grade spaces. The proposal generates a shortfall of 81 spaces when compared to the Planning Scheme requirements.

Clause 52.06-7 of the Greater Geelong Planning Scheme states that any application to reduce the number of car parking spaces required must be accompanied by a Car Parking Demand Assessment. Furthermore, the assessment must assess the likely car parking demand generated by the proposal with consideration to:

- The likelihood of multi-purpose trips within the locality which are likely to be combined with a trip to the land in connection with the proposed use
- The variation of car parking demand likely to be generated by the proposed use over time
- The short-stay and long-stay car parking demand likely to be generated by the proposed use
- The availability of public transport in the locality of the land
- The convenience of pedestrian and cyclist access to the land
- The provision of bicycle parking and end of trip facilities for cyclists in the locality of the land
- The anticipated car ownership rates of likely or proposed visitors to or occupants (residents or employees) of the land
- Any empirical assessment or case study

5.2 Car parking demand assessment

5.2.1 Office

Based on information supplied by WAC, excluding the medical centre, WAC can accommodate maximum of 121 office staff per day. Amongst the office staff, 24 are permanently allocated a fleet vehicle, and therefore have been assessed in section 5.2.5 of this car parking demand assessment. An assessment of the car parking demand of the other 97 office-based staff follows.

It is expected that the office will typically reach 80% capacity (i.e., 97 desks occupied) with consideration for staff who may choose to work from home, work part time or may be undertaking home visits as well as leave entitlements. As such, of the 97 office-based staff without a fleet vehicle, on any given day there may typically be 78 in the office.

Based on a review of Journey to Work data for the city of Greater Geelong (2016), 73.3% of people travelled to work in a private vehicle. Noting the location of the site, with somewhat limited access to public transport, it has been conservatively assumed that 90% of office staff at WAC will drive to work in a private vehicle. Application of this rate equates to a demand for up to 70 car parking spaces for the office use.

– *Car parking demand = 70 spaces*

5.2.2 Medical centre

WAC have advised that the health care component of the site is staffed by 34 employees, including 21 practitioners. Assuming two patients are on-site for every practitioner, at any given time there may be a total of 76 people (including 42 visitors and 34 employees) on-site at the health care component of WAC.

WAC have advised that the majority of patients of the centre are transported to and from the site by either their patient transport services (fleet vehicles) or by taxis for which WAC covers the cost. As such, 80% of patients do not require on-site parking. Based on the assumption there are typically 42 visitors on-site, eight (8) visitors may require a car parking space. Additionally, taxi's will be allowed to use the proposed bus parking zone for drop off purposes.

Further to the above, assuming 90% of health care staff drive to the site, similarly to the office staff, there may be a demand for up to 31 staff spaces.

Based on the foregoing, the health care component of WAC is anticipated to generate a demand for up to 39 spaces.

– *Car parking demand = 39 spaces*

5.2.3 Conference centre/function space

The proposed function space will be able to accommodate up to 420 patrons for large events when arranged in theatre/lecture style seating, while for a banquet style event a maximum of 300 patrons can be accommodated. Following discussions with WAC however, it is understood that large events which reach this maximum capacity are only expected to occur a few times per year such as during NAIDOC week (up to 420 patrons) or for a wedding (up to 300 patrons). Furthermore, during these rare occasions where the function room capacity is met, it is anticipated that many of the attendees would be staff/children from the office, and medical centre.

During capacity events, the on-site carpark would be available for attendees. There would be an event management plan in place which would include providing information to event attendees and may also include offsite car parking with a shuttle bus to transport people to and from the site.

On a more regular basis, the function space would be used by staff of the WAC for group training, seminars, presentations etc. For this purpose, it is expected that the space may be used by 20-30 patrons, all of whom would otherwise typically be working in the office or medical centre components of the WAC. In this regard, the existing staff would walk to the function space for their seminar before/after which they would be in the office/medical centre.

Based on the foregoing, it is expected that during the week on a typical basis, the patrons of the conference centre are already accounted for as staff of the other uses. Nevertheless, to account for presenters, trainers, caterers etc it will be conservatively assumed that the centre generates a demand for up to ten (10) spaces.

– *Car parking demand = 10 spaces*

5.2.4 Café

The proposed café use is expected to operate ancillary to the overall development, whereby customers are expected to comprise staff and visitors to the other uses and visitors are not typically expected to drive to the site for the sole purpose of visiting the café.

The proposed café is expected to be operated by one staff member. As such the café use is expected to generate a demand for one (1) car space.

– *Car parking demand = 1 space*

5.2.5 Fleet vehicles

As outlined within section 3, WAC currently own 44 fleet vehicles and expect to expand this fleet to 55 vehicles. Of these 55 vehicles, 11 are permanently stored and operated off-site by Wurdi staff and staff that do not access the Morgan Street site. Of the remaining 44 vehicles, approximately half (indicatively 20) are picked up each morning by staff and used for home visits and other off-site activities, the other half (indicatively 24) are used by WAC staff and are stored on-site throughout the day unless required for by a staff member who is already on-site.

Based on the foregoing, the fleet vehicles will generate a demand for 44 car spaces, noting that staff using the vehicles would park on-site while they take the vehicle out for the day.

– *Car parking demand = 44 spaces*

5.2.6 Anticipated car parking demand and provisions

Based on the car parking demand assessment, the anticipated typical car parking demand is outlined below in Table 5.2.

Table 5.2 Anticipated car parking demand

	Use	Planning Scheme requirement	Projected typical demand
Proposed	Office	51	70
	Medical centre	65	39
	Conference centre	126	10
	Food and drink	3	1
	Fleet vehicles	n/a	44
	Sub-Total	**245**	**164**

Based on the foregoing, anticipated car parking demand will be total of 164 spaces for the proposed development and it is proposed to provide 164 on-site car parking spaces. As such, the proposed car parking provision meets the forecast car parking demand. Accordingly, the proposed provision of car parking is considered acceptable.

5.3 Accessible car parking

The Building Code of Australia (BCA) specifies the minimum requirements for provision of accessible car parking. The BCA accessible parking requirements for each of the building classes is set out below:

– Class 5 office 1 space for every 100 or part thereof
– Class 6 café 1 space for every 50 or part thereof
– Class 9a medical centre 1 space for every 50 or part thereof
– Class 9b place of assembly 1 space for every 50 or part thereof

Based on the requirement to provide 1 space for every 50 parking spaces (or part thereof) for the majority of uses, total of four (4) accessible parking spaces is required given proposed 164 on-site parking spaces.

It is proposed to provide four (4) accessible spaces on the WAC site and to be located at the southern end of at-grade car park. Therefore, the proposed accessible car parking provision satisfied the BCA requirement.

6. Bicycle parking

The bicycle parking requirements for the proposed development are set out in Clause 52.34-3 of the Greater Geelong Planning Scheme. Based on application of the listed rates, the statutory bicycle parking requirements for the site are outlined below in Table 6.1.

Table 6.1 Clause 52.34 bicycle parking requirements

Use	No./Area	Requirement	Total
Café (retail)	80m^2	1 to each 300m^2 of leasable floor area for staff 1 to each 500m^2 of leasable floor area for visitors	0 0
Medical centre	21	1 to each 8 practitioners for staff 1 to each 4 practitioners for visitors	3 5
Office	1463 m^2	1 to each 300m^2 of leasable floor area for staff 1 to each 1000m^2 of leasable floor area for visitors	5 1
Place of assembly	418 m^2	1 to each 1500m^2 of leasable floor area for staff 2 + 1 to each 1500m^2 of leasable floor area for visitors	0 2
Total		**Staff** **Visitors**	**8** **8**

Based on the above calculations, the proposed development requires a total of 16 bicycle parking spaces, including 8 staff spaces and 8 visitor spaces. As 8 employee spaces are required, end-of-trip facilities would be required with at least one shower and changing area to be provided.

It is proposed to provide 12 staff bicycle parking spaces in a secure bicycle storage room off the under-croft car park. Two private showers with changing areas are provided with direct access off the bicycle storage area. 12 Visitor bicycle parking spaces are also provided. As such, proposed bicycle parking provision satisfied statutory requirements.

7. Traffic assessment

7.1 Traffic growth

Based on the Department of Transport (DoT) *Traffic Volume Open Data Hub*, Morgan Street sees around 1.5% growth in traffic volumes per year. As such a total growth of +20% has been applied to the through volumes along Morgan Street, in order to assess the anticipated traffic volumes in around 10 years' time.

The estimated future traffic volumes are shown below in Figure 7.1.

Figure 7.1 ***Peak hour turning movements – Future volumes***

Base map source: Metromap, accessed July 2022

7.2 Traffic generation

7.2.1 Medical centre

Traffic generation by medical centre uses can be divided into staff movements and visitor movements. In terms of staff movements, it will be assumed that all staff arrive to the site in the hour before opening (08:00-09:00) with all staff departing from the site in the hour after closure (17:00-18:00).

In terms of visitor movements, these can be determined from the operational characteristics of the medical centre. The proposed medical centre use would be staffed by up to 21 practitioners. Appointments are expected to range from 30 minutes to 1 hour however for a conservative traffic assessment, a 30-minute duration will be assumed. As such, there may be 42 visitors on-site at any given time.

As such, for every practitioner, across the opening hours there may be up to two (2) inbound and two (2) outbound trips per hour. Application of this rate to all 21 practitioners equates to a traffic generation rate of 84 trips per hour, equally split between inbound and outbound movements. Among these 84 trips, it is assumed that 20 trips will occur via taxi and each taxi trip will account for two traffic movements.

The medical centre traffic generation is summarised below:

- Staff generate 42 trips per day, including:
  - 21 inbound traffic movements in the AM peak
  - 21 outbound traffic movements in the evening (outside of peak hours)
- Visitors generate 84 trips per hour across opening hours, including:
  - 52 inbound traffic movements per hour
  - 52 outbound traffic movements per hour
  - Application of these rates during the peak hours sees:
    - 26 inbound traffic movements in the AM peak
    - 52 inbound and 52 outbound movements in the PM peak

7.2.2 Office

The traffic generation rates listed for office uses within the RMS Technical Direction TDT 2013/14, *Guide to Traffic Generating Developments,* have been adopted:

- Daily trips 11 veh/day/100 m^2 GFA
- AM peak hour 1.6 veh/h/100 m^2 GFA
- PM peak hour 1.2 veh/h/100 m^2 GFA

Application of the above rates to the proposed 1498m^2 GFA equates to 165 trips per day, with 24 trips occurring during the morning peak and 18 trips occurring during the PM peak.

With due consideration of the projected office staff rates, it is expected that basing the traffic generation of the office use on floor area will lead to an underestimate of vehicle trips. As such, it will instead be assumed that of the 79 office staff who are expected to drive to the site each day (excluding those allocated a fleet vehicle), 50% will arrive and depart during the peak hours, with 10% travelling in the opposite direction. Application of these rates equates to 40 vehicles travelling in the peak direction and 8 travelling in the off-peak direction.

7.2.3 Conference/function space

As outlined within section 5.2.3, in any typical week the conference centre is expected to be used as an ancillary training room for staff of the office (or in some cases the medical centre and childcare centre). As such, the unique traffic generated by the conference centre is that which may be associated by additional presenters, trainers, caterers etc traveling to the site.

Based on up to 10 additional contractors attending the site and assuming that 60% arrive to the site during the AM peak and 60% depart during the PM peak, there may be up to six (6) inbound and six (6) outbound movements during the AM and PM peak, respectively.

7.2.4 Café

As outlined within section 5.2.4, the café use proposed on site would operate ancillary to the other uses and would be operated by one staff member. As such, the café use can be expected to generate one inbound movement and one outbound movement during the AM and PM peak hours.

7.2.5 Fleet vehicles

The WAC provides 55 fleet vehicles for staff to use during the day to undertake home visits and transport people, including 45 vehicles which are based in and out of the WAC site. For purposes of this assessment, it will be assumed that half of the fleet vehicle spaces turn over in both the AM and PM peak hours, generating both and inbound and outbound movement. As such, a total of 23 inbound and 23 outbound movements may be expected in each peak hour.

7.2.6 Total traffic generation

A summary of the peak hour traffic movements generated by each component of the development is provided below in Table 7.1.

Table 7.1 Total traffic generation

Use	AM Peak – 8:00-9:00		PM Peak – 15:15-16:15	
	Inbound	Outbound	Inbound	Outbound
Medical centre	47	0	52	52
Office	40	8	8	40
Conference / function space	6	0	0	6
Café	1	0	0	1
Fleet vehicles	23	23	23	23
Total	**117**	**31**	**83**	**122**

While it is noted that for the afternoon peak, traffic generated by the office, conference/function space and café uses would likely peak between 17:00-18:00 in the evening, for purposes of a more conservative assessment it has been assumed that these movements occur during the road network peak from 15:15-16:15.

7.3 Traffic distribution

It is assumed that all traffic generated by the development will be distributed as per the following which is based on existing site access turning demand as described in section 2.6.2:

– 35% to/from the west
– 65% to/from the east

7.4 Traffic volumes

Based on the for all traffic to be directed through the proposed access to Morgan Street/The Boulevard at the north of the site, the future AM and PM peak hour traffic volumes under this arrangement are shown below in Figure 7.2.

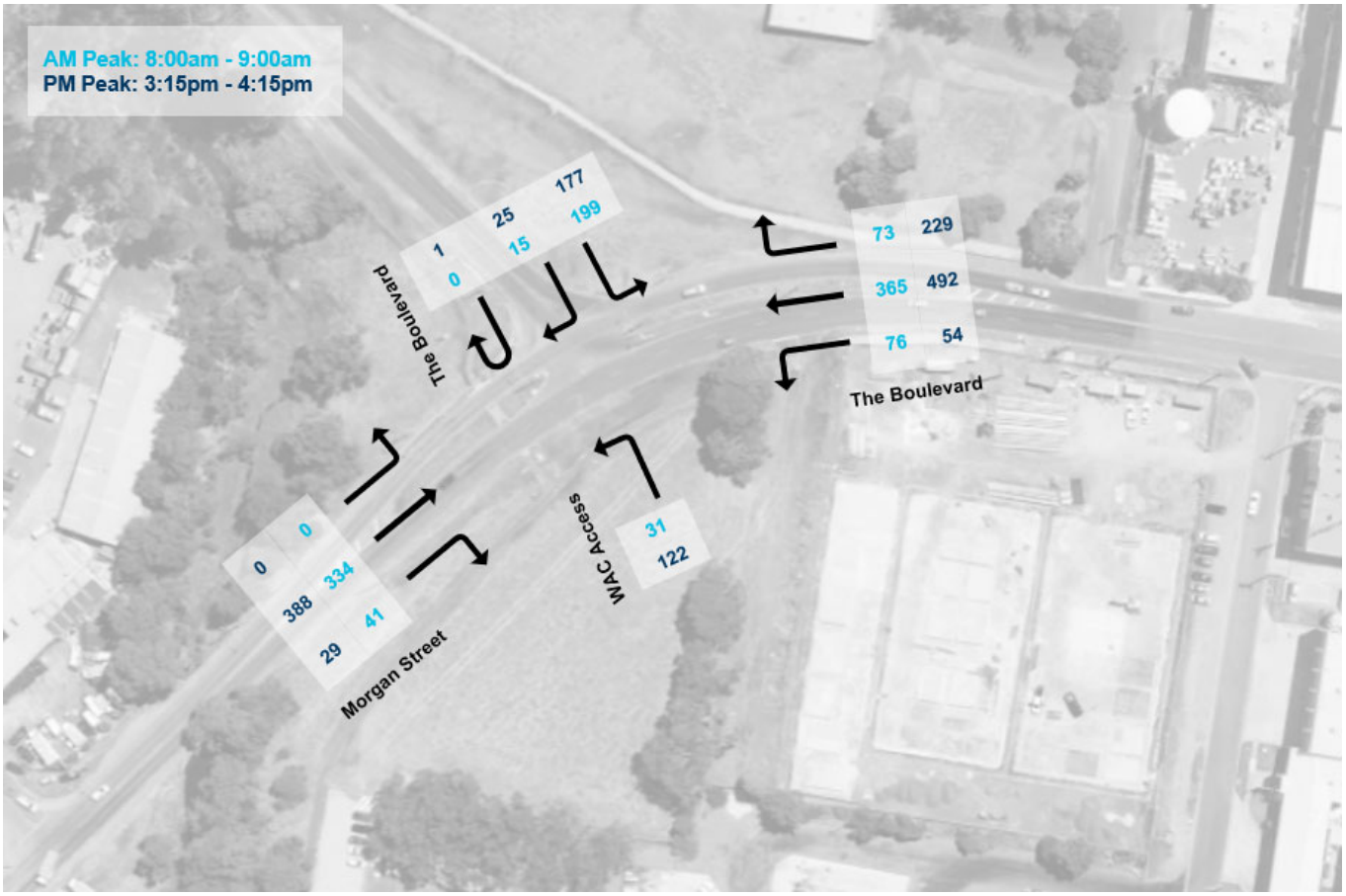


Figure 7.2 Future Peak hour turning movements

Base map source: Metromap, accessed July 2022

7.5 Traffic impact

7.5.1 SIDRA parameters

SIDRA Intersection is a computer software program that was developed by the Australian Road Research Board (ARRB) to design and analyse the performance of both signalised and unsignalised intersections. The parameters used to assess the intersections are summarised as follows:

Degree of Saturation (DoS) is a ratio of arrival (or demand) flow to capacity. A DoS above 1.0 represents oversaturated conditions and a DoS below 1.0 represents undersaturated conditions. The practical DoS thresholds for each intersection type are summarised in Table 7.2.

Table 7.2 Degree of Saturation thresholds

Unsignalised intersection	Roundabout	Signalised intersection
0.80	0.85	0.90

Source: Austroads Guide to Traffic Management Part 3: Transport Study and Analysis Methods, 2020

The **95th percentile queue length (95%ile queue)** is the value below which 95% of all observed cycle queue lengths fall, or 5% of all observed queue lengths exceed.

Average delay is the average time, in seconds, that vehicles can be expected to wait at an intersection. A Level of Service (LoS) classification is assigned based on the delay calculated. These ratings are shown in Table 7.3.

Table 7.3 Average delay based on Level of Service classification summary

Level of Service (LoS)	Average Delay (s)		
	Unsignalised intersection	Roundabout and give-way	Signalised intersection
A	≤ 10	≤ 10	≤ 10
B	10-15	10-20	10-20
C	15-25	20-35	20-35
D	25-35	35-50	35-55
E	35-50	50-70	55-80
F	>50	> 70	>80

Source: Table 7.7 of Austroads Guide to Road Design Part 3: Transport Study and Analysis Methods, 2020

7.5.2 SIDRA assessment

This section outlines the SIDRA modelling undertaken for the Morgan Street intersections. The following scenarios are included in the summary of results, as shown in Table 7.4.

– Existing conditions (Ex)
– Existing + 10 years compound growth (Ex+)
– Existing + 10 years compound growth + development traffic (Fu)

The SIDRA layout for the existing intersection of Morgan Street and The Boulevard is shown in Figure 7.3 while the proposed intersection including the WAC access is shown below Figure 7.4. Due to the configuration of the site access as a staggered T-intersection, the future layout has been modelled as a network of two intersections in SIDRA.

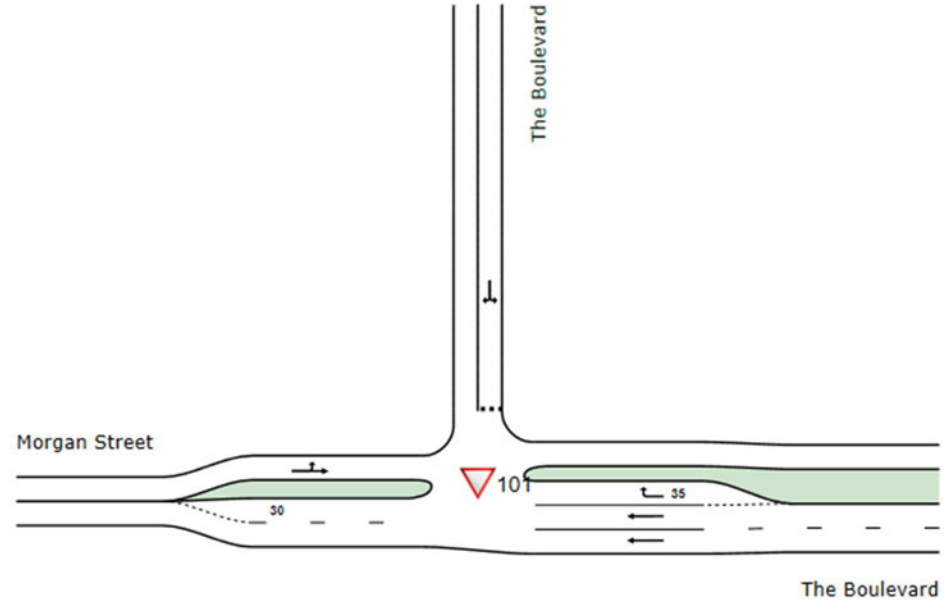


Figure 7.3 Morgan Street/The Boulevard

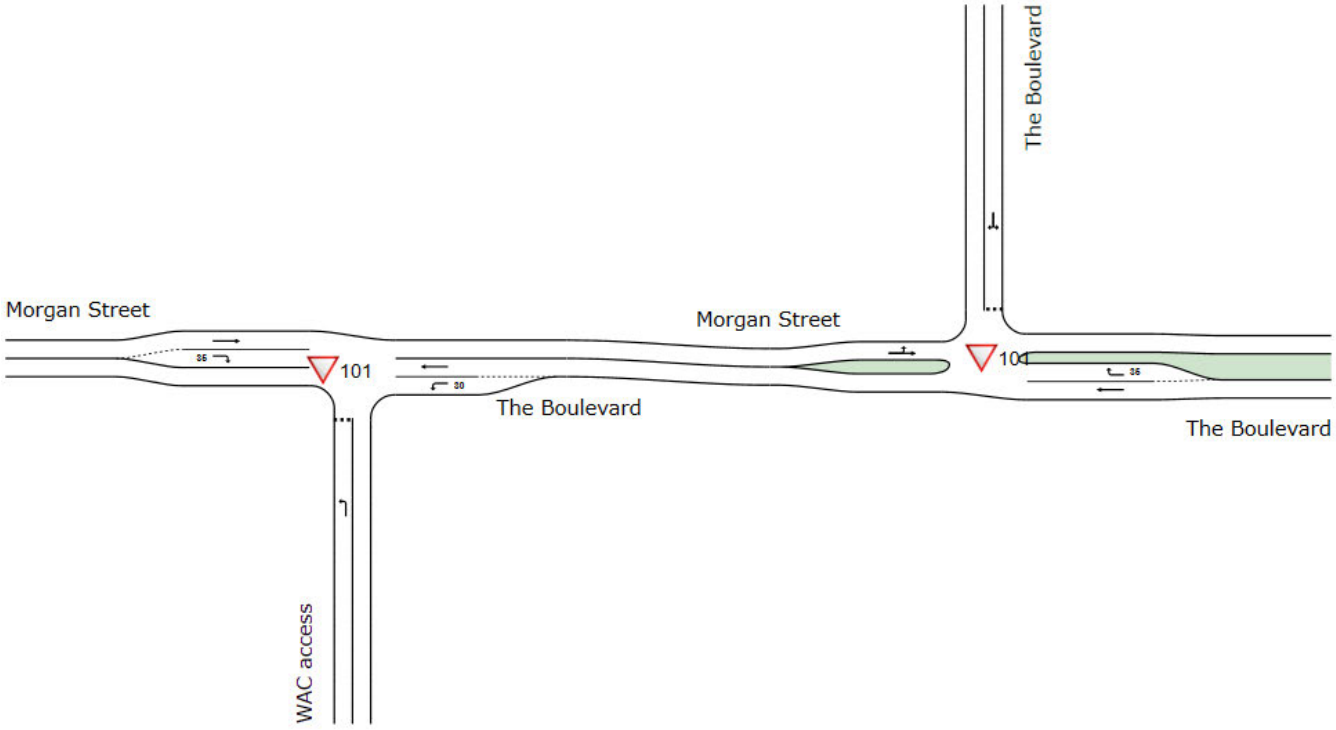


Figure 7.4 Morgan Street/The Boulevard/WAC access

Table 7.4 SDIRA results – Morgan Street/The Boulevard

Approach	Movement	DoS			Average Delay (s)			LOS			95th Percentile Queue (m)		
		Ex	Ex+	Fu	Ex	Ex+	Fu	Ex	Ex+	Fu	Ex	Ex+	Fu
AM Peak													
WAC access (S)	Left			0.037			7.4			A			0.4
The Boulevard (E)	Left			0.043			5.6			A			0.0
	Through	0.138	0.166	0.203	0.1	0.2	0.1	A	A	A	0.0	0.0	0.0
	Right	0.058	0.062	0.063	6.6	6.9	6.9	A	A	A	1.7	1.8	0.8
The Boulevard (N)	Left	0.277	0.302	0.319	7.7	8.4	8.7	A	A	A	8.7	9.9	4.2
	Right	0.277	0.302	0.319	11.8	13.9	16.8	A	A	C	8.7	9.9	4.2
Morgan Street (W)	Left	0.156	0.187	0.187	5.6	5.6	5.6	A	A	A	0.0	0.0	0.0
	Through	0.156	0.187	0.187	0.0	0.0	0.0	A	A	A	0.0	0.0	0.0
	Right			0.050			7.7			A			0.5
PM Peak													
WAC access (S)	Left			0.175			8.7			A			1.8
The Boulevard (E)	Left			0.031			5.6			A			0.0
	Through	0.186	0.224	0.274	0.2	0.2	0.1	A	A	A	0.0	0.0	0.0
	Right	0.191	0.207	0.211	7.0	7.4	7.5	A	A	A	6.1	6.5	2.9
The Boulevard (N)	Left	0.306	0.348	0.390	8.4	9.5	10.1	A	A	B	9.9	12.4	5.6
	Right	0.306	0.348	0.390	17.1	21.5	28.7	B	B	D	9.9	12.4	5.6
Morgan Street (W)	Left	0.181	0.217	0.217	5.6	5.6	5.6	A	A	A	0.0	0.0	0.0
	Through	0.181	0.217	0.217	0.0	0.1	0.1	A	A	A	0.0	0.0	0.0
	Right			0.041			8.6			A			0.4

The results of the SIDRA assessment indicate there will be a level of degradation of the traffic conditions at the Morgan Street/The Boulevard intersection following the proposed development. In this regard, the intersection is currently operating under excellent conditions and will see a small reduction in capacity following the addition of traffic growth.

Following the conversion of the T-intersection into a staggered T-intersection, allowing for the access to the WAC site, the capacity will reduce further particularly for the right-turn out of the northern leg of The Boulevard. In this regard, the overall degree of saturation will be 0.319 in the AM peak and 0.390 in the PM peak, each of which indicates significant spare capacity at the intersection. Queues and delays are shown to be minimal.

Based on the above, it is considered that the level of traffic generated by the proposed development can be adequately accommodated within the proposed intersection arrangement at the site access and the surrounding road network without causing detrimental impact to the existing traffic network.

7.6 Turn lane warrants

The Austroads *Guide to Traffic Management (AGTM) Part 6: Intersections, Interchanges and Crossings Management*, provides warrants for the provision of turn lanes at unsignalised intersections. The turn lane warrants at the site access off Morgan Street have been calculated based on the traffic projected in Section 7.4 turning into the site.

Figure 7.5 shows the turn lane warrants when all of the traffic generated by the development accesses the site. In this regard, a short auxiliary left (AUL(s)) and short channelised right (CHR(s)) turn treatment will be required.

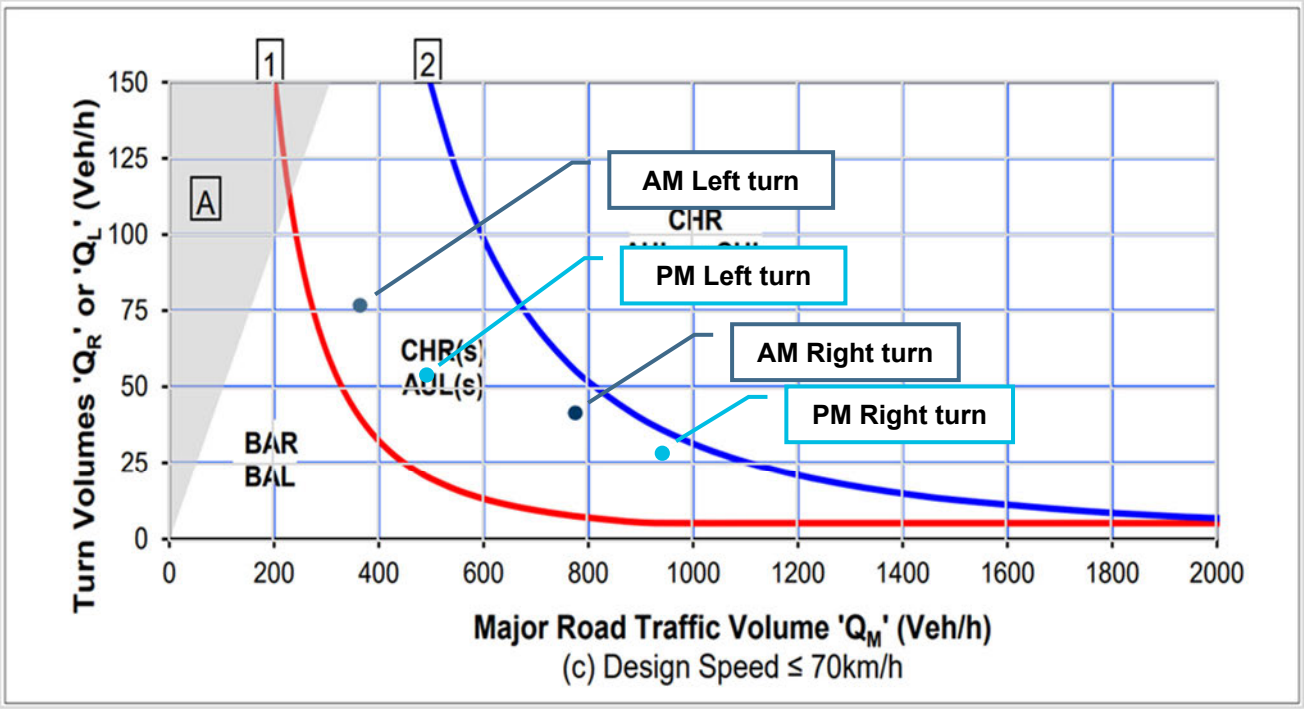


Figure 7.5 Warrants for Turn Treatments on Major Roads (≤70 km/h) – Future

Source: Austroads

It is proposed to provide a short channelised right turn treatment and an auxiliary left turn treatment at the Morgan Street and WAC site access intersection as per Austroads Guide to Road design Part 4A to satisfy the turn lane requirements. A concept design has been prepared for required intersection upgrade with additional turn lane treatments and attached in Appendix B.

8. Conclusions

It is proposed to redevelop the site into a three-storey purpose-built facility for the Wathaurong Aboriginal Corporation. The new building would be a mixed-use facility providing an office, medical centre, conference centre/function space, and on-site café. As part of this application, a total of 164 spaces would be provided on-site.

Considering the analysis presented in this report, it is concluded that:

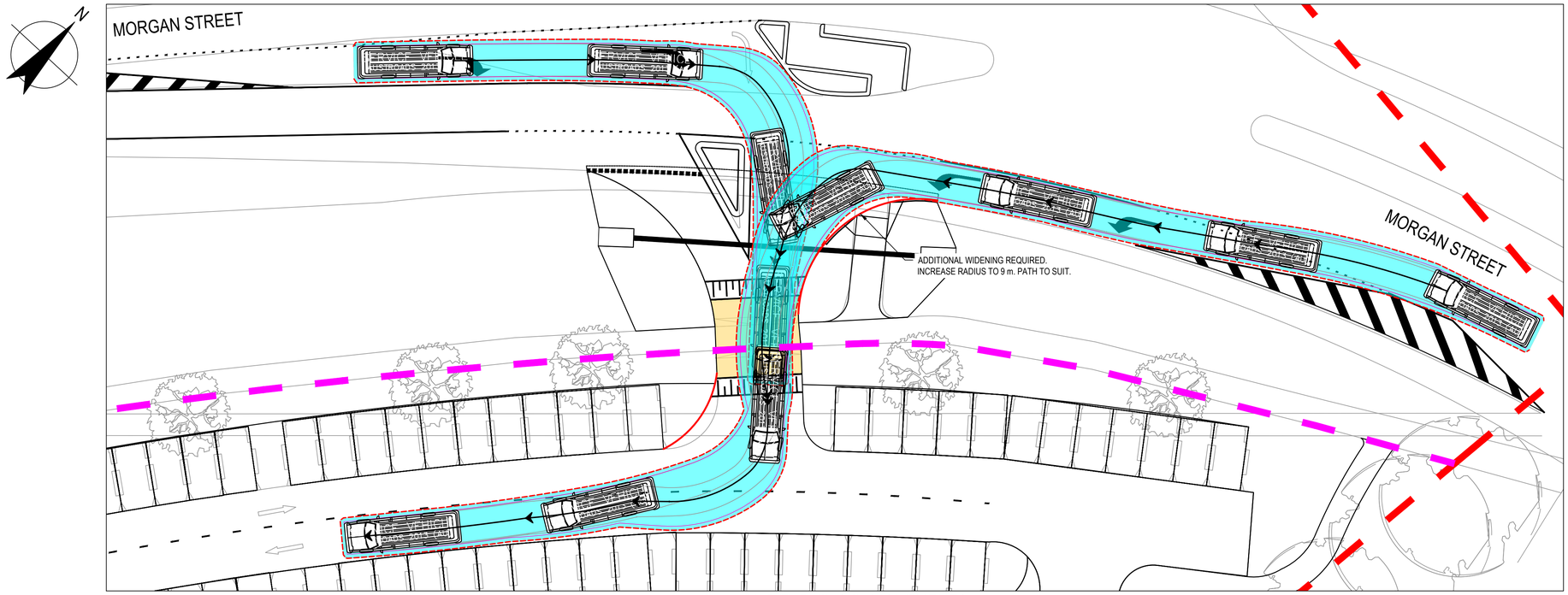
- The proposed car parking, bicycle parking, loading and access design is considered appropriate.
- The car parking layouts and accesses have been designed in accordance with the requirements of the Planning Scheme.
- The proposed provision of staff and visitor bicycle parking meets the requirements of the Planning Scheme and is therefore considered appropriate.
- The site generates a statutory requirement to provide 245 car parking spaces, however it is anticipated the car parking demand will be 164 spaces.
- It is proposed to provide 164 on-site car parking spaces which satisfies the anticipated car parking demand.
- The ultimate anticipated traffic volumes generated by the development are not expected to have a considerable impact on the operation of Morgan Street or the surrounding road network.
- Based on the anticipated traffic by the proposed development and existing traffic along Morgan Street, a short channelised right turn lane (CHRs) and a short auxiliary left turn lane (AULs) will be required at Morgan Street and the WAC site access road intersection as per AGTM Part 6. It is proposed to provide short channelised right turn treatment and auxiliary left turn treatment at the Morgan Street and WAC site access intersection to satisfy the turn lane requirements.
- There are no traffic engineering reasons which should preclude a permit from being issued for this proposal.

Appendix A

Swept path analysis

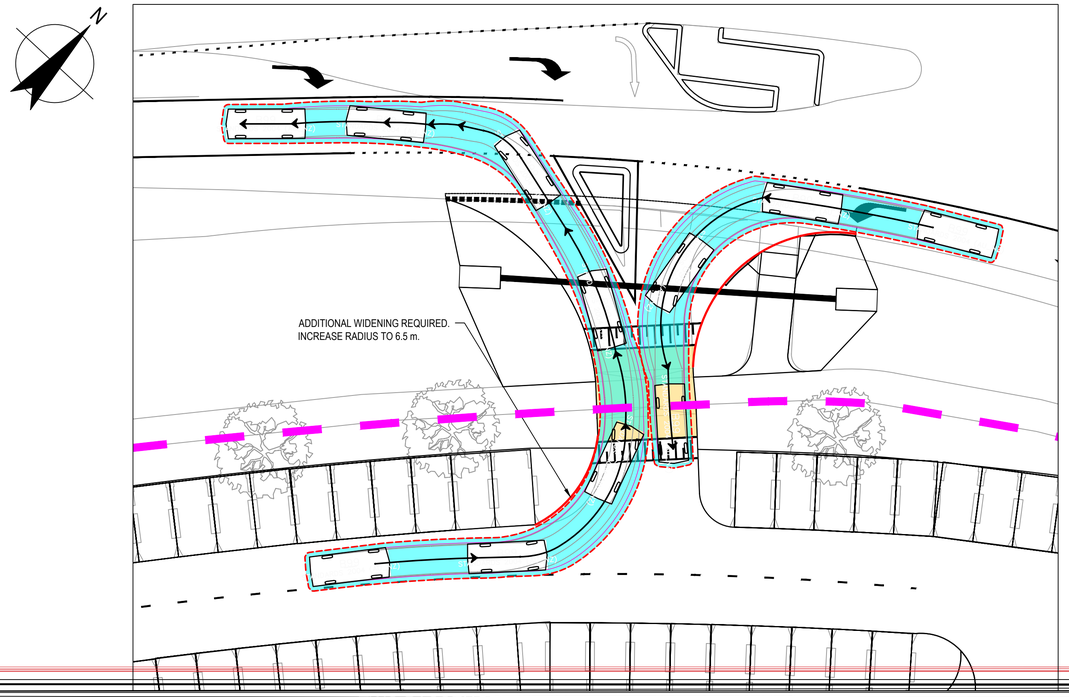
WARNING

SERVICES SHOWN ON THIS DRAWING ARE APPROXIMATE ONLY. THE EXACT LOCATION IS TO BE CONFIRMED ON SITE BY CONTRACTOR PRIOR TO COMMENCEMENT OF WORKS.



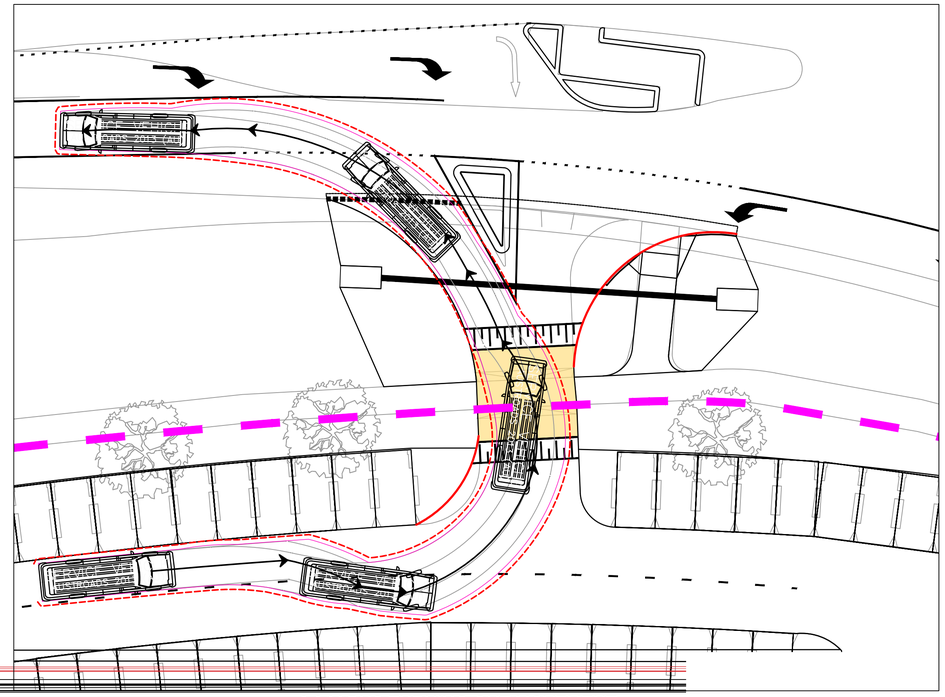
8.8 m BUS TURNING IN MOVEMENTS

SCALE 1:200



TWO PASSENGER VEHICLE TURNING MOVEMENTS

SCALE 1:200



8.8 M BUS TURNING OUT MOVEMENT

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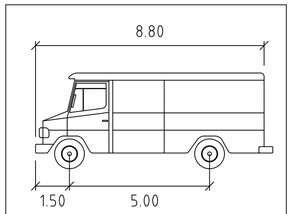

SERVICE VEHICLE

		meters
Width	:	2.50
Track	:	2.50
Lock to Lock Time	:	6.0
Steering Angle	:	38.7

VEHICLE DETAILS:

NTS

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Rev	Description	Checked	Approved	Date
P02	REVISED TOWN PLANNING ISSUE	AV	HB	26.02.24
P01	TOWN PLANNING ISSUE	M.W.	A.V.	22.09.23

Author C. MENCHAVEZ **Drafting Check** M. WOOTTEN

Designer D. CHAN **Design Check** A. VAN EEDEN

0 2 4 6 8 10m

SCALE 1:200 AT ORIGINAL SIZE

THIS DRAWING INCLUDES COLOURED INFORMATION
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Project No. 12613952

Client: WATHAURONG ABORIGINAL CO-OPERATIVE

Project: MORGAN STREET REDEVELOPMENT

Status: TOWN PLANNING

Drawing Title: SWEPT PATHS INTERSECTION SHEET 1 OF 5

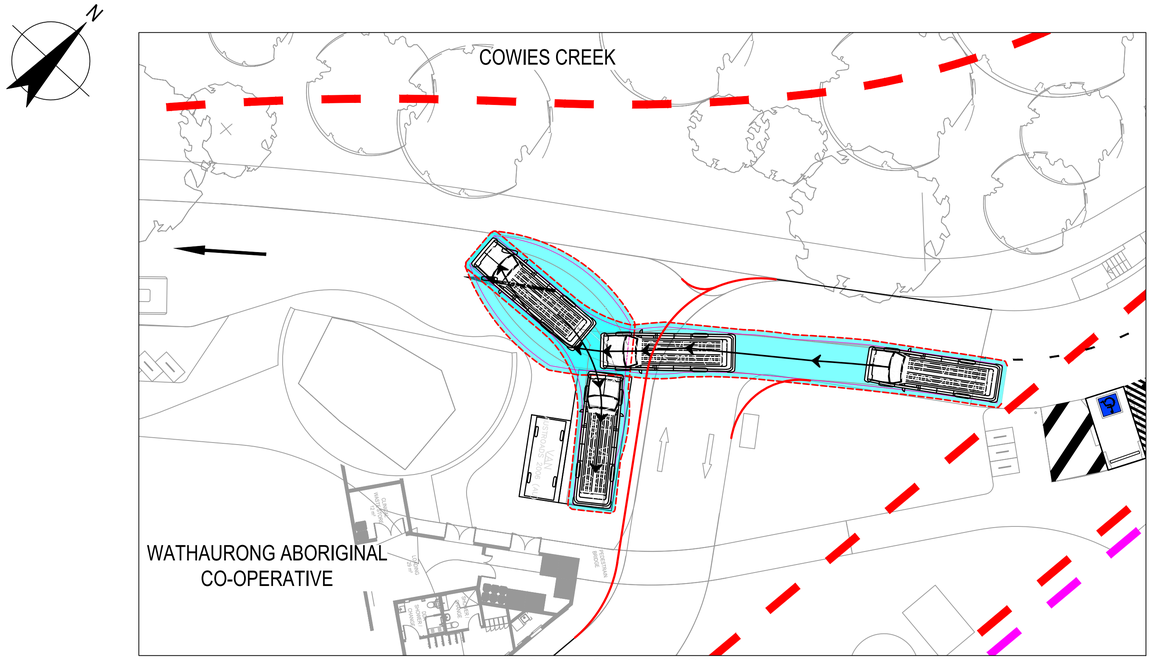
Size: A1

Drawing No.: 12613952-GHD-00-00-DRG-CI-00500

Rev: P02

Plot Date: 26 February 2024 - 1:11 PM Plotted by: Anthony van Eeden

File Name: C:\12d\SW\data\P-00-12D-001\31-12613952 - Wathaurong Hub Redevelopment_2569\CADD\Drawings\12613952-GHD-00-00-DRG-CI-00500.dwg



REFUSE TRUCK PARKING MOVEMENT

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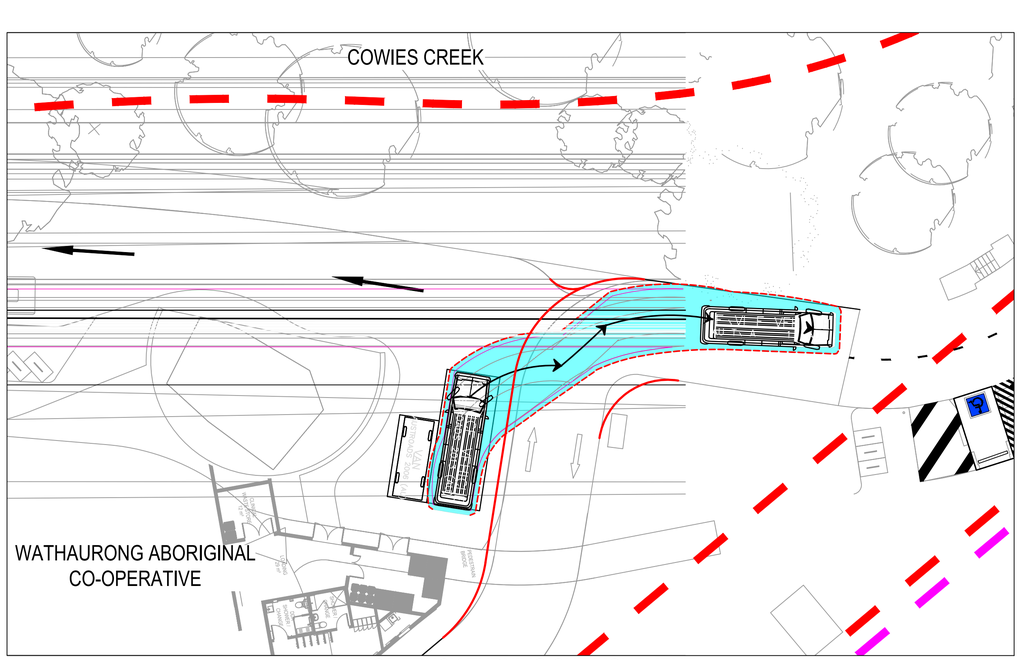
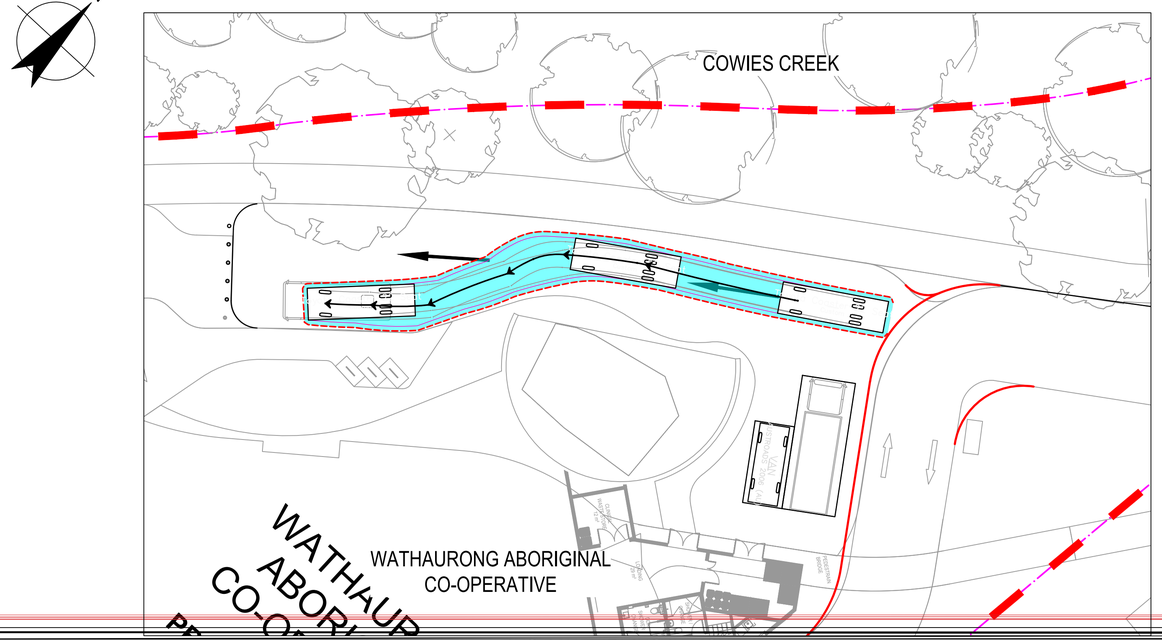


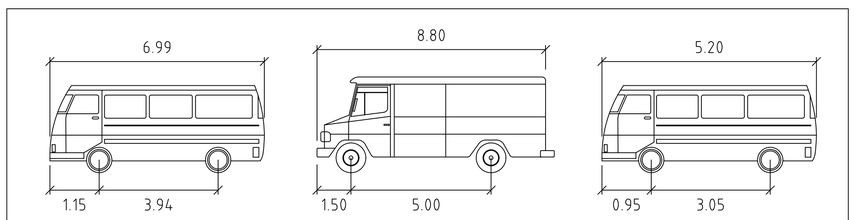
REFUSE TRUCK TURNING OUT MOVEMENT

SCALE 1:200



BUS BAY TURNING IN MOVEMENT

SCALE 1:200



Toyota Coaster 22 Seat		meters
Width	:	2.08
Track	:	1.69
Lock to Lock Time	:	6.0
Steering Angle	:	42.3

SERVICE VEHICLE		meters
Width	:	2.50
Track	:	2.50
Lock to Lock Time	:	6.0
Steering Angle	:	38.7

VAN		meters
Width	:	1.94
Track	:	1.84
Lock to Lock Time	:	6.0
Steering Angle	:	33.5

VEHICLE DETAILS:

NTS

WARNING

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Rev	Description	Checked	Approved	Date
P02	REVISED TOWN PLANNING ISSUE	AV	HB	26.02.24
P01	TOWN PLANNING ISSUE	M.W.	A.V.	22.09.23

Author C. MENCHAVEZ **Drafting Check** M. WOOTTEN **Reg No.**

Designer D. CHAN **Design Check** A. VAN EEDEN **Date**

0 2 4 6 8 10m

SCALE 1:200 AT ORIGINAL SIZE

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Project No. 12613952

Client WATHAURONG ABORIGINAL CO-OPERATIVE

Project MORGAN STREET REDEVELOPMENT

Status TOWN PLANNING

Drawing Title SWEPT PATHS
LOADING AREA AND BUS BAY
SHEET 2 OF 5

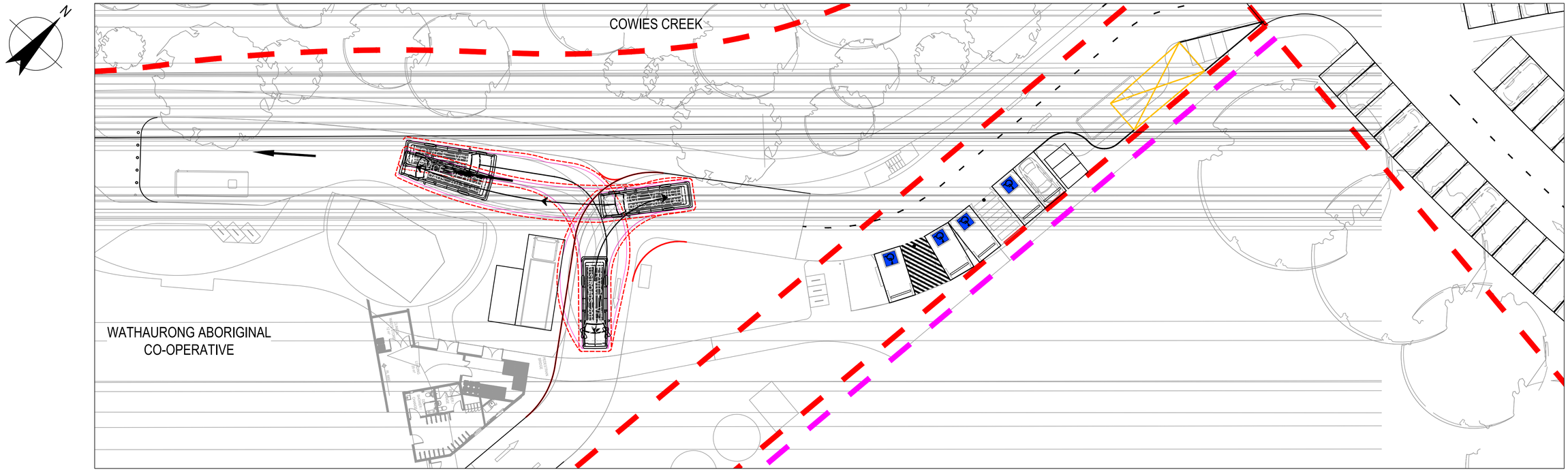
Size A1

Drawing No. 12613952-GHD-00-00-DRG-CI-00501

Rev P02

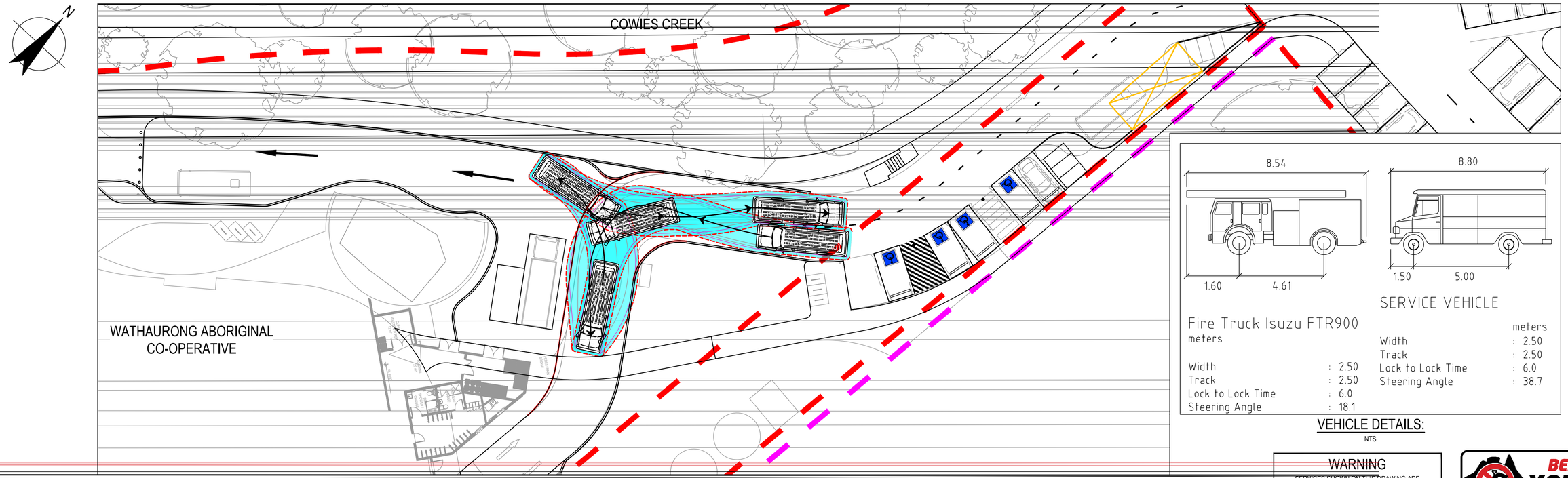
Plot Date: 26 February 2024 - 1:13 PM Plotted by: Anthony van Eeden

File Name: C:\12d\SW\data\P-00-12D-001\31-12613952 - Wathaurong Hub Redevelopment_2569\CADD\Drawings\12613952-GHD-00-00-DRG-CI-00501.dwg



EMERGENCY SERVICE ACCESS FROM THE EXISTING BRIDGE

SCALE 1:200



EMERGENCY SERVICE ACCESS FROM NEW INTERSECTION

SCALE 1:200

Fire Truck Isuzu FTR900

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 18.1

SERVICE VEHICLE

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 38.7

VEHICLE DETAILS:

NTS

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Designer D. CHAN **Design Check** A. VAN EEDEN

0 2 4 6 8 10m

SCALE 1:200 AT ORIGINAL SIZE

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www.ghd.com

Project No. 12613952

Client WATHAURONG ABORIGINAL CO-OPERATIVE

Project MORGAN STREET REDEVELOPMENT

Status TOWN PLANNING

Drawing Title SWEPT PATHS
FIRE BOOSTER ACCESS
SHEET 3 OF 5

Size A1

Drawing No. 12613952-GHD-00-00-DRG-CI-00502

Rev P02

Plot Date: 26 February 2024 - 1:16 PM Plotted by: Anthony van Eeden

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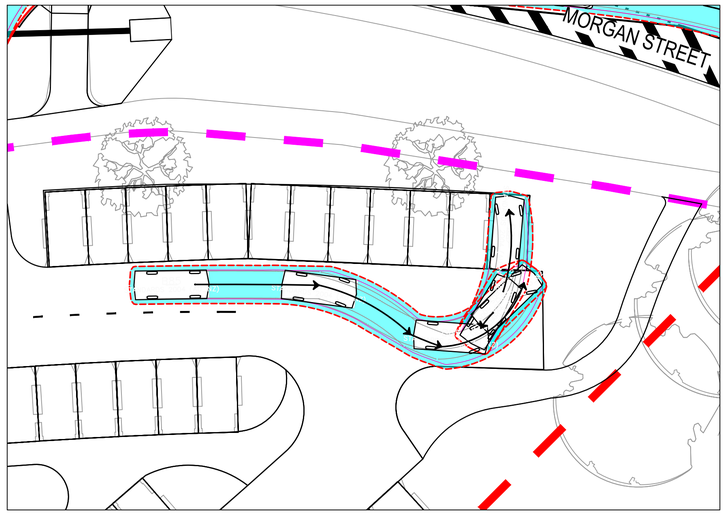
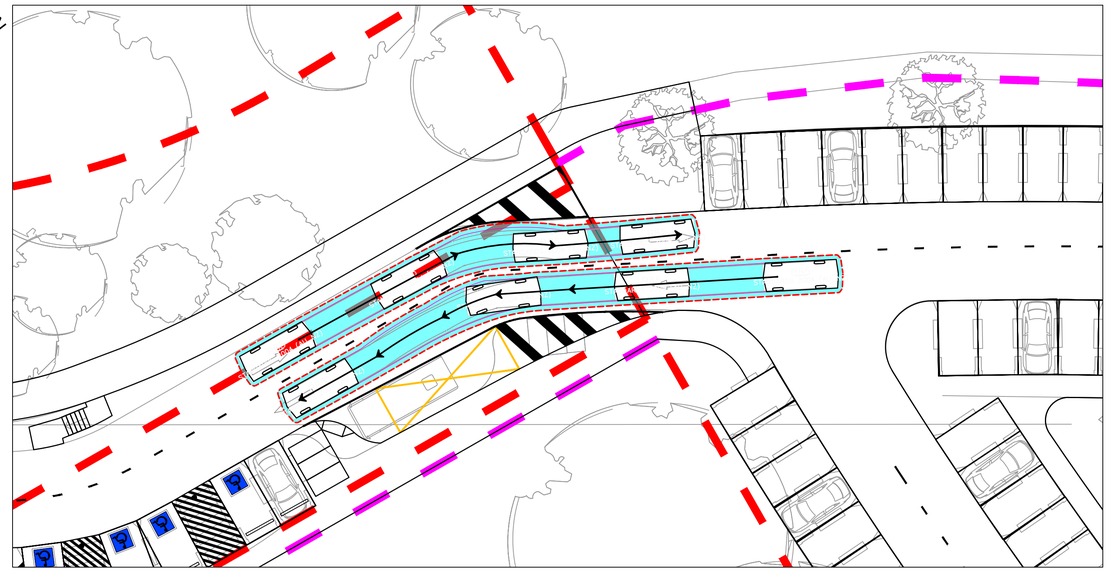


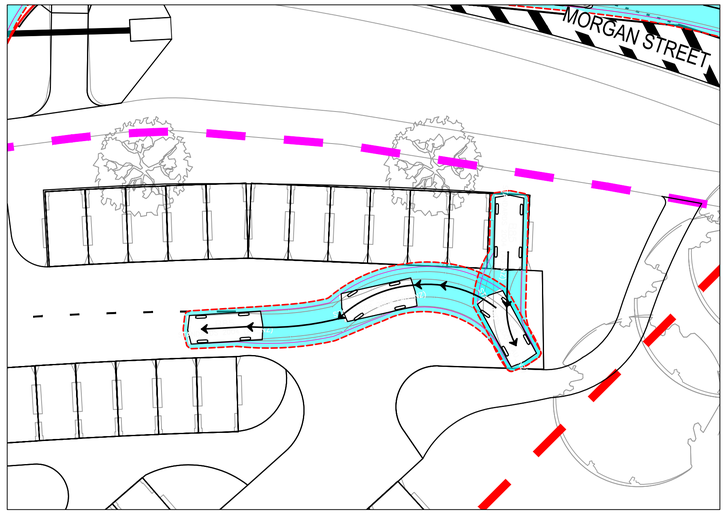
END BAY PARKING TURNING IN MOVEMENT

SCALE 1:200



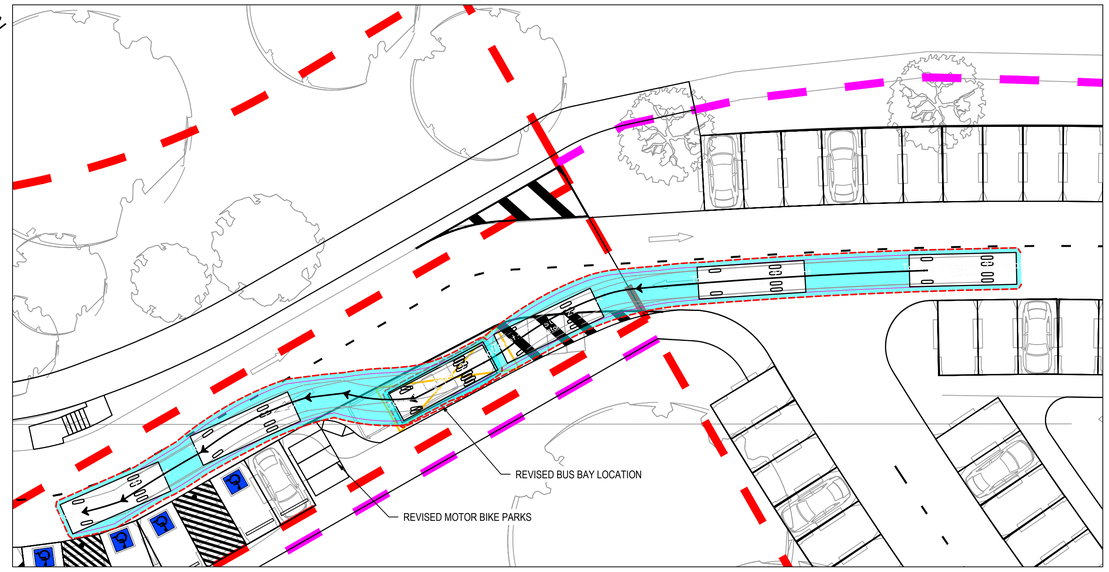
UPPER LEVEL BUS BAY THROUGH MOVEMENTS

SCALE 1:200



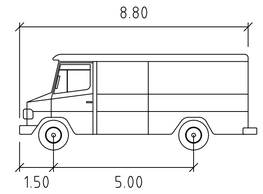
END BAY PARKING TURNING OUT MOVEMENT

SCALE 1:200



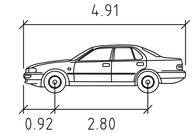
UPPER LEVEL BUS BAY TURNING MOVEMENTS

SCALE 1:200



SERVICE VEHICLE

		meters
Width	:	2.50
Track	:	2.50
Lock to Lock Time	:	6.0
Steering Angle	:	38.7



B85

		meters
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Track	:	1.77
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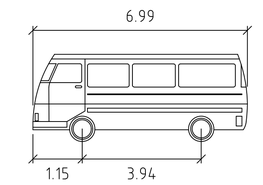
Steering Angle	:	34.1



Toyota Coaster 22 Seat

		meters
Width	:	2.08
Track	:	1.69
Lock to Lock Time	:	6.0
Steering Angle	:	42.3

VEHICLE DETAILS:

NTS

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P01	TOWN PLANNING ISSUE	M.W.	A.V.	22.09.23

Author C. MENCHAVEZ **Drafting Check** M. WOOTTEN

Designer D. CHAN **Design Check** A. VAN EEDEN

0 2 4 6 8 10m

SCALE 1:200 AT ORIGINAL SIZE

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Project No. 12613952

Client WATHAURONG ABORIGINAL CO-OPERATIVE

Project MORGAN STREET REDEVELOPMENT

Status TOWN PLANNING

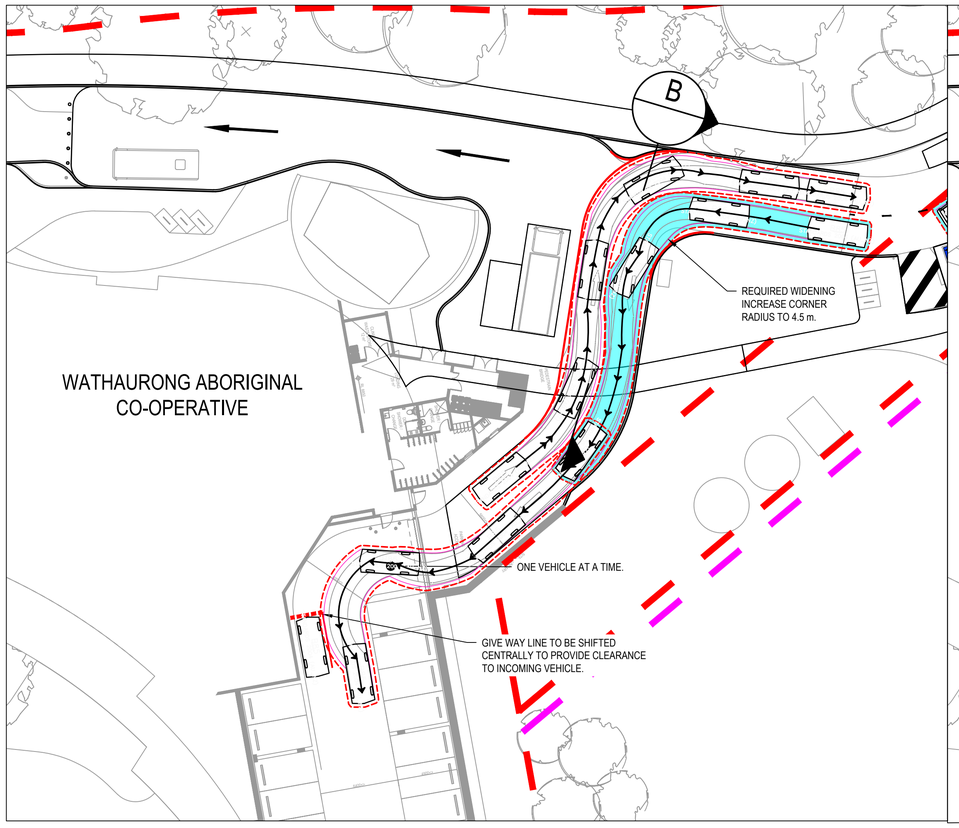
Drawing Title SWEPT PATHS TRIANGLE SITE AND UPPER LEVEL BUS BAY SHEET 4 OF 5

Size A1

Drawing No. 12613952-GHD-00-00-DRG-CI-00503

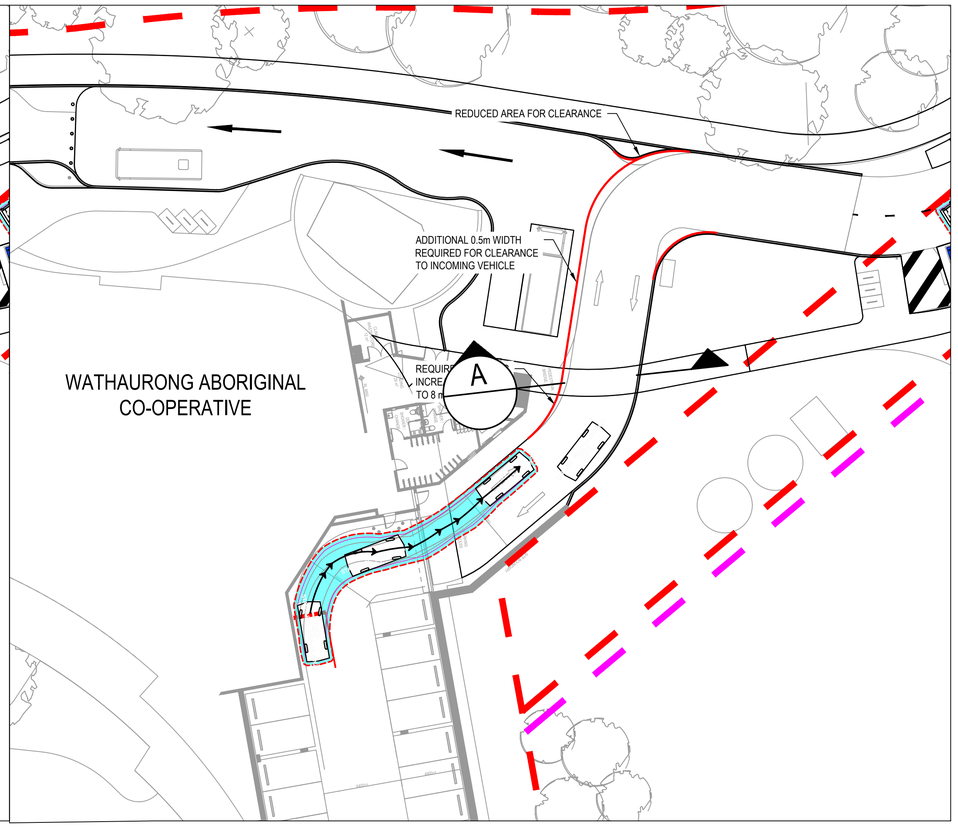
Rev P03

Plot Date: 29 February 2024 - 5:19 PM Plotted by: Anthony van Eeden File Name: C:\12d\SW\data\P-00-12D-001\31-12613952 - Wathaurong Hub Redevelopment_2569\CADD\Drawings\12613952-GHD-00-00-DRG-CI-00503.dwg



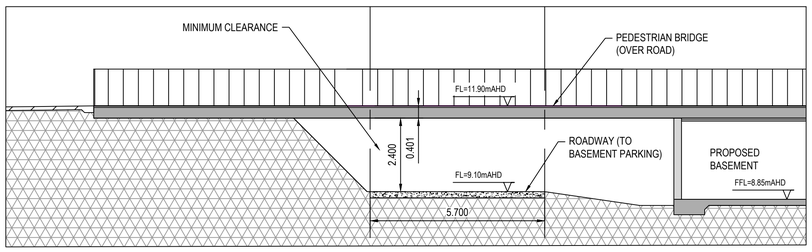
BASEMENT ACCESS TURNING IN MOVEMENT

SCALE 1:250



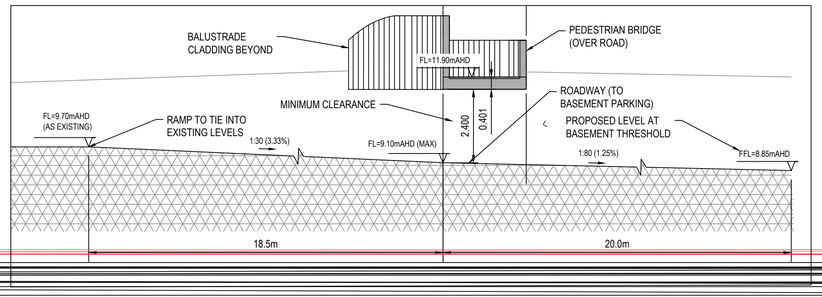
BASEMENT ACCESS TURNING OUT MOVEMENT

SCALE 1:200



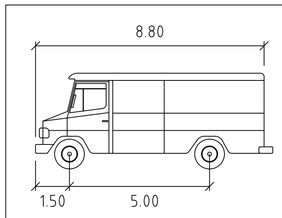
TYPICAL SECTION A - ROADWAY TO BASEMENT PARKING CLEARANCE UNDER PEDESTRIAN BRIDGE

SCALE 1:100



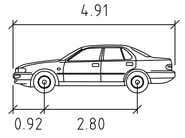
TYPICAL SECTION B - ROADWAY TO BASEMENT PARKING LONG SECTION

SCALE 1:100



SERVICE VEHICLE

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 38.7



B85

	meters
Width	: 1.87
Track	: 1.77
Lock to Lock Time	: 6.0
Steering Angle	: 34.1

VEHICLE DETAILS.

NTS

WARNING

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P02	TOWN PLANNING ISSUE	AV	HB	26.02.24
P01	TOWN PLANNING ISSUE	M.W.	A.V.	22.09.23

Author C. MENCHAVEZ **Drafting Check** M. WOOTTEN

Designer D. CHAN **Design Check** A. VAN EEDEN

0 2 4 6 8 10m

SCALE 1:200 AT ORIGINAL SIZE

0 2.5 5 7.5 10 12.5m

SCALE 1:250 AT ORIGINAL SIZE

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www.ghd.com

Project No. 12613952

Client WATHAURONG ABORIGINAL CO-OPERATIVE

Project MORGAN STREET REDEVELOPMENT

Status TOWN PLANNING

Drawing Title SWEPT PATHS BASEMENT ACCESS SHEET 5 OF 5

Size A1

Drawing No. 12613952-GHD-00-00-DRG-CI-00504

Rev P02

Plot Date: 26 February 2024 - 1:24 PM Plotted by: Anthony van Eeden

File Name: C:\12d\SW\data\P-00-12D-001\31-12613952 - Wathaurong Hub Redevelopment_2569\CADD\Drawings\12613952-GHD-00-00-DRG-CI-00504.dwg

Appendix B

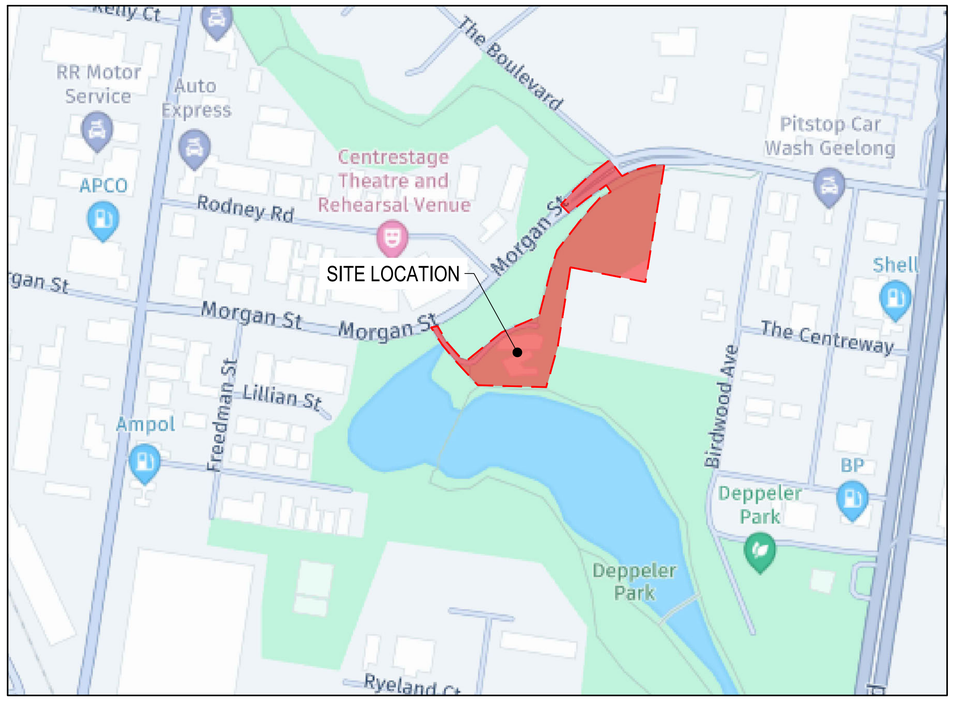
Civil plans

WATHAURONG ABORIGINAL CO-OPERATIVE

MORGAN STREET REDEVELOPMENT

CIVIL SCHEMATIC DESIGN

12613952



LOCALITY PLAN

NOT TO SCALE

NEARMAP - IMAGERY (DATE EXTRACTED: 12/02/2024)

DRAWING INDEX

DRG No:	DRAWING TITLE
12613952-GHD-00-00-DRG-CI-00001	COVER PAGE, LOCALITY PLAN AND DRAWING INDEX
12613952-GHD-00-00-DRG-CI-00002	GENERAL NOTES AND MASTER LEGEND
12613952-GHD-00-00-DRG-CI-00010	EXISTING CONDITIONS PLAN
12613952-GHD-00-00-DRG-CI-00100	OVERALL SITE LAYOUT PLAN
12613952-GHD-00-00-DRG-CI-00101	SITE LAYOUT PLAN - SHEET 1 OF 2
12613952-GHD-00-00-DRG-CI-00102	SITE LAYOUT PLAN - SHEET 2 OF 2
12613952-GHD-00-00-DRG-CI-00200	DRAINAGE LAYOUT PLAN - EXISTING CONDITIONS
12613952-GHD-00-00-DRG-CI-00201	DRAINAGE LAYOUT PLAN PROPOSED STRATEGY
12613952-GHD-00-00-DRG-CI-00202	DRAINAGE CATCHMENT PLAN EXISTING CONDITIONS
12613952-GHD-00-00-DRG-CI-00203	DRAINAGE CATCHMENT PLAN POST DEVELOPMENT
12613952-GHD-00-00-DRG-CI-00500	SWEPT PATHS INTERSECTION SHEET 1 OF 5
12613952-GHD-00-00-DRG-CI-00501	SWEPT PATHS LOADING AREA AND BUS BAY SHEET 2 OF 5
12613952-GHD-00-00-DRG-CI-00502	SWEPT PATHS - FIRE BOOSTER ACCESS - SHEET 3 OF 5
12613952-GHD-00-00-DRG-CI-00503	SWEPT PATHS - TRIANGLE SITE - AND UPPER LEVEL BUS BAY - SHEET 4 OF 5
12613952-GHD-00-00-DRG-CI-00504	SWEPT PATHS - BASEMENT ACCESS - SHEET 5 OF 5

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Author C. MENCHAVEZ Drafting Check M. WOOTTEN Reg No.

Designer R.BON Design Check A. VAN EEDEN Date

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Project MORGAN STREET REDEVELOPMENT

Status TOWN PLANNING

Drawing Title COVER PAGE, LOCALITY PLAN AND DRAWING INDEX

Drawing No. 12613952-GHD-00-00-DRG-CI-00001

Size A1

Rev P02

Plot Date: 26 February 2024 - 1:03 PM Plotted by: Anthony van Eeden File Name: C:\12d\SW\data\P-00-12D-001\31-12613952 - Wathaurong Hub Redevelopment_2569\CADD\Drawings\12613952-GHD-00-00-DRG-CI-00001.dwg

LEGEND:

- TITLE BOUNDARY
- FUTURE TITLE BOUNDARY
- EXISTING CONTOURS 100mm INTERVAL
- PROPOSED CONTOURS 100mm INTERVAL
- EASEMENT
- ROAD CENTERLINE
- ROAD KERB
- EXISTING UNDERGROUND WATER
- EXISTING UNDERGROUND ELECTRICAL
- EXISTING UNDERGROUND STORMWATER
- EXISTING UNDERGROUND GAS
- EXISTING ELECTRICAL LIGHT POLE
- EXISTING ELECTRIC POLE
- EXISTING TICKET MACHINE
- EXISTING PARKING SIGN
- EXISTING FIRE HYDRANT
- BENCH MARK
- EXISTING DRAIN PIT
- EXISTING TREES
- EXISTING SIGNS
- EXISTING BOLLARDS
- EXISTING BIN
- EXISTING WATER VALVE
- PROPOSED STORMWATER AND PIT
- SERVICE TO BE REMOVED
- PROPOSED SUB SURFACE DRAIN
- CONDUIT
- JUNCTION PIT
- GRATED PIT
- ELECTRICAL PIT
- RAIN GARDEN
- NEW ASPHALT ROAD PAVEMENT
- EXISTING PRIVATE ASPHALT ROAD PAVEMENT
- LANDSCAPING
- PROPOSED BUILDING
- CONCRETE PAVEMENT
- SUP BITUMEN PAVEMENT
- SUP FEATURE PAVING
- EXPOSED AGGREGATE CONCRETE PAVEMENT

GENERAL

G1. ALL DIMENSIONS ARE METRES AND LEVEL SHOWN ARE TO AUSTRALIAN HEIGHT DATUM (A.H.D) UNLESS OTHERWISE STATED. DO NOT USE DRAWINGS TO DETERMINE SCALE MEASUREMENTS.

G2. ALL TREES AND SHRUBS ARE TO BE RETAINED UNLESS ROAD CONSTRUCTION NECESSITATES THEIR REMOVAL OR AS DIRECTED BY THE SUPERINTENDENT OR SUPERINTENDENT.
(A)

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Designer R.BON **Design Check** A. VAN EEDEN

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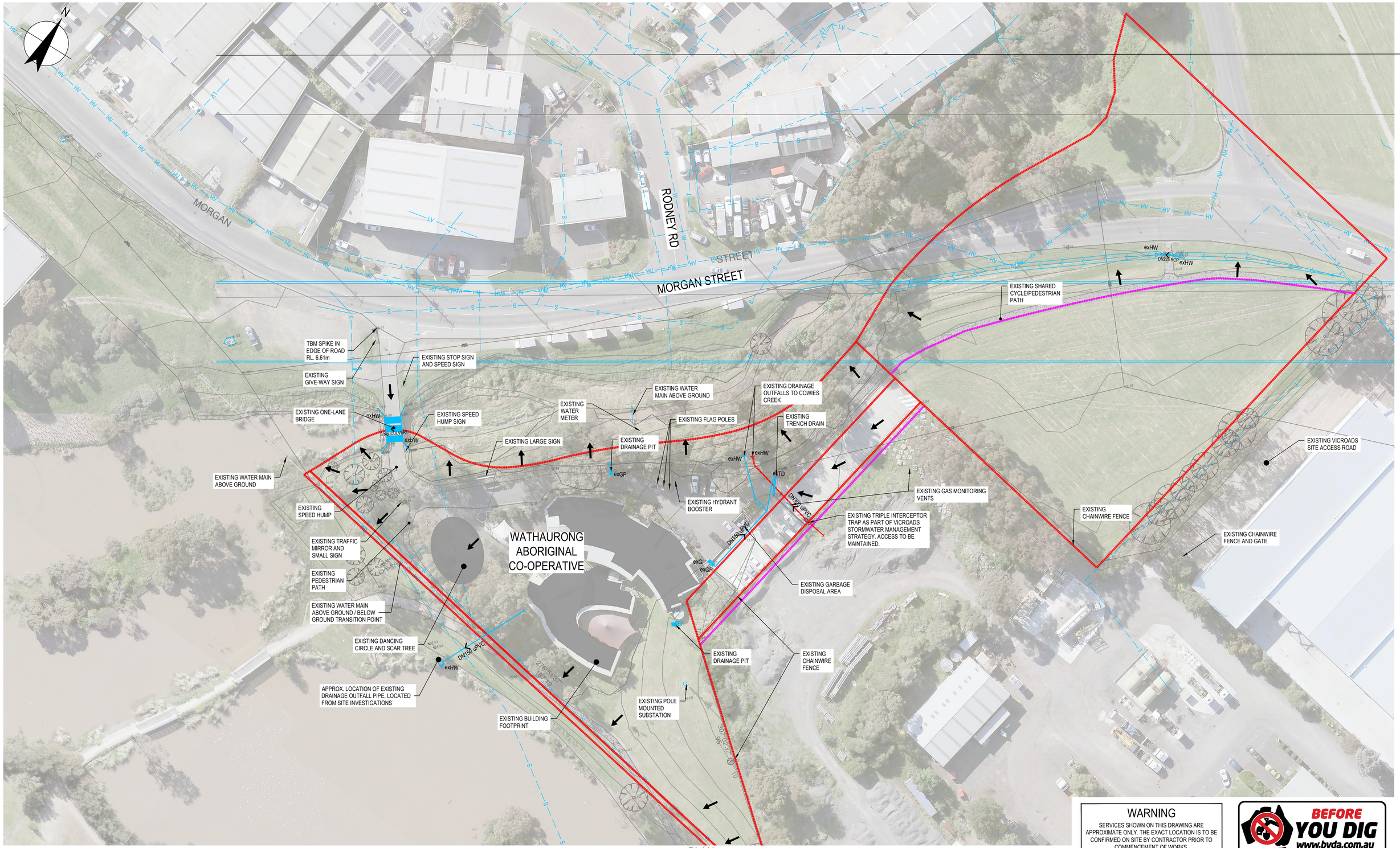
Client WATHAURONG ABORIGINAL CO-OPERATIVE
Project MORGAN STREET REDEVELOPMENT
Status TOWN PLANNING

Drawing Title GENERAL NOTES AND MASTER LEGEND
Drawing No. 12613952-GHD-00-00-DRG-CI-00002
Size A1
Rev P02

Plot Date: 26 February 2024 - 1:05 PM Plotted by: Anthony van Eeden
File Name: C:\12d\SW\data\P-00-12D-001\31-12613952 - Wathaurong Hub Redevelopment_2569\CADD\Drawings\12613952-GHD-00-00-DRG-CI-00002.dwg



PLAN
SCALE 1:500

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Author C. MENCHAVEZ **Drafting Check** M. WOOTTEN
Designer D. CHAN **Design Check** A. VAN EEDEN

0 5 10 15 20 25m
SCALE 1:500 AT ORIGINAL SIZE

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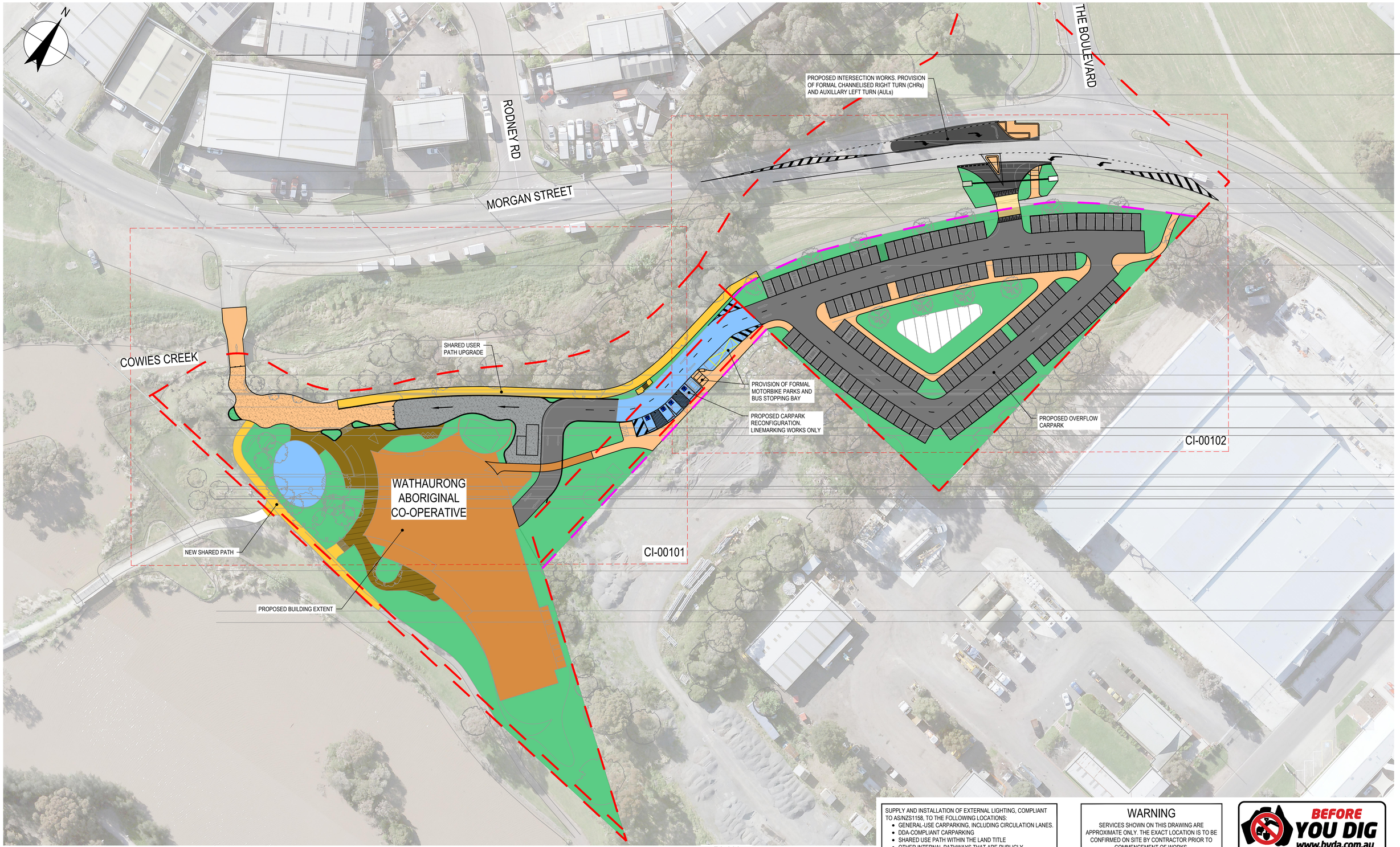
Project No. 12613952

Client WATHAURONG ABORIGINAL CO-OPERATIVE
Project MORGAN STREET REDEVELOPMENT
Status TOWN PLANNING

Drawing Title **EXISTING CONDITIONS PLAN**
Size **A1**
Drawing No. 12613952-GHD-00-00-DRG-CI-00010
Rev **P02**

Plot Date: 26 February 2024 - 1:10 PM Plotted by: Anthony van Eeden
File Name: C:\12d\SW\data\P-00-12D-001\31-12613952 - Wathaurong Hub Redevelopment_2569\CADD\Drawings\12613952-GHD-00-00-DRG-CI-00010.dwg



PLAN
SCALE 1:500

SUPPLY AND INSTALLATION OF EXTERNAL LIGHTING, COMPLIANT TO AS/NZS1158, TO THE FOLLOWING LOCATIONS:

- GENERAL-USE CARPARKING, INCLUDING CIRCULATION LANES.
- DDA-COMPLIANT CARPARKING
- SHARED USE PATH WITHIN THE LAND TITLE
- OTHER INTERNAL PATHWAYS THAT ARE PUBLICLY ACCESSIBLE
- BRIDGE

WARNING

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P03	REVISED TOWN PLANNING ISSUE	A.V.	H.B.	29.02.24
P02	REVISED TOWN PLANNING ISSUE	A.V.	H.B.	26.02.24
P01	TOWN PLANNING ISSUE	M.W.	A.V.	22.09.23

Author	C. MENCHAVEZ	**Drafting Check**	M. WOOTTEN	**Reg No.**	
Designer	D. CHAN	**Design Check**	A. VAN EEDEN	**Date**	

0 5 10 15 20 25m
SCALE 1:500 AT ORIGINAL SIZE

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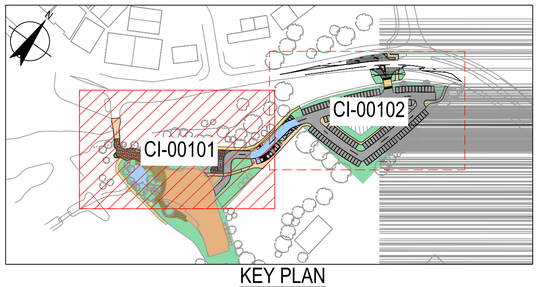
Project No. 12613952

Client: WATHAURONG ABORIGINAL CO-OPERATIVE
Project: MORGAN STREET REDEVELOPMENT
Status: TOWN PLANNING

Drawing Title: OVERALL SITE LAYOUT PLAN
Drawing No.: 12613952-GHD-00-00-DRG-CI-00100
Size: A1
Rev: P03

Plot Date: 29 February 2024 - 5:33 PM Plotted by: Anthony van Eeden
File Name: C:\12d\SW\data\P-00-12D-001\31-12613952 - Wathaurong Hub Redevelopment_2569\CADD\Drawings\12613952-GHD-00-00-DRG-CI-00100.dwg



KEY PLAN
SCALE 1:2500

MORGAN STREET

COWIES CREEK

EXISTING BRIDGE TO BE EXIT ONLY

REMOVABLE BOLLARD / GATE

EXISTING LARGE SIGN TO REMAIN

REMOVABLE BOLLARDS

LOWER LEVEL BUS PARKING

EXISTING TREE TO REMAIN. CARE TO BE TAKEN WORKING IN PROXIMITY OF THE TREE

PROVISION OF B1 KERB IN ACCORDANCE WITH IDM SD100 FOR DETAILS

6 VISITOR BIKE PARKS

PROVISION OF BUS STOPPING BAY AND LOADING ZONE AND REQUIRED SIGNAGE

PROPOSED LOADING AREA FOR DELIVERY AND GARBAGE DISPOSAL

ROAD ONE-WAY ONLY PAST BASEMENT RAMP. ARROWS INDICATE FLOW, NO FORMAL LINE MARKING

EXISTING FOOTHPATH TO BE UPGRADED TO 2.5m WIDE SHARED USER PATH

EXISTING KERB TO BE BROKEN UP AND REMOVED

JOIN NEATLY TO EXISTING CONCRETE

FOR CONTINUATION REFER TO DRG No CI-00102

PROPOSED 2.5m WIDE ALIGNMENT OF NEW SHARED USER PATH

TRANQUILITY GARDEN

3m WIDE TURNING BAY

6 VISITOR BIKE PARKS

NEW FOOTPATH

FIRE PUMP ENCLOSURE

PROPOSED FIRE BOOSTER CABINET

PROPOSED FIRE TANKS AND FIRE PUMP CABINET

ENSURE SUFFICIENT HEIGHT CLEARANCE FROM ROADWAY AND FOOTBRIDGE IS PROVIDED

PROVISION OF OVERHEAD PEDESTRIAN BRIDGE

EXISTING FENCING TO BE RECONFIGURED TO THE NEW LEASED BOUNDARY

PROVISION OF ACCESS TO BASEMENT PARKING

EXISTING DANCE CIRCLE

EXISTING DANCING CIRCLE AND SCAR TREE TO REMAIN

JOIN NEATLY TO EXISTING PATH

WATHAURONG ABORIGINAL CO-OPERATIVE

PLAN
SCALE 1:200

WARNING

SERVICES SHOWN ON THIS DRAWING ARE APPROXIMATE ONLY. THE EXACT LOCATION IS TO BE CONFIRMED ON SITE BY CONTRACTOR PRIOR TO COMMENCEMENT OF WORKS.

BEFORE YOU DIG www.byda.com.au

SUPPLY AND INSTALLATION OF EXTERNAL LIGHTING, COMPLIANT TO AS/NZS1158, TO THE FOLLOWING LOCATIONS:

- GENERAL-USE CARPARKING, INCLUDING CIRCULATION LANES.
- DDA-COMPLIANT CARPARKING
- SHARED USE PATH WITHIN THE LAND TITLE
- OTHER INTERNAL PATHWAYS THAT ARE PUBLICLY ACCESSIBLE
- BRIDGE

Rev	Description	Checked	Approved	Date
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Author C. MENCHAVEZ | Drafting Check M. WOOTTEN | Reg No.
Designer D. CHAN | Design Check A. VAN EEDEN | Date

0 2 4 6 8 10m
SCALE 1:200 AT ORIGINAL SIZE

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Project No. 12613952

Client WATHAURONG ABORIGINAL CO-OPERATIVE
Project MORGAN STREET REDEVELOPMENT
Status TOWN PLANNING

Drawing Title SITE LAYOUT PLAN SHEET 1 OF 2

Size A1

Drawing No. 12613952-GHD-00-00-DRG-CI-00101

Rev P03

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PLAN
SCALE 1:200

KEY PLAN
SCALE 1:2500

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0 2 4 6 8 10m
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Project No. 12613952

Client WATHAURONG ABORIGINAL CO-OPERATIVE
Project MORGAN STREET REDEVELOPMENT
Status TOWN PLANNING

Drawing Title SITE LAYOUT PLAN SHEET 2 OF 2

Size A1

Drawing No. 12613952-GHD-00-00-DRG-CI-00102

Rev P03

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