Batman Invest

Traffic Impact Assessment

Proposed Residential & Retail Development at 30-32 Geelong Rd Portarlington

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Traffic & Parking Impact Assessment for

Proposed Residential & Retail Development at 30-32 Geelong Road, Portarlington

Author- Kevin J Flynn

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Contents

Appendices

1 Traffic Impacts Summary

A planning permit is sought to develop residential apartments and retail shops at 30-32 Geelong Road, Portarlington. The land is currently occupied by a residence and various sheds.

Refer to Figures 1 & 2 below for Locality Plans.

Refer to Appendix A for the Concept Layout Plans.

Based on the investigations and analysis it is considered that there would be no traffic management, safety or operational grounds that would impede this development.

A summary of investigations and findings of the proposed development is shown in the Tables below:

Summary – Proposed Mixed Development, 30-32 Geelong Rd Portarlington.

Address Site:	30-32 Geelong Road, Portarlington. Zoned Commercial 2 Zone (C2Z) under the Greater Geelong Panning Scheme (GGPS).
Road Hierarchy:	Geelong Road, Portarlington is a sealed urban arterial road under the care and management of VicRoads (C123) with traffic volume of approximately 6,000 vehicles per day with a commercial vehicle component of 7%. Geelong Road is subject to a posted speed limit of 60km/h.
Existing Use:	Residence and Warehouse.
Proposed Use:	Mixed Use. Residential component of 55 apartments, café and 5 Retail / shop tenancies.
Crash History:	In the last five years of VicRoads crash data, there have been no crashes in the vicinity of the subject land.
Traffic Generation & Distribution:	The mixed use development will generate up to 598 vehicle trips per day when fully occupied with approximately 74 vehicles per hour in the peak periods. It is considered that the generated traffic will distributed equally to the east and west along Geelong Road.
Traffic Impacts:	The generated traffic will have minimal impact on the operating efficiency of the local network.
Access	The design of the access point shall comply with the Greater Geelong Planning Scheme, the relevant Austroads / VicRoads guides and the Infrastructure Design Manual. The design of access ramp and aisle ways shall allow vehicles to enter and exit in a forward manner. Under the Austroads / VicRoads guidelines, a BAR / BAL type treatment is required at the car park entry on Geelong Road.

Parking	The calculated parking demand for the development is 94 spaces according to the planning scheme. The sub-ground car park provides for 57 vehicles which results in a shortfall of 37 spaces for the development. It is proposed that the residential component is provided in the sub-ground car park while the visitor and café / retail components are provided from the available on-street supply. The visitor parking demand component of 11 spaces will most likely occur outside business hours and will not impact on demand for the café / retail components. As such there will be a peak shortfall of 26 spaces which is proposed to be provided from the available on-street parking opportunities nearby. The underground car park and access ramp will conform to the design requirements of Clause 52.06 of the Greater Geelong Planning Scheme.
Recommended Actions:	Council to grant a waiver for the shortfall in parking supply for the café / retail components of the development calculated as 26 spaces. BAR / BAL type intersection treatments to be applied on Geelong Road at the new car park entry point. An access management system to be applied to the car park entry ramp.

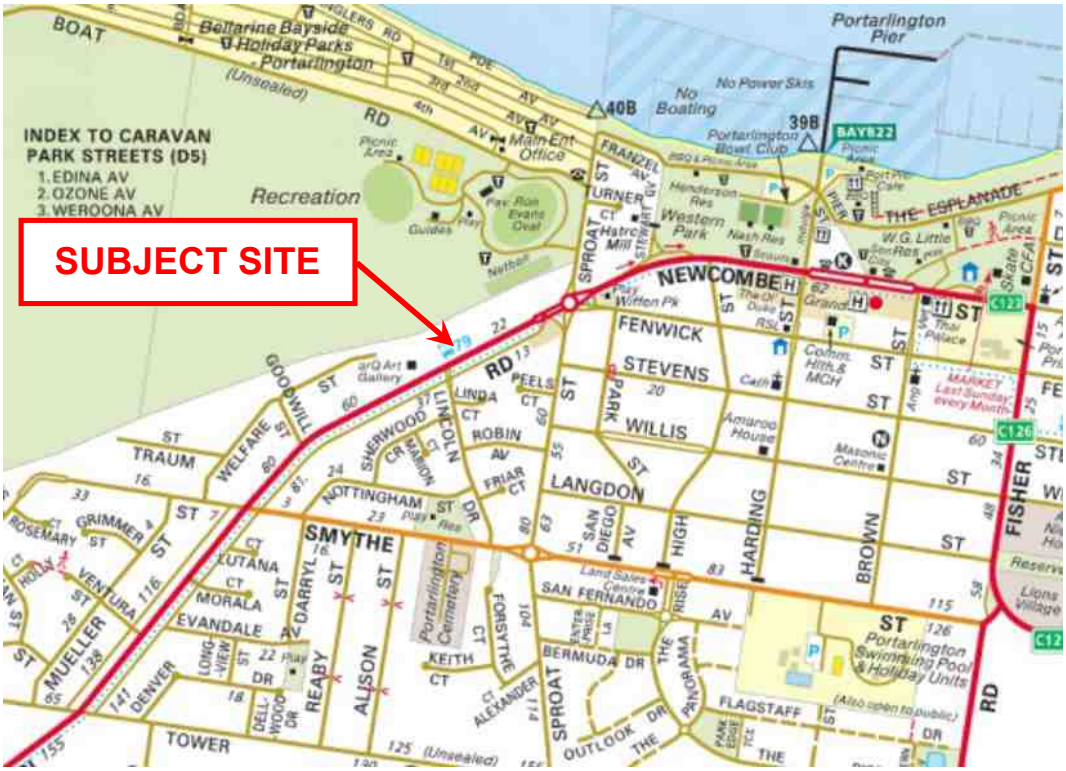


Figure 1 – Locality Plan of Subject Site – 30-32 Geelong Road

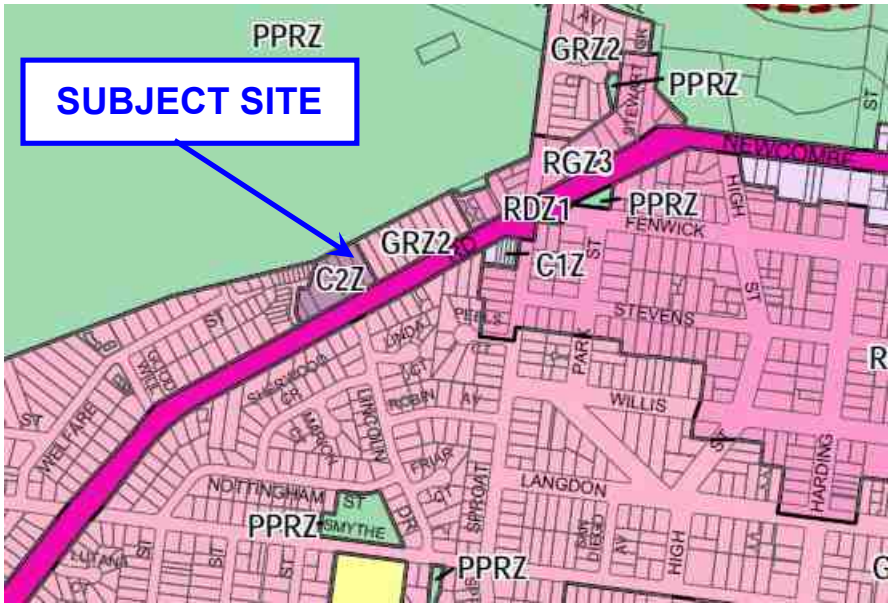


Figure 2 – Zoning Plan of Subject Site – 30-32 Geelong Road

2 Introduction

Civil and Traffic Consulting P/L has been engaged by Select Architects to undertake a traffic impact assessment of a proposal to develop residential apartments, café and commercial / retail tenancies at 30-32 Geelong Road Portarlington. The subject site is 2,285m² in size and is currently used as a residence and warehouse.

Refer to concept development plans in Appendix A

This traffic assessment report is based on the concept plans prepared by Architecton P/L (Architects) and site visits undertaken during July and August of 2015.

This report consists of:

- A description of the proposed development and access requirements;
- An estimation of traffic generation and distribution;
- An estimation of parking demand and impacts;
- An assessment of the impacts for pedestrians, cyclists and public transport users;
- An assessment of the traffic impacts on the local network; and
- Recommendations to address the traffic and parking impacts, if necessary.

Refer to Locality Plan in Figure 1 above.

2.1 References

The principal references used in the preparation of this Traffic Impact Assessment Report include the following:

- The Greater Geelong Planning Scheme (GGPS);
- The RTA Guide to Traffic Generating Developments – Ver 2.2, 2002;
- Traffic Engineering & Management – Institute of Transport Studies – Monash University – 2003;
- Austroads Guide to Road Design Part 4A: "Un-signalised and Signalised Intersections" and VicRoads Supplementary comments on the Austroads Guide;
- Other Relevant VicRoads and Austroads Guidelines;
- AS 2890.1 Parking Facilities, Part 1: "Off Street Car Parking" 2004;
- AS 2890.6 Parking Facilities, Part 6: "Off Street Car Parking for People with Disabilities" 2009.

3 The Development Proposal

A planning permit is sought to develop residential apartments and shops on 2,285m² of land at 30-32 Geelong Road Portarlington. The land is currently occupied used as a residence and warehouse.

Refer to concept development plans in Appendix A.

The proposed mixed use development will contain the following attributes:

- All elements of the development will be contained in a single building over five levels, including a sub-ground car park, lifts and stairs;
- 55 residential apartment, 34 x 1 bedroom and 21 x 2 bedroom;
- A reception area of 65m²;
- Five ground level retail / commercial tenancies varying in area from 30m² to 100m² (totalling 255m²) ;
- A café with net floor area of 96m² with adjoining outdoor seating area;
- A sub-ground car park with accommodation for 57 light vehicles. The car park access ramp is situated on the north-east boundary with access directly off Geelong Road. A secure door will provide access by swipe card of remote control. Waste bins and storage areas are located in the sub-ground car-park;
- A rooftop garden and viewing deck will also be provided.

4 Site Conditions – Land Use

The site area of 30-32 Geelong Road Portarlington is approximately 2,285m² in size. The site is currently used as a residence and warehouse which will be demolished to make way for the new development building. The site has frontage to Geelong Road on the south boundary, has frontage to adjoining properties on the west and east boundaries and has frontage to a flora and fauna reserve across the north boundary.

The subject land is zoned Commercial 2 Zone (C2Z) under the Greater Geelong Planning Scheme (GGPS).

Refer to Figure 2 above.

5 Local Road Network

5.1 Geelong Road, Portarlington

Geelong Road, at the frontage of the subject site, is an important arterial road (C123), managed by VicRoads, that provides a link between the communities of Portarlington, Drysdale and Geelong. The sealed carriageway is generally two-lane two-way carrying approximately 6,000 vehicles per day under normal operating conditions which can rise to approximately 10,000 vehicles per day during the peak holiday periods (data obtained from VicRoads website). The commercial vehicle composition is 7%. The average two-way peak hour volume is expected to be in the order of 600 vehicles per hour. The posted speed limit on Geelong Road is 60km/h.

The sealed carriageway width is approximately 9.1m wide. The eastbound carriageway is approximately 5.5m wide bounded by barrier type kerb and channel and includes kerbside parallel parking. The westbound carriageway is approximately 4.6m wide with a 3.6m wide traffic lane and 1m wide sealed shoulder. A parallel service road on the south side of Geelong Road provides access to properties on that side of the road. The main carriageway and the service road are separated by an embankment where the service road is approximately 1m higher.

Lincoln Drive intersects Geelong Road approximately 30 west of the subject site.

5.2 Public Transport

Routes 60 of the Geelong bus service (operated by McHarrys) travels past the subject site on Geelong Road, providing 21 return services on weekdays and 7 on weekends. The nearest bus stops for the westbound and eastbound services are located approximately 85m to the west of the subject site. A bus shelter is provided for the westbound service. Lawrence Road intersection.

The close and convenient bus services have the potential to reduce the overall traffic and parking impacts, generated by the development.

5.3 Road Safety

The established method of assessing road safety is analysing the database of casualty crashes maintained by VicRoads from Police reports. The crash database in the last five years of recording (Jan 2009 to Dec 2013) shows that no crashes have occurred in the vicinity of the subject intersection.

5.4 Pedestrians & Cyclists

There is a concrete footpaths across the frontage of subject site. There are no cycle lanes on Geelong Road.

5.5 Photographs

Photo 1: Looking north towards the subject site, across Geelong Road.

Photo 2: Looking west along Geelong Road. Subject site is at right of picture.

Photo 3: Looking east along Geelong Road. Subject site is at left of picture.

Photo 4: Looking west along the north side of Geelong Road showing footpath.

Photo 5: Looking west across the frontage of the subject site.

Photo 6: Looking south along Lincoln Drive from Geelong Road.

6 Traffic Generation & Impacts

The development will generate traffic from the residential, cafe and retail components of the land use. For the purposes of this report, the residential houses are defined as high density flats / buildings and at this early stage, the retail / café tenancies can be classified as a small shopping centre.

The RTA Guide to Traffic Generating Developments (Ver 2.2, 2002) and an update in 2013, provides guidance in the determination of traffic demand for land use in new developments. In accordance with the RTA 2013, the recommended traffic generation rate for high density dwellings in regional areas is 4.5 trips per day with 0.5 in the peak hour periods.

According to the RTA 2002, the peak daily traffic generation rate (Saturday) for small shopping centres can be taken as 121 trips per 100m² of gross leasable floor area (GLFA) or 16.3 trips per 100m² GLFA in the maximum peak hour period. GLFA is defined as 75% of the gross floor area.

6.1 Traffic Generation

As indicated in Section 3, the proposed development includes 55 high density residential dwellings, a 96m² café and 5 retail / commercial tenancies with total GLFA of 191m² (255 x 0.75).

Based on the RTA guide rates, the maximum daily traffic generation for this proposed mixed use development is indicated in Table 1 below.

LAND USE	NUMBER	TRIP RATE	DAILY TRIPS	PEAK HR TRIPS
Dwellings	55	4.5	248	28
Retail / Cafe	287m²	121 / 100m²	350	46
TOTALS			**598**	**74**

Table 1 – Traffic Generation Proposed Development

The generated trips include arrivals and departures and all vehicles required to service the residential development including waste collection.

It is considered that all arriving traffic will be equally distributed to the east and west along Geelong Road. The AM peak split of generated residential traffic is expected to be 80% departing and 20% arriving. The PM peak split is expected to be 40% departing and 60% arriving.

It is expected that the café / retail generated traffic will be stable throughout the day with the peak hour period occurring around lunchtime on Saturday.

It is considered that there is ample spare capacity in the local road network to accommodate the traffic generated by the proposal without unduly impacting on safety and performance.

6.2 Traffic Impacts

It is considered that the maximum generated peak hour traffic of approximately 74 vehicles per hour will have minimal impact on the performance and safety of the local road network and intersections.

Of the 598 generated trips per day, approximately 248 (or 28 in the peak hour) will be residential trips using the car park entry ramp. This estimated peak traffic at the entry / exit point to car park does not meet the threshold requirements for capacity analysis as defined in Table 3 below, reproduced from the Austroads Guide to Traffic Management, Part 3: Traffic Studies and Analysis. As such capacity analysis is not necessary for the car park entry (intersection).

Type of road	Light cross and turning volumes maximum design hour volumes vehicles per hour (two way)		
Two-lane major road	400	500	650
Cross road	250	200	100
Four-lane major road	1000	1500	2000
Cross road	100	50	25

Table 3 – Intersection volumes below which capacity analysis is unnecessary

6.3 Car Park Access Entry

The design of the access entry shall accord with the requirements of the Greater Geelong Planning Scheme (GGPS), the Infrastructure Design Manual (IDM) and the relevant Austroads / VicRoads guides. Design of the access entry, ramp and car park shall ensure vehicles will enter and exit in a forward manner.

The car park access in effect is a new intersection on Geelong Road, requiring assessment for road safety and auxiliary lane treatments, particularly during the peak holiday traffic periods. The Austroads Guide to Road Design Part 4A: "Un-signalised and Signalised Intersections" (AGTD: 4A) provides guidance on the type of entry / intersection appropriate for the generated traffic as approved by VicRoads. It is considered that the 28 peak hour trips will be split 50/50 between arrivals and departures and split 50/50 between the east and the west along Geelong Road.

Figure 4.9 of the Austroads Guide to Road Design Part 4A (reproduced below in Figure 4) indicates minimum intersection type required according to the traffic flow. Using the chart, it can be seen that the vehicle turning movements at the entry qualify for a CHR / AUL type treatment on Geelong Road with an estimated existing two-way flow of approximately 600 vehicles per hour.

It can be seen that the qualifying flows are on the threshold of the CHR / AUL treatment and it will be difficult to impose this warrant in the context of the local road environment and the proximity of the Lincoln Drive intersection. It is proposed that in this instance the lesser standard BAL / BAR type treatment for urban roads is more appropriate for the car park entry point.

The BAR treatment will require road pavement widening of approximately 1.5m, on the south side of the carriageway to provide the necessary 6m total width. The BAL requirement will utilise the existing parking lane at the entry point and no further widening will be required. Considering the close proximity of the Lincoln Drive intersection the road widening for the BAR treatment will be contiguous with a left turn lane into Lincoln Drive. With consideration of the embankment and drainage requirements between the Geelong Road carriageway and the service road, it is recommended that the BAR type widening on the south side is bounded by Kerb and Channel.

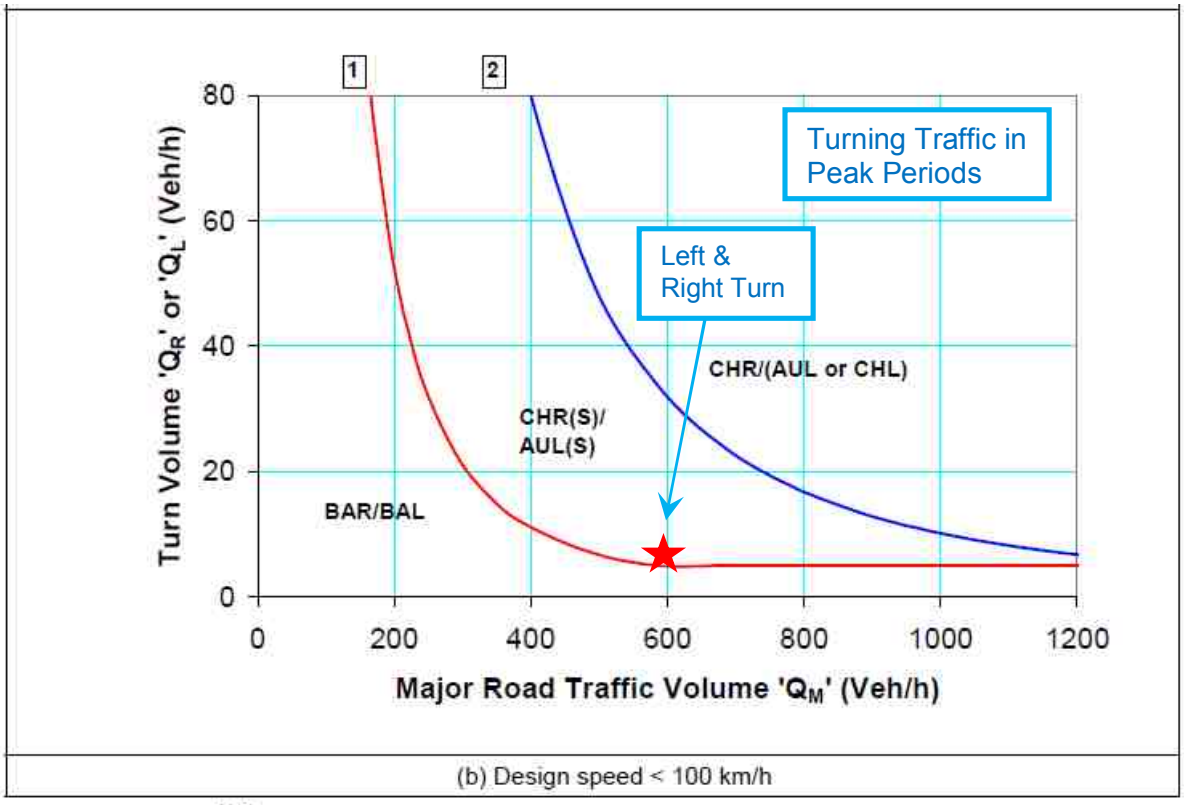
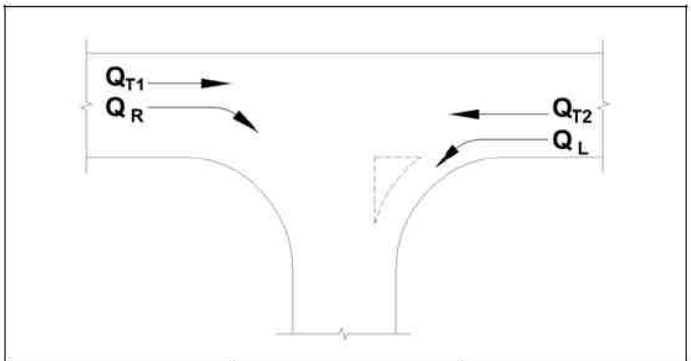


Figure 4: Austroads determination of intersection type.



Turn type	Splitter island	QM (veh/h)
Right	No	= Q_{T1} + Q_{T2} + Q_L
Right	Yes	= Q_{T1} + Q_{T2}
Left	No/Yes	= Q_{T2}

Figure 5: Calculation of Major Road Traffic Flow QM.

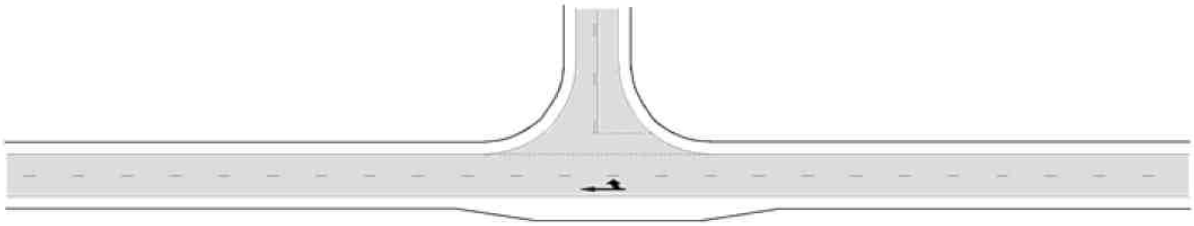
In accordance with the Austroads guide, the BAR type treatment is to allow a minimum of 6.0m width on the carriageway in order for a vehicle to pass to the left of a right turning vehicle that may be waiting to turn.

Design for the BAR / BAL treatment shall use a 70km/h design speed to determine the length of transition tapers required for Geelong Road, in accordance with the Austroads guidelines.

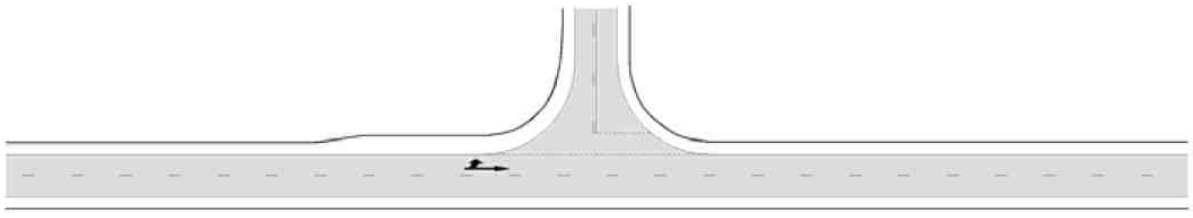
Figure 6 below shows the features of rural BA turn treatments at T-intersections, namely:

- the BAR treatment features a widened shoulder on the major road that allows through vehicles, having slowed, to pass to the left of turning vehicles
- the BAL treatment on the major road has a widened shoulder, which assists turning vehicles to move further off the through carriageway making it easier for through vehicles to pass
- the BAL turn treatment on the minor road allows turning movements from a single lane with a shoulder that is too narrow to be used by left-turning vehicles (to prevent drivers from standing two abreast at the holding line).

Where the major road is sealed it is preferred that the widened shoulders are also sealed, unless the shoulders can be maintained with a sound and even surface in all weather conditions. Secure gates at the entry point shall be set back sufficiently from the Geelong Road traffic lane to allow queuing of one vehicle while gates are being opened.



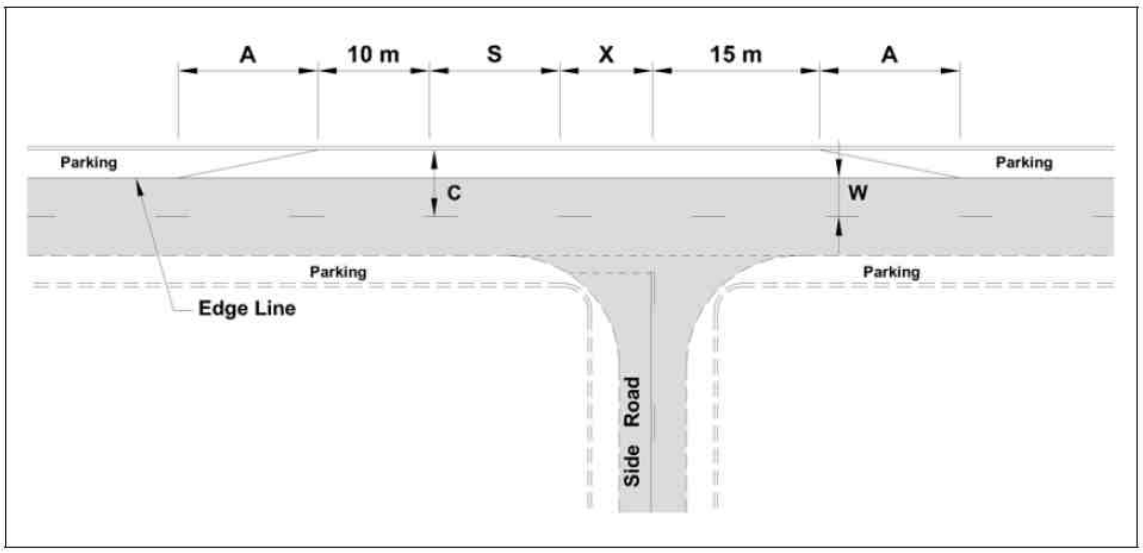
Basic Right Turn (BAR)
on the Major Road (Two-Lane, Two-Way Road)



Basic Left Turn (BAL)
on the Major Road

Figure 6 – Reproduced from ATRD: 4A – Urban Basic Left and Right Turn Treatments

The composition of the BAR treatment is shown in Figure 7 below (reproduced from Figure 7.5 of AGRD: 4A), where dimension W = 3.6m, dimension C = 6m, dimension, V (design velocity) = 70km/h, dimension S = 12m, dimension X = 10m and dimension A = 25m.



Notes:

1. This diagram does not show any specific bicycle facilities. Where required bicycle facilities should be provided in accordance with this guide.
2. The dimensions of the treatment are defined thus:

W = Nominal through lane width (m) (including widening for curves). Width to be continuous through the intersection.

C = On straights – 6.0 m minimum
– 6.5 m minimum for 19 m semi-trailers and B-doubles
– 7.0 m minimum for Type 1 & Type 2 road trains
On curves – widths as above + curve widening (based on widening for the design turning vehicle plus
– widening for the design through vehicle).

A = $\frac{0.5V(C-W)}{3.6}$

Increase length A on tighter curves (e.g. where side friction demand is greater than the maximum desirable). Where the design through vehicle is larger than or equal to a 19 m semi-trailer, the minimum speed used to calculate A is 80 km/h.

V = Design speed of major road approach (km/h).

S = Storage length to cater for one design turning vehicle (m) (minimum length 12.5 rn).

X = Distance based on design vehicle turning path, typically 10–15 m.

Figure 7 – Reproduced from ATRD: 4A – Austroads Urban Basic Right Turn Treatment

6.4 Pedestrians & Cyclists

The proposed internal pedestrian facilities and the access points to the local road network shall be DDA compliant. All new connections of proposed walkways to the external road network shall provide suitable sight distance at the entry points and crossing points.

Clause 52.34 of the Greater Geelong Planning Scheme (GGPS) prescribes the minimum provisions required for bicycle facilities. There is no bicycle space requirement for residential dwellings of this type, however it is understood that secure facilities will be provided in the basement level car park as part of the storage area allocation for each residential unit.

Under the GGPS the retail component of this development should provide a prescribed rate of 1 cycle locker / space to each 600m² of leasable floor area for employees and 1 to each 500m² of leasable floor area for customers. As the retail component of this

development does not exceed 1,000m² there is no requirement to provide cycle facilities however it is recommended that within the development, secure cycle parking is provided for shop employees and that bike racks should be provided for customers at street level.

6.5 Waste Collection & Service Vehicles

It is proposed that waste collection will occur from the kerb-side, either form Council or a private waste company. A waste management plan shall be developed that will schedule pick-ups outside the peak operating time of the development.

Service deliveries for café and retail shall also occur outside normal business hours.

6.6 Sight Distance

Sight distance requirements at access driveways are set out in Section 3.2.4 of AS/NZS 2890.1:2004 Parking Facilities - Part 1: Off-street Car Parking.

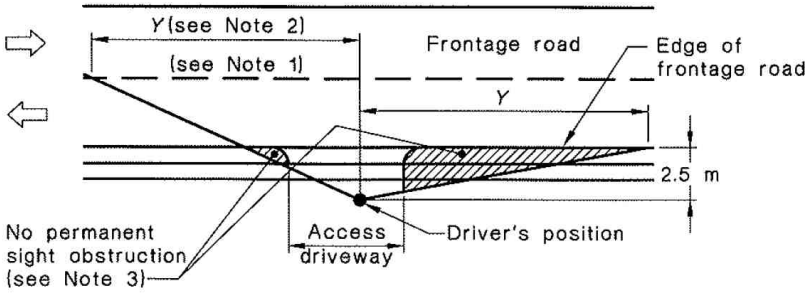
Access driveways will be located and constructed so that there is adequate entering sight distance to traffic on the frontage road and sight distance to pedestrians on the frontage road footpath for traffic entering the frontage road, as follows:

a) ***Entering sight distance*** Un-signalised access driveways shall be located so that the intersection sight distance along the frontage road available to drivers leaving the car park or domestic driveway is at least that shown in Figure 3 below.

b) ***Sight distance to pedestrians*** Clear sight lines as shown in Figure 4 below shall be provided at the property line to ensure adequate visibility between vehicles leaving the car park or domestic driveway and pedestrians on the frontage road footpath.

6.6.1 Entering Sight Distance

Entering Sight Distance (ESD) requires driveways to be located so that the sight distance along the frontage road available to drivers leaving a driveway complies with the minimum criteria of AS/NZS 2890.1, represented in Figure 3. The table included in Figure 3 indicates that ESD should be 83m desirable for a 5 second gap selection or 65m for Stopping Sight Distance (SSD) for the applicable frontage road design speed of 60 km/h. It should be noted that existing sight distance at the proposed entry point is satisfactory providing that vegetation is trimmed and the visibility conditions are maintained.



Frontage road speed (Note 4) km/h	Distance (Y) along frontage road m		
	Access driveways other than domestic (Note 5)		Domestic property access (Note 6)
	Desirable 5 s gap	Minimum SSD	
40	55	35	30
50	69	45	40
60	83	65	55
70	97	85	70
80	111	105	95
90	125	130	Use values from 2nd and 3rd columns
100	139	160	
110	153	190	

NOTES:

1 Centre-line or centre of road (undivided road), or right hand edge of right hand through lane (divided road).

2 A check to the left is not required at a divided road where the median is wide enough to shelter a vehicle leaving the driveway.

3 Parking on this side of the frontage road may need to be restricted on either side of the driveway so that the sight distance required by the above table to an approaching vehicle is not obstructed.

4 This is the posted or general speed limit unless the 85th percentile speed is more than 5 km/h above the limit in which case the tabulated speed nearest the 85th percentile shall be adopted.

5 The values in the table apply only to left turn and right turn manoeuvres into two-way roads up to four lanes wide and one-way streets regardless of width, either for a 5 s gap, desirable at lower frontage road speeds, or minimum stopping sight distance based on 2 s reaction time.

Crossing manoeuvres (e.g. from an access opposite the steam of a T-junction) over four lanes or more, and turning manoeuvres into a six lane two-way road would require longer gaps unless there was a median wide enough to store a vehicle and allow a two stage manoeuvre.

6 These distances are based on stopping sight distances with reaction time of 1.5 s for traffic approaching along the frontage road and are applicable to a frontage road speed of up to 80 km/h only. Wherever practicable sight distance provided at domestic property accesses should meet the values given in the second or third columns of the Table.

7 When checking sight distance the driver's eye height and the height of the object (approaching vehicle) are to be taken as 1.15 m above the road surface.

Figure 3: Sight Distance Requirements at Access Driveways

6.6.2 Pedestrian Sight Distance

Sight Distance to Pedestrians criterion requires the provision of minimum sight triangles as set out in Figure 4 (reproduced from the code) at the property line to ensure adequate visibility between exiting vehicles and pedestrians on the frontage footpath.

It is expected that these criteria will be satisfied at the new access driveway. Detailed design will confirm that buildings, fences and shrubs adjacent to the access driveway do not limit sight lines below the specified values.

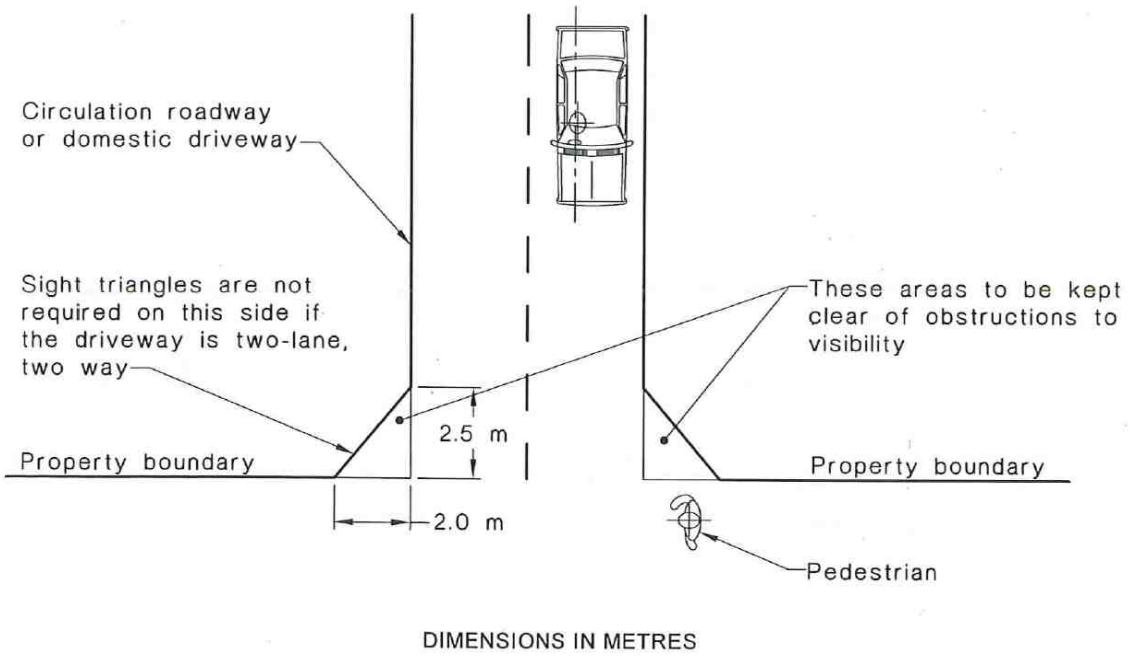


Figure 4: Minimum Sight Lines for Pedestrian Safety

6.7 Public Lighting

It is understood that a public lighting scheme will be developed for this proposal. The overall lighting scheme will take into consideration the appropriate level of lighting required in accordance with the Australian Standard - AS 1158.1.1 (2005) Lighting for Roads and Public Spaces.

7 Parking

7.1 Parking Demand

The mixed use development shall provide the parking requirements in accordance with the Greater Geelong Planning Scheme (GGPS).

According to the GGPS, the residential component of the development shall provide 1 car space per 1 or 2 bedroom dwelling, plus 1 visitor car space to every 5 dwellings for developments with 5 or more dwellings.

In accordance with the GGPS the retail shops are to provide 4 car spaces per 100m² of leasable floor space (leasable floor space is defined as 75% of gross floor area, RTA: 2002).

The café is to provide 0.4 spaces per patron permitted. In accordance with RTA 2002, an allowance of 2.1m² per seat can be made of the gross floor area.

Based on the GGPS guide rates, the parking demand calculations for the proposed mixed use development is indicated in Table 4 below.

LAND USE	NUMBER	PARKING RATE	PARKING SPACES
1 & 2 Bed Dwellings	55	1 per Dwelling	55
Residential Visitors		1 per 5 Dwellings	11
Retail / Commercial	255m²	4 / 100m² GLFA	10
Cafe	96m² (approx. 45 people)	0.4 per Person Permitted	18
TOTALS			**94**

Table 4 – Planning Scheme Parking Demand

7.2 Parking Provision

The following Table 5 indicates the on-site parking provided for this development as indicated on the concept development plans.

PRKING AREA	CAR SPACES
On-site Basement Car Park	57
Kerbside Parking – Geelong Road	5
TOTAL	**62**

Table 5 – Proposed Development Parking Provision.

The assessment indicates a parking provision shortfall of 32 spaces, which will require a waiver under the GGPS.

7.3 Parking Impacts

The assessment of parking demand shows a provision shortfall of 37 spaces as calculated under the planning scheme. It is proposed that five of these spaces are provided along the street frontage of the subject land.

The parking demand assessment under the planning scheme considers the impacts if all components of the development were operating at peak demand which is rarely the case in reality (if ever) for this type of facility. The nexus between the residential component and the retail / café components of the development need to be taken into account when assessing parking demand. In addition, consideration needs to be given to the walk-ins from the surrounding residential areas and adjacent commercial land uses.

It is proposed that the residential parking demand component of the development will be provided in the basement level secure car park. The residential visitor parking and the café / retail parking component will be provided by the available on-street parking opportunities nearby. It is expected that residential visitor parking demand normally occurs outside business hours and the car parking waiver should include only the shortfall in the retail / café component of 26 spaces.

Clause 52.06-6 of the Planning Scheme grants the Council discretionary powers to reduce or waive the number of car spaces required by Table 52.06-5 of the Planning Scheme. In this instance it is recommended approval be granted for a waiver of 26 spaces, which is proposed to be provided from the on-street parking supply.

It is expected that during the daytime traffic and parking demand will be low as the café will principally service the local precinct, where patrons would have already travelled and parked their vehicles, or have walked to the facility.

7.4 Parking Design

The concept development plans show the design of the basement level car park, basement access ramp, the off-street parking area and access aisle-ways conform to Clause 52.06 of the GGPS requirements and to the Australian Standard AS/NZS 2890.1 Parking Facilities, Part 1: "Off Street Car Parking" 2004 and to AS/NZS 2890.6 Parking Facilities, Part 6: "Off Street Car Parking for People with Disabilities" 2009.

It is recommended that the detail design of the basement level car park shows a provision of 2 accessible spaces for people with disabilities, convenient to the lift lobby. The concept design layout plans show queuing space for one vehicles prior to the secure door for the basement level parking.

Considering the ramp layout with limited sight distance, particularly from below, it is recommended that an access management system is implemented to control the use of the car park access ramp. This management system may include the provision of a red stop lamp facing motorists at the street level if the secure gate is activated from the car park and stop lamp in the basement if the gate is activated from street level. The default position will be stop at both locations. The estimated maximum peak traffic flow at the access ramp is 28 vehicles per hour (1 every 2 minutes) which is not expected to cause any queuing with the utilisation of an access management system.

8 Conclusions & Recommendations

Based on the analysis and investigations contained in this report it is concluded that:

1. The proposed mixed use development at 30-32 Geelong Road Portarlington will generate approximately 598 trips per day with 74 vehicle trips in the peak hour periods (28 trips per hour at car park entry). This assessment is made for the convergent peak demand for the land use components of the development which in reality, will rarely be achieved. It is expected that traffic generation under normal operation will be much less than the calculated demand and will have minimal impact on the performance and safety of the local road system;
2. Under the Austroads requirements for new intersections, the car park entry shall require BAR / BAL type treatments to be applied to Geelong Road. The BAR treatment includes carriageway widening of approximately 1.5m on the south side of Geelong Road and the BAL treatment shall utilise the existing parking lane with no further widening necessary:
3. The concept development plans show the provision of 57 car spaces in the sub-ground car park which exceeds the planning scheme requirement for the residential component of the development. It is recommended that 2 spaces are reserved for people with disabilities situated convenient to the lift lobby;
4. It is proposed the parking demand for residential visitors and users of the retail / café components, is provided from the available on-street parking opportunities nearby. Under the planning scheme, the peak parking demand for residential visitors and the retail / café components of the development is calculated to be 39 spaces, with a shortfall of 37 spaces. In reality the peak demand for these land uses will not converge as the demand for residential visitors normally occurs outside business hours. This being the case, it is likely that the maximum demand for these components will be in the order of 26 spaces. This development will require Council granting a waiver for this shortfall in parking provision;
5. The design of the basement level car park and access ramp shall conform to Clause 52.06 of the GGPS requirements and to the Australian Standard AS/NZS 2890.1 Parking Facilities, Part 1: "Off Street Car Parking" 2004 and to AS/NZS 2890.6 Parking Facilities, Part 6: "Off Street Car Parking for People with Disabilities" 2009. The concept design layout plan shows queuing space for one vehicle prior to the secure door for the basement level parking. The design of the car park allows vehicles to enter and exit in a forward manner;
6. The available sight distance at the proposed access point on Geelong Road shall meet the minimum sight distance requirements provided that vegetation is trimmed and well maintained, and any new landscaping along street frontage shall consider the necessary pedestrian sight lines. It is considered that there will be sufficient gaps in the traffic stream on Geelong Road to allow vehicles to exit safely from the site in both directions;
7. It is recommended that bicycle storage facilities are provided within the development for residents, shop employees and shop customers.

There are no traffic engineering reasons that would preclude the issue of a Planning Permit for the development, subject to Council granting a waiver for the shortfall in parking provision and BAR / BAL type treatments are applied to Geelong Road for the new entry to sub-ground car park.

Appendix - A

CONCEPT LAYOUT PLANS

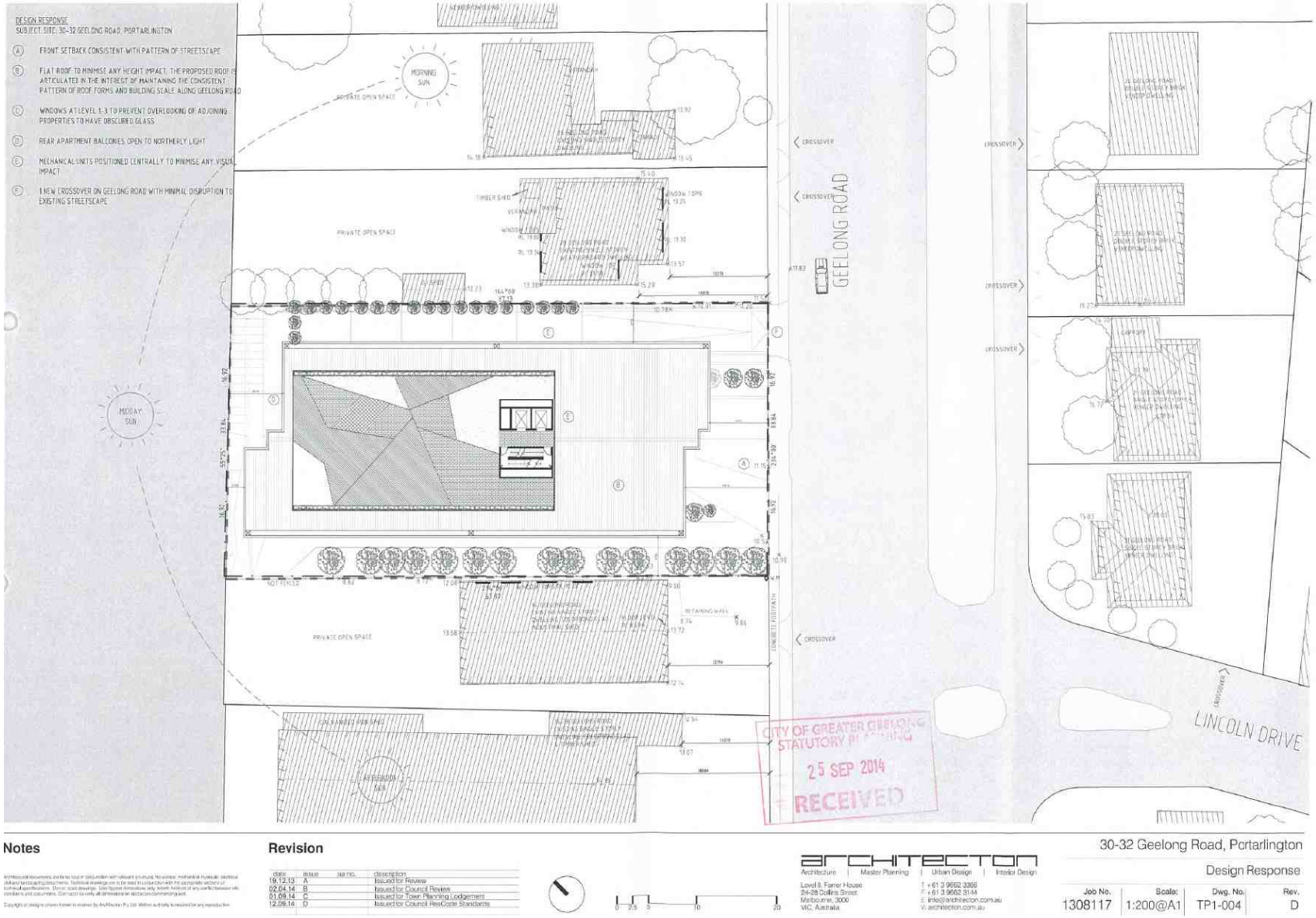


Figure A.1 – Proposed Site Layout – Development at 30-32 Geelong Road Portarlington

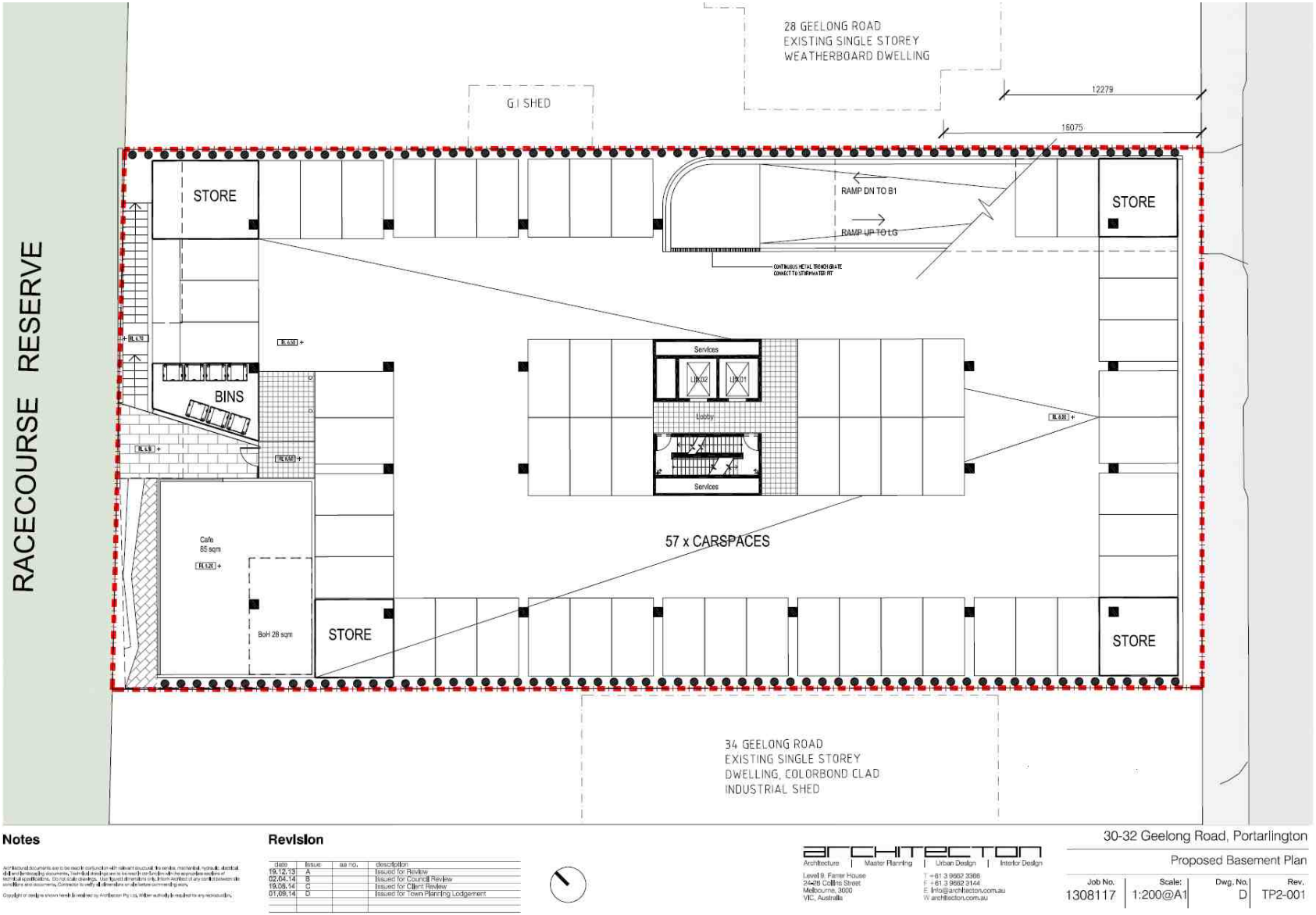


Figure A.2 – Proposed Sub-Ground Car Park – 30-32 Geelong Road Portarlington

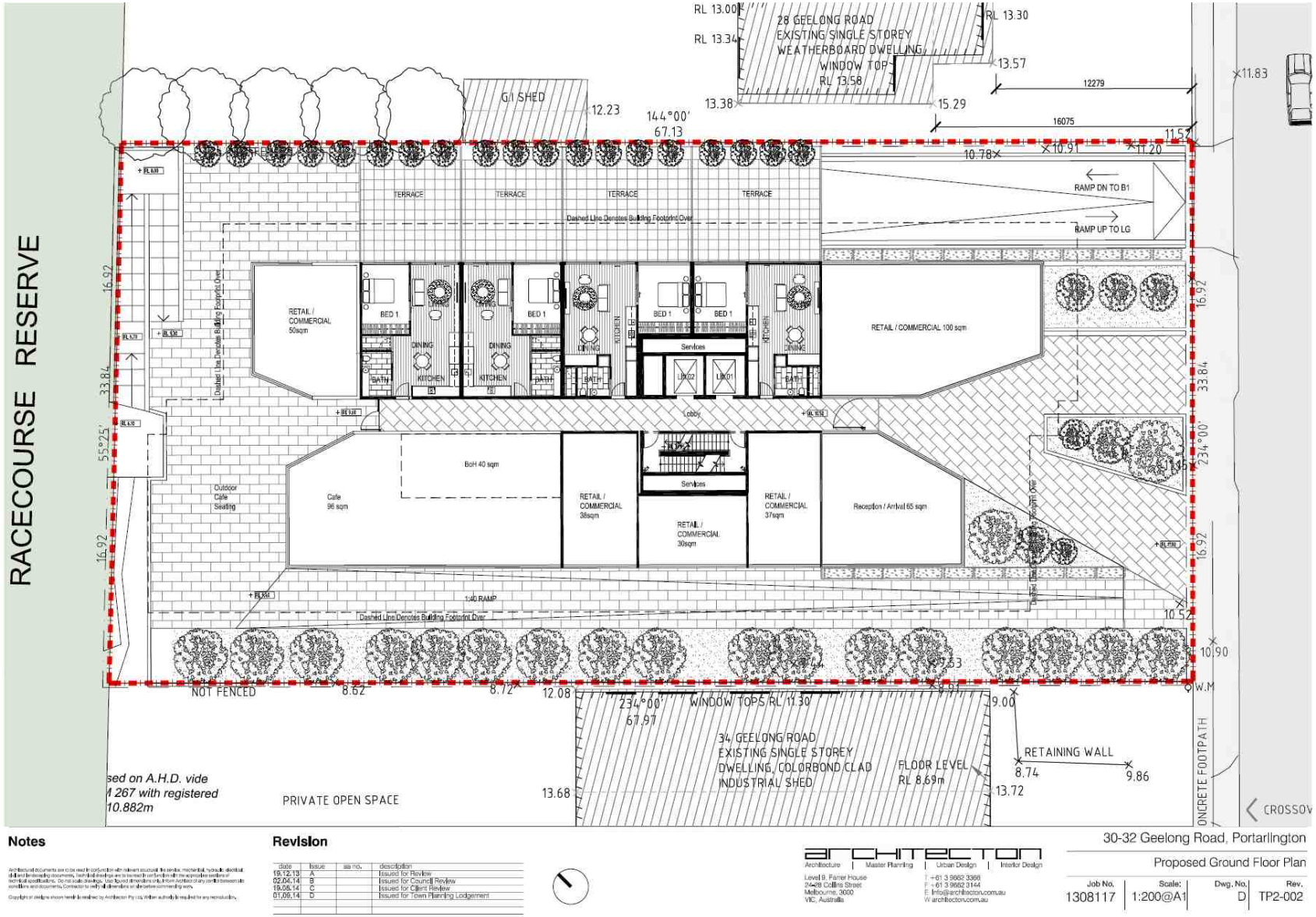


Figure A.3 – Proposed Ground Level Floor Plan – 30-32 Geelong Road Portarlington

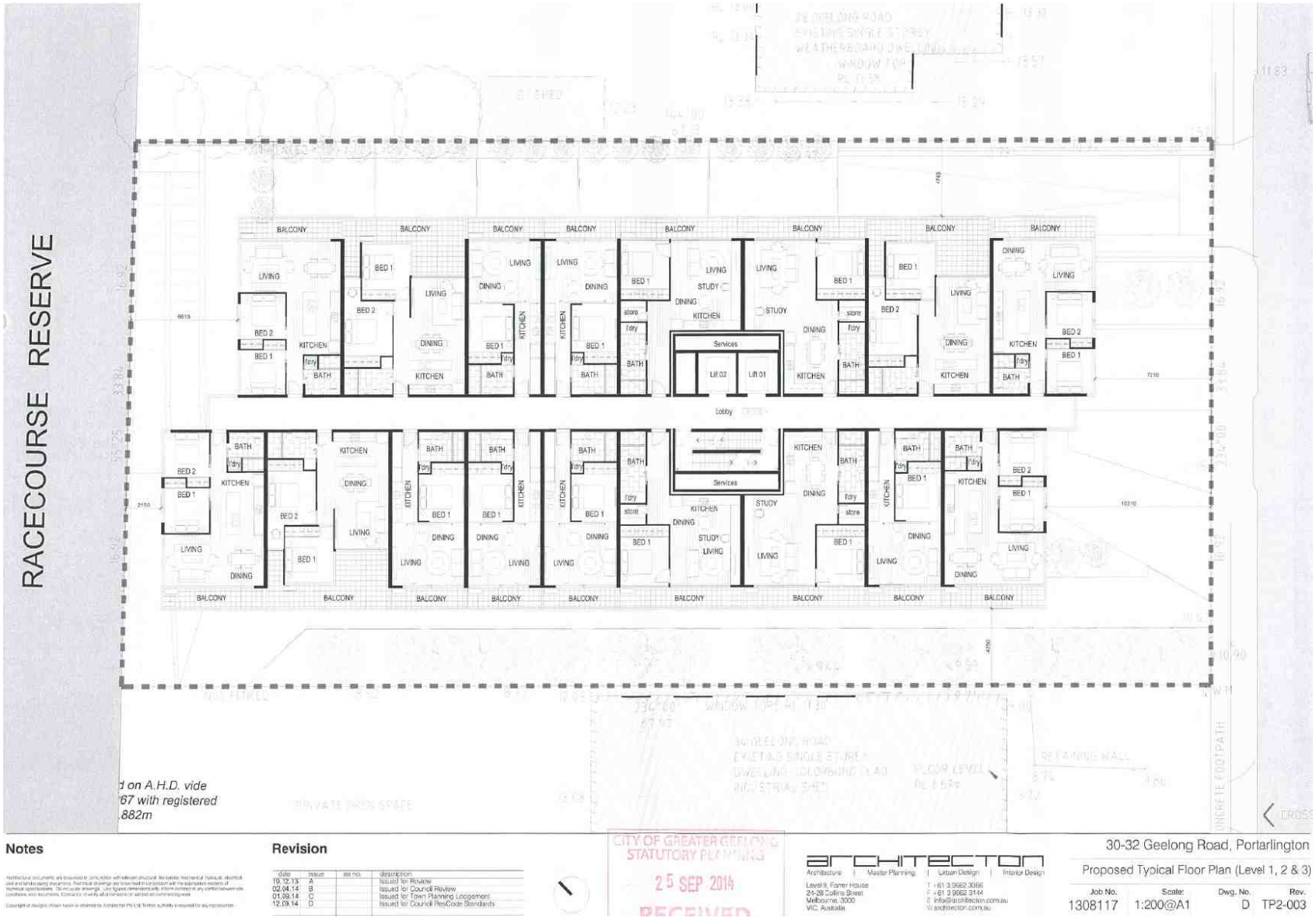


Figure A.4 – Proposed Residential Floor Plan, Levels 1, 2 & 3 – 30-32 Geelong Road Portarlington