Appendix 8 - Traffic and Transport Report (Midson Traffic)

MIDSON traffic pty ltd

Holmes Dyer

Boyer Road Precinct Structure Plan
Traffic Impact Assessment

February 2025

CELEBRATING 15 YEARS
2008 - 2023

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1. Introduction

1.1 Background

Midson Traffic were engaged by Holmes Dyer to prepare a traffic impact assessment for a proposed rezoning and masterplan development for future residential subdivision in Bridgewater.

1.2 Traffic Impact Assessment (TIA)

A traffic impact assessment (TIA) is a process of compiling and analysing information on the impacts that a specific development proposal is likely to have on the operation of roads and transport networks. A TIA should not only include general impacts relating to traffic management, but should also consider specific impacts on all road users, including on-road public transport, pedestrians, cyclists and heavy vehicles.

This TIA has been prepared in accordance with the Department of State Growth (DSG) publication, *Traffic Impact Assessment Guidelines*, August 2020. This TIA has also been prepared with reference to the Austroads publication, *Guide to Traffic Management,* Part 12: *Integrated Transport Assessments for Developments*, 2020.

Land use developments generate traffic movements as people move to, from and within a development. Without a clear understanding of the type of traffic movements (including cars, pedestrians, trucks, etc), the scale of their movements, timing, duration and location, there is a risk that this traffic movement may contribute to safety issues, unforeseen congestion or other problems where the development connects to the road system or elsewhere on the road network. A TIA attempts to forecast these movements and their impact on the surrounding transport network.

A TIA is not a promotional exercise undertaken on behalf of a developer; a TIA must provide an impartial and objective description of the impacts and traffic effects of a proposed development. A full and detailed assessment of how vehicle and person movements to and from a development site might affect existing road and pedestrian networks is required. An objective consideration of the traffic impact of a proposal is vital to enable planning decisions to be based upon the principles of sustainable development.

This TIA also addresses the relevant clauses of C2.0, *Parking and Sustainable Parking Code*, and C3.0, *Road and Railway Assets Code*, of the Tasmanian Planning Scheme – Brighton, 2021.

1.3 Statement of Qualification and Experience

This TIA has been prepared by an experienced and qualified traffic engineer in accordance with the requirements of Council's Planning Scheme and The Department of State Growth's, *Traffic Impact Assessment Guidelines*, August 2020, as well as Council's requirements.

The TIA was prepared by Keith Midson. Keith's experience and qualifications are briefly outlined as follows:

- 29 years professional experience in traffic engineering and transport planning.
- Master of Transport, Monash University, 2006
- Master of Traffic, Monash University, 2004

- Bachelor of Civil Engineering, University of Tasmania, 1995
- Engineers Australia: Fellow (FIEAust); Chartered Professional Engineer (CPEng); Engineering Executive (EngExec); National Engineers Register (NER)

1.4 Project Scope

The project scope of this TIA is outlined as follows:

- Review of the existing road environment in the vicinity of the site and the traffic conditions on the road network.
- Provision of information on the proposed development with regards to traffic movements and activity.
- Identification of the traffic generation potential of the proposal with respect to the surrounding road network in terms of road network capacity.
- Review of the parking requirements of the proposed development. Assessment of this parking supply with Planning Scheme requirements.
- Traffic implications of the proposal with respect to the external road network in terms of traffic efficiency and road safety.

1.5 Subject Site

The subject site is located approximately 550 metres west of Old Main Road along Boyer Road. The subject site also has frontage onto Cobbs Hill Road.

The subject site consists of several titles covering an area of approximately 52 hectares:

- Title reference 44724/8 (50 Boyer Road).
- Title reference 44724/9 (170 Boyer Road).
- Title reference 44724/2.
- Title reference 152364/2 (31 Cobbs Road).
- Title reference 135574/1 (29 Cobbs Road).
- Title reference 135574/2 (25 Cobbs Road).

The subject site connects to Boyer Road along its southern boundary and Cobbs Hill Road along its northern boundary.

The subject site is Zoned 'Future Urban' under the Bridgewater Local Provision Schedule. The existing use of the site is low density residential, with one dwelling situated on each lot, with the exception of 31 Cobbs Hill Road.

The subject site and surrounding road network is shown in Figure 1.

Figure 1 Subject Site & Surrounding Road Network

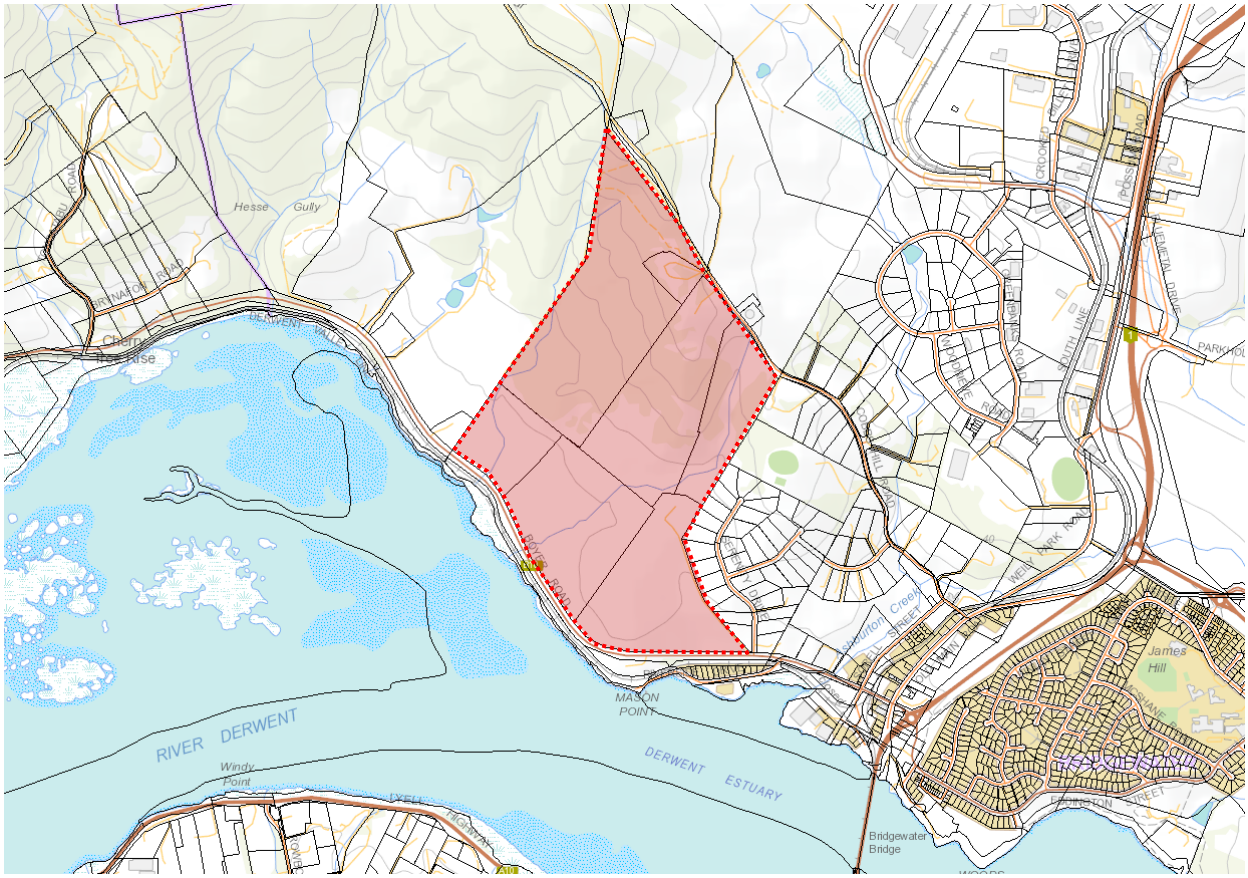


Image Source: LIST Map, DPIPWE

1.6 Reference Resources

The following references were used in the preparation of this TIA:

- Tasmanian Planning Scheme – Brighton, 2021 (Planning Scheme)
- Austroads, *Guide to Traffic Management,* Part 12: *Integrated Transport Assessments for Developments*, 2020
- Austroads, Guide to Road Design, Part 4A: Unsignalised and Signalised Intersections, 2021
- Department of State Growth, *Traffic Impact Assessment Guidelines*, 2020
- Transport NSW, *Guide to Traffic Impact Assessment*, 2024 (TIA Guide)
- Australian Standards, AS2890.1, *Off-Street Parking*, 2004 (AS2890.1)
- Hubble Traffic, *Land Rezoning for New Residential Subdivision*, 2024 (Hubble Report)

2. Existing Conditions

2.1 Transport Network

For the purposes of this report, the transport network consists of Boyer Road, Serenity Drive, Old Main Road and The Derwent Valley Rail Line.

2.1.1 Boyer Road

Boyer Road is a State Growth owned road that connects between the Midland Highway in Bridgewater and Rocks Road in New Norfolk along the eastern shore of the Derwent River. It has a two-lane configuration with a sealed pavement width of 6-metres. Edge and centre lines are provided along its length near the subject site. Boyer Road is not proclaimed as a Limited Access Road.

Under the Tasmanian Road Hierarchy, Boyer Road is categorised as a category 5, which is defined as follows:'

> *"Other Roads are primarily access roads for private properties.*
>
> *Some may be used for comparatively low frequency heavy freight vehicle transport, for example:*
>
> - *Log transport – but they are not the most important log transport roads and experience fluctuation in use; and*
> - *Farm property access – for purposes including delivery of fuel and supplies, stock transport, crop delivery and milk pickup.*
>
> *While a few of these roads may currently carry larger numbers of heavy freight vehicles, they may duplicate existing Trunk, Regional Freight or Regional Access Roads and are not DIER's strategically preferred heavy freight vehicle routes."*

Boyer Road currently carries 3,500 vehicles per day[1] near the subject site, with a peak flow of approximately 450 vehicles per hour (PM peak). The heavy vehicle proportion of traffic is 11.5%. The hourly distribution of traffic flow on Boyer Road west of Sorell Street is shown in Figure 2.

Boyer Road adjacent to the subject site is shown in Figure 3.

[1] Department of State Growth traffic data, 2023

Figure 2 Boyer Road Weekday Hourly Traffic Flow

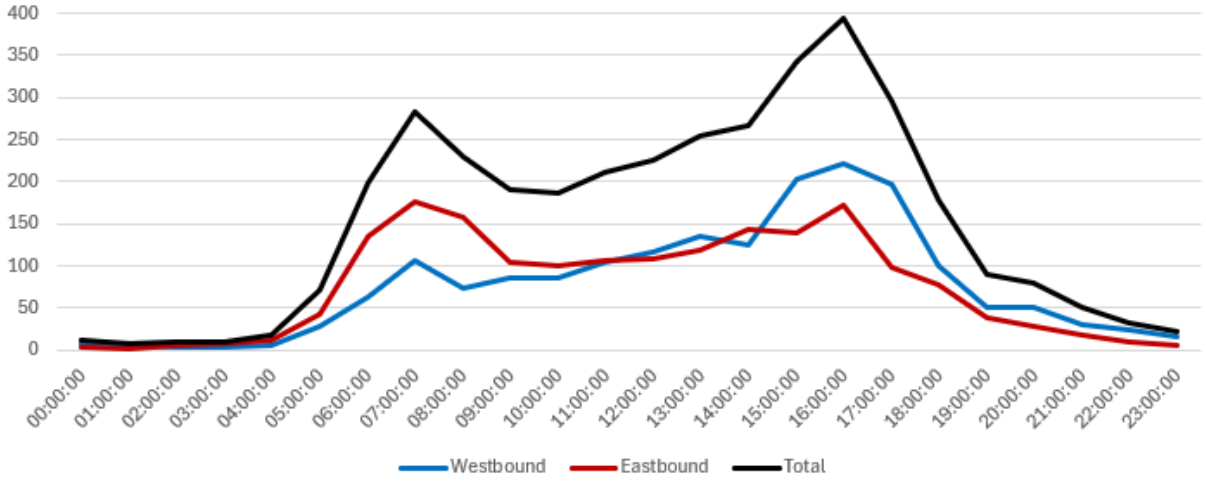


Figure 3 Boyer Road

2.1.2 Serenity Drive

Serenity Drive is a local cul-de-sac that services a small residential catchment area. It is approximately 600 metres in length, connecting to Boyer Road at a T-junction at its southern end and a cul-de-sac at its northern termination. The general urban speed limit of 50-km/h is applicable to Serenity Drive. The traffic volume is estimated to be approximately 300 vehicles per day.

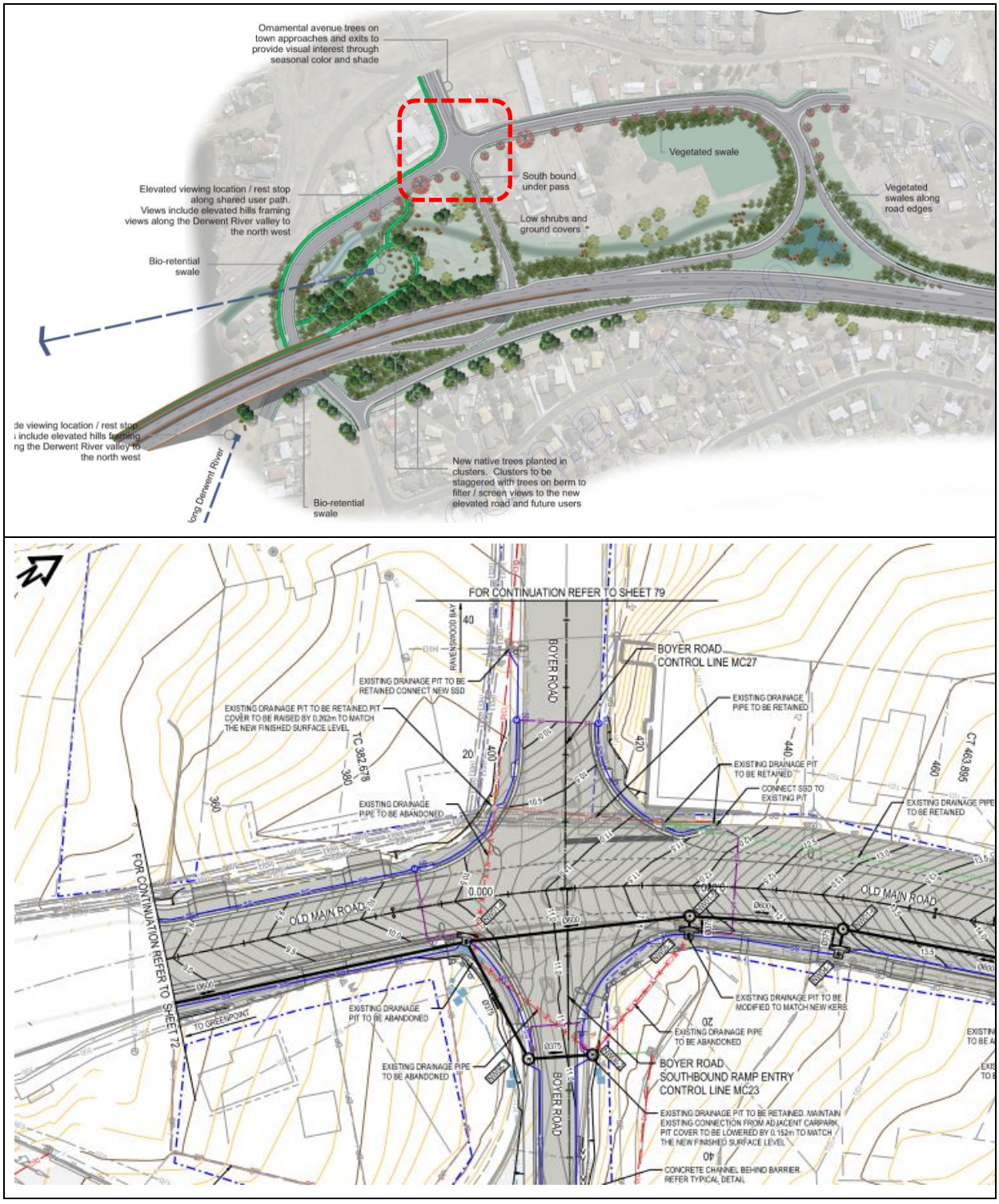
2.1.3 Old Main Road

Old Main Road is a local collector road that once formed part of the Midland Highway corridor. It now serves as access to residential and commercial properties for a short length to the north of the Midland Highway. Traffic volumes are very low, in the order of 300 vehicles per day near the Boyer Road junction.

The current roundabout at the intersection of Boyer Road with Old Main Road will be removed and converted to a give-way junction as part of the Bridgewater Bridge works that are currently underway. The Old Main Road/ Boyer Road junction will form a component of the northern interchange associated with the new Bridgewater Bridge.

The layout associated with the Bridgewater Bridge is shown in Figure 4.

Figure 4 Old Main Rd/ Boyer Rd New Bridgewater Bridge



2.1.4 Derwent Valley Rail Line

The Derwent Valley Line connects between Maydena and Bridgewater along the western and northern side of the Derwent River. It connects to the South Line at Bridgewater, where it continues to Western Junction where it connects to the Western Line.

The Derwent Valley Railway Line crosses Boyer Road and Cobbs Hill Road within the study area.

2.2 Road Safety Performance

Crash data can provide valuable information on the road safety performance of a road network. Existing road safety deficiencies can be highlighted through the examination of crash data, which can assist in determining whether traffic generation from the proposed development may exacerbate any identified issues.

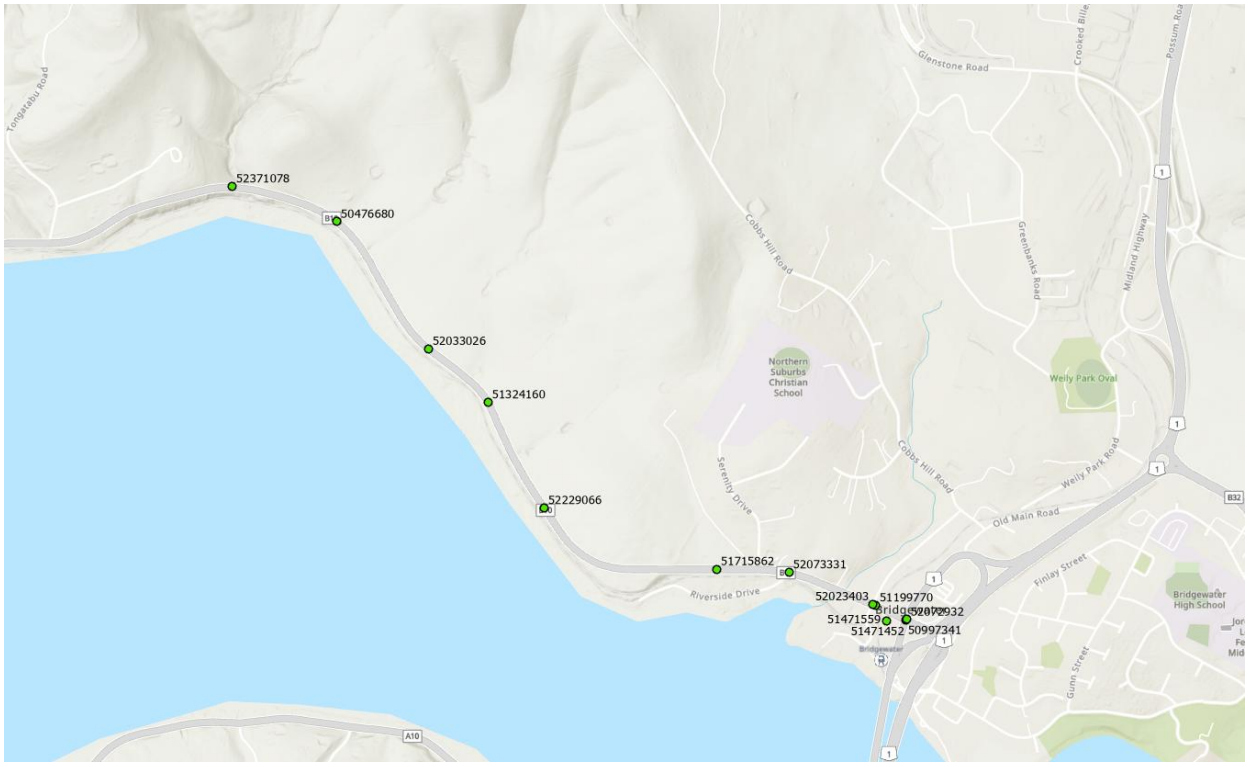
Crash data was obtained from the Department of State Growth for a 5+ year period between 1st January 2019 and 31st August 2024 for Boyer Road between Old Main Road and Tongatabu Road.

The findings of the crash data is summarised as follows:

- A total of 16 crashes were reported during this time.
- Severity. 2 crashes involved minor injury; 14 crashes involved property damage only.
- Time of day. Crashes were disbursed throughout the day. 9 crashes were reported between 8:00am and 5:00pm. 2 crashes were reported prior to 8:00am and 5 crashes were reported after 6:00pm. Afternoon crashes were dominant, with a total of 5 crashes reported between 12:00pm and 3:00pm.
- Day of week. 5 crashes were reported on Fridays; 3 crashes were reported on Mondays and Sundays; 2 crashes were reported on a Wednesday; 1 crash was reported on a Tuesday and a Saturday.
- Crash types. 5 crashes involved a 'cross-traffic' collisions; 3 crashes involved 'rear-end' collisions; 2 crashes involved 'other-manoeuvring' collisions; and various other crash types with no clear trend.
- Crash locations. Crashes were relatively evenly disbursed along Boyer Road. 5 crashes were reported at the Boyer Road/ Old Main Road intersection; 1 crash was reported at the Boyer Road/ Riverside Drive intersection; 1 crash was reported at the Boyer Road/ Sorell Street/ Wallace Street junction; the remaining crashes were reported at midblock locations. The crash locations are shown in Figure 5.
- Vulnerable road users. 2 crashes involved motorcyclists – 1 crash at the Boyer Road/ Old Main Road junction and the other approximately 800 metres west of the Serenity Drive junction. Both crashes involved minor injury

The crash history does not provide any indication that there are pre-existing road safety deficiencies in the transport network near the subject site. Whilst Boyer Road has a posted speed limit of 80-km/h the severity of crashes reported is relatively low.

Figure 5 Crash Locations



Source: Department of State Growth

3. Proposed Masterplan

3.1 Masterplan Proposal

The proposed development involves the subdivision of land to create the following 372 residential lots (including 3 existing dwellings) accessed via Boyer Road. The breakdown of the lots includes the following:

- 260 single dwelling lots
- 42 units
- 66 duplex lots (two dwellings on one lot)
- 3 triplex lots (three dwellings on one lot)
- 1 'mixed residential' lot that can be used for possible commercial/ retail/ community use

The subdivision will be accessed via three new junctions connecting to Boyer Road. The proposed masterplan is shown in Figure 6.

Figure 6 Proposed Masterplan Layout - South

3.2 Alternative Access Considerations

The site has road frontage at Cobbs Hill Road and Boyer Road. Whilst the subject site is located in close proximity to Serenity Drive, no direct road access is considered possible due to property constraints.

Cobbs Hill Road is a low volume rural/ residential access road that has a variable pavement width between 5 and 6 metres. This road could only be considered to be appropriate for low volume vehicular access to the subject site for the following reasons:

- The existing construction of Cobbs Hill Road is not suitable for the modest increase in traffic associated with the structure plan.
- The existing rail level crossing near Old Main Road would likely require upgrading. The existing level crossing is a low volume standard with warning lights and limited storage between the crossing and Old Main Road.

On this basis, Boyer Road was considered to be the most appropriate road connection for the subject site. Boyer Road has substantial spare capacity that can accommodate the potential traffic generation associated with future subdivision of the subject site (refer to modelling in Sections 4.3 and 4.4). No access to Cobbs Hill Road has been provided in the masterplan layout.

4. Traffic Impacts

4.1 Trip Generation

Trip generation rates were sourced from the TIA Guide. The TIA Guide recommends the following traffic generation rates:

- Single dwellings. 7.4 vehicles per day per dwelling, with a peak of 0.78 vehicles per hour per dwelling.
- Units. 5 vehicles per day, with a peak of 0.5 vehicles per hour per unit (noting one unit per lot).
- Duplex & Triplex lots. 5 vehicles per day, with a peak of 0.5 vehicles per hour per unit (noting 2 or 3 dwellings per lot).
- Commercial/ retail/ community use. 43.4 vehicles per day per 100m2 of GLFA[2], with a peak of 1.78 vehicles per hour per 100m^2 GLFA during the AM peak and 3.71 vehicles per hour per 100m^2 GLFA during the PM peak.

This equates to the following traffic generation:

- Daily traffic generation. 2,904 vehicles per day
- AM peak traffic generation. 297 vehicles per hour
- PM peak traffic generation. 300 vehicles per hour

4.2 Trip Assignment

When fully developed, the subdivision will connect to Boyer Road at three new road junctions.

Based on the layout of the concept structure plan, the traffic generation is estimated to be spread across the three accesses as follows:

- Access 1 (northern access) 900 vehicles per day/ 93 vehicles per hour
- Access 2 (middle access) 958 vehicles per day/ 96 vehicles per hour
- Access 3 (southern access) 1,045 vehicles per day/ 108 vehicles per hour

[2] GLFA = 'Gross leasable floor area'. In this case it is assumed that a building can be constructed on the lot with a GLFA of 150m^2.

4.3 Road Junction Capacity Analysis

Traffic modelling of the proposed road junctions on Boyer Road was undertaken using SIDRA Intersection software.

SIDRA uses complex analytical traffic models coupled with iterative approximation technique to provide estimates of capacity and performance of intersections. SIDRA is endorsed as a modelling tool by Austroads.

One of the key SIDRA outputs is an indication of level of service (LOS) at intersections. The LOS concept describes the quality of traffic service in terms of 6 levels, with level of service A (LOS A) representing the best operating condition (ie. at or close to free flow) and level of service F (LOS F) representing the worst (i.e. forced flow). Other key outputs of SIDRA include average movement delay and 95th percentile queue lengths[3].

The level of service method used in the modelling is the Delay method, where level of service is based solely on average movement delay, including geometric delay, as summarised in Table 1.

Table 1 SIDRA LOS Performance standards

Level of Service	Signals and Roundabouts	Sign Control (Give Way & Stop)
LOS A	$d \leq 10$	$d \leq 10$
LOS B	$10 < d \leq 20$	$10 < d \leq 15$
LOS C	$20 < d \leq 35$	$15 < d \leq 25$
LOS D	$35 < d \leq 55$	$25 < d \leq 35$
LOS E	$55 < d \leq 80$	$35 < d \leq 50$
LOS F	$80 < d$	$50 < d$

The lowest target level of service considered acceptable for an urban environment is LOS D, which corresponds to a maximum delay of 50 seconds for give way control. LOS E and F represent the junction operating at capacity, with forced flow conditions.

4.3.1 2034 Modelling

Traffic modelling was conducted for the 10-year forecast period of 2034. This accounts for the likely minimum period for the masterplan to be fully developed. The 10-year forecast is also a requirement within the Department of State Growth's TIA guidelines.

Boyer Road has experienced a 1.8% compound growth rate between 2018 and 2023. This growth rate was applied to determine the background traffic volumes on Boyer Road in 2034. The 2034 Boyer Road

[3] This is the queue length not exceeded 95% of the time.

peak hour volumes will be 275 vehicles per hour during the AM peak and 471 vehicles per hour in the PM peak.

All three access junctions will effectively have the same through traffic on Boyer Road. In this regard the southern access will carry the highest traffic volume associated with the masterplan. The southern access was therefore modelled using SIDRA under 2034 peak hour conditions (noting that the remaining two accesses will have a better operational efficiency as they have less traffic generation associated with the junctions).

The junction was modelled with a channelised right turn land (CHR) and short channelised left turn lane (CHL(S)).

The SIDRA modelling for 2034 conditions during the AM and PM peak periods are summarised in Table 2 and Table 3 respectively. It can be seen that the junction will operate at a high level of efficiency during both AM and PM peak periods, with LOS-A, LOS-B and LOS-C for all approaches.

Table 2 AM Peak 2034 Boyer Road SIDRA

Movement Performance - Vehicles								
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m
East: Boyer Road								
5	T	92	11.5	0.050	0.0	LOS A	0.0	0.0
6	R	29	3.0	0.025	9.2	LOS A	0.1	0.7
Approach		121	9.4	0.050	2.2	NA	0.1	0.7
North: Masterplan site								
7	L	62	3.0	0.065	9.4	LOS A	0.2	1.7
9	R	16	3.0	0.029	11.9	LOS B	0.1	0.8
Approach		78	3.0	0.065	9.9	LOS A	0.2	1.7
West: Boyer Road								
10	L	7	3.0	0.004	8.3	LOS A	0.0	0.0
11	T	198	11.5	0.109	0.0	LOS A	0.0	0.0
Approach		205	11.2	0.109	0.3	NA	0.0	0.0
All Vehicles		404	9.1	0.109	2.7	NA	0.2	1.7

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.

Table 3 PM Peak 2034 Boyer Road SIDRA

Movement Performance - Vehicles								
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m
East: Boyer Road								
5	T	278	11.5	0.153	0.0	LOS A	0.0	0.0
6	R	53	3.0	0.046	9.4	LOS A	0.2	1.3
Approach		331	10.1	0.153	1.5	NA	0.2	1.3
North: Masterplan Site								
7	L	38	3.0	0.040	9.4	LOS A	0.1	1.0
9	R	9	3.0	0.026	15.9	LOS C	0.1	0.7
Approach		47	3.0	0.040	10.7	LOS B	0.1	1.0
West: Boyer Road								
10	L	14	3.0	0.008	8.3	LOS A	0.0	0.0
11	T	217	11.5	0.120	0.0	LOS A	0.0	0.0
Approach		231	11.0	0.120	0.5	NA	0.0	0.0
All Vehicles		608	9.9	0.153	1.8	NA	0.2	1.3

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.

4.4 Boyer Road/ Old Main Road Impacts

The proposed implementation of the Master Plan will increase traffic flows at the Boyer Road/ Old Main Road intersection. The Boyer Road/ Old Main Road junction is currently being modified as part of the New Bridgewater Bridge project (as outlined in Section 2.1.3).

Traffic modelling was undertaken for the Boyer Road/ Old Main Road junction (revised layout associated with the Bridgewater Bridge project). The existing turning movements associated with the junction are summarised in Table 4. The turning movements were derived from origin-destination data associated with the Bridgewater Bridge and factored to 2024 conditions by applying background traffic growth of 1.8% per annum for all approaches.

Table 4 Boyer Rd/ Old Main Rd Existing Peak Turning Movements

Peak	Boyer Road			Old Main Rd South			Old Main Rd North		
	Left	thru	Right	Left	thru	Right	Left	thru	Right
AM Peak	108	136	18	25	22	87	9	87	72
PM Peak	81	110	36	38	8	53	6	61	167

Turning movements for 2034 peak periods were calculated incorporating background traffic growth (as per Section 4.3.1 assumptions) and traffic generation associated with the proposed development (utilising the same turning proportions as existing conditions). The 2034 turning movements at the Boyer Road/ Old Main Road junction are shown in Table 3.

Table 5 Boyer Rd/ Old Main Rd 2034 Peak Turning Movements

Peak	Boyer Road			Old Main Rd South			Old Main Rd North		
	Left	thru	Right	Left	thru	Right	Left	thru	Right
AM Peak	203	242	32	32	45	98	11	98	128
PM Peak	136	183	60	60	63	60	7	69	278

The SIDRA modelling for 2034 conditions during the AM and PM peak periods are summarised in Table 6 and Table 7 for the AM and PM peaks respectively.

It can be seen that all movements at the intersection have a LOS of C or better. The intersection therefore caters for the additional traffic generation of the proposed masterplan at a high level of service.

Table 6 AM Peak 2034 Boyer Rd/ Old Main Rd SIDRA

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m
South: Old Main Rd								
1	L	51	2.0	0.130	8.8	LOS A	0.6	4.6
2	T	28	2.0	0.130	0.5	LOS A	0.6	4.6
3	R	113	2.0	0.130	9.5	LOS A	0.6	4.6
Approach		192	2.0	0.130	8.0	NA	0.6	4.6
North: Old Main Rd								
7	L	13	2.0	0.172	8.6	LOS A	0.9	6.5
8	T	113	2.0	0.172	0.3	LOS A	0.9	6.5
9	R	142	2.0	0.172	8.9	LOS A	0.9	6.5
Approach		267	2.0	0.172	5.3	NA	0.9	6.5
West: Boyer Road								
10	L	214	2.0	0.767	20.8	LOS C	12.2	86.9
11	T	271	2.0	0.767	19.6	LOS C	12.2	86.9
12	R	36	2.0	0.767	21.1	LOS C	12.2	86.9
Approach		520	2.0	0.767	20.2	LOS C	12.2	86.9
All Vehicles		979	2.0	0.767	13.7	NA	12.2	86.9

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.

Table 7 PM Peak 2034 Boyer Rd/ Old Main Rd SIDRA

Movement Performance - Vehicles								
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m
South: Old Main Rd								
1	L	71	2.0	0.096	8.6	LOS A	0.5	3.4
2	T	11	2.0	0.096	0.3	LOS A	0.5	3.4
3	R	68	2.0	0.096	9.3	LOS A	0.5	3.4
Approach		149	2.0	0.096	8.3	NA	0.5	3.4
North: Old Main Rd								
7	L	8	2.0	0.280	8.7	LOS A	1.5	10.9
8	T	80	2.0	0.280	0.4	LOS A	1.5	10.9
9	R	312	2.0	0.280	8.9	LOS A	1.5	10.9
Approach		400	2.0	0.280	7.2	NA	1.5	10.9
West: Boyer Road								
10	L	152	2.0	0.739	22.3	LOS C	9.4	66.6
11	T	205	2.0	0.739	21.0	LOS C	9.4	66.6
12	R	67	2.0	0.739	22.6	LOS C	9.4	66.6
Approach		424	2.0	0.739	21.7	LOS C	9.4	66.6
All Vehicles		974	2.0	0.739	13.7	NA	9.4	66.6

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.

4.5 Access Impacts

The Structure Plan proposes three new road junctions connecting to Boyer Road. The Acceptable Solution A1.2 of Clause C3.5.1 of the Planning Scheme states "*For a road, excluding a category 1 road or a limited access road, written consent for a new junction, vehicle crossing, or level crossing to serve the use and development has been issued by the road authority*".

Advice was sought from the Department of State Growth as the road authority. General comments were provided and no objection was made subject to a detailed assessment being provided in the form of a TIA. No written consent has been received from the Department of State Growth for the new junctions and therefore the Acceptable Solution A1.2 of Clause C3.5.1 of the Planning Scheme is not met.

The Performance Criteria P1 of Clause C3.5.1 of the Planning Scheme states:

> *"Vehicular traffic to and from the site must minimise any adverse effects on the safety of a junction, vehicle crossing or level crossing or safety or efficiency of the road or rail network, having regard to:*
>
> *(a) any increase in traffic caused by the use;*
>
> *(b) the nature of the traffic generated by the use;*
>
> *(c) the nature of the road;*
>
> *(d) the speed limit and traffic flow of the road;*
>
> *(e) any alternative access to a road;*

(f) the need for the use;

(g) any traffic impact assessment; and

(h) any advice received from the rail or road authority".

The following is relevant with respect to each of the three proposed junctions on Boyer Road associated the structure plan:

a. Increase in traffic. The traffic generation of the three accesses varies between 637 and 816 vehicles per day. Traffic modelling of the traffic movements at the three proposed junctions indicate that they will operate at an acceptable level of efficiency (refer to Section 4.3.1).

b. Nature of traffic. The traffic generated by the rezoning and future subdivision will be residential in nature, which is consistent and compatible with existing traffic utilising Boyer Road.

c. Nature of road. Boyer Road is a Category 5 highway under the Department of State Growth's road hierarchy.

d. Speed limit and traffic flow of road. Boyer Road has a posted speed limit of 80-km/h and carries a volume of 3,500 vehicles per day.

e. Alternative access. Alternative access arrangements were considered. This is detailed in Section 3.2.

f. Need for use. The structure plan has been proposed to address an identified housing shortfall. The subject site was selected due to its potential to provide a large residential lot yield located in reasonable proximity to services (shops, schools, etc).

g. Traffic impact assessment. This report documents the findings of a traffic impact assessment. Importantly the proposed junctions have been demonstrated to operate at a high level of efficiency through traffic modelling (Section 4.3), provide sufficient sight distance in accordance with Austroads requirements (Section 4.9), and have an appropriate design in accordance with Austroads requirements (Section 4.7).

h. Road authority advice. The Department of State Growth were consulted. No objection was received in principle subject to a TIA being prepared that confirmed sight distance standards are met and appropriate junction designs were documented.

Based on the above assessment the proposed junctions connecting to Boyer Road satisfy the requirements of Performance Criteria P1 of Clause C3.5.1 of the Planning Scheme.

4.6 Junction Spacing

The three proposed new junctions on Boyer Road will have a physical spacing of approximately 780 metres between accesses 1 and 2, and 300 metres between accesses 2 and 3. The spacing is appropriate for an 80-km/h highway and will result in negligible conflicts between turning movements associated with the proposed accesses.

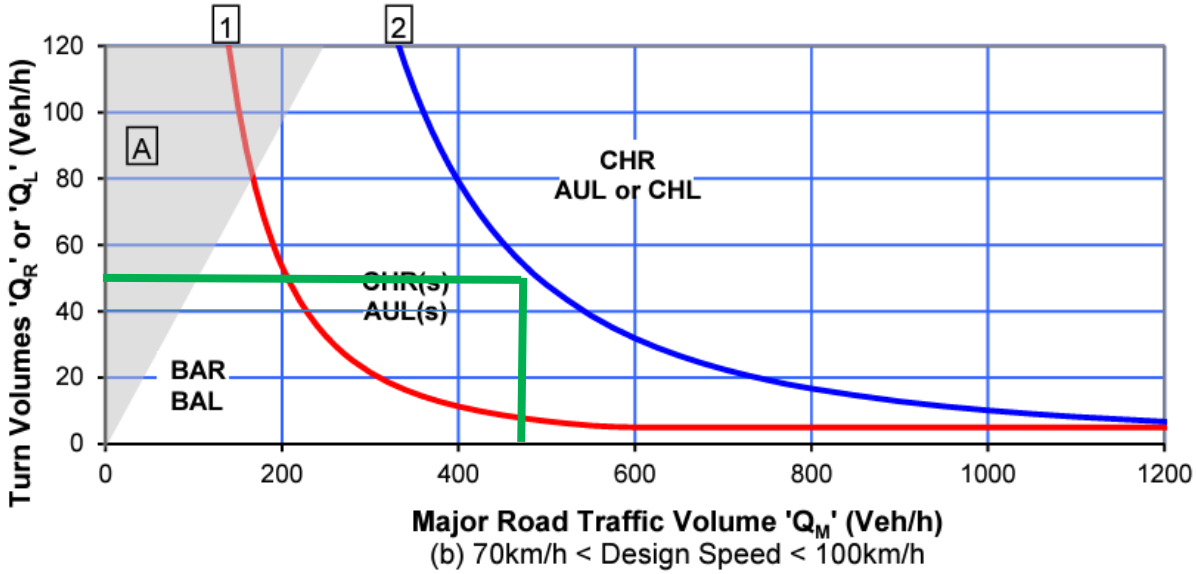
4.7 Junction Design

Right turn entry movements will be dominant at each of the three access locations on Boyer Road. This is based on the connectivity of the site with the arterial road network.

Austroads Guide to Traffic Management, Part 6, provides warrants for the provision of turn lane facilities. The turn lane warrants are reproduced in Figure 3.

During the PM peak period, right turning traffic is likely to be in the order of 40 vehicles per hour (based on an inward peak hour split of 60%, and a right turn split of 80%). With opposing traffic flow on Boyer Road peaking at 400 vehicles per hour, short channelised right turn lanes, CHR(S), will be required. This is shown in Figure 7.

Figure 7 Austroads Turn Lane Warrants



Note that the demand flows for left turning movements from Boyer Road into the site's junction accesses is low. On this basis no channelised left turn facility is warranted.

As such, Basic Auxiliary Left Turn treatments (BAL) should be applied at all three junctions. The BAL is the minimum treatment for use in a rural situation which provides tapers leading into and out of the left-turn treatment in order to cater for the swept path of a large design vehicle.

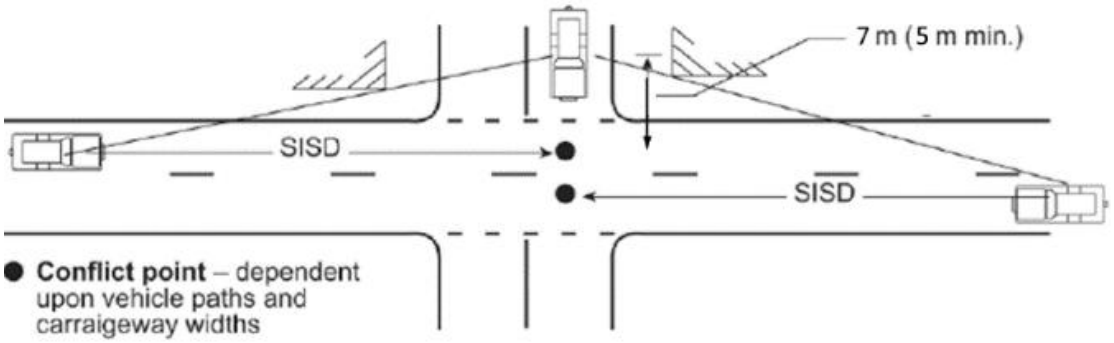
4.8 Street Lighting

The design of the new road junctions will require street lighting in accordance with Australian Standards. The existing section of Boyer Road west of the Serenity Drive junction currently has no street lighting.

4.9 Sight Distance

Sight distance requirements for road junctions are set out in Austroads Part 4A. Safe Intersection Sight Distance (SISD) is the minimum sight distance which should be provided on the major road at any intersection. SISD is measured along the carriageway from the approaching vehicle to the conflict point; the line of sight having to be clear to a point 7.0 metres (5.0 metres minimum) back along the side road from the conflict point as shown in Figure 8.

Figure 8 Austroads SISD Requirements



The 85th percentile speed of vehicles travelling along Boyer Road was estimated at each of the three proposed junction locations using a hand-held radar device. The 85th percentile speed was assessed to be 80-km/h (same as the posted speed limit).

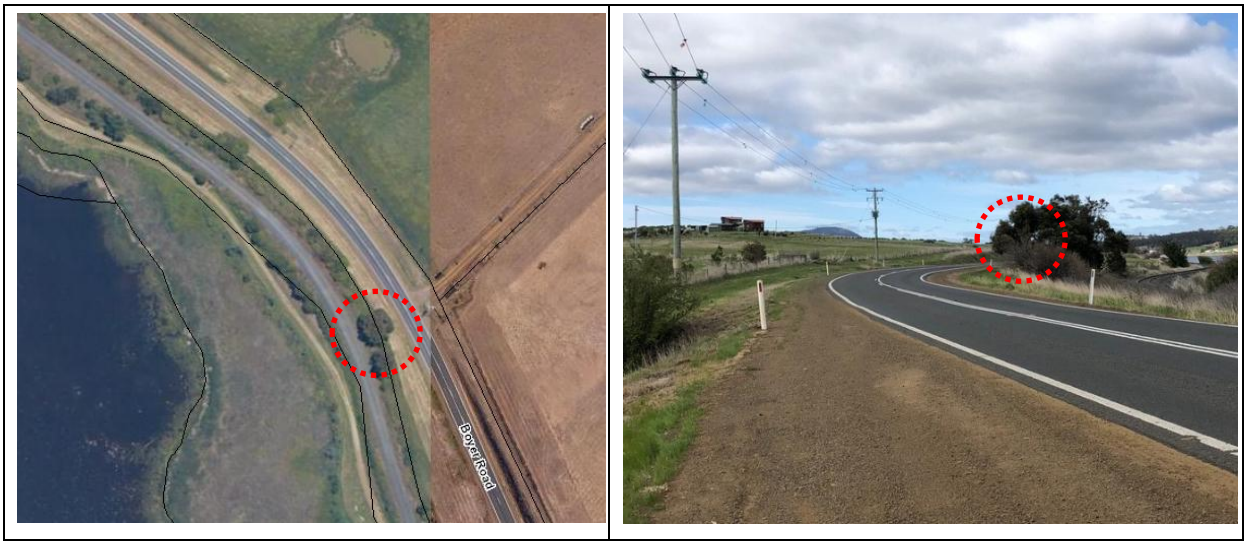
Austroads requires the following minimum Safe Intersection Sight Distance (SISD) provision to be 181 metres for a design speed of 80-km/h.

The available sight distance at each potential access location were measured. The results are summarised in Table 8. All proposed access locations satisfy Austroads SISD requirements.

Table 8 Access Sight Distance

Access Location	Sight Distance West	Sight Distance East	Comments
Access 1	200 metres	210 metres	Complies with SISD requirements
Access 2	300 metres	260 metres	Complies with SISD requirements
Access 3	185 metres	210 metres	Vegetation on the highway verge can be removed to improve sight distance to west. This is shown in Figure 9.

Figure 9 Access 3 Sight Distance - Vegetation Maintenance



4.10 Internal Road Layout & Hierarchy

The subdivision will create new lengths of road within the masterplan site as follows:

- Three new road junctions that connect to Boyer Road, extending into the site. The roads extending from these junctions form collector roads through the site. The westernmost collector road extends to the northern boundary of the site, terminating at a cul-de-sac.
- A central 'spine' road that links through the site, connecting all three roads that link to Boyer Road, as well as other connecting roads within the subdivision. The central road will form the main collector road through the site.
- A number of local access roads.
- 5 short cul-de-sacs.

The internal road network provides good connectivity to all lots within the subdivision. All lots can be accessed via any of the three roads that connect to Boyer Road.

Council relies on the design criteria of LGAT Tasmanian Standard Drawings and Subdivision Guidelines, 2020. The requirements for residential subdivision roads are reproduced in Table 9. The following standards are applicable for the internal road network:

- Road design should be in accordance with Austroads Guidelines.
- LGAT Standard Drawings and Tasmanian Subdivision Guidelines.

Table 9 LGAT Standard Drawings – Road Requirements, Residential

ROAD TYPES	ROAD TYPE	ROAD LENGTH / NUMBER OF TENEMENTS	MINIMUM ROAD WIDTH	MINIMUM RESERVATION WIDTH	MINIMUM FOOTPATH REQUIREMENTS
1 – Arterial	Detail design required				
2 – Sub Arterial					
3 – Collector	Through Road	Any length	11.0m	20.0m	Both Sides
4 – Local	Through Road	Any length	8.9m	18.0m	One Side Only
	Cul–De–Sac	Length > 150m	8.9m	18.0m	One Side Only
	Cul–De–Sac	Length ≤ 150m and / or No. of equiv. tenements ≤ 15	6.9m	15.0m	One Side Only

The LGAT road design specifications for the collector roads within the masterplan is 20 metre reservation width and 11 metre pavement width. Other internal roads within the subdivision require a road reservation width of 18 metres with a sealed road width of 8.9 metres. The cul-de-sacs can be designed with a reservation width of 15 metres and sealed pavement width of 6.9 metres.

The proposed masterplan will incorporate contemporary design elements to support active transport modes. Specifically, the design intends to incorporate:

- 8.9m pavements for 20m road reserves (plus a separate 2.5m pedestrian /cycleway on one verge); and
- 7.5m pavements for 18m and 15m road reserves with 1.2m footpaths.

The proposed pavement widths align with modern road design principles and provides a safe environment for pedestrians and cyclists within the study area.

4.11 Adjacent Development

It is noted that rezoning is proposed in 28 hectares of land situated adjacent to the subject site. A TIA prepared by Hubble Traffic in April 2024 that considered the development of land highlighted in Figure 10.

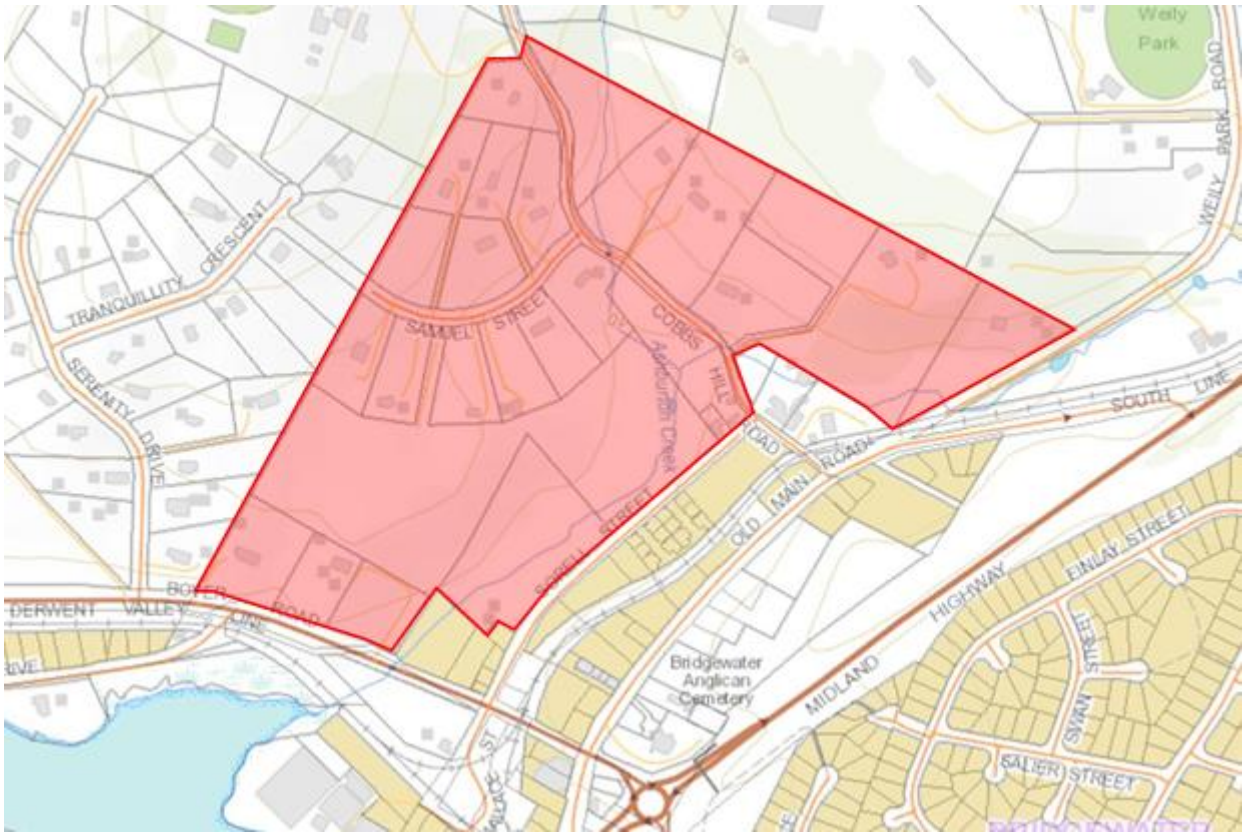
The Hubble report identified that the rezoning has the potential to generate an additional 218 vehicle trips in the surrounding network during weekday peak periods.

Of relevance to the proposed masterplan subject of this report is the increase in traffic generated by the neighbouring site on Cobbs Hill Road. The Hubble Report indicates that traffic PM peak flows on Cobbs Hill Road will be 135 vehicles per hour between Old Main Road and Sorell Street; and 65 vehicles per hour between Samuel Street and Sorell Street.

The traffic generation of the neighbouring site will mostly access the Midland Highway and Bridgewater Bridge, with some increased flows on Boyer Road between Old Main Road and Serenity Drive. The traffic modelling in this report effectively captures this increase as background traffic growth, noting that the

neighbouring development site is unlikely to generate significant traffic in Boyer Road west of the Serenity Drive junction.

Figure 10 Serenity Drive/ Sorell Street Masterplan Area



4.12 Road Network Impacts

The proposed masterplan will generate a moderately large amount of traffic, with new road junctions that will extend the urban boundary along Boyer Road. It will therefore have impacts on the surrounding transport network that are examined in the following sections.

4.12.1 Boyer Road

The construction of three new road junctions on Boyer Road will not have any significant adverse impacts on traffic flow for through movements due to the design of the junctions and the inclusion of channelised turn lanes.

The existing line marking along Boyer Road will need to be modified to remove the overtaking line marking located adjacent to the subject site as a result of the new road junctions.

The changes associated with access to Boyer Road (ie. The introduction of three new road junctions, but no direct property driveway access) are not considered sufficient to warrant reduction of the existing 80-km/h speed limit.

4.12.2 Old Main Road Junction

Traffic generated by the structure plan when fully developed will predominantly access the network to the east of the structure plan site due to the connectivity with the arterial road network. This will result in the majority of traffic generation utilising the Boyer Road/ Old Main Road junction.

The Boyer Road/ Old Main Road junction will form a component of the Bridgewater Bridge northern interchange. When complete it will be converted to a T-junction with a one-way link opposite Boyer Road that will provide access to the southbound carriageway of the Bridge. This is shown in Figure 4.

Assuming 80% of traffic generation accesses Old Main Road, this equates to a peak traffic volume increase of 232 vehicles per hour at the junction.

Traffic modelling for this junction was undertaken in Section 4.4. The increased traffic generation associated with the structure plan is well within the intersections capacity to absorb, thus continuing to operate at the intersection at a high level of service.

4.12.3 Cobbs Hill Road Impacts

Cobbs Hill Road is a local access road that currently services a small residential and rural catchment area. The Hubble Report indicates that future traffic flows associated with rezoning of land adjacent to the site will increase peak hour flows on Cobbs Hill Road to 135 vehicles per hour between Old Main Road and Sorell Street.

The structure plan will not access Cobbs Hill Road. No changes to traffic flow on Cobbs Hill Road will result from the proposed structure plan.

4.13 Rail Network Impacts

An existing railway level crossing is located in Boyer Road approximately 65 metres west of the Old Main Road junction. The railway crossing is actively controlled by railway level crossing traffic lights.

TasRail were consulted during the preparation of the TIA. TasRail have indicated that an ALCAM[4] assessment of the railway level crossings will be required to determine whether the level of safety at the crossings is adequate for the future traffic growth associated with the proposed masterplan. The ALCAM assessment can be undertaken by TasRail prior to the future subdivision's construction.

The peak hour increase in traffic flow as a result of the fully developed structure plan is likely to be 240 vehicles per hour (assuming 80% of all traffic generation accesses the Old Main Road junction). This equates to an average of an additional 4 vehicles per minute during peak periods.

[4] The Australian Level Crossing Assessment Model (ALCAM) is a comprehensive assessment tool used to identify risks at level crossings, in line with both Australian Standard 1742.7:2016 and the New Zealand Transport Agency Traffic Control Devices Manual Part 09, which produces a unique risk score for each level crossing.

The daily traffic volume on Boyer Road in 10-years will be 7,100 vehicles per day based on the same assumptions (increased from 3,500 vehicles per day currently). The peak traffic flow of Boyer Road will increase to approximately 780 vehicles per hour at the rail level crossing. This assumes a 10-year background compound growth rate of 1.8% on Boyer Road in addition to the traffic generation by the structure plan.

It is noted that railway movements at the crossing are infrequent and typically occur outside of peak periods. Assuming that the railway crossing was operational during peak periods, then the two-minute closure of Boyer Road is likely to result in queues of up to 85 metres[5]. This would create localised congestion beyond the intersection of Boyer Road into Old Main Road for a period of several minutes. This would not cause any operational, efficiency or safety issues as there is sufficient spare capacity to store approximately 2 to 3 cars within Old Main Road on both approaches waiting to enter Boyer Road. Importantly the railway level crossing typically operates outside of peak periods when traffic flows are low, resulting in smaller queues.

On this basis the flashing signal control is the appropriate railway crossing treatment at this location. Boom gates (as the next higher level of control) are typically utilised when multiple tracks cross in urban areas.

It is noted that 95th percentile queue lengths from the Old Main Road junction on Boyer Road are likely to be 87 metres and 67 metres during the AM and PM peaks respectively (refer to SIDRA summary in Table 6 and Table 7). The 95th percentile queue length therefore will extend beyond the location of the railway level crossing under the 2035 forecast conditions. Appropriate keep clear line marking should therefore be considered as part of TasRail's ALCAM assessment of the railway crossing.

4.14 Pedestrian and Cyclist Impacts

The masterplan will generate a moderate amount of pedestrian activity. Walking paths are proposed through the site to connect to the surrounding network, including Boyer Road and Cobbs Hill Road.

Footpaths are proposed along each of the internal roads. Pedestrian movements are encouraged within the subdivision network, but it is not recommended to encourage pedestrian movements to/ from Boyer Road. Boyer Road is a rural highway with a speed limit of 80-km/h with no formal footpath provision.

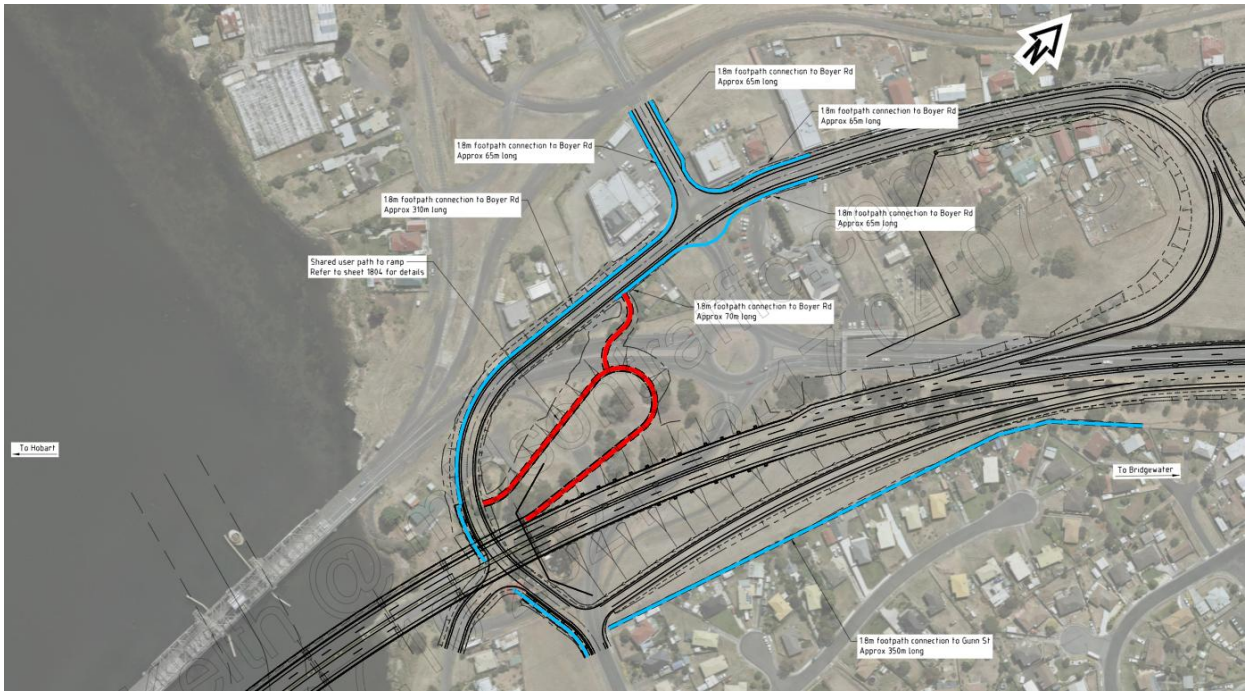
A pedestrian path is provided through the site which will connect between Cobbs Hill Road and the internal roads that connect to Boyer Road.

An existing walking track is located along the foreshore (running south of the railway line), connecting at the western termination of Riverside Drive and extending to Tongatabu Road. It is noted that there are no pedestrian crossing facilities over the railway line near the subject site. All access to the walking track will be via the existing junction of Riverside Drive.

The construction of the New Bridgewater Bridge will introduce pedestrian and cyclist infrastructure that will connect to Old Main Road. This is shown in Figure 11. Consideration of the construction of a future footpath or shared pedestrian/ cyclist path on the northern side of Boyer Road between the proposed eastern access and Old Main Road should be considered.

[5] Based on peak Boyer Road flow of 780 vehicles per hour and a PM westbound split of 57.5% based on existing flow characteristics.

Figure 11 Pedestrian and Cyclist Paths – Northern Interchange



Source: Department of State Growth

4.15 Public Transport Impacts

The structure plan will create a residential catchment area of approximately 383 dwellings. The nearest public transport services currently operate through Bridgewater to the east of the subject site, well beyond what would be considered a reasonable walking distance.

It would be expected that as the subdivision is developed, Metro Tasmania should be consulted to expand Bridgewater bus services through the site. The design of the internal road network associated with the structure plan can facilitate bus movements that can be accessible for all lots.

The proposed road network connecting to Boyer Road can facilitate a bus route through the site to enable all lots to be within a 400 metre distance from the route. A logical route through the site could be between the central road through the site connecting between the westernmost and easternmost junctions with Boyer Road.

4.16 Road Safety Impacts

There are no significant detrimental road safety impacts foreseen for the proposed completion of the masterplan's subdivision. This is based on the following:

- The surrounding road network is capable of absorbing the traffic generated by the proposed subdivision. The subdivision accesses Boyer Road at three new road junctions that defray the overall generation to acceptable levels that results in all junctions operating at a high level of efficiency.
- The existing road safety performance of the road network does not indicate that there are any current road safety deficiencies that might be exacerbated by the proposed development.
- The horizontal geometry and vertical alignment of Boyer Road provides sufficient sight distance for vehicles approaching each of the three proposed junctions.

5. Conclusions

This Traffic Impact Assessment (TIA) for the Boyer Road Precinct Structure Plan has evaluated the potential impacts of the proposed residential subdivision on the surrounding transport network. The key findings of this assessment are as follows:

- Traffic Generation and Distribution: The development is expected to generate approximately 2,904 vehicle trips per day via Boyer Road. The peak traffic generation of the fully developed masterplan will be 300 vehicles per hour. Traffic modelling indicates that the new access junctions on Boyer Road will operate at acceptable levels of service, with minimal impact on existing traffic conditions.
- Intersection Performance: SIDRA intersection modelling analysis confirms that the Boyer Road and Old Main Road intersection, which is being modified as part of the Bridgewater Bridge project, will continue to function efficiently under future 2034 traffic conditions, with all movements maintaining a Level of Service (LOS) of C or better.
- Road Safety and Sight Distance Compliance: Crash data analysis does not indicate any significant pre-existing safety deficiencies in the network. The proposed access points on Boyer Road provide adequate Safe Intersection Sight Distance (SISD) as per Austroads requirements, with minor vegetation clearance recommended at one location.
- Public Transport and Active Transport Considerations: The proposed masterplan will require future public transport integration. The road network proposed will facilitate good public transport accessibility for all lots within the subject site. Internal pedestrian pathways will provide connectivity within the site, with additional active transport infrastructure along Boyer Road recommended.
- Impact on Rail Infrastructure: While traffic increases at nearby rail crossings remain within acceptable limits, TasRail has recommended ALCAM assessments to confirm the safety and adequacy of existing rail level crossing controls in light of future traffic volume increases within the network.
- Compliance with Planning Requirements: The proposed access arrangements satisfy the Performance Criteria of Clause C3.5.1 of the Planning Scheme, and the development aligns with State Growth requirements, subject to final approval.

Overall, the proposed masterplan can be accommodated within the existing and planned transport infrastructure, with no significant adverse impacts on road network performance, safety, or capacity.

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