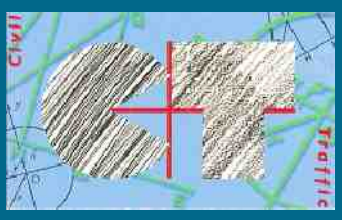
Barwon Water

Traffic Impact Assessment

Proposed Residential Development at 38 - 42 Mainsail Drive, St Leonards



Traffic & Parking Impact Assessment for

Proposed Residential Development at 38 - 42 Mainsail Drive, St Leonards

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Project: CAT – 13-2015

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Revision	Date	Amendments
A	03-06-2015	Draft Issue
B	12-06-2015	Final Issue
C	-	-

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Appendices

1 Traffic Impacts Summary

A planning permit is sought to develop residential allotments at 38–42 Mainsail Drive, St Leonards. The land is currently occupied by a water storage tank.

Refer to Figures 1 & 2 below for Locality Plan.

Refer to Appendix A for the Concept Layout Plan.

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, subject to the relocation of the bus stop approximately 28m north-east along Mainsail Drive.

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

Summary – Proposed Residential Development, 38-42 Mainsail Dve

Site Address:	38-42 Mainsail Drive St Leonards. Zoned Public Use Zone 1 (PUZ1) under the Greater Geelong Planning Scheme (GGPS).
Road Hierarchy:	Mainsail Drive, Harbour Way and Pearl Bay Passage are local "Access Streets – Level 2" under the care and management of the City of Greater Geelong. The maximum average daily two-way traffic flows are estimated at 1,500 vehicles per day for Mainsail Drive and 300 vehicles per day for Harbour Way and Pearl Bay Passage.
Existing Use:	Water storage tank.
Proposed Use:	Residential development including 2 allotments and a reserve for the water storage tank.
Crash History:	In the last five years of VicRoads crash data, there has been one crash on the local road network, involving a pillion passenger falling from a motorcycle.
Traffic Generation & Distribution:	The residential development will generate up to 24 vehicle trips per day when fully occupied with approximately 3 vehicles per hour in the peak periods. It is considered that the generated traffic will distributed equally northwards and southwards on Mainsail Drive.
Traffic Impacts:	The generated traffic is minimal and will have negligible impact on the operating efficiency of the local road network.
Access Design	The design of vehicle driveway crossings shall accord with the Infrastructure Design Manual (IDM). Safe sight distance is to be provided at the access points to accord with the Australian Standards.
Parking	Adequate parking shall be provided on-site to conform to the Planning Scheme requirements for residential developments.
Recommended Actions	Relocate the existing bus stop on the site frontage, 28m to the north-east on Mainsail Drive.

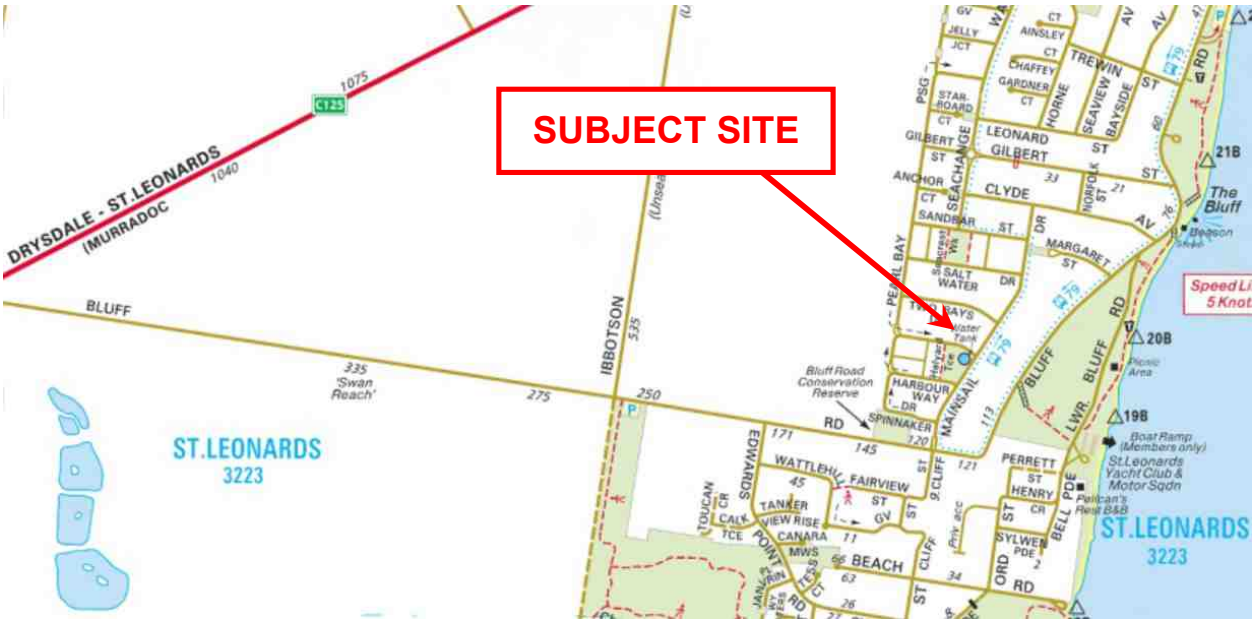


Figure 1 – Locality Plan of Subject Site – 38-42 Mainsail Drive

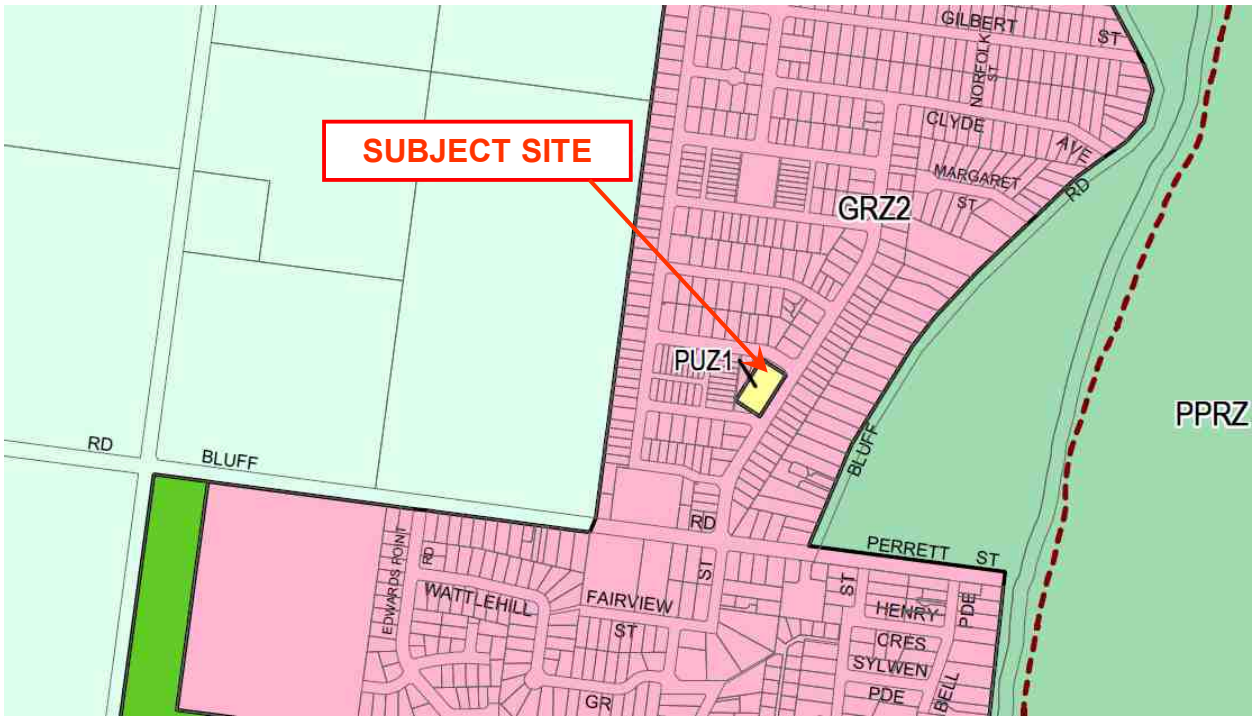


Figure 2: Zoning Plan.

2 Introduction

Civil and Traffic Consulting Pty Ltd has been engaged by Barwon Water to undertake a traffic and parking assessment for a proposal to subdivide 38–42 Mainsail Drive, St Leonards into residential allotments.

This report is based on a traffic and parking assessment of the development plan prepared by St Quentin P/L (dated May - 2015) and site visits undertaken during February – May 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.

3 The Proposed Development

3.1 The Development

A planning permit is sought to develop residential allotments at 38–42 Mainsail Drive, St Leonards.

This report assesses the traffic and parking impacts of the development based on the concept subdivision plan prepared by St Quentin P/L and site visits undertaken during February – May 2015.

The development plan of the proposed residential allotments show:

- two (2) residential allotments of 733m² and 713m² in size;
- A reserve of 1,428m², on the north-east corner of subject site (Mainsail Drive and Pearl Bay Passage), for the purposes of retaining the existing Barwon Water storage tank. The existing tank site access will remain;
- Both allotments will be accessed from Mainsail Drive;
- An existing bus stop on frontage of the subject site (for northbound services) will be relocated approximately 28m north-east along Mainsail Drive in order to provide access for the allotments.

Refer to Concept Subdivision Plan in Appendix A.

It is proposed that the Planning Scheme residential parking requirements will be provided on-site with visitor and excess parking provided on the road-side.

3.2 The Development Site

The proposed allotments are proposed to be subdivided from Barwon Water land on Mainsail Drive between Harbour Way and Pearl Bay Passage, in St Leonards. The subject site is flanked on north side by Pearl Bay Passage, on the east side by Mainsail Drive, on the south side by Harbour Way and on the west side by a public reserve and public footpath signposted as Halyard Terrace. The general location is urban residential.

The property contains an existing Barwon Water storage tank which will be retained on a separate reserve as part of this development. An access gate to the tank is provided midblock along Mainsail Drive. The site is zoned as Public Use Zone 1 (PUZ1) under the Greater Geelong Planning Scheme.

Refer to Figures 1 & 2 above for locality plan.

4 The Existing Road Network

All three streets, fronting the subject site are sealed and kerbed and could be classified as "Access Streets – Level 2" under Clause 56.06 of the Greater Geelong Planning Scheme (GGPS). All streets are under the care and management of the City of Greater Geelong and are subject to the urban default speed limit of 50km/h. All streets are kerbed with 7m sealed carriageways between kerbs. Stylised street lighting is provided along all streets, however it is uncertain if the roads and intersections are illuminated sufficiently to satisfy the Australian Standards.

4.1 Mainsail Drive

Mainsail Drive is situated on an 18m wide road reserve with concrete footpaths both sides. The kerb and channel is barrier type. Parallel parking is permitted both sides of the carriageway. The average daily traffic volume is not known however considering the location and functionality of Mainsail Drive, the maximum volume can be reliably estimated in the order of 1,500 vehicles per day.

The intersections of Harbour Way and Pearl Bay Passage with Mainsail Drive are Tee intersections with no sign control. In this low traffic volume environment, the standard "T" intersection rule applies where the minor road must yield to the major (or through) road.

4.2 Harbour Way

Harbour Way is situated on a 15m wide road reserve with concrete footpaths both sides. The kerb and channel is semi-mountable type. Parallel parking is permitted both sides of the street. The average daily traffic volume is not known however the maximum volume can be reliably estimated at approximately 300 vehicles per day. A 90° off-street parking area is provided near Halyard Terrace and can accommodate 4 vehicles.

4.3 Pearl Bay Passage

Pearl Bay Passage is situated on an 18m wide road reserve with concrete footpaths both sides. The kerb and channel is barrier type. Parallel parking is permitted both sides of the street. The average daily traffic volume is not known however the maximum volume can be reliably estimated at approximately 300 vehicles per day. A 90° off-street parking area is provided near Halyard Terrace and can accommodate 4 vehicles.

4.4 Public Transport - Buses

Mainsail Drive is on a bus route for the Geelong – St Leonards service No 79 of the Geelong / Bellarine Transit System. A bus stop is situated on the frontage of the subject

site, north of Harbour Way (for north-bound only). 13 services to Geelong and 14 return services are provided from 5:20 AM to 10:25 PM. The journey times vary from 1 hour 5 mins to 1 hr 20 mins.

For full timetable information visit: http://www.mcharrys.com.au

The existing bus stop on the Mainsail Drive frontage of the subject site (for northbound services) will be relocated approximately 28m north-east along the road in order that vehicle access can be provided for the allotments.

4.5 Road Safety

The established method of assessing road safety is analysing the record of casualty crashes that is maintained by VicRoads (Police reports).

The crash database, in the last five years of recording (Jan 2009 to Dec 2013), shows that one casualty crash has occurred in the vicinity of the subject land.

The crash occurred at the intersection of Mainsail Drive and Salt Water Drive in December 2013 and involved a pillion passenger falling from a motorcycle heading east on Salt Water Drive, resulting in serious injury.

4.6 Photographs

Photo 1: Looking west along Harbour Way from Mainsail Drive. The subject site frontage is at right of picture.

Photo 2: Looking north along the west side of Mainsail Drive. The subject site is at left of picture. Note the bus stop and existing access gate to the water storage tank facility.

Photo 3: Looking south along Mainsail Drive. The subject site and the existing access driveway are at right of picture.

Photo 4: Looking north along Pearl Bay Passage. The subject site is at left of picture.

Photo 5: Looking south along Mainsail Drive from the Pearl Bay Passage intersection. The subject site is at right of picture

Photo 6: Looking north along Mainsail Drive over the Harbour Way intersection. The subject site is at left of picture.

5 Traffic Generation & Impacts

5.1 Traffic Generation, Distribution & Impacts

The RTA Guide to Traffic Generating Developments (Ver 2.2, 2002) provides guidance in the determination of traffic demand for land use developments.

In accordance with the RTA 2002, the typical traffic generation rate for residential allotments is nine (9) vehicle trips per allotment per day with 0.85 trips per allotment per hour in peak periods.

Based on the RTA guide rates, the two (2) proposed residential allotments of this development will generate up to approximately 18 vehicle trips per day with 2 trips in the peak hour periods. These generated trips are both arriving and departing trips however in the peak periods it is assumed that all trips will be departing in the AM peak hour and all trips will be arriving in the PM peak hour.

It is expected that traffic generated from the Barwon Water storage tank will be very low, with maximum vehicle use in the order of 5 to 6 vehicle trips per day.

The total traffic generated by the development is expected to be 24 vehicle trips per day with 3 trips in the peak hour periods as indicated in the following Table.

LAND USE	NUMBER	TRIP RATE	DAILY TRIPS	PEAK HR TRIPS
Allotments	2	9	18	2
Storage Tank	1	6	6	1
TOTALS			**24**	**3**

Table 1 – Traffic Generation

It is important to note that the estimated traffic volumes above are at the higher end of demand for the residential allotments and storage tank and include journey to work trips as well as shopping trips. The net generated traffic has the potential to be reduced slightly with the close proximity of the bus services. It is considered that all generated traffic will be distributed to Mainsail Drive, with 50% orientated towards the north and 50% towards the south. It is considered that the estimated peak hour volume of 3 vehicles per hour will have negligible impact on the performance and safety of the local road network.

5.2 Access to Allotments

Access to the two residential allotments will be provided on Mainsail Drive. Access to the water storage tank will remain in its current location on Mainsail Drive. The new residential driveway crossings shall be constructed in accordance with the Infrastructure Design Manual (IDM).

The sight distance at the driveways shall meet the requirements of the Australian Standards. The streetscape shall be kept free of low and overhanging branches in order to maintain optimum sight distance. Refer to Section 5.6 for sight distance requirements.

5.3 Pedestrians & Cyclists

The local footpath system is highly developed with constructed footpaths on all frontages.

5.4 Waste Collection

It is proposed that the existing kerbside waste collection service operated by Council will be extended to include the new allotments.

5.5 Sight Distance – Access Driveway

Appropriate sight distances will apply to the driveway access locations on Mainsail Drive. Any new landscaping works, gates and fences will consider the provision of safe sight distance in accordance with the Australian Standards as indicated below.

Appropriate sight distance will be evaluated against criteria for private access driveways set out in Australia/New Zealand Standard AS/NZS 2890.1 Part 1: "Off-street Car Parking" – Section 3.2.4.

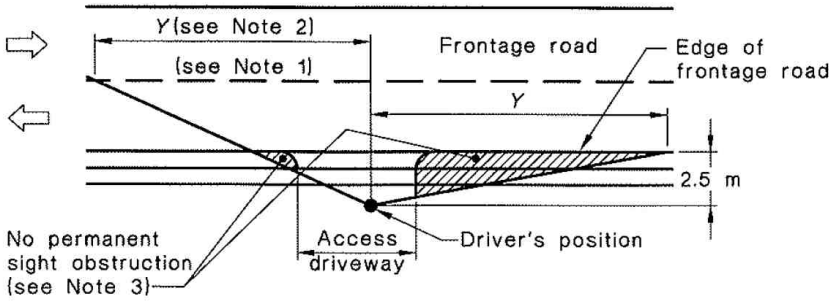
Access driveways will be located and constructed so that there is adequate entering sight distance to traffic on the frontage road and sight distance to pedestrians on the frontage road footpath for traffic entering the frontage road, as follows:

- Entering sight distance for 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.

- Sight distance to pedestrians Clear sight lines as shown in Figure 4 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.

5.5.1 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 69m desirable for a 5 second gap selection or 45m for Stopping Sight Distance (SSD) for the applicable frontage road speed of 50 km/h.



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

5.5.2 Pedestrian Sight Distance

Sight Distance for 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.

Detailed design shall confirm that buildings, fences and shrubs adjacent to the access driveway do not limit sight lines below the specified values.

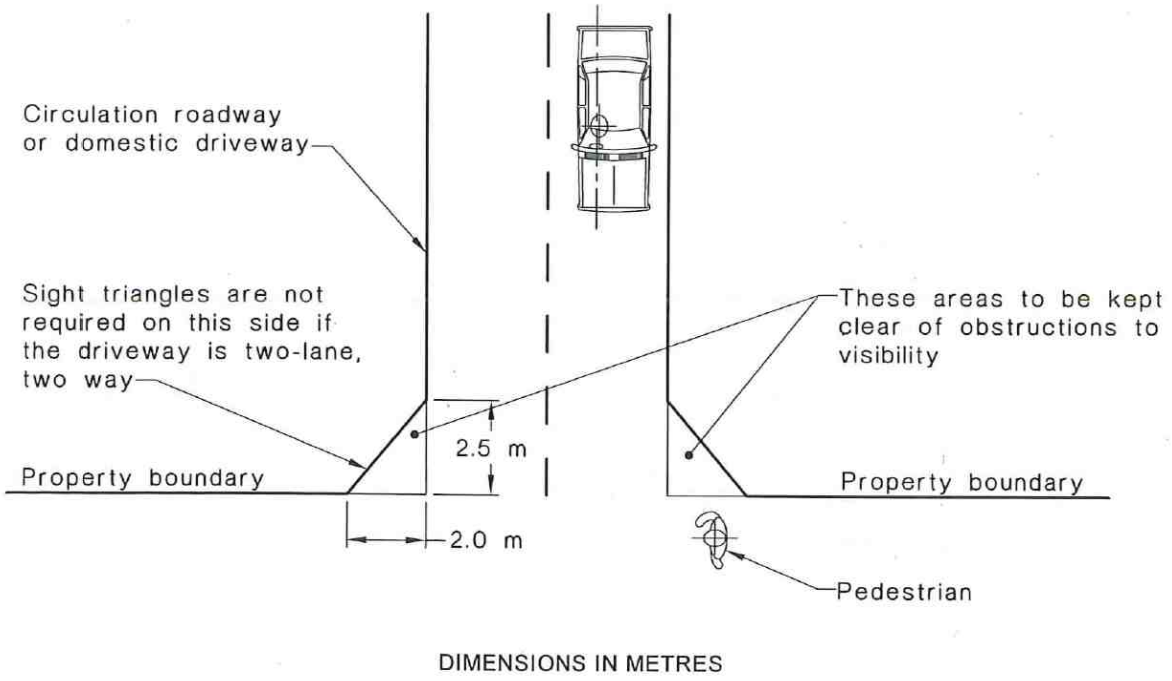


Figure 4: Minimum Sight Lines for Pedestrian Safety

5.6 Public Lighting

The existing street lighting is stylised to conform to the local estate themes. It is not certain if the illumination levels of the streets and intersections are sufficient to satisfy the Australian Standard - AS 1158.1.1 (2005) Lighting for Roads and Public Spaces.

6 Parking Generation & Impacts

6.1 Parking Generation – Planning Scheme

Clause 52.06 of the Greater Geelong Planning Scheme nominates parking rates for land use. Under the planning scheme, dwellings of one or two bedrooms require the minimum provision of 1 car space per dwelling, dwellings of three or more bedrooms require the minimum provision of 2 car spaces per dwelling.

In accordance with the Planning Scheme it is proposed that the residential parking component for each allotment will be provided on-site. Occasional overspill and visitor parking will be provided on the kerb-side.

7 Conclusions

Based on the investigations and analysis contained in this report the following conclusions are made:

1. The proposed residential development at 38 – 42 Mainsail Drive, St Leonards will generate approximately 24 vehicle trips per day with approximately 3 trips in the peak hour period. The trips will be distributed to the local street network on Mainsail Drive;
2. There is potential for a reduction in the estimated generated trips due to the close proximity of the bus stop on Mainsail Drive;
3. The peak generated traffic flows on average will be approximately 1 vehicle every 20 minutes. This low generation rate will have negligible impact on the performance and safety of local road network;
4. The available sight distance at the proposed access entry points on Mainsail Drive shall meet the minimum requirements of AS/NZS 2890.1. Any new on-site landscaping shall consider the necessary pedestrian sight lines at the entry point;
5. The current bus stop adjacent to the subject site frontage will be relocated approximately 28m northward to allow access to the new residential allotments. Public Transport Victoria (PTV) have given approval in principal for the bus stop relocation;

This assessment has found that there would be no traffic management, safety or operational grounds that would impede this development.

8 References

1. Traffic Engineering & Management – Institute of Transport Studies – Monash University – 2003;
2. Concept Development Plans prepared by St Quentin P/L;
3. The Greater Geelong Planning Scheme;
4. The RTA Guide to Traffic Generating Developments – Ver 2.2, 2002;
5. The Australian / New Zealand Standard 2890.1 – Parking Facilities Part 1: Off Street Parking, 2004;
6. Other Relevant VicRoads and Austroads Guidelines;

Author

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Appendix - A

CONCEPT LAYOUT PLAN

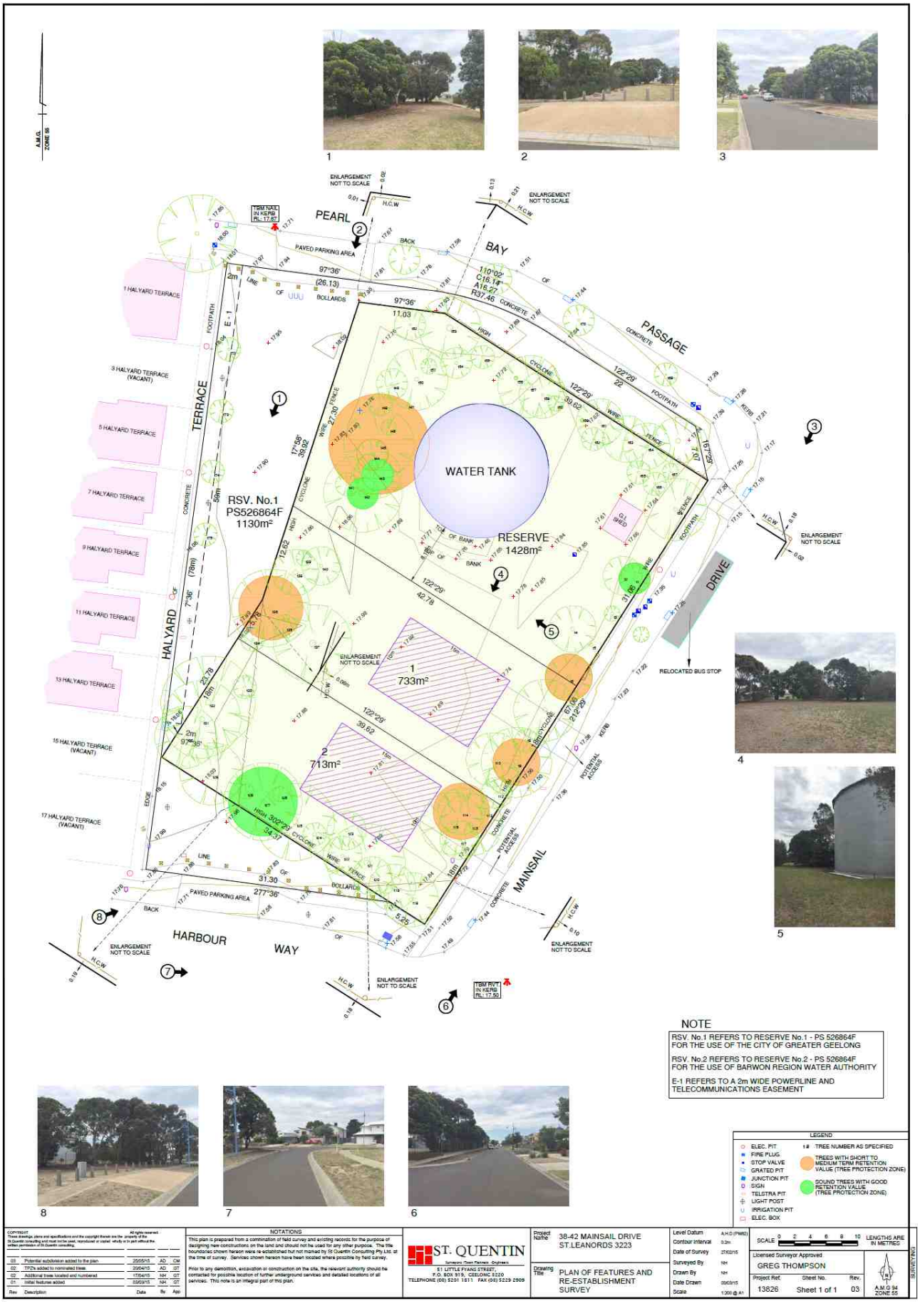

Figure A.1 – Concept Subdivision Plan – Residential Development 38-42 Mainsail Drive