

# Amendment C325

## Expert Evidence Statement

CG40452



Prepared for  
St Leonards Property Holdings Pty Ltd

7 December 2015

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## Document Control

Version	Date	Author	Author Initials	Reviewer	Reviewer Initials
F01	7/12/15	Tim McKinley			

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# 1 Planning Panels Victoria Guidelines

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The following report has been prepared in accordance with the Planning Panels Victoria Guide to Expert Evidence. My qualifications, expertise and instructions to undertake this work are summarised below:-

## Name:

Timothy Peter McKinley

## Address:

Cardno

Level 4, 501 Swanston Street

Melbourne Vic 3000

## Professional Qualifications:

- > Bachelor of Engineering (Civil) Hons, 2003, University of Melbourne
- > Bachelor of Commerce, 2003, University of Melbourne
- > VicRoads Accredited Senior Road Safety Auditor

## Professional Experience:

- > Cardno 2011 - present
- > Cardno Grogan Richards 2007 – 2011
- > VicRoads 2003 - 2007

## Areas of Expertise:

- > Car parking, traffic and transportation.
- > Traffic advice and assessment of land uses and development proposals to planning authorities, government agencies, corporations and developers (including residential, retail, commercial, industrial, institutional and mixed use projects).

## Expertise to Prepare this Report:

My training and experience including involvement with all forms of development over a number of years qualifies me to comment on the traffic implications of the proposal.

## Instructions which defined the scope of this report:

I have been requested by Norton Rose Fulbright, on behalf of St Leonards Property Holdings Pty Ltd, on 2<sup>nd</sup> November 2015, to provide my expert opinion, in regards to Amendment C325 on the site addressed as:

- 2-20 Leviens Road, St Leonards
- 22-40 Leviens Road, St Leonards
- 152-200 Bluff Road, St Leonards
- 481-505 Ibbotson Street, St Leonards
- 511-529 Ibbotson Street, St Leonards
- 531-539 Ibbotson Street, St Leonards
- 541-569 Ibbotson Street, St Leonards
- 42 Pearl Bay Passage, St Leonards

I have been requested to provide my opinion on the following issues:

1. Amendment C325 Explanatory Report;
2. Draft Schedule 39 to the Design and Development Overlay;

3. Submissions received during the public exhibition.

### Facts, Matters and Assumptions Relied Upon:

- > Site visit, Thursday 3<sup>rd</sup> December 2015;
- > Greater Geelong Council Delegates Report, regarding Amendment C325;
- > Previous Cardno Traffic and Transport Assessment, dated 19<sup>th</sup> November 2014;
- > Planning Scheme Amendment;
- > Submissions by various parties;
- > Greater Geelong Planning Scheme;
- > St Leonards Structure Plan;
- > Austroads Guides to Road Design;
- > Infrastructure Design Manual

### Identity of Persons Undertaking the Work:

Tim McKinley of Cardno, assisted by Jeremy Peters also of Cardno.

I have made all the inquiries that I believe are desirable and appropriate, and no matters of significance, which I regard as relevant, have to my knowledge been withheld from the Panel.



*Tim McKinley*

*Associate*

for **Cardno**

## 2 Introduction

---

It is proposed to rezone approximately 73.5 hectares of land within the St Leonards Growth Area 2 from Farming Zone to General Residential Zone and apply a Design and Development Overlay to the land being rezoned, as well as 42 Pearl Bay Passage.

This report has been prepared in accordance with the Planning Panels Victoria Guidelines. In the course of preparing this assessment, I have inspected the subject site and surrounding road network, researched relevant case study data, analysed relevant traffic volume data, reviewed the proposed documents and plans outlined in Section 1.

My opinions with respect to the proposed rezoning are set out in the following report.

## 3 Background

---

### 3.1 The Proposed Amendment

The proposed Amendment C325 to the Greater Geelong Planning Scheme applies to 73.5 hectares of land located generally surrounded by Leviens Road, Ibbotson Street, Bluff Road and the lots to the west of Pearl Bay Passage.

In November 2014, the landholders lodged a request to amend the planning scheme and rezone the land from Farming Zone 1 to General Residential Zone 1, and apply the Design and Development Plan Overlay (Schedule 39). I prepared a Traffic and Transport Assessment, dated 19<sup>th</sup> November 2014 that was submitted in association with the rezoning and adopt this report as part of this evidence statement.

Since the preparation of the November 2014 report, the following traffic and transport related items have occurred:

- Council encouraged that a property along Pearl Bay Passage be purchased to provide a connection between GA2 and the residential area to the east;
- An Outline Development Plan has been established, nominating potential site access points as well as retarding basin areas which may restrict vehicular access;
- Follow up meetings between Council, VicRoads, DEDJTR and the applicant have been held with respect to the provision of external road infrastructure to mitigate against the traffic impacts of the rezoning and subsequent subdivision.

Noting the above, I adopt this document as my Statement of Expert Evidence for the purposes of the Independent Panel convened to consider Amendment C325.

### 3.2 Delegate's Report

The Amendment and was advertised between 17 September 2015 and 19 October 2015 and a total of 27 submissions were received. Of these submissions, 18 were objections.

A Council Delegate's Report was prepared for the Amendment. Key Issues were identified in the report with the following issues relevant to this assessment:

- Lack of Infrastructure in St Leonards to support the population increase;
- The proposed road link at 42 Pearl Bay Passage is not supported;
- Transport and movement concerns from the Department of Transport.

In Summary the Delegate's Report stated that:

*"Council officers have considered the submissions and do not recommend any major changes from what was exhibited. Some changes to the DDO Schedule are proposed in response to submissions from the proponent and agencies, and further review from Council officers."*

## 4 Issues

---

The issues dealt with in this report are the traffic and transport implications of the proposed rezoning of Growth Area 2, inclusive of the following issues raised by local residents, landowners and authorities:

- General traffic increases;
- Eastern connection to Pearl Bay Passage;
- McBeth Street Footpath;
- Bluff Road secondary access location;
- Potential development west of Ibbotson Road;
- East-west internal roads; and
- Bicycle treatment widths.

It is of note that the proposed arterial road intersection treatments at Murradoc Road / Leviens Road and Murradoc Road / Bluff Road have not been raised in submissions and therefore no additional analysis of these intersections has been undertaken within this report.

Council also noted the need for further discussions with the applicant regarding cross sections of roads within the site.

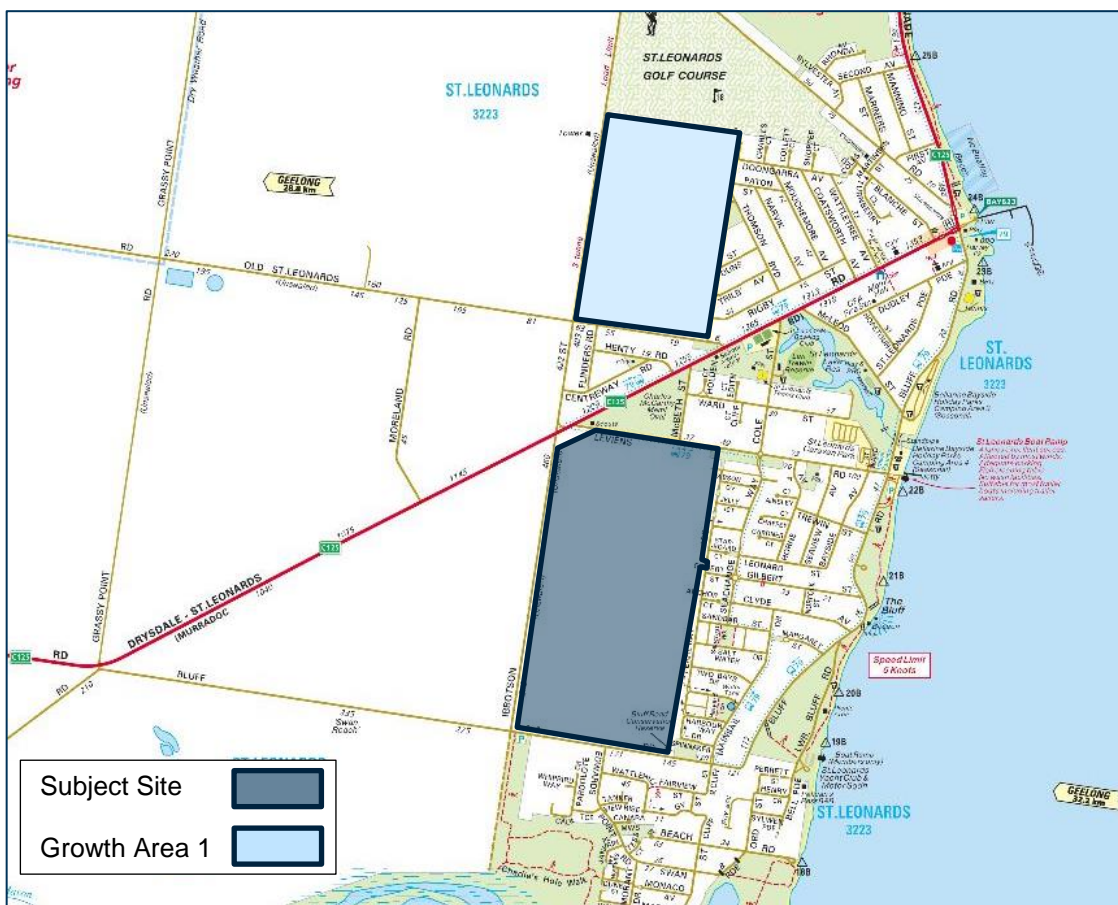
## 5 Background and Existing Conditions

### 5.1 Location and Land Use

The subject site is located south-east of Murradoc Road, St Leonards, within the block bounded by Leviens Road to the north (530m), Ibbotson Street to the west (1150m), Bluff Road to the south (610m) and existing residential lots to the east as shown in Figure 5-1. This forms “Growth Area 2” as defined in the St Leonards Structure Plan and has a total land area of Growth Area 2 is 73.55 hectares. Further to this, a parcel of land at 42 Pearl Bay Passage has been included as part of this parcel for future road connectivity to the east.

The site is currently flat and undeveloped, and was previously utilised for farming purposes. Land surrounding the site is generally residential to the north, south and east, with farming land to the west. The Charles McCarthy Memorial Oval abuts the site at its northern boundary.

**Figure 5-1 Site Location**



### 5.2 Existing Vehicular Access

Various private vehicular access points to the subject site are currently provided as follows:

- Three from Leviens Road
- Two from Bluff Road
- Six from Ibbotson Street

## 5.3 Road Network

### 5.3.1 Ibbotson Street

Ibbotson Street is a local road running north-south between Batman Road in the north and Bluff Road in the south, abutting the western boundary of the site.

Within the vicinity of the site, Ibbotson Street is an unsealed gravel road, as shown in Figure 5-2 and Figure 5-3. Existing properties along the eastern side of Ibbotson Street take access via an unsealed access road, as shown in Figure 5-3. Ibbotson Street does not display speed limit signs south of Murradoc Road and therefore the default speed limit applies. Observations on-site indicate that the vegetation on both sides of Ibbotson Street, in the vicinity of the subject site, are identified within a 'Biodiversity Conservation Area' and are protected from any activity or disturbance.

**Figure 5-2 Ibbotson Street, looking north from the subject site**



**Figure 5-3 Ibbotson Street, looking south from the subject site**



### 5.3.2 Leviens Road

Leviens Road is a local road running east-west between Bluff Road in the east and Murradoc Road in the west.

Within the vicinity of the site, Leviens Road has a sealed carriageway with unsealed shoulders, as shown in Figure 5-4 and Figure 5-5, and has a posted speed limit of 60 km/h (seasonally adjusted to 50km/h). Existing lots on the northern side of Leviens Road take access via concrete driveways, as shown in Figure 5-5.

**Figure 5-4 Leviens Road, looking west from the subject site**



**Figure 5-5 Leviens Road, looking east towards the subject site**



Immediately to the east of the subject site, Leviens Road contains a widened carriageway to allow parking with kerb and channel and footpaths located on the southern side of the road, as shown in Figure 5-6.

**Figure 5-6 Leviens Road, looking west at the subject site boundary**



### 5.3.3 **Bluff Road**

Bluff Road is a local road oriented generally east-west in the vicinity of the site, between Murradoc Road in the west and Mainsail Drive to the east, and continues further north to Murradoc Road, where it becomes The Esplanade.

In the vicinity of the site, Bluff Road operates as a two-way road and accommodates a sealed carriageway with unsealed shoulders, as shown in Figure 5-7 and Figure 5-8. A speed limit of 80km/h is generally applicable at the site frontage, with a 100km/h speed limit to the west.

**Figure 5-7 Bluff Road, looking east from the subject site**



**Figure 5-8 Bluff Road, looking west towards Ibbotson Street**



The section of Bluff Road, east of Edwards Point Road, contains a widened westbound carriageway as well as kerb and channel on the southern side of the carriageway, as shown in Figure 5-9. A speed limit of 50km/h applies in this residential section.

**Figure 5-9 Bluff Road, looking east, east of Edwards Point Road**



### 5.3.4 Murradoc Road

Murradoc Road is a Declared Main Road and extends between Drysdale in the west and St Leonards in the east.

Within the vicinity of the site, Murradoc Road consists of a single carriageway with one traffic lane in each direction plus sealed shoulders of approximately 1.5 metres shared within cyclists. At the intersection of Bluff Road / Murradoc Road currently has a posted speed limit of 100 km/h. Further north-east towards Leviens Road, the speed limit is 70km/h, while closer to the town centre, a 60km/h speed limit applies.

A typical cross section of Murradoc Road is shown in Figure 5-10, an aerial of the intersection of Murradoc Road / Ibbotson Street is shown in Figure 5-11, an aerial of the intersection of Murradoc Road / Leviens Road in Figure 5-12 and Murradoc Road / Bluff Road in Figure 5-13.

**Figure 5-10 Murradoc Road, looking west from Ibbotson Street**



**Figure 5-11 Aerial - Murradoc Road / Ibbotson Street Intersection**



**Figure 5-12 Aerial - Murradoc Road / Leviens Road Intersection**



**Figure 5-13 Aerial - Murradoc Road / Bluff Road Intersection**



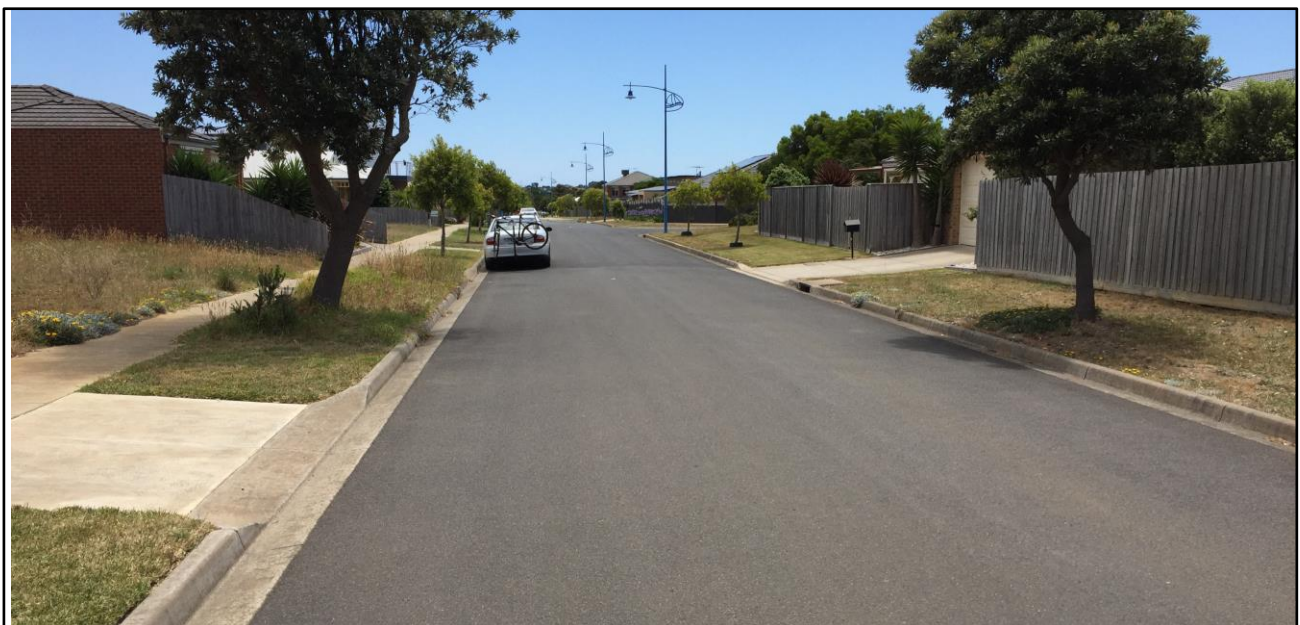
### 5.3.5 Pearl Bay Passage

Pearl Bay Passage is a local access street that generally runs north-south, other than at two short east-west sections at its connection to Seachange Way and Mainsail Drive.

In the vicinity of Gilbert Street and Seachange Way, Pearl Bay Passage consists of a single carriageway of 7.0m width, with parking allowed on both sides of the road. A footpath is provided within the western verge only.

A default speed limit of 50km/h is present, while no parking restrictions are present.

**Figure 5-14 Looking north, at 42 Pearl Bay Passage**



### **5.3.6 Gilbert Street**

Gilbert Street is a local access street that runs east-west between Pearl Bay Passage and Bluff Road.

Gilbert Street consists of a single carriageway of 7.0m width, with parking allowed on both sides of the road. A footpath is provided only at the western half of the road.

A default speed limit of 50km/h is present, while no parking restrictions are present.

A roundabout is formed at the intersection of Gilbert Street and Seachange Way, with other traffic calming also present.

### **5.3.7 Seachange Way**

Seachange Way is a local access street that runs from Sandbar Street in the south to Leviens Street in the north. It continues as Cole Street, north of Leviens Street.

Seachange Way consists of a single carriageway of 7.0m width, with parking allowed on both sides of the road. A footpath is provided on both sides of the road.

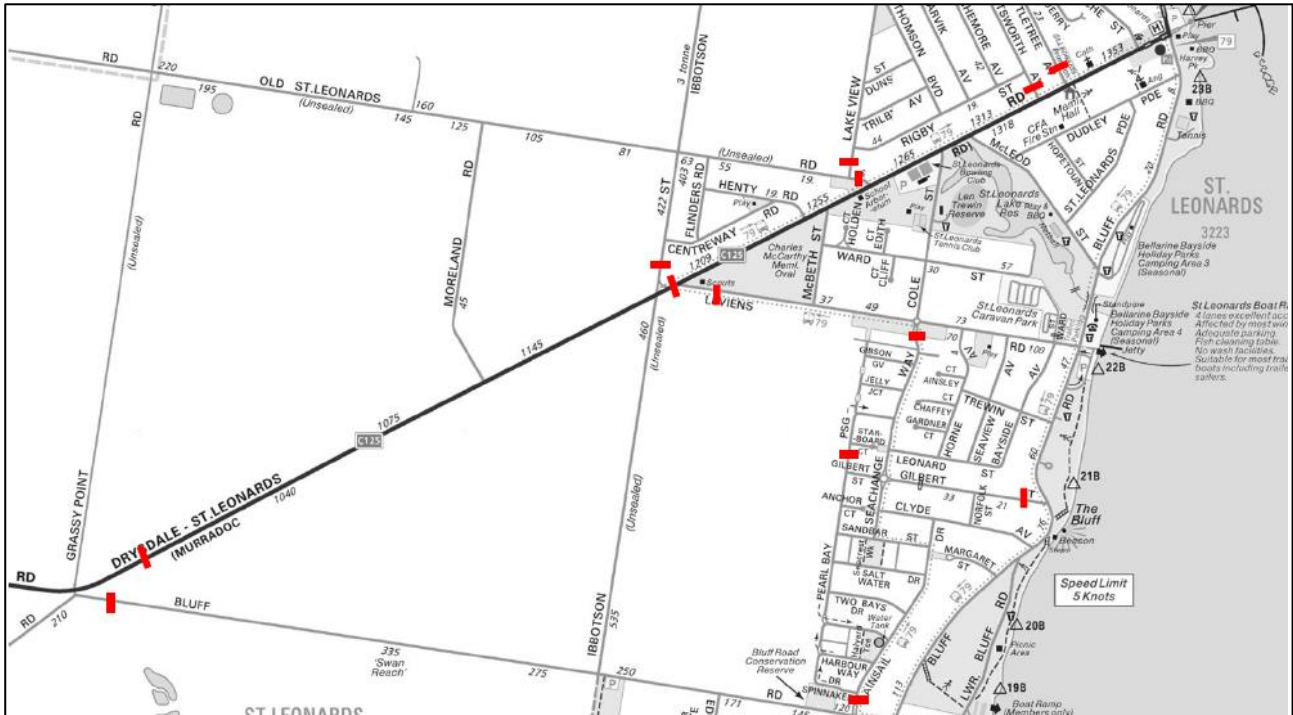
A default speed limit of 50km/h is present, while no parking restrictions are present.

A roundabout is formed at the cross intersection of Seachange Way with both Leviens Street and Gilbert Street, with simple t-intersections formed at other intersecting streets.

## 5.4 Traffic Volumes – Local Streets

In order to update traffic volume data on local streets in the vicinity of the subject site, in particular streets which potentially will link proposed access points to the arterial network, Cardno commissioned tube counts at the locations shown in Figure 5-15, over the week commencing 28<sup>th</sup> October 2015. This date was selected as it provided for normal weekday volumes, weekend volumes and public holiday (Melbourne Cup).

**Figure 5-15 Tube Count Locations**



A summary of the results is shown in Table 5-1, including the following data:

- The peak traffic volume recorded over any hour during the week;
- The peak traffic volume recorded over the average hour during the week;
- The peak traffic volume recorded over any day during the week;
- The peak traffic volume recorded over the average day during the week.

**Table 5-1 Local Street Two-Way Traffic Volumes – October / November 2015**

Street	Location	Peak Hour (vph)	7 Day Average Peak hour (vph)	Peak Day (vpd)	7 Day Average Daily (vpd)
Pearl Bay Passage	Outside No. 42	18	13	127	115
Gilbert Street	West of Bluff Road	42	20	262	198
Seachange Way	South of Levens Road	76	66	811	724
Mainsail Drive	North of Bluff Road	70	51	684	621
Levens Street	East of Murradoc Road	75	54	777	675
Bluff Road	East of Murradoc Road	203	128	1708	1523

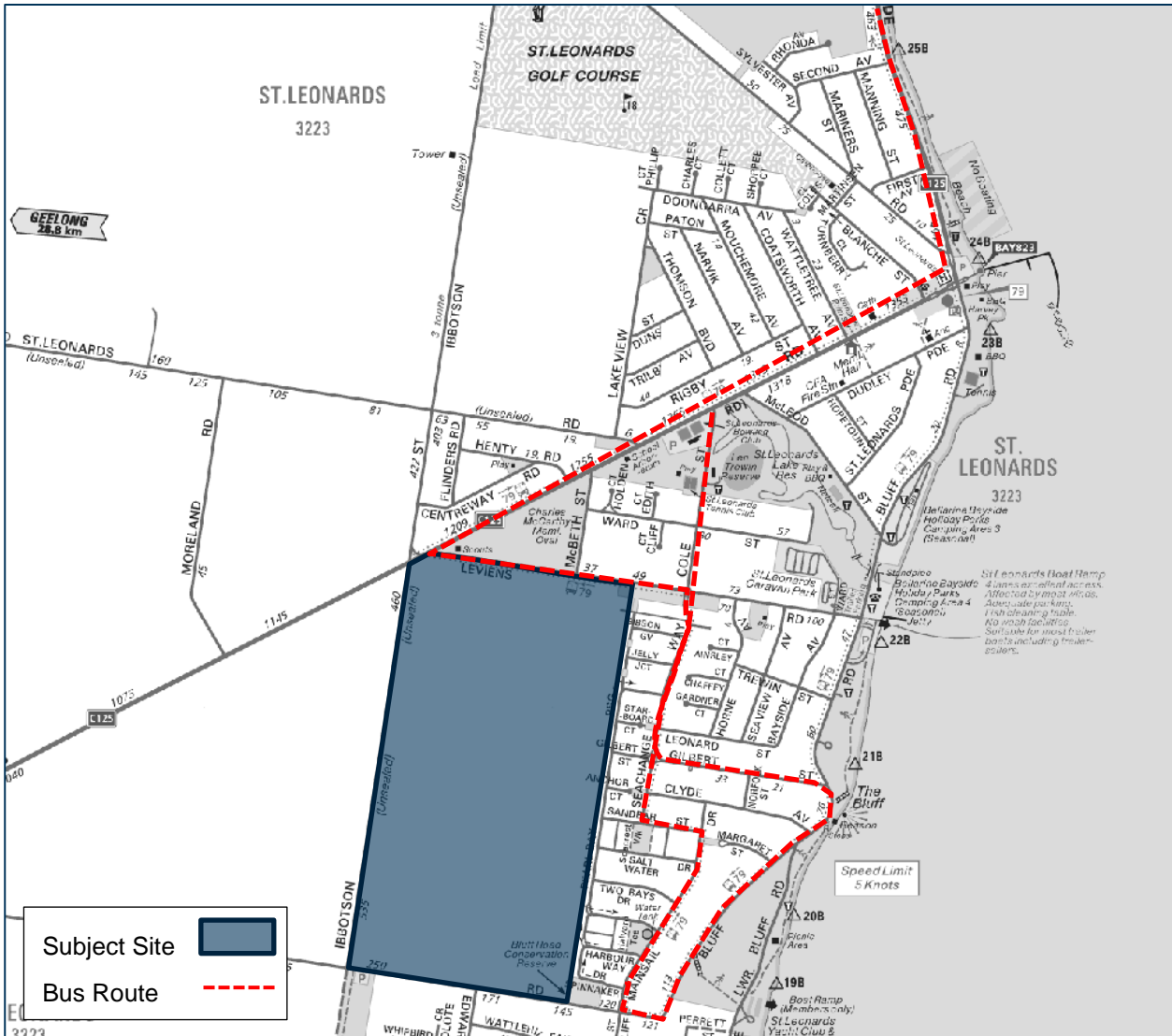
## 5.5 Sustainable Transport

### 5.5.1 Public Transport

The site has public transport accessibility, with a bus service located along Levens Road. Public transport services in St Leonards is limited to Bellarine Transit services bus routes, which operate along Murradoc Road and Geelong-Portarlington Road, with parts of the service extending into residential streets.

Bus Route 60 operates from the Geelong Railway Station to St Leonards, via Portarlington. Thirteen (14) services operate between 5:00am and 9:00pm weekdays, with services approximately every hour between 7:00am and 2:00pm. Furthermore, seven (7) services currently operate on Saturday's and five (5) services on Sunday's and Public Holidays.

**Figure 5-16 Existing St Leonards Bus Route Locations**



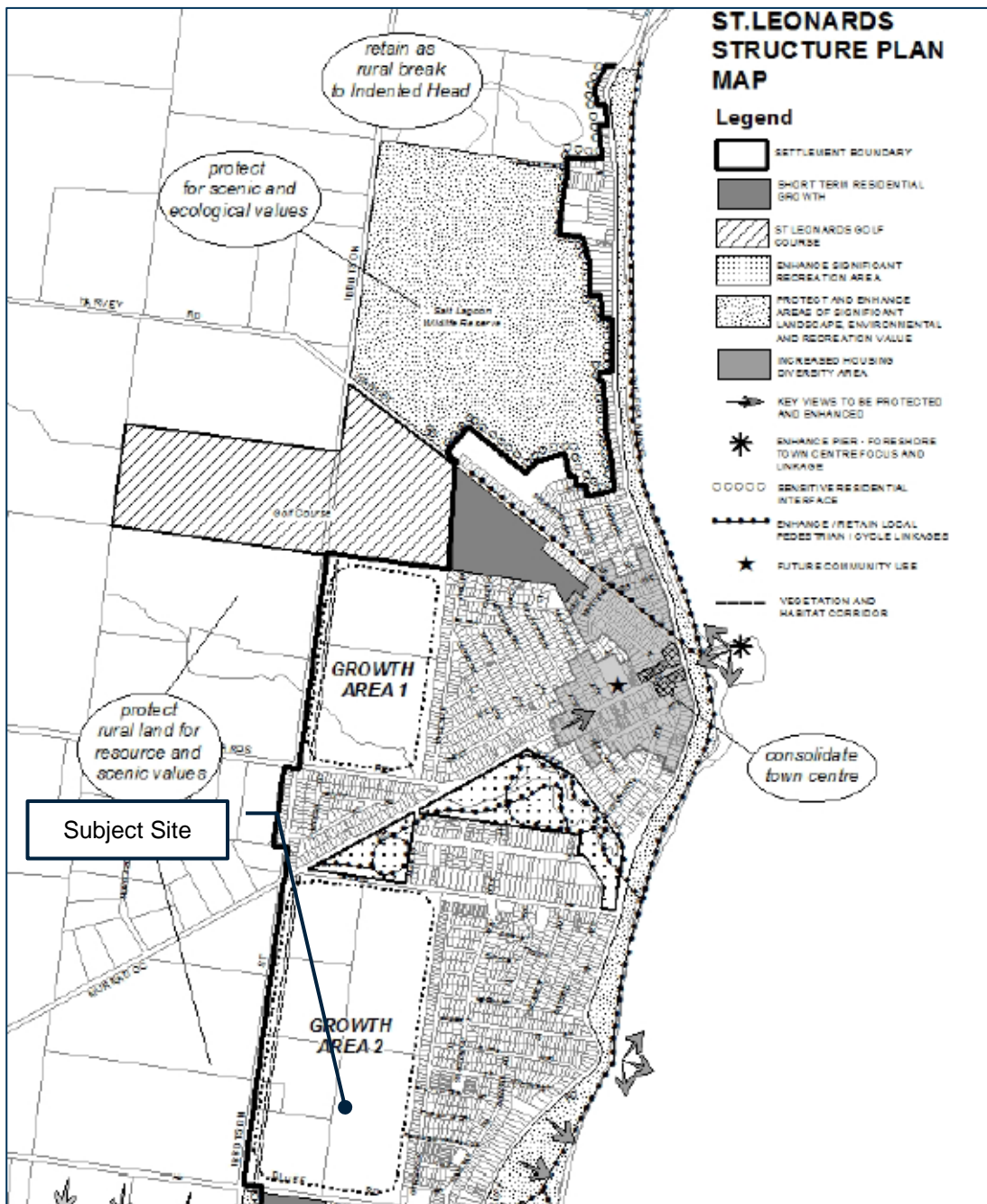
## 5.6 St Leonards Structure Plan

The 2014 St Leonards Structure Plan identified the subject site as Growth Area 2. Furthermore, an additional growth area, north of Murradoc Road, known as Growth Area 1, was identified within the St Leonards Structure Plan. The Structure Plan states that the two sites are estimated to provide between 25 and 33 years supply of land for the St Leonards Township.

The St Leonards Structure Plan was adopted by the City of Greater Geelong in February 2014. Within the Structure Plan, two growth areas were identified as long term residential growth areas capable of accommodating in the order of 1400 lots. Furthermore, the Structure Plan indicated that there are no planned major upgrades/improvements to the road network within the township of St Leonards.

The location of the subject site within the St Leonards Structure Plan area is shown in Figure 5-17. It is noted that the land to the west is protected for “resource and scenic value”.

**Figure 5-17 St Leonards Structure Plan Areas**



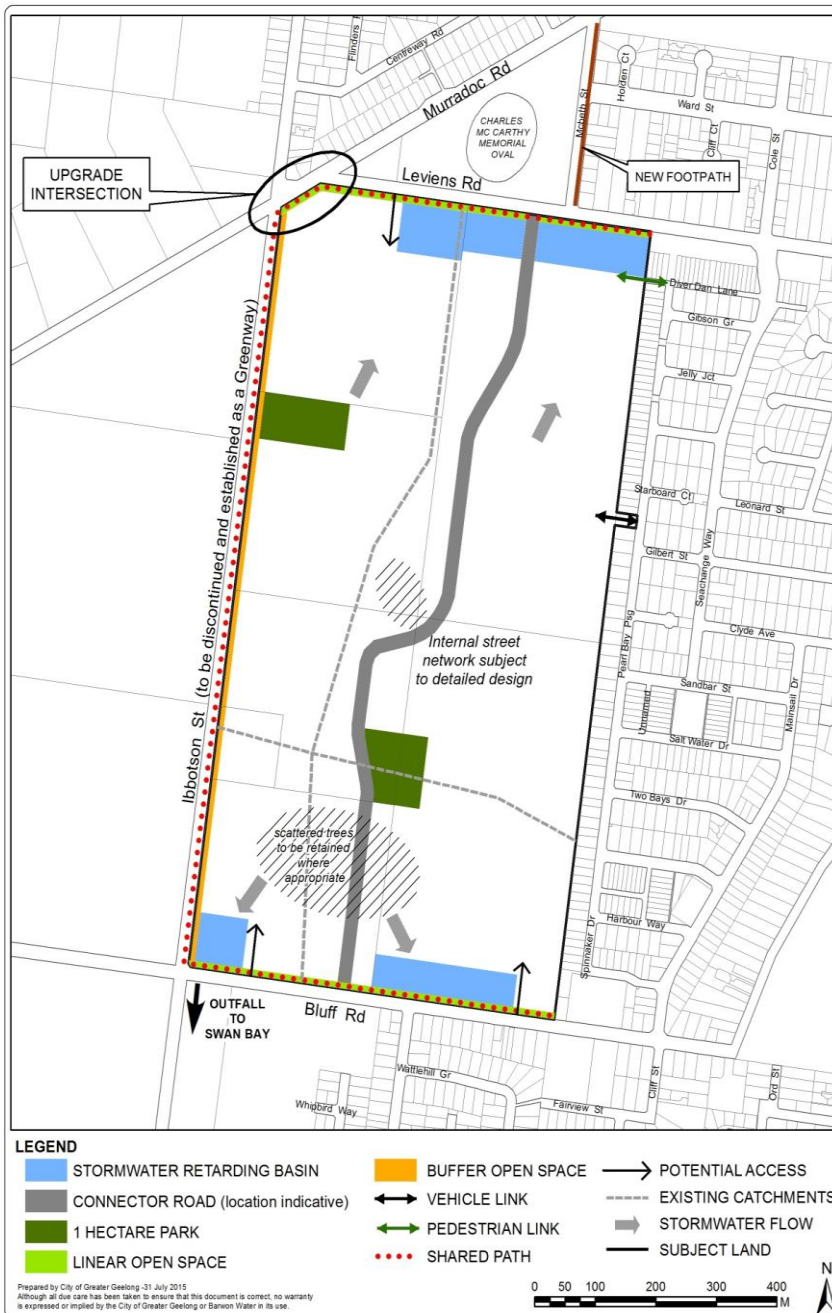
# 6 Potential Development

## 6.1 General

Based on the exhibited Outline Development Plan, it is proposed to rezone the 73.55 ha site to a Residential 1 Zone (R1Z) with a lot yield of approximately 900 lots, as well as a number of open space reserves and water basins. The development is to include the construction of Leviens Road and Bluff Road along the frontage of the site to a similar standard as to what exists within the vicinity of the site.

The exhibited Outline Development Plan as appended to the Proposed Schedule 39 to the Design and Development Overlay is shown in Figure 6-1.

**Figure 6-1 Exhibited Outline Development Plan**



## 6.2 Vehicle Access and Road Network

Access to the site from the surrounding road network is shown to be provided via a number of access points along Leviens Road to the north and Bluff Road to the south. At each of these road frontages, a single major connector road access is to be installed, supplemented by smaller access streets. A further access street link is shown to be provided to Pearl Bay Passage to the east of the site to integrate the site into the Seachange Estate area. Access to Ibbotson Street has been minimised due to significant vegetation and the rural interface along the western boundary of the site. A “greenway” is proposed along this boundary, with no significant vehicle access, nor vehicular connection to Murradoc Road from Ibbotson Street.

The development is to include road pavement sealing and installation of kerb and channel adjacent the sites boundary to Leviens Road and Bluff Road, to a similar standard to what exists surrounding the subject site.

It is understood that most properties will be accessed from the internal road network proposed. All access points will form T-intersections with Leviens Road, Bluff Road (or roundabouts if desired) with “Give Way” signage and line marking installed.

The road network for the subdivision will comprise of Access Streets and a Connector Road. It is recommended that the internal access street network for the residential subdivision be designed in accordance with various applicable design criteria, including Clause 56 of the Greater Geelong Planning Scheme, the Infrastructure Design Manual adopted by Greater Geelong Council or Growth Area Structure Plans located within Greater Geelong. The indicative road hierarchy proposed road cross sections are shown in Table 6-1.

**Table 6-1 Internal Road Network Street Types**

Type	Road Reserve	Indicative Capacity	Carriageway	Cyclists / Pedestrians
Level 1 Access Street	13.5m	1,000-2,000 vpd	5.5m	2 x 1.5m wide footpath
Level 2 Access Street (Adjacent Open Space)	13.5m	2,000-3,000 vpd	7.3m	1 x 1.5m wide footpath within road reserve 1 x 1.5m wide footpath within open space
Level 2 Access Street	16.0m	2,000-3,000 vpd	7.3m	2 x 1.5m wide footpath
Level 1 Connector Street	22.0m-24.0m	3,000 vpd-7,000vpd	3.5m lane in each direction plus parking lane	1 x 2.5m wide shared path 1 x 1.5m footpath

### **6.3 Pedestrians and Cyclists**

The Outline Development Plan shows a shared path network along the northern (Leviens Road), southern (Bluff Road) and western (Ibbotson Street) frontages of the site. Further to this, a bicycle/pedestrian connection to the existing Diver Dan Lane is proposed in the north eastern section of the GA2 land.

The internal pedestrian and cycle network will comprise of a shared path and open space path network, as well as standard footpaths within the street network.

No pedestrian paths are currently provided within the existing Leviens Road and Bluff Road reserves. As such, external pedestrian access to the subject land will be limited until such time as Leviens Road and Bluff Road are fully constructed.

### **6.4 Public Transport Access**

The north-south connector road is to provide for public transport movements within the site, relying on new or rerouted bus services from the surrounding road network. This will allow for all lots to be located within reasonable proximity to a potential bus route.

## 7 Traffic Implications

### 7.1 Arterial Road Connections

It is proposed to utilise the existing Murradoc Road / Bluff Road intersection, which provides a channelised right turn lane to minimise the impact of turning traffic on through vehicles. A channelised right turn treatment is proposed to be constructed at the intersection of Murradoc Road / Leviens Road to mitigate against the impact of right turning traffic.

These treatments have been analysed in the previous Cardno report and agreed by VicRoads and Council after subsequent meetings and therefore no further analysis of these intersections is shown.

The proposed intersection at Murradoc Road / Leviens Road is shown within concept plans attached as Appendix A, specifically highlighting works associated with GA2. This plan also outlines works at the Murradoc Road / Ibbotson Street intersection, noting that these works are associated with GA1 only and this has been specified within the proposed GA1 permit conditions.

### 7.2 Traffic Generation

A traffic generation study was undertaken over the week of 28<sup>th</sup> October-3<sup>rd</sup> November 2015, with traffic volumes measured within an enclosed area of St Leonards with the only access via Lakeview Crescent, Coatesworth Avenue and Wattletree Avenue as shown in Figure 7-1.

**Figure 7-1 Study Area**



The daily average for traffic generation in this section St Leonards was 1632 vehicle movements per day, with the peak activity occurring on the Saturday with 2005 vehicle movements per day. The total number of dwellings in this area at this time was 386 dwellings (excluding unoccupied lots), which equates to a traffic generation rate of 4.2 vehicle movements per day and 5.2 vehicle movements per day respectively.

Based on the foregoing, it is projected that the rezoned GA2 area will produce 3,780-4,680 movements per day, inclusive of up to 470 movements in the morning and evening peak hours.

The previous analysis prepared by Cardno was highly conservative for the proposed residential rezoning, adopting 10 vehicle movements per lot per day. This is unlikely to ever be achieved at any time other than the absolute peak over the Christmas / New Year period.

### 7.3 Traffic Distribution

The distribution of traffic to and from the site will be a function of a number of factors as follows:

- The location of access points to the surrounding road network;
- The purpose of the trip;
- The location of work destinations;
- The location of retail and other facilities.

It is generally accepted that for residential developments, approximately 80% of trips are outbound and 20% inbound in the AM peak. Conversely in the PM peak, 60% are inbound and 40% are outbound.

In consideration of the existing road network and in particular the location of local schools, the St Leonards and Geelong Townships and access to arterial roads, it is expected that traffic generated by the site will mainly utilise:

- > Murradoc Road (or Bluff Road) to access the St Leonards Township, Geelong and all other areas of the Bellarine Peninsula; and
- > Ibbotson Street (or Bluff Road) and Murradoc Road to access parts of the Bellarine Peninsula.

The distribution of vehicle movements is based on the location of surrounding employment centres, local and major shopping destinations, recreational destinations and schools and other education centres. Only a small percentage of the work related trips will be to destinations within the St Leonards Township, with the majority to Geelong and the remainder to the Bellarine Peninsula / Portarlington / Point Lonsdale. Likely traffic destinations within St Leonards, such as the schools and shops, typically front Murradoc Road. The majority of local and supermarket shopping trips will be to the IGA Supermarket which fronts Murradoc Road. Other shopping trips for household goods, clothing etc. will primarily be to Geelong. Recreational trips will likely be towards Geelong. The majority of educational trips will be generated to and from St Leonards or Geelong, with some trips also likely to Portarlington / Drysdale.

It has been assumed that 35% of traffic will travel to/from the site via Leviens Road and the remaining 65% to travel to/from the site via Bluff Road.

From the above, the following distribution of residential traffic to the surrounding area has been adopted.

- > Bellarine Peninsula / Geelong (inc. Drysdale) 75%
- > St Leonards 25%

Having regard to the location of proposed access points, journey to work data and the location of surrounding facilities, the distribution of traffic to and from the development at each access point on a daily basis has been modelled as shown in the following table. It is noted that the internal local road network will be resolved at the detailed design stage, however the majority of traffic into St Leonards would be encouraged to use the more direct central connector street via Leviens Street rather than a less direct Pearl Bay Passage link. Gilbert Street is likely to provide a more convenient access to the foreshore for a small pocket of lots in the north-eastern section of the subject site.

**Table 7-1 Access Point Distribution**

Access Point	Percentage Traffic Distribution	Daily Generated Vehicle Movements
Pearl Bay Passage	2%*	94vpd
Leviens Road	23%*	1076vpd
Bluff Road	75%	3510vpd
<b>Total</b>	<b>100%</b>	<b>4680 vehicles per day</b>

## 7.4 Traffic Impact on Local Streets

Future traffic volumes on local streets in the vicinity of the site have been modelled having regard to the distribution analysis undertaken above, and exiting traffic volume data detailed in Table 5-1.

Projected volume increases on each road link are shown in Table 7-2.

**Table 7-2 Local Street – Traffic Volume Increases**

Street	Section	Category	Existing Volume	Projected Additional Volume	Total
Pearl Bay Passage	Outside No.42	Access Street	115 vpd	94vpd	<b>209vpd</b>
Gilbert Street	West of Bluff	Access Street	198 vpd	94vpd	<b>292vpd</b>
Leviens Road	East of Murradoc	Connector Street	675 vpd	1076vpd	<b>1751vpd</b>
Bluff Road	East of Murradoc	Connector Street	1573 vpd	3510vpd	<b>5083vpd</b>

Each of the existing streets has been constructed as a conventional 7.0 m road pavement width, designed to accommodate intermittent kerbside parking along each kerb and two way traffic movements. Where two cars are parked opposite each other, a single two way traffic lane remains.

Clause 56.06-8 of the Greater Geelong Planning Scheme, which sets out the design of roads and neighbourhood streets for residential subdivisions, defines an “Access Street – Level 2” as “a street providing local residential access where traffic is subservient, speed and volume are low and pedestrian and bicycle movements are facilitated.”

These streets are recommended to provide characteristics shown in Table 6-1.

I have reviewed each of the above streets as to their existing design standard and function and in my view; each is constructed (or proposed to be constructed) and operates in accordance with conventional access and connector streets. Significant increases in traffic volumes over the Christmas holiday period would also be able to be accommodated.

Projected traffic volume increases in each street are moderate in absolute terms and, while some increases are significant in relative terms (when viewed against relatively low existing volumes) total volumes remain comfortably within acceptable levels for an access or connector street and will not impact significantly on the existing function, operation or amenity of the existing streets.

In my view, the connections as proposed are desirable to integrate the development with existing neighbourhoods and that the traffic implications of the connections on existing streets are moderate and acceptable. Additional access for emergency vehicles and alternative access for residents is desirable. It is of note that internal streets will be subject to further detailed design.

## 8 Road Network Considerations

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Having regard to the expected traffic volumes and road functions, I recommend the following road works be adopted with respect to external, abutting and internal roads

### 8.1 External

The only external works considered necessary is the provision of a right turn treatment at Murradoc Road / Leviens Road. For a 70km/h speed environment, the length of the turn lane would require a minimum length of 55m for deceleration. The concept plan for this intersection is shown in Appendix A.

### 8.2 Leviens Road Frontage and Access

Based on the anticipated traffic volumes illustrated in Table 7-2, it is recommended that at least two access points be provided to Leviens Road. The primary access point should be designed to the standard of a Level 1 Connector Street with a carriageway width of 7.0 metres plus additional parking. The secondary access points should be designed to the standard of a Level 2 Access Street with a carriageway width of 7.3 metres, inclusive of parking.

It is recommended that the drainage, parking and footpath works would be undertaken by the developer for the southern side of the road only, with the lane width being matched in with the existing widening that has already occurred to the east.

No turning treatment is likely to be required at the intersection of Leviens Road and the access points. The traffic volumes would be significantly less than the Leviens Street / Murradoc Road intersection analysed in the previous report.

Anticipated cross sections for the frontage are shown in Appendix B.

### 8.3 Ibbotson Street

Ibbotson Street, in the vicinity of the subject site is identified as a Biodiversity Conservation Area. It is therefore recommended that no road works or supplementary verge and drainage works occur along this portion of Ibbotson Street to preserve the existing environment.

Further to this, any access to Ibbotson Street would provide traffic access to the southern leg of the Ibbotson Street / Murradoc Road intersection. Given the traffic volumes generated by GA1 on the northern leg of this intersection, any additional traffic volumes on the southern leg are likely to create potential safety and operational issues at this intersection by creating a cross intersection. No vehicular access from the GA2 area to Ibbotson Street is recommended, as well as the "greenway" proposed.

### 8.4 Bluff Road Frontage and Access

Based on the anticipated traffic volumes shown in the previous traffic report, it is recommended that at least two access points be provided to Bluff Road. The primary access point should be designed to the standard of a Level 1 Connector Street with a carriageway width of 7.0 metres, plus parking. The secondary access points should be designed to the standard of a Level 2 Access Street with a carriageway width of 7.3 metres.

I consider a secondary access point in the south-eastern portion of the site to be good design practice as it creates a block size in accordance with 56.06-7 of the Greater Geelong Planning Scheme (maximum 240m), and will reduce the reliance on the north-south connector to access the GA2 area from Bluff Road.

It is noted that the drainage, parking and footpath works would be undertaken by the developer for the northern side of the road only, with the lane width being matched in with the existing widening that has already occurred at the residential interface.

Similarly to Leviens Road, no turning treatment is required at the intersection of Bluff Road and the access points.

Anticipated cross sections for the frontage are shown in Appendix B.

## **8.5 Bicycle and Pedestrian Connectivity**

The 2014 St Leonards Structure Plan identifies that the majority of residential streets in St Leonards have no formal pedestrian paths, wide grassy verges and a lack of kerb and channel. Notwithstanding this, it is recommended that the site frontage to Leviens Road and Bluff Road provide footpaths at the site frontage to match into any existing or future footpaths to the east of the subject site.

The 2014 St Leonards Structure Plan Cycling Strategy identifies Leviens Road as a key bicycle route, which provides a connection to Murradoc Road, which connects Geelong and the Bellarine Peninsula. It is recommended that the north-south Connector Road provide a shared path to connect the subject site to Leviens Road and the surrounding bicycle network.

A proposed local pedestrian/bicycle connection at Diver Dan Lane is also considered beneficial to provide direct local access to the beach, without requiring residents to “double back” via the Connector Street and Leviens Road due to the potential presence of the retarding basin.

## **8.6 Internal**

It is recommended that the internal road network is designed in accordance with Clause 56.06 of the City of Greater Geelong Planning Scheme – Access and Mobility Management, with cross sections generally designed as Level 2 Access Streets, other than the central north-south connection between Leviens Road and Bluff Road, which will be designated as a Level 1 Connector Road.

The north-south connector should be designed to the standard of a Level 1 Connector Road and provide for a future bus route and an off road share path. Treatments such as midblock slow points should be incorporated into the road design where applicable to ensure that vehicle speeds are maintained at appropriate levels on these roads.

Anticipated internal cross sections are shown in Appendix B.

## 9 Response to Issues

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I have reviewed the relevant traffic and transport related submissions and respond as follows.

### 9.1 Traffic Increases in Local Streets and “Hooning”

Likely travel routes to the east of the site include Pearl Bay Passage, Gilbert St and Seachange Way. Each of these roads contains a carriageway of a minimum 7.0m width. Gilbert St and Seachange Way contain speed control devices/features including roundabouts, narrowings, raised sections or bends to limit speeds through the local street network.

Traffic increases in local streets in the vicinity of the site are moderate and well within the environmental capacity of each street as defined in Clause 56.06-8 of the Greater Geelong Planning Scheme.

Projected traffic volume increases on local streets in the vicinity of the site are moderate in absolute terms, and the total volumes remain comfortably within acceptable levels for an access street. Increased volumes will not impact significantly on the existing function, operation or amenity of the existing streets.

In my view, the connections as proposed are desirable to integrate the development with existing neighbourhoods and that the traffic implications of the connections on existing streets are moderate and acceptable.

### 9.2 42 Pearl Bay Passage Access and Intersection

Various submissions objected to the use of 42 Pearl Bay Passage as a vehicular connection to the subject area, citing increased traffic, noise and intersection concerns.

In my view, it is desirable to provide vehicular access connections to integrate the Growth Area 2 land with the Sea Change Estate land. This will provide for vehicular connectivity in both directions (i.e. allow Pearl Bay Passage users to head west towards Geelong as well as local traffic from the GA2 area to head east towards Gilbert Street and the beach). Permeability within a local road network is considered desirable, to avoid the creation of “gated communities” or barriers for local traffic.

Council’s Delegates Report suggested that “If the link was not created, integration could only occur from Levens Road and Bluff Road. This would be a very poor outcome.” I agree with this assessment by Council.

The carriageway width of Pearl Bay Passage lies within the range of 7-7.5m, which, under the Greater Geelong Planning Scheme is classified as an Access Street – Level 2, allowing car parking on either side of the road, and an environmental traffic capacity of 2000-3000vpd. The surveys undertaken by Cardno suggest that the volumes of less than 130vpd currently exist at Pearl Bay Passage outside No.42, which is significantly lower than the environmental capacity for this street. Gilbert Street and Seachange Way carried a maximum of 262vpd and 811vpd. Even allowing for full development of unoccupied lots within the Seachange area (18% increase) and seasonal variation in occupancy, traffic volumes will still fall well below the indicative maximum of 3000vpd.

42 Pearl Bay Passage is one of few vacant lots of sufficient width to be able to accommodate a standard access street, with a width of 20m allowing for the construction of a standard access street (7-7.5m carriageway plus verge width and footpaths).

The location of a new access road at 42 Pearl Bay Passage will be directly opposite side fences and a garage and therefore headlight glare is unlikely to be a significant problem at this location. A standard t-intersection would be formed at this intersection, with good sightlines available in both directions. I do not believe that the intersection will be unsafe.

The Delegates Report also stated that “Council does not envisage any safety issues”.

A similar intersection to the potential 42 Pearl Bay Passage intersection exists at Horne Avenue / Levens Road and Seaview Avenue / Levens Road.

### 9.3 **McBeth Street Footpath**

Some submissions did not wish for a pedestrian footpath along McBeth Street to be included within the Amendment. St Leonards in general provides few pedestrian paths on road frontages, especially Murradoc Road, Leviens Road and Bluff Road. Therefore any connection would be discontinuous.

With the proposed connector road joining Leviens Street approximately 150m to the west of McBeth Street, the desire line to Murradoc Road is likely to be directly north through Charles McCarthy Oval. The need for a pedestrian path at this location was not specified within the St Leonards Structure Plan as part of a holistic network. I do not believe there is significant justification for a pedestrian path to be provided along McBeth Street as part of the Amendment.

### 9.4 **Bluff Road Secondary Access Road**

A submission objected to vehicle noise, traffic and lights in the vicinity of the proposed access to Bluff Road at the south-eastern section of GA2. The Outline Development Plan is indicative only, however in my view a secondary access point near this location is desirable. A retarding basin will limit opportunities for site access midblock, so a secondary access to the east will allow for the catchment of vehicle movements to the south-east that are located well away from the proposed connector road. This low order, low volume street would create a similar intersection to the existing Horne Avenue / Leviens Road and Seaview Avenue / Leviens Road intersection.

### 9.5 **DEDJTR Submissions**

A coordinated submission from the Department of Economic Development, Jobs, Transport and Resources, Vic Roads and Public Transport Victoria with respect to the Amendment dated 23<sup>rd</sup> October 2015 provided various comments.

The Department suggested:

*The proposed central North-South connector road is generally supported, however a more direct and continuous alignment with existing roads in the abutting residential areas to the north and south is preferred. This would also assist with development of the future bus network.*

*Similarly a primary East-West street needs to be established, ideally in continuous alignment with either Sandbar Street or Anchor/Clyde Street. Either would provide continuity between the new and existing development areas as well as access to the bus service along Seachange Way and Sandbar Street. Additionally, if Anchor/Clyde Street is selected, it would provide direct onward connectivity to the bay/foreshore.*

I disagree with the connector road being aligned in the north-south direction with existing streets. The purpose of the connector street is to provide a central connection from the residential streets to the major site access points along Leviens Road and Bluff Road. By offsetting this connector street to align with McBeth Street to the north, the connector street would be skewed well towards the eastern end of the site and not perform its function for the lots situated to the west of the site. A connector street is also designed to carry buses, and therefore alignment with McBeth Street would also limit bus accessibility for lots situated to the west of the site. Further to this, the carriageways of McBeth Street and Edwardes Point Road are not designed to cater for bus traffic.

Cross intersections are not desirable from a traffic safety perspective, and should be eliminated from designs where possible. In my view, a centrally located connector road with t-intersections at Bluff Road and Leviens Road provide for adequate and access for both buses and local residents.

I agree with Council's Delegates Report statement that "the north-south connector road should be located as centrally as possible between Ibbotson Street and the eastern boundary and will act like a spine for the estate".

I disagree with the request for a primary east-west street to be provided. A direct connection to Clyde Ave or Sandbar Street is not possible due to properties located along Pearl Bay Passage not being available. This request is also contradictory to the statement provided by PTV in the same letter that categorically rules out Pearl Bay Passage for use as a bus route. Travel routes from GA2 are likely to be biased towards Murradoc Road via Bluff Road or Leviens Road to access the St Leonards town centre and Geelong and therefore a

primary traffic route to the east is unnecessary. Ibbotson Street is proposed to become a “greenway” without vehicular access and therefore does not require any primary east-west street connection.

A minor Access Street is proposed to be provided at 42 Pearl Bay Passage to allow connection for residents to the foreshore.

I agree with Council’s Delegates Report statement that “did not advocate for a primary east-west street, advising that any connection to the subdivision must not encourage significant traffic movements”.

Public Transport Victoria stated:

*It is noted that Pearl Bay Passage is not a through road and hence cannot be used for any bus operation.*

*The only option of servicing this area is through Ibbotson Street and Bluff Road. Therefore these two roads need to be constructed to allow bus operation.*

Ibbotson Street is to become a “greenway” so construction of this road for buses is not considered to be appropriate. It is proposed that the north-south connector street will be designed to carry buses. Widening of the carriageway abutting the GA2 area along Leviens Road and Bluff Road will also improve potential bus operation at the site frontage.

VicRoads stated it has no objection to the Planning Scheme Amendment subject to the traffic impact assessment report being revised to incorporate intersection upgrades including:

- Murradoc Road / Ibbotson Street – sealing of the bell mouth on the southern side of Murradoc Road;
- Murradoc Road / Leviens Road – a right turn lane shall be provided on Murradoc Road on the west approach to the intersection.

Further to Section 8.1, I agree with a right turn lane being provided on the western approach to the Murradoc Road / Leviens Road intersection. However I disagree with the provision of a sealed bell mouth at Ibbotson Street south of Murradoc Road. The southern leg of Ibbotson Street will become a “greenway” and not be carrying any traffic from GA2. I understand that this section will be sealed in conjunction with the upgrade of the Murradoc Road / Ibbotson Street intersection undertaken by GA1 and therefore no additional sealing is required.

The Department also provided further comments with respect to Pedestrians and Cyclists, stating the “*provision of dedicated cycling treatments on Bluff Road and the primary north-south and east-west roads through the site is required, so as to provide onward connectivity to the broader network and destinations*”. Comments were also provided stating that the 2.5m shared path was not compliant with Austroads Guide to Traffic Engineering Practice, Part 14 – Bicycles.

A dedicated 2.5m shared path is to be provided along the north-south connector street within the GA2 area. No specific provision for cyclists is necessary in the east-west direction, as east-west streets will be access streets with low traffic volumes not requiring any separation of cyclists from other vehicles. It is proposed to widen Leviens Road and Bluff Road to provide a wider carriageway and a shared path within the open space setback, which will improve bicycle amenity.

A 3.0m path is the minimum requirement for major recreational areas such as coastlines, rivers or linear open space corridors, as defined with Austroads Guide to Road Design Part 6A (noting that Austroads Guide to Traffic Engineering Practice, Part 14 – Bicycles has been superseded by Austroads Guide to Road Design since 2009). I would consider that the shared paths within and abutting the GA2 area are local access paths as they are not part of a fully integrated network of bicycle paths. I therefore do not agree that a 3.0m path is applicable in this location.

Various standards, inclusive of Greater Geelong Planning Scheme Clause 56.06, various Precinct Structure Plans developed for Growth Areas (including Armstrong Creek), the Infrastructure Design Manual adopted by Greater Geelong Council and VicRoads Cycle Notes specify 2.5m shared paths as being appropriate.

The Council Delegates Report suggested “*Widening the shared 2.5m path to 3.0m is not supported. A 2.5m wide path is consistent with Greater Geelong growth area planning standards and VicRoads Cycle Notes, Widths of Off-Road Shared Use Paths (June 2010).*” I agree with this assessment.

## 9.6 Review of Schedule 39 to the Design and Development Overlay

I have reviewed both the Design Requirements and Application Requirements as they relate to “Traffic and Pedestrian Movements”.

Under the Design Requirements section, it is stated that the subdivision should provide a movement network that “*identifies necessary upgrades of abutting roads and road intersections in the vicinity*”. Under the Application Requirements, it is a requirement for “*A Road Network and Traffic Management Plan generally in accordance with the recommendations of the Cardno Report dated November 2014*”. Given that the November 2014 report identified the necessary upgrades of abutting roads and road intersections in the vicinity, and has been the basis of subsequent meetings and general agreement between the proponents, Council, VicRoads, PTV and DEDJTR, it is considered that the redundant Design Requirements item should be removed.

Also under Design Requirements it is stated that the subdivision should provide a movement network that “*improves connectivity to St Leonards, particularly Murradoc Road via a new footpath on McBeth Street*”. Further to Section 9.3, no footpath is provided along Murradoc Road between McBeth Street and Coatesworth Avenue, for a distance of approximately 730m. The nexus between footpath connectivity from the GA2 area to St Leonards town centre via McBeth Street is questionable and therefore the item should be removed.

## 9.7 Review of Outline Development Plan

I have reviewed the Outline Development Plan with respect to various traffic and transport related issues raised by submitters.

Further to section 9.3, the provision of a new footpath along McBeth Street does not appear to be justified and I would recommend its removal from the ODP.

Further to the response to VicRoads in section 9.4, I would recommend that the circle notating the upgrade of the intersection be constrained to the Murradoc Road / Leviens Road intersection only, as this intersection alone will carry the bulk of the turning movements from GA2. The intersection of Murradoc Road and Ibbotson Street is unlikely to carry any significant turning movement volumes from GA2.

The potential access point shown on Bluff Road to the east of the main connector is considered to be the secondary access point along this road. I would recommend that this access point be included as a secondary access point rather than potential access point. Given the offset of the connector street to the west, a secondary access point allowing appropriate intersection spacing and internal permeability in this section of the land parcel is desirable and also reduces the reliance on the major connector street. This would also address the concern of landowners in the south-eastern portion of the site with respect to being landlocked.

## 10 Conclusions

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Having reviewed relevant submissions that raise traffic and transport matters, it is my view that:

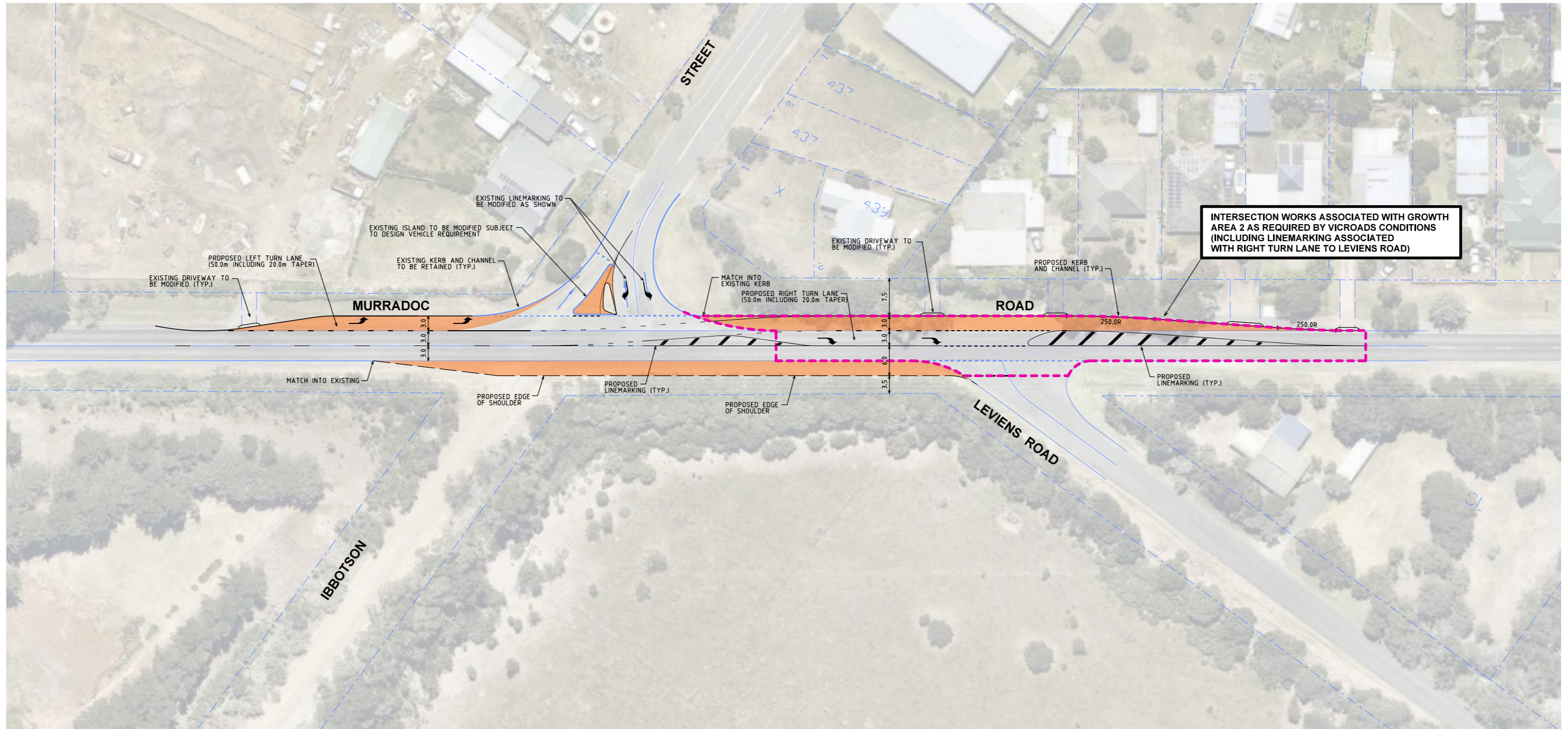
1. The proposed development as shown in the Outline Development Plan provides appropriately for the development of the site for residential purposes, with proposed access points providing sufficient capacity to cater for traffic level expected to be generated.
2. The proposal to provide vehicular access to the site via Pearl Bay Passage is appropriate, assisting in integrating the development with neighbouring residential precincts.
3. Projected traffic volume increases in local streets providing access to the site will be moderate in absolute terms and, while some increases are significant in relative terms (when viewed against relatively low existing volumes) total volumes will remain comfortably within acceptable levels for an access street and connector street and will not impact significantly on the existing function, operation or amenity of the existing streets.
4. There is no significant justification for the inclusion of a footpath along McBeth Street.
5. There is no justification to provide a major east-west street within the future subdivision.
6. A 2.5m shared path is an appropriate treatment for cyclist amenity.

Expert Evidence Statement

APPENDIX

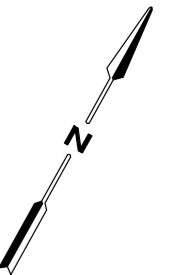
A

MURRADOE ROAD / LEVIENS ROAD  
INTERSECTION



**INTERSECTION WORKS ASSOCIATED WITH GROWTH AREA 2 AS REQUIRED BY VICROADS CONDITIONS (INCLUDING LINEMARKING ASSOCIATED WITH RIGHT TURN LANE TO LEVENS ROAD)**

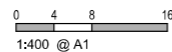
NEW PAVEMENT AREA = 745 m<sup>2</sup>



MELWAY REFERENCE MAP 459 J10

Rev	Date	Description	Drawn	Appr.
P1	04.12.15	ISSUED FOR INFORMATION	JCS	TM

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**WARNING**  
 BEWARE OF UNDERGROUND SERVICES  
 THE LOCATIONS OF UNDERGROUND SERVICES SHOWN ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVIDED ON SITE.

1. ALL DIMENSIONS TO FACE OF KERB AND CHANNEL U.N.O
2. DECLARED ROAD - ST LEONARDS ROAD (SPEED ZONE 40KM/H)
3. LOCAL ROAD - IBBOTSON ROAD (SPEED ZONE 50KM/H)
3. LINE MARK IN ACCORDANCE WITH VICROADS TEM VOLUME 2 AND REMOVE ALL REDUNDANT LINEMARKING.

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Drawn	JCS
Designed	JCS
Checked	RPT
Authorised	TM

Client	ST LEONARDS PROPERTY HOLDINGS
Project	GROWTH AREAS 1 AND 2 ST LEONARDS CITY OF GREATER GEELONG
Title	GROWTH AREAS 2 WORKS

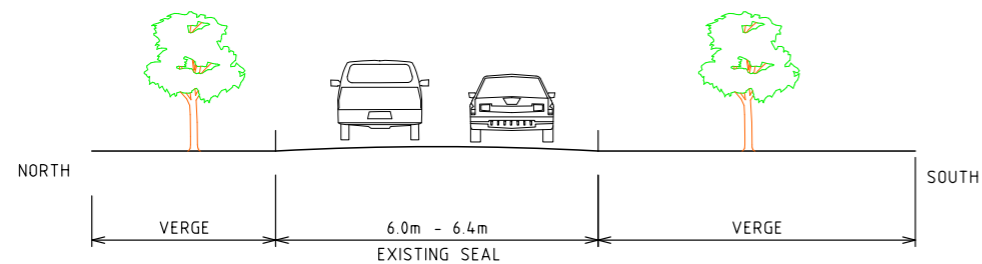
Status	<b>PRELIMINARY</b>		
NOT TO BE USED FOR CONSTRUCTION PURPOSES			
Date	04.12.15	Scale	1:400
Project Number	CG140452	Revision	T 01 P1

Expert Evidence Statement

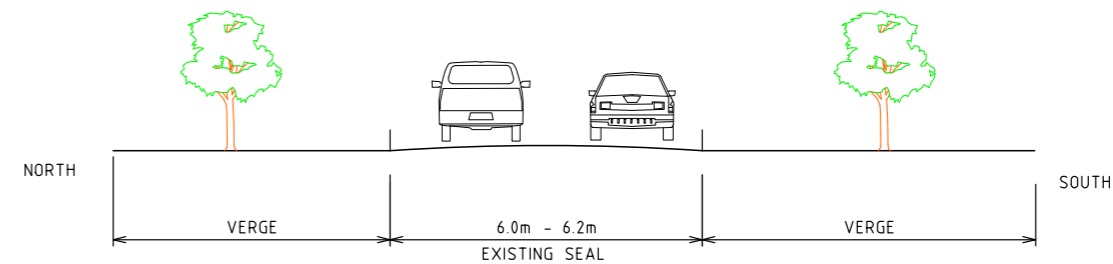
APPENDIX

B

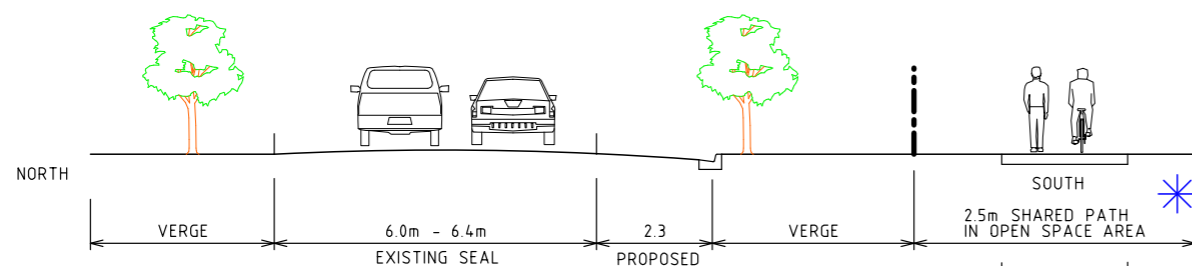
PROPOSED CROSS SECTIONS



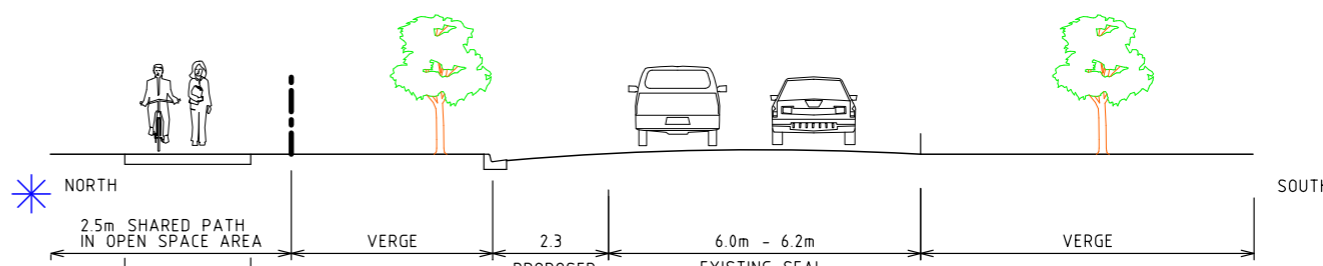
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EXISTING**



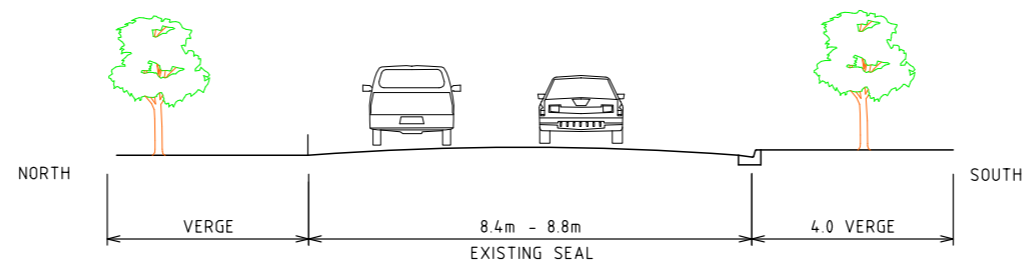
**BLUFF ROAD - RURAL INTERFACE  
EXISTING**



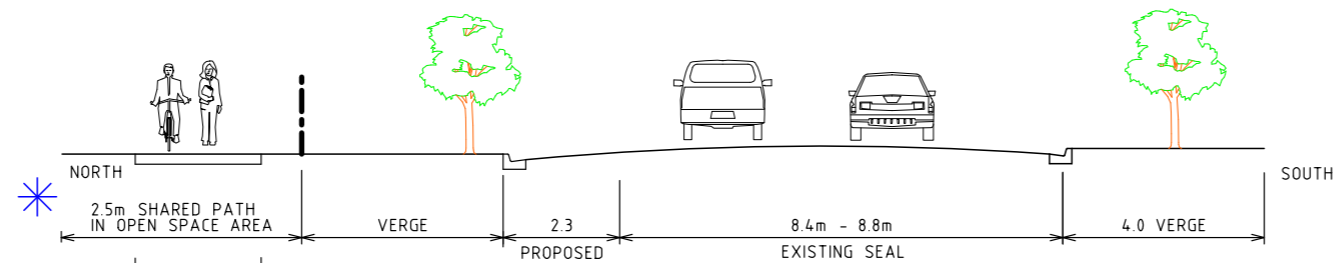
**LEVIENS ROAD  
PROPOSED**



**BLUFF ROAD - RURAL INTERFACE  
PROPOSED**



**BLUFF ROAD - RESIDENTIAL INTERFACE  
EXISTING**



**BLUFF ROAD - RESIDENTIAL INTERFACE  
PROPOSED**

**NOTE:**  
\* SUBJECT TO OPEN SPACE NETWORK  
SHARED PATH DESIGN