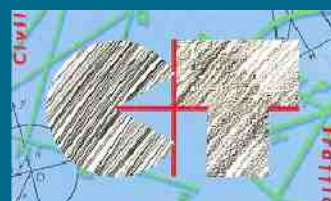


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Traffic Impact Assessment  
Proposed Residential Development at  
40-42 & 48 Newcombe Street Drysdale





## **Traffic & Parking Impact Assessment for** Proposed Residential Development at 40-42 & 48 Newcombe Street Drysdale

*Author- Kevin J Flynn*

**Project: CAT – 13-2015**

**June 2015**

| <b>Revision</b> | <b>Date</b> | <b>Amendments</b> |
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## Appendices

Appendix A – Concept Subdivision Layout Plan

# 1 Traffic Impacts Summary

A planning permit is sought to develop residential allotments at 40–42 & 48 Newcombe Street Drysdale. The land at 40-42 Newcombe Street is currently occupied by a water pump station. The land at 48 Newcombe Street is currently vacant.

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 extension and widening of Elgin Street and the provision of a vehicle turning facility in the cul-de-sac.

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

## Summary – Residential Development, 40-42 & 48 Newcombe St

|   |   |
|---|---|
| <b>Address Site:</b>                          | 40-42 Newcombe Street, Drysdale. Zoned Public Use Zone 1 (PUZ1) under the Greater Geelong Planning Scheme (GGPS). 48 Newcombe Street is zoned General Residential Zone Schedule 1 (GRZ1) under the GGPS.  |
| <b>Road Hierarchy:</b>                        | Newcombe Street and Elgin Street are unsealed local access streets under the care and management of the City of Greater Geelong. The maximum average daily two-way traffic flows are estimated at 100 vehicles per day.   |
| <b>Existing Use:</b>                          | Water pumping station / vacant land.  |
| <b>Proposed Use:</b>                          | Residential development including 10 residential allotments, a reserve for pump station and buffer reserve.   |
| <b>Crash History:</b>                         | In the last five years of VicRoads crash data, there are no recorded crashes on the local road network in the vicinity of the subject site.   |
| <b>Traffic Generation &amp; Distribution:</b> | The residential development will generate up to 96 vehicle trips per day when fully occupied with approximately 10 vehicles per hour in the peak periods. It is considered that all generated traffic will distributed to the wider road network through Elgin Street north of Newcombe Street.   |
| <b>Traffic Impacts:</b>                       | The generated traffic is minimal and will have negligible impact on the operating efficiency of the local road network.   |
| <b>Elgin Street Design and Access</b>         | The design of Elgin Street (south) shall accord with the "Access Lane" road category under the GGPS, and shall comply with the relevant Austroads / VicRoads road design guides and the Infrastructure Design Manual. The design shall include a "Hammer Head" turning facility that will accommodate the swept path of a 12m SU Truck / Bus vehicle being the largest vehicle expected to access the allotments. |

|                |   |
|----------------|---|
| <b>Parking</b> | Adequate parking shall be provided to conform to the Planning Scheme requirements for residential developments. |
|----------------|---|

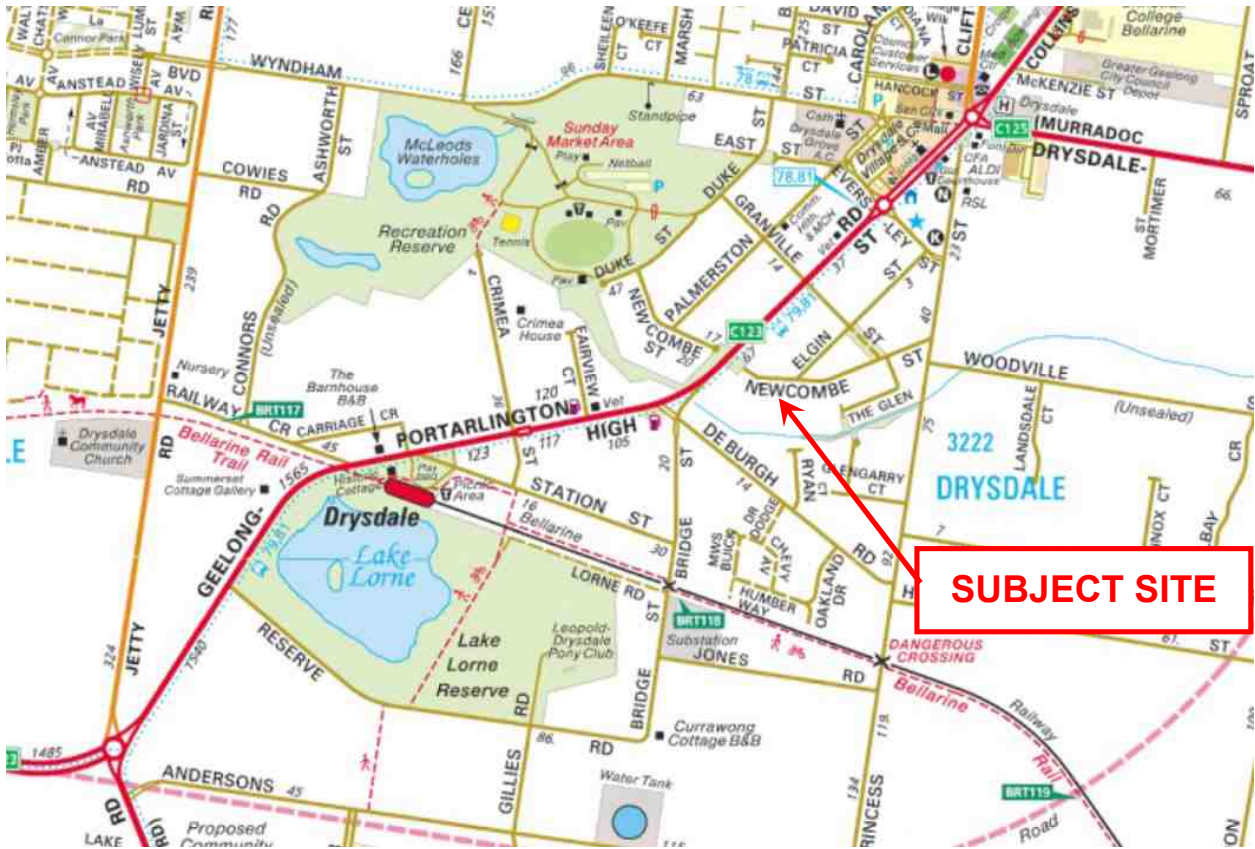


Figure 1 – Locality Plan of Subject Site – 40-42 Newcombe Street

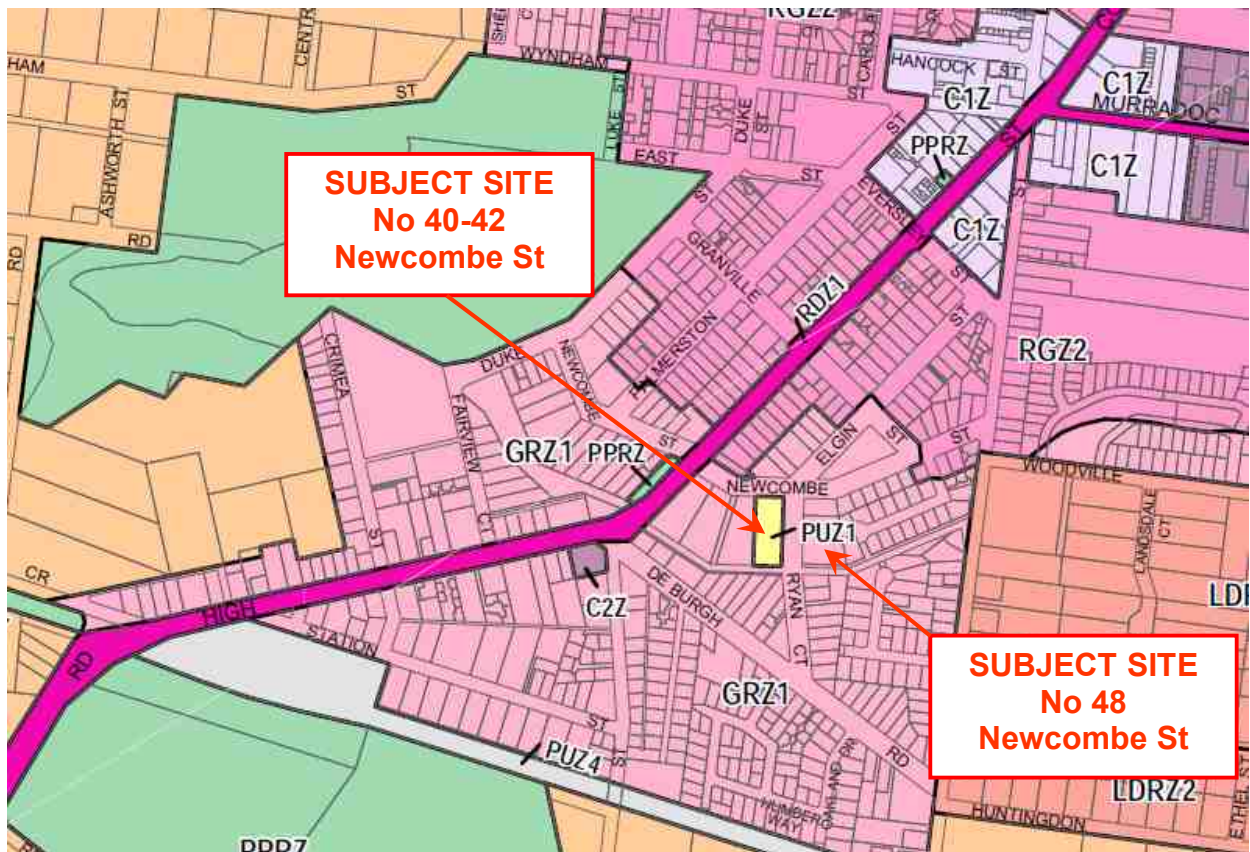


Figure 2: Zoning Plan.

## 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 40–42 Newcombe Street and part of 48 Newcombe Street, Drysdale into residential allotments.

This report is based on a traffic and parking assessment of the development plan prepared by St Quentin P/L (dated September - 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 40–42 Newcombe Street and part of 48 Newcombe Street in Drysdale.

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:

- Ten (10) residential allotments across the two land parcels with:
  - i) Six (6) allotments at 40-42 Newcombe St ranging in size from 411m<sup>2</sup> to 576m<sup>2</sup>;
  - ii) Four (4) allotments at 48 Newcombe St ranging in size from 1,006m<sup>2</sup> to 1,052m<sup>2</sup>;
- A reserve of 726m<sup>2</sup>, on the north-east corner of subject site (Newcombe St and Elgin St intersection), for the purposes of retaining the existing Barwon Water pumping station;
- A reserve of 206m<sup>2</sup> on the southern boundary of the subject land (west side of Elgin Street) for the purposes of providing a buffer between the allotments and the existing adjacent drainage channel;
- Allotment No 1 on the west parcel will be accessed from Newcombe Street and the remaining allotments will be accessed from Elgin Street;
- The Elgin Street cul-de-sac will be widened and extended to provide access to the allotments. A “Hammer Head” turning facility will be provided at the southern terminal of Elgin Street.

*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 allotments are proposed to be subdivided from Barwon Water land at No 40-42 Newcombe Street and No 48 Newcombe Street, in Drysdale.

The subject land at No 40-42 Newcombe Street on the south-west corner of Newcombe Street and Elgin Street, Drysdale. The southern half of 4,087m<sup>2</sup> site is not fenced (open grassland). The subject site is flanked on north side by Newcombe Street (gravel road), on the east side by the extension of Elgin Street (unmade), on the south side by an

existing drainage channel reserve and on west side by allotment No 36 - 38 Newcombe Street. The site is zoned as Public Use Zone 1 (PUZ1) under the Greater Geelong Planning Scheme.

The subject land at No 48 Newcombe Street is the vacant land at rear of existing residence with access to Elgin Street. The site is zoned as General Residential Zone Schedule 1 (GRZ1) under the Greater Geelong Planning Scheme.

The proposed development is situated approximately 530m driving / walking / cycle distance to the commercial area of Drysdale. The existing Barwon Water pump station which will be retained on a reserve as part of this development.

*Refer to Figures 1 & 2 above for locality plan.*

## 4 The Existing Road Network

Both Newcombe Street and Elgin Street, fronting the subject site are gravel roads and could be classified as “Access Place” under Clause 56.06 of the Greater Geelong Planning Scheme (GGPS). Both 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.

### 4.1 Newcombe Street

The Newcombe Street is an un-sealed carriageway approximately 6m wide with grassed verges on a 28.7m wide road reserve. Shallow road side drains flank both sides of the road. There are no constructed footpaths. The road forms a cul-de-sac to the west and vehicle access to High Street is prevented. Pedestrian and cycle access to High St is provided. The subject length of Newcombe Street provides access to five residential properties, west of Elgin Street.

There are no traffic counts available for this section of Newcombe Street however with consideration to the number of residences, the two-way traffic volume is expected to be very light and estimated to be in the order of 100 vehicles per day (or 10 vehicles in the peak hour periods).

Newcombe Street has priority at the intersection with Elgin Street with a Give Way sign facing north along Elgin Street.

### 4.2 Elgin Street

The extension of Elgin Street past the subject site is a narrow gravel track approximately 3m wide on a 30m road reserve. Elgin Street south (past the subject site) provides existing access to the subject site and to an existing residence at No 44–48 Newcombe Street (opposite the subject site). Progress on the gravel road for motorists is terminated past the No 44–48 residential entry with a “No Road” sign. The gravel track extends southwards past the “No Road” sign to the drainage reserve gate, providing access for maintenance vehicles and pedestrian access to Ryan Court.

The existing traffic volume of Elgin Street, south of Newcombe Street, is expected to be very light in the order of 15 vehicles per day at maximum. Considering the local street layout and access routes, the traffic volume of Elgin Street, north of Newcombe Street is expected to be in the order of approximately 300 vehicles per day or 30 vehicles in the peak hour periods.

### 4.3 Public Transport - Buses

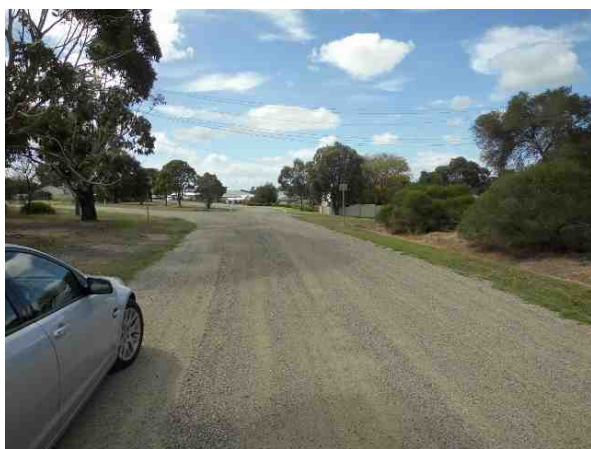
Routes 79 and 81 of the Bellarine Peninsula bus network operate along High Street Drysdale, approximately 140m west of the subject site, providing several services daily to Geelong and other communities on the Bellarine Peninsula. Bus stops are located both sides of High Street approximately 60m south of Granville Street, approximately 275m from the subject site.

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

## 4.4 Road Safety

The established method of assessing road safety is analysing the record of casualty crashes that is maintained by VicRoads (Police reports). The road safety record in the vicinity of the subject site is excellent. In the last five years of records from the VicRoads Crash-Stats website (Jan 2008 to Dec 2012), there have been no casualty crashes in the vicinity of the subject site. A good road safety record should not indicate that the road network adjacent to the subject site will always operate safely.

## 4.5 Photographs



**Photo 1:** Looking east along Newcombe Street towards the Elgin Street intersection. The subject site frontage is at right of picture.



**Photo 2:** Looking west along Newcombe Street from the Elgin Street intersection. The subject site is at left of picture.



**Photo 3:** Looking south along Elgin Street from Newcombe Street. The subject site and the existing access driveway are at right of picture.



**Photo 4:** Looking north along Elgin Street from the drainage reserve. 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 ten (10) proposed residential allotments of this development will generate up to approximately 90 vehicle trips per day with 9 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 pump station 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 60 vehicle trips per day with 6 trips in the peak hour periods as indicated in the following Table.

| LAND USE      | NUMBER | TRIP RATE | DAILY TRIPS | PEAK HR TRIPS |
|---------------|--------|-----------|-------------|---------------|
| Allotments    | 10     | 9         | 90          | 9             |
| Pump Station  | 1      | 6         | 6           | 1             |
| <b>TOTALS</b> |        |           | <b>96</b>   | <b>10</b>     |

**Table 1 – Traffic Generation**

It is important to note that the estimated traffic volumes above are at the higher end of demand for the ten (10) residential allotments and the pump station 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, and the Drysdale shopping centre. It is considered that all generated traffic will be distributed to Elgin Street, north of Newcombe Street and the estimated peak hour volume of 10 vehicles per hour will have negligible impact on the performance and safety of the local road network.

### 5.2 Extension of Elgin Street

It is proposed to extend and widen Elgin Street (south) in the current informal nature to provide access to all allotments. The road cross section shall conform to the requirements of the Greater Geelong Planning Scheme, the Infrastructure Design Manual (IDM) and the relevant Austroads / VicRoads guides. It is considered that

widening of the existing carriageway to 5.5m is appropriate and shall accord with the “Access Lane” category under the Planning Scheme.

Design of the roadway shall ensure vehicles can enter and exit the cul-de-sac in a forward manner. Kerb radii at intersections shall comply with the IDM and road alignment curves / bends shall accord with the Austroads guides. It is important that the new road and “Hammer Head” turning facility is designed to accommodate, at minimum, service vehicles and emergency service vehicles including CFA tankers.

### 5.3 Access to Allotments

Access to allotment No 1 will be provided on Newcombe Street with access to the remaining allotments provided on Elgin Street. Access to the pump station will remain in its current location on Elgin Street. The construction of each access driveway shall consider appropriate road side drainage and discharge.

Access 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.

### 5.4 Pedestrians & Cyclists

There are no constructed footpaths on the local road network. The wide grassed verges adjacent to road carriageways provide ample off-road space for the occasional pedestrian or cyclist.

It is considered that at some point in the future Council will initiate a local area scheme to provide sealed roadways, underground drainage and improved pedestrian / cycle facilities.

### 5.5 Waste Collection

It is proposed that the existing kerbside waste collection service operated by Council will be extended to include the new allotments, particularly in Elgin Street. The “Hammer Head” turning facility at the southern terminal of Elgin Street shall be designed at minimum to accommodate the turning path of a typical waste collection vehicle.

Elgin Street (south) is subject to a steep grade of approximately 1 in 10. Although this grade is suitable for light vehicles, Council may consider Elgin Street unsuitable for large vehicles and require an alternative waste collection system to be determined.

## 5.6 Sight Distance – Access Driveway

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

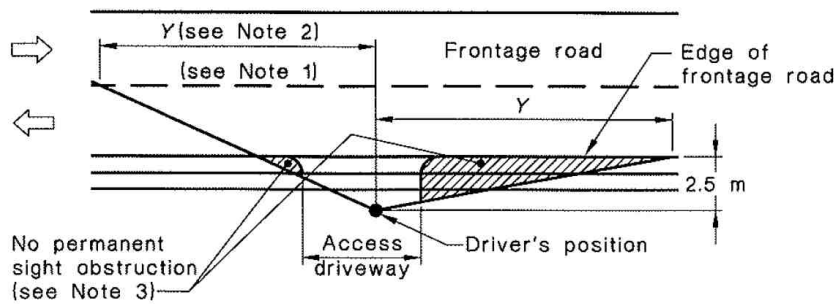
Appropriate sight distance will be evaluated against criteria for private access driveways set out in Australia/New Zealand Standard AS/NZS 2890.1 Part 1: “Off-street Car Parking” – Section 3.2.4.

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.

### 5.6.1 Entering Sight Distance

Entering Sight Distance (ESD) requires driveways to be located so that the sight distance along the frontage road available to drivers leaving a driveway complies with the minimum criteria of AS/NZS 2890.1, represented in Figure 3. The table included in Figure 3 indicates that ESD should be 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<br>(Note 4)<br>km/h | Distance (Y) along frontage road<br>m         |                |  |
|---|---|----------------|--|
|   | Access driveways other than domestic (Note 5) |                | Domestic property access (Note 6)                              |
|   | Desirable<br>5 s gap                          | Minimum<br>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 2 <sup>nd</sup><br>and 3 <sup>rd</sup> columns |
| 100                                     | 139   | 160            |  |
| 110                                     | 153   | 190            |  |

**NOTES:**

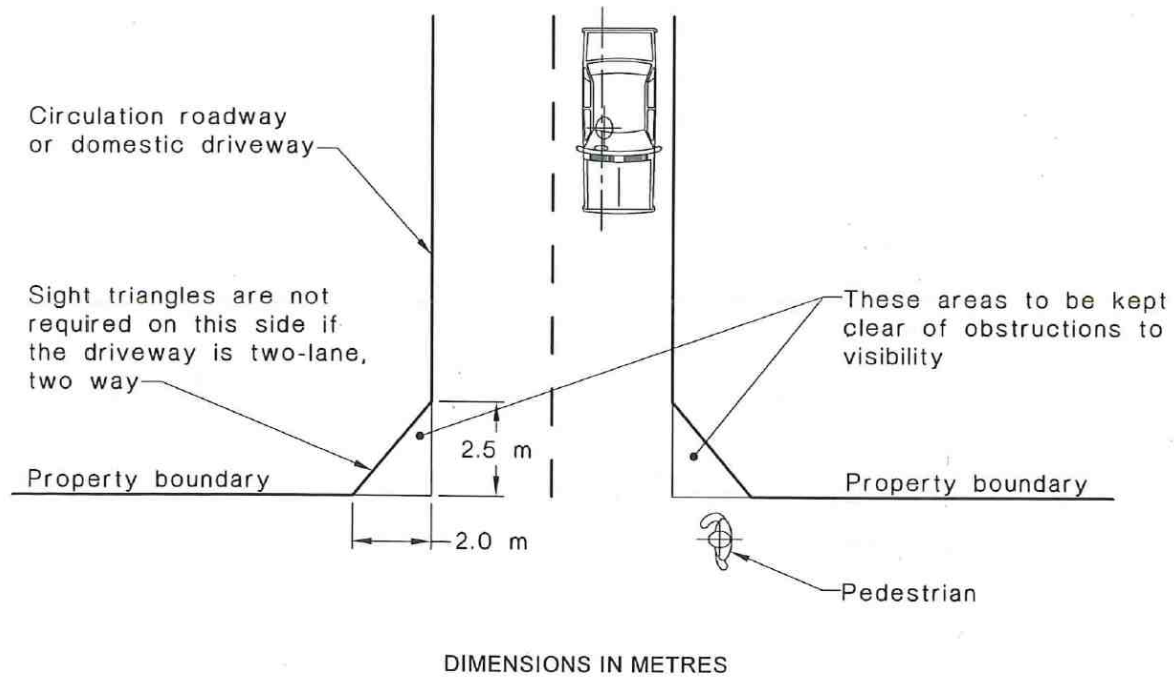
- 1 Centre-line or centre of road (undivided road), or right hand edge of right hand through lane (divided road).
- 2 A check to the left is not required at a divided road where the median is wide enough to shelter a vehicle leaving the driveway.
- 3 Parking on this side of the frontage road may need 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 85<sup>th</sup> percentile speed is more than 5 km/h above the limit in which case the tabulated speed nearest the 85<sup>th</sup> 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 stem 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**

**5.6.2 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**

## 5.7 Public Lighting

There is an existing street light on the north-west corner of Elgin Street and Newcombe Street. Council should investigate to determine if the current lighting level at this intersection conforms to 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 road-side.

## 7 Conclusions

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

1. The proposed residential development at 40–42 Newcombe Street & 48 Newcombe Street, Drysdale will generate approximately 96 vehicle trips per day with approximately 10 trips in the peak hour period. The trips will be distributed to the local street network, generally along Elgin Street, north of Newcombe Street;
2. It is highly likely that the net generated traffic from the development as calculated above will be reduced considering the proximity of the bus stops on High Street and the proximity of the Drysdale shopping centre;
3. The generated traffic flows on average will be approximately 1 vehicle every 6 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 Newcombe Street and Elgin Street 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 carriageway of Elgin Street south shall be widened and extended to conform with an "Access Lane" category as defined in Clause 56.06 of the Greater Geelong Planning Scheme;
6. The extension works on Elgin Street shall include a "Hammer Head" turning facility designed to accommodate, at minimum, service vehicles and emergency service vehicles including CFA tankers;

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;

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# Appendix - A

## CONCEPT LAYOUT PLAN



**Figure A.1 – Concept Subdivision Plan – Residential Development 40-42 & 48 Newcombe Street**

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