

# Traffic and Transport Assessment

Austin Street, Winchelsea

V181663



Prepared for  
TGM

16 October 2020

PLANNING & ENVIRONMENT ACT 1987  
SURF COAST PLANNING SCHEME  
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43.04 of the Surf Coast Planning Scheme

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## Document Control

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# 1 Introduction

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Cardno was retained by TGM to undertake a traffic engineering assessment for the development of the land at 135-235 Austin Street, Winchelsea.

In the course of preparing this assessment, the subject site and its environs have been inspected, and all relevant traffic data collated and analysed.

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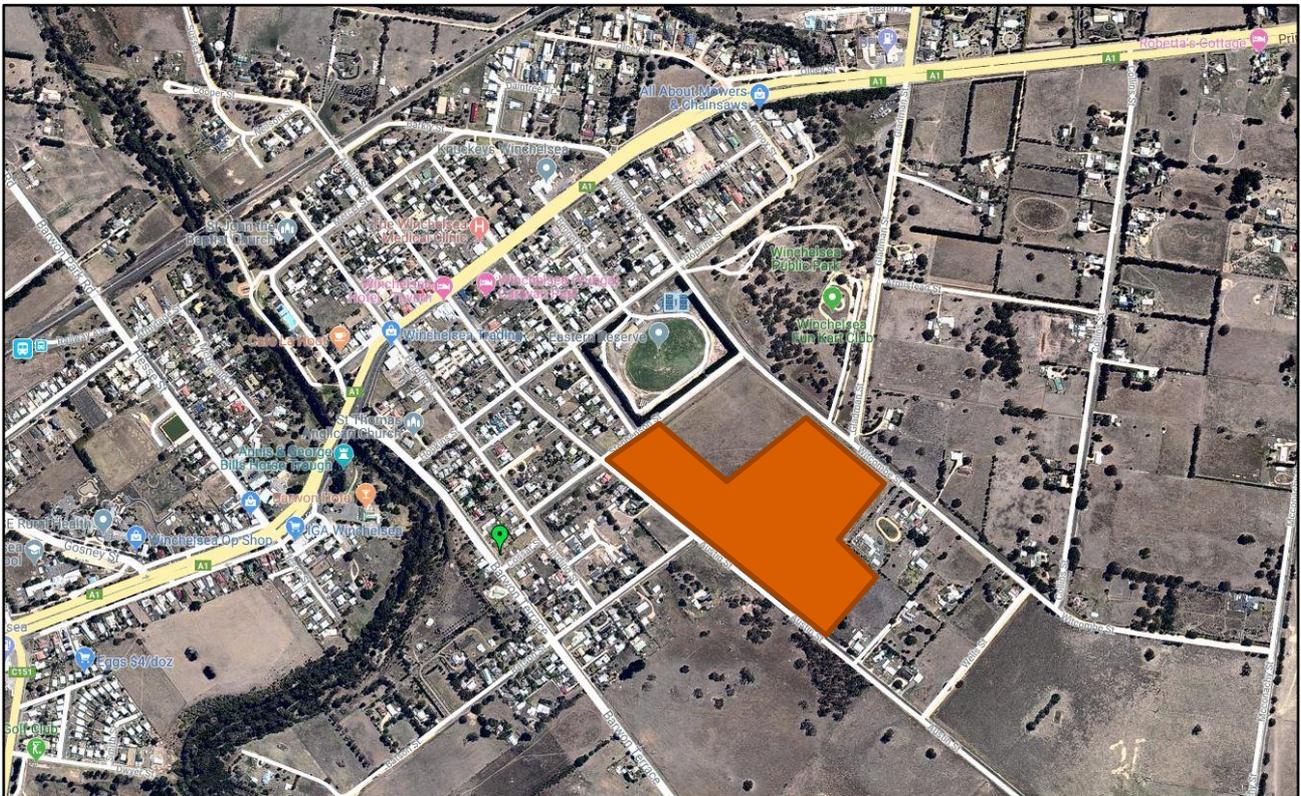
## 2 Background and Existing Conditions

### 2.1 Location and Land Use

The subject site is located at the eastern side of the town of Winchelsea, to the south of the Princes Highway, as shown in Figure 2-1. The subject site has a total area of approximately 9 hectares, with frontages to Austin Street to the south-west, Witcombe Street to the north-east and Stephenson Street (part) to the north-west.

Land surrounding the subject site is generally low density residential to the south, west and east, with recreational land to the north. The site is currently vacant.

Figure 2-1 Subject Site



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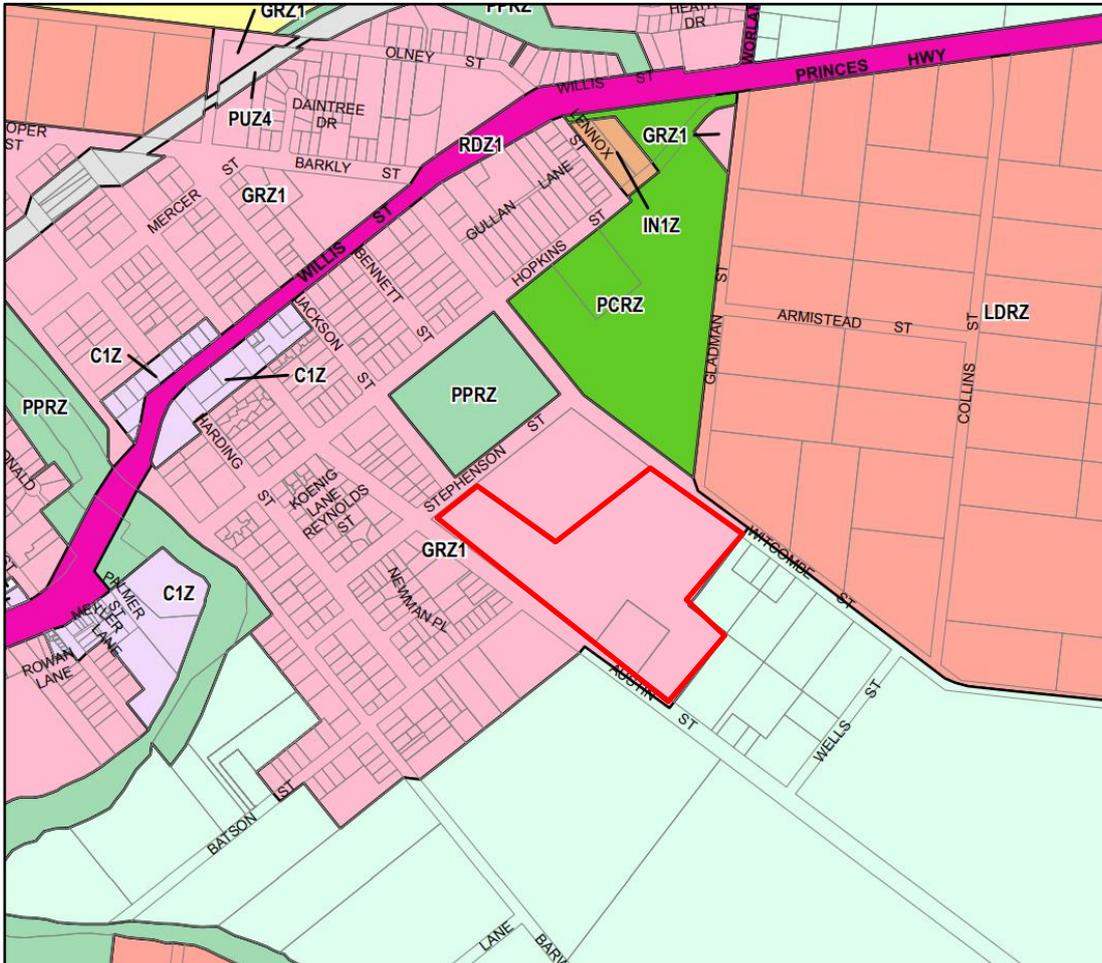
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## 2.2 Planning Zones

Figure 2-2 shows the current planning scheme zones for the site within the Surf Coast Planning Scheme. It can be seen that the site lies within a General Residential Zone, surrounded by Low Density Residential Zone, Farming Zone, Public Park and Recreation Zone and Public Conservation and Resource Zone.

**Figure 2-2 Surf Coast Planning Scheme Zones**



## 2.3 Future Road Network

The upgrade of the Princes Highway is currently nearing completion, which includes:

- > Duplication between Waurm Ponds and Winchelsea
- > Duplication between Winchelsea and Colac (near the subject site)
- > Safety improvements between Colac and Mt Gambier

The project is currently being delivered by the Major Road Projects Authority (MRPA), with sections of the upgrade from Waurm Ponds to Colac completed in 2019. The road features two traffic lanes in each direction, separated by a central median.

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## 2.4 Winchelsea Structure Plan

The Winchelsea Structure Plan 2021 sets out principles and strategies to guide the growth of Winchelsea and the surrounding district through to the year 2021. It is proposed under the Structure Plan to add over 559 dwellings within Winchelsea to effectively double the number of residences in the town.

The Winchelsea Structure Plan 2021 identified the area proposed to be developed as located within Site 2.

Recommendations within the Structure Plan pertaining to Site 2 include:

- > Traffic Impact Assessment should be undertaken for each development stage and countermeasures applied to the existing road network to improve road traffic and pedestrian safety (Development Stage);
- > The proposed eastern traffic link should be established in the first stage of Site 2 and enhanced as further development occurs. This is to be constructed to the minimum standard of a collector street;
- > The application of traffic management measures may be delayed in light of area wide applications. In this instance the developer may make cash contribution to the future cost of such measures (Development Stage);
- > Surf Coast Shire and VicRoads to cooperate in developing a future traffic management plan of the Princes Highway through the township (5 year action);
- > Surf Coast Shire to develop the long term traffic management plan for the Winchelsea Township (10 year action);
- > Surf Coast Shire to manage the development of the eastern link road to the minimum standard of a collector street (15 year action);
- > VicRoads and Surf Coast Shire to coordinate the upgrading of the Princes Highway/Gladman Street/Inverleigh Road intersection to provide, at minimum, exclusive turning lanes (15 year action).
- > VicRoads and Surf Coast Shire to coordinate the upgrading of the Princes Highway/Gladman Street/Inverleigh Road intersection to accommodate traffic signals (20 year action).

## 2.5 Development Plan Overlay

The Surf Coast Planning Scheme DPO13, specifies that a Road Network and Traffic Management Plan must be provided for the proposed development.

The Road Network and Traffic Management Plan forms part of this document and outlines:

- > A network designed to reduce traffic speeds and promote community interaction and use of the road reserve. It should comprise a predominantly grid based layout modified for topographical conditions (court bowls should not be provided except where they create a pedestrian linkage to adjoining streets). The network design is to cater for vehicles, pedestrians and cyclists.
- > A connector street to link Gladman Street, which will become the connector route to the Princes Highway for this residential growth area.
- > Street frontages to areas of public open space to maximise the surveillance of public areas.
- > Pedestrian and cycle routes to link ~~with the extension of Eastern Reserve, and the Princes Highway for the length of the Austin Street property frontage.~~

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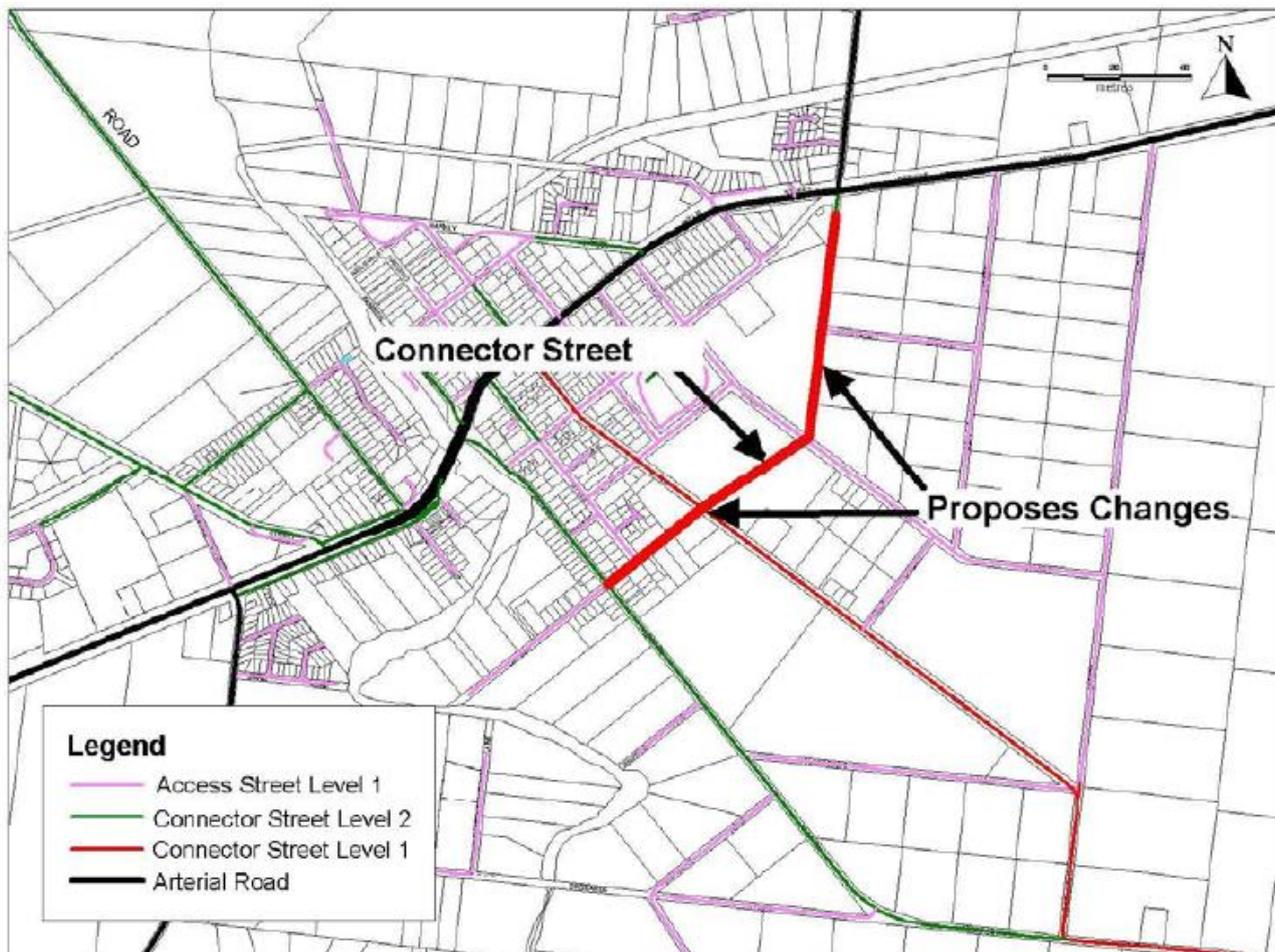
## 2.6 Winchelsea Growth Area Outline Development Plan

The Winchelsea Growth Area Outline Development Plan further defines the ultimate road network surrounding the site.

This document nominated Austin Street, Gladman Street and Batson Street in the vicinity of the site as Connector Street Level 1 (to facilitate access to Princes Highway), while Stephenson Street and Witcombe Street as Access Street Level 1.

A right turning lane was required by VicRoads at the intersection of Princes Highway/Austin Street to facilitate west to south right turns.

**Figure 2-3 ODP Road Hierarchy**



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## 2.7 Existing Road Network

### 2.7.1 Austin Street

Austin Street is a local road that runs north-south between Barkly Street and McConachy Street, Winchelsea, along the western boundary of the site.

In the vicinity of the subject site, Austin Street provides a 30m road reserve, with varying carriageway widths. The original carriageway width allows for a seal of approximately 6.5m with no kerbs, however, recent development has widened the west side of Austin Street immediately north of Batson Street, to provide for an additional parking lane and associated kerb.

Ultimately Austin Street is to be of Connector Street Level 1 standard, with parking lanes and kerbs on both sides of the road, and shared/footpaths provided.

A speed limit of 50km/h is provided in the residential area of Austin Street, while the non-residential section has an 80km/h speed limit.

**Figure 2-4 Austin Street, looking south-east past the subject site**



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## 2.7.2 Stephenson Street

Stephenson Street is a local road that runs east-west between Harding Street and Witcombe Street, Winchelsea, along the northern boundary of the site.

In the vicinity of the subject site, Stephenson Street provides a 30m road reserve, with carriageway widths of approximately 5.5m with no kerbs. Stephenson Street is sealed between Harding Street and Jackson Street and unsealed between Jackson Street and Witcombe Street

Ultimately Stephenson Street is to be of Access Street Level 1 standard, with a 7.3m carriageway width allowing for parking and through traffic, supplemented by kerbs and footpaths on both sides.

A speed limit of 50km/h applies on Stephenson Street.

**Figure 2-5 Stephenson Street, looking south-west past the subject site at Jackson Street**



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### 2.7.3 Witcombe Street

Witcombe Street is a local road that runs north-south between Princes Highway and McConachy Street, Winchelsea, along the eastern boundary of the site.

In the vicinity of the subject site, Austin Street provides a 30m road reserve, with a sealed carriageway width of approximately 5.5m with no kerbs. A shared path exists on the eastern side of the road between Gladman Street and the Princes Highway

Ultimately Witcombe Street is to be of Connector Street Level 1 standard, with parking lanes and kerbs on both sides of the road, and shared/footpaths provided.

A speed limit of 50km/h is provided in the area of Witcombe Street adjacent the sports reserve, while the section south of Stephenson Street has an 80km/h speed limit.

**Figure 2-6 Witcombe Street, looking south-east past the subject site**



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#### 2.7.4 **Gladman Street**

Gladman Street is a local road that runs north-south between Princes Highway and Witcombe Street, Winchelsea, near the eastern boundary of the site.

In the vicinity of the subject site, Gladman Street provides a 20m road reserve, with an unsealed carriageway width of approximately 6m with no kerbs.

Ultimately Gladman Street is to be of Connector Street Level 1 standard, with parking lanes (where required) and kerbs on both sides of the road, and shared/footpaths provided.

A speed limit of 80km/h is currently provided along Gladman Street.

**Figure 2-7 Gladman Street, looking south towards Witcombe Street**



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### 2.7.5 Batson Street

Batson Street is a local road that runs east-west between Austin Street and the Barwon River, Winchelsea, near the western boundary of the site.

In the vicinity of the subject site, Batson Street provides a 20m road reserve, with a sealed carriageway width of approximately 5.5m with kerbs in the vicinity of Austin Street. No footpaths are currently provided along Batson Street.

Ultimately Batson Street, east of Barwon Terrace, is to be of Connector Street Level 1 standard, with parking lanes (where required) and kerbs on both sides of the road, and shared/footpaths provided.

A speed limit of 50km/h is provided along Batson Street.

**Figure 2-8 Batson Street, looking west from Austin Street**



### 2.7.6 Princes Highway

The Princes Highway is a primary arterial road that forms part of Federal Highway Route 1 throughout Australia. Locally, the Princes Highway provides connection between Geelong and Colac. The Princes Highway generally provides two traffic lanes in each direction through the Winchelsea town, separated by a central median and supplemented by various turning lanes and signalised intersections.

Princes Highway is currently being duplicated between Winchelsea and Colac, with all works expected to be completed in 2020.

Near the subject site, a speed limit of 60km/h applies.

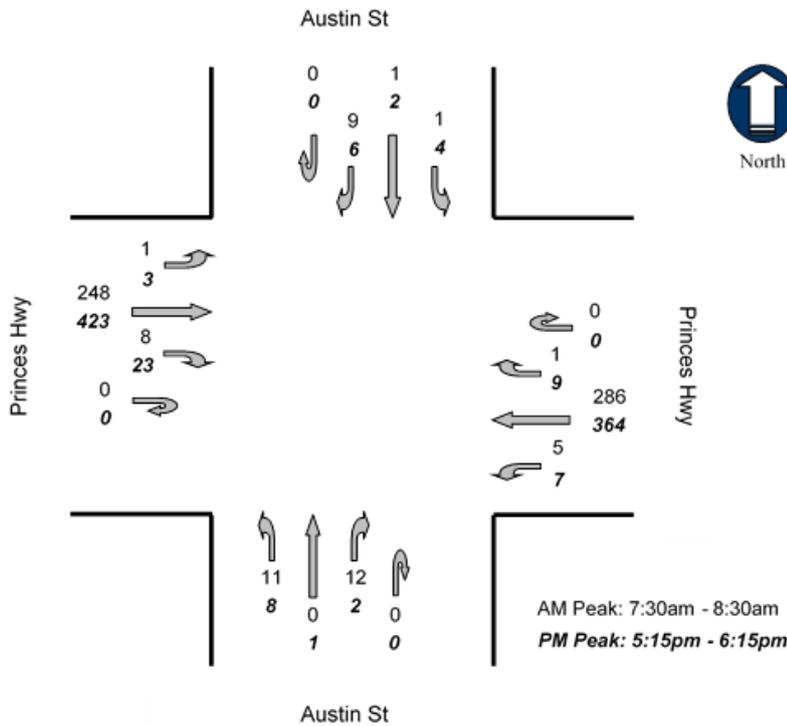
Right turn lanes are provided within the Princes Highway median at Austin Street, Witcombe Street, Gladman Street and various other local streets, with a left turn deceleration lane also provided at Gladman Street.

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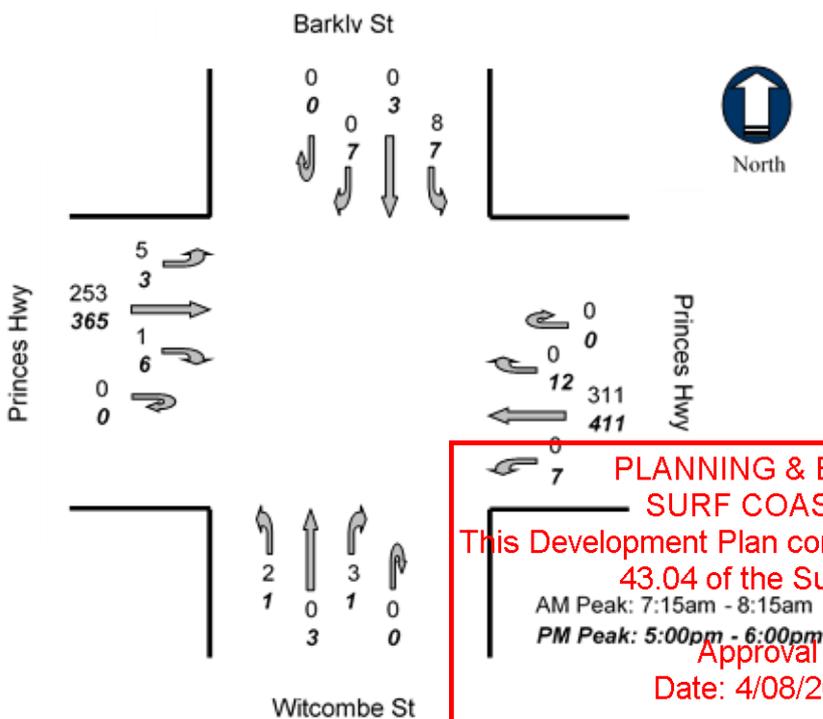
## 2.8 Traffic Surveys

Cardno undertook traffic movement surveys at the intersections of Princes Highway with Austin Street and Witcombe Street during peak traffic periods on 26 June 2019. The results of these surveys are shown below in Figure 2-9 and Figure 2-10.

**Figure 2-9 Austin Street Intersection Traffic Surveys**



**Figure 2-10 Witcombe Street Intersection Traffic Surveys**



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## 2.9 Public Transport, Pedestrian and Bicycle Networks

The site is located approximately 1,200 metres from Winchelsea Railway Station, which is to the north-west of the site. Services generally run between Geelong and Warrnambool four times a day in each direction.

The site has typical access to pedestrian and bicycle networks for a rural town setting, with some footpaths provided in residential areas, but otherwise limited.

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# 3 Proposed Development

## 3.1 General

It is proposed to develop the site for the purposes of a residential development which will accommodate 126 lots. The indicative plan of subdivision is shown in Figure 3-1.

**Figure 3-1 Proposed Plan of Subdivision**



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### 3.2 Road Layout and Access

Access to the site will be integrated within the existing road network, with the following access points proposed:

- > Stephenson Street (one Access Street);
- > Austin Street (one Connector Street and two Access Streets);
- > Witcombe Street (one Connector Street and one Access Street); and,
- > Future Connections to South-East (two Access Streets).

Access Streets within the subdivision will have a 16 metre road reservation, which is sufficient to accommodate a 7.3 metre carriageway, catering for two-way traffic flow, pedestrian paths and sufficient width for kerbside vehicle parking. The Access Streets meet the dimension requirements of the Infrastructure Design Manual (IDM). Where an access street abuts the open space reserve and does not have a residential frontage, a 14m road reserve has been adopted.

A Connector Street forms part of the “Eastern Traffic Link” between Batson Street and Gladman Street. This Connector Street is proposed within a 20.4 metre road reservation, which is sufficient to provide an 11.6m carriageway (i.e. a 3.5m through lane and 2.3m parking lane in each direction), supplemented by verges inclusive of a shared path.

Each property within the subdivision will be provided with a driveway crossover to gain access to their dwelling.

Figure 3-2 shows the access and circulation around the proposed site.

**Figure 3-2 Access and Circulation**



Sight distances at all intersections along Austin Street, Stephenson Street and Witcombe Street have been reviewed, with all proving satisfactory.

### 3.3 Pedestrians, Cyclists and Public Transport

Pedestrians are to be provided for via footpaths along both sides of the street at most residential frontages, with the exception of streets adjacent to the reserve which will be provided with footpaths along the lot frontages only. A 2.5m wide shared path will be provided on along the west side of the Connector Street, north side of Austin Street and east side of Stephenson Street along the frontages.

The Connector Street is designed to be bus capable, with a 3.5m lane in each direction.

### 3.4 Parking

On street parking is able to be accommodated along the residential street frontages of all internal roads. A 7.3m carriageway width allows for parking on either side of each of the Access Streets, inclusive of the streets adjacent to the reserve. The connector street allows for indented parking on either side of the road. A visitor parking rate of at least one space per lot on-street is expected to be easily achieved.

### 3.5 Garbage Collection and Emergency Vehicle Access

Garbage collection is expected to be undertaken from the kerbside areas of all Access Streets and Connector Streets. All road carriageway widths meet or exceed the minimum Planning Scheme requirements and therefore are considered appropriate.

Provision for CFA vehicles has been allowed for with the road cross sections adopted. The minimum carriageway widths required by the CFA are exceeded for all street classifications represented.

### 3.6 Intersections, Street Lengths and Slow Points

All intersections of streets classified as Access Streets or below are proposed to be configured as 'Give-way' controlled T-intersections, which will provide appropriate control for a residential development of this size. 3m x 3m splays are recommended to be incorporated into the design of the intersections to increase sightlines and improve safety. The intersections have been aligned to minimize skew and facilitate adequate sight lines.

Where internal circulating roads have lengths exceeding approximately 200m in length, slow points are to be incorporated into the design, with the type of treatment to be determined within the detailed design. The section road length of the Connector Street is greater than 200m and a traffic management measure, such as a speed hump or speed cushion is proposed, subject to approval by the Council. It is of note that all roads are likely to have on-street parking occurring at regular intervals to further reduce traffic speeds on the local street network.

A cross intersection is proposed at the intersection of Witcombe Street and Gladman Street. In order to reduce the likelihood and severity of crashes at this intersection, treatments such as a roundabout, offset approaches, splitter islands could be considered as part of the detailed design of the subdivision.

### 3.7 Development Plan Overlay Compliance

The subject site is subject to Schedule 13 of the Development Plan Overlay as outlined within the Surf Coast Planning Scheme. The following items were required to be addressed

- > A network designed to reduce traffic speeds and promote community interaction and use of the road reserve. It should comprise a predominantly grid based layout modified for topographical conditions (court bowls should not be provided except where they create a pedestrian linkage to adjoining streets). The network design is to cater for vehicles, pedestrians and cyclists.

The site generally provides for a modified grid network throughout, suitable for vehicles, pedestrians and cyclists. A cul-de-sac area is provided from the road adjacent to the reserve, with footpaths on either side allowing pedestrian access to the broader road network in the subdivision. The proposed internal road network is considered to provide a good level of service to all parts of the site.

- > A connector street to link Gladman Street, which will become the connector route to the Princes highway for this residential growth area.

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A Connector Street is provided east-west through the site to form part of the route towards the Princes Highway.

- > *Street frontages to areas of public open space to maximise the surveillance of public areas.*

The reserve has street/lot frontages on both the western and southern sides to provide for passive surveillance.

- > *Pedestrian and cycle routes to link with the extension of Eastern reserve, and the Princes Highway for the length of the Austin Street property frontage.*

Footpaths are to be provided internally along the Access Streets within the site, with a shared path proposed along the Connector Street (as part of the Princes Highway connection). At the Austin Street frontage of the site, a shared path is also to be provided at the site frontage.

### **3.8 Upgrades to the Existing Road Network**

As part of the development, the road frontages of Austin Street, Stephenson Street and Witcombe Street would be upgraded to urban standards, inclusive of the following:

#### **3.8.1 Austin Street**

Widening of the carriageway on the east side only to provide for a parking lane, kerb and channel, and an off-road shared path.

#### **3.8.2 Witcombe Street**

Widening of the carriageway on the west side only to provide for a parking lane, kerb and channel, and a footpath / shared path. Further to this, a roundabout is proposed at the intersection of Gladman Street / Witcombe Street, subject to Council approval. It is recommended the roundabout be designed in accordance with Austroads guidelines, with a centre island of 10 metre radius, minimum 6.3 metre wide circulating carriageway and adequate sight lines to the centre island as well as to vehicles entering from the adjacent approach and circulating within the roundabout.

#### **3.8.3 Stephenson Street**

Widening of the carriageway on the south side only to provide for a carriageway widening, kerb and channel, and a footpath.

It is noted that the drainage, parking and footpath works would only be undertaken by the developer on the development side of the road only, similar to recent works undertaken on Austin Street and Batson Street in the vicinity of the site.

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## 4 Traffic Considerations

### 4.1 Traffic Generation

Guidance on traffic generation characteristics of residential developments is set out within the Victorian Code for Residential Developments, April 1992, which suggests in Table E9.1 that for:

*“single dwelling lots apply traffic generation rates of 10 vehicles per day per lot, equivalent to approximately 1 vehicle per hour in the peak hour, unless a lower rate can be demonstrated. Lower rates can be applied to multi-unit dwellings based on locally derived rates.”*

As a result, in assessing traffic generation associated with residential subdivisions, a rate of 10 vehicle movements per dwelling is considered the starting point, with reductions considered in light of connectivity to public transport, shopping, educational and employment opportunities in the surrounding areas. For example, in areas which enjoy higher levels of public transport accessibility, particularly those within walking distance of fixed rail services, research indicates that generation rates can reduce to around 8 vehicle movements per household.

However, in order to provide a robust assessment of the traffic impacts of the proposed subdivision, the full 10 vehicles per lot has been adopted for all dwellings, with 10% of those occurring during each of the morning and afternoon peak periods.

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.

Based on the foregoing, it is projected that the proposed residential development will produce 1260 movements per day, inclusive of 126 movements in the morning and evening peak hours.

Table 4-1 has been developed to detail the projected traffic generation in each peak hour.

**Table 4-1 Anticipated Traffic Generation and Distribution**

Period	In	Out	Total
AM Peak (vm/hr)	25	101	126
PM Peak (vm/hr)	76	50	126
Daily (vm/day)	630	630	1260

### 4.2 Traffic Distribution

To determine the traffic impacts for the proposed subdivision the following traffic distribution has been assumed, based on the location of schools, employment and recreational facilities:

- > Princes Highway centrally (Winchelsea) 25%
- > Princes Highway to the east (Geelong) 50%
- > Princes Highway to the west (Colac and Camperdown) 15%
- > Winchelsea – Deans Marsh Road to the south (Lorne) 10%

Based upon this anticipated traffic distribution, which is consistent with the projected traffic distribution for previous assessments for the land within Winchelsea, Figure 4-1 shows the anticipated peak hourly traffic volumes associated with the developed site.

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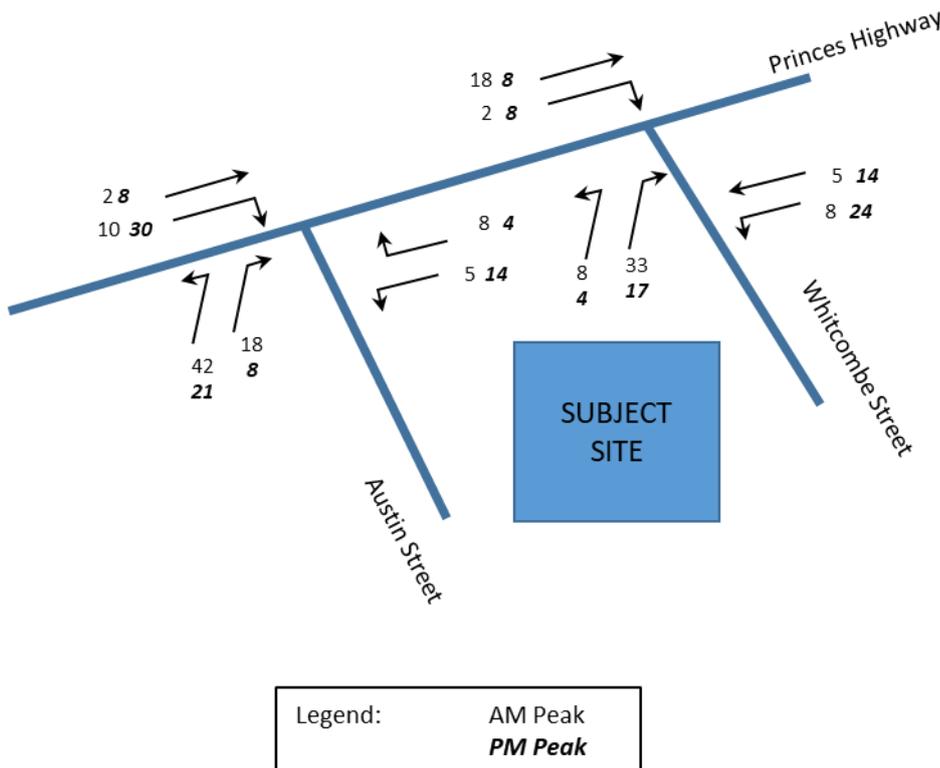
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**Figure 4-1 Projected Development Peak Hourly Traffic Volumes**



### 4.3 Traffic Analysis

As shown in Table 4-1, the traffic generation of the site will be less than 2.5 vehicle movements per minute during peak periods. The vast majority of traffic at Princes Highway will be split between at least two separate intersections (assuming Gladman Street is not used due to it being unsealed) and between inbound and outbound movements, with any individual traffic movement occurring at a frequency of far less than one movement per minute (Figure 4-1). The impact of the subject site will therefore be minimal in traffic engineering terms.

The duplication of the Princes Highway has been undertaken in line with extensive future planning for the Winchelsea township, inclusive of accommodating traffic generation associated with residential development within and around the township.

Channelised left and right turning treatments are currently provided at Gladman Street, with the strategy defined within the Winchelsea Structure Plan to ultimately signalise this intersection. The auxiliary right turn lanes at each Witcombe Street and Austin Street are the highest order of unsignalised turning treatment, and therefore no further upgrade is considered necessary as part of this development.

As such, it is considered that the layout of the intersections of Princes Highway with Austin Street, Witcombe Street and Gladman Street will more than adequately accommodate the additional traffic associated with the residential subdivision.

The surrounding local roads also have significant capacity, with the environmental capacity of these roads specified within the Infrastructure Design Manual. The indicative maximum for a Connector Street Level 1 is 6000 vehicles per day, while for an Access Street, the indicative maximum is 2500 vehicles per day. With development traffic, these roads will still operate well within capacity.

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## 5 Summary and Conclusions

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Based upon the investigations and assessments summarised in this report it is concluded that:

- > The proposed residential subdivision is anticipated to generate a total of 1260 vehicle movements per day, inclusive of 126 movements in the peak hours;
- > The impact of the subject site on traffic conditions is expected to be minimal in traffic engineering terms.
- > The traffic on surrounding roads is expected to remain within the environmental capacity guidelines.
- > The internal site layout is designed in accordance with Clause 52.06 of the Surf Coast Planning Scheme and IDM to provide adequately for vehicles, pedestrians and cyclist connectivity;
- > The duplication and upgrade of the Princes Highway near to the site will more than adequately cater for the traffic generation and distribution associated with the proposal, with turning lanes provided; and
- > The roads interfacing with the proposed development will be upgraded to urban standards on one side of the road (development side).

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Austin Street, Winchelsea

APPENDIX

A

PROPOSED CROSS SECTIONS

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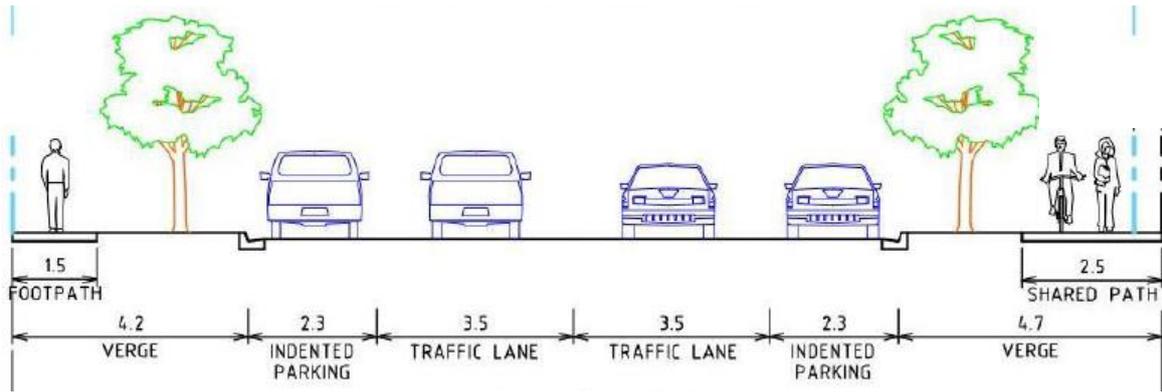
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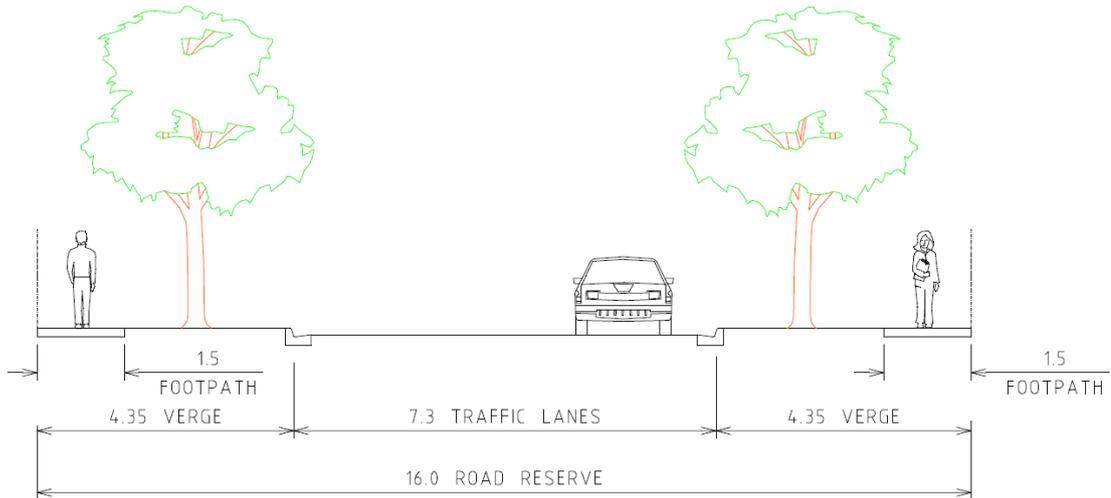
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**CONNECTOR STREET**  
**20.4m ROAD RESERVE**



**ACCESS STREET**  
**16m ROAD RESERVE**

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