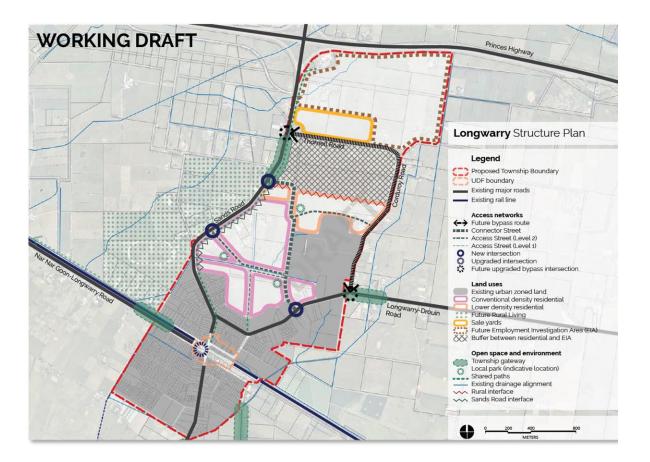


# **Transport & Traffic Engineering Advice**

# Longwarry Structure Plan



# Echelon Planning January 2022

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# 1 INTRODUCTION

#### 1.1 Background

Transport & Traffic Solutions Pty Ltd (T&TS) has been engaged by Echelon Planning to provide transport & traffic engineering advice to assist with the development of a Structure Plan for the township of Longwarry. The advice required includes:

- New road and pedestrian/ cyclist connections to improve access within the township and to prevent heavy vehicles from using the existing residential/ commercial area within the Town Centre to access the Princes Highway.
- Preliminary road and intersection upgrades that are required to support development within the structure plan area.
- > Improving access between the retail centres located on either side of the railway line.
- > Typical road cross sections.
- > Creating an active street on the north side of the railway (Mackay Street).
- > Public transport and path network upgrades/ extensions.
- > Traffic and speed management improvements to improve road user safety.

#### **1.2 References**

The following references were used to assist in the preparation of this report:

- Department of Environment, Land, Water and Planning, VicPlan and Planning Schemes Online, State Government of Victoria, Accessed November 2021;
- Austroads Guide to Road Design, Austroads Guide to Traffic Management, Australian Standards, and the VicRoads Supplement to the Austroads Guide and Australian Standards, as detailed in this report;
- Infrastructure Design Manual v5.30, Local Government Infrastructure Design Association, 24 March 2020; and

# 2 EXISTING CONDITIONS ASSESSMENT

# 2.1 Longwarry

The Longwarry Township is located 90km to the south-east of Melbourne's CBD and 15km north-west of Warragul. It is strategically located with direct access provided from the Princes Freeway (M1) via the Sand Road diamond interchange located 3km north of the town centre.

Access to Longwarry is also provided from the South Gippsland Highway (M420) in the south-west via Koo-Wee-Rup and the South Gippsland Highway (A440) in the south-east via Drouin, Poowong, and Korumburra.

Refer Figure 2.1 for the Longwarry Township location.

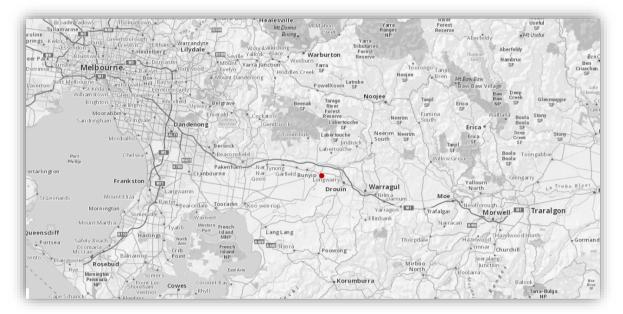


Figure 2.1: Longwarry Township<sup>1</sup>

# 2.2 Existing Road Network Characteristics

The road network within the Longwarry Structure Plan (LSP) area consist of a mix of arterial and local roads. The arterial road network consists of:

- Koo-Wee Rup Longwarry Road C421 (Sand Road, Princes Avenue) A north-south aligned two-way road connecting the Princess Freeway in the north to the Longwarry Town Centre (LTC) in the south.
- Koo-Wee Rup Longwarry Road C421 (Kennedy Street) A north-south and east-west aligned two-way road connecting the LTC in the north to the South Gippsland Highway in the south-East.
- Nar Nar Goon Longwarry Road C433 (Flinders Road) An east-west aligned two-way road connecting the LTC in the east to the Princess Freeway in the west via Nar Nar Goon and Bunyip.
- Longwarry Drouin Road C433 (Mackey Street, Drouin Road) An east-west aligned two-way road connecting Drouin-Warragul Road (Princes Way), Drouin in the east to Koo-Wee Rup -Longwarry Road, Longwarry in the west.

The key local road network consists of:

Church Street - An east-west aligned two-way road located north of the LTC. It connects Longwarry – Drouin Road (Drouin Road) in the east to Koo-Wee Rup - Longwarry Road (Princes Avenue) in the west.

<sup>&</sup>lt;sup>1</sup> <u>VicPlan Version 2.3.1</u>, Department of Environment, Land, Water and Planning, State Government of Victoria, October 2021 Longwarry Township 24 January 2022

- Cook Road A south-east to north-west aligned two-way road located west of the LTC. It connects Longwarry Drouin Road (Drouin Road) in the south-east to Nar Nar Goon Longwarry Road in the north-west via a railway bridge underpass (2.8 metre height clearance). Cook Road is unsealed west of Little Street.
- Bennett Street A north-west to south-east aligned two-way road located within the LTC. It connects Koo-Wee Rup Longwarry Road in the north-west to Edgar Road in the south-east. Bennett Street provides alternative access to Drouin via Edgar Road and Old Drouin Road.
- Corduroy Road & Thornell Road A north-south and east-west aligned two-way rural road respectively, located to the north-east of the LTC, east of the industrial zone. Corduroy Road connects into Longwarry – Drouin Road in the south-east, where-as Thornell Road connects to Koo-Wee Rup - Longwarry Road (Sand Road) in the north-west. Corduroy Road connects to Thornell Road via a continuous long radius horizontal curve.

### 2.3 Estimated 2021 Road Network Traffic Volumes

Existing traffic volume data for Cook Road, Mackey Street, Bennett Street, and Koo-Wee Rup -Longwarry Road (Sand Road) was provided by Baw Baw Shire Council, where-as existing traffic volume data for Longwarry - Drouin Road (Drouin Road) north of Church Street and on all legs of the Church Street/Longwarry - Drouin Road and Church Street/Koo-Wee Rup - Longwarry Road (Princes Avenue) intersections were sourced from T&TS's data base.

As the existing traffic volume data was older than two-years, it has been grown at an average annual percentage growth rate equivalent to 3%<sup>2</sup> to obtain 2021 estimated traffic volumes.

Refer Figure 2.1 for the estimated 2021 road network traffic volumes including percentage of commercial vehicles.



Figure 2.2: Estimated 2021 Road Network Traffic Volumes

As illustrated in Figure 2.2, the 2021 estimated traffic volumes are well below the expected capacity of a two-way rural arterial road (7,000 to 18,000<sup>3</sup> vehicles per day (vpd)), a two-way urban arterial road/ connector street (3,000 to 7,000 vpd), and a two-way urban local road (< 3,000 vpd). This finding is also

<sup>&</sup>lt;sup>2</sup> Baw Baw Shire Population Summary, Longwarry - Longwarry North, 2016 - 2021, <u>Forecast ID</u>, Accessed 6 April 2021. 3 18,000 vpd is the theoretical capacity of a two-way road with uninterrupted traffic flows.

in line with Council's comments in that they have no concerns with traffic within the Longwarry Township<sup>4</sup>.

It is noted that existing traffic volume data was not available for Nar Nar Goon - Longwarry Road and Koo-Wee Rup - Longwarry Road (south of the railway line). However, based on the 2021 daily traffic volumes on both Princess Avenue and Mackay Street, it is expected that both Nar Nar Goon - Longwarry Road and Koo-Wee Rup - Longwarry Road would carry around 3,000 to 3,500 vehicles per day.

Traffic volume data on these roads should be collected by Council to confirm actual traffic volumes.

## 2.4 Speed Limits

The posted speed limits on the existing road network within the LSP area was provided by Baw Baw Shire Council. Refer Figure 2.3.

As illustrated, the posted speed limit varies from a 40km/h time controlled school speed zone adjacent to the Longwarry Primary School, 50km/h on Bennett Street and the local roads to the east of the Longwarry Primary School, 60km/h on the arterial road network within the LTC and General Residential Zone (GRZ), and 80km/h and 100km/h on the arterial road network outside of the GRZ.

The urban default limit of 50km/h applies to the local road network within the LTC not displayed with a speed limit.

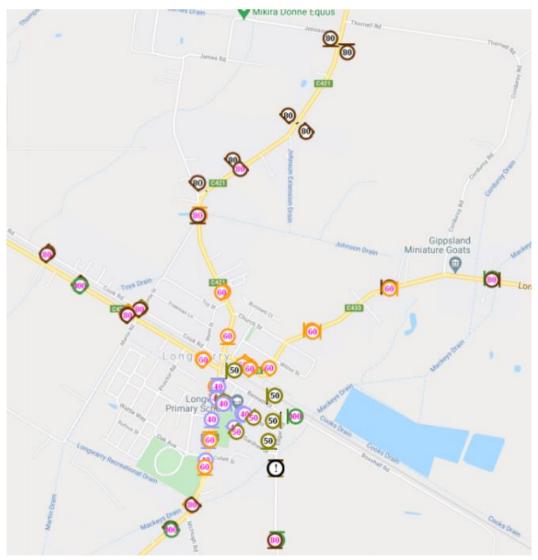


Figure 2.3: Posted Speed Limits within the Longwarry Structure Plan Area

<sup>&</sup>lt;sup>4</sup> Longwarry Council Workshop Notes, 15 March 2021, Civil Management Team Response.

### 2.5 Heavy Vehicle Network

Koo-Wee Rup - Longwarry Road, Nar Nar Goon - Longwarry Road, and Longwarry – Drouin Road are approved to carry Class 1 Vehicles, Class 2 Combination vehicles, Performance Based Standards (PBS) vehicles and High Productivity Freight Vehicle (HPFV) combinations, Emergency & Emergency Preparedness Vehicles, Oversize & Overmass Agricultural Vehicles & Implements, and Controlled Access Buses.

Bennett Street is approved to carry the above vehicles except PBS Level 2B and Class O Oversize Agricultural Vehicles.

Corduroy Road, Thornell Road, Cook Road, and Church Street are approved to carry Class 1 Oversize & Overmass Agricultural Vehicles only. Cook Road and Church Street are also approved to carry Controlled Access Buses.

### 2.6 Casualty Crash Statistic

The casualty crash history of the existing road network within the LSP area was sourced from the VicRoads' Crashstats database for the period between 1 January 2014 and 31 May 2019. The database indicates that eight (8) casualty crashes occurred on Koo-Wee-Rup-Longwarry Road (one in 2014, three in 2015, two in 2016, and two in 2019), four (4) casualty crashes occurred on Longwarry-Drouin Road (two in 2014, one in 2015, and one in 2019), and five (5) casualty crashes occurred on the local road network (two on Cook Road 2016 & 2017, one on Ormond Road 2016, one on Proctor Road 2016, and one on Toy Street 2017).

Of the 17 recorded casualty crashes, 7 were serious injury crashes and 10 were other crashes. No fatal crashes were recorded.

As all crashes varied in location along the road network and were not of a consistent pattern, it can be concluded that there are no serious safety concerns with the existing road network within the LSP area. Refer Figure 2.4 for the casualty crash locations including severity within the LSP Area.





### 2.7 Public Transport & Path Network

#### 2.7.1 Public Transport

#### 2.7.1.1 Train

The Longwarry Railway Station is located within the LTC directly east of Koo-Wee Rup – Longwarry Road and between Cook Road and Flinders Road (Nar Nar Goon – Longwarry Road). The Railway Station services the Gippsland Railway Line. An at grade single track rail crossing controlled by boom gates is provided on Koo-Wee Rup – Longwarry Road in the centre of town. The railway line splits the

Longwarry Township into two and creates a barrier to pedestrian, cyclist, and vehicle movements i.e. all pedestrians, cyclists, and vehicles are required to cross at the rail crossing.

An informal gravel car park is located to the south of the rail station. Pedestrian access to the railway station is provided via an informal gravel car park.

Trains arrive/ depart the railway station every 80 minutes between 5am and 9am, 60 minutes between 9am and 7pm, and 45 minutes between 7pm and 9pm. It's an approximate 1.5 hour journey time between Longwarry Railway Station and Southern Cross Railway Station, a 15 minute journey time between Longwarry Railway Station and Warragul Railway Station, and a 1 hour journey time between Longwarry Railway Station and Traralgon Railway Station

In March 2021, the Victorian Government awarded the contract for the Gippsland Line Upgrade (GLU) to VicConnect as part of the Regional Rail Revival program. As part of the GLU, Longwarry Railway Station will be upgraded to include a second platform and the duplication of the track between Longwarry and Bunyip which will enable more frequent and reliable services. The upgrade will also include accessibility and amenity improvements to the railway station. Early works began in 2021 with construction expected to be completed by late 2022.

Refer Figure 2.5 for the proposed layout of the upgrade works at Longwarry Railway Station.



Figure 2.5: Proposed Longwarry Railway Station Upgrade Layout<sup>5</sup>

#### 2.7.1.2 Bus

The Longwarry township is serviced by one regional bus service. An eastbound and westbound bus stop is located on Nar Nar Goon-Longwarry Road adjacent to Longwarry Railway Station. Refer details below for the bus route arrival/ departure times:

- Sarfield Station to Traralgon Plaza Arrive/ Departs at 5:51pm, and
- Traralgon Plaza to Garfield Station Arrive/ Departs at 6:54am.

#### 2.7.2 Path Network

Footpaths are provided on both sides of the carriageway within new residential development sites and within the Longwarry Town Centre, apart from Mackey Street which is provided on the north side only.

Within the older residential areas, footpaths are provided on one side of the road only or not provided at all.

There are no pedestrian priority crossing facilities within the Longwarry Town Centre. It is understood from the community drop in sessions held by Council that locals are concerned with the lack of such facilities adjacent to the railway station (Flinders Road and Sand Road), on Mackey Street and Bennett Street and on Koo Wee Rup-Longwarry Road adjacent to the school.

There are no dedicated bicycle facilities within Longwarry and in particular the LTC and the Longwarry Railway Station.

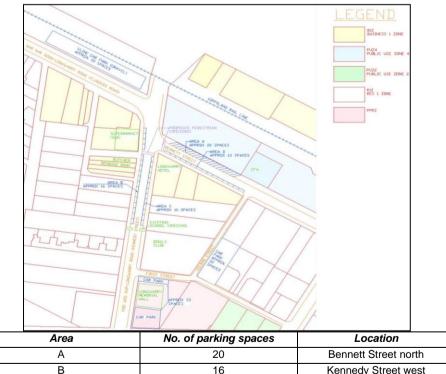
<sup>&</sup>lt;sup>5</sup> State Government of Victoria, Regional Rail Revival, Gippsland, Longwarry Station, Accessed 7 April 2021.

The Gippsland Railway line forms a barrier to pedestrian and cyclist movements between the north and south side of the railway line. All pedestrians and cyclists are funnelled to Longwarry-Drouin Road and required to cross the railway line via the footpath path connections located on either side of the carriageway.

### 2.8 Parking

Council completed a car parking study of the Longwarry Township south of the Railway Line (Longwarry Car Parking Study (South of Railway Line)). The findings of the car parking study follow:

- As the Longwarry Township grows and the existing retail precinct is extended, there may be a need to introduce time-based parking restrictions to better manage parking for short term and long term visitors. This needs to be monitored by Council and appropriate action taken once deemed necessary.
- Over 50% of the available on-street and off-street parking is located at the Longwarry Hall and Bowling Club. As this parking is located on the opposite side of the existing retail precinct on Kennedy Street, it is recommended that as the existing retail precinct is extended, the need for a pedestrian (zebra) crossing with flashing lights on Kennedy Street be considered by Council.
- A review of the VicRoads warrants for the installation of a zebra crossing6 reveals that a zebra crossing is not warranted now.
- The proposed on-street parking in Kennedy Street and Bennett Street should be formalised and defined by installation of marked parking bays, as shown in Figure 2.6. If required, the works can be staged in accordance with the demand as the existing retail precinct grows.
- New pram crossings should be provided in the vicinity of the intersection of Kennedy Street and Bennett Street to enhance pedestrian safety. Refer Figure 2.6.



Total	59	
D	13	Bennett Street south
С	10	Kennedy Street east
В	16	Kennedy Street west
A	20	Bennett Street north

Figure 2.6: Proposed Car Park Linemarking Works

<sup>&</sup>lt;sup>6</sup> Section 8.2.1 (i) of the VicRoads Supplement to the Austroads Guide to Traffic Management, Part 6 states that the number of pedestrians crossing within 20 m of the proposed site exceeds 60 persons per hour (each older person, person with a disability and unaccompanied child of primary school age should count as two) and the number of vehicles per hour which pedestrians have to cross in one bound exceeds 500.

# 3 BAW BAW PLANNING SCHEME

### 3.1 Clause 21.04-7 Longwarry Town Plan

With regard to new transport infrastructure, The Longwarry Town Plan identifies the following:

- Investigate a northern road connection to service future residents and limit heavy vehicles moving through the town centre. This could be partially funded by developers of the proposed future Rural Living area where the road would service future residents.
- Consider an opportunity to connect this road to the existing undeveloped industrial subdivision to the east (IN3Z). Negotiation with the landowner is required to facilitate this link that would allow convenient truck access from the development to the Freeway, bypassing the town centre.

### 3.2 Longwarry Urban Design Framework

The key transport related recommendations and directions of the Longwarry Urban Design Framework (UDF) are detailed below:

- > To strengthen and enhance the gateway to the centre to improve the recognition and identification of Longwarry along main roads.
- To improve the appearance and safety of the station precinct, providing pedestrian links to the commercial precincts.
- > Improve legibility and pedestrian access to train station.
- > Improve the pedestrian environment and links throughout study area.

The UDF identifies actions in three categories (Land Use, Built Form and Access and Movement), which seek to achieve the identified Key Directions. The actions related to transport infrastructure include:

- Land Use
  - Investigate area to establish a commuter car park.
- > Built Form
  - Upgrade and enhance the station precinct comprising an integrated transport hub with safe and convenient pedestrian access within an established landscape setting.
  - Ensure any new car parking in commercial precincts is provided to the rear of buildings.
- Access and Movement
  - Advocate to slow vehicle traffic at town entries, allow for safer pedestrian movement and improve presentation.
  - Work with VicRoads to implement formalised pedestrian crossings in key locations to improve safety and increase activity.
  - Initiate discussions with Transport for Victoria/ VicRoads to upgrade the Princes Avenue / Mackey Street intersection that forms a key entry to improve pedestrian safety and manage vehicle movement.
  - Establish key pedestrian and cycle links to Longwarry Station providing connections to commercial and community nodes.
  - Implement vehicle connection from residential area at the south –west to Princes Avenue. Provide vehicle access to supermarket customer car park also.
  - Initiate discussions with Transport for Victoria/ VicTrack to establish a rear access way between the rail reserve and vacant land providing back-of-house connection for businesses to Mackey Street.
  - To improve pedestrian amenity within the town centre consider advocating to VicRoads for the reduction of speed limits from 60 to 40km/hr along Mackey and Kennedy Streets within the town centre.

• New commercial development on south side of Mackey Street to provide on-site car parking positioned to the rear of new built form. Avoid parking within front setbacks.

It is noted that the actions associated with the Longwarry Station could be actioned with the State Governments Gippsland Line Upgrade works.

Further, a set of design guidelines were developed to help achieve an improved urban design outcome within the Longwarry Town Centre. The key guidelines related to access are detailed below:

- Vehicle access points along fine grain commercial streets should be avoided. Alternatively, access should be provided to side streets or rear lanes.
- Loading and unloading of vehicles should be sited and designed to avoid pedestrian and vehicle conflict. Seek to locate on-site where possible.
- Ensure on-site car parking is located to have a minimal visual impact to the streetscape. Where possible, avoid parking between building frontages and the street.
- On-site car parking should ensure vehicle access is designed to prioritise pedestrian movement and safety. Seek to implement designated pedestrian crossings within onsite car parks to maximise pedestrian safety and legibility of wayfinding.
- For two or more dwellings, seek to utilise one crossover to the site. Multiple crossovers are discouraged.

Refer Figure 3.1 for the Longwarry Urban Design Framework plan.

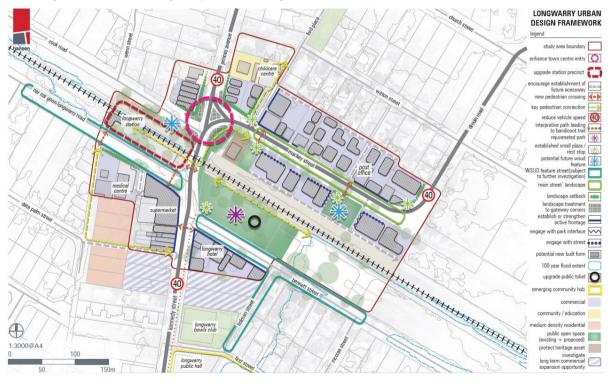


Figure 3.1: Longwarry Urban Design Framework

# 4 LONGWARRY STRUCTURE PLAN

# 4.1 Longwarry Structure Plan

The Longwarry Structure Plan (LSP) focuses upon the whole township of Longwarry and includes strategies and actions throughout. The main proposed growth area is located to the north of the Longwarry town centre. It is generally bounded by Thornell Road and farming zoned land to the north, Corduroy Road and industrial zoned land to the east, Drouin Road (C433), Church Street, Princes Avenue (C421) and general residential zoned land to the south, and Sands Road (C421) to the west.. The majority of the LSP area is currently zoned farming with a small portion of rural living zoned land located in the east, north of the industrial zoned land. Refer Figure 4.1 and Appendix A, Longwarry Structure Plan.

The LSP proposes to create a total of 766 dwellings within the areas designated as conventional density residential and lower density residential.

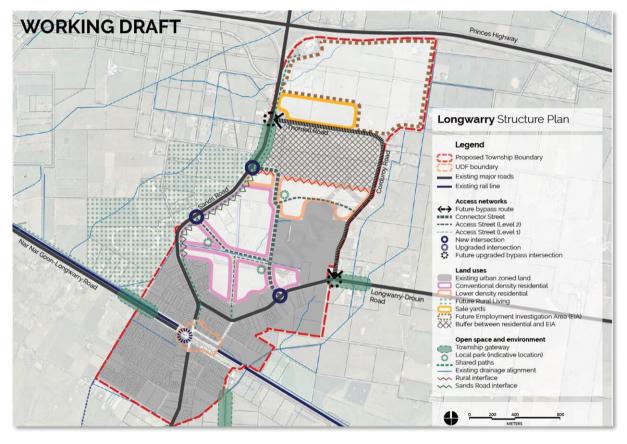


Figure 4.1: Longwarry Structure Plan

# 4.2 Proposed LSP Road Network

The proposed road network within the LSP area consists of the following:

- A centrally aligned north-south aligned connector street, connecting Sand Road (C421) in the north-west to Drouin Road (C433) in the south.
- An east-west aligned access street level 2 located to the north of Johnson Drain, connecting the proposed connector street in the east to Sands Road in the west.
- An east-west aligned access street level 2 located central to the lower density residential area, connecting the proposed connector street in the west to Corduroy Road in the east.
- An east west / north-south aligned access street level 1 located to the south of Johnson Drain, connecting the proposed connector street in the east to Burnnett Court in the south.

All road cross sections are to be as per the requirements of the Infrastructure Design Manual.

### 4.3 Traffic and Speed Management

#### 4.3.1 Bypass Route

To stop heavy vehicles using Church Street, Mackey Street, and the new LSP connector street network to travel between Drouin Road (C433) & Princes Avenue/ Sand Road (C421), it is recommended that Thornell Road and Corduroy Road be upgraded to a connector street standard, so that this road network can be used as a heavy vehicle bypass route. This proposal avoids heavy vehicles from travelling through the existing and proposed residential and commercial areas of Longwarry, and the associated safety and noise issues.

Further, the added benefit of upgrading these roads is that they can also be used to service the future Employment Investigation Area located to the north of the LSP area. The location also provides the existing Industrial 3 Zone land with direct frontage and exposure to passing traffic.

#### 4.3.2 Industrial Zone Access

All access to the industrial zoned land located to the east of the LSP area should be provided from Drouin Road and Corduroy Road. Access to the LSP connector street and/or the proposed road network within the adjacent residential areas should be prevented.

#### 4.3.3 Intersections

All proposed arterial road intersections are to be constructed with an auxiliary left-turn treatment and channelised right-turn treatment in accordance with the Austroads Guide to Road Design and to the satisfaction of the responsible authority.

Consideration should be given to changing the priority of the Princes Avenue/ Longwarry-Drouin Road/ Mackay Street/ Cook Road intersection so that Princes Avenue and Longwarry-Drouin Road form the major road leg and Mackay Street and Cook Road forms the minor road leg (staggered T-intersection). Further, to control traffic speeds and improve road user safety, the intersection should be constructed as a Raised Safety Platform commencing from 10 metres north of Mackay Street and ending prior to the railway crossing.

Consideration should also be given to upgrading the intersection of Koo Wee Rup-Longwarry Road/ Bennett Street/ Nar Nar Goon – Longwarry Road to a Raised Safety Platform to control traffic speeds and improve road user safety at this intersection.

#### 4.4 Public Transport & Path Network

#### 4.4.1 Public Transport

The connector street network within the LSP area should be designed and constructed as a bus capable route.

To ensure that buses are offered as a practical alternative transport mode for residents of Longwarry, it is recommended that Baw Baw Shire Council engage with the Head, Transport for Victoria to improve the frequency of the existing regional bus service from/ to Longwarry, and to ensure that once the connector street network is constructed within the LSP Area, the existing regional bus services is rerouted through the LSP area.

#### 4.4.2 Path Network

To ensure walking and cycling is promoted as an alternative transport mode for residents of Longwarry, it is recommended that the following transport infrastructure is built within and adjacent to the LSP Area:

- a. Shared Path
  - i. Along the connector street network within the LSP between Sand Road and Drouin Road.
  - ii. The north side of Johnson Drain between the Connector Street and Sands Road.
  - iii. On the east side of Sands Road between the Princes Highway and Longwarry Public Hall & Library.

- iv. In the unmade road between Burnnett Court and Church Street.
- v. On the north-west side of Drouin Road between the LSP connector Street and Church Street.
- b. Zebra Crossing
  - i. Princes Avenue north of Mackay Street.
  - ii. Koo Wee Rup-Longwarry Road south of Bennett Street.
  - iii. Mackay Street east of Ford Place and west of Drouin Road.
  - iv. Bennett Street east of Koo Wee Rup-Longwarry Road.
  - v. Nar Nar Goon Longwarry Road near the railway station car park/ bus stop.
- c. Grade Separated Pedestrian/ Cyclist Crossing
  - i. East of the Longwarry Township connecting Mackay Street to McCrae Street.
  - ii. West of the Longwarry Township connecting Little Street to Martin Road.

It is recommended that Baw Baw Shire Council commence discussions with the State Government/ VicTrack on the potential of providing these grade separated pedestrian/ cyclist crossing points as part of the Gippsland Railway line upgrade works.

Refer Figure 4.2 for the crossing locations.



Figure 4.2: Potential New Pedestrian/ Cyclist Crossings

The proposed path network ensures that the residents of Longwarry have a safe and convenient path network between residential and commercial areas and within the commercial area.



**Transport & Traffic Engineering Advice** 

# 5 CONCLUSION



# **APPENDIX A – LONGWARRY STRUCTURE PLAN**