Cardno

GISBORNE FUTURES

TRAFFIC AND TRANSPORT RECOMMENDATIONS REPORT

V180578

24 July 2020

Macedon Ranges Shire Council

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Executive Summary

Cardno Victoria Pty Ltd (Cardno) has been engaged by Macedon Ranges Shire Council (MRSC) to provide traffic and transport advice to inform the preparation of the Structure Plan and the Urban Design Framework (UDF) documents, forming part of the Gisborne Futures Plan. This report provides a detailed summary of each of those tasks and their associated outcomes to provide an evidence base for the Traffic and Transport recommendations presented in both the Structure Plan and the UDF documents.

The Gisborne Structure Plan is generally bound by the railway line to the north, Kilmore Road and the Calder Freeway to the east, Brooking Road to the south, and Rosslynne Reservoir and the Gisborne Golf Course to the west. The Gisborne UDF area encompasses the main town centre, is generally bounded by Robertson Street, Hamilton Street and Aitken Street.

Numerous strategic and local transport and land use planning policies have been assessed over the course of preparing this advice. Generally, objectives and strategies focus on; further integrating and improving the efficiency of the existing and future public transport with land use and development, creating safer and efficient road network through redevelopment of the road hierarchy and advocating a new north-south road or bypass to ease congestion, encourage sustainable and alternative forms of transport, reduce travel distances, locate new developments next to existing and planned connector and arterial roads, and safe, attractive and efficient pedestrian and bicycle networks, linking existing and new developments and major points of interest.

A number of road, pedestrian and bicycle network recommendations were made in the 2009/2016 Gisborne Movement Network Study, identifying numerous upgrades, extensions and additions to problematic areas within the Gisborne area. The pedestrian and cyclist network has been generally accounted for with new developments and some constructed upgrades, but still exhibits a lack of connectivity in many areas. Furthermore, an increase in traffic volumes within the area has seen some road capacity thresholds be neared, reached or far surpassed.

Cardno has undertaken extensive analysis of existing conditions, including inspections of the main road network and Gisborne town centre, automated tube count surveys (daily traffic volumes), intersection turning movements surveys, origin-destination surveys, crash data, inspection of parking restrictions and car parking occupancy surveys, the public transport network, pedestrian and cyclist infrastructure, land use and travel behaviour.

With the data collected and analysis undertaken, Cardno were able to provide initial advice on some issues highlighted by the above tasks, categorised by traffic, walking and cycling, public transport and car parking. There are periodical congestion issues within the study area, with improvements required at of some locations to improve performance and safety. There are gaps in pedestrian and cyclist connectivity with either limited or sub-standard facilities and pathways. Public transport services are also limited and integrated poorly.

With these issues outlined, a number of initial opportunities were identified. First and foremost, a western alternate route for heavy vehicles and large traffic volumes to access the Calder Freeway, in addition to a number of key intersections requiring signalisation and upgrading. Key links along main roads and areas of interest for pedestrian and cyclists should be considered, along with increased and improved wayfinding. A review of the bus and train timetables should be undertaken to better integrate existing services and future services to accommodate growth. Finally, a more comprehensive review into car parking distribution and utilisation within the Town Centre and at key locations.

The above informed the most recent Gisborne Structure Plan (GSP) and Town Centre UDF, both of which fall under the Gisborne Futures umbrella, dated May 2020. The GSP identifies that the key principal in relation to transport and movement is to provide a safer, more efficient and easier movement network which connects communities through a range of transport options, whilst also decreasing the impact of external freight movements to reduce adverse impacts on local amenity. The Town Centre UDF identifies key vehicle routes, pedestrian connections and precincts so as to facilitate the planning and redesign of all transport movements, connections and access and streetscapes at the confluence of the four key arterial roads.

In order to inform the specific transport recommendations stated in the GSP and UDF, significant traffic modelling using the Victorian Integrated Transport Model (VITM) has been undertaken to determine the impact of future background traffic growth (2.3% per annum until 2046) and the proposed future road network. Comprehensive analysis indicates that the existing road network would be operating near or over its theoretical capacity as soon as the year 2036. Incorporating these results, it was concluded that providing a Western Link Road (WLR) would be of the greatest overall benefit to the road network. Furthermore, it was established that without an increase in demand, an Eastern Link Road would not provide a significant benefit across the broader road network.

Local intersection modelling was also undertaken using SIDRA Intersections software to provide a more microscopic look at existing and future traffic impacts on a more localised scale compared to the macroscopic evaluation of VITM. Generally, all intersections within the Gisborne Structure Plan (GSP) currently operate below or near their capacity, but will however reach capacity either at the modelled 2031 or 2046 scenarios. For the intersections that reach capacity, a proposed intersection layout has been included to cater for future growth and traffic volumes.

An additional part of the Gisborne Futures Plan is the Gisborne Business Park Masterplan. In the earlier stages of the masterplan development, Cardno was engaged to provide a Transport and Infrastructure Plan. This work examined the existing traffic conditions at the Business Park as it currently operates, as well as its proposed future expansion. As the Gisborne Structure Plans developed, Cardno were able to provide an appropriate range of conclusions and recommendations to ensure optimum accessibility and safety across all transport modes.

Overall, the existing Business Park exhibits road and footpath conditions of varying quality, with some areas having been upgraded creating an obvious quality variance. Additionally, access to this network for pedestrians and cyclists is limited and unsafe, with observations on site and anecdotal evidence suggesting that pedestrians walk to and from the Business Park along the rail reserve from the Railway Station. Furthermore, the current provision of bus services, one service per hour, does not provide an attractive alternative transport mode for Business Park employees.

To support the above amidst the Gisborne Business Park expansion, Cardno has provided recommendations to increase the safety and amenity of both vehicle users and pedestrians. This includes the upgrade of the Station Road and Saunders Road intersection to be fully signalised with pedestrian facilities, in addition to the upgrade of the Barry Road and Saunders Road intersection to facilitate Business Park turning movements. Additionally, it is proposed to construct a second collector road off Saunders Road in the form of a connector boulevard. Finally, the overall upgrade and provision of an off-road and on-road shared path and footpath network is highly recommended to facilitate movements within the Business Park and out toward significant areas of interest.

Finally, Cardno have provided a set of recommendations based on the preceding reports and analysis undertaken throughout the iterative process of the Gisborne Futures development. Overall, the recommendations are intended to both respond to existing issues and facilitate the planned future growth in Gisborne over the next 30 years, with the overarching aim of encouraging the uptake of alternative and sustainable forms of transport.

The GSP recommendations include supporting the provision of the WLR, which will provide the greatest benefit to the overall road network. This would be in addition to a wide variety of local street widening, carriageway improvements, road extensions, new local road construction and intersection upgrades to improve both capacity and efficiency to the more local road network. It is also recommended that the active transport network, including the Principal Bicycle Network (PBN), be constructed and upgraded to fill in all network gaps and provide high-quality pathways to promote alternative transport modes and facilitate easy, safer and more efficient access between residential areas and key areas of interest. Furthermore, the increased provision, quality and integration of the public transport network and car parking will further improve the overall amenity and capacity of the overall transport network through Gisborne and New Gisborne.

Specific recommendations regarding the Gisborne Town Centre have also been provided, linking back to the UDF. The lengths of Hamilton Street and Robertson Street are proposed to be upgraded, prioritising the provision of pedestrian and cyclist facilities along and across the roads, including turning lanes to improve traffic flow. Increased pedestrian and cyclist facilities have been proposed along Brantome Street and Heritage Way to maintain an active retail frontage. Aitken Street is proposed to be upgraded in a similar manner to Robertson Street, including a signalised intersection at Robertson Street and the provision of service roads to relocate property access points off the main road.

Lastly, short, medium and long term measures have been provided to improve the provision and utilisation of car parking throughout the GSP. This includes the implementation and upgrade of wayfinding throughout the busier areas of Gisborne to better utilise specific parking locations. In addition, there are several locations which have been identified that could accommodate new on-street parking facilities. In the long-term it is recommended that underground or roof-top parking facilities are provided with new development, and that Neighbourhood Activity Centres away from the town centre could reduce the parking demand.

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1 Introduction & Project Background

1.1 Introduction

Macedon Ranges Shire Council (MRSC) is preparing a Structure Plan and Urban Design Framework (UDF) for the township of Gisborne, collectively named “Gisborne Futures”. The Gisborne Futures plan is being developed to provide a framework for the management of population growth and the associated change required for the town over the next 30 years.

Cardno Victoria Pty Ltd (Cardno) has been engaged to provide a range of traffic and transport advice to inform the preparation of the Structure Plan and UDF documents. As such Cardno has prepared a number of associated documents throughout the development of the Gisborne Futures project.

This report provides a detailed summary of each of these tasks, the outcomes, and is intended to provide an evidence base for the traffic, transport and car parking recommendations presented in both the Structure Plan and UDF documents.

1.2 Project Background

In 2009, the Gisborne Outline Development Plan (ODP) was adopted by Council, which provided the framework for development under conditions and assumptions about the future for the town at that time. Gisborne Futures is the first review of that development plan, and accounts for the fact that a range of considerations have changed, including land use, population demographics, and infrastructure.

Various Transport and Movement studies and strategies have been undertaken in the meantime, providing recommendations to address both existing and potential future issues across various modes of transport. These strategies have been reviewed as part of this study, with recommendations that remain relevant considered. This study is intended to not only address existing issues however, but address the future transport requirements to cater for the land use and development proposals identified in the Gisborne Futures Plan

Cardno’s involvement in developing the Gisborne Futures Plan has included the following broad tasks:

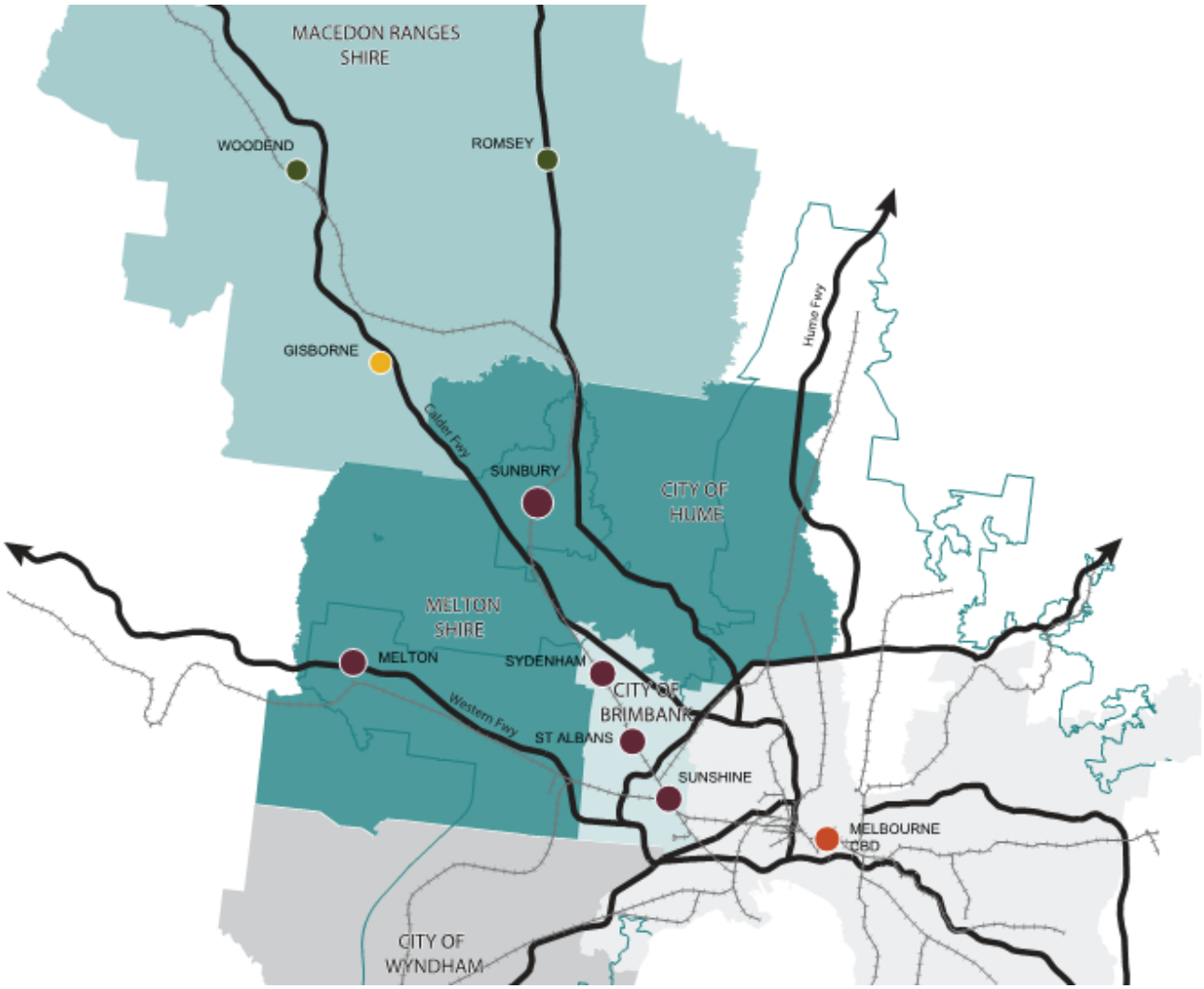
- Analysis of previous strategies and studies, assessment of the current transport conditions and identifying current issues and opportunities across all transport modes;
- Undertaking a Transport Impact Assessment for the future expansion of Gisborne Business Park;
- Developing a strategic transport model using the Victorian Integrated Transport Model (VITM) to both assess the impact of future development on the road network in and around Gisborne, and to test potential options to improve traffic conditions through the town centre;
- Providing a Car Parking Precinct Plan to inform the UDF, identifying recommendations to best manage available parking resources to accommodate existing and future demand;
- Developing a range of recommendations across all modes of transport to address existing issues and to support future demand for both the Gisborne Structure Plan and the UDF; and
- Developing a suite of local intersection models to help identify appropriate intersection improvement measures to support future traffic growth.

This document is intended to present the work undertaken in these various studies and form part of the background documentation supporting the Gisborne Futures Plan.

1.3 Gisborne Futures Study Area

Gisborne is located within the southern end of Macedon Ranges Shire, approximately 60 kilometres north west of Melbourne off the Calder Freeway. The Shire is a peri urban municipality located on the interface of metropolitan Melbourne and regional Victoria. Gisborne in the regional context is shown in Figure 1-1.

Figure 1-1 Gisborne in the Regional Context.



Source: Ethos Urban

The Gisborne Futures study area comprises both Gisborne including the town centre, south of the Calder Freeway corridor, and New Gisborne north of the freeway.

1.3.2 Gisborne Structure Plan Area

The Structure Plan study area encompasses that identified in the 2009 ODP, generally bound by the railway line to the north, the business park, Kilmore Road and the Calder Freeway to the east, Brooking Road to the south, and the golf course, Rosslynne Reservoir, and the nature reserve to the west. The purpose of the Gisborne Structure Plan study however is to investigate areas that may be outside of the current ODP that may be appropriate for future urban growth, and hence the study area does explore areas to the north of the railway line, east of the business park and Kilmore Road, and west of the nature reserve.

Key transport links within the study area include:

- Melbourne to Bendigo railway line with Gisborne Station at New Gisborne;
- Calder Freeway, with fully directional interchanges at Melbourne Road and Station Road, and an east facing half interchange at Mount Macedon Road;
- Arterial roads, including Bacchus Marsh Road / Robertson Street, Melton Road, Melbourne Road, Aitken Street / Station Road, and Saunders Road;
- Kilmore Road, providing an additional non-arterial but important link over the Calder Freeway corridor;
- Route 473 Bus service linking residential areas to the town centre and Gisborne Station; and
- Shared paths along the Jacksons Creek Reserve, and Station Road.

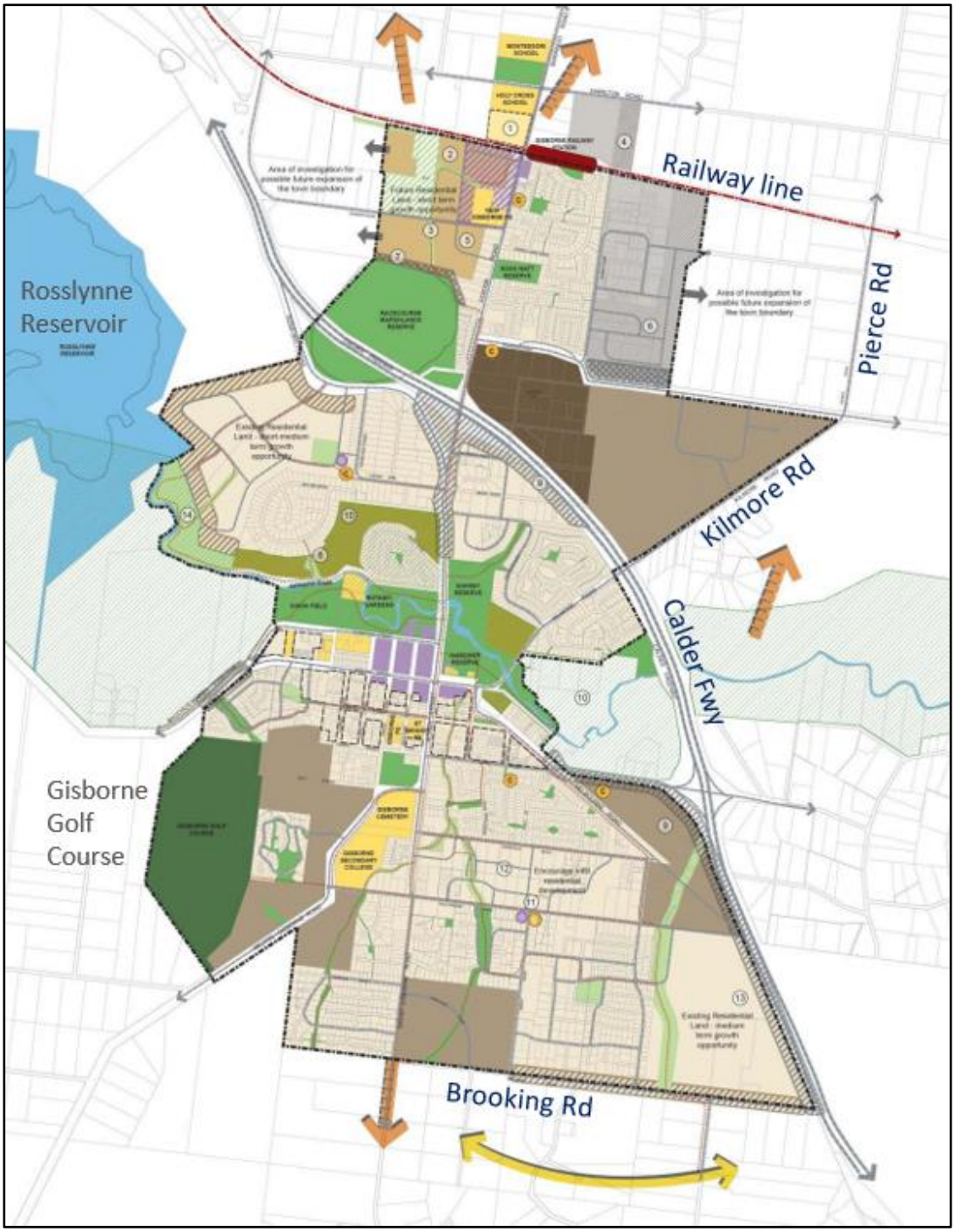
New Gisborne, north of the Calder Freeway, contains a mix of general residential, low density residential,

and rural living areas. Gisborne Business Park is also located on Barry Road, east of the existing residential area. A number of schools are also located along Station Road and Barringo Road / Hampton Road.

South of the Calder Freeway, Gisborne is primarily general residential, with pockets of low density living. The town centre is located immediately south of Jacksons Creek, at the confluence of the primary arterial roads, providing the commercial focus of the Gisborne study area and surrounding rural areas. Jacksons Creek runs east from Rosslyne Reservoir, providing a green public use and conservation zone through the town, including open parks and the Sankey Reserve and Gardner Reserve sports facilities. Other than the town centre, key facilities in Gisborne include the Primary School and Secondary College, Gisborne Golf Course, and Gisborne Library.

The Gisborne Futures study area, generally following the Framework Plan area , is shown in Figure 1-2.

Figure 1-2 Existing Gisborne / New Gisborne Framework Plan



Source: Macedon Ranges Planning Scheme – Clause 21.13

1.3.3 Gisborne Urban Design Framework Plan Area

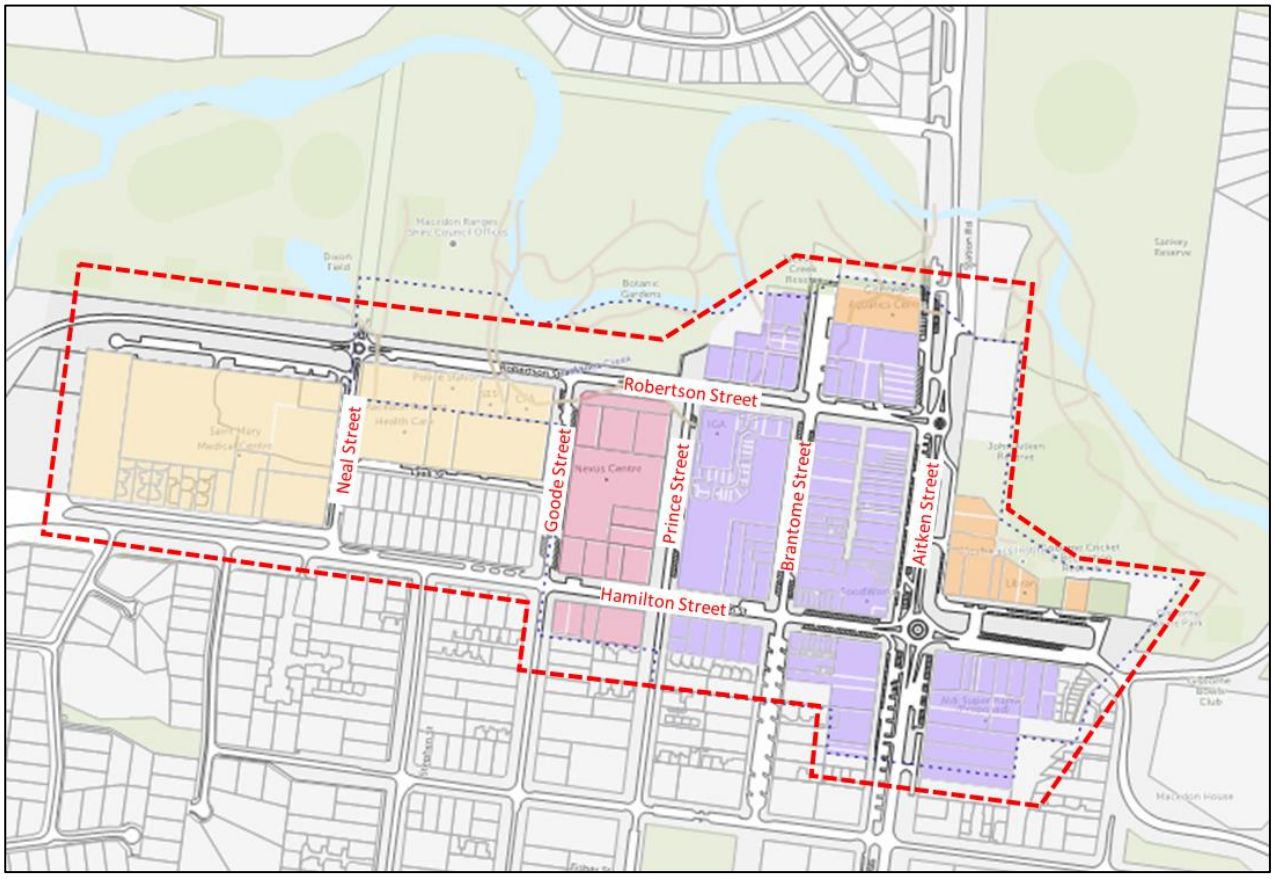
The Gisborne UDF study area is generally bounded by the Jacksons Creek reserve to the north, Gardner Reserve and the Melbourne Road / Kilmore Road intersection to the east, properties south of Hamilton Street, and both Goode Street and Neal Street to the west. The primary roads through the UDF area include Aitken Street, Brantome Street, prince Street, and Goode Street in the north south direction, and Robertson Street and Hamilton Street in the east west direction.

The town centre contains four primary precincts, namely:

- **Retail Precinct**, focussed round Aitken Street, Brantome Street and Prince Street between Robertson Street and Hamilton Street, inclusive of these streets.
- **Commercial Precinct**, bound by Princes Street, Goode Street, Robertson Street, and Hamilton Street.
- **Health and Civic Precinct**, generally south of Robertson Street between Goode Street and the area west of Neal Street.
- **Community Precinct**, including the Aquatic Centre and the area east of Aitken Street and north of Hamilton Street.

The Gisborne UDF study area boundary is shown in Figure 1-3, including the precincts outlined above.

Figure 1-3 Gisborne Urban Design Framework Area



Source: Ethos Urban Gisborne Futures Issues & Ideas Report

2 Strategic Context

2.1 Planning Policy and Strategic Documentation

A considerable amount of strategic and local transport and land use planning documentation has been considered in the development of this Traffic and Transport Recommendations Report. This section summarises those that have the most direct relevance and are vital in informing this study, whist others which have a broader, or a very specific focus have been summarised in Appendix A of this report.

Those detailed here include:

- Macedon Ranges Planning Scheme;
- Gisborne / New Gisborne Outline Development Plan (2009);
- Gisborne Town Centre Urban Design Framework (2009);
- Gisborne Movement Network Study (2016); and
- Macedon Ranges Walking and Cycling Strategy (2014);

Key goals and objectives from these documents are identified in the following Section 2.2 below, with a more detailed analysis identifying specific transport actions and recommendations relevant to Gisborne and new Gisborne and their status and continued relevance is summarised in Section 2.3.

Additional documentation summarised and included in Appendix A of this report includes:

- Transport Integration Act (TIA);
- Plan Melbourne (2017-2050);
- Loddon Campaspe Integrated Transport Strategy;
- Loddon Mallee South Regional Growth Plan;
- Macedon Ranges Shire Council Plan;
- New Gisborne Development Plan;
- Gisborne Business Park Masterplan; and
- Gisborne Sports Precinct Infrastructure Plan (2018).

2.2 Policy and Strategy Summary Objectives

This section summarises the key policy and strategy with respect to traffic and transport, highlighting the relevant overarching objectives and strategies.

2.2.1 Macedon Ranges Planning Scheme

The Victorian State Planning Policy Framework states under Clause 18 that Planning should ensure an integrated and sustainable transport system that provides access to social and economic opportunities, facilitates economic prosperity, contributes to environmental sustainability, coordinates reliable movements of people and goods, and is safe.

Under the Local Planning Policy Framework of the Macedon Ranges Planning Scheme, Clause 21.11 provides local content to support Clause 18. The following objectives relate to integrated transport within the Shire:

- To integrate transport with land use and development in the Shire to facilitate efficient transport use;
- To provide a safe and efficient road transport network;
- To encourage the use of more sustainable transport modes and reduce distances travelled;
- To facilitate public transport use in the Shire; and
- To facilitate the use of alternative transport modes in the Shire, in particular walking, cycling and riding.

Strategies of note which support the above objectives include:

- Ensuring that land use and development proposals have regard for the existing and planned transport network;
- Locate new development adjacent to major arterial roads in such a way as to minimise the impact on traffic movements on the adjoining road network and provide safe and efficient access along with adequate and well located car parking areas;
- Encouraging development in settlements near existing transport infrastructure; and
- Facilitating improvements to the recreational path network.

Clause 21.13 outlines further infrastructure strategies specific to Gisborne, in-line with Clause 21.11, including:

- Develop safe, attractive and efficient bicycle and pedestrian networks using public open spaces, linear links and road networks through all urban areas;
- Give priority to connecting new residential areas to the town centre, local neighbourhood centres, community facilities, open space, public transport and the railway station when planning and designing pedestrian and bicycle paths;
- Encourage the continued improvement of public transport services within and between Gisborne and New Gisborne;
- Ensure new development is designed to accommodate future bus routes, including suitable road widths and intersection treatments to enable the safe and efficient operation of bus movements;
- Retain and protect Station Road as the key north-south road between Gisborne and New Gisborne;
- Develop a new north-south collector road within the New Gisborne growth area to alleviate traffic pressure on Station Road;
- Develop the road hierarchy in Gisborne / New Gisborne and undertake the upgrades identified in the Gisborne Movement Network Study 2007;
- Ensure new residential development addresses issues relating to the sequence of development and timely provision of physical and social infrastructure, including connecting roads, open space and walking / cycling paths; and
- Discourage residential development that requires ‘leapfrogging’ of services or cannot be fully serviced or interface with existing development at the time of development.

2.2.2 Gisborne / New Gisborne Outline Development Plan (2009)

The Gisborne / New Gisborne Outline Development Plan (ODP) provides direction for the future residential, commercial and industrial growth of Gisborne to enable orderly and sequential development. It provides a clear overall structure plan for the layout of main road networks and land uses. The ODP is informed by existing conditions assessment, community consultation, recommendations and implementation. The ODP sought as a high priority to:

- Rezone the New Gisborne growth area to Urban Growth Zone;
- Rezoning of existing R1Z land to Low Density Residential Zone (LDRZ) for areas where existing subdivision patterns are low density, are in landscape sensitive locations and/or unsewered; and
- Rezoning of land from R1Z to Urban Growth Zone (UGZ) for land in the south Gisborne growth area.

Thus, impacting on future growth patterns and movement networks.

The ODP draws upon a number of previous studies, including the 2006 GMNS and identifies key transport infrastructure upgrade needs across all modes. Transport and movement issues identified include:

- Congestion on roads around schools during pick up and drop off times;
- Bicycle facilities are generally poor, with no significant provision of cycling facilities;
- Based on existing parking generation rates, there will be a moderate shortfall (approximately 200 spaces) in the town centre parking supply by 2031;
- The existing pedestrian infrastructure network is deficient and some existing paths are substandard;
- The existing public transport network does not fully meet the needs of residents in many areas; and
- Residents tend to rely heavily on motor vehicles both within and out of town.

The ODP responds by nominating a key collector street within the New Gisborne growth area, identifies a network of pedestrian and bicycle trails, proposes bus routes and encourages pedestrian links to the train station.

2.2.3 Gisborne Urban Design Framework (2008)

The Gisborne Town Centre UDF was prepared to ensure that future streetscape works, commercial development and public sphere projects throughout the Gisborne Activity Centre are delivered in a planned, efficient and orderly fashion. The UDF process is informed by community and stakeholder engagement, discussing the future issues and opportunities facing Gisborne, including future development and transport options.

The vision is for Gisborne to retain its ‘country village’ feel, whilst reflecting its forward looking, sustainability conscious and vibrant community. Goals to achieve this vision from an access perspective include improving safe and efficient movement within the town centre and connections to key locations throughout the township, with respect to both active transport and vehicular transport modes. Convenient connectivity between the town centre and the railway station in New Gisborne is a key consideration.

The UDF identifies the existing conditions within the Gisborne town centre and identifies opportunities for improvement and the preferred mix of land uses. Gisborne is identified as a relatively car-dependant centre, with opportunity to both appease congestion and promote active transport through infrastructure improvements. Key access themes include east-west pedestrian connectivity within the town centre, in addition to improved bus and bicycle connections from the town centre to the train station.

2.2.4 Gisborne Movement Network Study (2016)

The Gisborne Movement Network Study 2016 (GMNS) was prepared as an update to the 2009 GMNS, with the intent to summarise the key points from the previous GMNS, outline which recommendations have been completed or require completion and highlight future recommendations in relation to more recent forecast growth figures and infrastructure requiring improvement.

The GMNS provides a comprehensive inventory of the existing transport network, including existing condition descriptions, works recently undertaken and proposed works. The proposed upgrades are informed by traffic count data and modelled traffic volumes, with reference to existing and proposed growth and change areas. Land zoned for residential development is considered, along with indicative proposed development yields. The following key messages are derived from the 2016 GMNS:

- There is an increased volume of traffic in most strategic routes, reflecting the ongoing growth of the town;

- A future road hierarchy is proposed which proposes that the following roads be upgraded from a collector road to a secondary traffic road: Hamilton-street, Prince Street, Sheedy Road and McGeorge Road;
- VicRoads released plans in 2013 to duplicate the main north-south arterial road through Gisborne, being Station Road;
- New road infrastructure in the form of a Gisborne bypass is flagged as a potential option to divert heavy vehicles from Station Road. Further planning and traffic modelling are required to determine its feasibility;
- Pierce Road may require extending and widening to cater for both the expansion of the New Gisborne Industrial Estate and surrounding future residential development;
- Ferrier Road is proposed within the New Gisborne Development Plan to undergo road widening to become a 24m road reserve with boulevard planting. It is noted that New Gisborne Primary School is located at the intersection of Ferrier Road and Station Road, with significant future residential development forecast either side of Ferrier Road;
- Town centre car parking (on-street and off-street) surveys undertaken in 2014 indicated that that the average occupancy rate was 56%. Parking is predicted however to reach a shortfall of 300 spaces by 2036 based on anticipated residential development. The large number of new car parks required to address this shortfall cannot be accommodated within the town centre road network;
- The GMNS draws upon pedestrian and cycling network links identified in the 2014 Walking and Cycling Strategy, with a key issue identified being east-west pedestrian accessibility across Aitken Street in the town centre; and
- The Gisborne bus service provides connectivity between the train station and the town centre, which has been expanded in recent years within the town centre, with scope for further expansion.

2.2.5 Macedon Ranges Walking and Cycling Strategy (2014)

The Walking and Cycling Strategy has been developed with reference to a number of previous community and open space related strategies, responsive to the high value placed on walking and cycling opportunities. The primary purpose of this document is to advise Council on ways to increase participation and improve infrastructure.

The strategy identifies issues and opportunities for the Macedon Ranges Shire Council across a range of themes, including connections between towns, within the town, tourism trails, support infrastructure and participation. The key Direction is to:

“Consider in all road works projects whether the road is on the Preferred Cycling Network and include improvements for cycling in any major upgrades (both within towns and between towns)”.

A preferred cycling network is identified for the Macedon Ranges Shire, which includes a potential off-road shared trail along the railway line which passes through Gisborne Train Station.

Identified bicycle infrastructure upgrades within Gisborne tend to focus on north-south connectivity between the town centre and the train station along Station Road, through to the Gisborne Secondary College in the south. Hamilton-street is the main east-west link identified for implementation of an on-road cycling route. A network of off-road shared trails is also identified along public open space corridors.

2.3 Previously Identified Transport Recommendations

The 2009 Outline Development Plan (ODP 2009) has been reviewed in terms of recommendations made at the time in relation to the Gisborne transport, movement & access network. The 2009 and subsequent 2016 Gisborne Movement Network Study (GMNS 2009/2016) has also been cross referenced as necessary, to identify the current status of particular recommendations made in that report. Key recommendations identified in the Walking and Cycling Strategy 2014 (WCS 2014) relevant to Gisborne have been included.

A summary of the recommendations identified in the above toads network and active transport strategies and their current status is provided in Table 2-1 and Table 2-2 respectively.

Table 2-1 Previously Identified Road Infrastructure & Intersection Recommendations

Road network Recommendation	Identified in	Current status / Comments
Providing only one vehicle access from Jacksons Creek Estate to Station Road via Wallaby Run.	ODP 2009 (raised by VicRoads)	Only one vehicle access is provided
Truncating McKim Road, Radiata Road/Oakwood Close/ Government Road at Station Road.	ODP 2009 (raised by VicRoads)	These roads do not intersect with Station Road.
Providing a local connector road to link Morrow Road with The Boulevard.	ODP 2009 (raised by VicRoads)	Not implemented
Investigating the need to realign Ross Watt Road northerly to intersect with Morrow Road as a major controlled intersection.	ODP 2009 (raised by VicRoads)	Not implemented
Provision of future curve alignment improvements at Melbourne Road/Calthorpe Street intersection.	ODP 2009 (raised by VicRoads)	Not implemented
Ferrier Road and a new cross road intersection – roundabout to be constructed when new cross road is built	ODP 2009, GMNS 2009, GMNS 2016	New north-south cross road not constructed and as such no roundabout has been constructed.
Ferrier Road and Station Road intersection upgrade	GMNS 2016	Not upgraded. Upgrade is subject to further traffic analysis and planning.
Station Road and Saunders Road/new subdivision access point – roundabout to be constructed when new access road is constructed.	ODP 2009, GMNS 2009	No roundabout constructed at Station Road and Saunders Road. The alignment of Saunders Road does not form a cross intersection with the future subdivision access road on the west side of Station Road. Roundabout may therefore not be the most suitable treatment.
Station Road and Wallaby Run intersection – protected left and right turn lanes when Wallaby Run is connected to Station Road.	ODP 2009, GMNS 2009	Implemented
Station Road and Robertson-street intersection – signalise when traffic volumes exceed 10,000 vehicles per day at this point.	ODP 2009, GMNS 2009	Not signalised. Traffic volumes exceed 10,000vpd (currently 19,000vpd)
Melbourne Road and Kilmore Road intersection – roundabout and possible road realignment when traffic volumes exceed 9,000 vehicles per day on Melbourne Road.	ODP 2009, GMNS 2009	Upgrade currently in planning and design stages. Traffic volumes exceed 9,000vpd (currently 11,000vpd)
Willowbank Road and Gisborne-Melton Road intersection – roundabout to be constructed when Willowbank Road is extended west of Gisborne-Melton Road.	ODP 2009, GMNS 2009	No intersection upgrade. GMNS 2016 notes that the Fersfield Road Development Plan identifies a through road from Willowbank Road to Fersfield Road, rather than the proposed roundabout at Willowbank Road and Gisborne-Melton Road.

Road network Recommendation	Identified in	Current status / Comments
Willowbank Road and Mt Gisborne Road – roundabout or protected right-turn and left turn slip lanes as traffic volumes on Willowbank Road east of Aitken Street approach 2,000 vehicles per day.	ODP 2009, GMNS 2009	Implemented – roundabout constructed.
Willowbank Road and Brady Road – intersection upgrade to provide a standard T-intersection when abutting land is developed.	ODP 2009, GMNS 2009	Implemented – standard T- intersection. GMNS 2016 notes that this intersection should be upgraded to a roundabout, considering future volumes. GMNS 2016 also recommends lowering the speed of Brady Road from 100kph to residential default 50kmh.
The proposal to create a fourth leg on the roundabout at Parkview Street still stands once development is approved on the eastern side of Brady Road.	GMNS 2016	Fourth leg of the roundabout has been constructed, for access to future development east of Brady Road.
Retention of Station Road as the key north-south road.	ODP 2009	Station Road continues to be the key north-south road.
Development of a key collector street within the new development front west of Station Road. Connection points to Station Road are identified immediately north of Colwyn Estate, and immediately south of the Whistle Stop Tavern (now Barringo Food & Wine Co.).	ODP 2009	Key collector street not yet implemented. This is considered relevant when land west of Station Road is developed.
Aitken Street between Gisborne-Melton Road and Willowbank Road – upgrade to include 6m through lane and 2m wide sealed shoulders on both sides when volumes exceed 4,000 vehicles per day.	ODP 2009, GMNS 2009	Not upgraded.
Brady Road – upgrade to include 6m through lane and 2m wide sealed shoulders on both sides when abutting land is developed.	ODP 2009, GMNS 2009	Not upgraded. Abutting land is currently under development.
Station Road between Melbourne Road and Calder Freeway – duplication as traffic volumes approach 16,000 vehicles per day.	ODP 2009, GMNS 2009	Station Road not duplicated. Currently 15,000vpd (approaching the 16,000vpd threshold). It is understood that Council does not support duplication of Station Road.
Willowbank Road - upgrade to include 6m through lane and 2m wide sealed shoulders on both sides when abutting land is developed.	ODP 2009, GMNS 2009	Not upgraded. Abutting land is not fully developed with conventional residential development (low density residential development remains)
The Boulevard/Oakwood Close/Station Road – connection of Wallaby Run through to Station Road when abutting land is developed.	ODP 2009, GMNS 2009	The Wallaby Run connection to Station Road is in place. Housing development continues in this area.
An indicative road layout is provided for the expanded industrial area, including the possible provision of an additional east – west connection to Payne Road. The intersection of Barry Road and Saunders Road will require reviewing prior to any further development off Barry Road.	ODP 2009, GMNS 2016	East-west connection to Payne Road not constructed from the industrial park. The intersection of Barry Road and Saunders Road has not been upgraded. Review of the Barry Road and Saunders Road intersection is encouraged, given the proposed business park expansion.
It is therefore recommended that Pierce Road undergo some minor widening by adding unsealed shoulders and linemarking. Where Pierce Road intersects with Hamilton Road and the VicRoads arterial Gisborne-Kilmore Road, suitable intersection upgrades may be necessary	GMNS 2016	No improvements made. Improvements likely required considering future development.

Road network Recommendation	Identified in	Current status / Comments
An indicative road layout is provided for the Low Density Residential area between Kilmore Road and Saunders Road.	ODP 2009	The road layout is generally constructed per the ODP indicative layout. No road extension has been constructed in the eastern portion of this land area due to existing development.
Brantome Street proposed to become one-way from north to south with appropriate intersections at either end if determined feasible. This is due to forecast increased traffic accessing the CBD via Robertson-street and Hamilton-street	GMNS 2016	Not implemented
Sheedy Road/Fersfield Road/Bloomfield Road - The recommendation is for intersection upgrades at the subject intersections in the form of roundabouts or other formalised treatments	GMNS 2016	Limited implementation of roundabouts on the subject roads to date.
Hamilton Road intersection upgrade - the traffic volumes on Hamilton Road east and west are expected to double in the 2036 projections	GMNS 2016	Not upgraded. Is likely required in anticipation of predicted growth.
Gisborne Bypass – heavy vehicles travelling from north to south along Station Road are assumed to be in the order of 6.1% of all traffic. If constructed, the Gisborne Bypass may divert a portion of these heavy vehicles off Station Road and Robertson-street.	GMNS 2016	Concept option phase. Further analysis needed.

Table 2-2 Previously Identified Active Transport Network Recommendations

Active Transport Recommendation	Identified in	Current status / Comments
The provision of bicycle paths on Station Road is limited due to its narrow road reservation with little prospect of it being widened. An alternative shared bicycle / pedestrian network is proposed through the new residential area west of Station Road, utilising the new road network and linear open space corridor. This path will connect Gisborne to the train station.	ODP 2009	Off-road bicycle path not yet constructed. Good opportunity to integrate active transport link along the Racecourse Marshlands Reserve and creek to the north, reserving these areas prior to conventional residential development.
Key bicycle and pedestrian networks are to be developed along the Mt Gisborne Road / Aitken Street spine through Gisborne. This network currently partially exists, primarily north of Jackson's Creek.	ODP 2009, GMNS 2009	An off-road shared path network is generally in place starting from Willowbank Road in the south, through to Gisborne Station. A large proportion of the proposed off-road shared path network has been implemented between Gisborne Station in the north and Gisborne Secondary School in the south. Gaps in the network, particularly immediately south of the station and through the Jackson's Creek area are to be addressed.
New bicycle and pedestrian networks are to be provided through all new linear links, particularly through South Gisborne.	ODP 2009	Significant residential development to occur in South Gisborne. Existing key linear links include: Fersfield Road (east-west) – intermittent shared path (approx. 2.5m wide) provided on south side of road. Gaps in network to be completed. Willowbank Road (east-west) – 1.5m wide footpath intermittently constructed, varying from the north side of the road to the south side. Gaps in network to be completed. Brooking Road (east-west) – 2.5m wide shared path constructed on the north side to

Active Transport Recommendation	Identified in	Current status / Comments
		cater for the newly developed residential area only. Footpaths to be provided in existing residential areas. Footpaths to the east to be provided when residential development occurs. Mount Gisborne Road / Aitken Street (north-south) – 2.5m wide shared path provided north of Willowbank Road, on the east side. Footpath network to be extended south of Willowbank Road. Brady Road (north-south) - Pedestrian footpaths (1.5m wide) provided on both sides of the road. Footpath only provided on the east side at the southern end. Pedestrian footpaths are currently adequate. Tasman Road / Childe Harold Road / Bloomfield Road (north-south) – 1.5m wide footpath provided on the west side, 2 - 2.5m wide path provided on the east side, south of Willowbank Road. No paths provided on Bloomfield Road. Footpath network to be extended north along Bloomfield Road.
Acquire additional land to provide space for an accessible public walkway link from the Skyline Drive estate to the Jacksons Creek linear parkland	ODP 2009	No subsequent acquisition of land or provision of walkway.
Kilmore Road – install gravel footpath on one side in the next 5 – 10 years.	GMNS 2009	Completed - Sealed path provided on at least one side of the road between Calder Freeway and Melbourne Road.
Aitken Street between Willowbank Road and the Town Centre – install a sealed shared pathway (2.5m min) on one side in the short term (1-3 years).	GMNS 2009, Walking and Trails Plan	Completed – constructed on the east side of Aitken Street
Ferrier Road – install footpaths on both sides when abutting land is developed.	GMNS 2009	Not constructed – abutting land not yet developed. Footpath only provided in proximity to the Primary School.
Willowbank Road - install footpaths on both sides when abutting land is developed.	GMNS 2009	Limited provision of footpath on the north side of the road, however conventional residential development has not yet occurred. Footpaths have been provided along the south side in sections where conventional residential development has occurred. Gaps in the network to be rectified when development occurs.
Brady Road - install footpaths on both sides when abutting land is developed.	GMNS 2009	Footpaths are provided on both sides where conventional residential development has occurred. Gaps in the network to be rectified when development occurs.
Brooking Road - install footpaths on both sides when abutting land is developed.	GMNS 2009	Footpaths are provided on the north side where conventional residential development has occurred. Gaps in the network to be rectified when development occurs.

Active Transport Recommendation	Identified in	Current status / Comments
Fersfield Road – install gravel footpath on one side in the next 5 – 10 years.	GMNS 2009	Sealed footpath is provided on the south side only, however only in sections. Gaps in the network to be rectified when development occurs.
Fisher Street – upgrade existing footpath on south side to provide a 1.5m minimum pavement width in the short term (1-3 years).	GMNS 2009	Further works required to upgrade footpath to 1.5m wide between Prince Street and Aitken Street. Remaining sections of Fisher Street to be provided with footpaths.
Prince Street was recommended in the previous Bicycle Strategy to be an advisory on-road route and was also to include a safe crossing point of Bacchus Marsh-Gisborne Road (Robertson Street) in the vicinity of Prince Street. A shared path would be more appropriate for the northern section of Prince Street (on one side only) and an on-road advisory route would be appropriate south of Hamilton-street.	GMNS 2009	A shared path has been constructed in the northern section of Prince Street, on the east side of the road. No pedestrian crossing has been provided in the vicinity of Prince Street at Robertson-street, however there is an existing pedestrian crossing at Brantome Street and Robertson-street. No advisory route has been provided south of Hamilton-street. The shared path along the northern section of Prince Street is not well connected to the existing/wider bicycle network.
Walking - Link from Fersfield Road to Jacksons Creek Trail along Worcester Road and Calthorpe Street.	WCS 2014	Footpaths not constructed.
Walking - Willowbank Road between Brady Road and Bloomfield Road.	WCS 2014	Footpath almost fully constructed along south side of the road.
Walking - Link between Octagonal Court and train station running along east and north-east periphery of Gisborne Racecourse Marshlands Reserve, north to train line, and along south side of train line to station.	WCS 2014	Not constructed.
Walking - Link between train station and school on Hamilton Road.	WCS 2014	Footpaths have been constructed.
Walking - Fersfield Road between Sansom Street and Aitken Street.	WCS 2014	Limited provision of footpaths.
Walking - Fisher Street between Goode Street and Turanga Reserve.	WCS 2014	Footpaths not constructed.
Walking and cycling - Explore options for an off-road connection (within the road reserve) between New Gisborne and Riddells Creek along Saunders Road - Gisborne/Kilmore Road.	WCS 2014	Shared path currently constructed along Saunders Road as far east as Coleman Court.
Walking and cycling - Shared path link along south side of Sheedy Road from Fersfield Road to end of service road, and south side of Melbourne Road from Howey Street to Calthorpe Street.	WCS 2014	Shared path not constructed.
Walking and cycling - Shared path link along reserve between Fersfield Road and Willowbank Road.	WCS 2014	Shared path partly constructed south of Fersfield Road.
Walking and cycling - Shared path link down east side of reserve between Willowbank Road and the corner of Francis Crescent and Parkview Street. On-road cycle route treatment along east-west segment of Parkview Street, north up Brady Road, east along Charters Avenue, and south along [road name unknown] to location of potential park.	WCS 2014	Existing 1.5m path provided down east side of reserve between Willowbank Road and the corner of Francis Crescent and Parkview Street. On-road cycle route treatment no implemented.

3 Existing Conditions Summary

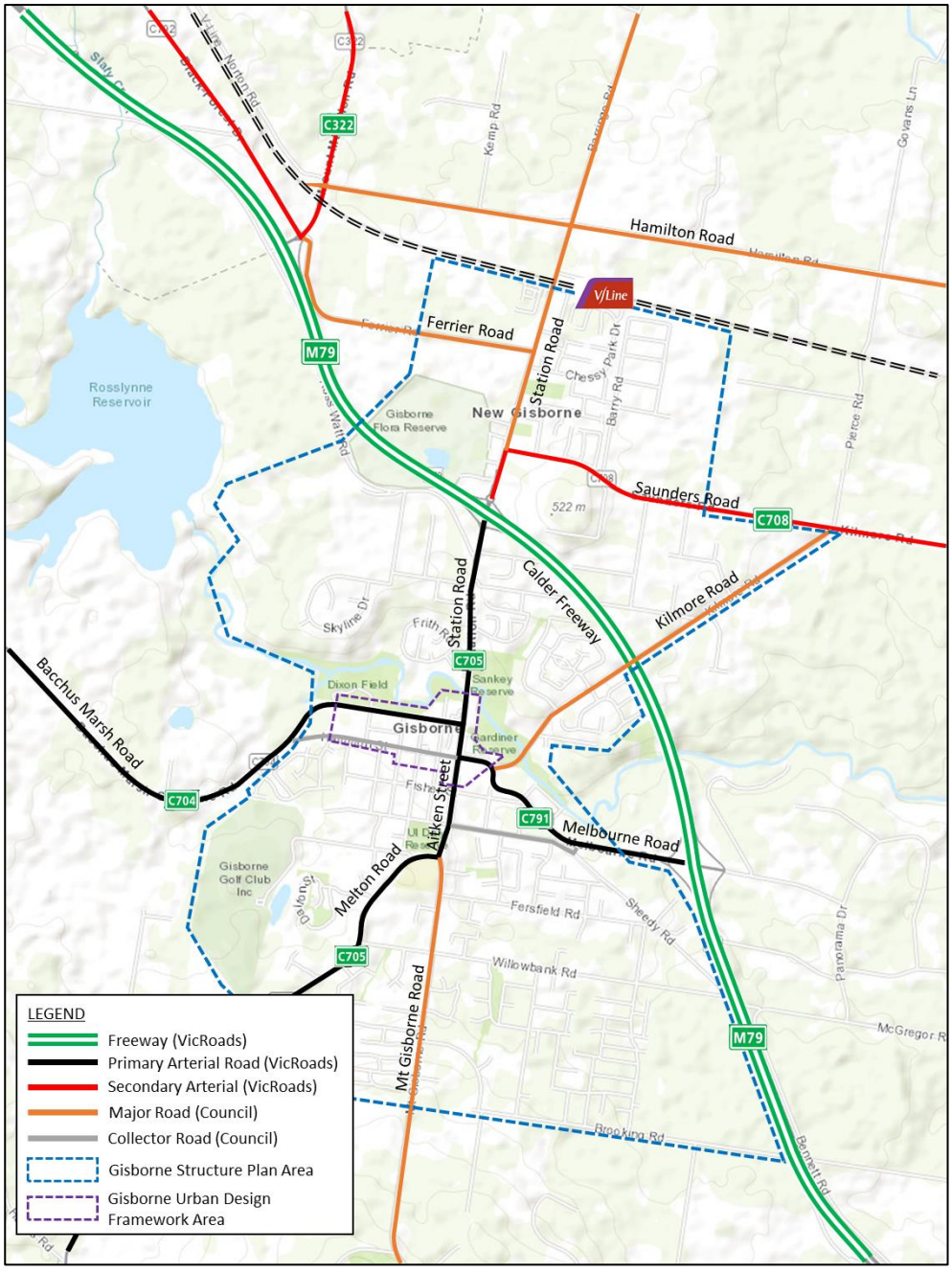
3.1 Location, Access & Land Use

3.1.1 Location and Access

Gisborne plays an important role in Macedon Ranges Shire as a key regional centre within the southern area of the Shire. The township is accessible to Melbourne and Sunbury to the southeast via the Calder Freeway (M79), with exit ramps providing access to the east and north of the town centre. Arterial roads which provide direct access to the town centre include Bacchus Marsh Road (C704) to the west, Gisborne – Melton Road (C705) to the south, Melbourne Road (C791) and Saunders Road / Kilmore Road (C708) to the east and Station Road (C708/C791) to the north.

Gisborne Railway Station is located on the Melbourne-Bendigo rail line in New Gisborne, approximately 1.6 kilometres north of the Calder Freeway interchange on Station Road, being just over 3 kilometres north of Gisborne town centre. Figure 3-1 illustrates the key transport links providing access to Gisborne.

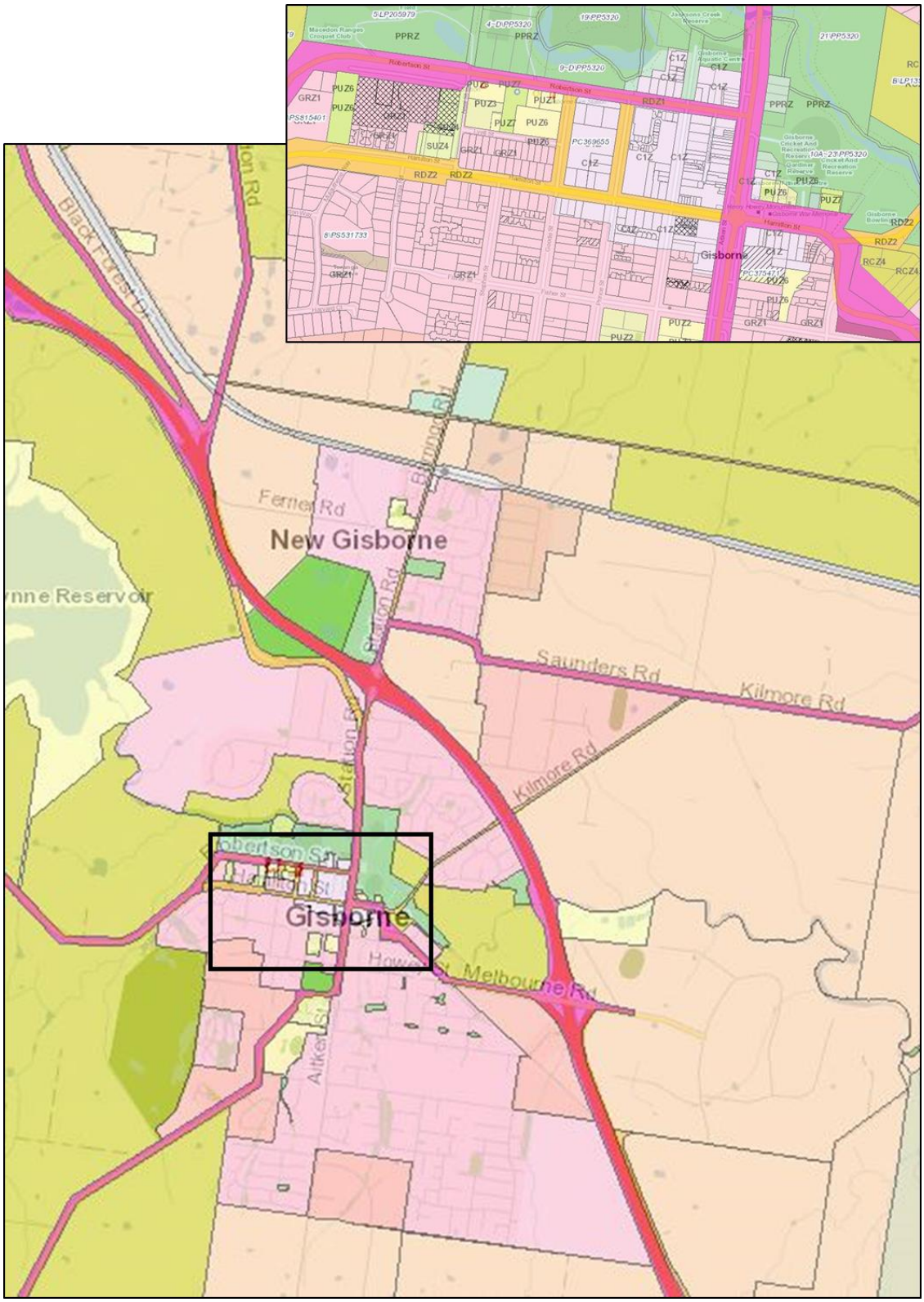
Figure 3-1 Gisborne Transport Access Links



3.1.2 Land Use

The Gisborne township and investigation areas currently include a mix of General Residential Zone (GRZ), Commercial Zone (CZ), Low Density Residential Zone (LDRZ), Rural Living Zone (RLZ), Industrial Zone (IN1Z), Public Park and Recreation Zone (PPRZ), Public Use Zone (PUZ) and Public Conservation & Resource Zone (PCRZ). Figure 3-2 indicates the existing land use zones within the Gisborne township and investigation areas.

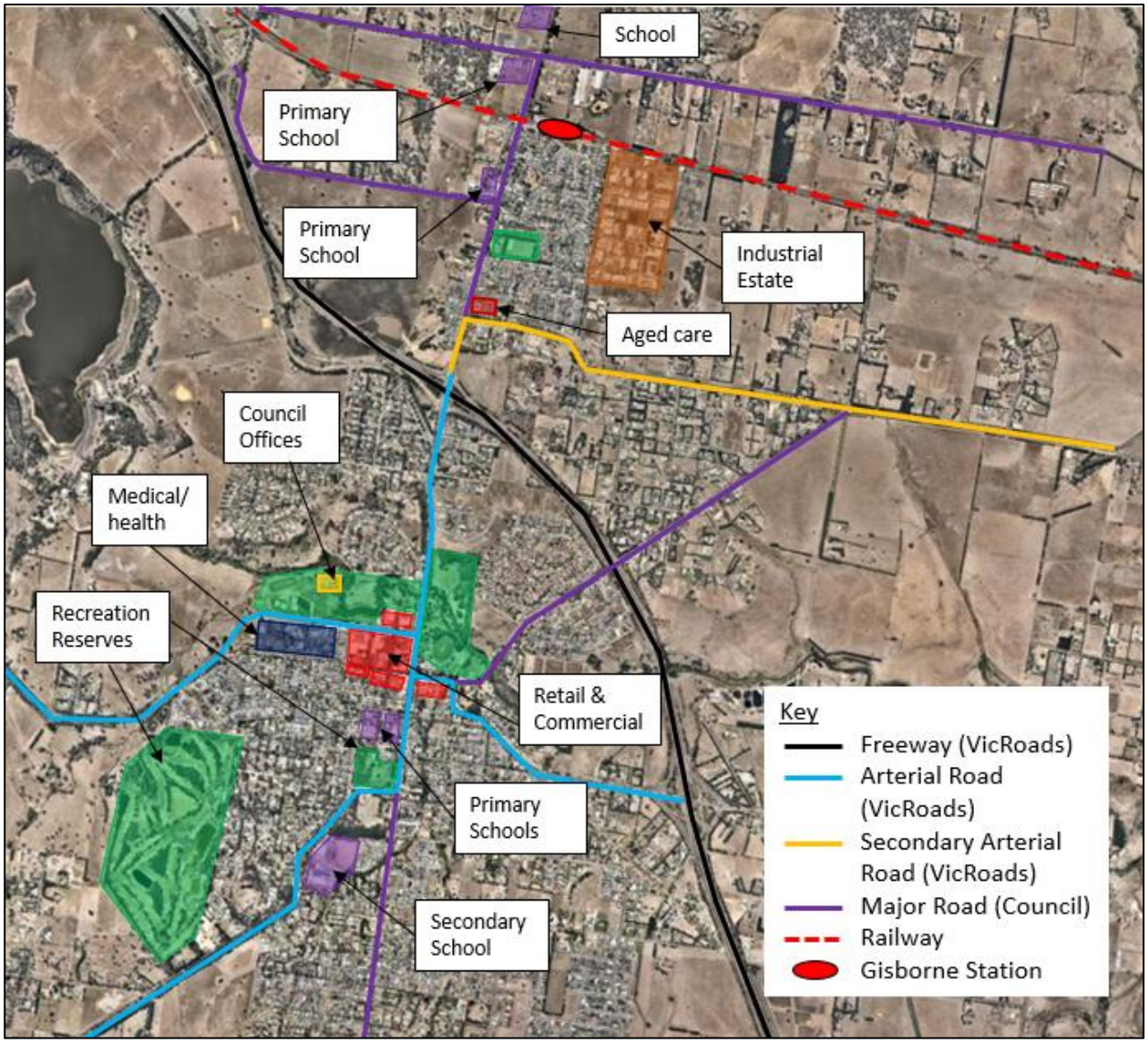
Figure 3-2 Existing Land Use Zones



Source: https://mapshare.vic.gov.au/vicplan/

Gisborne has a range of different employment and retail areas, education, services and facilities to support the existing population. These existing services, supported by additional services and facilities will continue to support a growing population within the township boundary. Current facilities in Gisborne are highlighted in Figure 3-3.

Figure 3-3 Existing Key Services in Gisborne



3.1.3 Existing Population

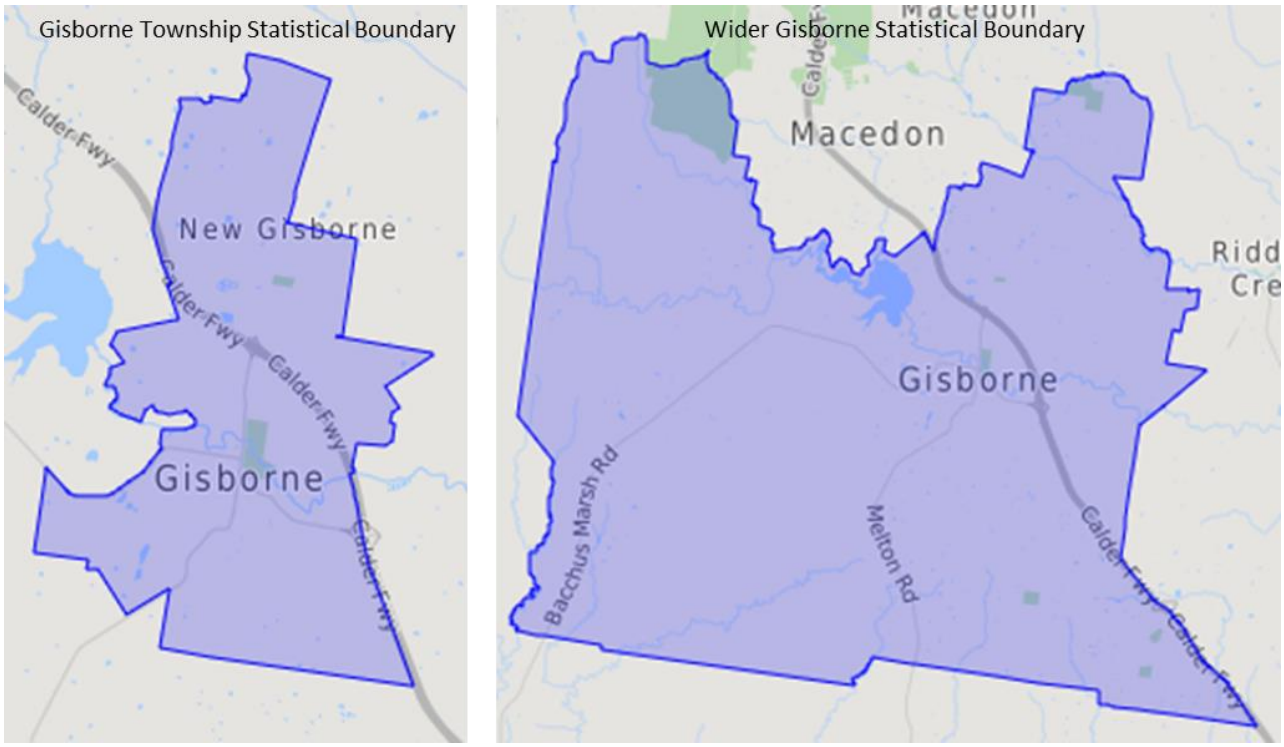
3.1.3.1 Population

Australian Bureau of Statistics (ABS) 2016 census data has been reviewed for the Gisborne area, with the Gisborne Township area and wider Gisborne area boundaries shown in Figure 3-4. 2011 ABS census data is also included by way of comparison.

Census data indicates that the population of Gisborne township was 9,822 in 2016, which had increased from 8,057 in 2011, representing a 22% overall increase and a 4.4% annual increase. In 2016, the wider Gisborne area had a population of 12,831 residents, and the estimated population in 2020 is 14,406 residents.

In terms of a long-range forecast, strong population growth is predicted to continue, with an estimated forecast of 20,454 residents by 2036.

Figure 3-4 Gisborne Census Data Areas



Source: Australian Bureau of Statistics

3.2 Existing Road Network

The existing Gisborne road network consists of strategic, local and service roads. The following section provides a brief description of the key road links that will continue to support the growth of Gisborne, or be improved or upgraded as growth occurs.

In order to gain a thorough understanding of existing traffic conditions in and around Gisborne, VicRoads and MRSC commissioned traffic surveys in October 2018. These included traffic volume surveys, intersection turning movement counts and origin-destination surveys across the road network throughout Gisborne. The results from these surveys are provided in Appendix B

3.2.1 Strategic Road Network

The arterial roads under VicRoads' jurisdiction that service Gisborne are described in the following sections.

3.2.1.1 Calder Freeway (M79)

The Calder Freeway is a VicRoads controlled Freeway that provides connectivity between Gisborne and Woodend and Kyneton within Macedon Ranges Shire and other major centres such as Melbourne, Sunbury and Bendigo further afield.

The Calder Freeway in proximity to Gisborne has a posted speed limit of 110km/h and provides a dual-carriageway with two lanes in each direction within a 130m wide road reserve. Exit and entry lanes on a full diamond interchange provide access to Gisborne from both directions on the freeway via Melbourne Road to the east of Gisborne and via Station Road to the north of Gisborne.

Figure 3-5 Calder Freeway Southbound, near Kilmore Road Overpass

Source: Google Street View

3.2.1.2 Station Road (C708/C791) (South of Saunders Road)

Station Road south of Saunders Road runs north-south and provides the primary connection to the town centre from the Freeway to the north and New Gisborne.

Station Road has a posted speed limit of 60km/h and a typical road reserve width of 30m. A single lane is typically provided in each direction; however, an additional lane is added in each direction when passing through the roundabouts either side of the Calder Freeway underpass. A second lane is also added on the uphill, northbound section of road between approximately Jacksons Creek and Wallaby Run. A 2 – 2.5m wide shared user path is provided along the east side of Station Road.

Figure 3-6 Station Road Southbound from Saunders Road

3.2.1.3 Aitken Street (C705)

Aitken Street provides north-south access through and south of the town centre, connecting Melton Road and the local street network from the south. Aitken Street is a key road running along the eastern edge of the town centre, which all other arterial roads intersect. It also provides angle parking within service lanes for retail access in the town centre.

Aitken Street has a 60km/h speed limit and provides a single lane in each direction within a 60m wide road reserve, with service lanes on both sides generally as far south as Howey Street. Footpaths are provided on at least one side for the length of Aitken Street varying in width from 1.5-2.5m, with a new signalised pedestrian crossing provided mid-block between Hamilton Street and Robertson Street.

Figure 3-7 Aitken Street Southbound from Robertson Street.

3.2.1.4 Melbourne Road (C791)

Melbourne Road connects Aitken Street to the Calder Freeway, to the east of the town centre. Melbourne Road has an 80km/h posted speed limit when exiting the Calder Freeway, reducing to 60km/h on approach to the town centre, with a single lane in each direction. It has a road reserve width varying from 40 – 60m. It is noted that an overtaking lane is added in the steeper eastbound section, east of the Kilmore Road intersection. There is a footpath along the eastbound service road and as far as Calthorpe Street along the southern side of Melbourne Road.

Figure 3-8 Melbourne Road Eastbound from Kilmore Road Intersection

3.2.1.5 Bacchus Marsh Road / Robertson Street (C704)

Bacchus Marsh Road provides the primary access to Gisborne from the west, which becomes Robertson Street east from the Hamilton Street intersection. On the approach to the Hamilton Street intersection, Bacchus Marsh Road has an 80km/h posted speed limit, with a 100km/h posted speed limit in the westbound direction. This speed limit reduces to 60km/h on Robertson Street west of the Neal Street roundabout. A single traffic lane is provided in each direction within a 60m wide road reserve. A 1.5m wide footpath is provided on the east side of the road, north of Mulgutherie Way.

Figure 3-9 Bacchus Marsh Road Northbound from Mulgutherie Way

Source: Google Street View

3.2.1.6 Melton Road (C705)

Melton Road provides the primary access to Gisborne from the south. Melton Road has a posted speed limit of 60km/h northbound, which begins near the intersection with The Willows, with a single lane in each direction. Prior to this intersection, the posted speed limit is 100km/h. The road reserve width is 60m. There is currently shared-path provision along the west side of Melton Road along part of the frontage to Gisborne Secondary College and a short section of gravel off-road path on the east side of the road between The Willows and Gisborne Secondary College. There are gaps in footpath provision however in proximity to residential development.

Figure 3-10 Melton Road Southbound Adjacent to Gisborne Secondary College

3.2.1.7 Saunders Road / Gisborne-Kilmore Road (C708)

Saunders Road provides an eastern extension from Station Road, north of the Calder Freeway, which becomes Gisborne-Kilmore Road to the east. Saunders Road and Gisborne-Kilmore Road are Secondary Arterial Roads with a single lane in each direction, within a 60m wide road reserve.

Saunders Road / Gisborne-Kilmore Road has a 60km/h between Station Road and Magnet Lane, becoming 80km/h east of Magnet Lane. A 2.5m wide shared path is provided on the north side of Saunders Road from Station Road, becoming a 1.5m wide footpath on the approach to Barry Road.

Figure 3-11 Saunders Road Eastbound from Station Road

3.2.2 Major Roads

The following non-arterial roads controlled by MRSC are also considered to be important in the distribution of traffic within Gisborne.

3.2.2.1 Station Road, north of Saunders Road

Station Road north of the Saunders Road runs north-south and provides a connection from Gisborne Railway Station towards the freeway and the town centre. A single lane is provided in each direction with sections of service lanes between Saunders Road and Ross Watt Reserve. Station Road has a posted speed limit of 60km/h and a road reserve width of 20 – 30m. Station Road is generally serviced by 1.5 - 2m wide footpaths on at least one side of the road, however a gap is noted between Octagonal Court and Ross Watt Reserve.

Figure 3-12 Station Road Southbound Towards Saunders Road

3.2.2.2 Kilmore Road

Kilmore Road provides a link between Hamilton Street / Melbourne Road to Gisborne-Kilmore Road, which includes an overpass crossing the Calder Freeway.

A single lane is provided in each direction, with two sections of service roads providing residential access, west of the Calder Freeway. Kilmore Road has a posted speed limit of 60km/h, increasing to 80km/h near Joseph Avenue. The road reserve width varies from 20 to 35m. 1.2 - 1.5m wide footpaths are provided on at least one side of Kilmore Road from the Melbourne Road intersection until just east of the Calder Freeway overpass eastbound.

Figure 3-13 Kilmore Road Eastbound from Mountain View Way

3.2.2.3 Hamilton Road

Hamilton Road is located approximately 400m north of the railway line running in an east-west direction parallel to the line.

Hamilton Road has a posted speed limit of 80km/h with one traffic lane in each direction within a 20m wide road reserve. A school zone is identified west of Barringo Road, with the speed limit reducing to 60km/h during school days between 8 – 9.30am and 2.30 – 4pm. Footpaths are currently not provided along the extent of Hamilton Road.

Figure 3-14 Hamilton Road Eastbound

Source: GMNS 2016

3.2.2.4 Ferrier Road

Ferrier Road extends west from the intersection with Station Road. Ferrier Road providing connectivity to the southbound carriageway of the Calder Freeway.

A single lane is provided in each direction within a 20m wide road reserve, with a posted speed limit of 60km/h, becoming 80km/h approximately 360m west of the Station Road intersection. A 1.6m wide section of footpath is provided on the north side of Ferrier Road, along the frontage of New Gisborne Primary School. A car park with a U-turn area including a safety zone is provided at the western boundary of the school.

Figure 3-15 Ferrier Road Westbound

Source: GMNS 2016

3.2.2.5 Barry Road

Barry Road is a local road, extending north from its intersection with Saunders Road. Barry Road is the primary access route to the Gisborne Business Park, running along the western boundary of the Business Park.

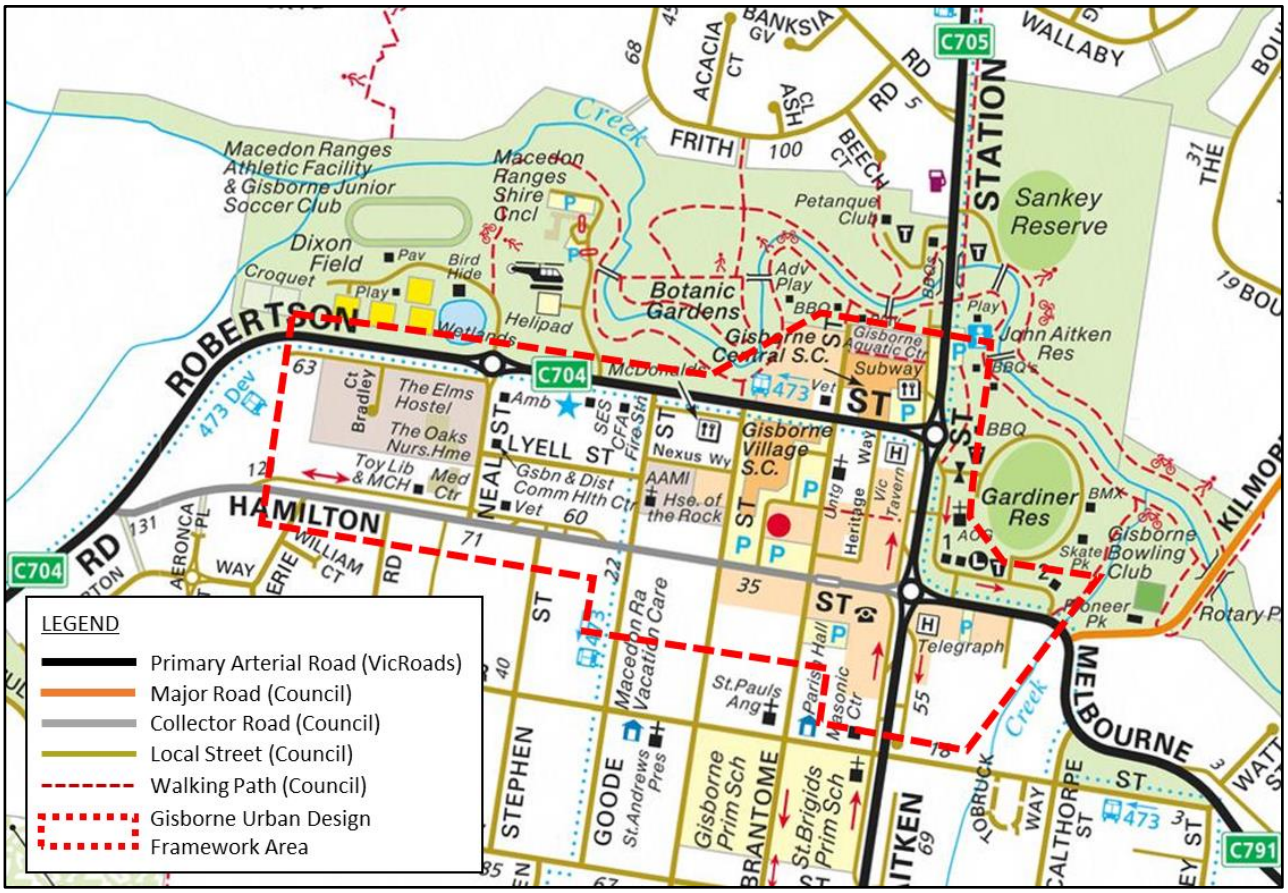
A single lane is provided in each direction within a 20m wide road reserve with a posted speed limit of 50km/h. A 200m long section of 1.5m wide footpath has been constructed on the east side of Barry Road, extending south from Ladd Road.

Figure 3-16 Barry Road Northbound from Saunders Road

3.2.3 Town Centre Streets

Figure 3-17 illustrates the street network within Gisborne town centre providing access to the various commercial precincts, car parks and other services. Key streets are summarised in the following sections.

Figure 3-17 Existing Road Network – Gisborne Town Centre



Source: Melway

3.2.3.1 Robertson Street (C704)

Robertson Street connects Bacchus Marsh Road to Aitken Street. Robertson Street provides for east-west movements along the northern extent of the town centre, providing access to shops including the Coles off-street car park, in addition to Macedon Ranges Shire Council offices and surrounding recreational facilities on the north side of Robertson Street.

Robertson Street has a posted speed limit of 50km/h between Aitken Street and Goode Street increasing to 60km/h between Goode Street and Neal Street. The posted speed limit becomes 80km/h in a westbound direction, west of Neal Street. A single lane is provided in each direction within a 30 – 60m wide road reserve, with short right turn lanes into Princes Street and the Coles car park in the centre of the carriageway.

A 1.5m wide footpath is provided along the north side of Robertson Street between Aitken Street and Neal Street, following Jacksons Creek for a portion, and on the south side of Robertson Street between Aitken Street and Neal Street to the west.

Figure 3-18 Robertson Street Westbound from Aitken Street

3.2.3.2 Hamilton Street

Hamilton Street is a Council controlled collector road that runs east-west between Aitken Street and Bacchus Marsh Road.

Within the vicinity of the town centre, Hamilton Street has a 50km/h posted speed limit with a single carriageway and one traffic lane in each direction within a 30m wide road reserve. Pedestrian paths are provided along both sides of Hamilton Street.

Hamilton Street provides for through traffic access between Melbourne Road and Bacchus Marsh Road, in addition to servicing shops with access to on and off-street car parking and access to residential development.

Figure 3-19 Hamilton Street Westbound from Brantome Street

Source: GMNS 2016

3.2.3.3 Brantome Street

Brantome Street is a Council controlled local access street that runs north-south between Howey Street, through to the Gisborne aquatic centre to the north of Robertson Street. Brantome Street provides access to retail development in the north in addition to residential and the primary schools between Fisher and Howey Streets.

Angled on-street parking is provided along Brantome Street for access to town centre shops and offices, with access also provided to off-street shopping centre car parks. Brantome Street provides key connectivity to the town centre from its intersections with Robertson Street, Hamilton Street and Fisher Street.

A default speed limit of 50km/h applies to Brantome Street, which has a single carriageway and one lane in each direction within a 30m wide road reserve. It is noted that Brantome Street becomes a one-way road

south of the Fisher Street intersection with a 40km/h speed limit, providing access to the primary schools in this location. Footpaths are provided along both sides of the road within the UDF area.

Figure 3-20 Brantome Street Northbound from Hamilton Street

3.2.3.4 Prince Street

Prince Street is a Council controlled local access street that runs north-south from Robertson Street, terminating just north of Daly Street.

Prince Street has a 50km/h posted speed limit with a single carriageway and one traffic lane in each direction within a 30m wide road reserve. It is noted that the speed limit reduces to a posted 40km/h south of Fisher Street, adjacent to the Primary School. Within the UDF area, Prince Street has footpaths on both sides, however no footpath is provided on the west side of the road between Hamilton Street and Fisher Street.

This street provides access to retail areas in the north and residential areas in the south where it ends in a court-bowl. Access to angled on-street parking and shopping centre off-street parking is provided along Prince Street between Robertson Street and Hamilton Street.

Figure 3-21 Prince Street Southbound towards Hamilton Street

Source: GMNS 2016

3.2.3.5 Goode Street

Goode Street is a Council controlled local access street that runs north-south between Robertson Street and Howey Street. The southern portion provides access to residential development whilst the northern portion provides access to the western extent of the town centre. Access to angled on-street parking and shopping centre off-street parking is provided along Goode Street between Robertson Street and Hamilton Street, with residential development on the west side.

A default speed limit of 50km/h applies to Goode Street, which has a single carriageway and one lane in each direction within a 30m wide road reserve. Footpaths are provided on both sides of the road between Robertson Street and Hamilton Street, however no footpaths are provided south of Hamilton Street.

Figure 3-22 Goode Street Southbound Towards Lyell Street

Source: GMNS 2016

3.2.3.6 Heritage Way

Heritage Way is an access lane between Robertson Street and Brantome Street and generally provides back of house parking and access to the businesses which have frontages to Aitken Street and Brantome Street.

There are no speed limit signs or designated footpaths provided along Heritage Way, however its 8m wide road reserve and brick construction lends itself to a low speed environment for shared pedestrian and vehicle access.

Figure 3-23 Heritage Way Northbound

Source: Google Streetview

3.2.4 Key Intersections

Crucial to the road network in Gisborne is the safety and performance of the primary intersections in the town centre and other locations on the arterial road network. The study focusses on a number of intersections that will be assessed under future traffic conditions, with improvement recommendations identified where necessary. The following intersections are considered to be the key intersections around Gisborne:

- Saunders Road and Station Road (T-intersection);
- Aitken Street and Robertson Street (roundabout);
- Aitken Street and Hamilton Street (roundabout);
- Aitken Street and Melton Road (roundabout);
- Aitken Street and Willowbank Road (roundabout);
- Aitken Street and Howey Street (cross-intersection);
- Hamilton Street and Bacchus Marsh Road (T-intersection);
- Melbourne Road and Kilmore Road (T-intersection);
- Station Road and Ferrier Road (T-intersection); and
- Saunders Road and Barry Road (T-intersection).

These locations are illustrated on Figure 3-24

Figure 3-24 Key Intersections Within Gisborne

3.2.5 Vehicle Crash Statistics

To gain an understanding of the locations and severity of road accidents and potential problematic intersections or road links within and around the Gisborne Futures area, Cardno has reviewed the Crashstats data obtained from VicRoads for around the last five (5) years prior to 27 March 2019.

3.2.5.1 Gisborne – Vehicular Accidents

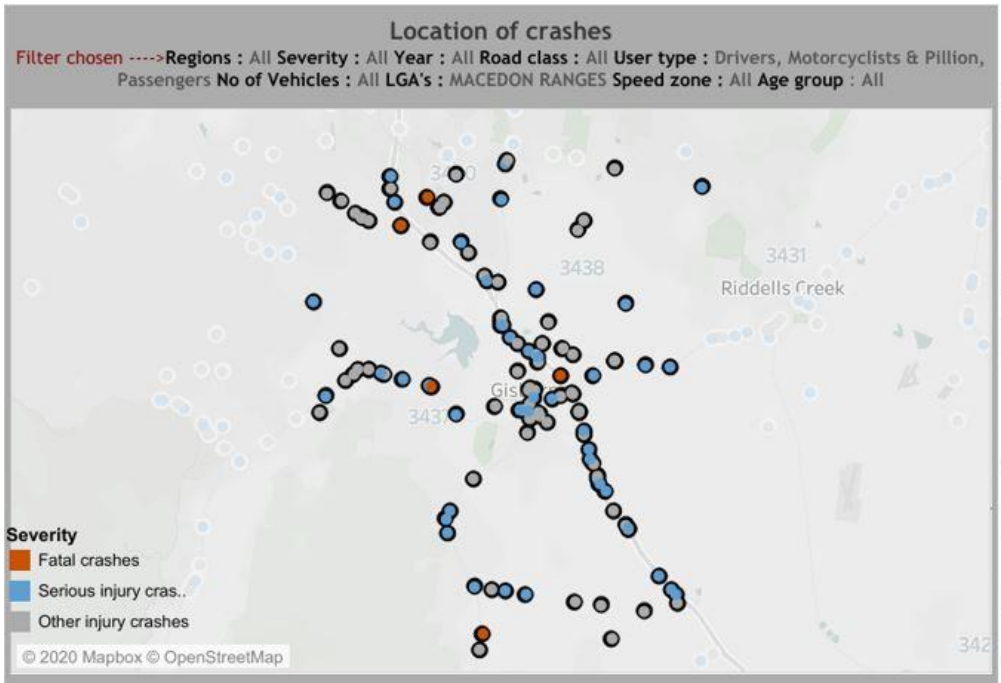
Crashstats data for incidents involving vehicles was examined for the wider Gisborne region, with a total of 133 incidents occurring over the 5-year period. The predominant locations are identified as follows:

- Nine (9) collisions occurred within the town centre (refer to section 3.2.5.2);
- Approximately 37 collisions occurred along the Calder Freeway, including exit ramps;
- The remaining collisions are fairly evenly distributed, predominantly along Saunders Road, Station Road, Gisborne-Melton Road, Bacchus Marsh Road and Couangalt Road;
- Notably, three (3) accidents occurred at the Saunders Road and Kilmore Road / Pierce Road intersection, collectively resulting in one (1) fatality and five (5) serious injuries; and
- Eight (8) accidents occurred along Couangalt Road, between Gisborne-Melton Road and the Calder Freeway. One serious injury incident is to both the Gisborne-Melton Road intersection and the Mount Gisborne Road intersection, whilst the other six (6) occurred along the straight stretch of road. None of the accidents were fatal.

The wider Gisborne area has recorded seven (7) fatal accidents. In addition to the fatality at the Saunders Road, Kilmore Road and Pierce Road intersection above, the other fatalities are as below:

- Calder Freeway between Kilmore Road and Station Road, August 2014;
- Gisborne-Bacchus Marsh Road south of Rosslynne Reservoir, July 2015.
- Further west along Gisborne-Bacchus Marsh Road from Rosslynne Reservoir, February 2017;
- Gisborne-Melton Road south of Couangalt Road, July 2017;
- Blackwood Road at the intersection of Forbes Road, June 2014;
- Black Forest Drive north of Blackwood Road, December 2017; and
- Skyline Drive, Gisborne, September 2019

Figure 3-25 Incidents Involving Vehicles (Gisborne Region)



Number of crashes*

Severity	2014	2015	2016	2017	2018	2019	Grand Total
Fatal crashes	2	2		3			7
Serious injury crashes	10	6	16	11	5	3	51
Other injury crashes	15	8	17	16	16	3	75
Grand Total	27	16	33	30	21	6	133

Number of persons*

Injury Level	2014	2015	2016	2017	2018	2019	Grand Total
Fatality	2	2		2			6
Serious Injury	11	6	13	10	6	3	49
Other Injury	18	14	20	21	15	3	91
Non Injury	20	7	12	28	8	4	79
Grand Total	51	29	45	61	29	10	225

Note : The data is incomplete for the last 6 months from the published date, as a result the last six months of data should not be used for any trend analysis.
Published date: 7/24/2019

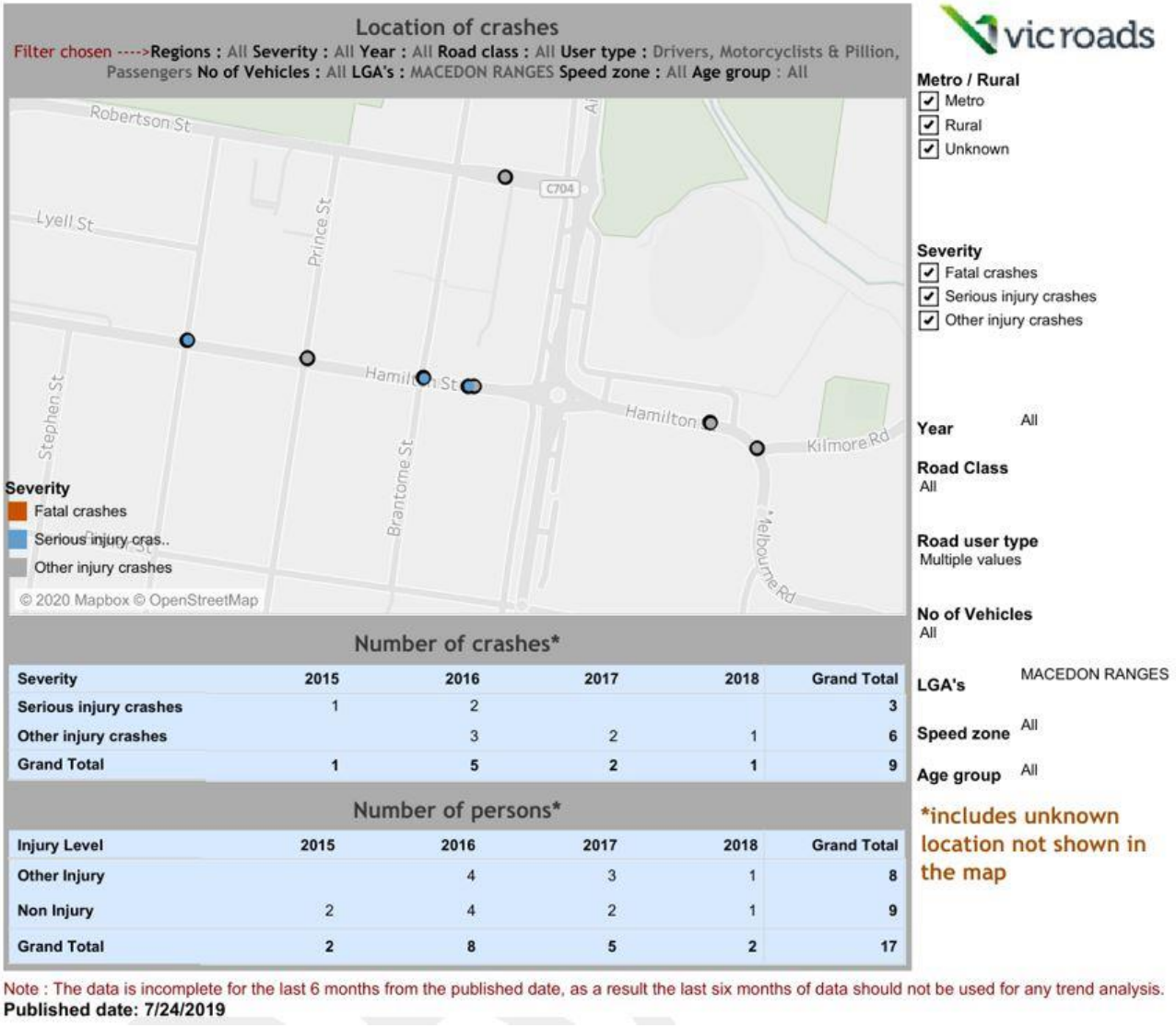
Source: VicRoads 'Crashstats'

3.2.5.2 Town Centre – Vehicular Accidents

Crashstats data was also examined for all recorded vehicular collisions within the town centre for the 5 year period between 2014 – 2019, with locations illustrated in Figure 3-26. A total of 9 crashes were recorded, predominantly along Hamilton Street. It is noted that this data includes vehicle incidents involving pedestrians.

Six collisions occurred along Hamilton Street, west of Aitken Street. Two (2) of these occurred at the intersection with Prince Street, and three (3) occurring between Brantome Street and Aitken Street.

Figure 3-26 Incidents Involving Vehicles (Gisborne Town Centre)



Number of crashes*

Severity	2015	2016	2017	2018	Grand Total
Serious injury crashes	1	2			3
Other injury crashes		3	2	1	6
Grand Total	1	5	2	1	9

Number of persons*

Injury Level	2015	2016	2017	2018	Grand Total
Other Injury		4	3	1	8
Non Injury	2	4	2	1	9
Grand Total	2	8	5	2	17

Note : The data is incomplete for the last 6 months from the published date, as a result the last six months of data should not be used for any trend analysis.
Published date: 7/24/2019

Source: VicRoads 'Crashstats'

3.3 Existing Active Transport Infrastructure

3.3.1 Overview

Whilst there is very little dedicated cycling infrastructure in Gisborne, pedestrian paths are provided throughout the Gisborne town centre however pedestrian paths within the other residential areas of Gisborne are limited. Shared user paths are provided along Jacksons Creek Reserve and Station Road between Robertson Street and Saunders Road intersections.

A masterplan of the existing Gisborne-wide footpath network is provided in Appendix C, which categorises paths by width (from 0.5m to >5.0m), current as at June 2018.

3.3.2 Pedestrian Network

Pedestrian infrastructure within the town centre was given particular attention, due to the relatively high levels of pedestrian movement in this area and due to observed road crossing issues particularly at Aitken Street.

Generally, within the town centre pedestrian connectivity is varied, with a number of line-marked pedestrian crossings provided which prioritise pedestrian movements over vehicles and provides safe crossing facilities. A number of pedestrian links however are incomplete or in poor condition, which could be improved.

Areas for potential improvements within the town centre are outlined in Figure 3-27 to Figure 3-33.

Figure 3-27 Northbound along Aitken St from Robertson St

Figure 3-28 Eastbound along Robertson St towards Aitken St

As shown in Figure 3-27 and Figure 3-28, the brick footpath ends and becomes gravel on approach to the Robertson Street crossing along Aitken Street. As a result, there is no Tactile Ground Surface Indicator (TGSI) on this road crossing approach. It was also observed that the footpath crossover point on the south side is on an angle, the central crossing area is quite narrow and poor drainage was noted in front of the crossing point on the north side. It was also noted that there are no pedestrian crossings provided for east–west movements across Aitken Street in this location.

Figure 3-29 New Pedestrian Crossing on Aitken St

Figure 3-30 New Signalised Pedestrian Crossing on Aitken St

Figure 3-29 and Figure 3-30 show a new pedestrian crossing and signalised pedestrian crossing along Aitken Street. It is understood that the Sunday market within Gardiner Reserve results in a large number of pedestrians crossing Aitken Street, with this installation designed to improve safety.

Figure 3-31 Eastbound along Hamilton St from Aitken St

It was noted that the pedestrian infrastcuture associated with the roundabout at Hamilton Street and Aitken Street was generally poor, presenting inconcistent materials and crossing points. Figure 3-31 depicts delapidated TGSIs, with a small section missing. It was noted that TGSIs were not provided at all crossing points, with kerb crossovers also inconsistent in their construction. Poor provision of pedestrian signage was also noted.

Figure 3-32 IGA Car Park Crossover on Brantome St

Figure 3-33 Brantome St Pedestrian Crossing at Hamilton St

Whilst pedestrian infrastructure along Brantome Street is generally good, it was observed that there were some potential pedestrian and vehicle conflict points due to unclear priority. For example, Figure 3-32 depicts a shopping centre car park vehicle exit point, where pedestrian and vehicle priority is unclear. Further, the 'no entry' signs are faded, providing potential for vehicles to accidently enter at this location, which pedestrians may not account for.

Figure 3-33 indicates a flat top road hump which is intended to improve pedestrian safety, however its proximity to the pedestrian crossing makes it unclear as to whether pedestrians or vehicles have priority.

3.3.3 Bicycle Network

3.3.3.1 Existing Bicycle Facilities

Bicycle infrastructure throughout Gisborne is very limited, with a notable absence of bicycle lanes within the town centre. Current bicycle infrastructure is generally limited to off-road shared paths, including along Station Road and within the Reserves associated with Jacksons Creek. A map showing existing bicycle infrastructure is shown in Figure 3-34.

Figure 3-34 Existing Bicycle Infrastructure

3.3.3.2 Principal Bicycle Network (PBN)

Figure 3-35 illustrates the existing PBN in addition to proposed PBN links. Existing links include east west links along Hamilton Street, Kilmore Road / Saunders Road, and Melbourne Road / Robertson Street / Bacchus Marsh Road. It is shown that there are currently very limited cycle facilities on these PBN links. The Station Road / Aitken Street, and a section of Melton Road are identified as a proposed section of the PBN.

Figure 3-35 Existing and Proposed PBN Links

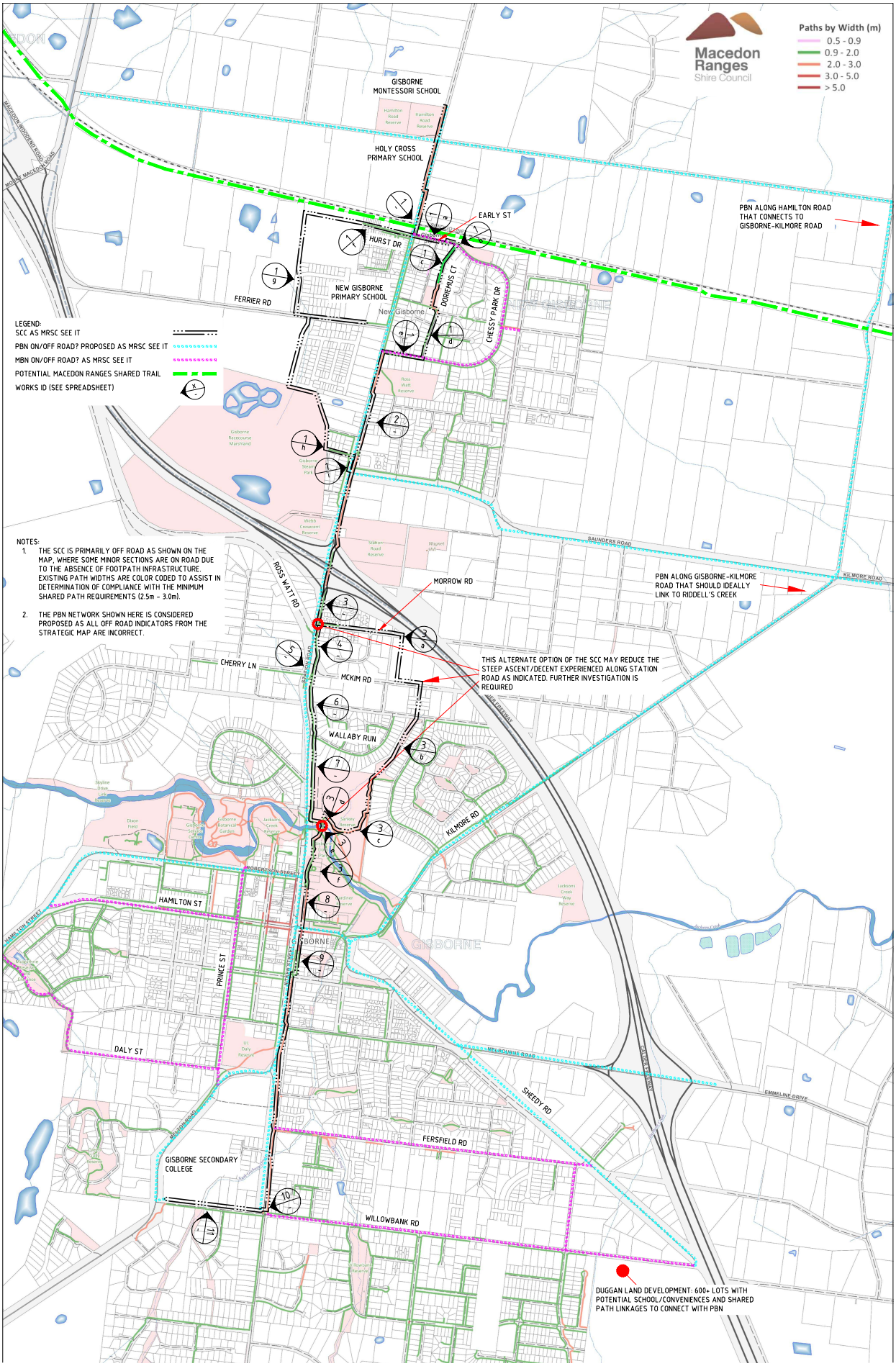
Source: vMap (DoT)

3.3.3.3 Gisborne Municipal Bicycle Network

MRSC has however prepared an indicative plan showing their suggested PBN and SCC, in addition to the Municipal Bicycle Network (MBN). This strategic cycling network is shown in Figure 3-36. The proposed bicycle infrastructure is significant and includes:

- Potential Macedon Ranges shared trail along the rail line;
- PBN to include a continuous north – south link between Gisborne Secondary College and the train station, along Aitken Street and Station Road;
- PBN to include all arterial roads;
- PBN along Hamilton Road, that connects to Gisborne-Kilmore Road via Pierce Road;
- MBN to include residential areas in New Gisborne, Gisborne town centre and east of Gisborne Secondary College; and
- A primarily off-road SCC which largely makes use of existing off-road paths.

Figure 3-36 Gisborne Indicative Strategic Bicycle Network



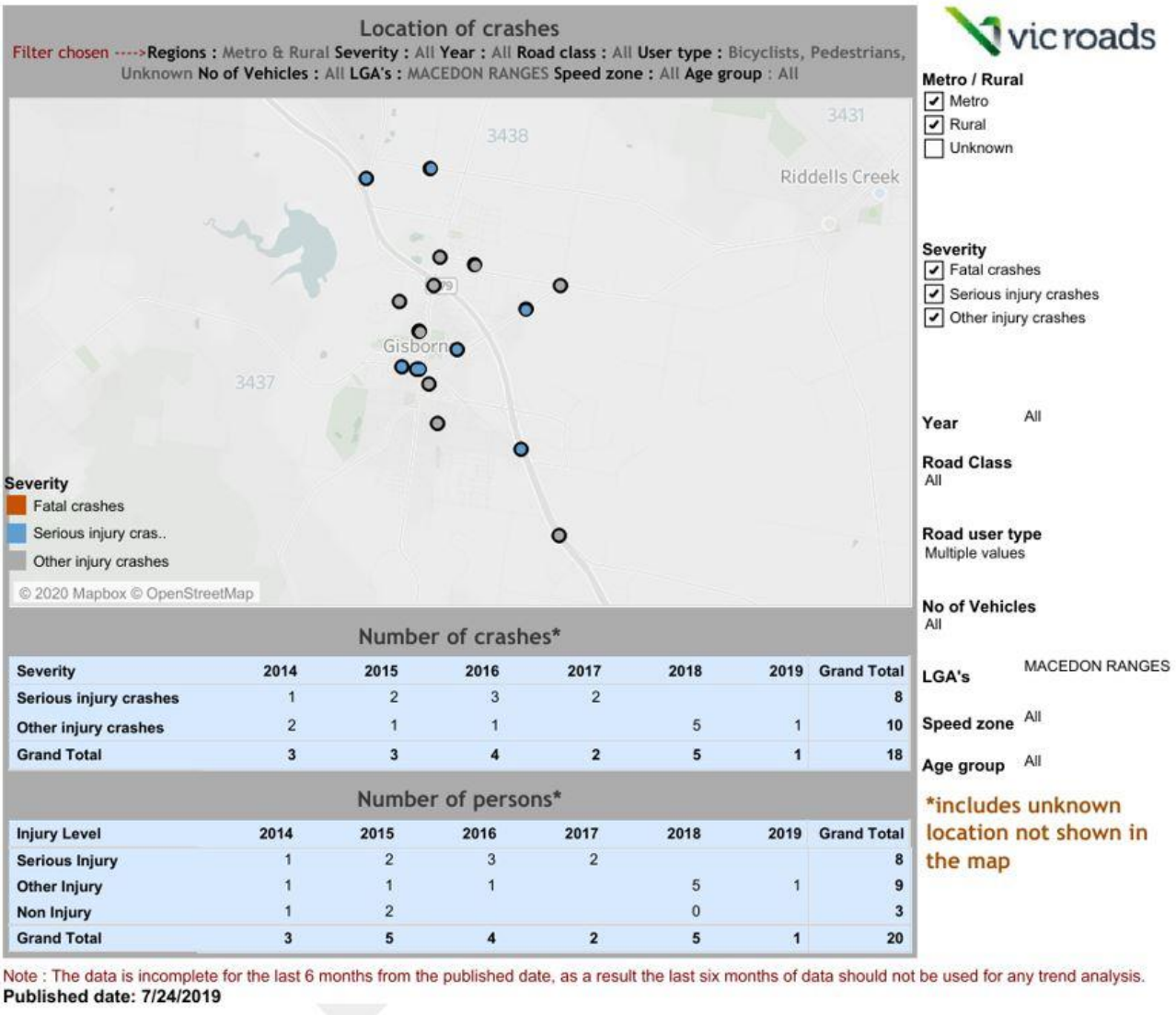
Source: MRSC

3.3.4 Pedestrian and Cyclist Crash Statistics

3.3.4.1 Gisborne – Pedestrians and Cyclists

The Crashstats data was also examined for incidents involving pedestrians and cyclists for the wider Gisborne region. In relation to incidents involving only pedestrians and cyclists, including within the town centre, a total of 18 were recorded from 2014 – 2019. The number of incidents per year is relatively consistent during this period, with three (3) of the total incidents occurring within the town centre. Of the 15 incidents outside the town centre, it is notable that three (3) occurred on Saunders Road. The incidents are illustrated in Figure 3-37.

Figure 3-37 Incidents Involving Pedestrians and Cyclists (near Gisborne)



Number of crashes*

Severity	2014	2015	2016	2017	2018	2019	Grand Total
Serious injury crashes	1	2	3	2			8
Other injury crashes	2	1	1		5	1	10
Grand Total	3	3	4	2	5	1	18

Number of persons*

Injury Level	2014	2015	2016	2017	2018	2019	Grand Total
Serious Injury	1	2	3	2			8
Other Injury	1	1	1		5	1	9
Non Injury	1	2			0		3
Grand Total	3	5	4	2	5	1	20

Note : The data is incomplete for the last 6 months from the published date, as a result the last six months of data should not be used for any trend analysis.
Published date: 7/24/2019

Source: VicRoads 'Crashstats'

3.3.4.2 Town Centre – Pedestrians and Cyclists

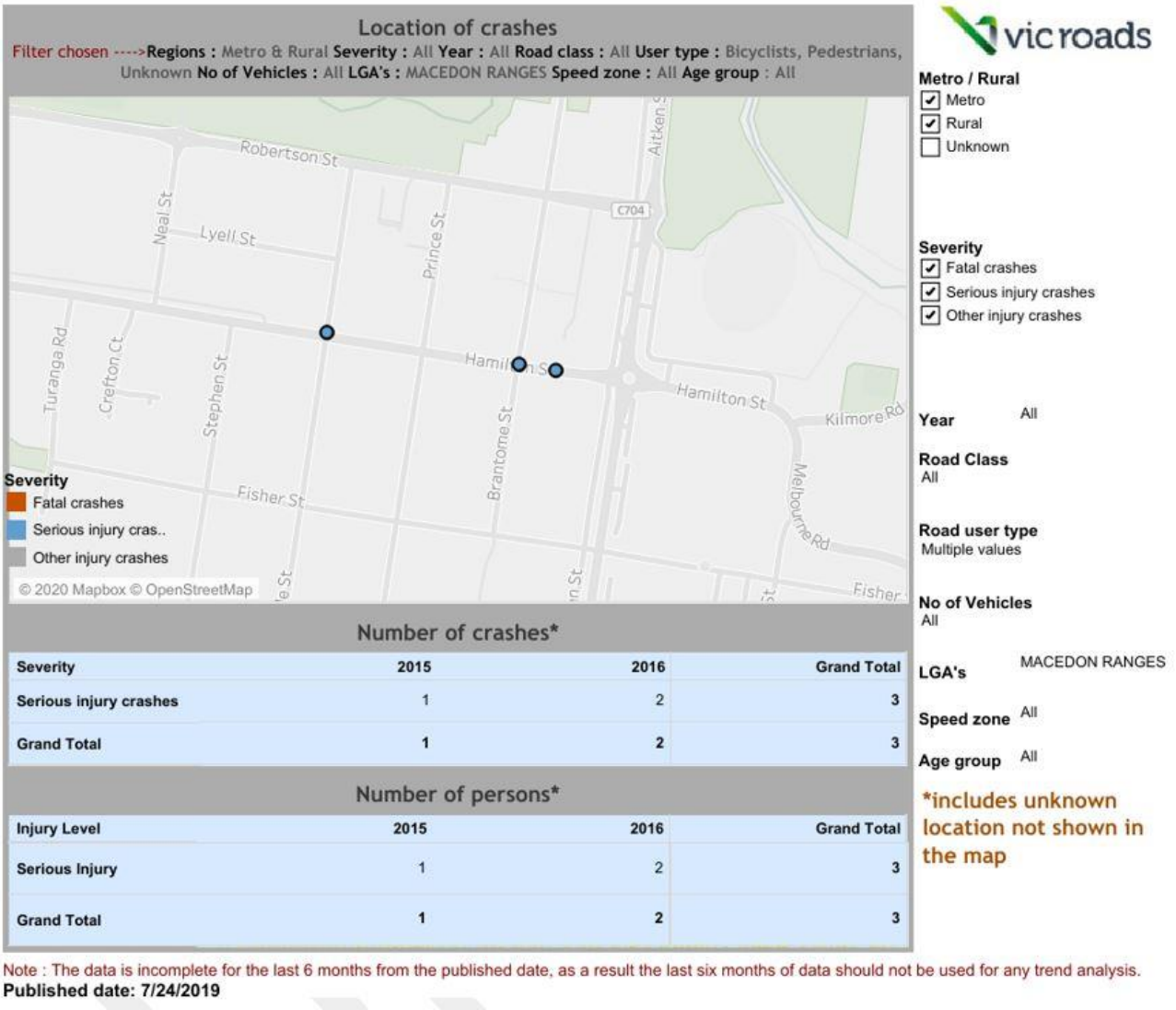
The Crashstats data was examined for all recorded pedestrian and bicycle incidents in the study area to assess the recent incident history.

It is noted that there were no bicycle related incidents in the study area. However, all three (3) pedestrian related incidents were recorded along Hamilton Street, with the locations illustrated in Figure 3-38. The incident locations are summarised below:

- Intersection with Goode Street, resulting in a serious injury;
- Intersection with Brantome Street, resulting in a serious injury; and

> East of Brantome Street, resulting in a serious injury.

Figure 3-38 Incidents Involving Pedestrians and Cyclists (Study Area)



Source: VicRoads 'Crashstats'

3.4 Public Transport Accessibility

Gisborne is currently accessed by both regional rail and a local bus service, as outlined in the following sections.

3.4.1 Existing Train Services

Train services to Gisborne Station operate along the Melbourne-Bendigo railway line and are operated by V/Line. Services run 7 days a week providing a direct connection to the metropolitan rail network via stops at Sunbury, Watergardens, Footscray and Southern Cross stations.

Services generally depart Gisborne at 1 hour intervals during the off-peak periods and at approximately 30 minute intervals during the peak periods. The travel time from Gisborne to Southern Cross Station is approximately 55 minutes, with travel time to Bendigo taking approximately 1 hour and 15 minutes.

Table 3-1 Gisborne V/Line rail service summary

Route	Destination	Day	Gisborne Station Arrival / Departure times	No. of services
Bendigo – Melbourne	Melbourne	Monday – Friday	5:31am to 11:40pm	23 (incl. 1 coach service)
		Saturday	6:52am to 11:40pm	16 (incl. 1 coach service)
		Sunday	6:52am to 9:45pm	13
Melbourne – Bendigo	Bendigo	Monday – Friday	7:10am to 12:41am	24
		Saturday	2:20am to 12:43am	20 (incl. 2 coach services)
		Sunday	2:20am to 11:13pm	17 (incl. 2 coach services)

Source of information: V/Line

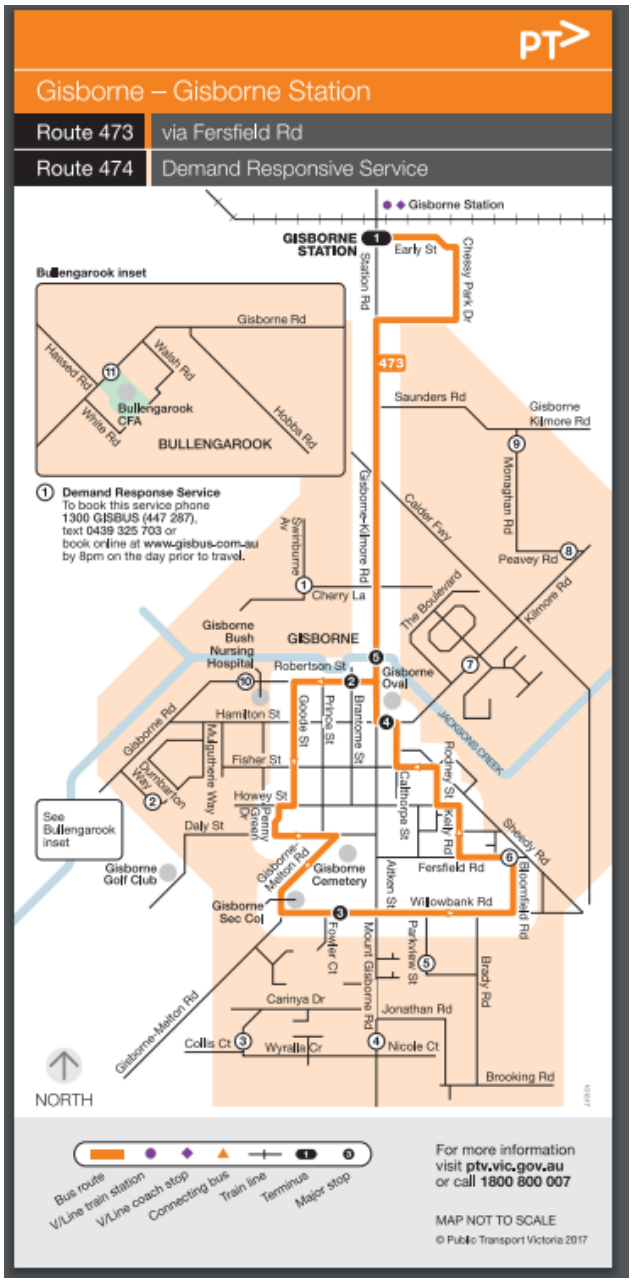
3.4.2 Existing Bus Network

Two local bus routes operate between Gisborne and Gisborne Station via a local service known as the 'GisBus'. Route 473 operates as a fixed route as depicted in Figure 3-39, whilst Route 474 is a demand responsive service operating within the wider area highlighted on the route map. The services operate from Monday to Friday with increased frequency during peak times, as shown in Figure 3-39.

The fixed Route 473 generally services the area immediately surrounding the Gisborne town centre, Gisborne Secondary College, Gisborne South and Gisborne Train Station. During the morning peak, the final stop is a five-minute trip from the Gisborne town centre to Gisborne Station. The Route 474 provides a supplementary service between other areas of Gisborne and the train station.

It is noted that the demand responsive Route 474 operates between 5:55am – 9:32am and 3:10pm – 8:06pm, whilst Route 473 operates all day between 5:58am – 7:55pm with services approximately every hour outside of peak times.

Figure 3-39 Gisborne Local Bus Route



Source: Public Transport Victoria

Table 3-2 Gisborne Local Bus Service – Peak Time Services

Peak time operation			
Gisborne Train Station arrivals (am)		**Gisborne Train Station departures (pm)**	
Route 474	Route 473	Route 474	Route 473
6:00	6:24	4:55	6:04
7:02	7:03	5:16	6:40
7:36	8:05	5:27	7:25
8:05	8:38	6:04	
8:35		6:34	
		6:59	
		7:36	

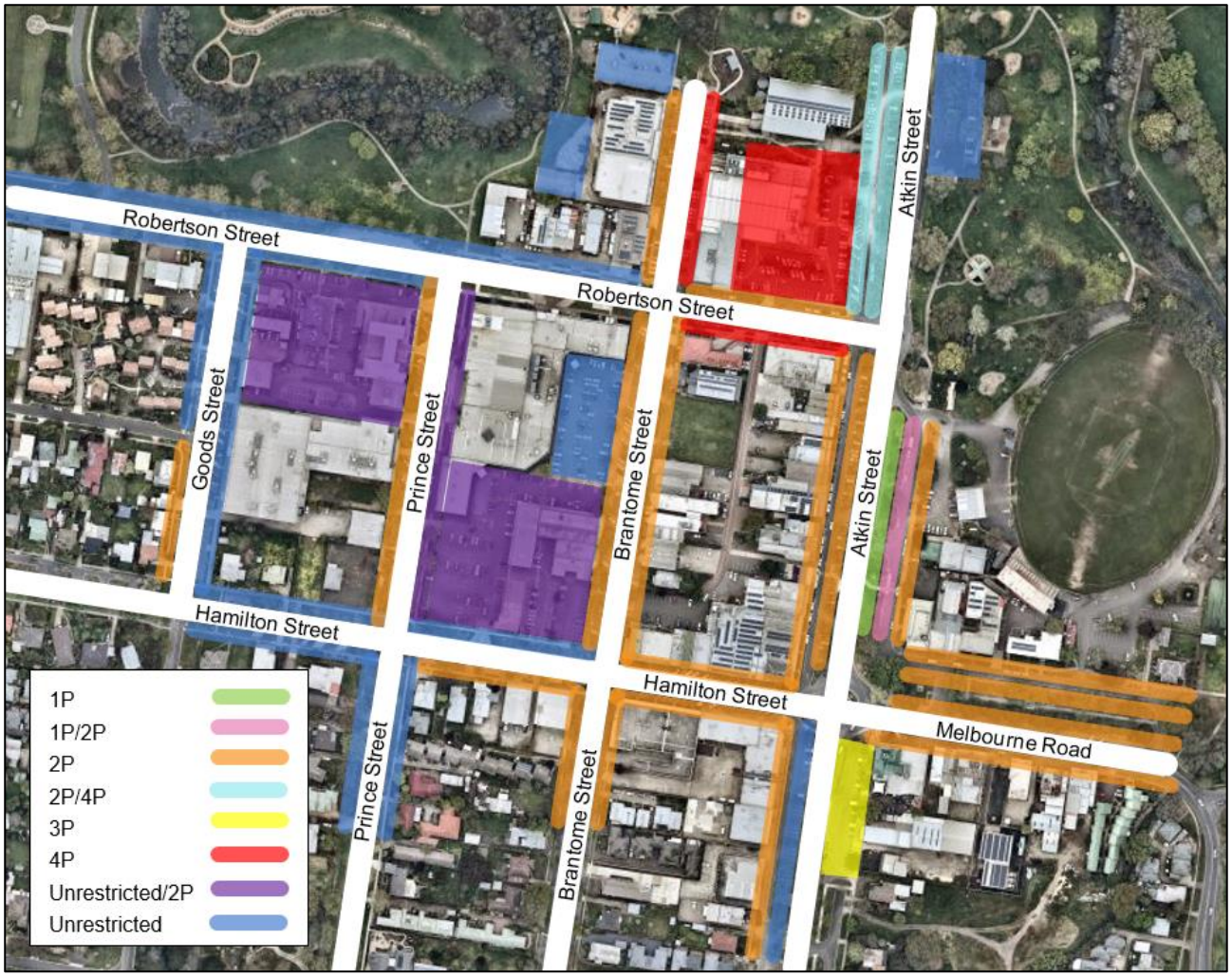
Source: Public Transport Victoria

3.5 Car Parking

3.5.1 Car Parking Supply and Restrictions

Cardno commissioned Nationwide Traffic Surveys P/L to undertake parking occupancy surveys on Thursday 11th October 2018 and Saturday 13th October 2018 between 7am – 7pm to determine existing parking restrictions and level of demand within Gisborne Town Centre. Figure 3-40 illustrates the predominant time restrictions of the car parking that was surveyed.

Figure 3-40 Time restrictions of Surveyed Car Parking



Within the Gisborne UDF area, a mix of on and off-street car parking is available with both restricted and unrestricted parking. Table 3-3 quantifies the number of car parking spaces associated with that illustrated in Figure 3-40.

Table 3-3 Summary of Car Parking Provision within Gisborne Town Centre

Type	On-Street	Off-Street	Total	% Provision
Unrestricted	202	446	648	45%
Disabled	19	16	35	2.4%
4P	49	0	49	3.4%
3P	0	25	25	1.7%
2P	450	150	600	42%
1P	14	0	14	1%
1/2P	4	0	4	0.3%
1/4P	3	0	3	0.2%
Bus Zone	7	0	7	0.5%
Loading Zone	3	0	3	0.2%
No Standing	2	0	2	0.1%
Other	4	42	46	3.2%
Total	757	679	1,436	100%

Currently there are 1,436 existing car spaces within Gisborne Town Centre for use by commercial employees, visitors and residents which includes 757 on-street and 679 off-street car spaces.

Existing parking supply within Gisborne Town Centre is predominately either unrestricted parking or two-hour parking, accounting for 45% and 42% respectively of on-street and off-street parking spaces. Unrestricted parking spaces are provided predominantly off-street, whilst two-hour parking spaces are located predominantly on-street.

It is also noted that whilst not surveyed, there is additional roof-top car parking on the corner of Brantome Street and Hamilton Street, with approximately 53 parking spaces provided. There is also capacity for additional on-street car parking further south of the surveyed car parks on Brantome Street and Prince Street, south of Hamilton Street. Based on aerial imagery and observations, these car parking areas are unrestricted and underutilised.

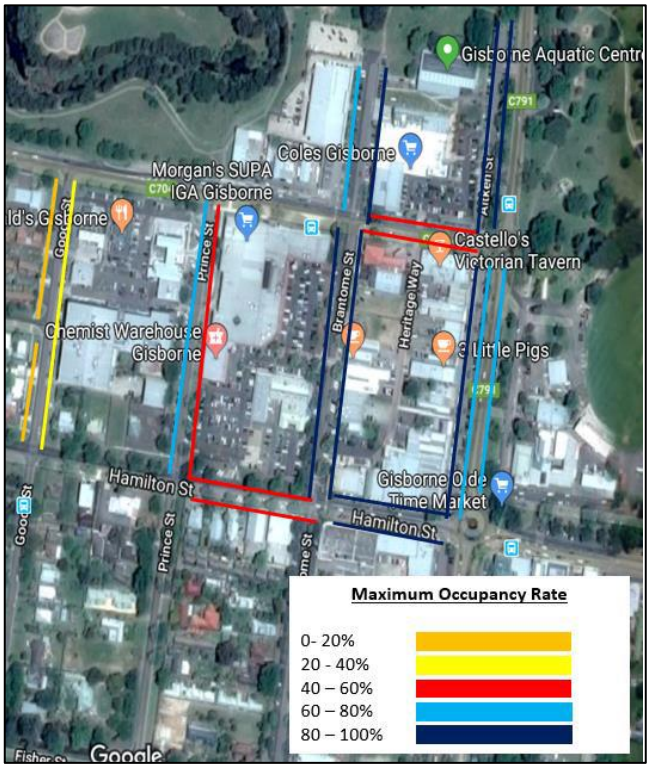
3.5.2 On Street Car Parking

3.5.2.1 On-Street Occupancy

Figure 3-41 and Figure 3-42 summarise the on-street car parking occupancy rates for key on-street locations within the Gisborne Town Centre between 7am-7pm on each of the survey days.

Figure 3-41 Parking Occupancy, Thursday (on-street)

Figure 3-42 Parking Occupancy, Saturday (on-street)



The following observations are made regarding Figure 3-41 (on-street car parking, Thursday):

- The maximum occupancy rate was nearing capacity (80% - 100%) only on the west side of Brantome Street (between Hamilton Street and Robertson Street) and on the east side of the Aitken Street service road (north of Robertson Street). This is likely due to their proximity to the supermarkets;
- Aitken Street, Goode Street and Prince Street through the central core of the town had maximum occupancy levels between 40% - 80%, indicating that there is still capacity in central areas; and
- The maximum occupancy rate along the north side of Hamilton Street was the lowest, at 0% - 40%. A possible explanation for this is that the angle of the car parks only allows eastbound parking access.

The following comments are made regarding Figure 3-42 (on-street car parking, Saturday):

- The eastern portion of the town centre had the highest maximum occupancy levels, likely due to the retail land uses being more prevalent in these areas. Brantome Street and Aitken Street generally had the highest maximum occupancy levels;
- West of Brantome Street, the maximum occupancy rate was notably lower, typically ranging from 0% - 60%.

3.5.2.2 On Street Duration of Stay

A summary of the duration of stay for on-street car parking is provided in Table 3-4, numbered in accordance with Figure 3-43.

Figure 3-43 On-Street Parking Segments

Table 3-4 Duration of Stay (on-street)

Car Park Area	Parking Restriction	Duration of Stay (Thursday)		Duration of Stay (Saturday)	
		≤ 1 hour	> 1 hour	≤ 1 hour	> 1 hour
1	2P	43%	57%	3%	97%
	4P	22%	78%	7%	93%
2	2P	51%	49%	n/a	n/a
	Unrestricted	39%	61%	57%	43%
3	2P	45%	55%	82%	18%
	Unrestricted	68%	32%	80%	20%
4	2P	31%	69%	47%	53%
	1P	100%	0%	42%	58%

Key points from this summary are as follows:

- Parking around Area 1 had a low turnover on the Saturday, with less than 10% of vehicles staying for shorter than one hour;
- Parking at the western end of the town centre Area 2 had a steady turnover rate for both two-hour limited and unrestricted parking;
- Parking in the central portion of the town centre Area 3 which includes both sides of Brantome Street, experienced high turnover on the weekend for both two-hour limited and unrestricted parking;
- Parking at the eastern end of the town centre Area 4 had a fairly steady turnover on the Saturday. The data also indicates that people generally look to maximise their stay within the two-hour limited parking on the weekday.

3.5.3 Off Street Car Parking

3.5.3.1 Off-Street Occupancy

Figure 3-44 and Figure 3-45 summarise the off-street car parking occupancy rates for key off-street locations within the town centre between 7am-7pm on each of the survey days.

Figure 3-44 Parking Occupancy, Thursday (off-street)

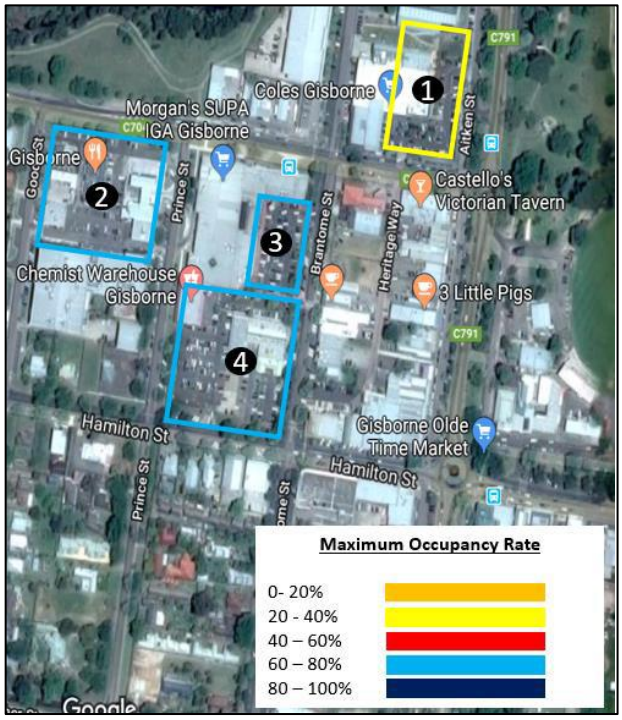
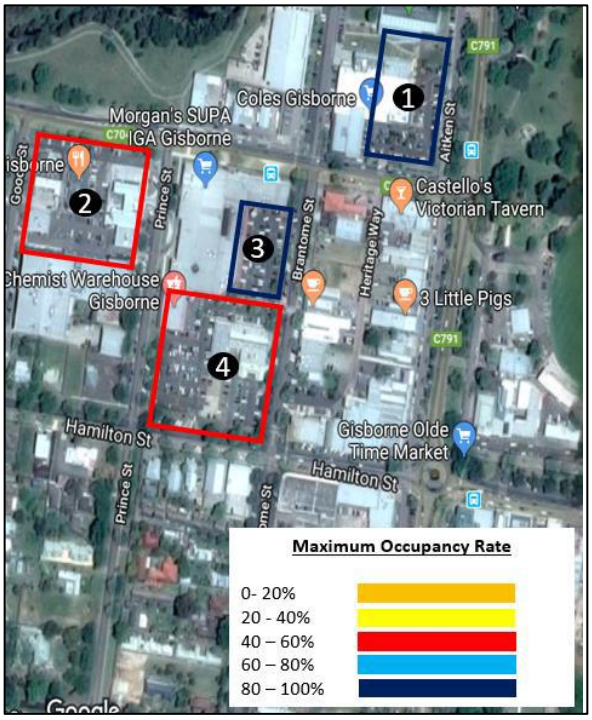


Figure 3-45 Parking Occupancy, Saturday (off-street)



The following observations are made regarding Figure 3-44 (off-street car parking, Thursday):

- The Coles car park (ref. 1) had a low maximum occupancy rate of up to only 40%; and
- All of the other off-street car parks had a maximum occupancy rate of 60% - 80%.
- The following comments are made regarding Figure 3-45 (off-street car parking, Saturday):
- The McDonalds (ref. 2) and Chemist Warehouse (ref. 4) car parks had a maximum occupancy rate of 40% - 60%, lower than that recorded on the weekday; and
- The Coles (ref. 1) and IGA (ref. 3) car parks had the highest maximum occupancy rates of 80% - 100%.

3.5.4 Off-Street Car Parking

3.5.4.1 Off-Street Duration of Stay

A summary of the off-street car parking duration of stay is provided in Table 3-5, numbered accordingly with Figure 3-44 and Figure 3-45.

Table 3-5 Duration of Stay (off-street)

Car Park Area	Parking Restriction	Duration of Stay (Thursday)		Duration of Stay (Saturday)	
		≤ 1 hour	> 1 hour	≤ 1 hour	> 1 hour
1	2P	38%	62%	20%	80%
2	2P	39%	61%	88%	12%
	Unrestricted	43%	57%	99%	1%
3	Unrestricted	11%	89%	90%	10%
4	2P	38%	63%	70%	30%
	Unrestricted	31%	69%	92%	8%

Key points for this summary are as follows:

- The car park Area 1 has a two-hour parking restriction, with 62% of vehicles staying for over one hour on Thursday and 80% staying for over one hour on Saturday;

- The McDonalds car park Area 2 provides both two-hour limited parking and unrestricted parking. On Thursday, both two-hour and unrestricted parking had duration of stay rates of 57% and 61% respectively, for stays of over one hour. On Saturday however, a majority of vehicles stay for less than one hour in both two-hour and unrestricted parking, at rates of 88% and 99% respectively. This suggests that people use this car park for multi-purpose trips on a weekday, or staff parking in the unrestricted spaces, whilst more specific trips are expected on a Saturday;
- The IGA car park Area 3 provides unrestricted parking, with a majority (89%) of vehicles parked for over one hour, whilst only 10% were parked for over one hour on the Saturday, illustrating a significant difference in parking patterns between the weekday and the weekend. This is likely due to staff parking and multi-purpose trips on a weekday;
- The Chemist Warehouse car park Area 4 provides both two-hour and unrestricted parking, with a high turnover rate on the Saturday and a relatively low turnover rate on the Thursday; and
- Overall, given the availability of unrestricted parking within the off-road car parks, it is expected that the lower turnover rates on the weekday are due to staff parking and multi-purpose trips.

3.5.5 Car Parking Summary

In summary, the existing car parking supplies in the Gisborne Town Centre exceed the peak demands generated by all existing uses within the town centre.

Key themes from the parking surveys undertaken to inform this Car Parking Assessment include the following:

- The average occupancy rate for all on-street parking in the town centre is 37% on a weekday and 31% on a Saturday;
- The peak occupancy rate for all on-street parking in the town centre is 61% on a weekday and 59% on a Saturday;
- The average occupancy rate for all off-street parking in the town centre is 42% on a weekday and 26% on a Saturday;
- The peak occupancy rate for all off-street parking in the town centre is 67% on a weekday and 59% on a Saturday;
- The peak occupancy rate for all on-street parking with a 2P restriction or shorter is 67% on a weekday and 72% on a Saturday; and
- The peak occupancy rate for all on-street parking with either a 4P restriction or no restriction is 53% on a weekday and 38% on a Saturday.

The above findings indicate that when car parking demand within the Gisborne Town Centre is at its highest, approximately 1 in 3 public parking spaces, in both on- and off-street locations, remain vacant. From a total surveyed supply of 1,436 car parking spaces, this translates to approximately 474 vacant car parking spaces during peak occupancy. This represents an under-utilisation of this existing infrastructure.

The average car parking demand across the day for both on- and off-street locations is within the range of 26% - 42% for both the weekday and Saturday, indicating significant car parking capacity outside of peak times.

Over half of the on-street parking in the town centre is 2P restricted, with minimal provision of car parking with any shorter time restrictions. The peak demand for 2P restricted car parking is generally consistent with the overall on-street car parking occupancy trend. The peak demand for longer term parking (4P or unrestricted) is 53% on a weekday and 38% on a Saturday. The higher demand for 2P parking is likely due to this shorter-term parking being located in the more central locations of the town centre.

3.6 Identified Issues & Opportunities

Based on a review of available information and site observations, the following traffic and road network issues and opportunities have been identified for the area. Figure 3-56 and Figure 3-57 illustrates these issues and opportunities for the Gisborne area and town centre respectively.

3.6.1 Traffic

3.6.1.1 Issues

- Significant volumes of heavy vehicles pass through the town centre, due to the convergence of Bacchus Marsh Road, Gisborne Melton Road and Kilmore Road to Station Road and connectivity that Gisborne via Station Road and Melbourne Road provides to the Calder Freeway;
- Significant vehicle congestion has been observed along Aitken Street and Station Road, particularly vehicles queuing at roundabouts during peak periods i.e. school pick up/drop off times and commuter peak times;
- Future growth areas identified within the Gisborne Movement Network Study 2016 (GMNS), particularly around New Gisborne, are anticipated to require key intersections upgrades along Station Road, such as Saunders Road, Ferrier Road and Hamilton Road; and
- Review the safety and performance of key intersections with respect to increased traffic flows.

3.6.1.2 Opportunities

- Consider a western alternate route to remove the need for heavy vehicles to pass through the Gisborne Town Centre to access the Calder Freeway and alleviate pressure on Station Road; and
- Upgrading of key intersections to account for future growth areas.

3.6.2 Walking and Cycling

3.6.2.1 Issues

- There is a lack of connectivity and end-of-trip facilities for cyclists;
- The high volume of vehicles travelling along Aitken Street and the limited pedestrian access points reduces the ability for pedestrians to cross Aitken Street;
- Sections of footpath adjacent to the Robertson Street and Aitken Street roundabout are incomplete, with poor connectivity for pedestrians walking cross Aitken Street at key desire lines;
- Sections of footpath are poor adjacent to the Hamilton Street and Aitken Street roundabout;
- There are a number of pedestrian / vehicle conflict points within town centre, for example at informal pedestrian crossings and at off street car park entry points; and
- There are gaps in active transport connectivity between Gisborne Station and the town centre and through to Gisborne Secondary College. Poor connectivity is noted along Station Road crossing Jacksons Creek.

3.6.2.2 Opportunities

- Saunders Road is identified in the walking and cycling strategy as a potential off-road pedestrian and cycling route. This opportunity should be pursued, in consideration of recent incidents on this road and the expected increase in road usage due to anticipated development;
- Vehicle and pedestrian wayfinding improvements to be considered; and
- Investigate the potential to provide a direct pedestrian link between the Business Park and Gisborne Station.

3.6.3 Public Transport

3.6.3.1 Issues

- Based on observation and review of census data, limited public transport provision and active transport links appear to be promoting car usage within the area;

- The limited public transport network and convenience of the Calder Freeway is likely to be encouraging private motor vehicle commuting to surrounding employment centres; and
- Bus services could be better integrated with the V/line train services.

3.6.3.2 Opportunities

- The bus network should be reviewed, to identify potential expansion to accommodate future growth;
- Bus services could be better integrated with train services; and
- There is opportunity to improve parking and access around the train station.

3.6.4 Car Parking

3.6.4.1 Issues

- High demand for on-street parking was observed within the town centre;
- Employees are observed to be parking in prime locations in the centre of town, reducing turnover on the commercial and retail precincts; and
- Review access and parking issues on market days and during sporting events at Gardiner Reserve.

3.6.4.2 Opportunities

- Car parking distribution to be reviewed;
- Potential to optimise restrictions to optimise the use of existing parking provision;
- The roof top car park on the corner of Brantome Street and Hamilton Street is not easily identifiable to the public and is underutilised. This car park has current capacity to accommodate additional town centre parking demand; and
- Alternative parking provision will need to be provided to cater for the long-term demand. Opportunities for this provision are to be identified.

Figure 3-46 Gisborne Issues and Opportunities

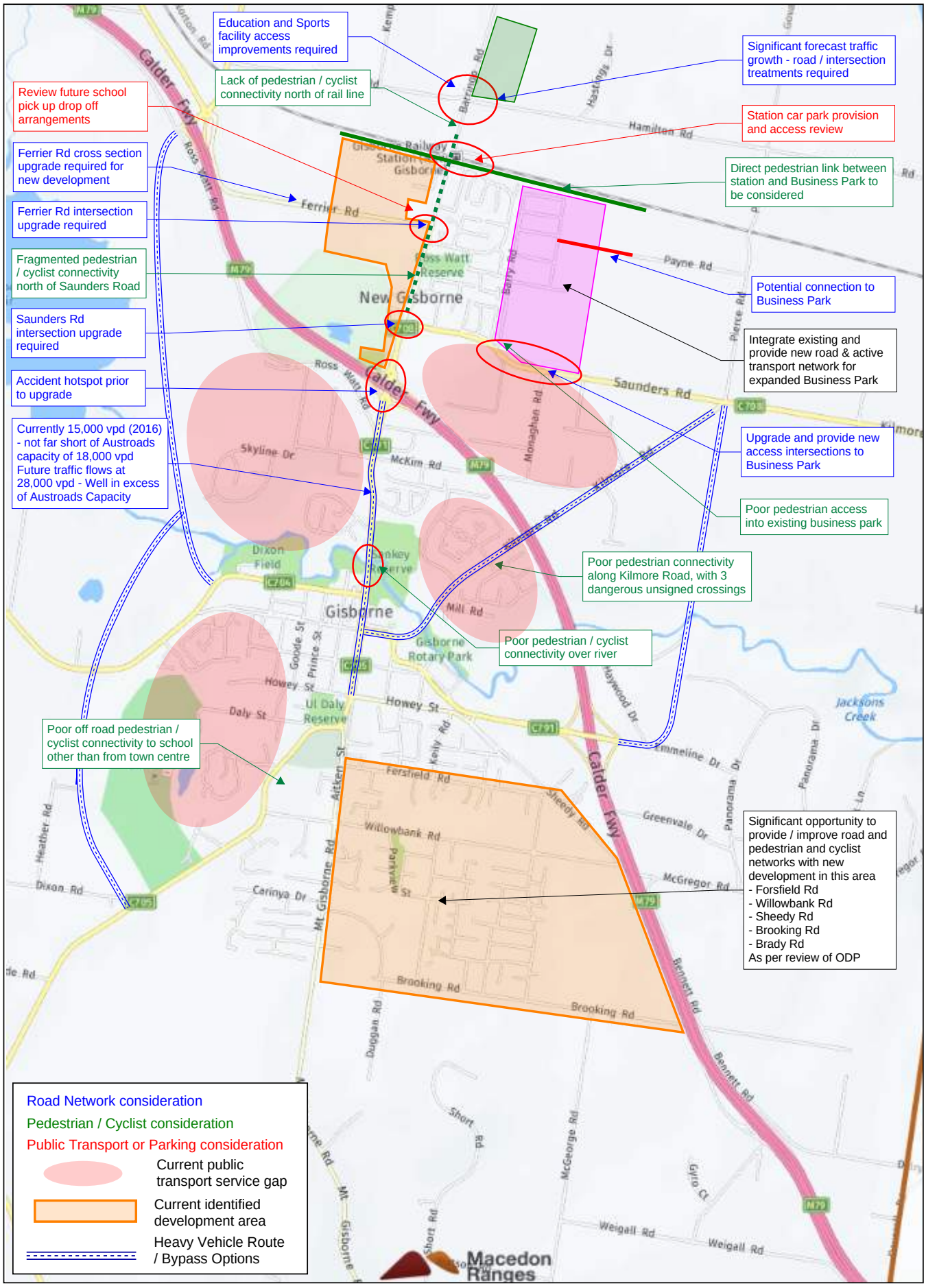
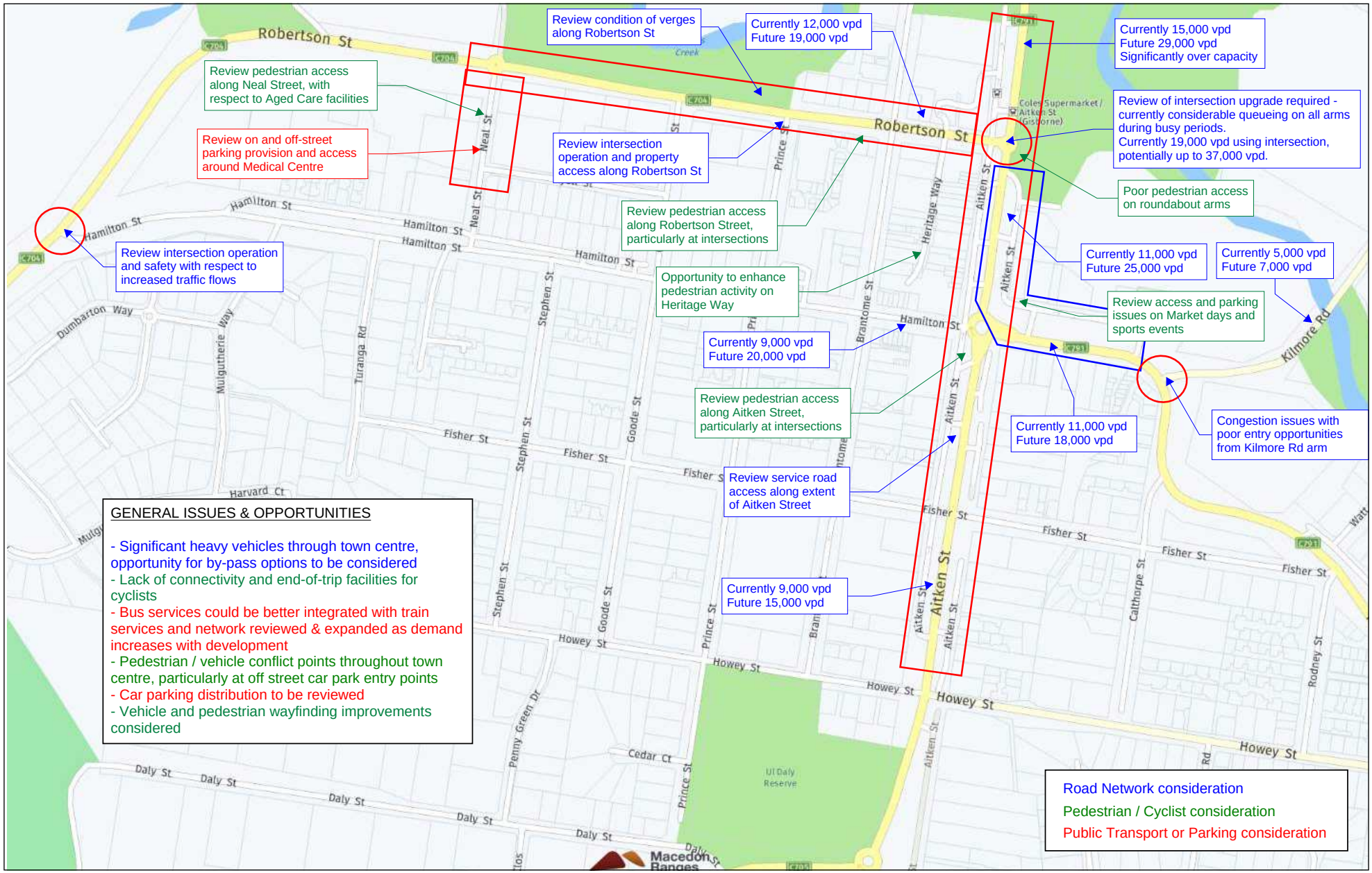


Figure 3-47 Gisborne Town Centre Issues and Opportunities



4 Gisborne Futures – Structure Plan and Urban Design Framework

4.1 Introduction

"The Gisborne Futures Plan has been developed to provide a framework to manage growth and change in Gisborne over the next 30 years to 2050. Gisborne Futures is the culmination of a number of projects, including:

- *Gisborne Structure Plan;*
- *Gisborne Urban Design Framework;*
- *Gisborne Neighbourhood Character Study; and*
- *Gisborne Business Park Development Plan.*

The Structure Plan provides a broad direction on development of the town, whilst the Urban Design Framework provides a greater level of detail on the look and feel of the town centre."

Source: Gisborne Futures – Structure Plan (MRSC)

The development of the Gisborne Structure Plan, Gisborne Urban Design Framework (UDF), and Gisborne Business Park Development Plan has been an ongoing and iterative process. A number of disciplines have worked with Macedon Ranges Shire Council throughout the process, including Urban Planning and Design, Transport Planning & Engineering, Services Engineering, Urban Economics, Heritage and Cultural Advisors.

Cardno has provided the Transport Planning and Engineering advice throughout the development of the Gisborne Structure Plan, the Gisborne UDF, and the Business Park Development Plan, to primarily inform the Movement and Access objectives, strategies and actions for each. This work has included a considerable level of strategic and local traffic modelling, to inform improvements in the existing road network capacity and operation, in addition to the provision of new network links to adequately cater for the transport demand bought about by the expected population growth and land use outlined in the Gisborne Structure Plan, and the Gisborne UDF.

The Structure Plan and Town Centre UDF also has a considerable focus on active transport measures, aiming to increase the number of trips being made by active modes rather than motor vehicles, through the provision of improved infrastructure, safer, and more direct links to the town centre, schools, public transport nodes, and future activity centres.

The draft Gisborne Structure Plan and Gisborne UDF presented in the following Sections 4.2 and 4.3 is as presented in the May 2020 draft Gisborne Futures Plan documentation. Throughout their development the Gisborne Structure Plan and Gisborne UDF has both informed the transport modelling and analysis (i.e. location of future growth areas and urban structure) whilst has also been informed by the work undertaken and presented in the following Chapters 5, 6, and 7 of this report through the provision of the various transport and movement recommendations.

4.2 Gisborne Structure Plan

The Gisborne Structure Plan provides an overall Framework Plan for the ultimate development of the Gisborne / New Gisborne area. This considers future urban growth, including existing in-fill sites, and future growth areas outside the existing Structure Plan boundary, primarily in the New Gisborne area. It is noted that growth in the interim is generally intended for 'infill' growth areas within the existing structure plan boundary, with the new growth areas in New Gisborne to be developed in the longer term.

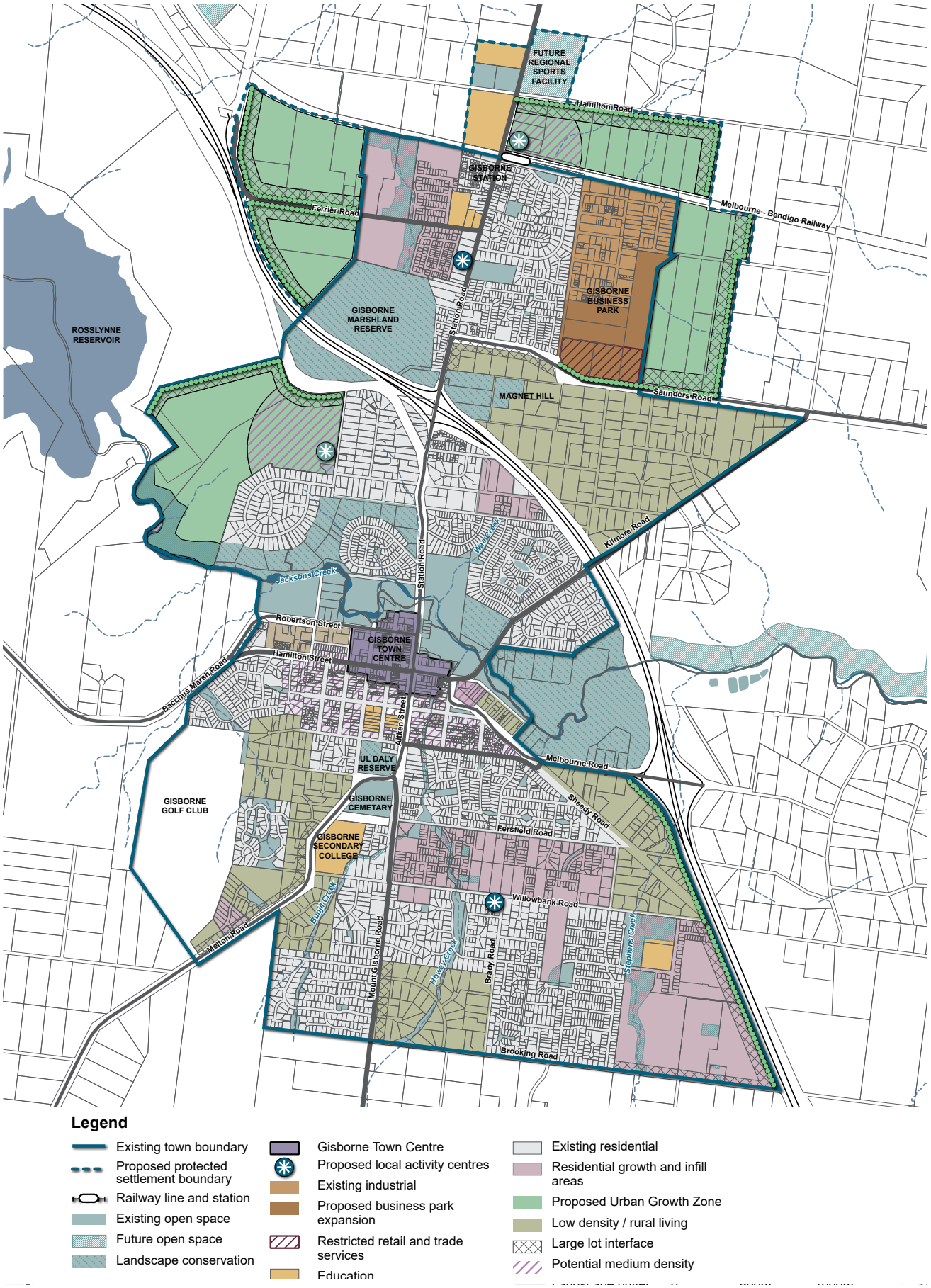
Gisborne Futures identifies the following Key Principal with respect to Transport & Movement:

"Provide a movement network which connects communities through a range of transport options – public transport, cars, walking and cycling to move people safely, efficiently and easily within Gisborne and which manages the impacts of external freight movements to reduce adverse impacts on local amenity."

The plan also outlines other key elements informing future transport requirements including the location of future Activity Centres, the expansion of the Gisborne Business Park, open space provision, and community infrastructure proposals.

The draft Gisborne Framework Plan is shown in Figure 4.1.

Figure 4-1 Draft Gisborne Framework Plan



Source: Gisborne Futures - Structure Plan (May 2020)

4.3 Gisborne Urban Design Framework

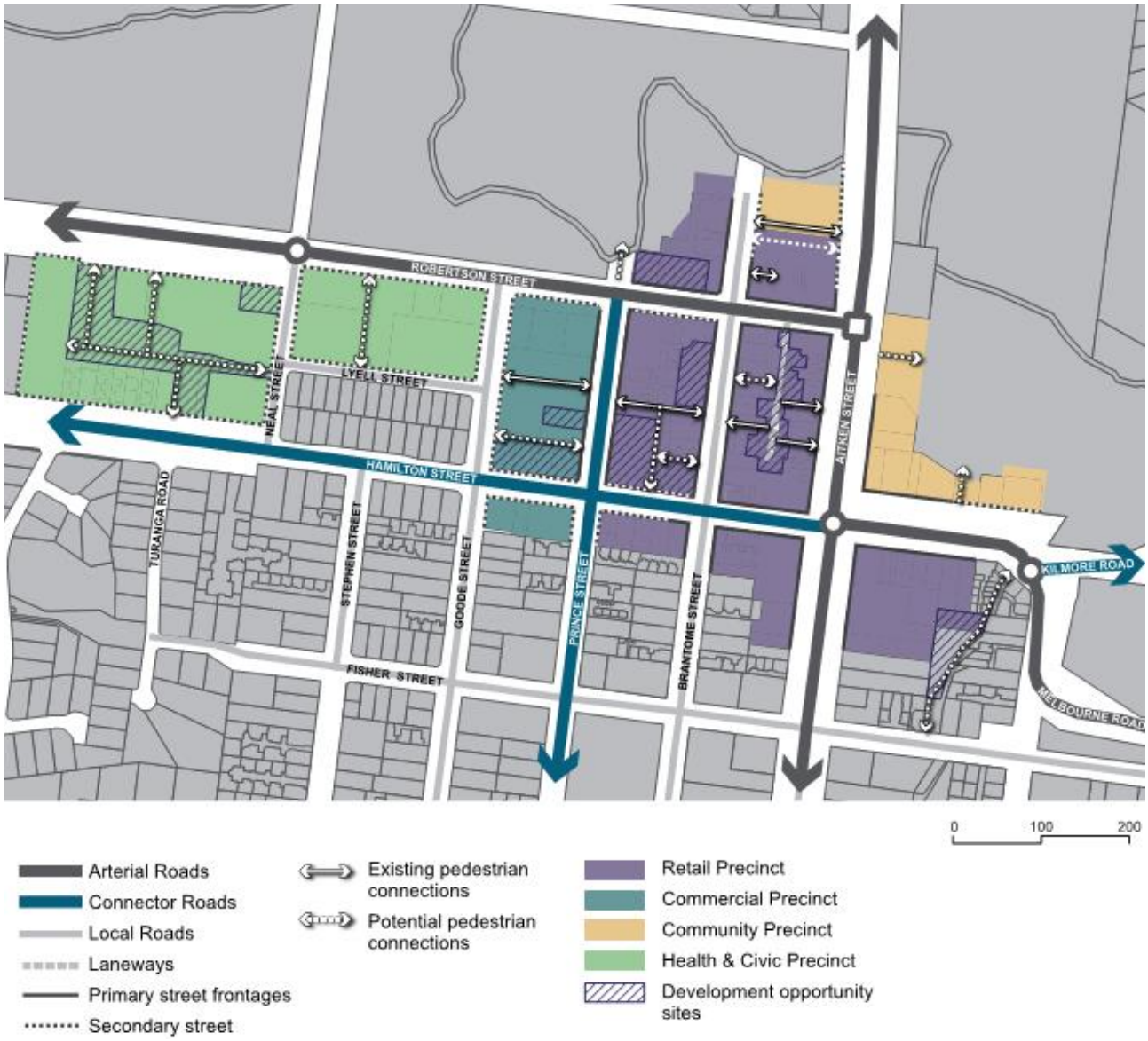
The Gisborne Urban Design Framework focuses more on the town centre, and is intended to provide a structure to guide future land use decisions that encourage attractive development opportunities whilst maintaining the character of the township. The Gisborne UDF considers aspects such as Land use, Built Form, Movement & Access, and Landscape and Public Realm.

Movement and Access is an important consideration in any town centre, not only to reduce congestion for vehicles, but as importantly, to provide attractive streetscapes to encourage pedestrian activity to and within the retail and commercial precincts. This encourages economic activity by residents and visitors to Gisborne and provides health benefits for residents.

The confluence of four key arterial roads within the town centre provides a range of challenges from a transport perspective. A balance is required to cater for both strategic through traffic and traffic stopping and parking in the town centre, all whilst providing adequate crossing facilities for pedestrians and measures for cyclists.

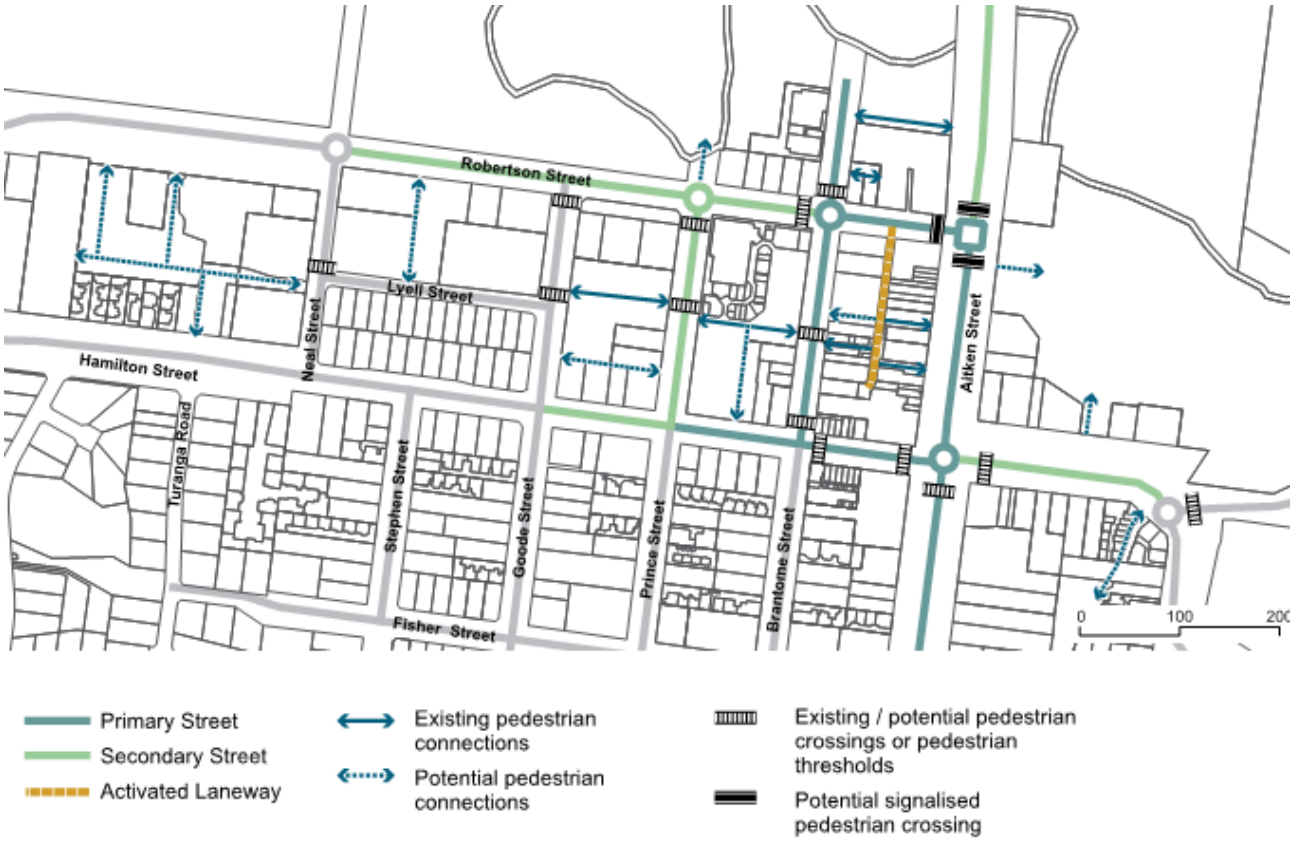
The Gisborne UDF identifies a land use structure, and from a Movement and Access point of view, provides a street network with indicative concepts for improvement measures identified to improve conditions for all modes of transport. Figure 4.2 illustrates the land use precincts, whilst Figure 4.3 and Figure 4.4 identifies the pedestrian connections and road network plans respectively.

Figure 4-2 Town Centre Land Use Framework



Source: Gisborne Futures – Town Centre UDF (May 2020)

Figure 4-3 Town Centre Pedestrian Connections



Source: Gisborne Futures - Town Centre UDF (May 2020)

Figure 4-4 Town Centre Road Network

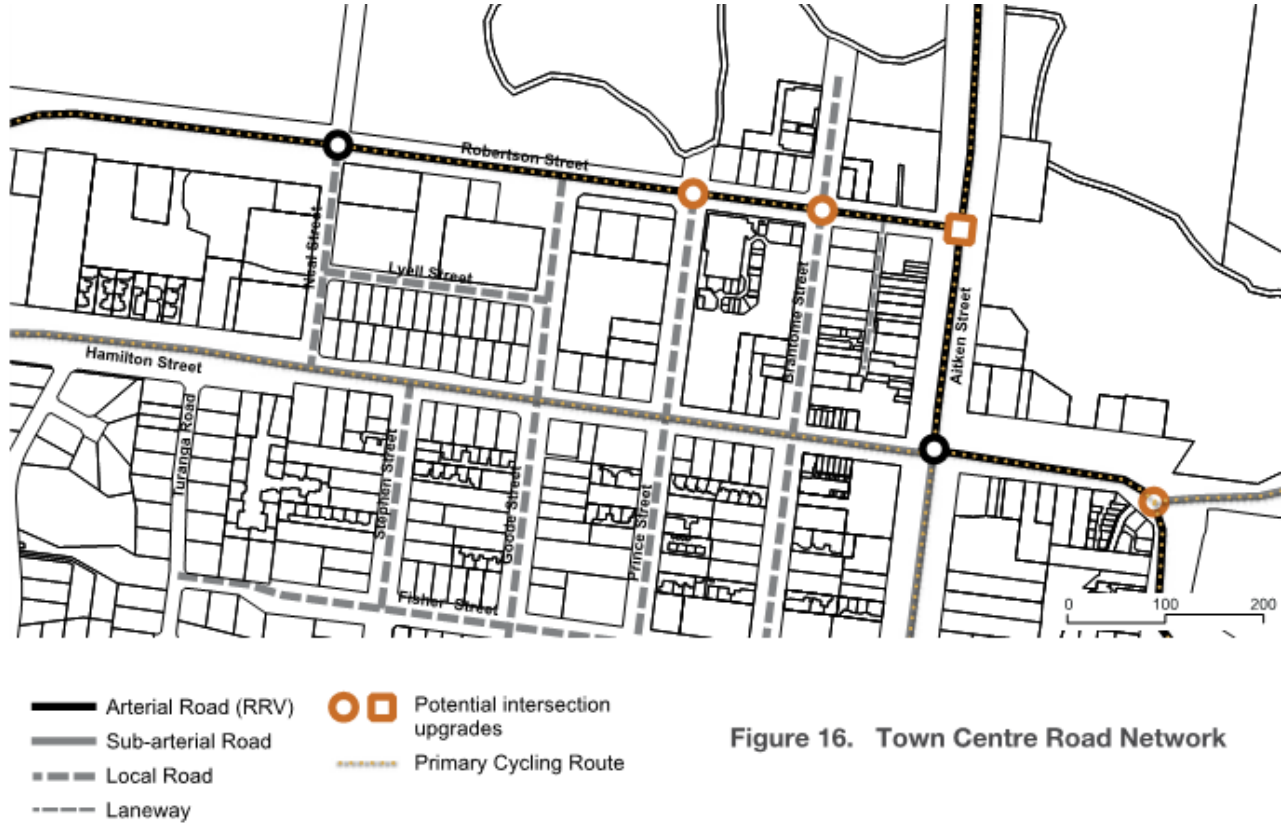


Figure 16. Town Centre Road Network

Source: Gisborne Futures - Town Centre UDF (May 2020)

5 Gisborne Futures Traffic Modelling

5.1 Introduction

A significant amount of traffic modelling has been undertaken to inform the transport recommendations for the Gisborne Futures Structure Plan and Urban Design Framework.

The Victorian Integrated Transport Model (VITM) has been used to determine the impact of future background traffic growth and Structure Plan development proposals at a strategic road network level. The VITM model has also been used to test the impact on traffic volumes throughout the study area under a number of network improvement options.

The output from this strategic modelling has also informed more detailed intersection modelling using SIDRA software package to determine appropriate upgrades that may be required to provide the additional intersection capacity to cater for future traffic volumes.

5.2 Strategic VITM Modelling

5.2.1 Strategic Traffic Modelling

The strategic modelling uses the Victorian Integrated Transport Model (VITM), a tool developed and maintained by the Department of Economic, Development, Jobs, Transport and Resources (DEDJTR) to assist in the planning of road and public transport infrastructure in Victoria. VITM uses future population, employment and land use data projections to forecast travel behaviour and the impacts of changes to the road network. The model is a link-based traffic model which is implemented in the CUBE Voyager software environment.

It is noted that the VITM is a simplified representation of the real world and as such is used as a decision guidance tool. The transport model's strengths lie in indicating the likely scale of changes brought about by the implementation of transport infrastructure schemes, land use changes or policy driver measures. It is important to note that the VITM model has been calibrated to reflect the study area conditions, however the outputs must be interpreted within the limitations of the model and used in a sensible and pragmatic manner.

The following sections detail the VITM model scenarios tested and summarise the modelling results for the various strategic links across the network for each of the scenarios. The key observations are provided for each scenario. A summary is also provided to illustrate the impacts on some of the more local network links that may also be impacted by the various scenarios.

The detailed Gisborne Strategic Traffic Model Report (Cardno 24 June 2020), referenced in this section is provided as Appendix D.

5.2.2 VITM Model Scenarios

In order to determine the impact on traffic volumes across the Gisborne Structure Plan road network, the existing conditions (2018) model was refined around the Gisborne study area, calibrated and validated to reflect existing traffic conditions. Subsequently a number of future year traffic model scenarios agreed with VicRoads (RRV) and Council were developed and tested. The following models were tested, for both an interim scenario (2031) and ultimate scenario (2046), that include a number of network improvement options:

- **Do Nothing (No Development)** - Forecast year with background traffic growth only[1];
- **Do Minimum (Base)** - Forecast year with both background traffic growth and Structure Plan land use / development traffic (Base);
- **Reference Case** - Forecast year with Base traffic and known network improvements[2], including:
  - Station Road Duplication between Saunders Road and the Calder Freeway;
  - Intersection Upgrades along Station Road (Saunders Road, Ferrier Rd, Robertson Road);

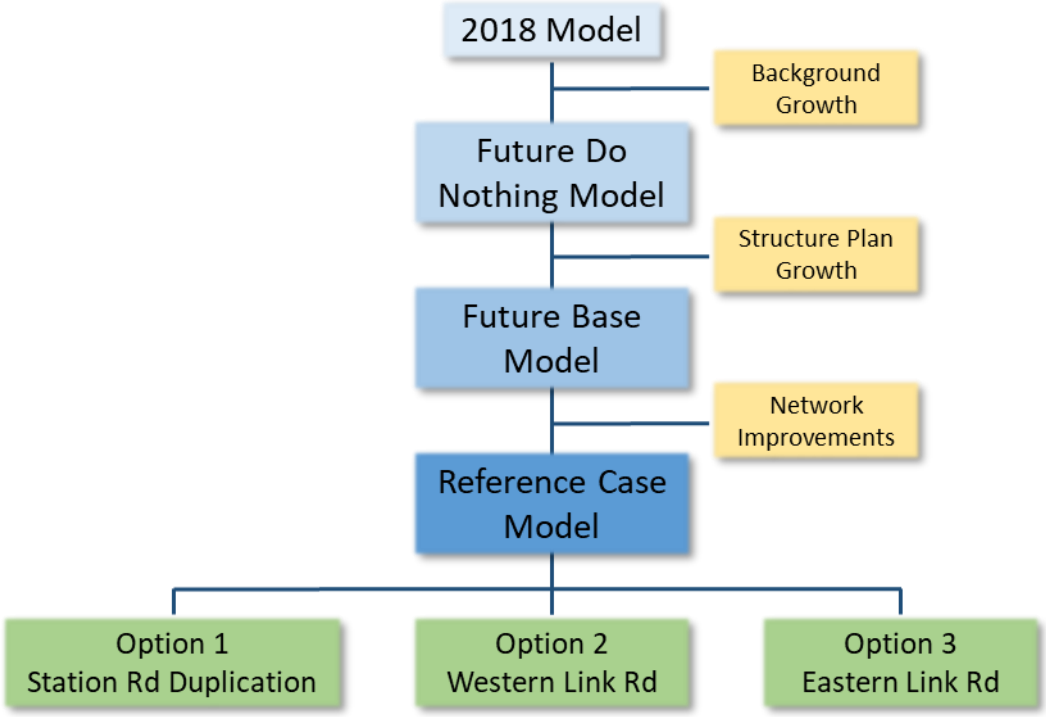
[1] The New Gisborne Business Park expansion has been included in this scenario as it has been endorsed by Council
[2] For more specific detail on each of the network improvements refer to the Gisborne Strategic Traffic Model Report in Appendix D

- General improvements along Kilmore Road, including upgrading of the links to have slightly higher capacities; and
- Upgrade to road networks where residential growth is likely (Willowbank Road, Cherry Lane, Ferrier Road).

> **Reference Case with Option 1** – Station Road capacity improvements, with the link between Calder Freeway and Robertson-street duplicated;

> **Reference Case with Option 2** – The provision of a Western Link Road (WLR), linking the Calder Freeway at the Mount Macedon Road interchange to Bacchus Marsh Road west of the Hamilton-street intersection, and on to Melton Road linking south of Willowbank Road and the golf course; and

> **Reference Case with Option 3** – The provision of an Eastern Link Road (ELR) between the Kilmore Road / Saunders Road intersection and the Melbourne Road interchange on Calder Freeway.



5.2.3 Model Results

The following section summarises the forecast link flows on each of the key strategic links through Gisborne under each of the road network options for both the interim 2031 and ultimate 2046 scenarios outlined above. The results for a more comprehensive table of network links are provided in the respective sections in the Gisborne Strategic Traffic Model Report (Cardno 24 June 2020). Similarly, road network diagrams showing the forecast daily traffic flows, the absolute and percentage increase or decrease in flows across the network under each of the traffic modelling scenarios are also provided in that document. Figure 5-1 shows the locations of the links analysed in the following sections of this report.

Figure 5-1 Strategic Model Links for Analysis

5.2.3.2 Background Traffic Growth

The road network was modelled for each of the interim and ultimate forecast years without any Structure Plan development, to gain an idea of the network conditions purely considering background traffic growth prior to the proposed growth areas being developed. Table 5-1 shows the forecast year background traffic compared with the existing traffic flows on key strategic links.

Table 5-1 Background Daily Traffic Volumes

Road Link (Location)	2018	2031	% CAGR*	2046	% CAGR*
Calder Freeway (west of Mt Macedon Rd)	24,720	33,320	2.3%	39,560	1.7%
Calder Freeway (Mt Macedon Rd & Station Rd)	28,880	39,330	2.4%	47,540	1.8%
Calder Freeway (Station Rd & Melbourne Rd)	27,530	35,390	2.0%	45,960	1.8%
Calder Freeway (south of Melbourne Rd)	31,680	40,190	1.8%	49,730	1.6%
Station Road (Saunders Rd & Farrell St)	10,870	12,680	1.2%	14,760	1.1%
Saunders Road (Station Rd & Farrell St)	4,460	10,570	6.9%	15,170	4.5%
Kilmore Road (east of Saunders Rd)	4,640	8,130	4.4%	13,690	3.9%
Station Road (north of Robertson St)	18,710	24,790	2.2%	25,710	1.1%
Kilmore Road (Melbourne Rd & Mill Rd)	5,600	7,710	2.5%	12,210	2.8%
Aitken Street (Robertson St & Hamilton St)	13,210	18,350	2.6%	18,610	1.2%
Robertson-Street (Brantome St & Aitken St)	11,450	12,510	0.7%	13,530	0.6%
Melbourne Road (Howey St & Calder Fwy)	9,160	14,610	3.7%	21,290	3.1%
Bacchus Marsh Rd (west of Hamilton St)	3,400	4,000	1.3%	7,780	3.0%
Melton Road (Willowbank Rd & The Willows)	3,730	8,350	6.4%	10,430	3.7%
Mt Gisborne Rd (Willowbank Rd & Jonathan Rd)	4,270	5,240	1.6%	6,020	1.2%

**Compound Annual Growth Rate*

Table 5-1 shows that there is considerable background traffic growth impacting the road network through Gisborne and New Gisborne, which would require significant road network upgrades regardless of any additional Structure Plan development. It is demonstrated that key links will exceed their current theoretical capacity (18,000vpd for a 2-lane single carriageway road), including Station Road, Aitken Street, and Melbourne Road.

The background traffic growth is approximately 2.3% per annum. Further analysis indicates that the average annual growth rates across the network are higher in the years up to 2031 at 2.8% p/a, reducing to 1.8% p/a between 2031 and 2046.

This is a little lower than historical traffic growth on the strategic road network over the preceding 15 years. A couple of strategic roads entering Gisborne show higher than average annual growth, the most notable being Kilmore Road / Saunders Road in New Gisborne (3.9% - 4.5% p/a), and Melton Road south of Willowbank Road (3.7%).

Table 5-2 below provides the number of heavy vehicles and the proportion of total vehicles on key links within the total vehicles shown above.

Table 5-2 Background Growth in Heavy Vehicles

Road Link	2018 No.	Prop'n	2031 No.	Prop'n	2046 No.	Prop'n
Calder Freeway (west of Mt Macedon Rd)	4,347	18%	6,350	19%	10,800	27%
Calder Freeway (south of Melbourne Rd)	4,513	15%	6,760	17%	10,380	22%
Saunders Road (Station Rd & Farrell St)	230	5%	1,000	10%	1,450	10%
Kilmore Road (east of Saunders Rd)	310	4%	670	8%	780	6%
Station Road (north of Robertson St)	180	1%	410	2%	1,070	4%
Aitken Street (Robertson St & Hamilton St)	260	2%	420	2%	870	5%
Robertson Street (Brantome St & Aitken St)	164	1%	400	3%	740	5%
Melbourne Road (Howey St & Calder Fwy)	120	1%	180	1%	650	3%
Bacchus Marsh Rd (west of Hamilton St)	260	8%	410	10%	850	11%
Mt Gisborne Rd (Willowbank Rd & Jonathan Rd)	140	4%	420	5%	1,240	12%

It is shown that there is a higher proportion of heavy vehicles on Calder Freeway, and to a lesser extent Saunders Road, Bacchus Marsh Road, and Melton Road. These proportions increase over time.

It is noted that Heavy Goods vehicles are defined as those being Class C4 and above as per the Austroads Guidelines Vehicle Classification System i.e. those with 3 axles and higher.

5.2.3.3 Base & Reference Case Traffic Growth

The analysis of this section is concentrated around the impact of the Reference Case scenario that includes the Structure Plan growth as well as known road network upgrades that will be implemented, against the background traffic growth. The following subsection provides the modelled link flows with the development traffic on the existing network for information.

5.2.3.3.1 Base Case Daily Traffic Volumes

The base case scenario includes the traffic growth from the proposed Structure Plan land use scenario including the priority residential development areas and future identified growth areas. Complementing the Structure Plan were future development projections for each of 2031 and 2046 provided by Council for each area to inform the traffic model.

Table 5-3 shows the forecast year base case traffic projections against the forecast background traffic to illustrate the impact of development on the key links without any network improvements.

Table 5-3 Impact of Forecast Development Traffic (On Base Network)

Road Link	2031 Daily Traffic Volumes			2046 Daily Traffic Volumes		
	No Dev't	Base Case	% Diff	No Dev't	Base Case	% Diff
Calder Freeway (west of Mt Macedon Rd)	33,320	33,590	1%	39,560	39,100	-1%
Calder Freeway (Mt Macedon Rd & Station Rd)	39,330	41,630	6%	47,540	49,960	5%
Calder Freeway (Station Rd & Melbourne Rd)	35,390	37,940	7%	45,960	50,780	10%
Calder Freeway (south of Melbourne Rd)	40,190	43,170	7%	49,730	51,720	4%
Station Road (Saunders Rd & Farrell St)	12,680	14,680	16%	14,760	19,560	33%
Saunders Road (Station Rd & Farrell St)	10,160	10,980	8%	14,590	16,550	13%
Kilmore Road (east of Saunders Rd)	8,130	8,690	7%	13,690	15,940	16%
Station Road (north of Robertson St)	24,790	25,750	4%	25,710	27,050	5%
Kilmore Road (Melbourne Rd & Mill Rd)	7,710	8,590	11%	12,210	15,080	24%
Aitken Street (Robertson St & Hamilton St)	18,350	19,090	4%	18,610	19,180	3%
Robertson-Street (Brantome St & Aitken St)	12,510	12,760	2%	13,530	16,200	20%
Melbourne Road (Howey St & Calder Fwy)	14,610	18,500	27%	21,290	24,940	17%
Bacchus Marsh Rd (west of Hamilton St)	4,000	3,980	-1%	7,780	8,270	6%
Melton Road (Willowbank Rd & The Willows)	8,350	8,540	2%	10,430	11,070	6%
Mt Gisborne Rd (Willowbank Rd & Jonathan Rd)	5,240	5,570	6%	6,020	6,710	11%

5.2.3.3.2 Reference Case Daily Traffic Volumes

The reference case model includes the base model development but also includes known road network improvements, which include the signalisation of the Station Road / Saunders Road, Aitken Street / Robertson-street, and Kilmore Road / Melbourne Road intersections.

Table 5-4 shows the forecast year reference case traffic projections against the forecast background traffic to illustrate the impact of development on the key links with known network improvements.

Table 5-4 Impact of Forecast Development Traffic (On Reference Case Network)

Road Link	2031 Daily Traffic Volumes			2046 Daily Traffic Volumes		
	No Dev't	Ref Case	% Diff	No Dev't	Ref Case	% Diff
Calder Freeway (west of Mt Macedon Rd)	33,320	33,710	1%	39,560	39,370	0%
Calder Freeway (Mt Macedon Rd & Station Rd)	39,330	41,550	6%	47,540	49,890	5%
Calder Freeway (Station Rd & Melbourne Rd)	35,390	37,280	5%	45,960	50,520	10%
Calder Freeway (south of Melbourne Rd)	40,190	43,140	7%	49,730	51,840	4%
Station Road (Saunders Rd & Farrell St)	12,680	14,870	17%	14,760	19,800	34%
Saunders Road (Station Rd & Farrell St)	10,160	10,260	1%	14,590	16,580	14%
Kilmore Road (east of Saunders Rd)	8,130	9,010	11%	13,690	16,040	17%
Station Road (north of Robertson St)	24,790	26,030	5%	25,710	26,790	4%
Kilmore Road (Melbourne Rd & Mill Rd)	7,710	9,640	25%	12,210	16,070	32%
Aitken Street (Robertson St & Hamilton St)	18,350	20,340	11%	18,610	22,280	20%
Robertson-Street (Brantome St & Aitken St)	12,510	14,450	16%	13,530	16,200	20%
Melbourne Road (Howey St & Calder Fwy)	14,610	18,310	25%	21,290	25,110	18%
Bacchus Marsh Rd (west of Hamilton St)	4,000	4,510	13%	7,780	8,800	13%
Melton Road (Willowbank Rd & The Willows)	8,350	8,570	3%	10,430	10,740	3%
Mt Gisborne Rd (Willowbank Rd & Jonathan Rd)	5,240	6,430	23%	6,020	7,310	21%

Table 5-4 generally shows an increase in traffic volumes on all links, albeit to varying degrees. Key observations being:

- Development in Gisborne has a modest impact on Calder Freeway, with between 0% and 4% increase either side of the Gisborne interchanges by 2046 and between 5% and 10% increase through the study area between the Gisborne interchanges;
- Station Road north of Saunders Road reaches capacity for a 2-lane road by 2046 with a considerable impact due to development, and will require improvements to assist traffic flow;
- Saunders Road between Barry Road and Station Road also shows significant growth in traffic, primarily due to the New Gisborne Business Park expansion and traffic generated by new residential development;
- Station Road between Calder Freeway and Robertson Street, shows a modest increase in traffic volumes due to development, however these flows are constrained due to this link being considerably over capacity due to the growth in background traffic;
- Melbourne Road, also experiencing significant growth in background traffic, has more significant increases in traffic due to structure plan development, with flows approaching the capacity for the 2-lane road by 2031, and exceeding capacity by 2046; and
- Increases in traffic flows are higher on links in New Gisborne in 2046 than in 2031 as much of the proposed development is focussed north of the freeway after 2031.

Table 5-5 shows the changes in heavy goods traffic volumes on key links as a result of Structure Plan development for each of the 2031 and 2046 forecast scenarios.

Table 5-5 Impact on Heavy Vehicles (Due to development on Reference Case Network)

Road Link	2031 Daily Heavy Veh Volumes			2046 Daily Heavy Veh Volumes		
	No Dev't	Ref Case	Increase	No Dev't	Ref Case	Increase
Kilmore Road (east of Saunders Rd)	670	1,070	400	780	1,050	270
Station Road (north of Robertson St)	410	560	150	1,070	1,440	370
Aitken Street (Robertson St & Hamilton St)	420	980	560	870	1,640	770
Robertson-Street (Brantome St & Aitken St)	400	1,000	600	640	1,620	980
Melbourne Road (Howey St & Calder Fwy)	180	260	80	650	750	100

Road Link	2031 Daily Heavy Veh Volumes			2046 Daily Heavy Veh Volumes		
	No Dev't	Ref Case	Increase	No Dev't	Ref Case	Increase
Bacchus Marsh Rd (west of Hamilton St)	410	990	580	850	1,880	1,030
Melton Road (Willowbank Rd & The Willows)	430	430	10	1,240	1,290	50

The impact of Structure Plan development on the road network shows increases in heavy vehicle volumes, most significantly on Aitken Street and Bacchus Marsh Road in both 2031 and 2046.

5.2.3.4 Network Improvement Option 1 - Station Road Capacity Improvements (Duplication)

This option tested the impact on traffic volumes across the network should Station Road have greater capacity and be duplicated between the Calder Freeway interchange and Robertson-street, in addition to the known intersection improvements included in the reference case scenario. Table 5-6 shows the impact on daily traffic volumes on each of the primary links.

Table 5-6 Impact of Station Road Capacity Improvements (Duplication)

Road Link	2031 Daily Traffic Volumes			2046 Daily Traffic Volumes		
	Ref Case	SRDUP	% Diff	Ref Case	SRDUP	% Diff
Calder Freeway (west of Mt Macedon Rd)	33,710	33,640	0%	39,370	39,980	2%
Calder Freeway (Mt Macedon Rd & Station Rd)	41,550	41,290	-1%	49,890	48,700	-2%
Calder Freeway (Station Rd & Melbourne Rd)	37,280	35,340	-5%	50,520	45,190	-11%
Calder Freeway (south of Melbourne Rd)	43,140	43,020	0%	51,840	52,170	1%
Station Road (Saunders Rd & Farrell St)	14,870	14,880	0%	19,800	19,800	0%
Saunders Road (Station Rd & Farrell St)	10,260	10,710	4%	16,580	15,770	-5%
Kilmore Road (east of Saunders Rd)	9,010	8,990	0%	16,040	15,730	-2%
Station Road (north of Robertson St)	26,030	28,810	11%	26,790	34,690	29%
Kilmore Road (Melbourne Rd & Mill Rd)	9,640	9,160	-5%	16,070	15,130	-6%
Aitken Street (Robertson St & Hamilton St)	20,340	22,120	9%	22,280	25,620	15%
Robertson-Street (Brantome St & Aitken St)	14,450	14,710	2%	16,200	16,630	3%
Melbourne Road (Howey St & Calder Fwy)	18,310	16,810	-8%	25,110	21,660	-14%
Bacchus Marsh Rd (west of Hamilton St)	4,510	4,580	2%	8,800	9,320	6%
Melton Road (Willowbank Rd & The Willows)	8,570	8,600	0%	10,740	11,160	4%
Mt Gisborne Rd (Willowbank Rd & Jonathan Rd)	6,430	6,420	0%	7,310	7,540	3%

Table 5-6 demonstrates that with increased capacity, Station Road allows a significant increase in traffic volumes by 2046, which appears to relieve pressure on Melbourne Road, Saunders Road, and Kilmore Road. Key observations being:

- The increase in capacity on Station Road allows an additional 8,000 trips on the link between the Calder Freeway interchange and Robertson Street by 2046;
- It is shown that the current capacity on Station Road forces trips further along Calder Freeway to the Melbourne Road interchange and into the town centre via Melbourne Road, as there is now a reduction in trips on the Calder Freeway between the Station Road and Melbourne Road interchanges, and Melbourne Road links;
- Similarly, there is a reduction in traffic on Saunders Road and Kilmore Road, suggesting that traffic was previously using this route, albeit to a lesser extent than Melbourne Road. It is noted that there is otherwise minimal impact on other links in New Gisborne;
- Despite the relief on Melbourne Road it does still marginally exceed capacity in 2046, however remains within capacity in 2031;
- The increase in capacity on Station Road does also transfer further south to Aitken Street south of Robertson-street, as vehicles now have a more direct access to Melton Road, Mt Gisborne Road and residential development south of the town centre; and

> There is minimal change in traffic volumes on other strategic links into Gisborne including Bacchus Marsh Road, Melton Road, and Mt Gisborne Road.

The impact of capacity improvements with the duplication of Station Road on heavy vehicles is shown in Table 5-7 below.

Table 5-7 Impact on Heavy Vehicles of Station Road Capacity Improvements (Duplication)

Road Link	2031 Daily HV Volumes			2046 Daily HV Volumes		
	Ref Case	SRDUP	Diff	Ref Case	SRDUP	Diff
Calder Freeway (west of Mt Macedon Rd)	6,390	6,420	30	10,000	10,200	200
Calder Freeway (Station Rd & Melbourne Rd)	6,550	6,560	10	9,840	9,360	-480
Calder Freeway (south of Melbourne Rd)	6,730	6,490	-240	9,490	9,470	-20
Saunders Road (Station Rd & Farrell St)	960	900	-60	1,350	1,360	10
Kilmore Road (east of Saunders Rd)	1,070	1,070	0	1,050	1,090	40
Station Road (north of Robertson St)	560	660	100	1,440	2,330	890
Aitken Street (Robertson St & Hamilton St)	980	1,010	30	1,640	1,700	60
Robertson-Street (Brantome St & Aitken St)	1,000	1,000	0	1,620	1,810	190
Melbourne Road (Howey St & Calder Fwy)	260	280	20	750	340	-410
Bacchus Marsh Rd (west of Hamilton St)	990	990	0	1,870	1,970	100
Melton Road (Willowbank Rd & The Willows)	430	460	30	1,290	1,460	170

Table 5-7 shows that in a similar manner to the all vehicle analysis above, that providing the additional capacity on Station Road reduces the number of heavy vehicles diverting further east on Calder Freeway and entering the town via Melbourne Road.

5.2.3.5 Network Improvement Option 2 – Western Link Road (WLR)

This option provides an understanding of the impact of the provision of a link road around the western side of Gisborne, connecting Calder Freeway with Bacchus Marsh Road and on to Melton Road in addition to the known intersection improvements included in the reference case scenario. Table 5-8 shows the impact of a WLR on traffic volumes on each of the primary links.

Table 5-8 Impact of Western Link Road on Daily Traffic Volumes

Road Link	2031 Daily Traffic Volumes			2046 Daily Traffic Volumes		
	Ref Case	WLR	% Diff	Ref Case	WLR	% Diff
Western Link Road (Calder Hwy to BM Rd)		8,160			12,790	
Western Link Road (BM Rd to Melton Rd)		6,430			8,760	
Calder Freeway (west of Mt Macedon Rd)	33,710	34,830	3%	39,370	41,310	5%
Calder Freeway (Mt Macedon Rd & Station Rd)	41,550	35,040	-16%	49,890	41,710	-16%
Calder Freeway (Station Rd & Melbourne Rd)	37,280	34,800	-7%	50,520	44,230	-12%
Calder Freeway (south of Melbourne Rd)	43,140	43,040	0%	51,840	51,960	0%
Station Road (Saunders Rd & Farrell St)	14,870	14,450	-3%	19,800	19,340	-2%
Saunders Road (Station Rd & Farrell St)	10,260	10,910	6%	16,580	16,330	-2%
Kilmore Road (east of Saunders Rd)	9,010	8,700	-3%	16,040	15,540	-3%
Station Road (north of Robertson St)	26,030	22,480	-14%	26,790	24,820	-7%
Kilmore Road (Melbourne Rd & Mill Rd)	9,640	8,680	-10%	16,070	13,840	-14%
Aitken Street (Robertson St & Hamilton St)	20,340	15,620	-23%	22,280	19,350	-13%
Robertson-Street (Brantome St & Aitken St)	14,450	13,390	-7%	16,200	15,440	-5%
Melbourne Road (Howey St & Calder Fwy)	18,310	16,230	-11%	25,110	21,470	-14%

Road Link	2031 Daily Traffic Volumes			2046 Daily Traffic Volumes		
	Ref Case	WLR	% Diff	Ref Case	WLR	% Diff
Bacchus Marsh Rd (Hamilton St & WLR))	4,510	2,950	-35%	8,800	4,950	-44%
Bacchus Marsh Rd (west of WLR)	4,510	5,330	+18%	8,800	10,290	17%
Melton Road (Willowbank Rd & The Willows)	8,570	2,880	-66%	10,740	3,830	-64%
Melton Road (south of WLR)	8,570	8,700	2%	10,740	11,810	10%
Mt Gisborne Rd (Willowbank Rd & Jonathan Rd)	6,430	6,190	-4%	7,310	7,710	5%

Table 5-8 demonstrates that the provision of a WLR has a significant impact on a number of links through Gisborne, generally reducing traffic volumes on most links across the network. Key observations being:

- Traffic volumes decrease significantly on the Calder Freeway between the Mt Macedon Road interchange and the Melbourne Road interchange in both the 2031 and 2046 scenarios;
- Station Road shows reductions in traffic volumes in both 2031 and 2046, however will still operate above capacity and would require some improvements to cater for the future demand;
- Aitken Street shows significant reductions in traffic volumes (23% and 13% in 2031 and 2046 respectively), and will fall to within capacity in 2031 and just above capacity in 2046;
- Similarly, Melbourne Road traffic volumes between Howey Street and the freeway interchange fall by 11% to within capacity in 2031 and 14% to just above capacity in 2046; and
- A significant reduction in traffic volumes on Bacchus Marsh Road, between the Hamilton Street intersection and WLR connection, also having a positive impact on Robertson Street and Hamilton Street.

The impact of the provision of a western link road on heavy vehicles on key links is shown in Table 5-9 below.

Table 5-9 Impact on Heavy Vehicles of Western Link Road)

Road Link	2031 Daily HV Volumes			2046 Daily HV Volumes		
	Ref Case	WLR	Diff	Ref Case	WLR	Diff
Western Link Road (Calder Hwy to BM Rd)		1,040			2,940	
Western Link Road (BM Rd to Melton Rd)		310			1,330	
Calder Freeway (west of Mt Macedon Rd)	6,390	6,970	580	9,800	10,820	820
Calder Freeway (Station Rd & Melbourne Rd)	6,550	6,480	-70	9,840	9,190	-650
Calder Freeway (south of Melbourne Rd)	6,730	6,750	20	9,490	9,350	-140
Saunders Road (Station Rd & Farrell St)	960	940	-20	1,350	1,490	140
Kilmore Road (east of Saunders Rd)	1,070	610	-460	1,050	800	-250
Station Road (north of Robertson St)	560	150	-410	1,440	300	-1,140
Aitken Street (Robertson St & Hamilton St)	980	280	-700	1,640	480	-1,160
Robertson-Street (Brantome St & Aitken St)	1,000	340	-660	1,620	510	-1,110
Melbourne Road (Howey St & Calder Fwy)	260	270	10	750	310	-440
Bacchus Marsh Rd (west of Hamilton St)	990	320	-670	1,870	510	-1,360
Bacchus Marsh Rd (west of WLR)	990	1,080	90	1,870	2,150	280
Melton Road (Willowbank Rd & The Willows)	430	130	-300	1,290	400	-890
Melton Road (south of WLR)	430	450	20	1,290	1,720	430

Table 5-9 shows that the provision of a western link road will significantly reduce heavy vehicle trips through Gisborne town centre on all routes, most significantly those south of Calder Freeway including Station Road / Aitken Street, Bacchus Marsh Road, and Melton Road.

5.2.3.6 Network Improvement Option 3 – Eastern Link Road (ELR)

This option provides an understanding of the impact of providing a link road around the eastern side of Gisborne, connecting Kilmore Road, Saunders Road and Pierce Road directly to the Melbourne Road interchange on Calder Freeway via Emmeline Drive, in addition to the known intersection improvements included in the reference case scenario. Table 5-10 shows the impact of an ELR on traffic volumes on each of the primary links.

Table 5-10 Impact of Eastern Link Road on Daily Traffic Volumes

Road Link	2031 Daily Traffic Volumes			2046 Daily Traffic Volumes		
	Ref Case	ELR	% Diff	Ref Case	ELR	% Diff
Eastern Link Road (Kilmore Rd to Emmeline Dr)		3,720			8,020	
Calder Freeway (west of Mt Macedon Rd)	33,710	33,030	-2%	39,370	39,570	1%
Calder Freeway (Mt Macedon Rd & Station Rd)	41,550	41,020	-1%	49,890	49,640	-1%
Calder Freeway (Station Rd & Melbourne Rd)	37,280	34,730	-7%	50,520	45,300	-10%
Calder Freeway (south of Melbourne Rd)	43,140	43,450	1%	51,840	52,950	2%
Station Road (Saunders Rd & Farrell St)	14,870	14,670	-1%	19,800	19,590	-1%
Saunders Road (Station Rd & Farrell St)	10,260	8,450	-18%	16,580	12,480	-25%
Kilmore Road (east of Saunders Rd)	9,010	9,860	9%	16,040	16,500	3%
Station Road (north of Robertson St)	26,030	25,770	-1%	26,790	26,610	-1%
Kilmore Road (Melbourne Rd & Mill Rd)	9,640	8,770	-9%	16,070	15,110	-6%
Aitken Street (Robertson St & Hamilton St)	20,340	20,250	0%	22,280	20,890	-6%
Robertson-Street (Brantome St & Aitken St)	14,450	14,460	0%	16,200	16,310	1%
Melbourne Road (Howey St & Calder Fwy)	18,310	17,610	-4%	25,110	24,340	-3%
Bacchus Marsh Rd (west of Hamilton St)	4,510	4,570	1%	8,800	9,090	3%
Melton Road (Willowbank Rd & The Willows)	8,570	8,440	-2%	10,740	10,570	-2%
Mt Gisborne Rd (Willowbank Rd & Jonathan Rd)	6,430	6,440	0%	7,310	7,410	1%

Table 5-10 demonstrates that the provision of an ELR has a much smaller impact on the road network throughout Gisborne, with changes to traffic volumes on most links being less than 10%. The ELR attracts modest traffic volumes with 3,720vpd in 2031 and 8,020vpd in 2046, with the following impact on the wider network:

- Saunders Road shows up to 25% reduction in traffic volumes (1,810 and 4,100 trips in 2031 and 2046 respectively) with the provision of an ELR, reflecting the fact that vehicles from the eastern side of New Gisborne will no longer need to travel that route to access the freeway, particularly if travelling toward Melbourne;
- The ELR has a negligible impact on Station Road, with a 1% reduction in traffic volumes both north and south of Calder Freeway. The link does reduce traffic on Kilmore Road between Saunders Road and Melbourne Road by up to 9%; and
- There is a lesser impact on Melbourne Road, with a 3% reduction in traffic volumes in 2046, with the link remaining above capacity.

The impact of the provision of an ELR on heavy vehicles on key links is shown in Table 5-11 below.

Table 5-11 Impact on Heavy Vehicles of Eastern Link Road

Road Link	2031 Daily HV Volumes			2046 Daily HV Volumes		
	Ref Case	ELR	Diff	Ref Case	ELR	Diff
Eastern Link Road (Kilmore Rd to Emmeline Dr)		340			510	
Calder Freeway (west of Mt Macedon Rd)	6,390	6,290	-100	9,800	9,980	-20
Calder Freeway (Station Rd & Melbourne Rd)	6,550	6,310	-240	9,840	9,930	90
Calder Freeway (south of Melbourne Rd)	6,730	6,790	60	9,490	9,450	-40
Saunders Road (Station Rd & Farrell St)	960	740	-220	1,350	1,020	-330
Kilmore Road (east of Saunders Rd)	1,070	1,210	140	1,050	1,100	50
Station Road (north of Robertson St)	560	500	-60	1,440	1,020	-420
Aitken Street (Robertson St & Hamilton St)	980	970	-10	1,640	1,210	-430
Robertson-Street (Brantome St & Aitken St)	1,000	1,030	30	1,620	1,660	40
Melbourne Road (Howey St & Calder Fwy)	260	230	-30	750	1,350	600
Bacchus Marsh Rd (west of Hamilton St)	990	1,020	30	1,870	1,820	-50
Melton Road (Willowbank Rd & The Willows)	430	380	-50	1,290	1,390	100

Table 5-11 shows that the provision of an ELR will have a much reduced impact on heavy vehicle volumes through Gisborne town centre. The more significant reductions are on Station Road and Aitken Street.

5.2.3.7 Impacts on Local Links

The following Table 5-12 and Table 5-13 summarise the future traffic volumes and the impacts of the various options on some of the key local links for both 2031 and 2046 respectively.

Table 5-12 Traffic Impacts on Local Network Links (Total Vehicles 2031)

Road Link	2018	No Dev't	Ref	SRD	WBP	EBP
Ferrier Road	2,390	3,080	5,425	5,442	5,060	5,302
Hamilton Road (east of Station St)	2,090	2,010	2,118	2,131	2,136	2,031
Hamilton-street (west of Aitken St)	10,800	11,810	12,331	12,230	11,980	12,352
Aitken Street (south of Hamilton St)	13,220	16,670	22,430	23,480	18,480	22,340
Howey Street	3,840	5,950	5,535	5,050	5,196	5,411
Aitken Street (south of Melton Rd)	5,000	7,840	11,449	12,038	11,711	11,513
Willowbank Road	1,600	3,720	6,300	6,897	7,110	6,360

Table 5-13 Traffic Impacts on Local Network Links (Total Vehicles 2046)

Road Link	2018	No Dev't	Ref	SRD	WBP	EBP
Ferrier Road	2,390	4,360	11,486	11,129	10,521	11,833
Hamilton Road (east of Station St)	2,090	1,300	5,596	5,587	5,716	4,836
Hamilton-street (west of Aitken St)	10,800	13,250	13,614	13,824	12,768	13,695
Aitken Street (south of Hamilton St)	13,220	16,820	22,210	24,860	20,010	21,490
Howey Street	3,840	4,250	7,424	5,489	5,757	8,397
Aitken Street (south of Melton Rd)	5,000	9,000	13,479	13,803	13,656	13,567
Willowbank Road	1,904	4,400	8,072	8,178	8,377	8,132

From the above tables, the following observations are made on the impact of the various options on some of the local roads across the network:

> Ferrier Road shows significant growth in traffic volumes, reflective of the proposed development accessing that link, however is not significantly impacted by the network improvement options;

- Traffic growth on Hamilton Road is minimal by 2031 but increases in 2046, reflecting the timing of development in the growth area north of the rail line;
- There is growth in traffic on Hamilton-street west of Aitken Street however little impact on traffic volumes due to the network improvement options, with the exception of a small reduction with the WLR;
- The duplication of Station Road has the most significant impact on Aitken Street south of Hamilton-street, with traffic volumes increasing up to almost 25,000 vpd, primarily due to the increased flows from Station Street north of Robertson-street. The WLR option reduces traffic volumes to around 20,000vpd, which maintains the link at capacity;
- The Station Road duplication and WLR options have the most significant impact on traffic volumes on Howey Street, with a reduction from 7,500vpd in the reference case to 5,500vpd;
- Aitken Street south of the Melton Road intersection shows significant traffic growth, reflective of the additional development to the south, however is not impacted by any of the network improvement options;
- Willowbank Road also shows the expected traffic growth due to development, but with little impact by the various network improvement options;
- Heavy vehicle traffic volumes are minimal (<100vpd) on local links in 2031, and there is little impact on these flows with any of the improvement options; and
- Heavy vehicle volumes on some of the local links do increase by 2046, with Hamilton Street, seeing an increase to up to 500vpd and Fisher Street and Howey Street up to 200vpd in the reference case. The WLR option does reduce these volumes back to well below 100vpd.

5.2.4 Conclusions

The primary conclusions from the preceding analysis are:

- There is a significant level of background traffic growth across the network, which has the greatest impact on future year traffic volumes. Whilst there is some local variation, the background traffic growth is 2.8% per annum up to 2031 and then 1.8% per annum from 2031 to 2046;
- The reference case growth scenario that incorporates the proposed Structure Plan land use shows additional traffic on all links, with the total traffic volumes pushing most of the strategic links through Gisborne towards or over the theoretical capacity (18,000vpd) for a 2 lane single carriageway road. The reference case scenarios show an increase in heavy vehicle volumes, most significantly on Kilmore Road, Aitken Street, and along Bacchus Marsh Road in 2031, and all strategic links in 2046;
- The option to duplicate Station Road between the Calder Freeway interchange and Robertson Street provides significant additional capacity, resulting in higher traffic volumes on that link by 2046. This option provides some relief on alternate routes into the town centre (Kilmore Road and Melbourne Road), whilst significantly increasing traffic on Aitken Street south of Robertson Street. This pattern is reflected in the heavy vehicle traffic volumes, with the increase in capacity on Station Road reducing the number of vehicles entering town from the west via the Melbourne Road interchange;
- The option to provide a Western Link Road provides the greatest benefit across the road network, with reductions to varying degrees in traffic volumes on most key links, bringing them all to within theoretical capacity with the exception of Station Road between the freeway and Robertson Street, and Melbourne Road between Howey Street and the freeway interchange. Intersection improvements along the Station Road link should bring the performance of Station Road to an acceptable level. There is also a significant reduction in the number of heavy vehicles on all strategic links through the town centre with the provision of a WLR;
- The option to provide an Eastern Link Road does not provide a significant benefit across the network compared to the WLR option, however with the primary benefit being reductions in traffic volumes on Saunders Road, and to a lesser extent on Kilmore Road between Saunders Road and Melbourne Road. A number of links remain significantly above the theoretical capacity including Station Road / Aitken Street and Melbourne Road.

There is limited impact on traffic volumes on non-strategic links south of the town centre resulting from any of the network improvement options.

5.3 Local Intersection Modelling

5.3.1 SIDRA Intersection Modelling

In addition to determining the daily traffic volumes on each link, the VITM modelling also provided peak hour traffic volumes and turning movements to inform more detailed intersection modelling to determine appropriate upgrades that may be required to cater for the increased traffic. This modelling has been undertaken using SIDRA software package.

The SIDRA software, originally developed by the Australian Road Research Board, provides information about the capacity of an intersection in terms of a range of parameters, as described below:

Degree of Saturation (D.O.S.) is the ratio of the volume of traffic observed making a particular movement compared to the maximum capacity for that movement. Various values of degree of saturation and their rating are shown in Table 5-14.

Table 5-14 Rating of Degrees of Saturation

01D.O.S.	02Rating
03Up to 0.6	04Excellent
050.6 to 0.7	06Very Good
070.7 to 0.8	08Good
090.8 to 0.9	10Fair
110.9 to 1.0	12Poor
13Above 1.0	14Very Poor

It is considered acceptable for some critical movements in an intersection to operate in the range of 0.9 to 1.0 during the high peak periods, reflecting actual conditions in a significant proportion of suburban signalised intersections.

The ***95th Percentile (95%ile) Queue*** represents the maximum queue length, in metres, that can be expected in 95% of observed queue lengths in the peak hour; and

Average Delay is the delay time, in seconds, which can be expected over all vehicles making a particular movement in the peak hour.

5.3.2 Identified Intersections for Analysis

Key intersections within the Gisborne Structure Plan boundary have been identified for analysis, to determine the required improvements that will cater for the future traffic. These intersections include:

1. Station Road / Ferrier Road;
2. Station Road / Saunders Road;
3. Station Road / Aitken Street / Robertson-street;
4. Aitken Street / Hamilton-street;
5. Aitken Street / Melton Road; and
6. Bacchus Marsh Road / Hamilton-street.

Intersection analysis has been undertaken for both the reference case i.e. background traffic growth and proposed structure plan land use scenarios, and the option to provide a Western Link Road (WLR).

The traffic volumes and turning movements for each scenario have been derived from the VITM traffic model for these scenarios reflecting strategic traffic increases, and as such, specific future development proposals that may have a local impact on intersections may not be reflected. Future SIDRA modelling should be undertaken on the local network for future development proposals to better reflect traffic conditions at the time of the development.

Modelling has been undertaken for both the interim 2031 scenario and ultimate 2046 scenario, and both AM and PM peak periods have been analysed. The SIDRA output tables have been provided in Appendix E.

5.3.3 Intersection Analysis

The following section summarises the analysis for each intersection under the existing layout, with the reference case traffic conditions and as a justifcation of improvements that may be made, the western link road traffic conditions. This section also identifies the proposed intersection modifications to be considered to allow the intersection to operate at an acceptable level of service should the existing layout be inadequate with the corresponding analysis and commentary to support these changes, provided. A summary table of the SIDRA results is provided for each of the intersections in Appendix E.

5.3.3.1 Station Road / Ferrier Road

Ferrier Road currently links Station Road and the Mt Macedon Road interchange on Calder Freeway, and provides access to New Gisborne Primary School, low density residential properties, and shortly to some new residential development in the priority residential development area adjacent to the primary school.

Ferrier Road will provide the primary access to a significant amount of new development within the priority residential development area and the future growth area further west, significantly increasing traffic demand on the Station Road / Ferrier Road intersection.

5.3.3.1.1 Existing Intersection Configuration

The existing intersection layout is a priority intersection, with Ferrier Road being the minor arm. Whilst widening locally through the intersection to the north, Station Road remains a single lane road in each direction. A school crossing is provided approximately 25m to the north of the intersection, and 45-degree angle parking is provided on both sides of Ferrier Road on the approach to the intersection. Figure 5-2 shows the current intersection configuration.

Figure 5-2 Existing Station Road / Ferrier Road Intersection

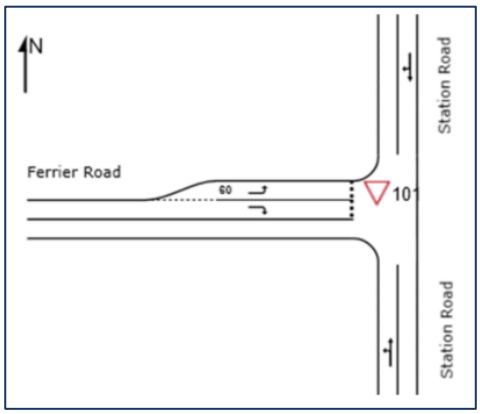
The existing intersection arrangement operates well within capacity under current traffic conditions, and the SIDRA analysis indicates that this layout will continue to operate with an Excellent Degree of Saturation (DoS) and minimal queues during both AM and PM peak periods in 2031. It is noted that given the low DoS on all arms in this scenario, this intersection layout would continue to operate satisfactorily from a capacity perspective well beyond 2031.

In 2046, the existing intersection layout does approach capacity, with the DoS almost 0.9 in both the AM and PM peak periods under the reference scenario. The provision of the WLR does reduce the DoS closer to 0.8, particularly in the AM peak.

5.3.3.1.2 Proposed Intersection Configuration

The LoS on the through Station Road arms remain well within capacity with Excellent LoS, however the Ferrier Road arm pushes the intersection toward capacity. An option to provide a second lane on the Ferrier Road approach was also tested, with a dedicated left and right turn lane, as per the layout shown in Figure 5-3.

Figure 5-3 Proposed Station Road / Ferrier Road Intersection



This option would result in the loss or relocation of some on-street parking on Ferrier Road on the approach to the intersection. The intersection remains within capacity with both the reference case and WLR volumes in 2046 (max LoS of 0.78 and 0.72 respectively). It is noted that this analysis does not consider factors such as gaps being provided by the signalised intersection at Saunders Road, that would assist in allowing turning vehicles to enter Station Road, potentially further reducing the LoS to below those indicated.

A second future option that may be considered is to provide signals. The intersection is shown to operate within capacity under all network scenarios. The provision of signals would also allow a safe pedestrian crossing on both Ferrier Road and Station Road, and would replace the existing school crossing on Station Road.

The SIDRA results for each of the scenarios outlined above are tabulated in Appendix E.

5.3.3.2 Station Road / Saunders Road

Station Road / Saunders Road is a key intersection in New Gisborne, with Saunders Road providing strategic access to Riddells Creek and further north to Lancefield. It also provides access to the New Gisborne Business Park via Barry Road and proposed residential growth areas in New Gisborne. Both Station Road and Saunders Road will see significant future increases in traffic volumes, placing considerable demand on this intersection. It is understood that this intersection is to be signalised in the short to medium term.

5.3.3.2.1 Existing Intersection Configuration

The existing intersection layout is a priority intersection, with Saunders Road being the minor arm. Station Road remains a single lane in each direction widening to provide a northbound passing lane around a through/right turn lane into Saunders Road. The Saunders Road arm provides a left turn slip lane onto Station Road. A shared path crosses the Saunders Road approach with very poor pedestrian crossing facilities. Figure 5-4 shows the current intersection configuration.

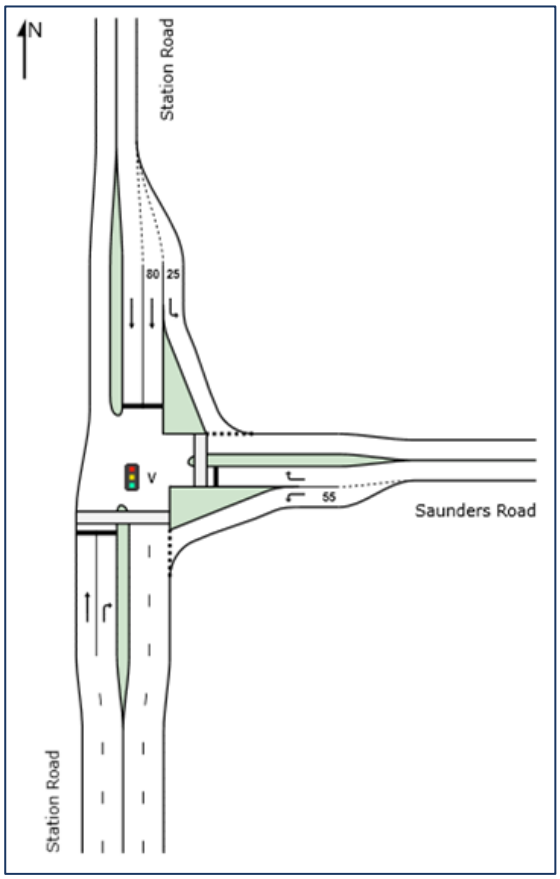
Figure 5-4 Existing Station Road / Saunders Road Intersection

The existing intersection arrangement operates well within capacity under current traffic conditions, and from purely a capacity point of view continue to do so with moderate increases in traffic volumes. The intersection in its current layout will however will reach capacity by 2031.

5.3.3.2.2 Proposed Intersection Configuration

It is understood that the intersection is proposed to be signalised, with Station Road duplicated between the Calder Freeway interchange and Saunders Road, and merging again to a single carriageway further north of the intersection. Pedestrian crossing facilities will be incorporated into the intersection design. Functional design plans have been provided for RRV, illustrating the proposed layout, as per Figure 5-5 below.

Figure 5-5 Proposed Station Road / Saunders Road Intersection



It is demonstrated that this intersection configuration will operate within capacity in 2031 with both the reference case and WBP traffic volumes, with DoS remaining below 0.72. Queue lengths and delay times also remain at acceptable levels on all arms of the intersection.

In 2046, the proposed intersection continues to operates within capacity in the AM and PM peak periods with both the reference case traffic volumes and WBP scenario volumes, with DoS not exceeding 0.9 and queue length and delay times remaining acceptable.

The SIDRA results for each of the scenarios outlined above are tabulated in Appendix E.

5.3.3.3 Station Road / Aitken Street / Robertson-street

The Station Road / Aitken Street / Robertson-street intersection is a key intersection on the strategic road network in Gisborne town centre. The intersection effectively provides the primary link for traffic accessing the freeway and New Gisborne via Station Road to the north, Bacchus Marsh Road via Robertson-street to the west, and Melton Road and Melbourne Road / Calder Freeway to the south. It also provides local town centre access via both Aitken Street and Roberson-street.

5.3.3.3.1 Existing Intersection Configuration

The existing intersection is a single lane roundabout, with service road entry and exit points at very close proximity on all arms. There is on-street car parking and off-street car parking entrances on the Robertson Street arm. Figure 5-6 shows the existing intersection layout.

Figure 5-6 Existing Station Road / Aitken Street / Robertson-street Intersection

The intersection currently experiences significant congestion, particularly during peak periods. The SIDRA analysis also suggests that the intersection will continue to be considerably over capacity in 2031 and beyond. It is understood that it is to be upgraded to signals in the short term.

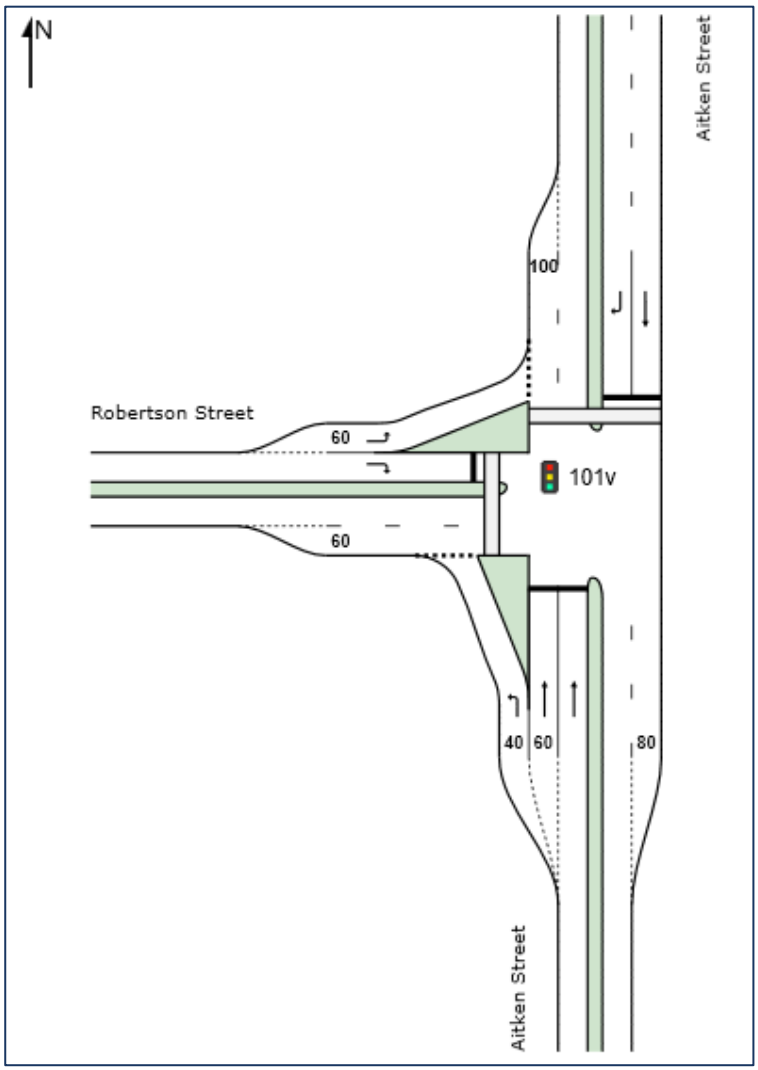
5.3.3.3.2 Proposed Intersection Configuration

It is proposed to upgrade this intersection to signals, including pedestrian facilities. The location is constrained to a degree due to the road reserves, locations of service roads, and adjacent vegetation that is preferred to be maintained. With these constraints in mind, in addition to proposed improvements to the service road access arrangements, the proposed layout increases the capacity on all arms whilst minimising the impact on the local street environment in line with the Gisborne UDF objectives.

The proposed layout allows for two lanes in each direction on the northern Station Road arm, whilst providing local widening to two lanes on the Aitken Street approach to mitigate the need to duplicate Aitken Street through the town centre. Local widening to allow separate left turn and right turn lanes on the Robertson Street approach to the intersection is also provided. Removal of some on-street parking on Robertson Street will be required to improve capacity on this arm.

Figure 5-7 illustrates the proposed intersection layout analysed in SIDRA.

Figure 5-7 Proposed Station Road / Aitken Street / Robertson Street Intersection



This intersection configuration will operate within capacity for both the AM and PM Peak periods for both the reference case and should the western link road be constructed both in 2031 and 2046 with LoS not exceeding 0.9 through to 2046, and with acceptable delays and queue lengths on the approaches.

The SIDRA results for each of the scenarios outlined above are tabulated in Appendix E.

5.3.3.4 Aitken Street / Hamilton Street

The Aitken Street / Hamilton Street is also a key intersection on the strategic road network in the town centre. This intersection provides the primary link into the town from the nearest interchange on the freeway to Melbourne to Aitken Street and Station Road, and provides a primary link to the retail precinct west of Aitken Street via Hamilton Street. The intersection also links Melton Road from the south.

5.3.3.4.1 Existing Intersection Configuration

The existing intersection is a single lane roundabout, with service road entry and exit points at very close proximity on all four arms. There is on-street car parking on the east and west Hamilton Street arms, and sub-standard pedestrian crossings on all but the northern Aitken Street arm. The roundabout has a feature water fountain in the middle of the centre island. Figure 5-8 shows the existing intersection layout.

Figure 5-8 Existing Aitken Street / Hamilton-street Intersection

The intersection currently operates within capacity with LoS around 0.66 in the AM peak and just above 0.7 in the PM peak. It would be expected that the intersection would continue to be able to operate within capacity with some growth in traffic volumes in its current configuration. It is shown however that it does significantly exceed capacity by 2031 for both the reference case traffic volumes, and to a lesser extent with the western link road.

5.3.3.4.2 Potential Intersection Configuration

It is understood that it would be undesirable to signalise this intersection, given the heritage significance with the water fountain feature in the central island. Road reserve widths and building alignments and the amenity and safety for pedestrians and cyclists provide additional constraints when considering measures to increase the capacity of this intersection.

With this in mind, a potential ultimate upgrade has been identified that would significantly improve the capacity of the intersection, however there are a number of constraints and considerations that would need to be addressed for this option to be acceptable. This ultimate option increases the capacity of the roundabout by providing two lanes on three of the approaches and formalising two circulating lanes.

This proposal would be subject to future detailed analysis and design when capacity of the existing intersection layout has been reached to address the spatial constraints, pedestrian and cyclist safety and connectivity, and amenity. Interim improvements may be identified and considered to increase capacity in the medium term, and as future traffic conditions are better understood at the time, an ultimate solution identified.

This intersection configuration generally operates within capacity in 2031 with the reference case traffic volumes, with the exception of the southern approach, which exceeds capacity in the AM peak only and the northern approach in the PM peak only. The intersection operates within capacity in 2031 with the provision of the western link road, with LoS remaining below 0.9 on all approaches in both the AM and PM peaks.

Similar to 2031, the intersection remains over capacity on the southern arm with the reference case volumes in 2046 in the AM peak, and the northern approach in the PM peak, however the eastern Hamilton Street approach also nears capacity in the AM peak. The intersection operates within capacity in 2046 with the provision of the western link road, with LoS generally remaining below 0.9 on all approaches in both the AM and PM peaks. The exception is the northern arm in the PM peak where the LoS slightly exceeds 1.0. The option to provide an additional lane on this approach exists with any duplication of Aitken Street between Robertson and Hamilton-streets. This would significantly increase the capacity of the intersection

The SIDRA results for each of the scenarios outlined above are tabulated in Appendix E.

5.3.3.5 Aitken Street / Melton Road

Melton Road to the south west and Aitken Street to the north of the intersection provides the strategic road link from Melton to the south into the town centre and further north to Calder Freeway. The southern Aitken Street arm provides access to significant residential development to the south and on to rural land via Mt Gisborne Road further south beyond the structure plan boundary.

5.3.3.5.1 Existing Intersection Configuration

The existing intersection arrangement is a single lane roundabout as shown in Figure 5-9 below.

Figure 5-9 Existing Aitken Street / Melton Road Intersection

The existing roundabout configuration will continue to support increased traffic levels during the peak periods in both 2031 and 2046 should the western link road be constructed in future. Should the western link road not be constructed, the southern Aitken Street arm does exceed capacity, with significant delays and queues.

Should the western link road not be constructed, local widening on the approaches to the roundabout may be considered to increase the capacity and reduce the DoS on the southern approach.

The SIDRA results for each of the scenarios outlined above are tabulated in Appendix E.

5.3.3.6 Bacchus Marsh Road / Hamilton Street

Hamilton Street provides an alternative access to the town centre and Melbourne Road to Robertson Street from the west via Bacchus Marsh Road. The existing layout shows Hamilton Street approaching Bacchus Marsh Road as the minor arm, with a right turn lane into the intersection from Bacchus Marsh Road, as shown in Figure 5-10 below

Figure 5-10 Existing Bacchus Marsh Road / Hamilton Street Intersection

The existing intersection configuration continues to support the future traffic levels with or without the WLR in 2031 and 2046. The SIDRA results for each of the scenarios outlined above are tabulated in Appendix E.

6 Gisborne Business Park

6.1 Introduction

Cardno was engaged by Macedon Ranges Shire Council in 2017 to undertake a Transport and Infrastructure study to inform the development of the Gisborne Business Park Masterplan. The purpose of the study was to develop a strategy for the road, drainage and footpath infrastructure networks that will assist Council for future planning and development of the Gisborne Business Park as well as the development of a Rural Land Zone Parcel adjacent to the east.

Following community consultation on the draft masterplan in 2018, Cardno provided an addendum to the original study to address some of the questions raised from the consultation, with the benefit of additional information gained through our involvement in the Gisborne Futures project. An updated Gisborne Business Park Masterplan Traffic & Transport Report has since been provided considering the initial study and the subsequent addendum, and is provided as Appendix F to this report.

The following sections summarise the background and development of the traffic and transport recommendations informing the draft Gisborne Business Park Masterplan.

6.2 Location & Existing Conditions

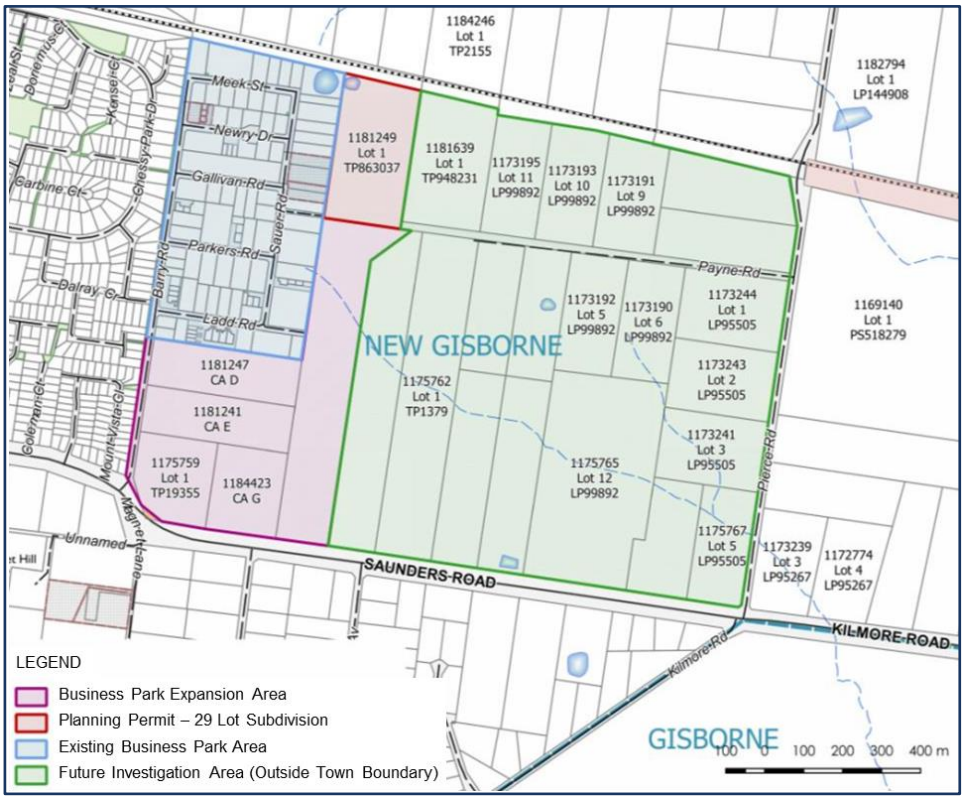
6.2.1 Business Park Location

The Gisborne Business park is located on Barry Road in New Gisborne. Barry Road extends north from Saunders Road to the railway reserve, bordering the edge of the residential development east of Station Road.

The study area for the Gisborne Business Park Traffic & Infrastructure Study generally considerd the existing Gisborne Business Park off Barry Road east of the residential area, the proposed business park expansion area to the east and south of the existing development. Whilst not considered part of the study area, consideration was also given to a 'Future Investigation Area' of Rural Land Zone between the study area and Pierce Road.

The study area is generally bound by Barry Road to the west, the Future Investigation Area to the east, Saunders Road to the south, and the Melbourne - Bendigo Railway Line to the north, as shown in Figure 6-1.

Figure 6-1 Gisborne Business Park – Study Area



6.2.2 Existing Land Use

The current land zones under the Planning Scheme within the study area are Industrial Zone 1 (IN1Z) over the existing business park, and Rural Land Zone 5 (RLZ5) over the remainder of the study area. Approximately 75% of the 114 available lots of varying sizes within the current business park area are occupied, and is generally a mix of light industry and warehousing operations.

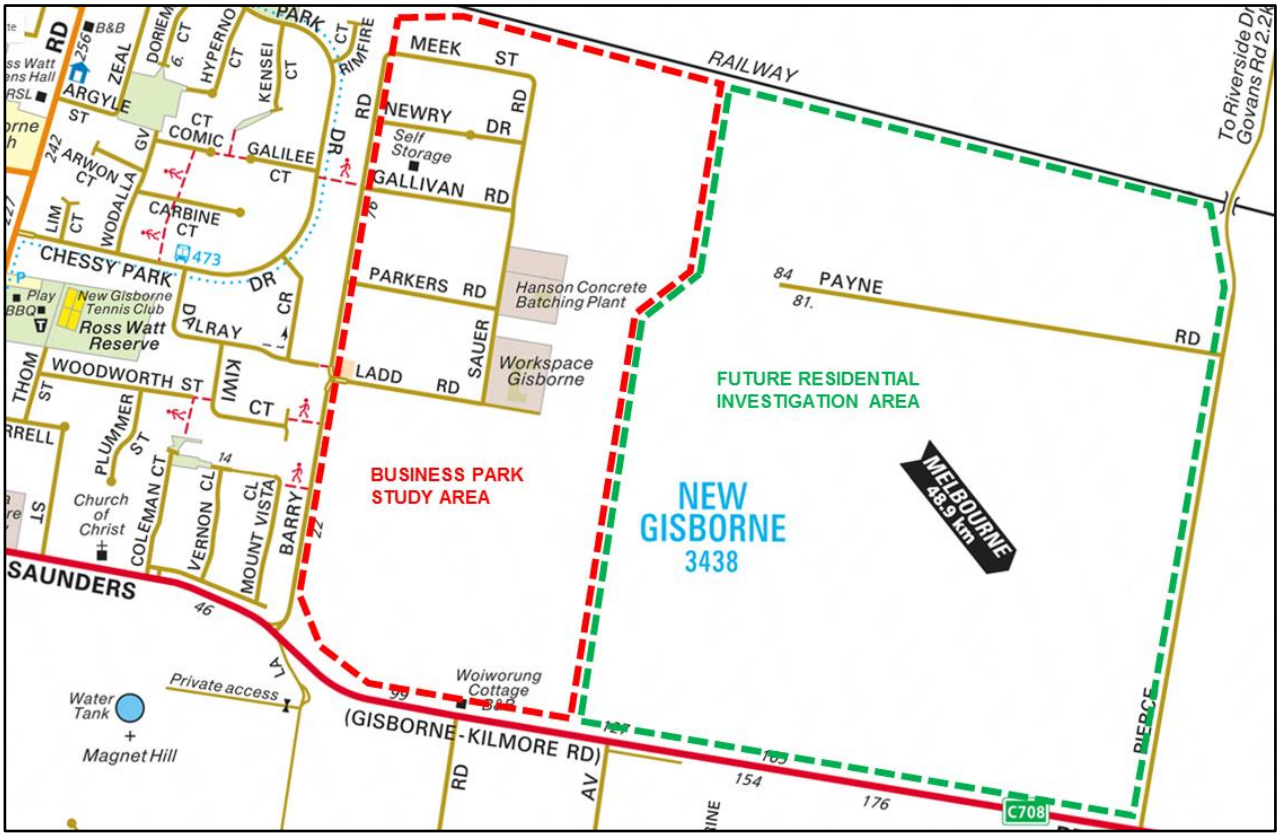
6.2.3 Existing Business Park Access

The following sections summarise the existing access into and within the Gisborne Business Park, with a more detailed description for each mode provided in the full business park report.

6.2.3.1 Road Network

Currently the only vehicle access into the existing business park is via Barry Road, which extends north from Saunders Road. Payne Road extends west from Pierce Road to the immediate east of the business park however does not provide a direct access. The road network within the business park comprises a number of east-west links between Barry Road and the north south aligned Sauer Road. Figure 6-2 shows the immediate road network around and within the business park study area. The key road links are summarised below.

Figure 6-2 Existing Business Park Road Network



Saunders Road is a VicRoads operated road within a 60-metre-wide reserve that extends east from Station Road, where it becomes Kilmore Road from the Pierce Road intersection and continues east through the small town of Riddell. Saunders Road provides access to the business park from both directions, via Barry Road. The Barry Road intersection is a priority intersection with an auxiliary right turn lane and left turn deceleration lane from Saunders Road into Barry Road.

Barry Road is a council operated road, extending north against the eastern boundary of the existing residential development, and is currently the only access point for the Gisborne Business Park. There is limited property access along the southern section of Barry Road, south of Ladd Road, whilst there are individual crossovers into businesses along the eastern boundary north of Ladd Road.

Pierce Road provides a rural connection to the north from Saunders Road with a grade separated crossing over the rail line, and continues north to Hamilton Road, where it continues further as Govans Lane. Pierce Road provides access to individual farm properties along the extent of the road

Payne Road extends west from Pierce Road toward the business park, terminating approximately 180 metres east of the study area, however may be extended into the business park as an additional future access. Payne Road provides access to a number of rural properties

The current **internal road network** as identified in Figure 6-2 consists of a number of local roads extending west from Barry Road to the north-south Sauer Road. The internal street network is generally within 20 meter reserves, however currently with varying road, parking, drainage and pedestrian infrastructure, as illustrated in Figure 6-3.

Figure 6-3 Existing Internal Road Network

All intersections are priority controlled T-intersections with a single lane on each approach at all intersections. A seagull treatment is in place on Barry Road at Ladd Road that allows all movements at the T-intersection.

6.2.3.2 Active Transport Network

There is currently limited provision for pedestrians and cyclists accessing or travelling within the business park.

A shared path is provided along the northern side of Saunders Road between Station Road and Coleman Court, with a footpath continuing on to Barry Road. There is no further connection into the site along Barry Road.

There are two footpath connections from the residential development to Barry Road further south, one from Kiwi Court, and the other from Mount Vista Close. In both of these locations, there is also no further pedestrian connectivity at Barry Road.

Further north, there is a shared path connection from Chessy Park Drive within the residential area west of the business park to Barry Road at Gallivan Road. This link provides a connection from the bus stop on Chessy Park Drive, however there are no further connections from this point further into the business park.

Observations made on site, supported by aerial imagery and anecdotal evidence suggests that pedestrians access the business park from the railway station via informal paths along the rail reserve and into the north of the business park.

There are no cycle lanes providing access into or within the business park.

Figure 6-4 shows the existing active transport provision into and within the business park site.

Figure 6-4 Existing Pedestrian Connectivity

6.2.3.3 Public Transport

Gisborne Business Park is located within approximately 600 metres walk from Gisborne Railway Station adjacent to the rail reserve to the top of Barry Street, however there is currently no pedestrian facilities along this route. It is closer to an 800 metre walk with full pedestrian access along Chessy Park Drive to the shared path into the business part at Gallivan Road.

The Route 473 bus service also runs along Chessy Park Drive, with a stop at the Gallivan Road shared path access to the business park. This service runs approximately hourly between 6:30am and 8:00pm Monday to Friday.

6.2.4 Existing Local Traffic Conditions

Traffic volume information had been sourced from VicRoads (RRV) and Macedon Ranges Shire Council to provide an understanding of the current operating conditions and functions of the roads accessing Gisborne Business Park, with the available traffic data summarised in Table 6-1.

Table 6-1 AADT Volumes on Roads Accessing Gisborne Business Park

Road Name	Section	Survey Date	AADT	% Heavy Vehicles
Barry Road	200m north of Saunders Road	April 2017	2,650	19%
Saunders Road	100m east of Station Street (Council)	2016	5,800	12%
Saunders Road	800m east of Barry Road	Oct 2018	3,423	14%
Station Road	100m north of Saunders Road	Oct 2018	7,065	7%
Station Road	100m south of Saunders Road	Oct 2018	12,289	7%

Traffic volumes on Barry Road generally reflect those of a Collector Street under IDM guidelines and an Industrial Access Street under the MPA/VPA guidelines.

It is shown that there has been approximately 2.6% annual traffic growth on Saunders Road over the 10 years between 2006 and 2016.

Intersection turning movement counts were undertaken in October 2018 at a number of locations for the Gisborne Futures project, including at Station Road / Saunders Road. The performance of the intersection from a traffic point of view was assessed in SIDRA, which showed that the intersection performed well within capacity. An analysis was also undertaken on the assumption that the existing business park be 100% occupied. The intersection remained within capacity as shown in Table 6-2.

Table 6-2 Station Road / Saunders Road Intersection - Existing Business Park SIDRA Results

Scenario	Approach	AM			PM		
		DOS	Average Delay (s)	95th%ile Queue Length (m)	DOS	Average Delay (s)	95th%ile Queue Length (m)
Existing Conditions (75% Developed)	Station Road (S)	0.382	5.0	21.9	0.370	5.4	20.0
	Saunders Road (E)	0.406	9.9	17.4	0.271	8.5	8.7
	Station Road (N)	0.294	0.8	0.0	0.272	1.2	0.0
Existing Business Park (100% Developed)	Station Road (S)	0.457	6.0	29.4	0.388	5.6	21.5
	Saunders Road (E)	0.426	10.3	19.0	0.346	8.9	13.2
	Station Road (N)	0.299	0.9	0.0	0.273	1.2	0.0

6.2.5 Crash History

A review of the crash statistics in the vicinity of the business park shows 2 ‘other injury’ accidents at the Barry Road / Saunders Road intersection and two at the Station Road / Saunders Road intersection. The Saunders Road / Kilmore Road intersection shows considerably more accidents, with 1 ‘fatal accident’, 2 ‘serious injury’ and 4 ‘other injury’ accidents. It is understood that this intersection has been upgraded since this study has been completed.

6.3 Draft Gisborne Business Park Masterplan

6.3.1 Draft Masterplan Road Network

It is ultimately proposed to expand the business park both to the east and south of the existing site to the Saunders Road frontage to include an additional 135 Lots, as illustrated in Figure 6-5. It is understood that the approved sub-division in the northeast corner of the expansion area has a Planning Permit for 29 lots. Figure 6-5 shows the draft Gisborne Business Park Masterplan, outlining the indicative lot arrangements and transport network.

Figure 6-5 Draft Gisborne Business Park Masterplan

6.3.2 Integration with Existing Development

Figure 6-5 demonstrates how the new development will connect to and integrate with the existing business park. Key access connections will be via Ladd Road, from Barry Road and Sauer Road, and Payne Road, from Sauer Road. Meek Street will also be extended east from the existing site into the new development in the north east.

Upgrades to the existing access network will ensure that the road network will be of similar standard to the newer development and to help it to be in character with the new development. The upgrades to the existing road network will also ensure that improved connectivity is provided for pedestrians and cyclists, both within the existing park and through to the expanded business park network.

It is also understood that there are long term plans for additional residential development in the rural zoned land east of the proposed business park expansion area, through to Pierce Road further east, as shown in Figure 6-5. Whilst it would be appropriate to provide an adequate distinction between the business park and residential development, the proposed road network will allow for potential future connectivity between the two. An example of this being the proposed extension of Payne Road from Pierce Road through to the business park.

6.3.3 Development Traffic Generation & Distribution

6.3.3.1 Development Yield

The existing business park provides a total of 114 lots of varying sizes, the average being approximately 1,900m^2, but only approximately 85 being currently occupied. With an average floor area being 40% of the lot size, this provides approximately 86,640m^2 floor area.

The proposed business park expansion area, including the section of 29 lots in the north east corner of the site subject to the approved Planning Permit, is approximately 35 hectares (Ha). The draft masterplan shows that there will be a total of 135 lots of varying sizes. An analysis of the masterplan shows that the average lot size is approximately 1,825m^2 as shown in Table 6-3 below.

Table 6-3 Development Lot Sizes and Floor Area

Lot Size	Approximate Lot Area (m^2)	Number of Lots	Total Lot Area (m^2)	Floor Area (%)	Total Floor Area (m^2)
Existing Site					
Total Existing Site	**1,900 (Avg)**	**114**	**216,600**	**40%**	**86,640**
Proposed Site					
Small Lot	850	50	42,500	40%	17,000
Mid Size Lot	2,050	75	153,750	40%	61,500
Large Lot	5,000	10	50,000	40%	20,000
Total Proposed Site		**135**	**246,250**		**98,500**
Average Proposed	*1,825*	*135*	*246,250*	*40%*	*98,500*
Total Business Park		***249***	***462,850***	***40%***	***185,140***

The detailed nature of the business types that will occupy the expanded business park is not known at this stage, however for the purpose of understanding the levels of traffic that will be generated by the development area, it has been assumed that 50% of development will be classified “Industrial”, and the other 50% “Warehousing” under the Planning Scheme.

6.3.3.2 Traffic Generation

An analysis of the current trip generation rates at the existing business park has been undertaken. The existing business park currently has around 85 of the total 114 lots occupied, and is generating 2,650 daily trips as per the 2017 traffic survey. With an approximate floor area ratio (40%), it is estimated that the current trip generation rate is around 3.2 trips per 100m^2 of total floor area.

Looking forward as the business park develops and the existing road network and service provision is upgraded, it would be expected that the empty lots will become occupied, and as such, should be considered when forecasting the future trip generation.

The levels of traffic generated depend on acknowledged trip generation rates for various land uses. As discussed above, it has been assumed for this assessment that there will be a mix of Industrial and Warehousing type premises.

The assumed future trip generation rates used are as per the RTA (NSW) "Guide to Traffic Engineering Developments", 1992, as shown in Table 6-4 below. The trip rates are applied to the total floor area to calculate the total daily traffic generation.

Table 6-4 shows trip rates for each land use and the future levels of trips generated by the total expanded business park area using the RTA trip rates for the entire business park..

Table 6-4 Gisborne Business Park Masterplan Traffic Generation (RTA Guide)

Land Use	Trip Generation Rate (Daily)	Land Use Proportion	Total Floor Area (m^2)	Daily Trips Generated	Trip Generation Rate (Hourly)	Hourly Trips Generated
Existing Site						
Industry	5 per 100m^2	50%	43,320	2,166	1 per 100m^2	433
Warehouse	4 per 100m^2	50%	43,320	1,733	0.5 per 100m^2	217
Existing Site Total			***86,640***	***3,889***		***650***
Proposed Site						
Industry	5 per 100m^2	42%	41,250	2,063	1 per 100m^2	413
Warehouse	4 per 100m^2	42%	41,250	1,650	0.5 per 100m^2	206
Bulky Goods	12.5 per 100m^2	8%	8,000	1,000	2.5 per 100m^2	200
Hardware Retail	18 per 100m^2	8%	8,000	1,440	3.6 per 100m^2	288
Proposed Site Total			***98,500***	***6,153***		***1,107***
Business Park Total			**185,140**	**10,042**		**1,757**

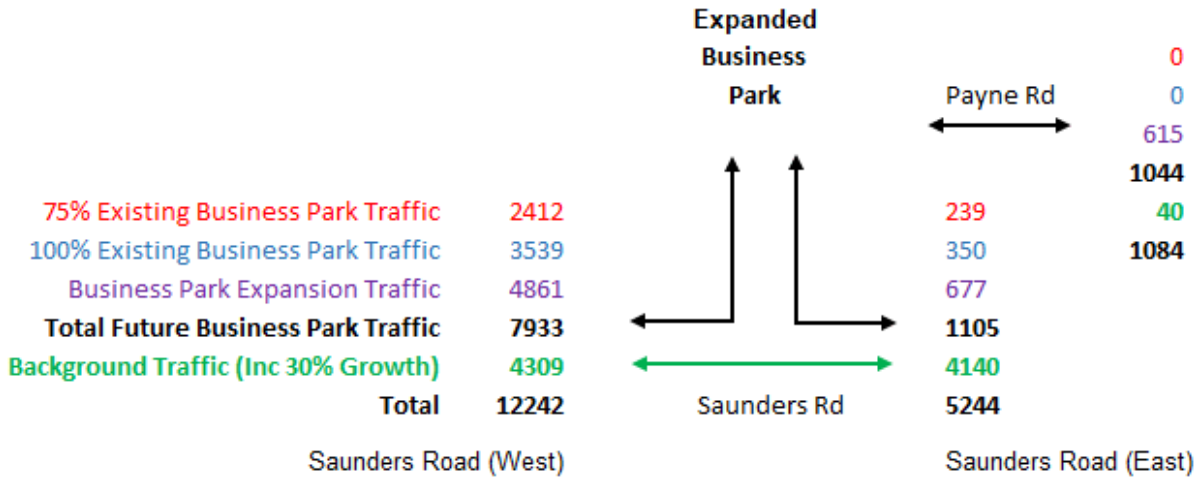
It is noted that the calculations used for the existing business park are based on the full development of the existing site. The existing site is currently approximately 75% developed.

It is also noted that the traffic generation and distribution does not account for any future residential or other development east of the proposed business park expansion and Pierce Road.

6.3.3.3 Traffic Distribution

The assumed future traffic distribution is based on the existing distribution with an assumed 10% using Payne Road should it be extended into the business park from the east. This link would provide an alternative access to the north of the rail line, and an alternative access to Kilmore Road and Saunders Road via Pierce Road. A breakdown of the total trips generated, and the impact on the connecting road network either side of the business park is illustrated in Figure 6-6.

Figure 6-6 Traffic Distribution and Two-Way Link Flows Adjacent to Business Park



The proposed business park expansion will result in an additional 4861 daily vehicles on Saunders Road west of Barry Road, accounting for around 40% of the total future vehicles on this section of Saunders Road.[3]

Similarly, the business park expansion will add approximately 677 daily vehicles to Saunders Road east of the proposed boulevard, accounting for around 13% of total future traffic flows on this link.

Based on the existing vehicle type proportions on Barry Road, approximately 19% of vehicles generated by the business park are heavy goods vehicles. This translates into an additional 923 daily heavy vehicles on Saunders Road west of the business park, and 126 daily heavy vehicles to the east.

6.3.4 Impact on Station Road / Saunders Road Intersection

6.3.4.1 2018 First Principles Analysis

All traffic assessment undertaken as part of the Gisborne Business Park Masterplan was undertaken prior to the Gisborne Futures traffic modelling. As such, a first principles approach was taken to determine the distribution of traffic from the expanded business park to the surrounding network and background traffic growth, with assumptions made to inform these calculations. The future year assumed for this analysis was 2035, in line with that of the Gisborne Movement Network Study. It was also assumed that 100% of the business park expansion area was developed.

The SIDRA intersection analysis with the peak hour traffic volumes based on these assumptions indicated that the signalised Station Road / Saunders Road intersection option operated within capacity tested both with and without the additional business park traffic. The results indicated that the impact of the additional traffic from the business park on the intersection was minimal. A more detailed description is provided in the Gisborne Business Park Masterplan Traffic & Transport Report provided in Appendix F.

6.3.4.2 2020 Post VITM Analysis

A subsequent analysis was undertaken once the strategic modelling was completed for the Gisborne Futures project. Options were tested for a “Reference Case”, with known intersection upgrades as outlined in Chapter 5, including this Station Road / Saunders Road intersection to signals. Future year scenarios included an interim 2031 scenario which assumed that 40% of the business park expansion had been developed, and an ultimate 2046 scenario with the business park 100% developed.

The results from the SIDRA intersection analysis based on the VITM traffic data is provided in Section 5.3.3.2 of this report. It is demonstrated that the signalised intersection configuration will operate within capacity in 2031 with the Reference Case traffic volumes, with DoS remaining below 0.72. Queue lengths and delay times also remain at acceptable levels on all arms of the intersection. This remains in line with the initial analysis.

In 2046, the proposed intersection continues to operates within capacity in the AM and PM peak periods with the Reference Case traffic volumes, with DoS not exceeding 0.9 and queue length and delay times remaining acceptable.

[3] This assumed a 30% growth in background traffic on Saunders Road. Future volumes will be dependent on development identified in Gisborne Futures.

6.4 Gisborne Business Park Masterplan Transport Network

Throughout the development of the business park masterplan, the road network layout and hierarchy was generally informed by the urban design options as they were confirmed. The external connections were well defined in terms of location, however safety improvements were a focus. The ultimate road network identified for the business park is shown in Figure 6-7.

6.4.1 External Connections

Throughout the development of the business park masterplan, improvements to the existing access intersection at Barry Road were considered, and further refined following consultation with the public. An additional access intersection was also identified further east on Saunders Road at the new connector boulevard. The provision for connecting the expanded business park to Payne Road to the east was also identified.

6.4.1.1 Saunders Road / Barry Road Intersection

Barry Road will continue to be a primary access into the business park, with estimated future 2-way daily traffic flows of around 4,050 vehicles entering and exiting the site at this location, up from the 2,650 vpd that currently use Barry Road.

Two options have been identified to improve safety and functionality as detailed in the full Gisborne Business Park Masterplan Traffic & Transport Report. These being:

- Maintain the priority intersection with the auxiliary left turn into Barry Road from the west but provide a channelised right turn lane into Barry Road from the east, and an improvement to the alignment of the Barry Road approach by realigning the kerb to provide space for separate left and tight turn lanes at the give way line; or
- Upgrade the intersection to a roundabout, which will require a more detailed assessment as it will require significant offset to the existing road alignment due to the shape of the road reserve, and the required vertical sight distances may be impacted by the location of the intersection at the apex of the hill.

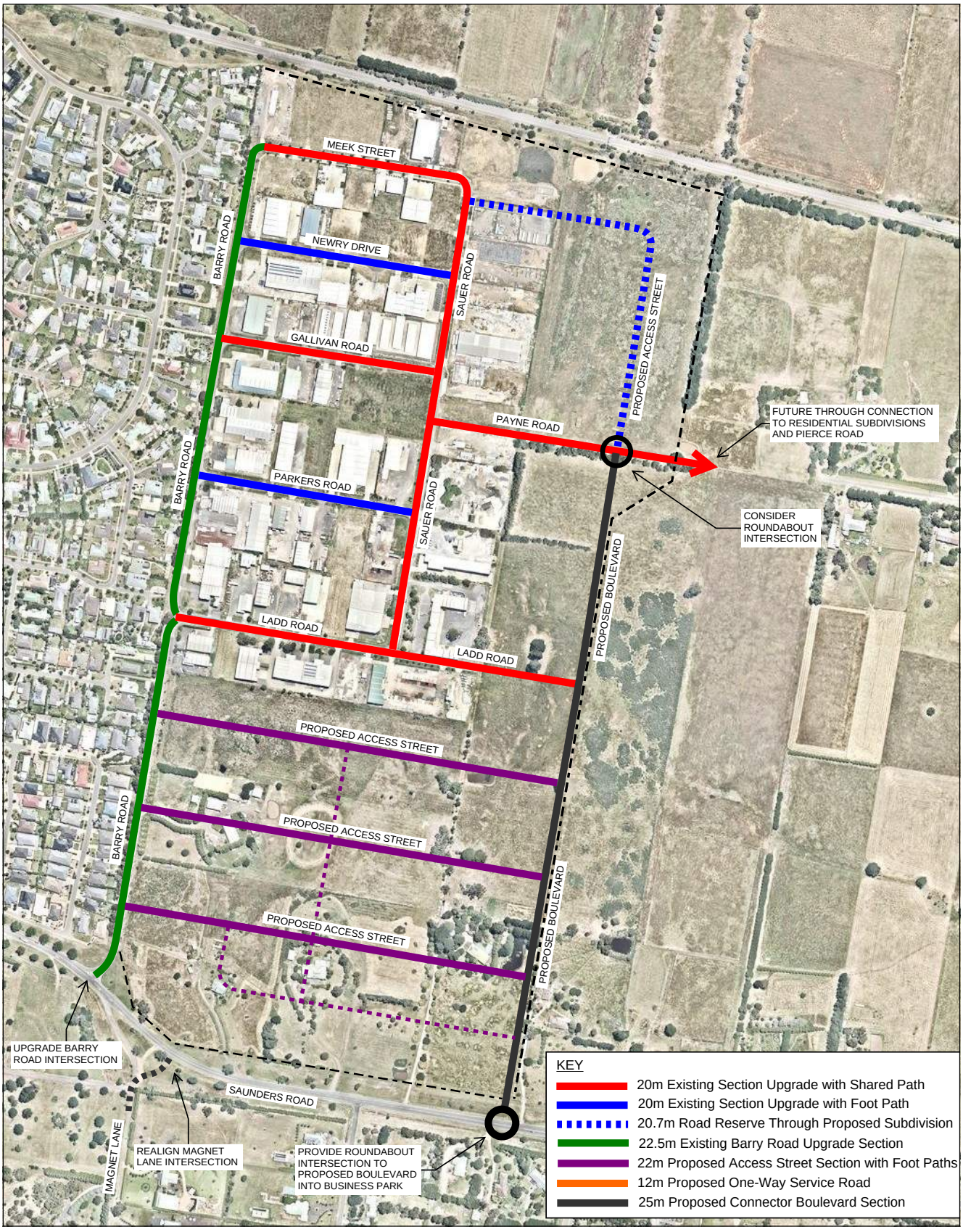
6.4.1.2 Saunders Road / Connector Boulevard Intersection

A similar number of vehicles are ultimately expected to access Saunders Road via the new boulevard connection. It would be proposed to provide a roundabout at this intersection, subject to future analysis and design.

6.4.2 Internal Network

The internal road network will comprise the existing business park road network, which is intended to be upgraded to a standard similar to that of the new road network that will be provided within the expanded business park area. Figure 6-7 illustrates the existing and proposed internal road network with proposed cross section types for each of the existing and proposed network links.

Figure 6-7 Proposed Business Park Internal Road Network



Below is a summary of the recommendations provided for the business park's internal roads:

- Barry Road:
  - It is proposed to upgrade the northern section of the existing 22.5m wide road reserve to maintain the swale along the western side, but provide formalised pedestrian and shared paths, service strips and on-street parking; and
  - The southern section will provide access to the proposed east-west access roads, extending the upgrade of the northern section to the Saunders Road intersection. An alternative option identified is to divide this section of road to provide a boulevard treatment with the swale in the centre of the road reserve, with parking and a shared path on the eastern side of the road reserve.
- Proposed Boulevard:
  - It is proposed to provide a boulevard treatment within the road reserve, including:
    - A swale separating the northbound and southbound carriageways;
    - A shared path along the western boundary and a footpath along the eastern boundary;
    - Service strips and parallel parking on both sides of the boulevard; and
    - Gaps in the centre median to allow vehicle movements into access streets and properties, as well as U-turns.
- Meek Street:
  - It is proposed to upgrade the road reserve to incorporate a shared path along the northern side, connecting to a proposed shared path from the Gisborne Railway Station to Barry Road and Sauer Road.
- Newry Drive:
  - It is proposed to provide footpaths on both sides of the road; and
  - Consideration to providing parallel parking by widening one side of the carriageway.
- Gallivan Drive, Ladd Road, Sauer Road and Payne Road:
  - It is proposed to provide drainage infrastructure on Gallivan Drive through a swale along one side of the road reserve, and a shared path connection between the Chessy Park Drive access and Barry Road through to Sauer Road; and
  - It is proposed to provide drainage infrastructure on Ladd Road, with a shared path link midway up the business park between Barry Road and the proposed boulevard.
- Parkers Road / Approved Subdivision:
  - It is proposed to upgrade the road to provide a kerb and channel, allowing parking on one side of the road, as well as providing footpaths along both sides with a drainage swale along one side; and
  - The proposed road through the approved subdivision in the north east corner has a 21m wide road reserve, and this cross-section may be modified to suit the slightly wider reserve.
- Proposed east-west links through expanded business park area:
  - It is proposed to provide a 22m wide road reserve for each of the three (3) east-west links, as per the Macedon Ranges Shire Design Guidelines for Industrial & Commercial Development, allowing for a drainage swale along one side of the reserve and footpaths and parallel parking on both sides of the carriageway.

6.4.3 Active Transport

It has been identified that there is currently very poor connectivity for active transport modes to and within the existing business park. With the expansion of the business park and through upgrades to the existing business park road network, there is considerable scope to improve accessibility for pedestrians and cyclists at the business park, as outlined in the following sections, and illustrated on Figure 6-8.

6.4.3.1 External Access

There is currently limited connectivity for pedestrians and cyclists into the business park from the surrounding street network, with the only access being via pedestrian links from the residential development

on the western side of the business park to Barry Road. Throughout the development of the draft Masterplan, a number of improvements providing access to the business park have been identified, including:

- Extending the existing shared path along Saunders Road from Coleman Street, where it currently terminates, to beyond the proposed boulevard on the eastern boundary of the business park extension, and providing links into the business park at Barry Road and the proposed boulevard.
- Providing a shared path along the rail reserve, extending east from Station Road along the northern boundary of the business park, and further east into the proposed residential growth area east of the business park. This will provide direct pedestrian connectivity between the business park and the Railway Station.
- Enhance the existing footpath connection between the residential area west of the business park and Barry Road at Kiwi Court, providing an additional pedestrian connection into the park from the west.
- Addressing community concern regarding pedestrians crossing Saunders Road at unsafe locations, consideration should be given to providing a formal uncontrolled pedestrian crossing near Monaghan Road. Pedestrian facilities should also be incorporated into new intersections and upgrades into the business park.

6.4.3.2 Internal Access & Connectivity

There is also currently very poor provision for pedestrians and cyclists within the existing business park, with a footpath only provided along one side of Meek Street and the northern end of Sauer Road. Identified recommendations to create a safe and well connected active transport network within the business park include:

- Providing footpaths on at least one side of each of the existing street network, and paths on both sides of the business park extension street network.
- Providing shared paths along both Barry Road and the proposed boulevard, connecting Saunders Road to the internal street network.
- Providing east west shared path links on Ladd Road, Meek Street, and Gallivan Drive / Payne Road, connecting the external access points from the west, and into the growth area east of the park.
- Providing formal pedestrian crossings on Barry Road at each of the external pedestrian connections into the residential area west of the business park to provide a safe environment for pedestrians. Provide a pedestrian crossing on Sauer Road, between Gallivan Road and Payne Road, connecting the shared path links on those streets.
- The provision of on-road cycle lanes may also be considered for Barry Road and the proposed boulevard.

6.4.4 Public Transport

6.4.4.1 Access to Rail Station

As outlined in the Active Transport recommendations, it is proposed to provide a shared path along the rail reserve, extending east from Station Road including along the northern boundary of the business park, and potentially into the future growth further east. It is clear that the business park would benefit from this direct link, improving access for pedestrians to the station. This link is highlighted in Figure 6-9.

6.4.4.2 Provision for Buses

There is currently no provision for public transport within the existing business park. Given that there is consideration for future residential development east of the business park, and the additional demand that the expanded business park may provide, it would be proposed to provide a bus capable network through the business park to Payne Road that can extend further east. This will allow for future bus service provision as commercial and residential demand increases in the future.

Bus capable links within the business park would include Barry Road, Ladd Road, the proposed boulevard and Payne Road, as indicated in Figure 6-9.

Figure 6-8 Proposed Active Transport Network

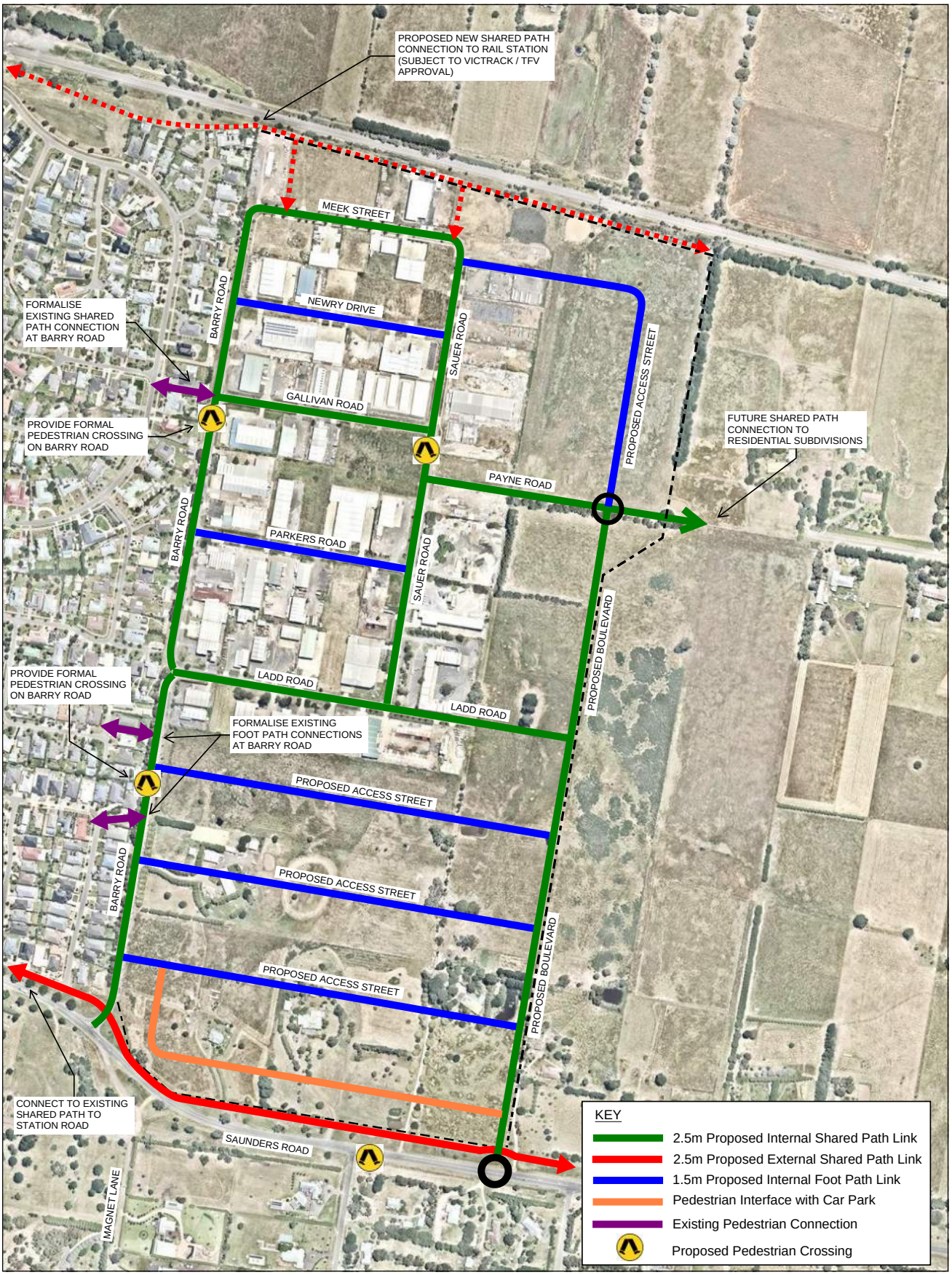
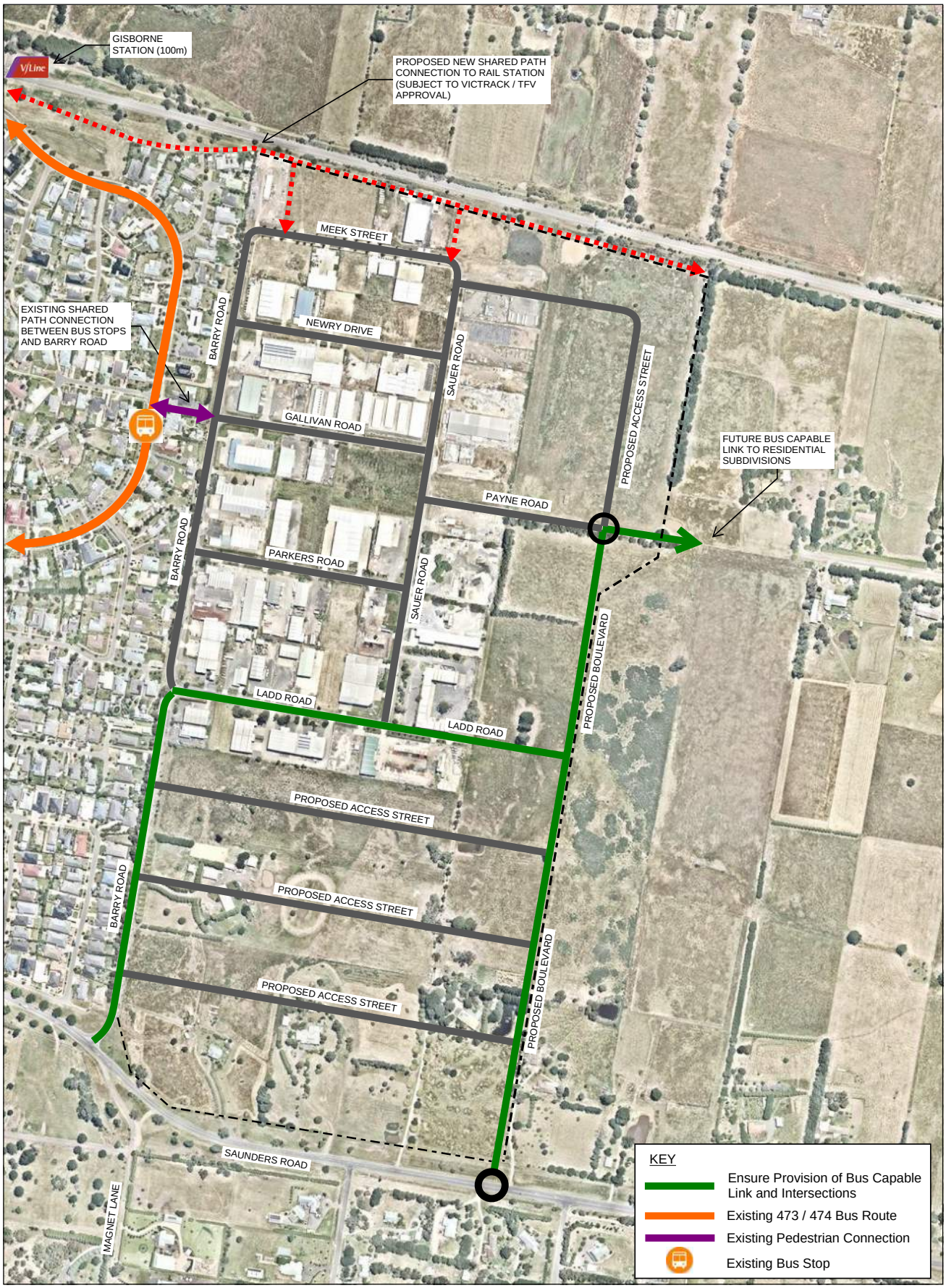


Figure 6-9 Bus Capable Network



6.4.5 Road Safety

With a number of incidents along Saunders Road, it is highlighted that safety for all transport modes is a key concern in the development of the transport network accessing and within the Business Park Masterplan.

In regards to improving road safety, measures to address this along Saunders Road were considered in both this business park masterplan development and also the wider Gisborne Futures project. These being:

- Improvements to the Station Road / Saunders Road intersection, including increasing capacity and safety through duplication of Station Road to the south and provision of signals at the intersection. A full road safety audit would be undertaken during the detailed design stage to ensure appropriate safety measures be incorporated into the intersection design;
- Improvements to the Barry Road intersection as proposed providing dedicated turning lanes from both directions on Saunders Road;
- Improvements to the Kilmore Road intersection. Improvements at this location are undertaken in a staged process, with shorter term measures to improve safety, and longer term measures to improve both safety and capacity if required; and
- A review of the speed limit along Saunders Road may also be considered as part of the Gisborne Futures study, considering an extension of the 60kph zone further east. This would be subject to RRV consultation and approval.

6.5 Conclusions & Recommendations

Throughout the development of the Gisborne Business Park Masterplan Transport Infrastructure Study, a range of conclusions and recommendations have been identified to ensure optimum accessibility and safety across all transport modes. The key findings and proposed recommendations are summarised below.

6.5.1 Existing Conditions

- Whilst there are significant safety issues for both vehicles and pedestrians, there Station Road / Saunders Road intersection operates within capacity under existing traffic conditions, and would continue to do so if the existing business park was 100% developed and occupied;
- Recent upgrades to sections of the internal road network have resulted in varying access conditions for vehicles and pedestrians throughout the business park, with some streets providing footpaths, formal drainage systems and improved road pavement and crossover conditions, whilst others lack some of these facilities;
- Existing provision for pedestrians and cyclists trying to access the business park is very poor, with the only access being via a shared path from Chessy Park Drive in the neighbouring residential area to the west of the site. Whilst there is no formal access, there is evidence that pedestrians walk to the business park from the rail station via the rail reserve and into Meek Street at the northern end of the site. Considerable safety issues have also been identified with pedestrians crossing Saunders Road along the southern frontage of the site;
- The nearest bus service is an hourly local bus service between Gisborne Town Centre and Gisborne Station, with a stop adjacent to the business park on Chessy Park Drive. The location and frequency of this service does not provide an attractive mode choice for people accessing the business park; and
- The existing Gisborne Business Park currently provides approximately 114 lots of varying sizes and business types, with around 85 lots currently occupied. Access is currently provided via Barry Road, off Saunders Road, with a number of internal local streets providing access to each of the properties. Traffic surveys undertaken in 2016 indicate that the current business park generates approximately 2,650 daily trips.

6.5.2 Proposed Recommendations

- Support the current proposal to upgrade the Station Road / Saunders Road intersection to fully signalised with pedestrian crossing facilities.
- Upgrade Saunders Road to improve the operation and safety at the Barry Road intersection, integrating access to Magnet Lane from the south. These improvements include the option to:

  - Provide a channelised right turn into Barry Road from the east and an improvement to the alignment of the Barry Road approach with the provision of separate left and right turn lanes; or
  - Upgrade to a roundabout, which will require a more detailed assessment as it will require significant offset to the existing road alignment due to the shape of the road reserve, and the required vertical sight distances may be impacted by the location of the intersection at the apex of a hill.

> Provide a second access into the business park off Saunders Road in the form of a connector boulevard whereby it is proposed that a roundabout with a raised median is provided at the future boulevard intersection. Additional access points will be provided with the completion of Sayers Road to the east of the park.

> Internally, the Masterplan provides for upgrades to the existing business park road network in order for it to become fully integrated with the expanded area, and there is free movement for vehicles and pedestrians throughout the business park. It is proposed that Barry Road and the new boulevard provide Connector Road access, with the remaining existing and proposed streets being Local Access Streets.

> As the business park develops and with potential residential development further east, it is recommended that key links within the business park be designed as bus capable, to allow for future bus services;

> Improve pedestrian and cyclist connectivity into the existing and future business park and also provide internal permeability for pedestrians and cyclists. Recommendations include:

  - Continue the shared path along the northern boundary of Saunders Road further east, past Barry Road and to the proposed boulevard intersection;
  - Provide shared paths in the north south directions along Barry Road and the proposed boulevard;
  - Improve the foot path and shared path connections from the west and integrate with those on Barry Road;
  - In consultation with VicTrack and Transport for Victoria, provide a formal shared path from the rail station along the rail reserve along the northern boundary to the site, with access points in to Meek Street;
  - Provide adequate east-west shared path and footpath connections throughout the site, including to the Payne Road connection to the east;
  - Provide formal pedestrian crossings on Barry Road and Sauer Road at key desire lines to provide safe access for pedestrians at these locations; and
  - Consider the provision of on road cycle lanes on Barry Road and the proposed boulevard.

7 Gisborne Futures Recommendations

7.1 Introduction

Over the course of the development of the Gisborne Futures Plans, Cardno has developed a range of Transport, Movement and Access recommendations for each of the Gisborne Structure Plan and Gisborne Urban Design Framework strategies. The Structure Plan recommendations consider the wider Gisborne and New Gisborne transport network, whilst the UDF recommendations focus on the town centre.

The development of these recommendations has been an iterative process and has been informed by a range of background work generally summarised in the preceding sections of this report, and other sources. The recommendations have been informed by:

- Review of transport policy, and previous studies and strategies;
- The collection and analysis of traffic and parking data;
- Liaison with other consultants contributing to the development of the Gisborne Futures Plan;
- Consultation with Council officers, other stakeholders and the public;
- Draft versions of the Structure Plan, with growth areas and development proposals identified; and
- Strategic and local transport modelling.

The recommendations are intended to both respond to existing issues across the network and to facilitate the future growth planned in Gisborne over the next 30 years, with the aim of encouraging non car use for short trips and hence a mode shift to active and public transport. The recommendations consider vehicular movements, active transport, public transport, and car parking.

7.2 Gisborne Structure Plan Recommendations

This section describes each of the wider Structure Plan recommendations that have been identified for consideration in the Gisborne Futures Plan.

7.2.1 Vehicle Movement Recommendations

It is understood that a number of road network improvements have been identified prior to this study, including the duplication of Station Road between Calder Freeway and Robertson Street, the provision of a bypass option to the west of the township, and a number of intersection upgrades in both Gisborne and New Gisborne.

As detailed in Chapter 5, a significant amount of traffic modelling has been undertaken to inform the road network recommendations for the Gisborne Futures Structure Plan and Urban Design Framework. The Victorian Integrated Transport Model (VITM) has been used to determine the impact of future background traffic growth and development proposals at a strategic road network level. This work has informed more detailed intersection modelling to determine appropriate upgrades that may be required to accommodate the increased traffic.

It is clear from the traffic modelling undertaken that a range of network improvements will be required to not only cater for background traffic growth in the region, but the future growth in Gisborne and New Gisborne.

7.2.1.1 Strategic Road Network Improvement Option

A number of strategic road network improvement options were modelled to identify a proposal that will allow the network to best cater for the background and Structure Plan development traffic, including:

- Duplication of Station Road between Robertson Street and the Calder Freeway interchange;
- Provision of a Western Link Road (WLR) connecting the Calder Freeway at the Mount Macedon Road interchange to Bacchus Marsh Road west of the Hamilton-street intersection, and on to Melton Road south of Willowbank Road and the golf course); and
- Provision of an Eastern Link Road (ELR), from Kilmore Road / Saunders Road intersection to the Melbourne Road interchange on Calder Freeway.

Of the options, the longer term provision of a WLR provides the greatest benefit across the road network. This option provides a reduction in traffic volumes to varying degrees on most key links, bringing them all to within theoretical capacity with the exception of Station Road between the freeway and Robertson-street and

Melbourne Road between Howey Street and the freeway interchange. Intersection improvements along Station Road should bring the performance of this link to an acceptable level.

The removal of through traffic also allows for intersection improvement proposals to be identified that will provide the capacity required within the spatial and amenity constraints, particularly in the town centre.

7.2.1.2 Gisborne

The following recommendations have been identified for the road network in Gisborne, primarily south of the freeway corridor. Recommendations for New Gisborne will follow this section, whilst recommendations within the town centre are identified in Section 7.3.

7.2.1.2.1 Station Road

It is demonstrated that Station Road does not have the capacity to manage future traffic volumes without either significantly increasing the capacity through duplication, or providing alternative routes for traffic to relieve pressure on that link. With the provision of a WLR, traffic is relieved on Station Road, however Station Road will still be over capacity in the ultimate forecast scenario. In order to operate at an acceptable level of service without full duplication, a number of additional improvements are recommended:

- Local widening to two lanes at key intersections to increase capacity, particularly on the approach to Robertson-street, including the widening of the bridge over Jackson's Creek;
- Intersection safety and capacity improvements at Ross Watt Road / Morrow Road, Cherry Lane, and Frith Road; and
- Improved layouts at direct property access points such as Caltex Garage and Sankey Reserve.

7.2.1.2.2 Hamilton-Street

- Improve service road connectivity along Hamilton Street between Goode Street and Bacchus Marsh Road;
- Upgrade the street with formal kerb and channel between Neal Street and Bacchus Marsh Road; and
- Traffic modelling indicated that a priority intersection remains appropriate in all future scenarios, however consideration should be given to providing future safety upgrades and capacity improvements at the Bacchus Marsh Road / Hamilton Street intersection as traffic flows increase.

7.2.1.2.3 Other Recommendations

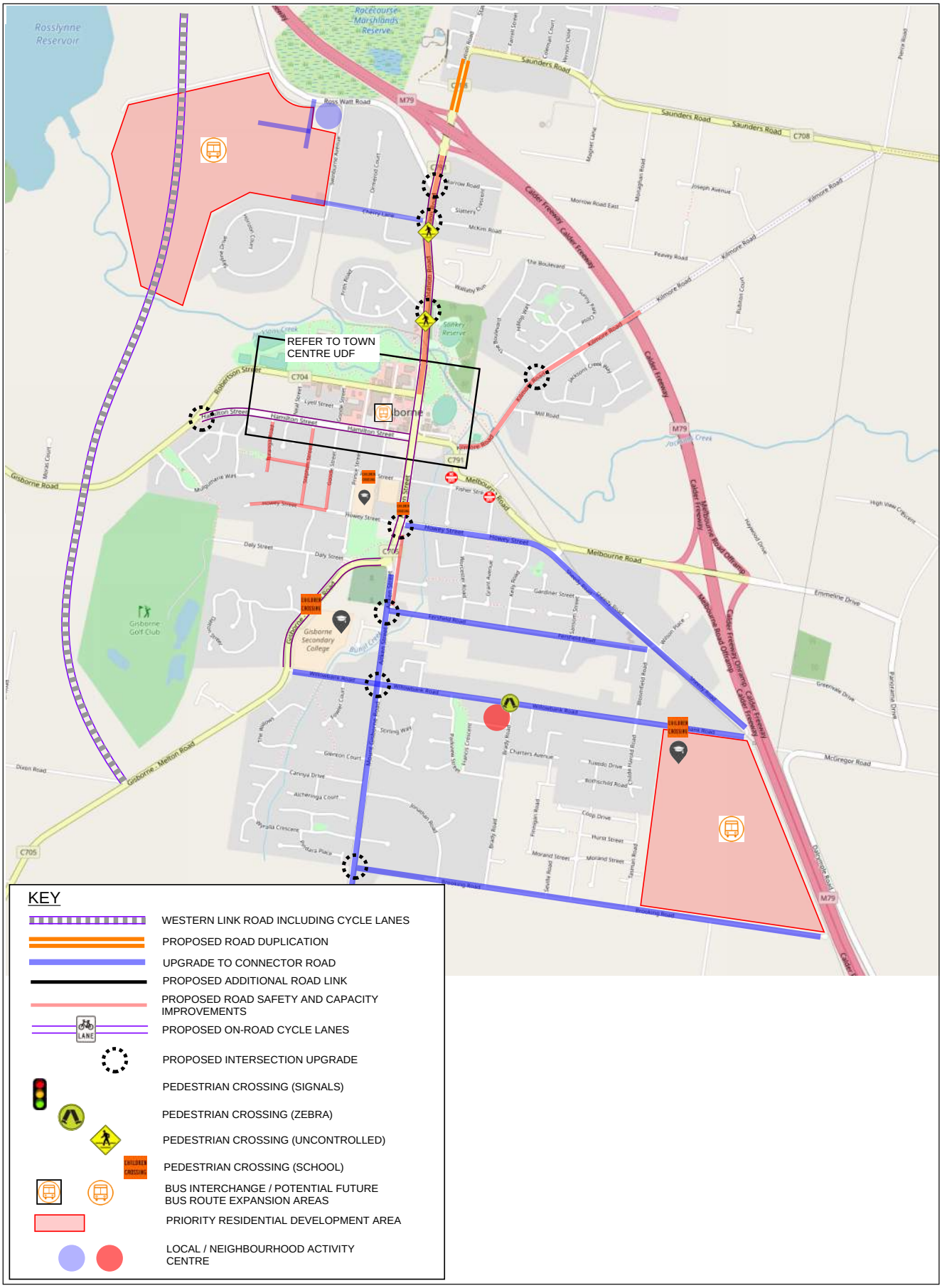
Complementing the upgrade recommendations to the strategic road network, the following recommendations are proposed to improve local access to the town centre and other key destinations in Gisborne:

- Upgrade Mount Gisborne Road / Aitken Street between Brooking Road and Melton Road to a collector road to improve safety and capacity to provide the primary north south link from the town centre to existing and future development to the south (This measure has been included in future traffic model scenarios);
- Kilmore Road is expected to approach theoretical capacity prior to the provision of the WLR, however an intersection improvement should be considered at The Boulevard with the provision of turning lanes on Kilmore Road to allow through traffic unimpeded (Capacity improvements on Kilmore Road have been included in future traffic model scenarios);
- Upgrade to Cherry Lane to a collector road to provide access to the vacant residential land west of Swinburne Ave and Skyline Drive and upgrade the intersection at Station Road (the upgrade of Cherry Lane has been included in future traffic model scenarios);
- Upgrade Ross Watt Road east of Swinburne Ave and upgrade the intersection at Station Road;
- Upgrade Howey Street and Sheedy Road to collector road for the extent between Aitken Street and Willowbank Road to provide a direct connection between new development off Willowbank Road and Brooking Road to the town centre and to the Calder Highway via Melbourne Road;
- Upgrade the Melbourne Road / Howey Street intersection subject to further assessment, to provide more direct access to Melbourne Road from southern development areas, with the recommended closure at Fisher Street and Calthorpe Street.
- Close access intersection to Melbourne Road at Fisher Street and Calthorpe Street to improve safety and efficiency, and encourage access via Aitken Street or Howey Street intersection on Melbourne Road;

- Upgrade Willowbank Road to collector road standard to provide a safe east-west link between Sheedy Road and Aitken Street, incorporating proposed pedestrian links, providing access to the proposed NAC at Brady Road and the proposed school and recreation area at the eastern end of Willowbank Road (the upgrade of Willowbank Road has been included in future traffic model scenarios);
- Upgrade Fersfield Road improve safety and capacity, incorporating improved pedestrian links;
- Upgrade sections of Turanga Road, Stephen Street, Goode Street and Howey Street to provide kerb and channel with sub-surface stormwater drainage; and
- Upgrade Brooking Road to connector road to connect future development from the south. Extend Brooking Road west to connect to Mount Gisborne Road to improve connectivity. (the upgrade of Brooking Road has been included in future traffic model scenarios)

Figure 7-1 illustrates the road network recommendations in the Gisborne area south of the freeway corridor.

Figure 7-1 Gisborne Road Network Recommendations



7.2.1.3 New Gisborne

New Gisborne will experience significant future growth, with the proposed residential Growth Areas all located north of the Calder Freeway corridor, in addition to a new Neighbourhood Activity Centre, the expansion of the Gisborne Business Park and the proposed Macedon Ranges Regional Sports Precinct. As such, considerable road network improvements will be required to cater for the traffic generation by these development proposals.

7.2.1.3.1 Station Road and Ferrier Road

North of the Calder Freeway interchange, Station Road has a wider road reserve however is encumbered with service roads (30 metres plus), which reduces to a 20 metre reserve at Ross Watt Reserve. Future traffic flows increase significantly on Station Road, ultimately up to around 16,000 vpd approaching Ferrier Road and to over 11,000vpd on Ferrier Road, leading to the following recommendations:

- Supporting the proposed duplication of Station Road between the Calder Highway interchange and Saunders Road as proposed by Regional Roads Victoria (RRV);
- Supporting the upgrade of the Saunders Road intersection to signals, as proposed by RRV (This upgrade is supported by both the strategic and local intersection traffic modelling);
- Plan for a future intersection at Octagonal Court to provide a secondary access point to future development west of Station Road;
- Upgrading Ferrier Road to a wider bus capable collector road, providing the primary access from the west to Station Road. Provide wayfinding to encourage traffic accessing Calder Freeway towards Melbourne to use the Mount Macedon Road interchange, helping to ease demand on Station Road. (the upgrade of Ferrier Road has been included in future traffic model scenarios)
- Upgrading the Ferrier Road intersection to provide a central right turn lane into Ferrier Road from the north, and widen Ferrier Road to provide dedicated left and right turn lanes on the approach to Station-Road to both increase capacity and improve safety. (this upgrade is supported by the local intersection modelling outlined in Section 5.3);
- Upgrading the Hurst Drive and Early Street intersections, incorporating an improved pedestrian crossing to increase capacity and improve safety; and
- Upgrading the level crossing on Station Road to improve safety and to match Station Road/ Barringo Road improvements.

7.2.1.3.2 Saunders Road

Saunders Road will also show significant increases in traffic volumes due to expansion of the business park and residential development in the growth areas in New Gisborne, in addition to wider background growth, ultimately approaching 16,000 vpd between Station Road and Barry Road. Recommendations for Saunders Road include:

- Upgrading the Barry Road intersection to increase capacity and safety at the intersection;
- As proposed in the Gisborne Business Park masterplan, providing a new intersection with direct access to the business park expansion area and the residential growth area east of the business park, to share the increase in demand with Barry Road;
- Considering an ultimate upgrade of the Kilmore Road / Pierce Road intersection to further improve safety and increase capacity if required;
- Advocating for a future extension of the 60kph speed limit on Saunders Road to east of the Kilmore Road intersection as development increases and additional intersections are provided; and
- Providing traffic management measures on the road network through the low density residential areas to prevent rat-running from Saunders Road to Kilmore Road if required.

7.2.1.3.3 Hamilton Road / Barringo Road / Pierce Road

Hamilton Road runs east-west parallel to the north of the rail line, and is intersected by Barringo Road and Pierce Road, both providing direct access across the rail line to the south. A new growth area is proposed between Hamilton Road and the rail line immediately east of Barringo Road, and a new regional sports precinct is proposed north of the Barringo Road / Hamilton Road intersection. This development, coupled with the existing schools west of Barringo Road, will increase traffic demand on Hamilton Road and Barringo Road.

Hamilton Road also provides a direct connection between Riddells Creek and Mount Macedon Road and Calder Freeway, bypassing Gisborne and New Gisborne. Ultimate traffic volumes on Hamilton Road east of Barringo Road are expected to approach 6,000 vpd, and 6,500 vpd on Pierce Road.

In order to maximise access to the northern growth area and sports precinct, the following recommendations have been identified:

- Upgrading the Hamilton Road / Barringo Road intersection to a roundabout, increasing capacity and improving safety at the intersection;
- Promoting access to the Calder Freeway via Mount Macedon Road, and improve safety at the Hamilton Road / Mt Macedon Road intersection;
- Standardising speed limits on Hamilton Road and Barringo Road on the approach to the intersection between the two roads to 60 kph on all approaches;
- Promoting alternative access into Gisborne town centre via Pierce Road, Payne Road, and Kilmore Road, to help ease demand on Station Road; and
- Upgrading Hamilton Road, providing appropriate access intersections into the growth area and Sports precinct.

7.2.1.3.4 Growth Areas in New Gisborne

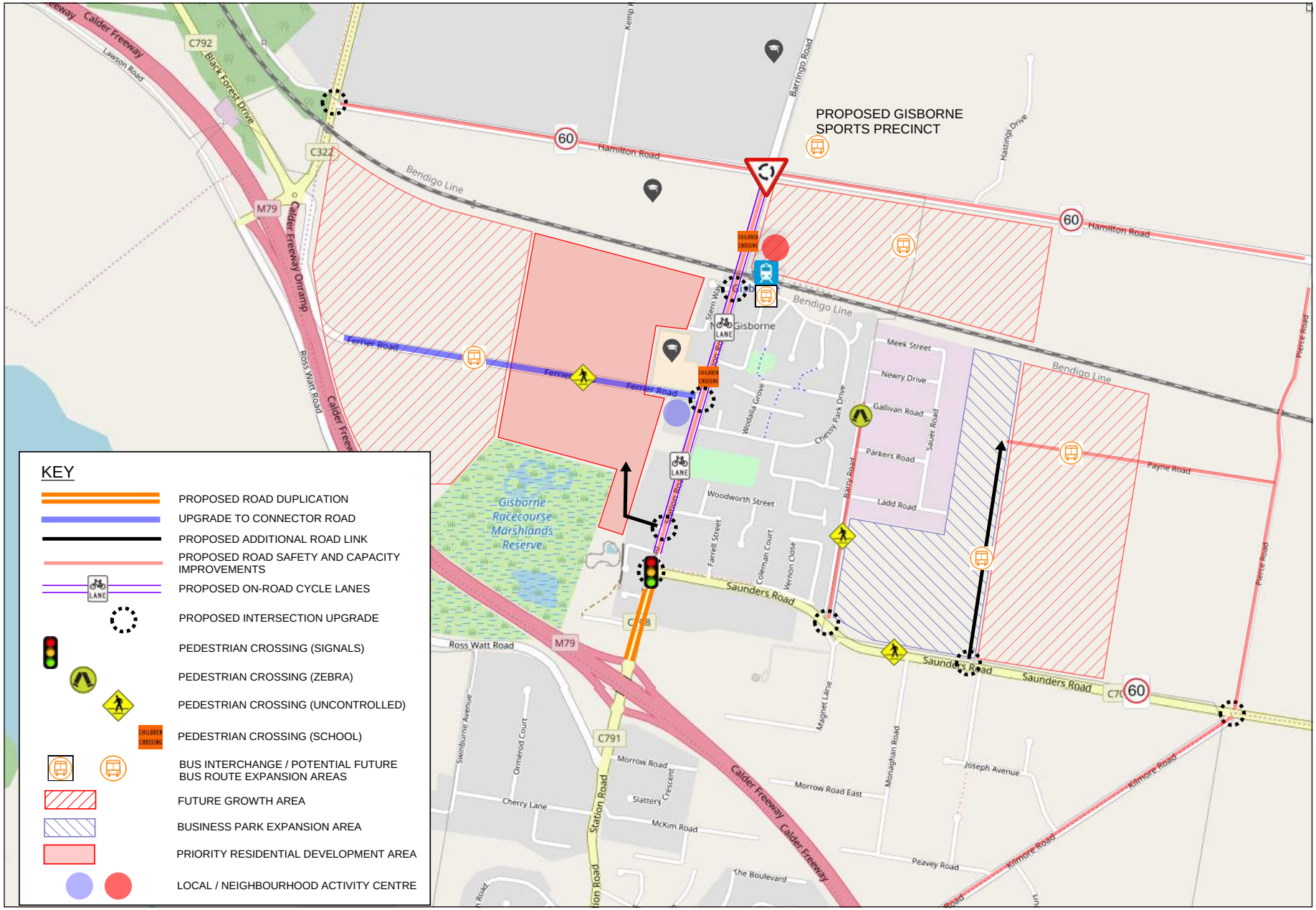
The street network within new growth areas and currently undeveloped areas should be provided with a hierarchy of local access streets and connector roads to ensure efficient vehicle access whilst maximising permeability for pedestrians. Ease of access to Neighbourhood Activity Centres (NACs), services, community and sports facilities should also be considered when determining the street network and hierarchy within new growth areas.

7.2.1.3.5 New Gisborne Business Park Expansion

Provide a suitable road network within the new Gisborne Business Park to provide adequate access for new development, whilst improving the existing road network for all road users within the existing business park area. Provide a second access to Saunders Road and extend Payne Road into the expanded business Park area. Refer to recommendations provided Chapter 6 of this report.

Figure 7-2 illustrates the road network recommendations in the New Gisborne area north of the freeway corridor.

Figure 7-2 New Gisborne Road Network Recommendations



7.2.1.4 Freight

The increase in freight vehicle traffic has been considered in the strategic and local traffic modelling. The road network recommendations outlined above, particularly the provision of the Western Link Road in the are intended to cater for the growth in heavy vehicles. Additional recommendations include:

- Consider the provision of a heavy vehicle rest area within the New Gisborne Business Park as the park is further developed, and the nature of the industry within the park is more clearly defined;
- Formalise a heavy vehicle rest area with amenities on the northern side of Robertson Street in a similar location to the existing informal parking area between Goode Street and Prince Street. Proposed pedestrian crossing facilities at the Prince Street intersection will provide safe access to services such as the fast food chains opposite; and
- Provide adequate wayfinding signage for heavy vehicles on the approaches to the town and to key destinations such as the business park.

7.2.2 Active Transport Recommendations

7.2.2.1 Area Wide

The following recommendations are intended to ensure that the walking and cycling network provides the safest and most efficient access to the town centre and other key existing and proposed facilities and services such as schools, sports precincts and local activity centres. An integrated approach is required to ensure that the active transport network complements the wider road network and public transport network recommendations.

These recommendations support and incorporate those proposed in the 2014 Macedon Ranges Walking & Cycling Strategy that remain relevant. The ultimate goal being to increase participation in walking and cycling and to encourage a mode shift away from vehicle trips to active transport for shorter journeys.

Strategic active transport recommendations include:

- Advocating for the extension of the Macedon Ranges Trail from Macedon to Riddells Creek, seeking support from authorities including DoT and VicTrack to determine the most appropriate access and alignment;
- Facilitating the completion of the Principle Bicycle Network (PBN) and the Primary Cycling Routes throughout Gisborne;
- Providing adequate wayfinding signage on the on-road and off-road walking and cycling network throughout Gisborne to other key trails and appropriate destinations; and
- Ensuring all employers provide adequate end of trip facilities on site and have green travel plans where appropriate, to encourage active and shared transport for their commute.

7.2.2.2 Gisborne

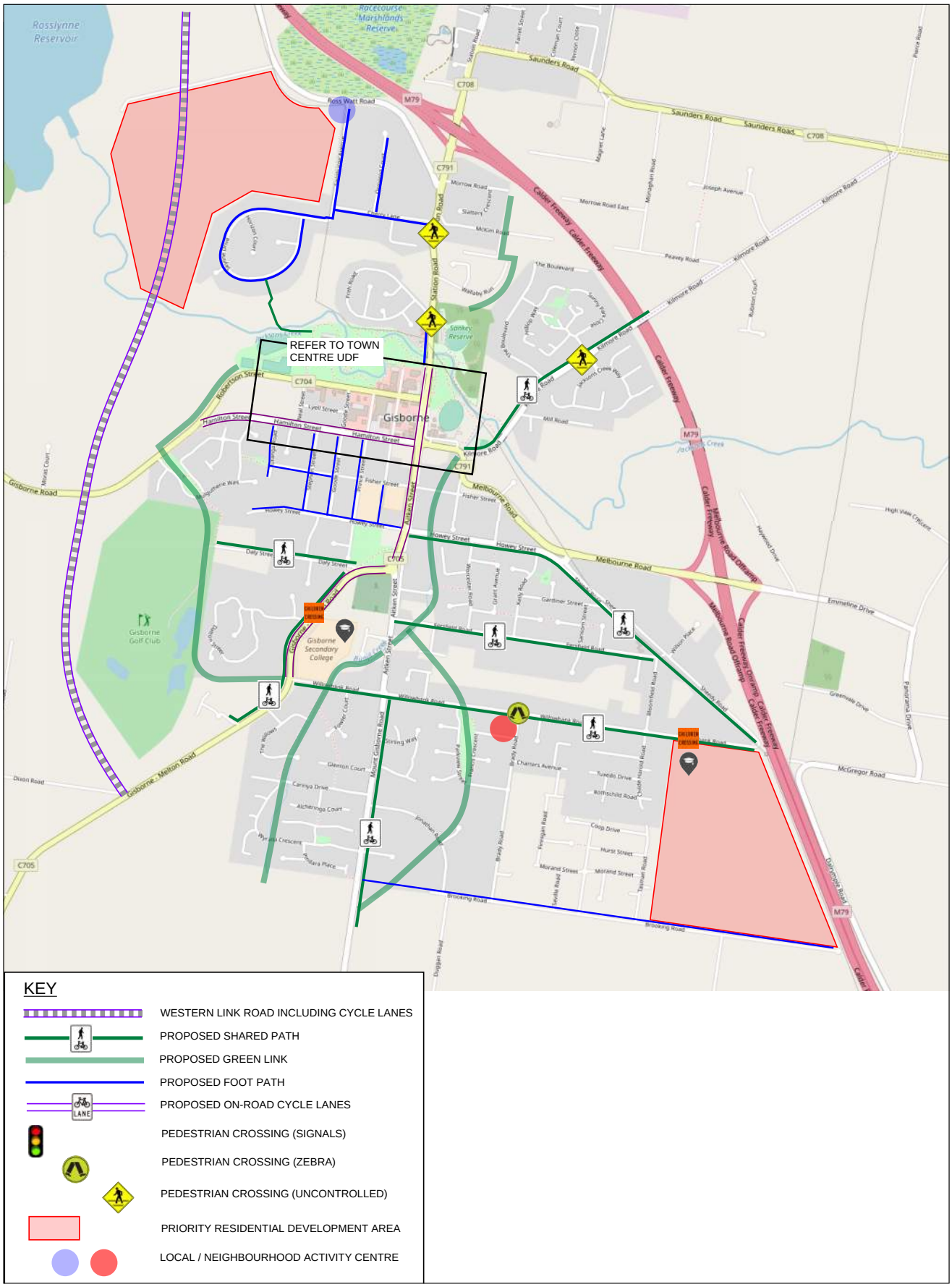
Whist there are no proposed new growth areas on the south side of the Calder Freeway, there are a number of existing developed and infill residential areas yet to be fully developed that require improvements in active transport connectivity or new links to surrounding facilities and the town centre. Active transport recommendations in the Gisborne area south of the freeway include:

- Incorporating pedestrian crossing facilities into intersection upgrades along Station Road;
- Integrating pedestrian paths into proposed ‘Green Links’ through Gisborne, including:
  - Through Sankey Reserve and north along Wallaby Run and further through the easement to Morrow Road;
  - Along the South Gisborne Drain / Budjil Creek reserve;
  - Through the Willowbank Reserve and easement to the south; and
  - A western pedestrian trail extending south from Jacksons Creek, along Bacchus Marsh Road and through the golf course to Willowbank Road and the proposed South Gisborne Drain link.
- Providing foot paths on all existing and proposed residential streets off Cherry Lane and Ross Watt Road, including Skyline Drive, Swinburne Ave, Ormerod Court, and to the potential NAC on Cherry Lane;
- Completing a pedestrian connection between Frith Road and the Aitken Street service road;

- Investigating the future provision of a pedestrian footpath link for Skyline Drive to connect to the Gisborne and New Gisborne townships;
- Completing pedestrian links on all streets in the 'town centre grid' within Hamilton Street, Aitken Street, Daley Street and Turanga Road, to match surrounding newer residential development areas;
- Completing the shared path loop along Daly Street between Gisborne Golf Club and Aitken Street;
- Upgrading the pedestrian path along Howey Street and provide a shared path along Sheedy Road to provide a direct link between new development between Willowbank Road and Brooking Road, including the proposed school and active recreation facility in Willowbank Road, to the town centre;
- Providing missing links in the shared path along Fersfield Road and provide missing links and upgrade the existing footpath along Willowbank Road, to provide a connection for residential areas and the proposed NAC to the existing shared path on Aitken Street and further west to Gisborne Secondary College;
- Providing a pedestrian link along Mount Gisborne Road south of Willowbank Road to the Brooking Road reserve, and further south if future development extends south of Brooking Road;
- Extending the shared path along Melton Road south from Dalton Street to new development between Melton Road and the golf course;
- Including off-road shared paths and on-road cycle lanes on any future Western Link Road option design;
- Providing on-road cycle lanes along Station Road;
- Considering extending on-road cycle lanes along Aitken Street and Melton Road to Willowbank Road; and
- Providing end of trip facilities for cyclists at all appropriate commercial developments and recreation destinations in Gisborne, including within the town centre.

Figure 7-3 illustrates the active transport recommendations in the Gisborne area south of the freeway corridor.

Figure 7-3 Gisborne Active Transport Recommendations



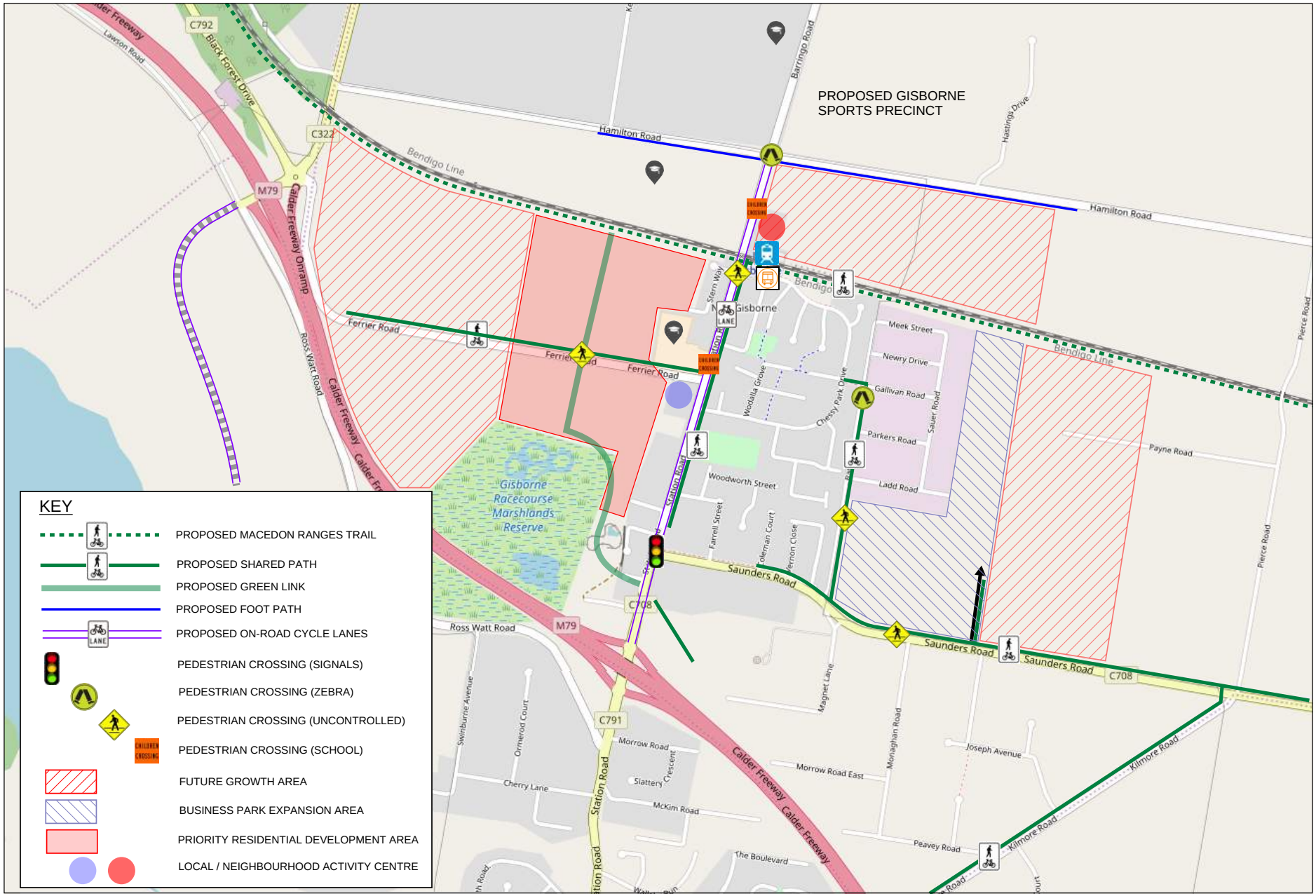
7.2.2.3 New Gisborne

Walking and cycling priorities within New Gisborne are to ensure connectivity from existing and proposed residential areas to key locations such as the train station, business park, schools and sports precincts and local activity centres. Focus is also given to ensuring maximum connectivity to services in Gisborne. Active transport recommendations in the New Gisborne area include:

- Incorporating on-road cycle lanes along Station Road and Barringo Road between the Calder Highway interchange and the proposed Gisborne Sports Precinct;
- Continuing the shared path on Station Road north from Saunders Road to Gisborne Station to link to the existing shared path along Barringo Road north of the rail line to the sports precinct;
- Providing a shared path along Ferrier Road, connecting to the footpaths within new development areas off Ferrier Road to the New Gisborne Primary School, proposed short-term Neighbourhood Activity Centre (NAC), and the shared path on Station Road;
- Integrating pedestrian crossing facilities into intersection upgrades at Station Road / Ferrier Road, providing a safe crossing from the east side of Station Road to the school and NAC;
- Integrating a shared path into the proposed 'Green Link' through new development in New Gisborne west of Station Road, and up to Magnet Hill;
- Continuing the shared path east along Saunders Road to Kilmore Road and along Barry Road to provide access to the business park and new development east of the business park;
- Providing safe pedestrian crossing points on Saunders Road at key desire lines to provide access to the shared path from existing development south of Saunders Road;
- Integrating pedestrian crossing facilities into the upgrade of the Station Road / Saunders Road intersection to signals;
- Advocating for the provision of a shared path link along the rail reserve between Station Road, the business park and new development to the east of the business park, either as part of the Macedon Ranges Trail extension or as a separate path pending the status and alignment of the Macedon Ranges Trail;
- Providing a footpath along Hamilton Road connecting new development to Barringo Road and the Sports Precinct, including pedestrian crossings at the proposed Hamilton Road / Barringo Road intersection;
- Improving the pedestrian and cycle access along Kilmore Road, upgrading the existing footpath between Melbourne Road and Mountain View Way to shared path status along the northern side of the carriageway, and providing a continued link north east of Mountain View Way to the proposed Saunders Road shared path link. Investigate options to provide protected access across the Calder Freeway overpass;
- Upgrading the pedestrian crossing on Kilmore Road to provide safer pedestrian access from Jacksons Creek Way to the shared path; and
- Providing end of trip facilities at all destinations for cyclists e.g. Gisborne Rail Station, NAC, Gisborne Sports Precinct, schools, and businesses within the New Gisborne Business Park.

Figure 7-4 illustrates the active transport recommendations in the New Gisborne area north of the freeway corridor.

Figure 7-4 New Gisborne Active Transport Recommendations



7.2.3 Public Transport Recommendations

As development in Gisborne progresses, it will be important to support the residential growth with an integrated public transport system, providing access to key locations including Gisborne Rail Station, the Town Centre, employment precincts such as the New Gisborne Business Park, schools, and sports precincts. Recommendations to improve public transport provision and access are provided in the following sections and are illustrated on Figure 7-1 and Figure 7-2 as appropriate, and include:

7.2.3.1 Rail

- Advocating for future service frequency improvements on the Melbourne Bendigo line, stopping at Gisborne; and
- Improving bus stop facilities to provide a Public Transport Interchange at Gisborne Station including improved shelter, timetable information, cycle parking facilities, and security measures as appropriate.

7.2.3.2 Bus Services

- Advocating for a high amenity bus interchange in the town centre to encourage a mode shift to public transport for shorter journeys into town;
- Advocating for higher frequency services, particularly during peak periods, providing access from residential areas to the town centre and Gisborne Station;
- Advocating for expanding the bus service time table to provide weekend services, integrated with the rail service timetable;
- Integrating bus timetables with the rail timetable to reduce dwell times at the station and improve door to door journey times;
- Advocating for extending the service through the business park and future residential growth areas as they develop, to maximise public transport catchment areas;
- Providing high quality bus stops, including safe pedestrian access, adequate shelter and timetable information; and
- Ensuring all new connector roads in growth areas and existing undeveloped areas are bus capable, to physically allow for future services within these areas.

7.2.3.3 Community / On-Demand Services

- Investigating opportunities for Council or privately funded on-demand transport services, including extending the Route 474 demand responsive service into new development areas; and
- Ensuring adequate and safe taxi holding / ride share / pick up areas at key locations including town centre, Gisborne Station, and sports precincts.

7.2.4 Car Parking

Whilst the provision and management of car parking within the town centre is important, it is equally important that there is adequate car parking provision at other locations in the Structure Plan area. Recommendations include:

- Continuing to provide adequate car parking at Gisborne Station to meet increasing demand;
- Ensuring adequate off-street car parking is provided for proposed NACs;
- Ensuring appropriate car parking restrictions are provided around schools including drop-off and pick-up areas;
- Providing adequate accessible car parking at the appropriate locations such as Gisborne Station and NACs
- Integrating recommendations detailed in Town Centre Parking Plan; and
- Providing car parking spaces with charging stations for Electric Vehicles within the town centre and other locations as appropriate.

7.3 Town Centre Recommendations

These recommendations are intended to provide advice regarding transport network improvements throughout and integrating into the network adjacent to the Gisborne UDF area, across all modes. These recommendations are intended to complement and integrate with the transport network improvements within the wider Gisborne Structure Plan area. The preparation of a Car Park Precinct Plan has also been completed, informing the town centre recommendations. This is provided in Appendix G. Sketch concept plans have been provided to contextualise come of the recommendations where appropriate.

7.3.1 Robertson-Street

Traffic flows on Robertson Street are expected to increase from 4,400vpd to 6,400vpd at the Neil Street intersection and from around 13,000vpd to 16,000vpd west of Aitken Street by 2046. This is a significant increase in traffic on a section of road that currently experiences queues due to insufficient capacity at the Aitken Street intersection and right turning traffic into Goode, Prince and Brantome Streets.

A range of potential improvements has been identified along the Robertson Street corridor that considers both the strategic importance of the road whilst improving the streetscape and urban realm that will encourage pedestrian activity to the active frontages proposed for the street. These are identified on Figure 7-5 and include:

7.3.1.1 Vehicle Movement

- Providing central right turn lanes along the extent of Robertson Street to the Neal Street roundabout to remove right turning vehicles from the through lanes and assisting traffic flow;
- With the removal of surface level off-street car parking access off Brantome Street and the potential provision of a multi-level car park at the corner of Hamilton and Prince Streets, there would expect to be an increase in traffic at the Robertson Street / Princes Street intersection. Consideration should be given to upgrading this intersection to a roundabout in future to improve capacity at the intersection;
- Providing formal kerb and channel along the extent of Robertson Street to Neal Street;
- Investigating the potential to streamline the number of property access cross overs along Robertson Street as land use changes and new development progresses; and
- With the provision of traffic lights at the Aitken Street intersection, consider allowing left and right turn movements out of Coles car park onto Robertson Street.

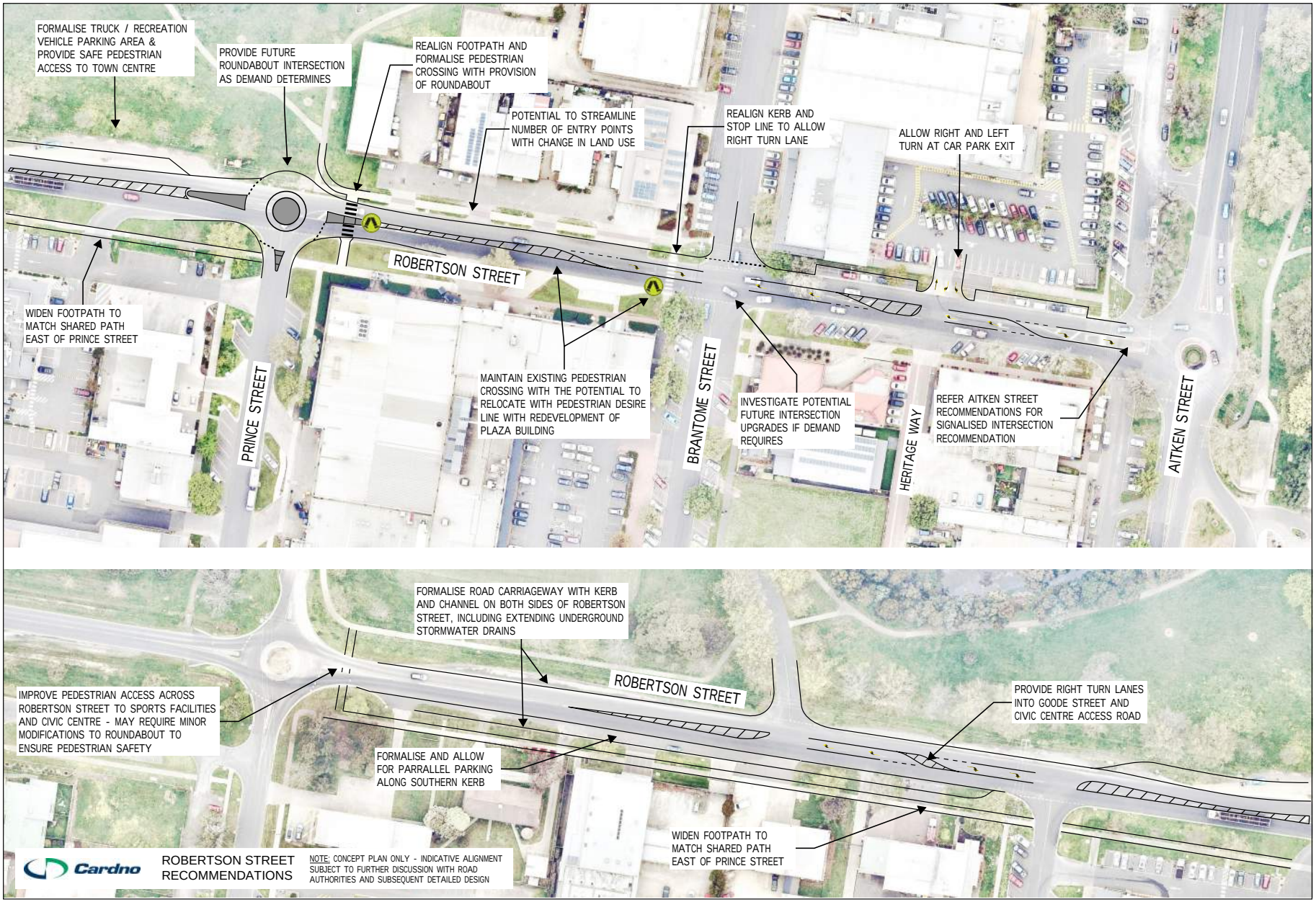
7.3.1.2 Pedestrian & Cycling

- Upgrading footpaths on both sides of Robertson Street, widening on southern side through to Neal Street, and adapting to include proposed weather protection;
- Providing adequate pedestrian crossing facilities on the northern arm of Brantome Street;
- Maintaining existing pedestrian crossing on Robertson Street at Brantome Street (short to medium term) and consider relocating pedestrian crossing to the west in line with entrance to new internal pedestrian link in development south of Robertson Street;
- Providing formal pedestrian crossings on the western and southern arms of the proposed roundabout at Prince Street;
- Ensuring maintenance of attractive pedestrian connection at Prince Street to existing foot paths through the park on north side of Robertson Street;
- Considering the provision of on-road cycle lanes along Robertson Street; and
- Providing adequate cycle parking facilities at appropriate locations along Robertson Street.

7.3.1.3 Car Parking

- Considering the provision of additional angle parking on the southern kerb of Robertson Street between the entrance to McDonalds and Goode Street;
- Formalising existing and provide additional parallel parking on the southern kerb of Robertson Street between Goode Street and Neale Street; and
- Investigating the provision of a formal heavy goods vehicle parking area on the northern side of Robertson-street between Prince Street and Goode Street.

Figure 7-5 Robertson-Street Recommendations



7.3.2 Brantome Street & Heritage Way

Brantome Street will maintain its emphasis on active retail frontage and local street amenity. It currently provides on-street car parking on both sides of the street and also provides access to the off-street parking area at the IGA plaza on the west side of the street. It currently has traffic volumes of around 3,500vpd however may potentially attract up to 6,500vpd by 2046.

Some of this traffic growth may be mitigated by the proposal to remove the off-street car parking access off Brantome Street and provide the multi-level car park at the corner of Hamilton-street and Prince Street. With the help of appropriate wayfinding signage, vehicles will use Princes Street instead of Brantome Street to access the car park.

It is intended to improve Heritage Way from its current use generally as a service laneway to a more active pedestrian focussed environment. Whilst service vehicle access will still be required, a range of improvements will encourage pedestrian activity and safety. Potential access and movement improvements to the Brantome Street & Heritage Way precinct include:

7.3.2.1 Vehicle Movement

- Ensuring the closure of the off-street car park access helps offset the potential increase in growth of background traffic;
- Providing vehicle wayfinding signage to direct traffic to the proposed multi-level car park via Robertson-street, Princes Street, and Hamilton Street;
- Ensuring intersection improvements at Robertson Street and Hamilton Street maintain limited queuing on Brantome Street;
- Providing measures to limit service vehicle access on Heritage Way during business hours, including allowing short stay service vehicle parking in the existing car park at the southern end of the lane off Brantome Street and/or imposing time restrictions for service vehicles on Heritage Way; and
- Imposing low speed limits on Heritage Way to allow vehicle access to premises ensuring pedestrian safety.

7.3.2.2 Pedestrian & Cycling

- Maintaining the existing mid-block pedestrian crossing on Brantome Street, ensuring that this remains on the pedestrian desire line when considering new development on the west side of the street;
- Widening the footpath along the extent of the eastern side of Brantome Street as additional retail development is provided, particularly on the northern section of the street;
- Providing adequate direct mid-block access for pedestrians between Brantome Street and Heritage Way and through to Aitken Street to provide permeability to encourage pedestrian activity through these areas;
- Providing a formal zebra crossing on Brantome Street at Hamilton Street to provide a clear and safe crossing for pedestrians;
- Providing mid-block access west from Brantome Street through the proposed town centre plaza and additional development in this block, including to the potential multi-level car park; and
- Providing on-street cycle parking facilities at appropriate locations along both Brantome Street and Heritage Way.

7.3.2.3 Car Parking

- Maintaining existing on-street car parking on Brantome Street, within existing restrictions however continue to monitor usage to refine restrictions in the future;
- Within the constraints of the Planning Scheme, limiting the provision of car parking for any new development with access to Heritage Way, to reduce vehicle traffic; and
- Providing adequate short stay service vehicle parking spaces in the off-street car park at the southern end of Heritage Way; and
- Providing wayfinding to any additional car park parking infrastructure in the precinct.

7.3.3 Station Road / Aitken Street

There is currently a significant number of vehicle access points off Aitken Street to the service roads either side of the street. There is also very poor pedestrian connectivity across both the service roads and the main carriageway. A range of measures may be implemented to improve conditions for both vehicles and pedestrians, whilst generally maintaining current levels of car parking. Improvements on Aitken Street will also improve access to the Community and Sports precinct. Identified network improvements on Aitken Street north and south of Hamilton Street are shown in Figure 7-6 and Figure 7-7 respectively and include:

7.3.3.1 Vehicle Movement

A key road network recommendation in the town centre is to provide signals at the Aitken Street / Robertson Street intersection. Current observations and local intersection modelling indicates that this intersection is already at capacity during peak periods. Additional traffic growth will only exacerbate this without any improvement measures. Modelling the intersection as a signal intersection added significant capacity to the intersection, allowing an acceptable level of performance as indicated in 5.3.3.3. This, and a range of complementary recommendations for Aitken Street include:

- Upgrading the existing roundabout at Robertson Street with a signal intersection. This will improve the performance of the intersection for vehicles on all arms, particularly during peak periods. It will also provide much improved pedestrian access across both Aitken Street and Robertson Street at this location;
- Closing the inbound access to the service road off Robertson Street immediately before the Aitken Street intersection, and provide 2-way access along the section of the service road south of the Station Road intersection;
- Streamlining access to and from the northbound service road between Robertson Street and Hamilton Street. This may be achieved by closing the mid-block access and the direct access off Hamilton Street at the southern end and to Robertson Street at the northern end, and providing a single entry off Aitken Street at the southern end and exit at the northern end before the signal intersection. An additional benefit of this proposal is the provision of an area that may be utilised for improvements to the urban realm and / or outdoor dining etc. Refer to Figure 7-6;
- Streamlining access to the southbound service road and Community and Sports Precinct between Robertson Street and Hamilton Street. This may be achieved by closing the current mid-block access and providing an inbound access from both directions at the northern end, maintaining access to the sports oval. This option will provide the opportunity to close the service road south of this exit and provide a new civic space. The loss of on-street car parking is minimal, and may be substituted by improvements to the existing off Street car park at the bank;
- Streamlining northbound service road access south of Hamilton Street by providing direct access to and from Aitken Street instead of Hamilton Street and Fisher Street; and
- Improving connectivity along the southbound service road between Hamilton Street and Fisher Street by continuing the service road along the extent of the block and providing a single access point to Aitken Street.

7.3.3.2 Pedestrian & Cycling

- Providing improved connection from the immediate pedestrian and shared path network to the proposed signal intersection at Robertson Street, including to the Community and Sports Precinct;
- Improving the pedestrian refuges on each arm of the Hamilton Street roundabout and provide formal zebra crossings on each of the east, west and south approaches to the intersection to improve pedestrian safety and connectivity around this intersection and to the Community and Sports Precinct;
- Providing on-road cycle lanes along the extent of Aitken Street and Station Road through the town centre; and
- Providing additional cycle parking facilities along Aitken Street at appropriate locations.

7.3.3.3 Car Parking

- Reconfiguring the existing 60-degree angle parking in the southern section of the service road north of Robertson Street to 90-degree parking to accommodate the 2-way access at this location; and
- Providing additional 90-degree parking on the northbound service road at the closed access points to compensate for losses in other locations on the service road.

Figure 7-6 Aitken Street (North) Recommendations

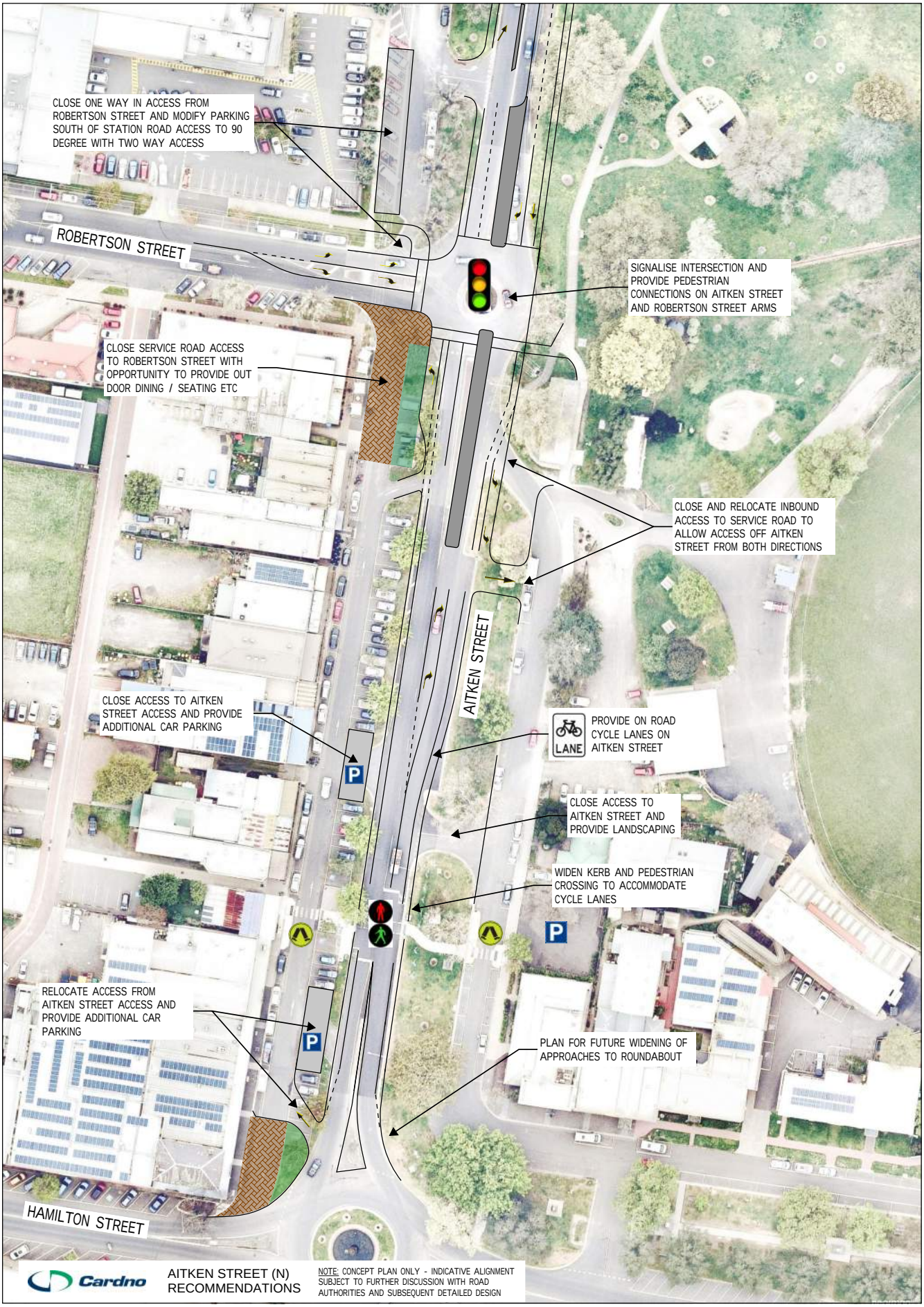


Figure 7-7 Aitken Street (South) Recommendations

7.3.4 Hamilton Street / Melbourne Road & Community Precinct

Hamilton Street east of Aitken Street is a key arterial link to the Calder Freeway, being the most direct access to and from Kilmore Road and Melbourne. Identified network improvements on this section of road are shown on Figure 7-8 and include:

7.3.4.1 Vehicle Movement

- Upgrading the Kilmore Road intersection to improve both capacity and safety in addition to improved pedestrian connectivity across both Melbourne Road and Kilmore Road;
- Upgrading the Aitken Street / Hamilton Street roundabout to increase capacity, widening the approach on both Hamilton Street arms and the southern Aitken Street arm in addition to the circulating carriageway; and
- Modifying the section of the service road at the corner of the NAB building to a shared user zone to provide an additional community / civic space.

7.3.4.2 Pedestrian and Cycling

- Providing a zebra pedestrian crossing on the eastern arm of the Aitken Street / Hamilton Street roundabout to provide connectivity to the Community and Sports Precinct;
- Improving existing pedestrian paths and upgrade sections to shared path connecting the town centre and Community Precinct to the Kilmore Road intersection;
- Providing adequate on-street cycle parking facilities in addition to secure parking and end-of-trip facilities within the Community and Sports Precinct for cyclists; and
- Providing on-road cycle lanes on Hamilton Street and Melbourne Road as detailed in the Macedon Ranges Walking & Cycling Strategy.

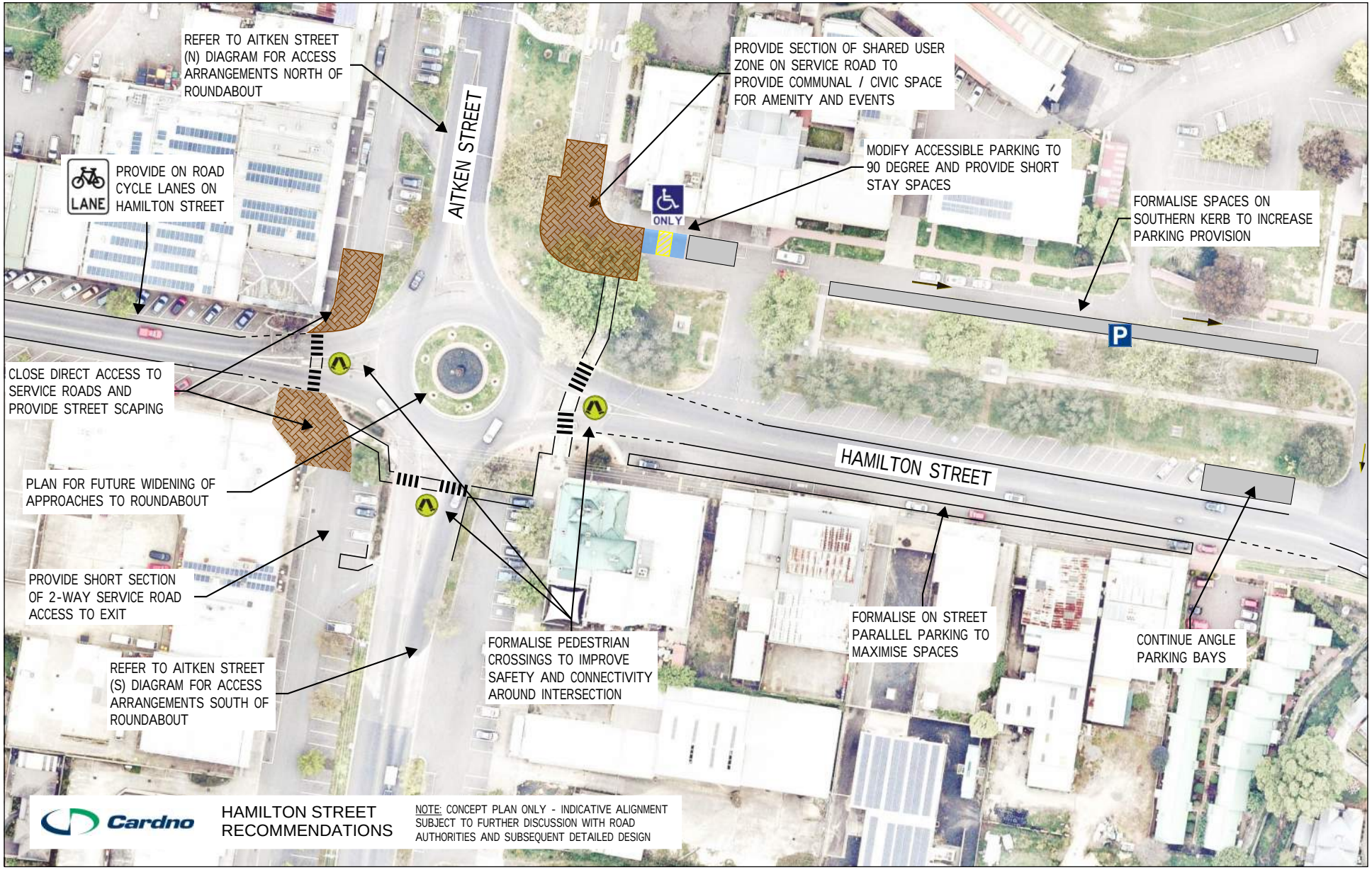
7.3.4.3 Car Parking

- Formalising parking on the eastbound service road to increase parking provision for the Community and Sports precinct; and
- Formalising parking on the southern kerb of Hamilton Street to increase the provision of parking for the town centre.

7.3.5 Other Recommendations

- Investigating the need for an intersection upgrade at Prince Street and Hamilton Street to a roundabout to support future traffic growth; and
- Providing on-road bicycle lanes along Hamilton Street west of Aitken Street through to Bacchus Marsh Road.

Figure 7-8 Hamilton Street / Community & Sport Precinct Proposals



7.4 Car Parking Precinct Plan Recommendations

7.4.1 Car Park Precinct Plan

Cardno has developed a Car Parking Precinct Plan for Gisborne Town Centre. Building upon the car park existing conditions analysis detailed in Chapter 3 of this report, Cardno considered the land use proposals identified in the Urban Design Framework provided by Ethos Urban, MRSC Planning Scheme considerations, and Council and community advice to develop a Car Park Precinct Plan. The full plan is provided as Appendix F to this report, and the recommendations are detailed below.

7.4.2 Improved Parking Management / Utilisation Recommendations

The following recommendations are made to guide improved management and utilisation of existing car parking in anticipation of future development, with the timeframe of these measures based on short (up to 5 years), medium (5 to 10 years) and long term (10 years and over).

7.4.2.1 Short Term Measures

- Based on duration of stay surveys, it appears that unrestricted off-street parking is being used as staff parking. If off-street parking supply becomes problematic, consider introducing time-limited parking within these areas. Given the lower occupancy rates in some areas of unrestricted parking, staff could be encouraged to park in these locations, further away from the commercial and retail areas; and
- Additional or improved wayfinding signage could be provided to direct vehicles to underutilised car parking areas, such as on and off-street parking south of Hamilton Street, which is still relatively close to key town centre land uses. An example of such underutilised car parking is on Brantome and Aitken Streets and the roof-top car park on the corner of Hamilton and Brantome Streets. Currently the off Street car parking in this location is not clearly signed, both in terms of wayfinding and car park entry signage.

7.4.2.2 Medium Term Measures

- Any new development should ensure that there is no reduction in the number of parking spaces. This is particularly relevant in instances where built form is proposed to replace existing car parking spaces;
- There is potential to provide additional formalised on-street car parking along Brantome and Aitken Streets, south of Hamilton Street, if required;
- There is potential to provide additional formalised on-street car parking along Robertson Street, between Brantome and Goode Streets;
- It is noted that a range of improved pedestrian and cyclist infrastructure is proposed to be implemented within the Gisborne Town Centre. When this infrastructure is provided, it will assist in alleviating car parking demand by providing alternative access options; and
- The unrestricted off-street car park at the north-eastern extent of the UDF area, located on the east side of Aitken Street, is under-utilised based on survey data. It is noted however that safe pedestrian crossing facilities are not in place to provide accessibility to the town centre. The use of this car park could be maximised by providing safe pedestrian crossing features, which may be provided as part of the proposed upgrade of the Robertson Street and Aitken Street intersection.

7.4.2.3 Long Term Measures

- A multideck car park above and/or below ground may be a long term measure to address future parking supply, however any multideck structure must be designed to provide active street frontages at the ground floor and allow for future adaptable re-use of the building;
- New development within the town centre should consider roof-top or underground car parking provision; and
- It is noted that various Neighbourhood Activity Centres are proposed outside of the town centre, which will be developed over a period of time. The establishment of these Neighbourhood Activity Centres will assist in reducing car parking demand in the town centre, by providing alternative destinations for goods and services. This is likely to help reduce short stay parking demand as residential development increases.

8 Conclusions

The following conclusions summarise the key findings from Cardno's traffic and transport analysis throughout the development of the Gisborne Futures Structure Plan and Urban Design Framework.

8.1 Road Network

Traffic surveys undertaken in 2018 confirm that Station Road is currently nearing the theoretical daily capacity, whilst Hamilton Street and Aitken Street also have significantly high daily traffic volume. The Aitken Street / Robertson Street intersection exceeds capacity during peak periods, with significant queues on Station Road, Aitken Street and Robertson Street, impacting the surrounding road network.

The high number of vehicles travelling through Gisborne Town Centre from the north and west to Bacchus Marsh Road and Gisborne-Melton Road to the south (and vice versa), highlights the lack of alternative routes to Bacchus Marsh and Melton that may avoid Gisborne. Heavy vehicles are also forced to travel through Gisborne.

It is clear that a range of measures are required for the road network to both handle existing traffic demand future background or strategic traffic growth, and the additional local demand due to residential and commercial expansion in Gisborne.

Strategic traffic modelling undertaken to determine the future impacts on the existing road network indicated that a number of road links would significantly exceed capacity without any improvement measures implemented. Given that most of the planned residential growth in the short to medium term was infill development south of the Calder Freeway corridor, the greatest impacts were on the road network in that area. The longer term development is generally planned for New Gisborne, and as such the more significant road network impacts in that area are felt then.

The strategic traffic model was also used to test basic local identified network improvements, and three significant network improvement options identified to increase capacity. These included the duplication of Station Road, the provision of a western link road between the Mount Macedon Road interchange on the freeway and Melton Road, and the provision of an eastern link road between Kilmore Road at Saunders Road and the Melbourne Road freeway interchange.

The primary conclusions from the strategic traffic modelling analysis are:

- There is a significant level of background traffic growth across the network, which has the greatest impact on future year traffic volumes. Whilst there is some local variation, the background traffic growth is approximately 2.8% per annum up to 2031 and then 1.8% per annum from 2031 to 2046.
- The reference case growth scenario that incorporates the proposed Structure Plan land use shows additional traffic on all links, with the total traffic volumes pushing most of the strategic links through Gisborne towards or over the theoretical capacity (18,000vpd) for a 2 lane single carriageway road. The reference case scenarios show an increase in heavy vehicle volumes, most significantly on Kilmore Road, Aitken Street, and along Bacchus Marsh Road in 2031, and all strategic links in 2046.
- The option to duplicate Station Road between the Calder Freeway interchange and Robertson Street provides significant additional capacity, resulting in higher traffic volumes on that link by 2046. This option provides some relief on alternate routes into the town centre (Kilmore Road and Melbourne Road), whilst significantly increasing traffic on Aitken Street south of Robertson Street. This pattern is reflected in the heavy vehicle traffic volumes, with the increase in capacity on Station Road reducing the number of vehicles entering town from the west via the Melbourne Road interchange.
- The option to provide a Western Link Road provides the greatest benefit across the road network, with reductions to varying degrees in traffic volumes on most key links. All links would be within theoretical capacity with the exception of Station Road between the freeway and Robertson Street, and Melbourne Road between Howey Street and the freeway interchange. Intersection improvements along Station Road should bring the performance of Station Road to an acceptable level. There is also a significant reduction in the number of heavy vehicles on all strategic links through the town centre with the provision of a WLR.
- The option to provide an Eastern Link Road does not provide a significant benefit across the network compared to the WLR option, however with the primary benefit being reductions in traffic volumes on Saunders Road, and to a lesser extent on Kilmore Road between Saunders Road and Melbourne Road. A number of links remain significantly above the theoretical capacity including Station Road / Aitken Street and Melbourne Road.

Local intersection modelling supported a number of improvements and upgrades, including:

- Replacing the roundabout at the Aitken Street / Robertson Road intersection with traffic signals to increase capacity, and to improve connectivity and safety for pedestrians;
- Replacing the priority intersection at Station Road / Saunders Road with traffic signals to increase capacity and to improve connectivity and safety for pedestrians;
- Upgrading intersections along Robertson Street in the town centre, providing right turn lanes in the shorter term, and potential roundabouts in the longer term;
- Increasing the capacity at the Aitken Street / Hamilton Street roundabout with additional approach lanes, whilst maintaining the character of the existing intersection;
- Upgrading the Melbourne Road / Hamilton Street intersection to improve safety and increase capacity in the shorter term; and
- Improving the Saunders Road / Barry Road as the Gisborne Business Park develops and expands, to increase capacity and improve safety.

8.2 Active Transport

It is generally considered that the provision for pedestrians and cyclists in the wider Gisborne / New Gisborne area is lacking. Whilst the shared paths along the Jacksons Creek reserve, and Station Road provide some connectivity, there are few other shared paths in Gisborne. Large areas, particularly south of the town centre lack foot paths, with either a path on one side of the road only or none at all. Pedestrian connectivity in the town centre is also poor, particularly at key intersections along Robertson Street, Aitken Street and Hamilton Street. The shared paths aside, there is no other provision for cyclists in Gisborne

A range of recommendations have been identified to improve conditions for pedestrians and cyclists throughout Gisborne, generally summarised as:

- Extending shared paths on key links including between Saunders Road and Gisborne Station, Saunders Road as the business park develops;
- Integrating pedestrian facilities into green links throughout Gisborne;
- Providing new footpath along existing streets where there are currently none;
- Providing new or improved pedestrian crossing facilities at key intersections and other pedestrian desire lines;
- Advocating for a shared path along the rail reserve as part of the wider MRSC strategy, providing a key local link between the railway station and Gisborne Business Park;
- Providing on road cycle lanes on key existing links in line with the Macedon Ranges Walking & Cycling Strategy, and connector roads in new development areas, and adequate end of trip facilities at locations such as the railway station, schools, commercial properties and within the town centre;
- Improving pedestrian crossing facilities both mid-block and at intersections in the town centre to improve safety and connectivity; and
- Widening footpaths in the town centre to improve safety and amenity for pedestrians.

8.3 Public Transport

Gisborne Railway Station is in New Gisborne at the northern extent of the town boundary, therefor reducing accessibility for pedestrians, and the steep incline from the town centre dissuading some cyclists. The only bus service that does provide connectivity to the station is a low frequency service.

Shorter term opportunities are to improve bus service frequency and ensure integration with the train timetable, provide weekend services, and improve bus stop facilities. Longer term recommendations include advocating for higher frequency train services to Melbourne and Bendigo, expanding the bus network into new growth areas and the business park.

8.4 Car Parking

In the development of the Gisborne Car Parking Plan, the following conclusions have been identified.

The Gisborne Town Centre contains predominantly two-hour limited and unrestricted parking. Off Street parking provides a higher proportion of unrestricted parking, whilst on-street provides a higher proportion of two-hour limited parking.

Car parking surveys conducted in October 2018 showed a general under-utilisation of existing infrastructure. Whilst there were busier peaks at specific locations both on and off street during the week and at weekends, there was still significant capacity. Current peak demand suggests an approximate vacancy rate of 1 in 3 spaces, equating to around 474 car parking spaces.

In order to better balance the utilisation of existing parking areas, consideration should be given to measures such as adding new or modifying time restrictions to encourage longer term parking such as employees away from the immediate commercial block, and providing wayfinding signage and safer pedestrian access to the longer term parking areas.

There is also scope to provide additional on-street parking on peripheral links on Brantome Street, Aitken Street and Robertson Street

Planning provisions should be made so that any new development in the town centre should ensure that there is no reduction in the number of spaces, particularly in instances where built form is proposed to replace existing car parking provision. There is potential significant civic/health precinct growth proposed, however this is slightly removed from the car parking which has been identified within the town centre. On this basis, future development in this area should be ‘self Sufficient’ in terms of providing adequate levels of car parking off Street

Longer term provision for car parking should consider rooftop, underground, or multi-deck options, with these structures designed to provide active street frontages at the ground floor and allow for future adaptable re-use of the building.

8.5 Gisborne Business Park Masterplan

The further development and expansion of the Gisborne Business Park in New Gisborne has provided opportunities to improve transport infrastructure and safety.

Existing conditions accessing and within the business park are currently very varied, primarily due to the ad-hoc timing and nature of development of the park, with some streets providing footpaths, formal drainage systems and improved road pavement and crossover conditions, whilst others lack some of these facilities

Existing provision for pedestrians and cyclists trying to access the business park is very poor, with the only access being via a shared path from Chessy Park Drive in the neighbouring residential area to the west of the site. Considerable safety issues have also been identified with pedestrians crossing Saunders Road along the southern frontage of the site

The proposal to upgrade the Barry Road intersection on Saunders Road should be fully supported, to improve the operation and safety at the intersection, integrating access to Magnet Lane from the south. Further assessments should be undertaken to determine the most appropriate upgrade measure.

The provision of a second access into the business park off Saunders Road in the form of a connector boulevard is supported whereby it is proposed that a roundabout with a raised median is provided at the future boulevard intersection.

The Masterplan provides for internal upgrades to the existing business park road network so that it becomes fully integrated with the expanded area, and there is free movement for vehicles and pedestrians throughout the business park. It is proposed that Barry Road and the new boulevard provide Connector Road access, with the remaining existing and proposed streets being Local Access Streets. Connector Roads should be bus capable to facilitate the future extension of the bus service into the park.

The provision for pedestrians and cyclists is fully supported in the business park masterplan, with additional external connectivity proposed from Saunders Road via Barry Road and the proposed boulevard, and from Gisborne Station. Internally, shared paths and footpaths are proposed on all streets as appropriate, with safe pedestrian crossings provided at appropriate locations on key desire lines. The provision of on road cycle lanes on Barry Road and the proposed boulevard should also be considered.

9 References

A number of background documents and studies have been considered in the preparation of this Report, including:

- Gisborne Futures – Draft Structure Plan (May 2020);
- Gisborne Futures – Draft Urban Design Framework (May 2020);
- Gisborne Futures Neighbourhood Character Report (Draft Version 2);
- Transport Integration Act (2010);
- Plan Melbourne (2017-2050);
- Macedon Ranges Planning Scheme;
- Gisborne Town Centre Urban Design Framework (2009);
- Gisborne Movement Network Study (2016);
- Macedon Ranges Walking and Cycling Strategy (2014);
- Gisborne / New Gisborne Outline Development Plan (2009);
- New Gisborne Development Plan (2012);
- Loddon Campaspe Integrated Transport Strategy (2015);
- Loddon Mallee South Regional Growth Plan (2014);
- Macedon Ranges Shire Council Plan; and
- Gisborne Business Park Master Plan.