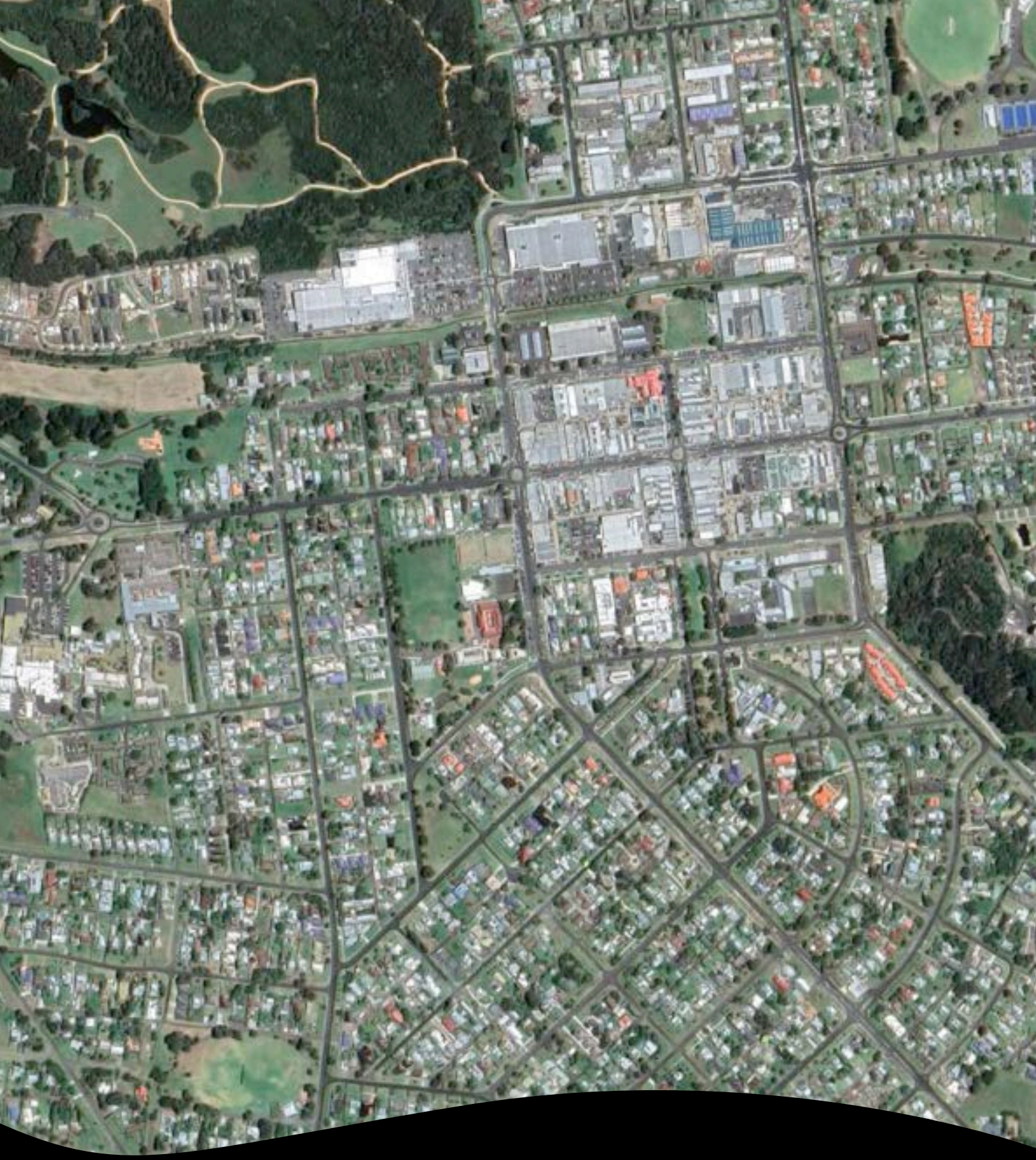

Smarter Choices - Access and Movement Study

Prepared for Bass Coast Shire Council

July 2020

Institute for Sensible Transport

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Executive Summary

The need for this *Access and Movement Study* arose from the recognition that Wonthaggi requires a long term, strategic and holistic plan for meetings its ambition to grow sustainably over the next 30 years.

What we found

Wonthaggi is experiencing traffic safety issues, heavy vehicle movement through the town's centre and parking difficulties that are putting pressure on Wonthaggi's future growth and liveability. The most consistent theme to arise from the review of the policy documents was that car dependence is too high in Wonthaggi and more needs to be done to create an environment in which more sustainable options become more attractive.

The Access and Movement Study has found Wonthaggi to have:

- High levels of car use, with around 9 in 10 trips made by car
- High parking demand during peak times
- Streets dominated by on street parking and through traffic
- A large proportion of car trips are of short distance; a third of all trips to work are under 2.5km and half are under 5km.
- Very low levels of walking, cycling and public transport. In many cases, existing conditions for these modes have reduced their attractiveness and appeal.

Rising traffic congestion has emerged as a concern in Wonthaggi. The evidence reviewed for this project suggests Wonthaggi has a *car dependency* problem. Its traffic congestion is a *symptom* of a lack of viable alternatives to the car. 'Solving' Wonthaggi's congestion can only be achieved by shifting a significant proportion of the short car trips to more space efficient modes.

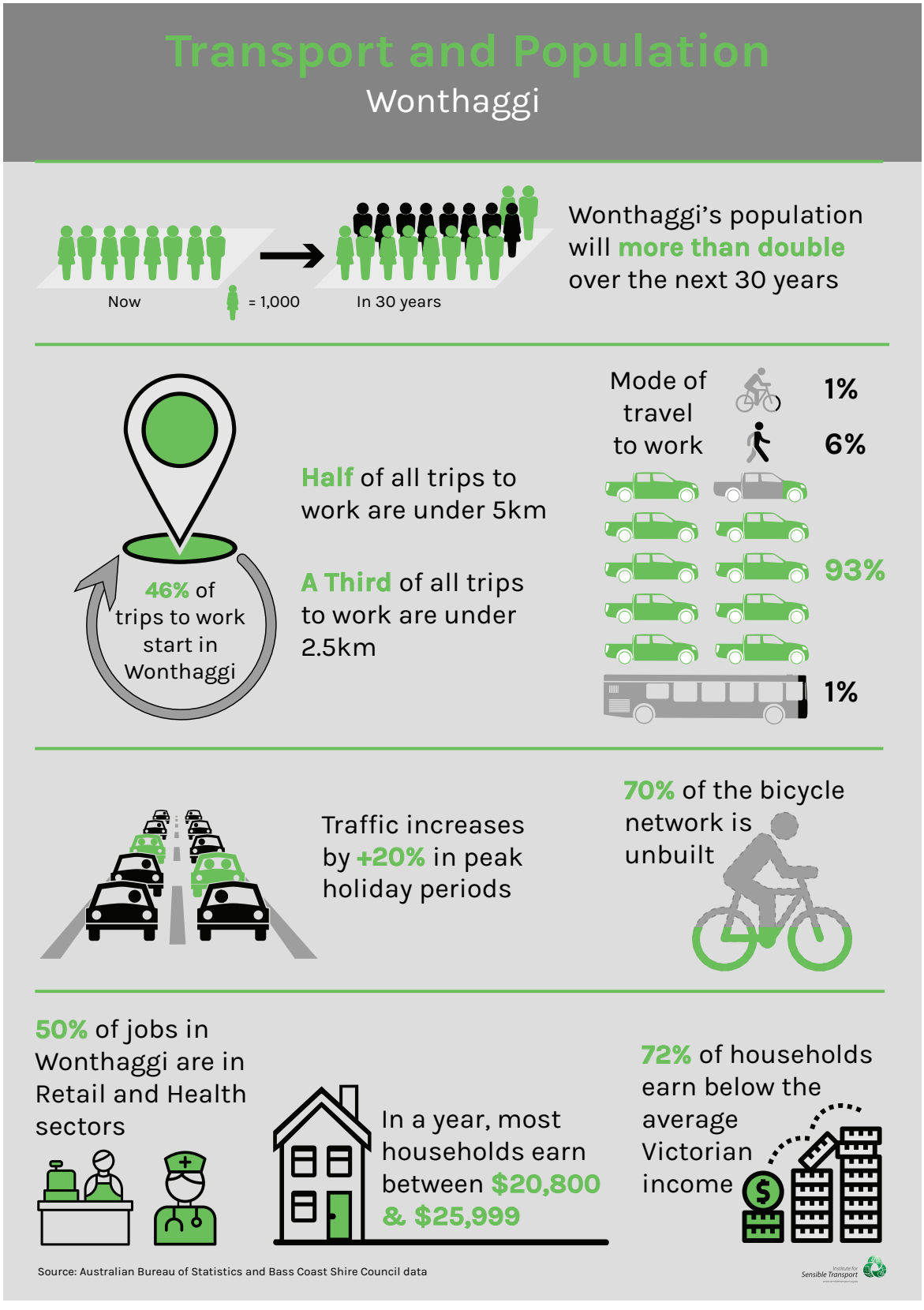
Creating a safer, more sustainable and vibrant Wonthaggi

The challenge facing Wonthaggi is stark. An expected doubling of the population over the next three decades will mean that if existing travel patterns continue, the inevitable congestion and parking difficulties will detract from the lifestyle that currently draw people to Wonthaggi. *'Doing more with less'* is the philosophy that will need to underpin strategic transport investment, as the amount of road and parking space per person begins to diminish.

This Study identified a wide range of opportunities to begin Wonthaggi's transformation into a sustainable, safe and inviting regional centre that capitalises on Wonthaggi's uniqueness. Its small scale, laneways and short average trip distances offer great opportunities to become a leading Victorian regional town for more sustainable travel. While this will be great for those seeking to walk, cycle and use public transport more often, it will also result in better outcomes for those that have to drive.

This Access and Movement Study outlines a holistic 30-year vision to make Wonthaggi an even better place to live, work and visit. This Access and Movement Study has the title *Smarter Choices* because it focuses on *'doing more with less'*. As Wonthaggi's population is set to more than double over the next 30 years, it is critically important to design a transport system that is more space and environmentally efficient, that provides access to healthier transport modes and creates streets that are more people-focused.

A package of reinforcing, integrated *actions* have been developed, to provide a clear set of implementable initiatives designed to assist Bass Coast Shire Council achieve its long-term vision for Wonthaggi.



Summary of Wonthaggi's key transport and demographic information

A strategic approach to transport

This Access and Movement Study has taken a strategic approach to guiding transport policy and investment decisions. The figure below captures the architecture of this strategic approach, with the *vision* at the centre, designed to align with Bass Coast Shire Council's broader strategic ambition.

Strategic elements of Access and Movement

Vision

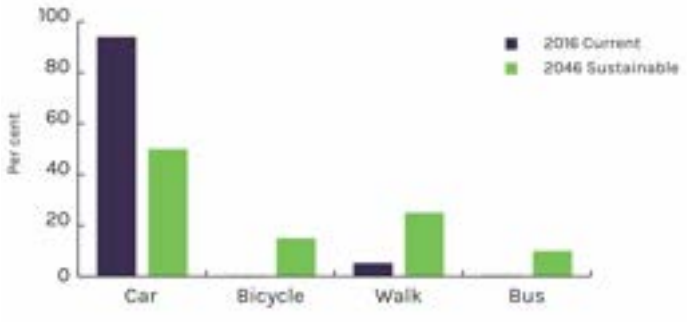
Access to and within Wonthaggi is safe and sustainable, for the whole community. The transport system supports the creation of a vibrant, people-focused township.

Principles

1. Wonthaggi is a vibrant, people focused place to live, work and visit.
2. Transport investment decisions are guided by their ability to support Council's commitment to reducing greenhouse gas emissions and its declaration of a Climate Emergency (i.e. actions must demonstrate how they will lower transport emissions).
3. Public transport along key corridors is fast, accessible, frequent and offers seamless integration between different services and key destinations and is connected to the active transport network.
4. Walking and cycling are the first choice for trips under 2km and 5km, respectively. Streets provide safe, high quality walking and cycling opportunities.
5. Safe Systems (Vision Zero) underpins the design of Wonthaggi's transport network, consistent with Victorian government policy.
6. Demand for car use is reduced to support Wonthaggi's growing population and better manage congestion and parking issues.

Transport targets to achieve a sustainable future

The population of Wonthaggi is forecast to grow by 2.5 times, from 8,000 today to 20,000 by 2046. Should current car usage remain at the same rates as today, this would mean a growth in the number of car trips by a factor of 2.5, making congestion and parking difficulties considerably worse. For these reasons, as well as the need to reduce transport emissions and create the sustainable future Council have committed to, a set of mode share targets have been created.



Current and 2046 Sustainable Mode Share Targets

To help guide Wonthaggi's progress towards meeting the targets outlined for 2046, a set of interim targets have been set, and aligned with future Census years, to make evaluation as easy as possible and help Council monitor progress.

Key moves

Almost 100 actions have been recommended, each designed to support the strategic ambition for Wonthaggi to become a healthier, more sustainable and productive town. The key areas of action included in Smarter Choices are shown below.

Key areas of action

The actions are also designed to better equip Wonthaggi to accommodate forecast population growth. Recommended key moves:

1. Enhance streets within Wonthaggi's core by redirecting through traffic and creating a greener, more people friendly centre.
2. Create more safe crossing opportunities for pedestrians.
3. Enhance bus access.
4. Build a connected network of bike lanes and paths.
5. Better manage existing car parking assets.

Ultimately, *Smarter Choices* is about helping to create a more diversified transport system, where people have the opportunity to use the mode of transport that best suits their needs. As the actions contained in *Smarter Choices* begin to be implemented, the community will have more opportunity to use sustainable transport modes, which will work to support Council's strategic direction to be a more sustainable, vibrant and healthier community.

1. Introduction

The need for this *Access and Movement Study* arose from the recognition that Wonthaggi requires a long term, strategic and holistic plan for meetings its ambition to grow sustainably over the next 30 years.

This *Access and Movement Study*, referred to a *Smarter Choices*, has found that high levels of car dependence and through traffic, built up over multiple decades, has reduced the vibrancy, safety and productivity of Wonthaggi.

Analysis conducted for this Study found that many of the car trips that take every day in Wonthaggi are surprisingly short, and, if provided with compelling alternatives, many of these short trips could be converted to active modes. This would help Wonthaggi tackle not just the congestion and parking pressure that detract from the quality of life in this South Gippsland regional centre, but also help to increase physical activity and improve environmental performance.

Wonthaggi experiences significant fluctuations in population and is expected to accommodate further urban growth in the future. This growth places pressure on the transport system and requires smarter, more sustainable transport options to support Council's ambition for Wonthaggi.

This Access and Movement Study outlines a holistic 30-year vision to make Wonthaggi an even better place to live, work and visit.

1.1 Why *Smarter Choices*?

This Access and Movement Study has the title *Smarter Choices* because it focuses on *'doing more with less'*. As Wonthaggi's population is set to more than double over the next 30 years, it is critically important to design a transport system that is more space and environmentally efficient, that provides access to healthier transport modes and creates streets that are more people-focused.

Smarter choices include a more rational use of the car, and a stronger emphasis on creating a compelling choice for people to use active transport for shorter trips. Moreover, Smarter Choices provides recommendations to enhance the useability of the public transport system and helps to create vibrant streets that makes Wonthaggi an even better place. Ultimately, Smarter Choices is about helping to create a more diversified transport system, where people have better choices that provide for closer alignment with the long-term strategic objectives for both Wonthaggi and the greater Bass Coast community.

1.2 Context and project area

Wonthaggi is located some 132km south east of the Melbourne CBD and is the largest town in the Bass Coast Shire. The former coal mining town currently has a total population of 7,700, which is expected to grow up to an estimated 18,000 residents by 2036. The Shire experiences large numbers of visitors each year, reaching a summer holiday population of over 80,000 people, of which 33,317 people are permanent residents. The Bass Highway crosses the town and runs from Inverloch on Victoria's South-East coastline to Metropolitan Melbourne.

Wonthaggi performs an important role as a commercial and service centre for the Gippsland region. With the Bass Highway running through the town, it is also an important freight route for product from the Gippsland region. The area is also a popular destination for tourists during summer months and Easter Holidays. The township is expected to accommodate further peri-urban growth in the future. This growth is mainly going to take place in the North East Precinct.

1.3 Project objectives

There are five key objectives of this project:

1. Create a road use and transport hierarchy with a holistic 30-year vision for the Wonthaggi township, based on the *Wonthaggi Activity Centre Plan*.
2. Inform updates to the Wonthaggi Activity Centre Plan, which forms the guiding document for the project.
3. Review existing policy documents and strategies, identify and fill any gaps in networking studies (see Appendix 1).
4. Formulate an ideal reconfiguration of Wonthaggi's Freight, Public Transport, Walking and Cycling networks, with recommendations for short, medium- and long-term implementation.
5. Assess the projected car parking demand and how it can be met.

The *Issues and Analysis Report*, submitted in March and revised in May, 2020 can be found in Appendix 1 and covers important background data and policy analysis. This report took a comprehensive analysis of recent and pertinent policies, strategies, data, and plans relevant to the transport issues of Wonthaggi. It included a range of Bass Shire Council documents, as well as State Government documents that guide transport and land use planning. The data analysis included Council provided data, as well as ABS and State Government datasets.

COVID-19

COVID-19 restrictions impacted on this project. Victorian government restrictions prevented face to face meetings and a team site visit had to be delayed until late in this project. A single person site assessment was undertaken in early April, and a two-person visit took place in late May.

Parking analysis planned for this project was also impacted, and took place in late May. The data from this activity is currently being processed and will be included in an updated version of this report upon its completion.

Steering group meetings were held via video conference.

Box 1 COVID-19 and this project

2. Policy review - summary

This section provides a concise overview of the key themes and findings from the more detailed Policy Review found in Appendix 1.

2.1 Key themes

The following provides a synthesis of the key themes to emerge from the review of the relevant policies and strategies:

- A recognition that the facilitation of traffic movement had diminished the quality of Wonthaggi as a vibrant regional centre. Freight traffic routes in particular have lowered the quality of the public realm in some of Wonthaggi's most historic and important shopping streets. Diverting freight around the town centre was identified in the *Draft Wonthaggi Activity Centre Plan.*
- Population growth: A common theme among the policy documents is the need to cater to a growing population, and a need for this growth to occur while meeting Council's goals for a sustainable future. The Wonthaggi North East Draft Precinct Structure Plan forecasts the Wonthaggi population will grow from 8,000 to 20,000 over the next 30-50 years.
- A need for change: The *Draft Wonthaggi Activity Centre Plan (2019)* in particular highlighted the need for Wonthaggi's street structure to change, in order to meet future challenges related to demands for a higher quality public realm. A more people-focused activity centre and open space outcomes that *'tell Wonthaggi's story'* was identified as a worthy policy goal.
- Doing better with infill development: A number of sites, such as the former Secondary School, have been earmarked for infill, medium density development.
- Increasing the diversity of transport options. The *Wonthaggi Structure Plan (2018)* highlights the need to prioritise walking and cycling and create more options for reducing car use. The most consistent theme to arise from the policy documents reviewed was that car dependence is too high in Wonthaggi and more needs to be done to create an environment in which more sustainable options become more attractive.

Figure 1 provides a snapshot of some of the key changes envisioned in the *Draft Wonthaggi Activity Centre Plan* including enhancements for active transport on key streets such as McBride Avenue and Graham Street.

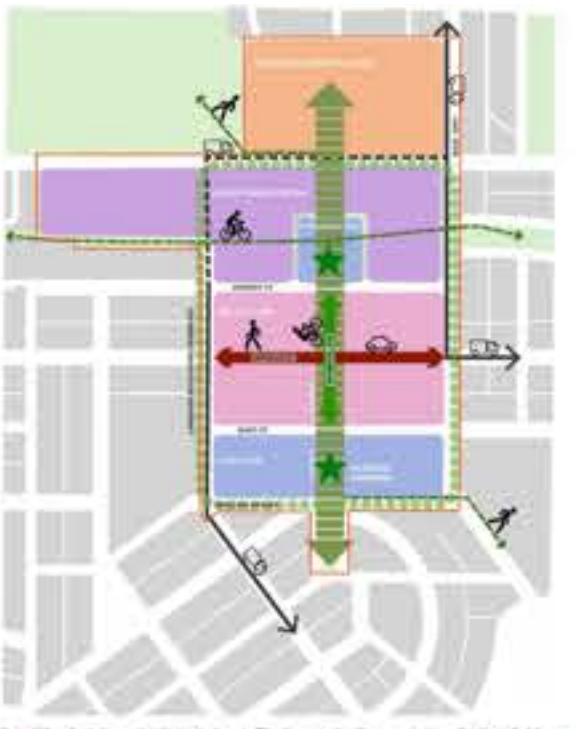


Figure 1 Draft Urban Form Diagram
Source: Draft Wonthaggi Activity Centre Plan

Box 2 provides a snapshot from the *Draft Wonthaggi Activity Centre Plan* identifying the outcomes sought from this *Access and Movement Study.*

Without the inclusion of sustainable transport principles, and a strategic shift to reduce car dependence, the Precinct Structure Plan risks embedding a '*predict and provide*' mentality that can in fact exacerbate the very congestion issues it aims to solve.

Access and Movement outcomes highlighted in the *Draft Wonthaggi Activity Centre Plan*

The specific outcomes that are sought to be achieved for access and movement are:

- To create a movement network that prioritises pedestrian and cyclist amenity and safety
- To provide convenient and safe car parking that meets the needs of the whole centre
- To enhance access to public transport.

Box 2 Access and Movement Outcomes
Source: Draft Wonthaggi Activity Centre Plan

Perhaps the most common theme to arise from the policy review was the overwhelming need to change the street character in Wonthaggi and diversify the set of transport options.

Appendix 1 provides a more detailed description of the policy review findings.

3. Transport in regional cities: An introduction

As Wonthaggi continues on a path of strong population growth, it will be important to ensure the increase in population does not come at the expense of the lifestyle and amenity that has attracted people to the township. *'Doing more with less'* is the philosophy that will need to underpin strategic transport investment, as the amount of road and parking space per person begins to diminish. This section provides an overview of key concepts in transport planning that can help guide Wonthaggi as it moves to increase the sustainability of its transport system.

As urban populations have grown upwards and outwards, in combination with increasingly attainable motor vehicles, transport systems have come under unprecedented strain. Growing motor vehicle ownership is taking place at the same time that an increasing number of governments are implementing measures intended to reduce the reliance communities have for car use.

3.1 The three elements of the transport system

Every mode of transport consists of three elements (rights of way, terminal capacity and vehicles), as shown in Figure 2. This framework can assist government to identify how to influence the relative contribution of a particular mode of transport. For instance, if Bass Coast Shire Council wished to grow the contribution cycling made to the transport task, this would be most effective if it addressed each of the three elements shown in Figure 2, such as bike lanes, bike parking, and policies that encouraged bike ownership/access.

The three elements framework has been used to ensure a comprehensive set of policies and actions simultaneously increase the use of sustainable mobility and reduce the impact of unsustainable modes of transport in Wonthaggi.

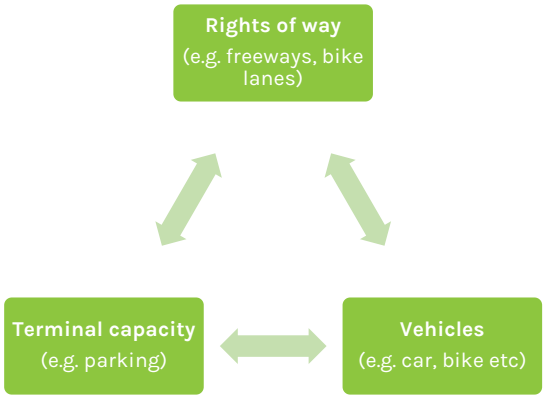


Figure 2 Every mode of transport has three elements
Source: Shoup (2010)

3.2 Why tackling transport is a priority

Transport presents one of the major challenges to enhancing the liveability, resilience and health of people who live, work or visit Wonthaggi. The growth in transport emissions, traffic congestion, parking frustration, noise and air pollution, as well as fatalities and serious injuries are just some of the major problems caused by widespread car use.

Private cars are used, on average, around 5% of the day (Shoup, 2017). Moreover, each car is estimated to need between 4 – 8 car parking bays, driving up the cost of housing and limiting the space that can be used for more productive or useful purposes (Shoup, 2005). While these data are drawn from cities in North America, they are unlikely to be substantially different in Wonthaggi. The average motor vehicle occupancy at peak hour in Victoria is around 1.1 people per vehicle, despite the average car having five seats.

3.2.1 Car dependence

The urban environment was radically transformed in most developed world towns, including Wonthaggi, in the decades following the end of the Second World War. This was needed to accommodate the space requirements of the car. Car based urban transport mentalities have, over decades, resulted in what transport researchers Professors' Newman and Kenworthy termed *automobile dependence* (Newman & Kenworthy, 1999).

The broadening geography of cities made the automobile the *default* mode for many and this had a self-reinforcing circle that Ivan Illich captures succinctly (Illich, 1973):

> *Beyond a certain speed, motorized vehicles create remoteness which they alone can shrink.*

The cycle of car dependence is illustrated in Figure 3.

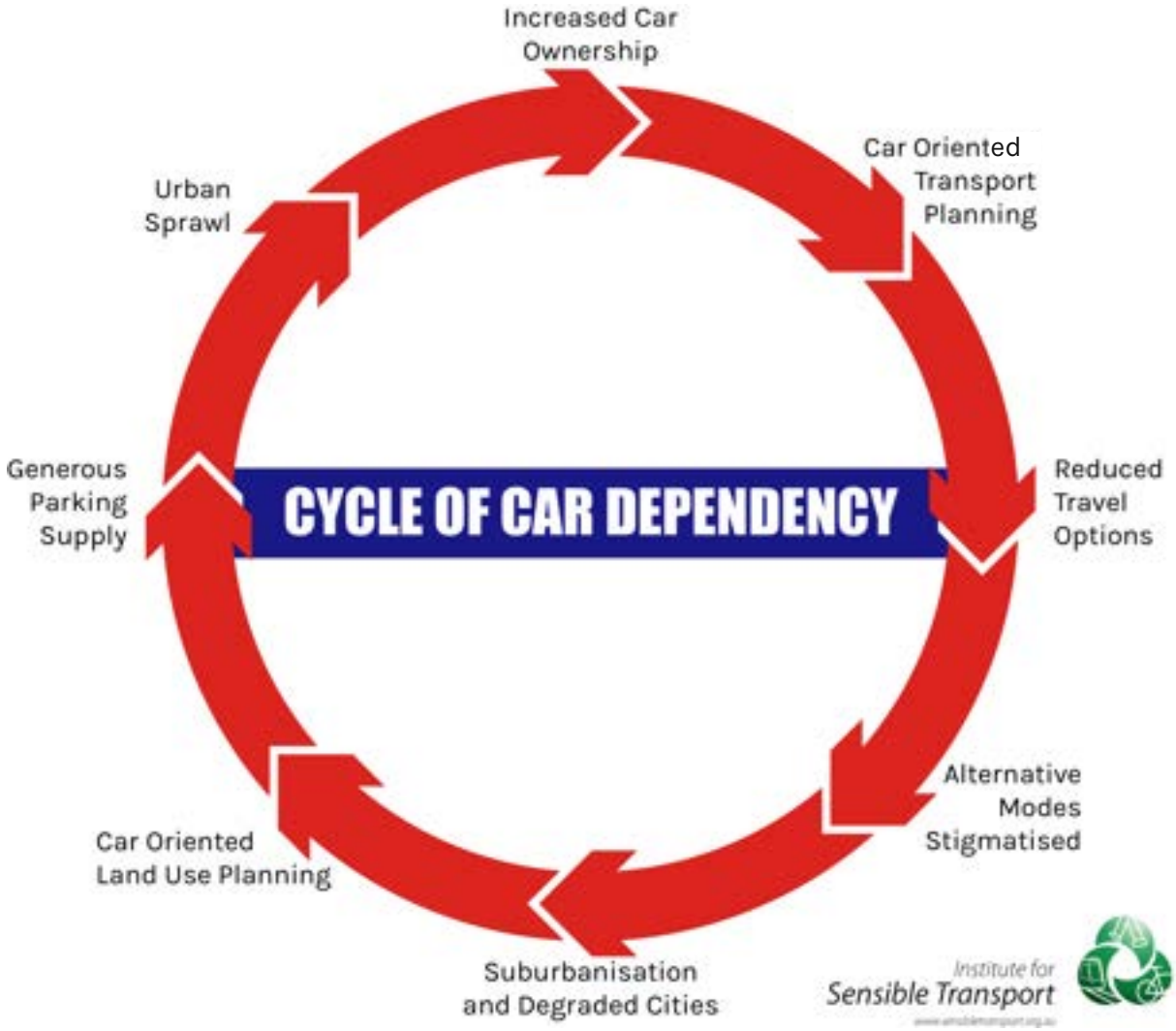


Figure 3 Cycle of car dependence
Source: Litman (2016)

The *Cycle of Car Dependency* illustrated in Figure 3 is highly pertinent to Wonthaggi, where almost all trips are driven. This phenomenon has been termed *forced car use* by Professor Graham Currie et al. (2007), where some people must drive, regardless of what their preference or trip distance might be, as it is the only viable mode of transport on offer.

The space efficiency rating of different modes of transport is shown in Figure 4. It shows that a 3.5 metre wide lane can carry 2,000 people by car[1] per hour, 9,000 by bus and 14,000 by bicycle. Whilst public transport is most efficient in this regard, the bicycle is the most efficient vehicle that can be used individually, without adherence to a timetable.

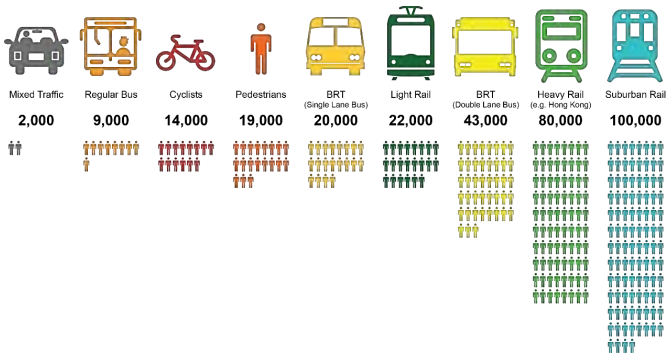


Figure 4 Carrying capacity of different modes, 3.5 metre carriageway
Source: United Nations (2013)

Rising traffic congestion has emerged as a concern in Wonthaggi. The evidence reviewed for this project suggests Wonthaggi has a *car dependency* problem. Its traffic congestion is a *symptom* of a lack of viable alternatives to the car. 'Solving' Wonthaggi's congestion can only be achieved by shifting a significant proportion of the short car trips to more space efficient modes.

3.2.2 Climate change and transport

Transport accounts for between 16 - 19% of Victoria's emissions. Road transport is the main contributor to transport emissions in Victoria.

Transport is one of the fastest growing sources of greenhouse gas emissions. Reducing the number of vehicle trips, and mode shifts away from car use towards sustainable travel (e.g. walking, cycling and public transport), in combination with vehicle fuel efficiency gains are highlighted as offering high mitigation potential. In December, 2019 Bass Coast Shire Council declared a *Climate Emergency*. Figure 5 provides an outline of the pathways through which transport emissions are able to be reduced.

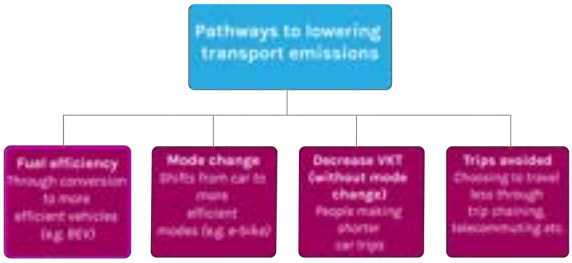


Figure 5 Pathways to lowering transport emissions
Source: Institute for Sensible Transport
NB: BEV is Battery Electric Vehicle, VKT is Vehicle Kilometres Travelled

The evidence reviewed in recent assessments (e.g. see Davies & Fishman, 2018) show that current transport emissions exceed the levels required to meet Australia's obligations under the Paris Climate Agreement. These emissions are forecast to increase under the existing policy context. According to the IPCC, '*sustained and unprecedented action*' will be required to arrest and then reverse this trend.

The Australian Government has set the target of reducing emissions by 26 – 28% below 2005 levels by 2030. In reality, this will require per capita reductions of around 50%, given population projections. Wonthaggi, as part of its contribution to a sustainable future, must provide a transport environment that allows the community to play their part in bringing down emission levels.

Based on material reviewed in this report, Wonthaggi does not show a trend in mode shift

[1] At average peak hour occupancies of around 1.1 – 1.2 people per vehicle.

towards sustainable travel that reflects the strategic ambition of Council to lower climate changing emissions. Only through a step change in how Wonthaggi designs and manages its streets will transport emissions be reduced in line with what is required to tackle the *Climate Emergency*.

Vehicle fuel efficiency

The motor vehicle fleet has shown only modest fuel efficiency improvements over the last 40 years, from around 12 litres per 100km to around 10 litres per 100km. Whilst electric vehicles have made considerable improvement in recent years, a combination of factors, including low petrol price, limited government incentives, a lack of charging infrastructure and high purchase price have meant little uptake within the Australian vehicle fleet.

Box 3 Australia's fuel efficiency

Figure 6 illustrates the stark contrast between *dirty* and *clean* transport modes and the *space* each mode consumes. The size of the black balloons represent grams of CO_2 per person kilometre for the different modes shown. The footprints represent the space consumption for each mode, expressed as m^2 per person. As with many other cities in Australia, Wonthaggi's street network continues to reflect a priority for modes that are both emissions intensive and space inefficient. Meeting Wonthaggi's commitment to address the Climate Emergency will be somewhat dependent on the degree to which it can create the conditions in which walking, cycling and public transport thrive.

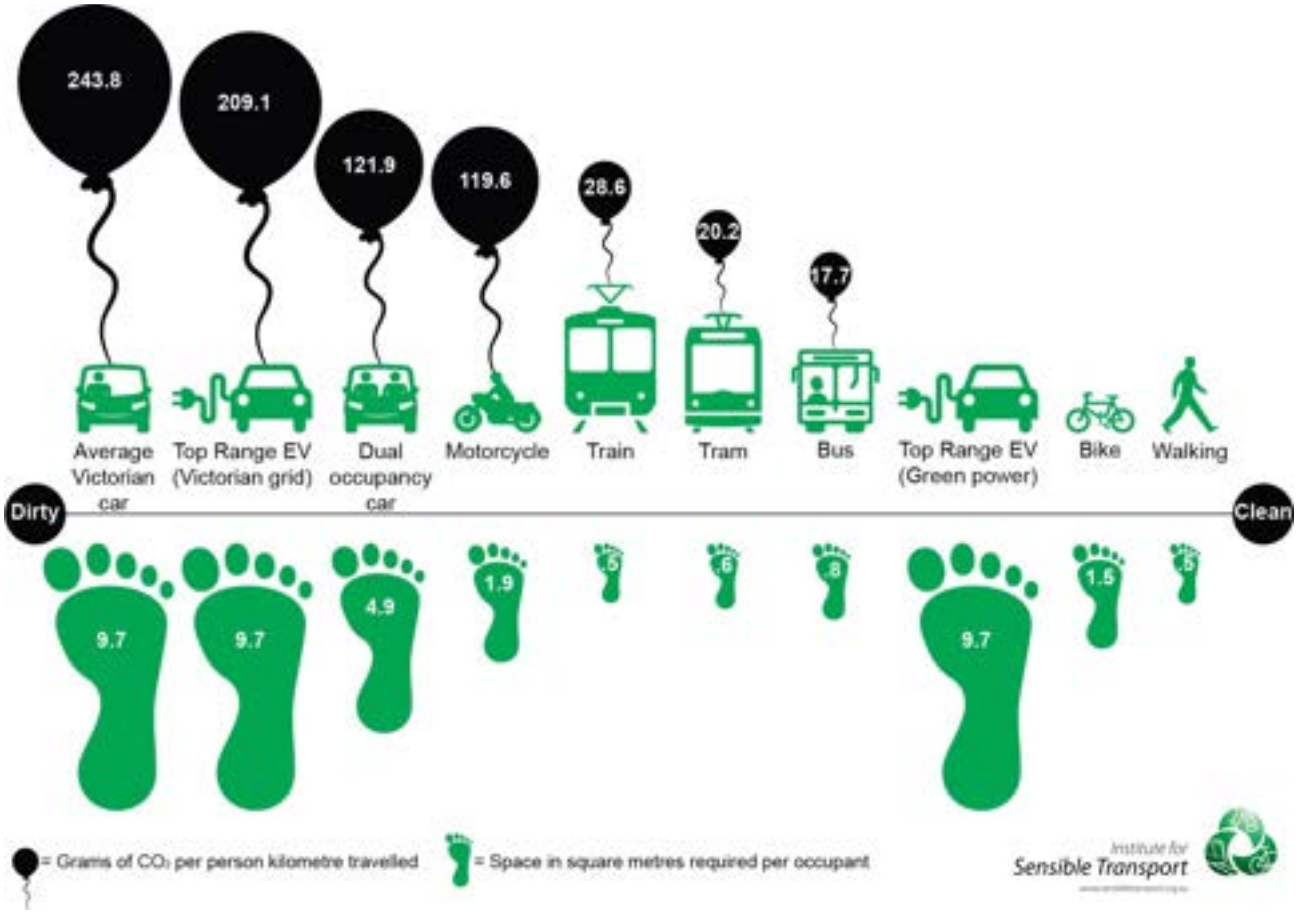


Figure 6 Emissions and space intensity, various modes
Source: Davies & Fishman (2018)

Electric vehicles

The international electric vehicle (EV) market is currently experiencing a rapid rate of growth, and this is expected to continue, with a number of countries signalling a ban on the sale of new internal combustion engine (ICE) vehicles coming into effect as soon as 2025. Global EV sales jumped 56% from 2016 to 2017 (ClimateWorks Australia & Electric Vehicle Council, 2018).

Australia has among the lowest EV penetration rates compared to other countries within the OECD. In recent months, a number of bodies have identified the need to change the policy context around EVs in Australia, in order to boost adoption rates and lower the oil dependency of the Australian vehicle fleet.

Why are electric vehicles important?

There are several key reasons for Bass Coast Shire Council to encourage EVs, including being a leader through the conversion of their corporate fleet. These include:

- Improved local air quality;
- Reduced tail-pipe GHG emissions;
- Reduced noise pollution;
- Reduced vehicle running costs (1/3 – 1/5 the running costs of an ICE[1] vehicle).

What can Bass Coast Shire Council do to increase electric vehicle adoption?

There are three broad areas in which government is able to influence the uptake of EVs. The figure below provides an indication of the different methods through which governments are able to increase adoption rates of EVs.

The purchase incentives and traffic priority are largely the domain of national and state government – though Council may wish to undertake an advocacy role to encourage adoption of policies in these areas. Given the limitations of local government to impact on purchase incentives and traffic priority, the most effective activity Council are able to lead on is the purchase of EVs as part of their organisational fleet, as well as holding '*come and try days*', in conduction with the EV industry and user groups. Finally, Council may wish to produce a fact sheet on EVs for their constituents (residents and businesses), including FAQs and what to consider before buying an EV/installing charging infrastructure etc.

Box 4 Electric vehicles

3.2.3 Physical activity

Modern, urban lifestyles have engineered physical activity out of everyday life and this presents a major threat to human health (Fishman, Böcker, & Helbich, 2015). Active transport is increasingly seen as an important opportunity to counteract the incidence of sedentary lifestyle diseases such as diabetes and obesity (Bauman et al., 2008; Götschi, Garrard, & Giles-Corti, 2015). Cost benefit assessments have shown that *health* is the main benefit category from bicycle infrastructure projects (Mulley, Tyson, McCue, Rissel, & Munro, 2013; Transport and Main Roads, 2011).

The policy documents reviewed in Appendix 1 found that enhancing population health is a key priority for Wonthaggi, and that many people in the community do not achieve the necessary levels of physical activity to protect against diseases of a sedentary lifestyle.

3.2.4 Road safety

Safety is a critical element of sustainable mobility planning. The safety data and policies reviewed in Appendix 1 makes clear that much more needs to be done to enhance safety outcomes. Figure 7 provides an indication of the chances of survival when a vehicle hits a pedestrian at different speeds. When a pedestrian is hit by a car travelling at 50km/h, they only have a 1.5 in 10 chance of surviving, compared to a 5 in 10 survival rate at 40km/h. Safer speeds also reduce the chance of a collision occurring, and helps to make it easier for pedestrians to judge when it is safe to cross.

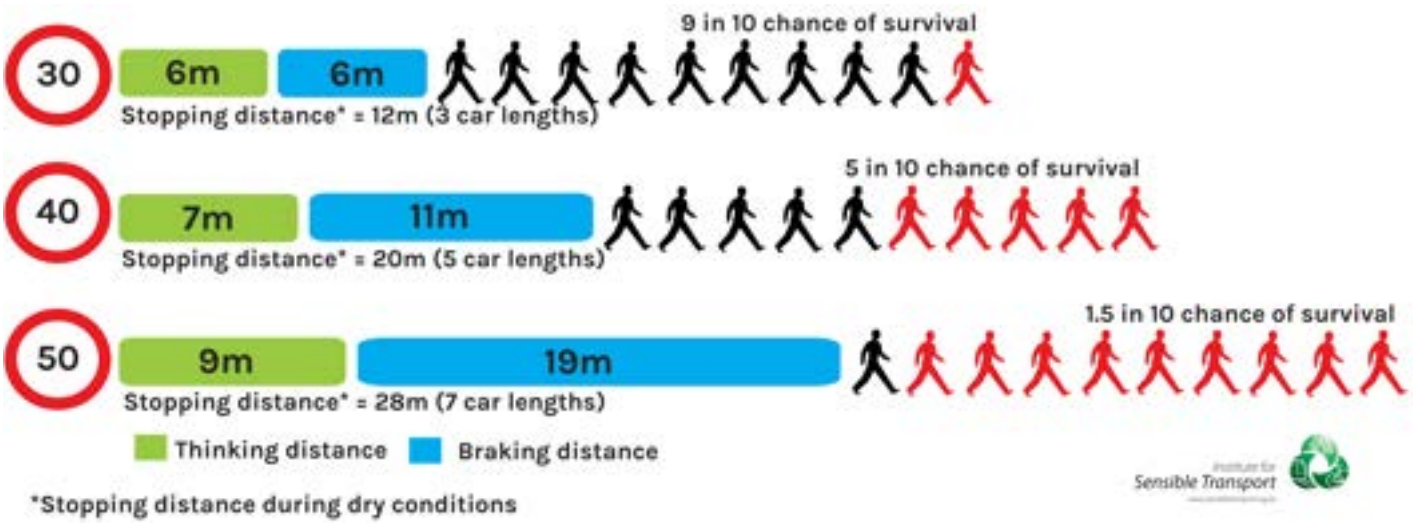


Figure 7 Changes of survival for different vehicle speeds

3.3 Barriers and facilitators to sustainable mobility

As highlighted throughout this report, and many of the policies and strategies reviewed in Appendix 1, Wonthaggi has high levels of car use and have a stated position of seeking to boost participation in sustainable mobility. Figure 8 provides a snapshot of some of the main barriers and facilitators to sustainable mobility in Wonthaggi. The icons on the left are the *barriers*, and include low density development, low traffic congestion (relative to cities), free, easy to find parking (compared to inner city areas), as well as a cultural familiarity with cars as the 'default' mode of transport for many people.

These factors have been drawn from a combination of the strategies and plans reviewed in Appendix 1, as well as the known barriers to sustainable mobility captured in the wider body of literature on the topic (Givoni & Banister, 2010; Hickman & Banister, 2014; Schwanen, Banister, & Anable, 2012).

The icons on the right-hand side of Figure 8 illustrate potential *facilitators* that could be implemented in Wonthaggi in order to boost sustainable mobility opportunities to and within the town centre. These have been applied when developing the recommendations found in Section 8.

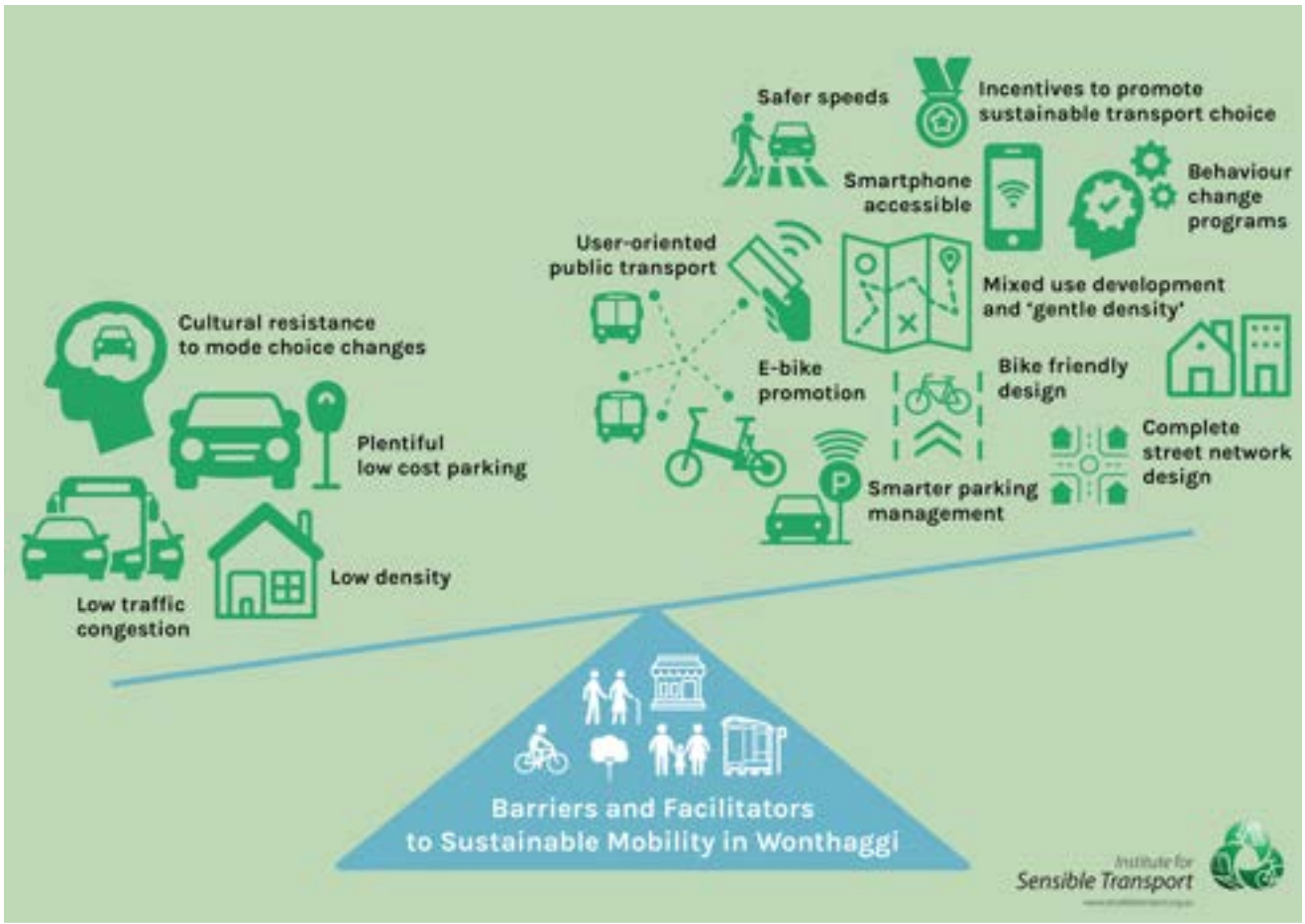


Figure 8 Barriers and facilitators to sustainable mobility in Wonthaggi

3.3.1 Understanding the relationship between bike infrastructure and willingness to cycle

The examination of travel patterns and distance conducted for this project (see Figure 13 - Figure 16 as well as Appendix 1) found that a significant proportion of trips are within a comfortable cycle distance, yet cycling participation is very low. The analysis of the street network found an absence of connected, quality bicycle infrastructure.

Safety concerns are a key barrier to the uptake of cycling (Bauman et al., 2008). Figure 9 provides an illustration of stated preference results on how confident people feel riding on different forms of bike infrastructure. It shows that only a small proportion of people feel confident to ride on streets with no bike infrastructure or a painted lane. Only 6% of people feel confident riding in mixed traffic (with cars and trucks). At the other end of the spectrum, when physically protected bikes are provided, 4 in 5 people say they would cycle. This information is relevant to Wonthaggi and has been used to inform the recommendations found in Section 9.5.

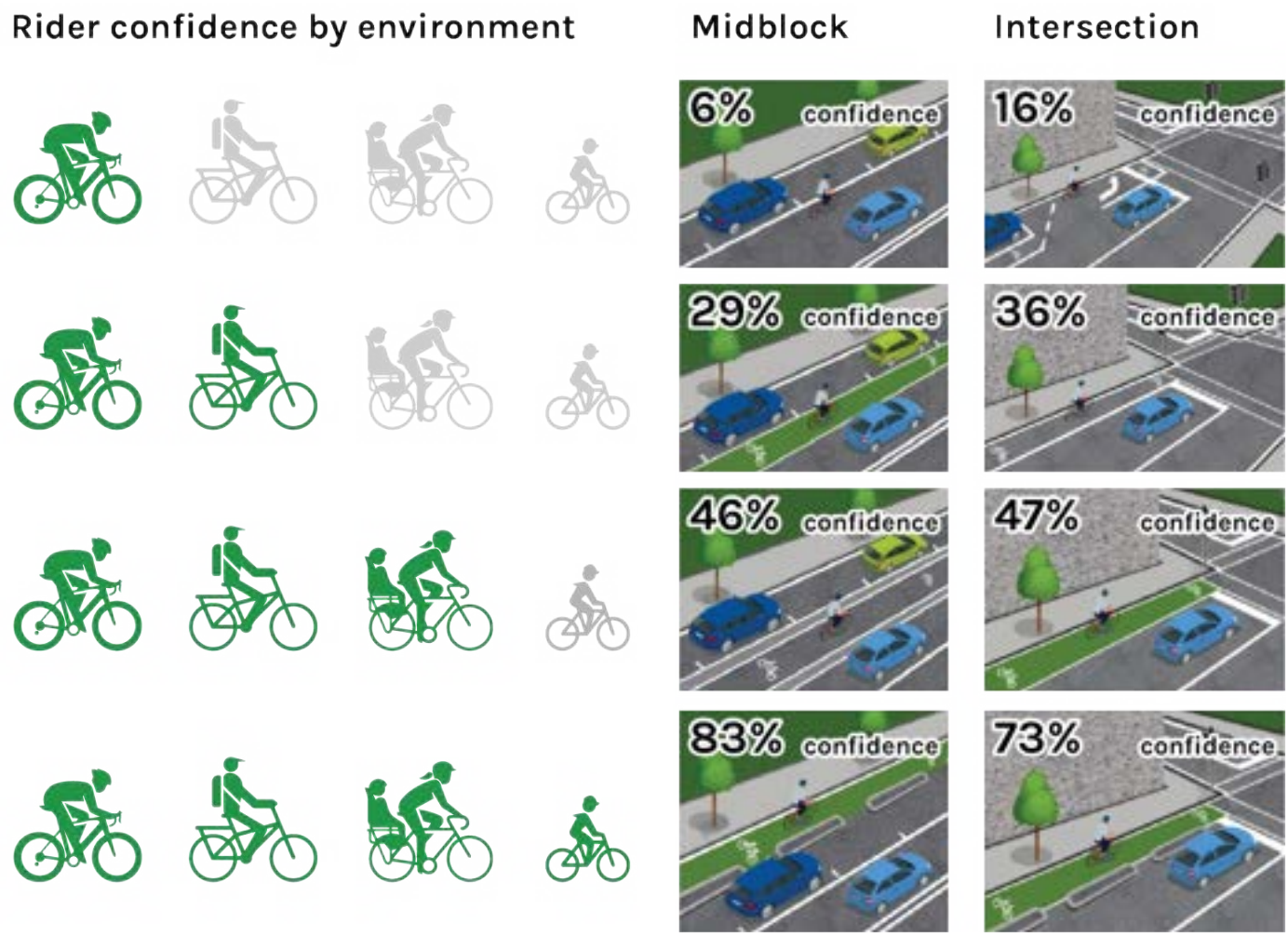


Figure 9 Riding confidence - different infrastructure
Source: Adapted from CDM Research & ASDF Research (2017)

3.3.2 Electric bikes

The global electric bicycle (e-bike) market has grown substantially in the last decade. E-bikes represent the largest, most rapid uptake of alternative fuelled vehicles in the history of motorisation (Fishman & Cherry, 2015). E-bike owners ride more often, and further than other cyclists and are able to better maintain speed with less effort. E-bike ownership reduces car use to a greater extent than regular bicycles. Figure 10 provides an image of a modern e-bike. Such bikes are generally capable of travelling ~80km between charges.

Figure 10 Modern e-bike

Australia's harmonisation of e-bike regulation, which broadly equates to European standards, coupled with growing market interest, has resulted in a flourishing local e-bike sector.

E-bikes offer the user quicker travel time, with less effort. E-bikes have been found to lessen some of the common barriers to conventional bikes, including the ability to overcome topographical challenges, physical limitations of the rider and arriving at work without perspiring. Moreover, e-bike owners report that being able to ride with greater loads (e.g. children or groceries) opens up greater possibilities for cycling, including replacing some car use. E-bikes are generally more expensive than conventional bikes (~$2,000 – $4,000), and this acts as a barrier to increased adoption.

Case Study: City of Melbourne e-bike fleet

The City of Melbourne has had e-bikes as part of their Corporate Fleet since 2008. The number of e-bikes has increased and now includes 25 e-bikes, with most designated to branches, including.

- 9 e-bikes in corporate transport 'pool'.
- 6 e-bikes used by Park Rangers and other 6 used by Maternal Child Health nurses to attend appointments with new mothers
- 2 e-bikes used by Animal Management for patrols
- 1 e-bike used by the Waterways team and another by Arts House

E-bikes are typically replaced by the City of Melbourne every three years, to ensure the reliability of the fleet and to take advantage of the continually improving technology.

There has been a significant growth in the use of e-bikes by City of Melbourne staff in recent years, with 10% of all corporate fleet trips occurring on e-bike, compared to 2.5% in 2016 (a fourfold increase).

Box 5 City of Melbourne e-bike fleet

E-bike riders cycle more frequently than conventional bike users and each trip is significantly longer than conventional bike journeys. E-bike users also report replacing car trips more often, helping to reduce congestion, emissions, parking pressure and other negative impacts associated with urban car use.

In 2017, Australian e-bike sales doubled compared to the previous year, with an estimated 25,000 – 30,000 e-bikes sold.

E-bikes offer several important benefits to assist Wonthaggi in becoming one of Australia's most liveable regional cities. Many of these relate to the added value proposition e-bikes offer. Female representation in cycling participation is much lower than their 51% of the population and e-bikes have been found to reduce this gender imbalance. Consuming significantly less space than motor vehicles, e-bikes can help to alleviate congestion and parking difficulties. The ability of e-bikes to shift trips from motor vehicle and public transport hold the following specific benefits in addition to congestion reduction:

- Road safety improvements
- Transport emissions reduction
- Physical activity benefits
- Reduction in transport costs
- Improved travel time reliability.

Previous studies have identified the barriers limiting people from using conventional bikes, which are identified in Figure 11 (Macarthur, Harpool, Scheppke, & Cherry, 2018). This is pertinent to Wonthaggi, as the two principal reasons offered are *'distances too far'* and 'hills'. As highlighted in Section 3.2, both of these act as barriers to the update of cycling in Wonthaggi, and therefore e-bikes offer a solution to stubbornly low ridership levels. Cold and rain may also reduce cycling numbers in Wonthaggi, though cycling levels are also low in summer, and cities with the highest bike mode share are both colder and wetter than Wonthaggi.

For Wonthaggi to maximise the potential for e-bikes to contribute to the town's sustainability and liveability ambitions, it will be necessary for different levels of government to work together to create an environment that encourages e-bike use. For Council, the most important contribution they can make is the development of the bicycle network. Additionally, holding *'come and try'* days and generally promoting e-bike purchase are two actions that can follow a substantial increase in the bike lane and path network.

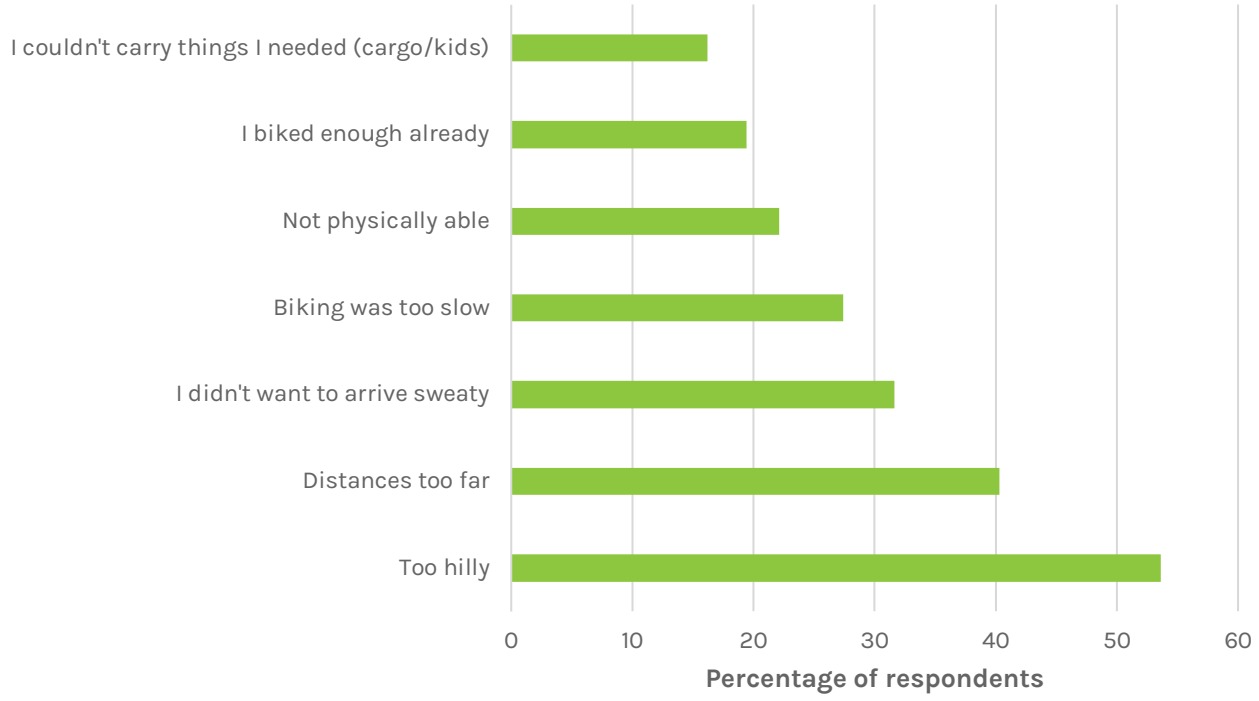


Figure 11 Barriers limiting conventional bike use according to e-bike owners
Source: Macarthur et al. (2018)
NB: Excludes safety concern

4. How people travel in Wonthaggi – in brief

This section offers a synthesis of key transport data about access and movement to and within the Wonthaggi township. It is a distillation of the more detailed description of travel data found in Appendix 1. The overall objective is to provide an understanding of travel patterns and opportunities to make the transport system safer, more sustainable, and help Wonthaggi become a more liveable township.

4.1 Journey to Work

The Census asks respondents to nominate the mode of transport they used on Census day to get to work. This section explores Census data related to journeys to work and relates to the 2016 Census. It will first look at journeys to work *to* Wonthaggi.

Figure 12 shows the mode share split for journeys to work *to* Wonthaggi. Approximately 93% of those travelling to Wonthaggi for work do so by car (5% of which as a passenger).

Over 9 in 10 work trips to Wonthaggi are by car. About 88% of workers live in Bass Coast Shire, and 46% live in Wonthaggi itself.

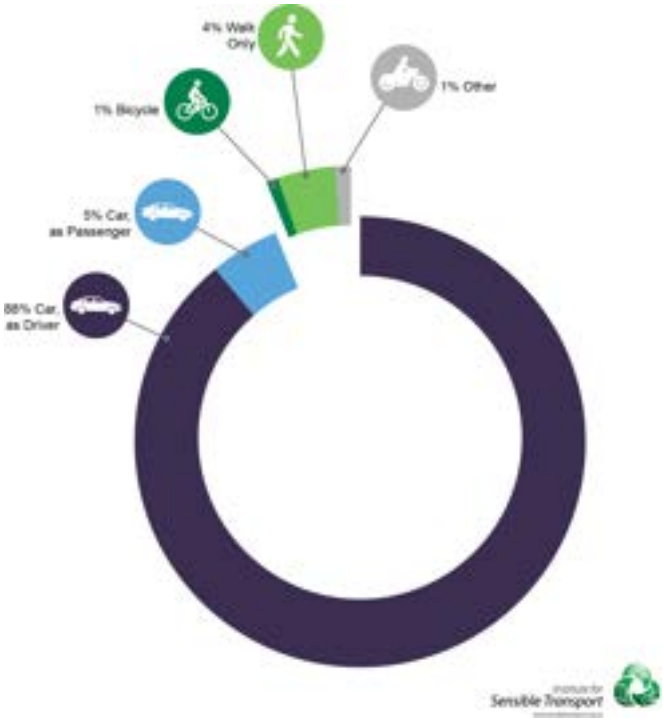


Figure 12 Mode Share - Journey to Work to Wonthaggi
Source: ABS

NB: Public transport was only 0.4% and this is why it is not represented in the graph.

Figure 13 provides a snapshot of key demographic and transport data for Wonthaggi.

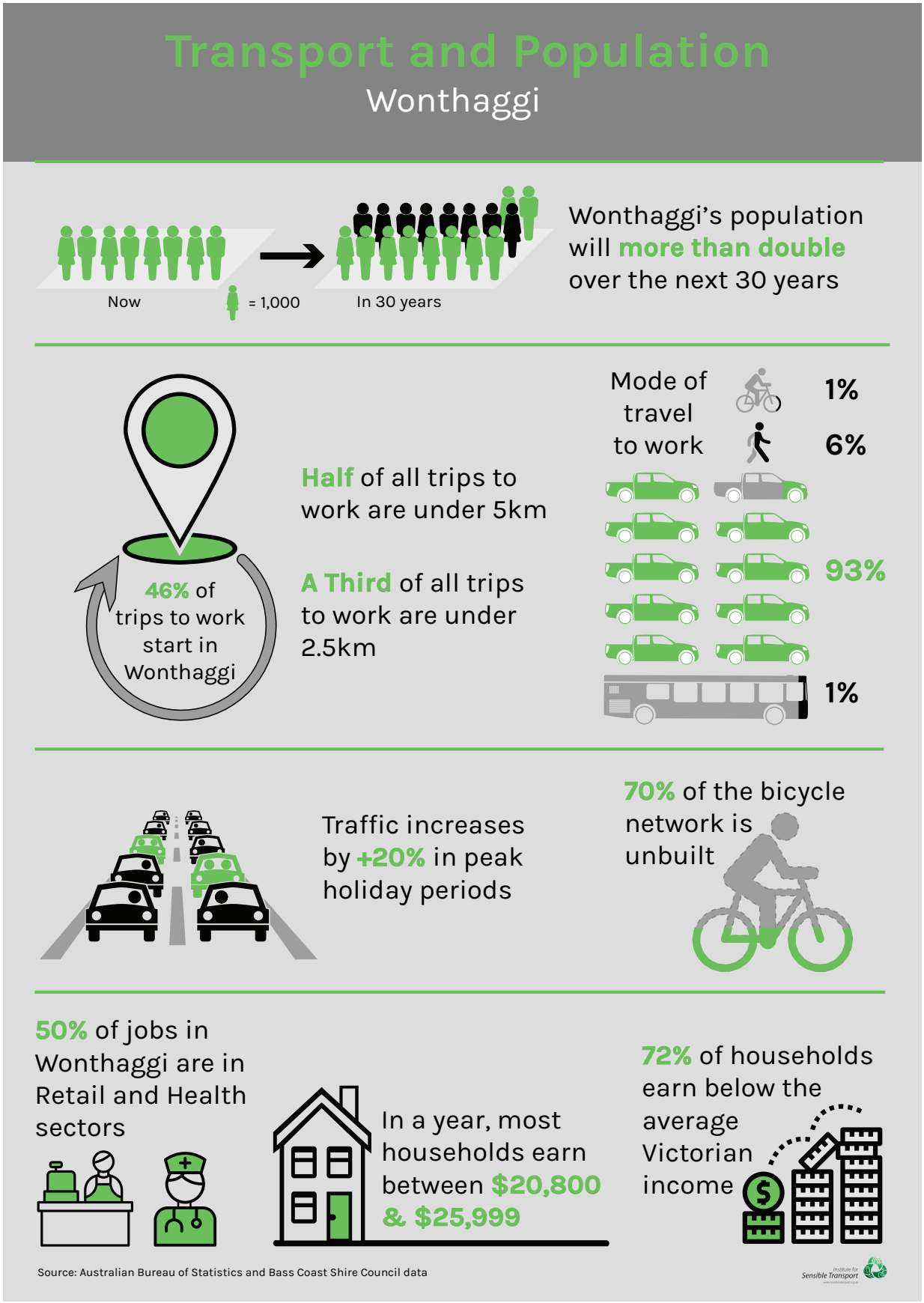


Figure 13 Wonthaggi - Demographic and transport summary

Figure 14 shows where people live who work in Wonthaggi. It shows that almost all workers live within the Bass Coast (88%) and almost half (46%) of all Wonthaggi workers live within the township itself.

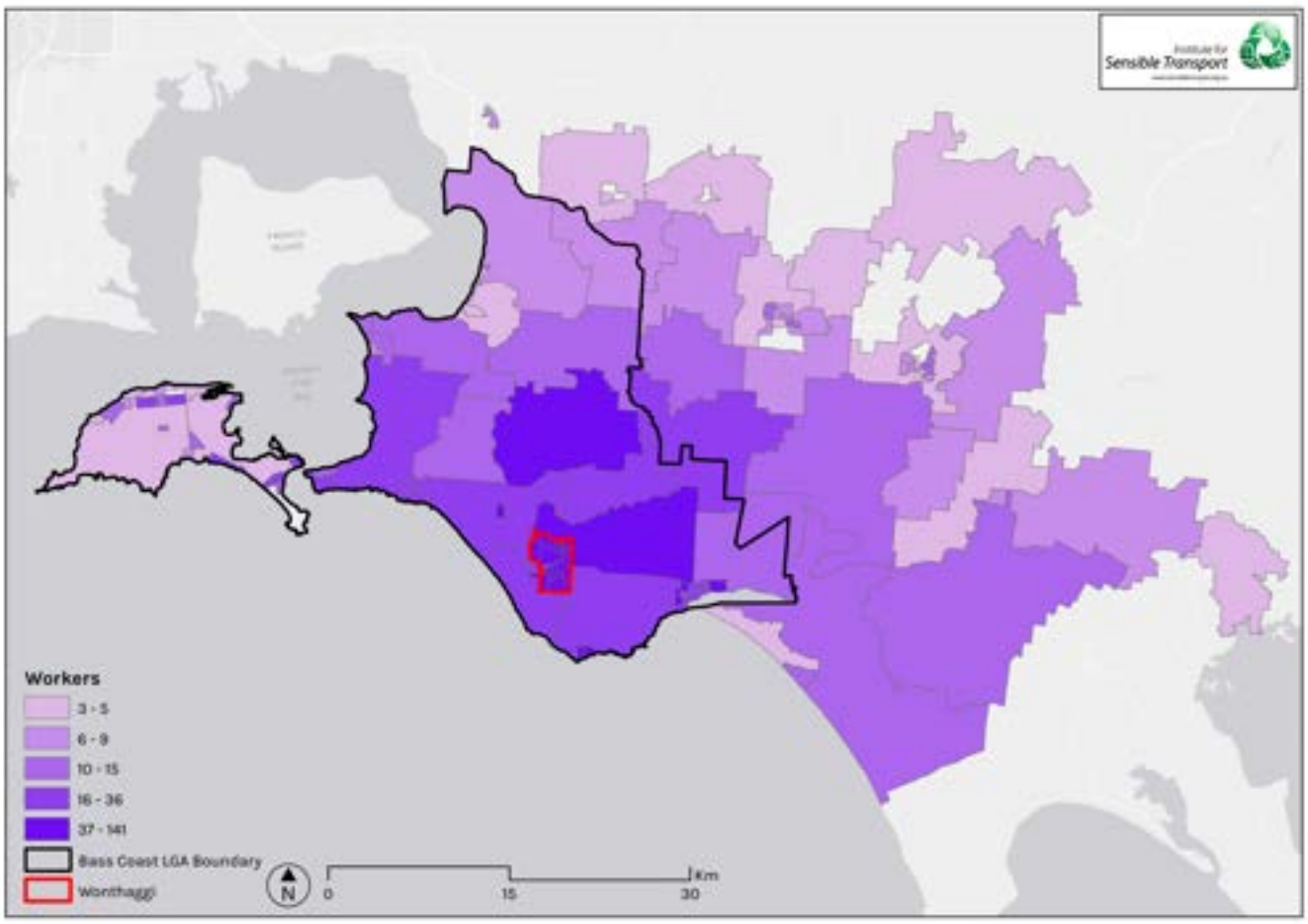


Figure 14 Where people live who work in Wonthaggi
Source: ABS

While 46% of jobs in Wonthaggi are filled by people living in town, they make up about 70% of the working residents of Wonthaggi. This highlights the strong connection of the local population with local jobs. It also highlights the potential for providing realistic alternatives to car use, given the dominance of short car trips.

Figure 15 shows a dot density map of journeys to work within Wonthaggi (outlined in red). Approximately half of all trips to work in Wonthaggi are shown. It shows a very large number of people live *and* work within the red boundary of Wonthaggi. The dot colours show that almost all of those commuters drive to work, with some limited walking and bike riding evident.

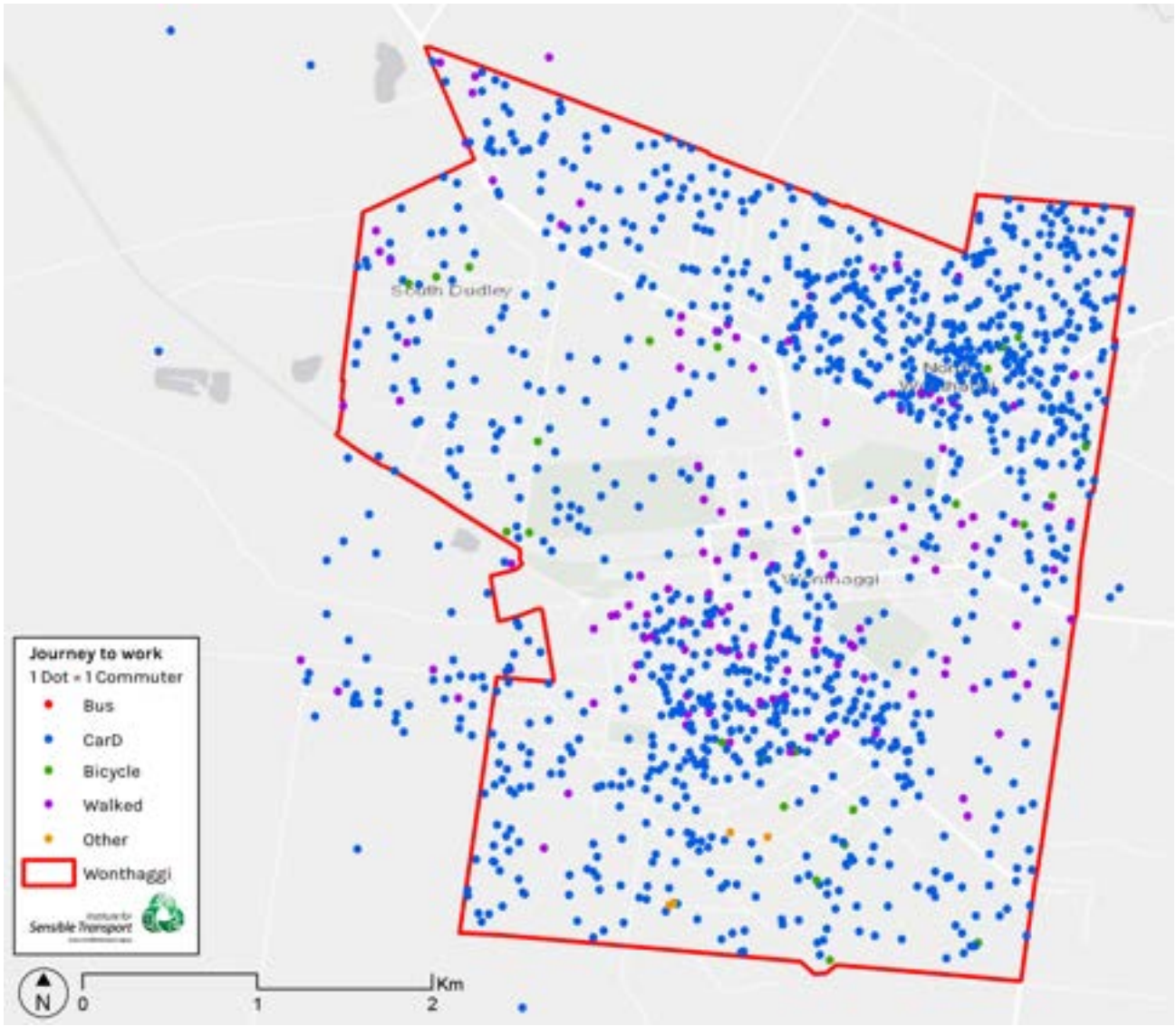


Figure 15 Journey to work to Wonthaggi
Source: ABS

4.2 Distance to work

The close proximity of workers shown in Figure 15 is also evident when analysing distance travelled to work in Wonthaggi. Figure 16 shows that one-third of all workers in Wonthaggi live within 2.5 km of work and almost half live within 5 km. Approximately 10-15% live within 1.5km or a 20-minute walk.

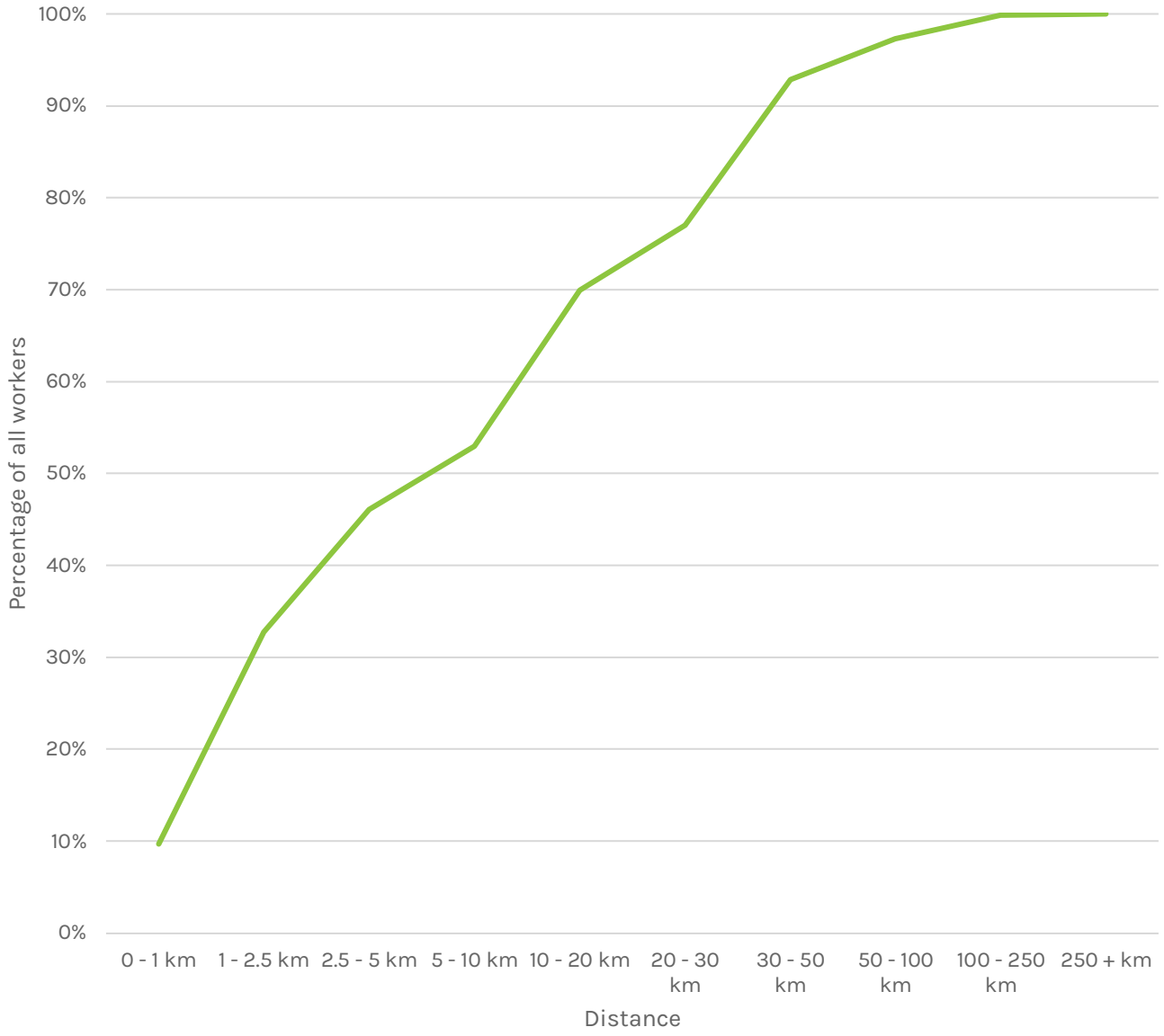


Figure 16 Distance Wonthaggi works travel to work
Source: ABS

One third of all Wonthaggi workers live within 2.5km of their workplace, and almost all arrive by car.

4.3 Crashes

Within the Wonthaggi destination zone, a total of 61 crashes were reported to police between July 2013 and April 2019 (6 years, 9 months).

As shown in Figure 17, the majority of reported crashes take place at intersections. Hotspots for crashes include Bass Hwy, McKenzie St, Murray St, Graham St, and Billson St.

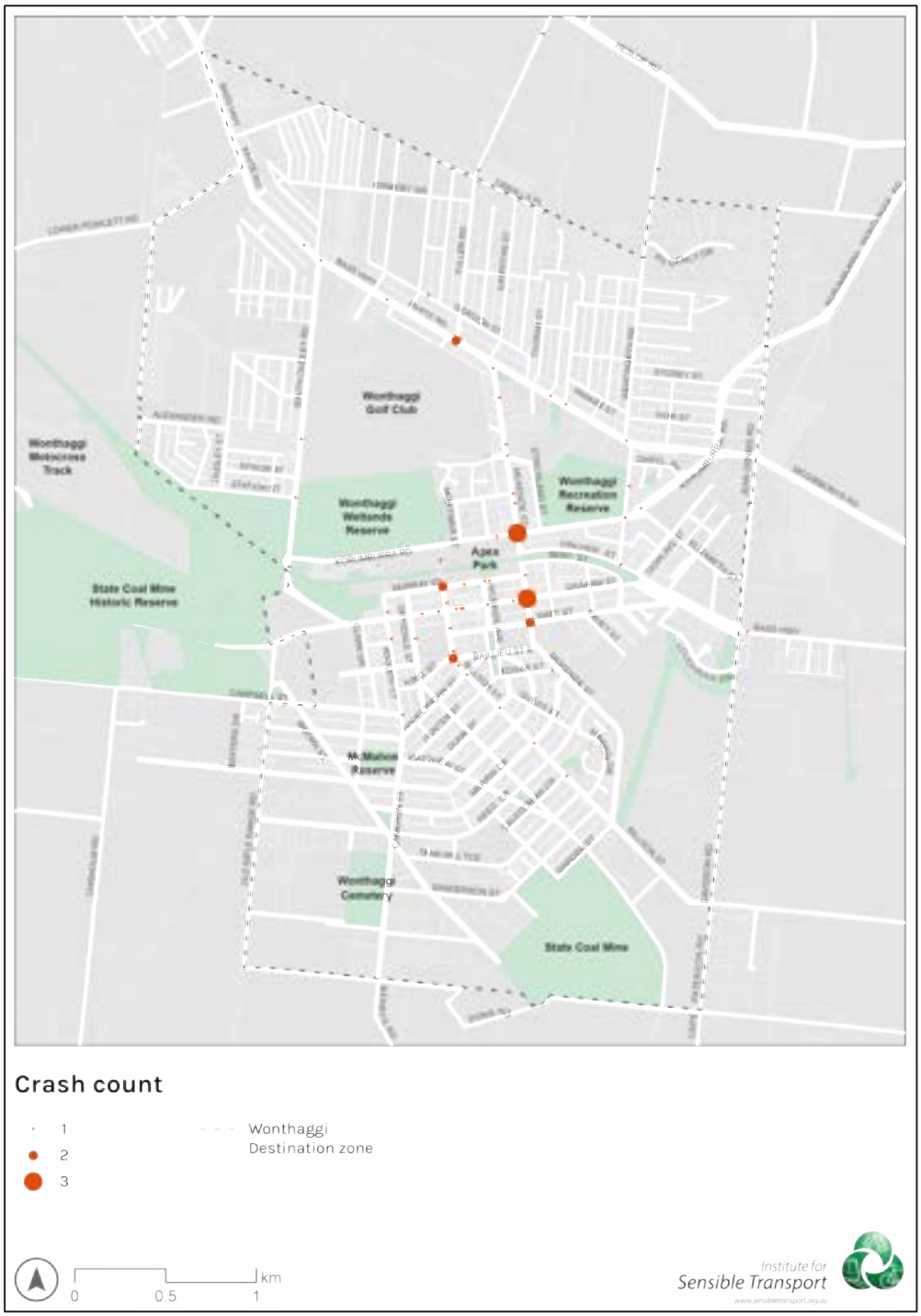


Figure 17 Wonthaggi Crash Count

Between July 2013 and April 2019, there had been 1 fatality, 12 serious injuries, and 57 with other injuries. Figure 18 shows that intersections represent the majority of serious injuries. The one recorded fatality took place at Billson and Baillieu Streets.

Figure 18 Crash Severity

When analysing crashes by *mode* of transport within this period and destination zone, every recorded crash involved a passenger car. A majority of pedestrian crashes have occurred in the town centre. Approximately a quarter of crashes involving pedestrians took place along Graham St. A total of three bike crashes occurred on Billson St, with one on McKenzie St.

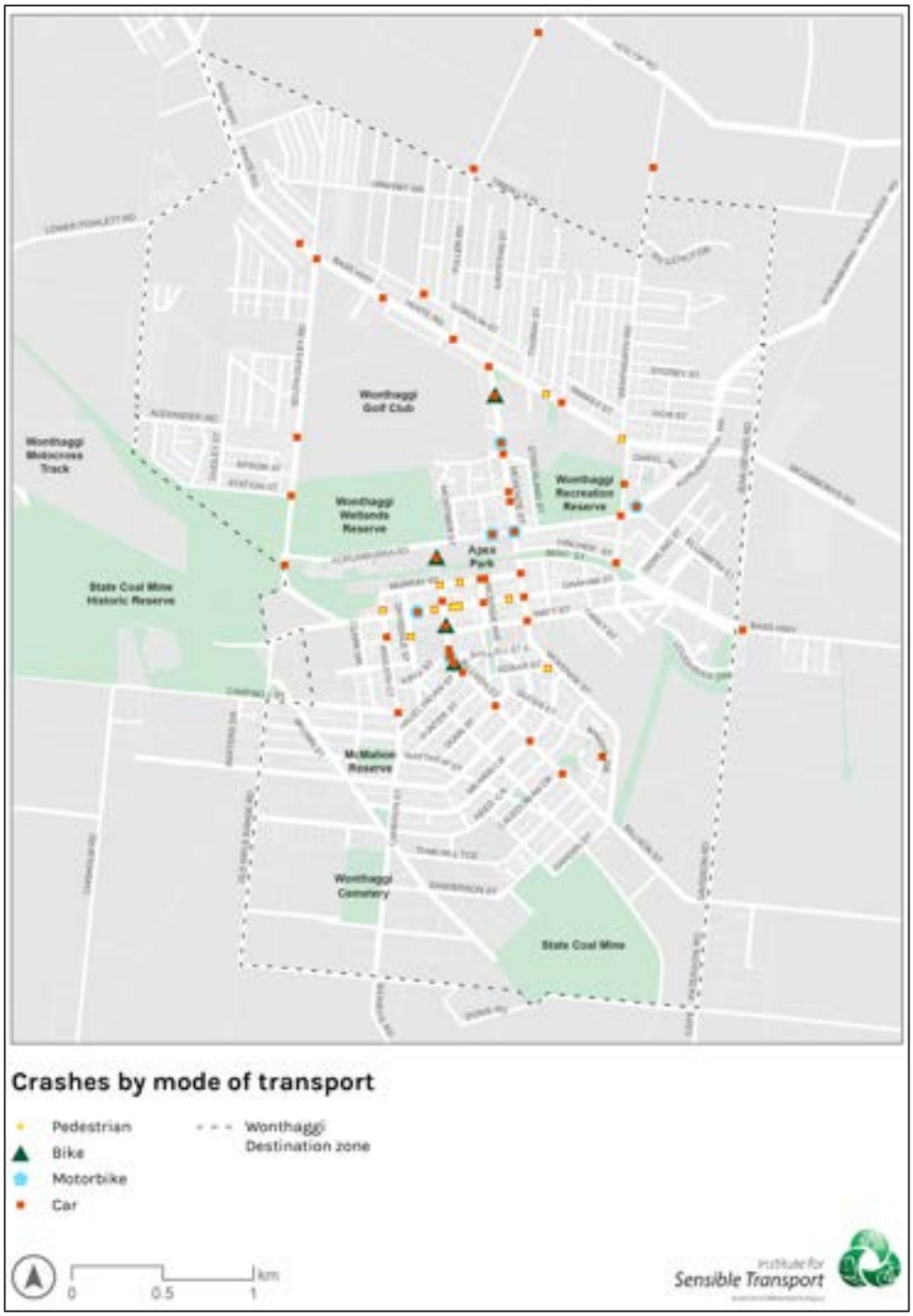


Figure 19 Crash Mode

A detailed set of options to reduce traffic injury likelihood and severity is included in Section 8.

4.4 Population growth

The population is projected to increase substantially in future years, with a Precinct Structure Plan (PSP) currently under development in the north-east of the town. Figure 20 shows the current population distribution (black dots) and the projected growth through new housing (purple dots). With an estimated 4,500 dwellings to be constructed and based on current people per dwellings in Wonthaggi (two people per dwelling), there are an estimated 9,000 additional people projected to live in Wonthaggi in the next 30 years.

This is on top of the just under 2,000 additional dwellings likely to be constructed within the township, through vacant lots and residential-zoned broadacre.

Without significant improvements to bolstering space and environmentally efficient transport options such as walking and bike riding infrastructure, Wonthaggi will likely experience increased traffic and parking congestion.

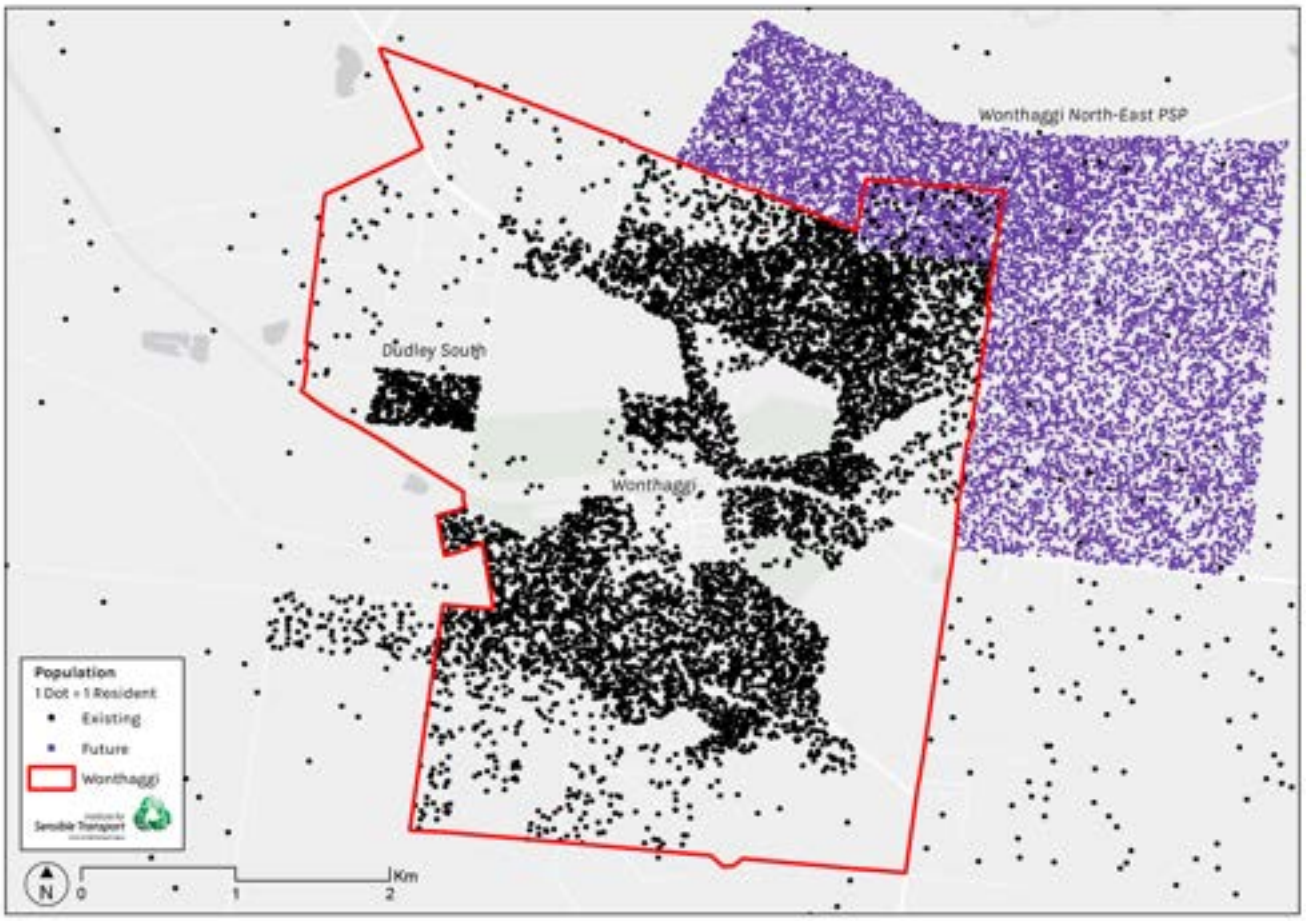


Figure 20 Population – Wonthaggi now and in 30 years

5. Site Surveys – brief summary

A site survey was conducted to gain a better understanding of the issues and opportunities for enhancing transport choices, the street environment, safety and sustainability. A more detailed description of the site survey can be found in Appendix 1.

5.1 Key insights

The overall finding to emerge from the site assessment was that the street environment in Wonthaggi has not adapted to the changing societal needs and preferences of the contemporary community. The alignment between the policy direction captured in the policy review in Appendix 1 and Wonthaggi's street design is yet to occur. The following provides a snapshot of the key, overarching insights gained from the site assessment.

5.1.1 No circulation plan

There does not appear to be any functional traffic management/circulation plan to direct traffic to certain streets and away from others. The SmartRoads street categories prepared by VicRoads, and described in Section 3.11 of Appendix 1 show little sign of implementation. For instance, the pedestrian priority areas indicated in SmartRoads have no treatments or signage to suggest pedestrian priority.

The lack of circulation plan can be seen in many streets that make up the CBD. For instance, McBride Avenue, which does not have a large role to play from a motor vehicle traffic throughput perspective, has every possibility offered in terms of direction of flow and turning movements for motor vehicles. This comes at the detriment of pedestrian safety and street vibrancy. See Section 8 for recommendations on reducing the negative impact motor vehicles have on the quality of Wonthaggi's public realm.

As previously identified, the declared road network does not reflect the use of Wonthaggi streets, particularly regarding heavy vehicles. There is a strong case for undeclaring Graham street and changing its structure to better reflect its position as the key shopping street within Wonthaggi's centre (as discussed in Section 9.2.3.2).

5.1.2 Dominance of car parking

Wonthaggi is both blessed and cursed with plentiful parking. While there is a common perception in most towns that there is *'not enough parking'*, when looked at from a parking spaces per job, or parking spaces per unit of area, Wonthaggi has a generous supply of parking. This makes accessing the central Wonthaggi area relatively easy by car and helps to explain why more than 9 in 10 trips are by car. The ease with which one can usually access a car park may also result in intra-Wonthaggi car trips being made, as people move shop-to-shop. Finally, the level of on-street car parking provision prevents this space being used for other purposes, such as kerb outstands, street greening, al fresco dining, street trading, or public gathering places.

5.1.2.1 On street

The street and built form environment of central Wonthaggi is dominated by car parking. Key streets (i.e. McBride and Graham) have 45-degree angle parking on both sides of the street, which reduces the width for other potential uses and severs the connection between both sides of the street. Currently, there are no mid-block crossings and while crossing the street mid-block does happen, informally, this activity is being suppressed by the current street layout and is made to be a higher risk activity than necessary. As highlighted earlier, some 25% of crashes involving pedestrians take place on Graham Street.

Overall, there are approximately 1,031 on street parking bays in the Wonthaggi Activity Centre area.

5.1.2.2 Off street

There are several large off-street parking facilities in central Wonthaggi. Overall, there are approx. 1,621 off street car parking bays in Wonthaggi (not including small private parking with restricted access, such as employee parking). No real time information displays were identified during the site assessment, and such technology is recommended in Section 9.7. This technology is likely to assist motorists find a car park, reduce circulation, and mitigate the frustration that can be experienced when looking for car parking. Finally, better utilisation of off-street parking may reduce the need for on-street parking on selected streets, where a higher value use has been recognised.

5.1.3 Vehicle speed

There is a disconnect between the role of the street and the speed limit. An example can be seen in Graham Street, which is the principal shopping street in the historic centre of Wonthaggi. The street has high numbers of pedestrians, reversing cars from 45-degree angle parking, and yet, has a posted speed limit of 50km/h. Conversely, Watt Street has few pedestrians and reversing cars, and has a posted speed limit of 40km/h (due to the former school site). Additionally, on initial observation, few cars on Graham Street move at 50km/h, as it does not feel safe, and many of these cars are either looking for a car park, or have just left one.

In Table 1, recommendations are made to speed limits in order to align posted speeds with the *Safe Systems* (Vision Zero) approach and the wider policies adopted by Bass Shire Coast Council.

5.1.4 Lack of street greenery

The natural environment of South Gippsland is one of the key features enjoyed by local residents and visitors. The site assessment found that more could be done to introduce street trees and other elements into key streets in Wonthaggi. Graham Street for instance has no street trees or other green features (see Figure 21), and yet would benefit from them, in terms of making the street more pleasant, offering shade/shelter and acting to slow motor vehicles. Section 8 includes recommendations to enhance the amenity of Graham Street.

Figure 21 A lack of greenery on Graham Street

5.1.5 Pedestrians at intersections

To walk in central Wonthaggi can have the effect of feeling like a second-class citizen. While the footpaths on streets like McBride and Graham are generous in width and often shaded, the crossing points in almost all situations prioritise vehicular traffic over pedestrians. Even when crossing streets with a very minor traffic function, the pedestrian is made to give way to vehicles. On other streets, the lack of pedestrian priority is exacerbated by relatively high vehicle speeds. This is partly caused by very wide streets and intersection radii[2] that facilitates vehicles to navigate intersections at higher speeds than is warranted.

Figure 22 Pedestrians required to give way to cars within town centre

Figure 22 shows signage at the southern crossing leg of Graham and McBride Streets, directing pedestrians to give way to cars. To provide a more vibrant and safer CBD, priority needs to be provided to pedestrians, particularly along Graham Street and McBride Avenue.

Figure 23 shows the wide street crossings and complex vehicle movements pedestrians are required to navigate. Where two lanes intersect with a key footpath crossing, it can create unsafe conditions where one car may stop while a car in the far lane has their vision obscured and does not seeing the crossing pedestrian.

Figure 23 A pedestrian navigating the intersection of Murray Street and Briggs Drive

[2] See https://nacto.org/publication/urban-street-design-guide/intersection-design-elements/corner-radii/

Figure 24 offers a typical intersection design, with radii that facilitate the vehicle turning movement speeds inconsistent with pedestrian amenity and safety that should be the priority within central Wonthaggi. While long freight vehicles do require wider turning angles, there is a need to restrict the pathways these long vehicles take within Wonthaggi's CBD. Minimising the impact large freight vehicles have on the Wonthaggi CBD will be a focus of the Access and Movement Strategy.

Figure 24 Crn Watt St and McBride Ave

Figure 25 provides a typical example of many of the streets in Wonthaggi, characterised by wide intersection mouths, promoting higher than safe speeds. This intersection, which appears to have newly constructed kerbs and surface does not offer a crossing point (pram ramp) or island for pedestrians. This intersection was the site of a fatality in the recent past.

Figure 25 Wide intersection radii and no pram ramp, Crn Billson St and Baillieu St E

5.1.6 Few bike lanes

While there are some good, recent developments in terms of shared paths (e.g. see Figure 26), on the whole, Wonthaggi streets offer considerable potential to grow cycling through the creation of a comprehensive network of paths and lanes.

Figure 26 Excellent example of new shared path, S Dudley Rd

Although it was common to see people riding bikes in Wonthaggi, this occurred *despite* rather than because of the bicycle infrastructure provided. There is a very limited network of shared paths, but no coherent street network of bicycle infrastructure. The only on road bike lane that was apparent during the site visit was on Bass Hwy/Graham Street and this ends abruptly at the approach to the intersection with McKenzie.

Most cyclists observed were using the footpath or rail trail shared path. There are opportunities to grow the street cycling network in and to Wonthaggi, helping to diversify the groups in the population who would be willing to cycle. The high number of short distance car trips suggests that if the conditions were made to feel safe and attractive, Wonthaggi could become a leading Victorian regional centre in the promotion of riding as part of everyday life.

Figure 27 Cycling in mixed traffic, Wonthaggi

5.1.7 Very wide streets

A large number of streets in Wonthaggi are very wide for the function they serve within the transport network. There appears to be significant scope to rationalise the street width, in order to:

a. Promote safer speeds

b. Provide more 'complete streets', in which more space is dedicated towards other modes including pedestrian and cycle usage.

c. Provide a more vibrant urban amenity, helping to make the street more attractive.

6. Movement and place

The following passage, from the *Movement and Place in Victoria* document provides a useful introduction into how to classify streets using the Victorian Department of Transport Movement and Place Framework.

''Movement and place classifications are grouped into road and street types that have similar land-use activities and share similar combinations of users.

They provide greater detail and understanding of the different movement and place roles transport links play across the network. Each type varies according to a modal hierarchy determined initially through SmartRoads classifications and provides the basis for discussions on future changes.

There are six general road and street types that define the variety of different roads and streets on our network. The road and street types for Victoria have been developed based on place and movement functions for now and how they could be into the future, ensuring more liveable, reliable, sustainable and inclusive transport outcomes.'' (p. 20).

It is useful to consider the above explanation of the framework in combination with Figure 28 below, which illustrates how the six major street types are placed on the *Movement* and *Place* matrix. The key streets that make up Wonthaggi have been rated using the Framework. These are the *ideal* ratings for the street, rather than a reflection of how the street necessarily functions today.

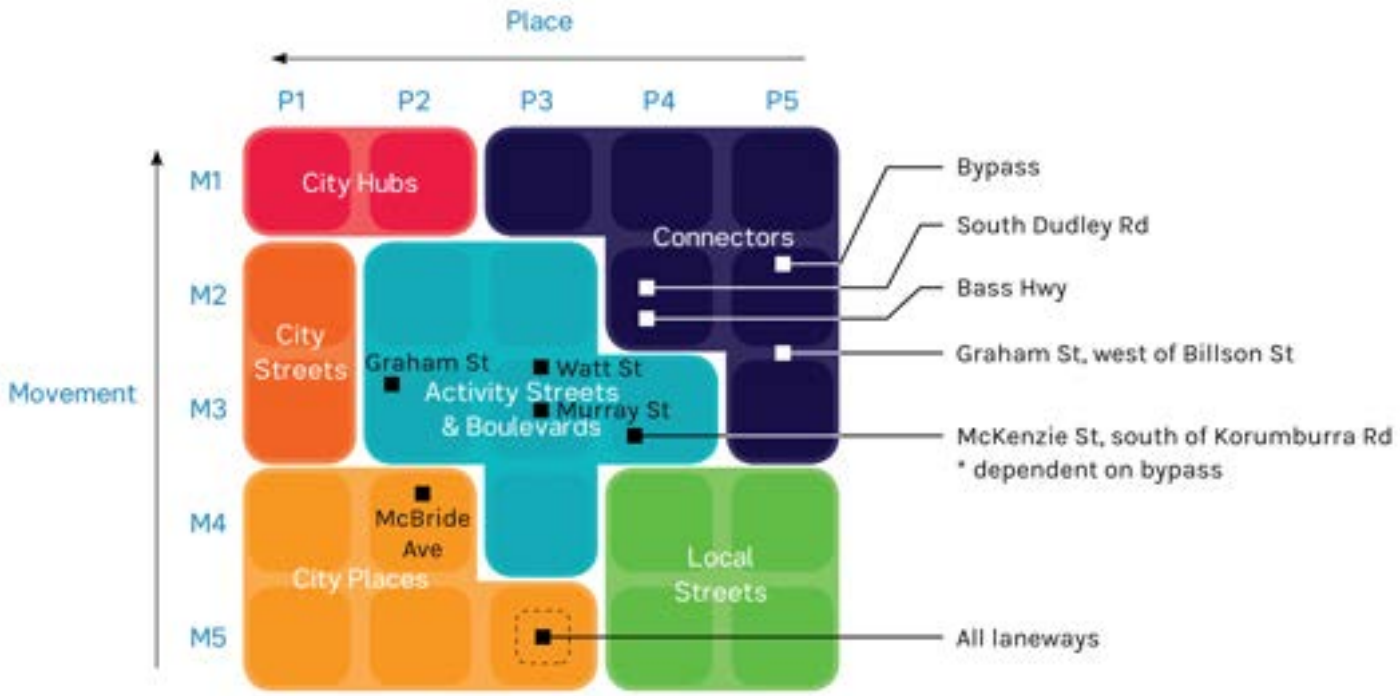


Figure 28 Movement and Place Analysis of Wonthaggi CBD Streets

The following descriptions are taken from the *Movement and Place in Victoria* document and provide an explanation of the categories identified in Figure 28.

City Hubs

Successful City Hubs are dense and vibrant places that have a high demand for movement. They are also places providing focal points for businesses and culture. City Hubs should aim to reduce the impact of high traffic volumes while accommodating high pedestrian numbers, multi-modal journeys and access to public transport and essential emergency services.

City Streets

Successful City Streets should provide a world class pedestrian friendly environment. They aim to support businesses, on-street activity and public life while ensuring excellent connections with the wider transport network.

City Places

City Places are roads and streets with high demand for pedestrian activities and lower levels of vehicle movement. City Places are places communities' value and for people and visitors to enjoy.

Activity Streets and Boulevards

Successful Activity Streets and Boulevards provide access to shops and services by all modes. There is high demand for movement as well as place with a need to balance different demands within the available road space.

Activity Streets and Boulevards aim to ensure a high-quality public realm with a strong focus on supporting businesses, traders and neighbourhood life.

Connectors

Successful Connectors should provide safe, reliable and efficient movement of people and goods between regions and strategic centres and mitigate the impact on adjacent communities.

Local Streets

Successful Local Streets should provide quiet, safe and desirable residential access for all ages and abilities that foster community spirit and local pride.

They are part of the fabric of our neighbourhoods, where we live our lives and facilitate local community access.

Further in the report, Figure 37 provides our Movement and Place assessment for central Wonthaggi streets and Figure 38 does the same for the wider Wonthaggi region. The wider Wonthaggi map identifies two proposed routes, the Wonthaggi Bypass and the East Precinct Boulevard. For the bypass in particular, Wonthaggi will only be able to maximise the benefits from this project if it reclaims the streets (e.g. Graham Street) in central Wonthaggi that current serve a freight/through traffic function. Lonsdale Street in Dandenong and Maroondah Highway in Ringwood provide good examples of where a bypass was used as the impetus for better local street outcomes in the core of Activity Centres. Appendix 2 provides case studies on these examples.

7. Vision, strategic objectives and mode share targets

This section lays out the *strategic framework* for *Smarter Choices*. Figure 29 provides an overview of the key elements, beginning with the *vision* at the centre. A set of *guiding principles* have been developed to support Bass Coast Shire Council's ambition to make Wonthaggi an even better place to live, work and visit. Creating vibrant streets and a more diversified set of transport options will be essential for both Wonthaggi's existing community as well as the many new residents that are expected over the next 30 years. Five *strategic objectives* provide more substance to guide Council's transport and land use decision making.

Sustainable mobility targets (see Section 7.4) allow Council to measure progress, helping to track improvements and adjust investment and policy decisions over time. Finally, a package of reinforcing, integrated *actions* have been developed, to provide a clear set of implementable initiatives designed to assist Bass Coast Shire Council achieve its long-term vision for Wonthaggi.

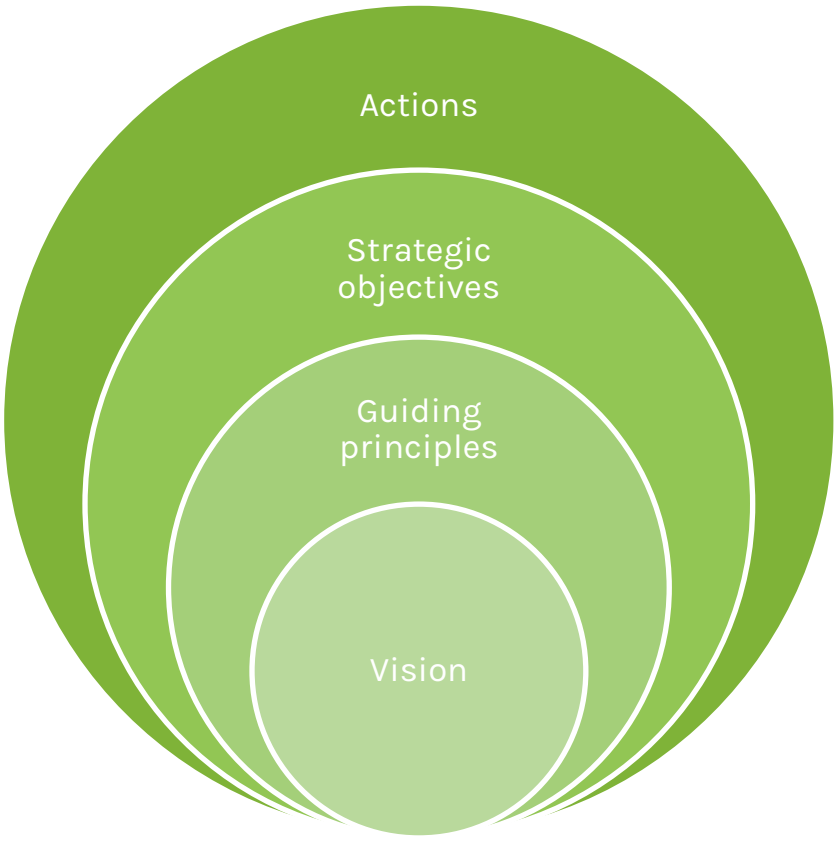


Figure 29 *Smarter Choices* Structure

7.1 Vision

Access to and within Wonthaggi is safe and sustainable, for the whole community. The transport system supports the creation of a vibrant, people focused township.

7.2 Guiding principles

1. Wonthaggi is a vibrant, people focused place to live, work and visit.
2. Transport investment decisions are guided by their ability to support Council's commitment to reducing greenhouse gas emissions and its declaration of a Climate Emergency (i.e. actions must demonstrate how they will lower transport emissions).
3. Public transport along key corridors is fast, accessible, frequent and offers seamless integration between different services and key destinations and is connected to the active transport network.
4. Walking and cycling are the first choice for trips under 2km and 5km, respectively. Streets provide safe, high quality walking and cycling opportunities.
5. *Safe Systems* (Vision Zero) underpins the design of Wonthaggi's transport network, consistent with Victorian government policy.
6. Demand for car use is reduced to support Wonthaggi's growing population and better manage congestion and parking issues.

7.3 Strategic objectives

The following set of *strategic objectives* have been developed and are based on the key themes drawn from the policy review found in Appendix 1 and are designed to provide measurable targets to track Council's progress. The five draft strategic objectives are to:

1. Lower transport emissions, to be consistent with 1.5 degrees of global temperature increase and align with Council's Climate Emergency Declaration.
2. Increase the proportion of the Wonthaggi community that reach national guidelines for physical activity, via a more supportive environment for walking and cycling.
3. Increase the proportion of the school population that arrive by foot or bicycle
4. Increase the proportion of the population that are within 400m of a high frequency public transport service.
5. Meet the sustainable mobility interim targets set by Council.

7.4 Mode share scenarios

Figure 30 shows the percentage of different transport modes used in Wonthaggi in 2016, as well as a *sustainable scenario* goal for 2046. If achieved, Wonthaggi's car use would drop from around 90% of all trips to 50% in 2046. This would position Wonthaggi as a national leader in sustainable mobility and offer a best practice example for other small regional towns.

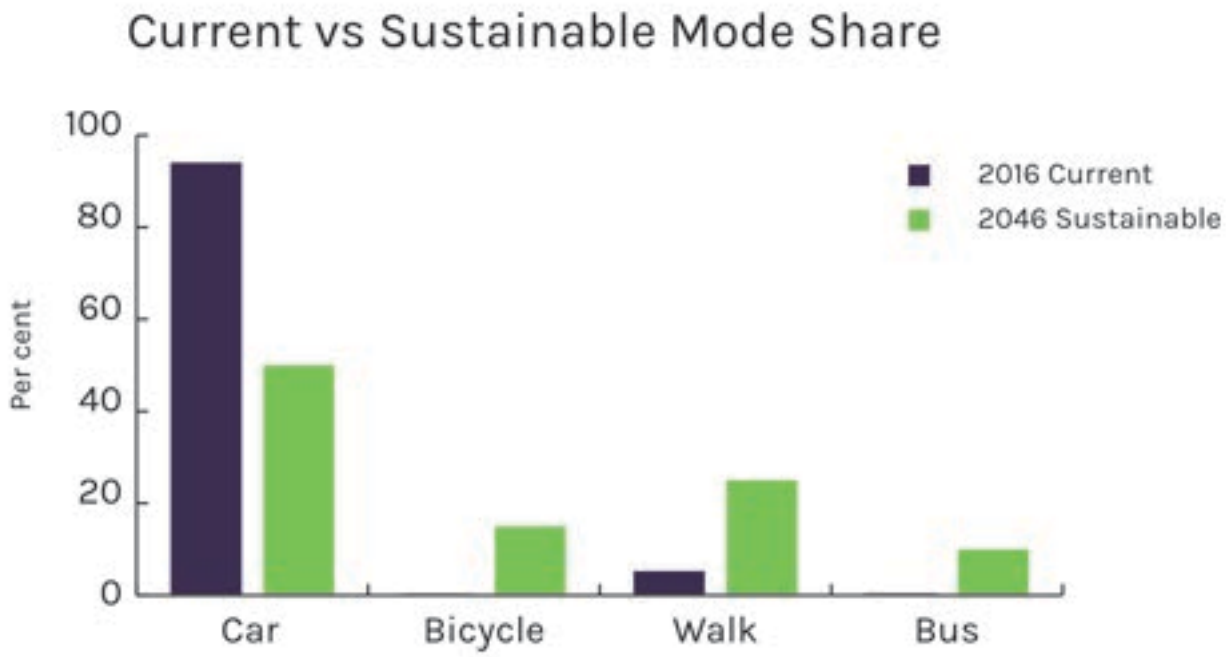


Figure 30 Mode share by percentage, 2016 and 2046 Sustainable Scenario

The population of Wonthaggi is forecast to grow by 2.5 times, from 8,000 today to 20,000 by 2046. Should current car usage remain at the same rates as it does today, this would mean a growth in the number of car trips by a factor of 2.5.

Figure 31 shows the estimated total number of trips taken for each mode for different scenarios. First, 2016 shows the estimated trips taken based on current mode share for journey to work and factoring up to all trip purposes (shopping, business, leisure, etc). The 2046 column shows the huge number of car trips estimated to occur if current travel behaviour remains the same as 2016.

Figure 31 Mode share by total trips taken

Wonthaggi does not have the road space capacity to accommodate such a large increase in car trips nor are such high levels of traffic within the township desirable. The Sustainable scenario still allows for some growth in the number of car trips until 2046, however a higher share of trips is proposed to be undertaken by foot, bike, and bus.

Even with a mode share of 50% car use in 2046, this will equate to an increase in total car trips by 33% compared to 2016, due to forecast population growth.

Figure 32 shows the proposed ten-year mode share targets that are required to maintain sustainable levels of car use within Wonthaggi. While a car mode share of 50% may seem highly ambitious, it is required to maintain a viable transport system within the Wonthaggi township.

The previous figure shows that even with a 50% car mode share in 2046, it still equates to a 33% increase in car trips due to the forecast population growth.

The ten-year mode share years are designed to coincide with Census years to easily track year-on-year and ten-year transport performance.

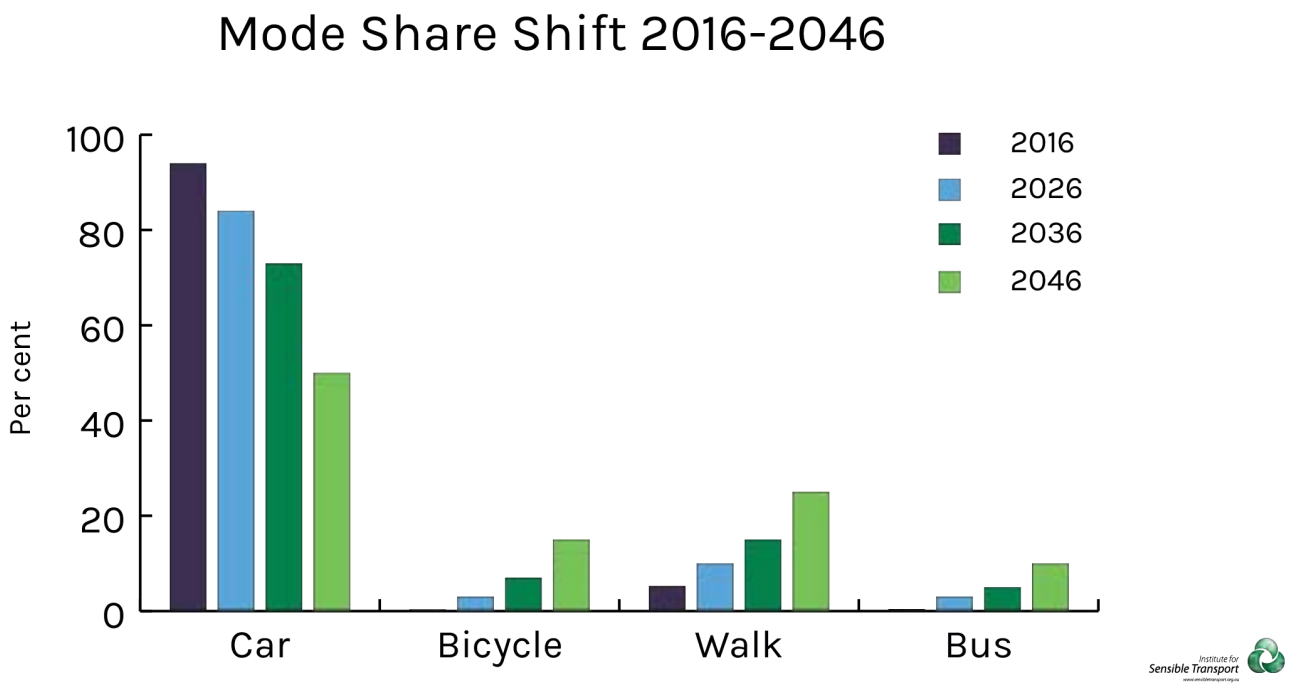


Figure 32 Ten-year mode share targets

8. Key Moves

This section highlights some of the key moves and opportunities to improve access and movement to, within, and through Wonthaggi. The next section will build on these themes and provide more specific actions that can be implemented to enhance the sustainability, vibrancy and productivity of Wonthaggi. Finally, Appendix 3 provides a consolidated table of all actions.

8.1 Changes to the declared road network

Our analysis, which is supported by previous reports by Bass Coast Shire Council, highlight the mismatch between declared roads in Wonthaggi and how they currently perform as an Activity Centre street. Graham Street has been identified as an important shopping street and *place* within Wonthaggi and no longer suited to be a declared road. Road signage, and recent intersection upgrades show Korumburra Road and Biggs Drive/Billson Street as providing an appropriate bypass for through vehicles and freight movements. In the long-term, Council should work with Regional Roads Victoria (RRV) to undeclare Graham Street. However, in the short-term Council should work with RRV to improve pedestrian safety and amenity within the town centre, including along Graham Street.

South Dudley Road has also been identified as a potential declared road. This route would principally support vehicle movements passing through towards Cape Paterson. Road signage already encourages South Dudley Road for this purpose.

In both instances, traffic volume data and existing road signage indicate the two proposed changes are already performing as arterial through roads. Declaring them would formalise this as the preferred traffic function of these roads.

8.2 Pedestrian priority

As highlighted earlier, in general, motor vehicle traffic is prioritised over pedestrians, including in key locations highlighted by the Department of Transport as warranting pedestrian priority. A set of actions are provided in Section 9.2.3.3 to enhance the pedestrian environment in Wonthaggi. This will serve to not only make walking a safer activity, but also a more convenient and attractive mode of transport, helping to provide a compelling alternative for the many short distance car trips that currently occur.

8.3 Enhanced bus access

Creating more opportunities for bus stops within central Wonthaggi is recommended. This will serve to improve access to shops and existing public amenities. Measures to enhance public transport in Wonthaggi are detailed in Section 9.4.

8.4 Leverage laneways as active travel paths

Wonthaggi has a unique network of laneways across the township. Historically, they would have provided access for a night porter, while they currently provide rear property access with some emerging front access on subdivided sites. There is an opportunity to use these laneways to encourage greater uptake in walking and bike riding for local trips. These laneways offer a low-traffic alternative to using the roads. A consistent urban design framework for upgrading laneways to attractive pedestrian and bike riding paths should be considered, including plants, property interfaces, and lighting.

8.5 Building a bike network

Wonthaggi has a contained urban footprint. Most trips that start and finish within the township are less than 3km. This distance makes bike riding a suitable alternative to car trips within town. There are some existing shared paths and a rail trail that provide an excellent starting point for building out a connected network within the town. Some streets, such as Dickson Street offer low-traffic bike boulevard opportunities for bike riding to be encouraged, connecting employment areas with other key destinations.

The planned north-east development of Wonthaggi also provides opportunities to embed best-practice bike infrastructure from the start. With the population of Wonthaggi set to more than double over the next 30 years, providing a more diverse mix of transport options will ensure existing traffic and parking concerns are not exacerbated.

Finally, Wonthaggi is situated within a short distance of several other townships and tourist destinations. Providing high-quality off-road bike trails between these townships, particularly Cape Paterson and Inverloch, will strengthen the tourism sector and local economy and enable families to ride safety.

8.6 Better manage existing car parking assets

There is a substantial amount of on and off-street car parking throughout the centre of Wonthaggi. There are over 1,300 off-street and a similar number of on-street parking bays in Wonthaggi.

Constructing additional parking bays, including through multi-decking, may result in large parking structures remaining under-utilised for almost the entire year. Instead, selected open space sites could be utilised to provide overflow parking during busy periods of the year. This could be managed by community groups through charging a gold-coin donation to access all day parking.

9. Smarter Choices – Recommendations

9.1 Introduction

The recommendations broadly fall into the five areas identified in Figure 33. As a *township-based* transport strategy, the vibrancy and amenity of Wonthaggi's public spaces is considered paramount. In practice, this means ensuring public realm enhancements are prioritised, rather than being subservient to the movement of motor vehicles. While there are certainly streets within Wonthaggi that play an important motorised transport role, including for freight, there are a number of key streets that have the potential to function as a *place* in their own right, rather than a uni-dimensional traffic throughput (movement) function.

Figure 33 Smarter Choices - Key Areas

The recommendations contained in this section have been designed to support Council's *vision, guiding principles and strategic objectives* described in Section 7.

A condensed list of actions is provided in Appendix 3.

9.2 Road User Hierarchy and Motor vehicle circulation plan

9.2.1 Introduction

The space Wonthaggi's road network is limited and there is strong competition for scarce space. To assist Council in making consistent, transparent decisions that work to support our vision and principles, two transport mode hierarchies have been developed; one for *town centres* and another for *regional roads*. The *Town Centre* mode hierarchy, which will be used to allocate space in the heart of Wonthaggi is shown in Figure 34.

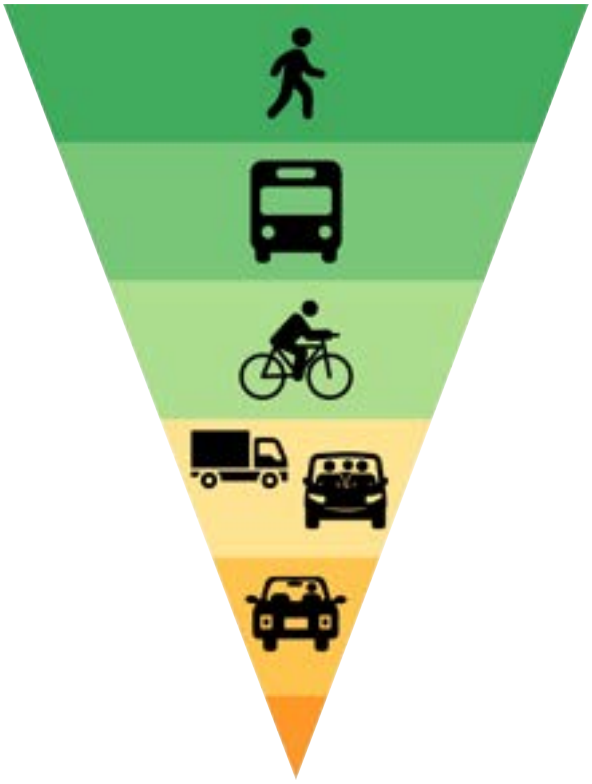


Figure 34 Mode Hierarchy – Wonthaggi Town Centre
NB: The pedestrian symbol includes those using walking aides and other similar mobility devices.

While the mode hierarchy within the central core of Wonthaggi will prioritise sustainable mobility and full accessibility for all ages and abilities, key freight routes will serve a different role. On these key declared routes, motorised transport will continue to be the priority in road space allocation decisions. The mode hierarchy of these roads is shown in Figure 35.

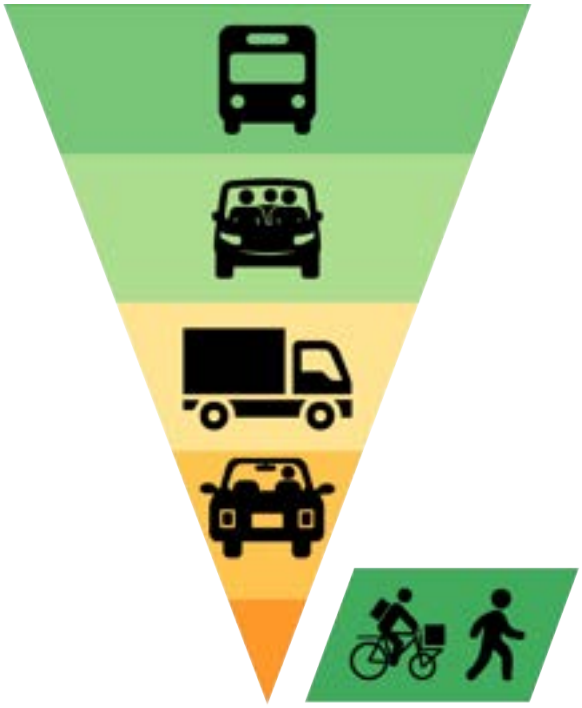


Figure 35 Mode Hierarchy - Regional Roads

In practical terms, these road hierarchies will assist Council in determining how space is allocated between modes in situations in which there is insufficient space to cater to very mode of transport. While motor vehicles may have priority on the main carriageway on these regional roads, providing a safe, separated pathway for active modes will be a priority of *Smart Choices*. The Movement and Place findings described in Section 6 provide the guiding framework for street design and mode priority.

9.2.2 Analysis

The numbers indicate that the majority of truck movements through Wonthaggi follow the Bass Highway and McKenzie Street with 300-400 daily trucks. The data also indicates that a significant proportion of trucks use the informal Briggs/Korumburra town bypass. Unfortunately, the VicRoads traffic counts do not appear to provide figures specific to Graham Street.

9.2.3 Recommendations

There is considerable potential to enhance the *quality of place* within Wonthaggi's core, through a variety of incremental measures designed to reclaim space formally dedicated to motor vehicles, and to traffic calm areas that are currently impacted negatively by through vehicle movements.

There is currently a paucity of data in which to make evidence-based decisions regarding truck volumes.

9.2.3.1 Implementing *Movement and Place* street ratings into street design.

Using the Movement and Place findings described in Section 6. The results of this analysis will help align street design with the aspirations Council has for central Wonthaggi. See Figure 36 for the recommended ratings for each of the key streets.

Figure 37 provides our recommendations for central Wonthaggi streets regarding their Movement and Place rating. The four categories used; *local street, activity street, city places and connector*, are all described, based on the Victorian government's framework in Section 6.

Figure 38 uses the same process to identify streets in the wider Wonthaggi, in terms of their Movement and Place rating. Importantly, this includes the proposed Wonthaggi Bypass. As highlighted earlier, central to the success of the Wonthaggi Bypass is the upgrade of streets in central Wonthaggi that are currently negatively impacted by high levels of through vehicle traffic. Without upgrading the level of support these streets provide for sustainable mobility and amenity, the effectiveness of the Bypass will be limited.

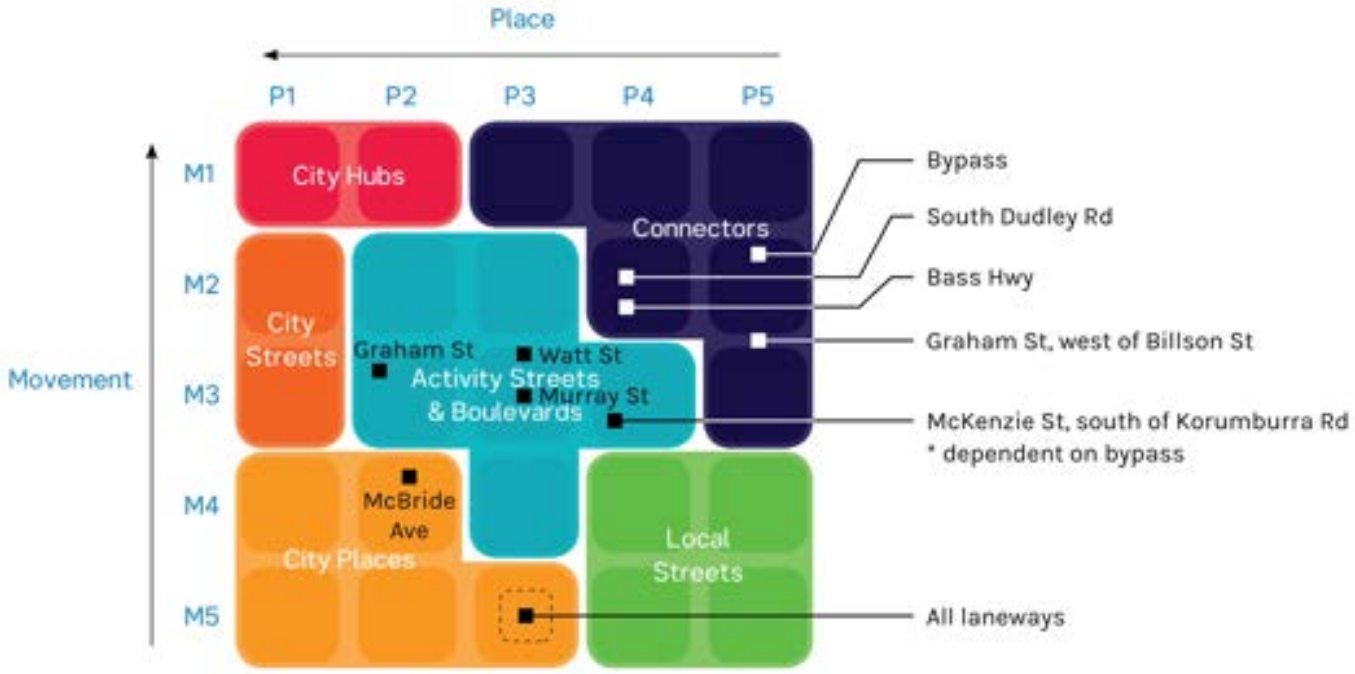


Figure 36 Proposed street Movement and Place rating

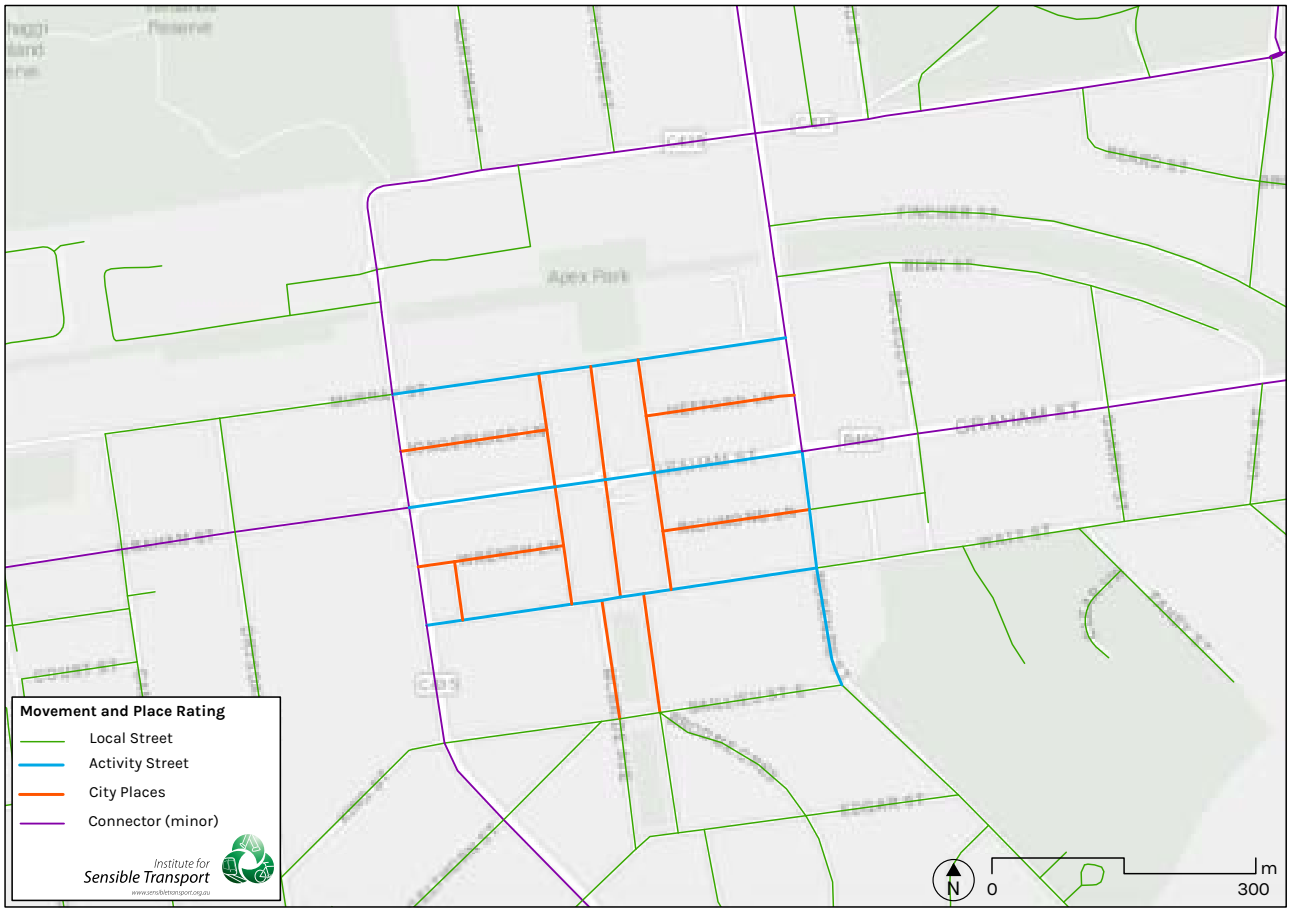


Figure 37 Movement and Place Rating, Central Wonthaggi

Figure 38 Movement and Place Rating, Wonthaggi region

9.2.3.2 Changes to key streets

Table 1 shows the proposed changes to each key street within the Wonthaggi CBD. These changes outline the future function of that street and the short, medium, and long-term actions required to reach it.

Short, medium and long-term time frames are suggested as 0-5 years, 5 – 15 years and 15 – 30 years respectively.

Table 1 Changes to key streets

Street	Existing challenges	Vision/potential	Short term actions	Medium-term actions	Long-term actions
Graham Street	Excessive through traffic, poor crossing opportunities, lack of street amenity and greenery, no bike facilities	A vibrant street that is the commercial and social heart of Wonthaggi. A beautiful street that encourages people to linger and attracts local and visitors.	Raised zebra crossings at intersections Trees and extra seating in free space Reduce to 30km/h Undeclare from arterial road network Replace 1 in 20 car parks with large street trees Protected bike lanes between parked cars and footpaths	Replace more parking with civic space and trees	Pedestrian Mall
Murray Street	Excessive through traffic, poor pedestrian amenity, especially at intersections.	A place in its own right, with people-focused street design that encourages interaction, via lower traffic volumes, lower speeds and greater pedestrian priority	Raised zebra crossings at intersections Left-in/left-out at each end of the street Trees and extra seating in free space Reduce to 30km/h	Replace some parking for civic space and trees Resurface the intersection of Murray and McBride to give texture and vibrancy	
McBride Avenue	Excessively wide street that acts as a barrier between both sides of the street and higher levels of vehicle traffic than necessary	A pedestrian orientated, people focused 'outdoor mall' with an emphasis on quality retail and hospitality and unique experiences that draws strong visitation from	Raised zebra crossings at intersections Trees and extra seating in free space Reduce to 30km/h	Replace some parking for civic space	Pedestrian Mall

		locals and further afield.		
Watt Street	Excessively wide street with generous intersection radii that promotes unsafe speeds.	Street design that supports the civic services and helps to invigorate this key street on the CBD's southern border.	Raised zebra crossings at intersections Trees and extra seating in free space Reduce to 30km/h	Replace some parking for civic space
Biggs/Bilson	Vehicle volumes and pedestrian unfriendly intersections	Provides enhanced crossing points for pedestrians to safely navigate between the core of Wonthaggi and areas to its west, while continuing to support its through traffic function.	Turn restrictions at Murray Street Right-turn lane into Woolies car park Modify the roundabout between Korumburra Road and the rail trail	Upgrade intersection with Coles and BigW

9.2.3.3 Prioritise pedestrians at intersections within Wonthaggi CBD

Pedestrian safety and amenity within Wonthaggi CBD are limited by the lack of safe crossing infrastructure. While the CBD is focused on economic activity and places where community can meet and exchange, the street network remains designed to prioritise vehicle movements.

Figure 39 shows the proposed pedestrian crossing upgrades, with the crossing number referenced in Table 2 providing the detailed upgrade type.

Figure 39 Proposed Crossing Upgrades

Pedestrian Refuge

A pedestrian refuge is an island barrier in the middle of a carriageway, designed to allow pedestrians to wait for only one direction of traffic to clear before walking to the refuge and then doing the same for the other direction of traffic.

Figure 40 A pedestrian refuge island in NSW

They are especially useful for pedestrian crossings at major arterial roads, where implementing zebra crossings may not be desirable.

Raised threshold crossing

Raised threshold crossings provide pedestrian priority while maintaining the function of the intersection or roundabout. Figure 41 provides an example of a roundabout in South Melbourne where raised threshold crossings are provided.

Figure 41 Raised zebra crossings at a roundabout

Raised threshold crossings should generally be in-line with pedestrian desire lines and they should typically provide space for one car to halt between the turn-off and the zebra crossing.

See Department of Transport practice note regarding design specifications for raised table intersections.

Raised zebra crossing

Raised zebra crossings can be applied at mid-block locations as well as intersections. See Figure 42 for an example.

Figure 42 Raised threshold treatment

Raised zebra crossings also improve accessibility for residents and visitors who may not be fully-abled. Providing priority at crossing points, raising the visibility of the person crossing, and a level pedestrian environment, reduces barriers for people with a disability to access shops and services within Wonthaggi.

Table 2 Proposed crossing upgrade actions

Crossing Number	Type	Priority	Location	Description
1	Raised Zebra	Short	West Graham St / Bass Hwy	Provides ped priority and gateway to the CBD
2	Raised Zebra	Short	Mid-block west Graham St	Provides mid-block crossing for pedestrians
3	Raised Zebra	Short	Mid-block east Graham St	Provides mid-block crossing for pedestrians
4	Raised Zebra	Medium	East Billson St & Watt St	Ped priority north-south across Watt St
5	Raised Zebra	Medium	West McKenzie St & Watt St	Ped priority north-south across Watt St
6	Signalised crossing	Medium	West Murray St & Bass Hwy	Too many lanes and vehicles turning for zebra
7	Raised Zebra	Short	Mid-block west Murray St	Upgrade existing zebra crossing to raised one
8	Raised Zebra	Short	Mid-block north McBride Ave	Provides mid-block crossing for pedestrians
9	Raised Zebra	Short	Mid-block south McBride Ave	Provides mid-block crossing for pedestrians
10	Raised Zebra	Medium	South McKenzie St & Bass Hwy	Provides ped priority and gateway to the CBD
11	Pedestrian Refuge	Medium	North McKenzie St & Bass Hwy	Provides crossing refuge on movement corridor
12	Pedestrian Refuge	Medium	East McKenzie St & Bass Hwy	Provides crossing refuge on movement corridor
13	Raised Zebra	Medium	Mid-block east Watt St	Provides mid-block crossing for pedestrians
14	Raised Zebra	Medium	Mid-block west Watt St	Provides mid-block crossing for pedestrians
15	Raised Zebra	Medium	Mid-block east Murray St	Provides mid-block crossing for pedestrians
16	Raised zebra	Short	East Murray St & Biggs Dr	safer ped xing
17	Raised Zebra	Medium	Rail Trail / Biggs Dr	Safe crossing for rail trail users
18	Signalised intersection	Medium	Biggs Dr and Shopping Centres	Safe crossing and traffic management
19	Raised Zebra	Short	Graham St & Biggs Dr	Slows vehicles while providing safer xing
20	Raised Zebra	Short	East Murray & McBride Ave	Ped priority
21	Raised Zebra	Short	West Murray & McBride Ave	Ped priority
22	Raised Zebra	Short	South Murray & McBride Ave	Ped priority
23	Raised Zebra	Short	North McBride & Watt St	Ped priority

24	Raised Zebra	Short	West McBride & Watt St	Ped priority
25	Raised Zebra	Short	East McBride & Watt St	Ped priority
26	Raised Zebra	Medium	South West McBride & Watt St	Ped priority
27	Raised Zebra	Medium	South East McBride & Watt St	Ped priority
28	Raised Zebra	Short	North Graham & McBride	Ped priority
29	Raised Zebra	Short	West Graham & McBride	Ped priority
30	Raised Zebra	Short	South Graham & McBride	Ped priority
31	Raised Zebra	Short	East Graham & McBride	Ped priority
32	Pedestrian Refuge	Medium	Murray Street & Bass Highway	Left-in/left-out Murray with ped refuge on Bass
33	Raised Zebra	Medium	West Murray & Biggs	Safe crossing to Med Clinic

9.2.3.4 Upgrade of Biggs Drive/Billson Street and Murray Street

The intersection of Biggs Drive/Billson Street and Murray Street should be altered to reinforce strategic road prioritisation and improve pedestrian crossing safety. Figure 43 identifies the recommended changes to this intersection. Vehicle movements into and out of Murray Street should be reduced to left-in/left-out only, with a traffic island built along the centre line of Biggs Drive/Billson Street.

Construction of this island will require some widening of the road surface, at the expense of the grassed verges, but will allow space for a pedestrian refuge islands in the centre of Biggs Drive/Billson Street. This is designed to improve pedestrian safety. Raised thresholds should be constructed on Murray Street, to enhance pedestrian amenity and safety.

Those travelling north on Biggs Drive and wishing to turn right into Woolworths would be able to use the roundabout just north of the view in Figure 43.

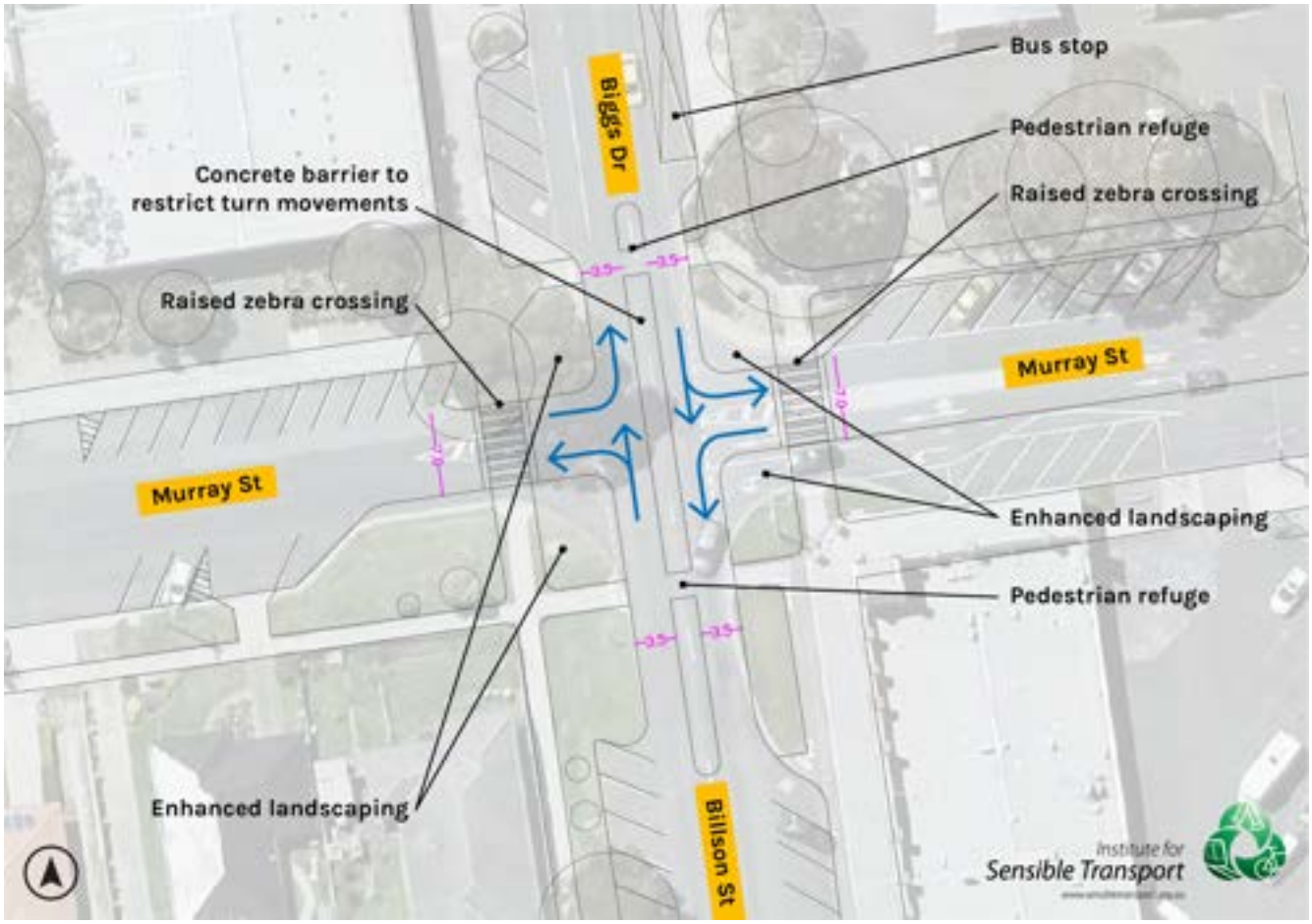


Figure 43 Redesigned intersection of Biggs Drive/Billson Street and Murray Street
Nb. These drawings are conceptual only. Further detailed work would be required to determine the final design outcome.

9.2.3.5 Upgrade of McBride Avenue and Murray Street

The intersection of McBride Avenue and Murray Street should be altered to reinforce pedestrian prioritisation and improve pedestrian crossing safety. There are currently pedestrian crossing points on all legs, but there is significant scope for improvement. The crossing points on Murray Street should be converted to raised crossings, which would slow vehicles while approaching the crossings, and navigating the intersection.

The crossing at McBride Avenue should also be raised, with the give way sign moved south to the edge of the crossing, and an additional give way sign installed at the intersection threshold. A double give way would ensure pedestrians have right of way, and that vehicles entering the intersection from McBride Avenue give way to all other vehicles

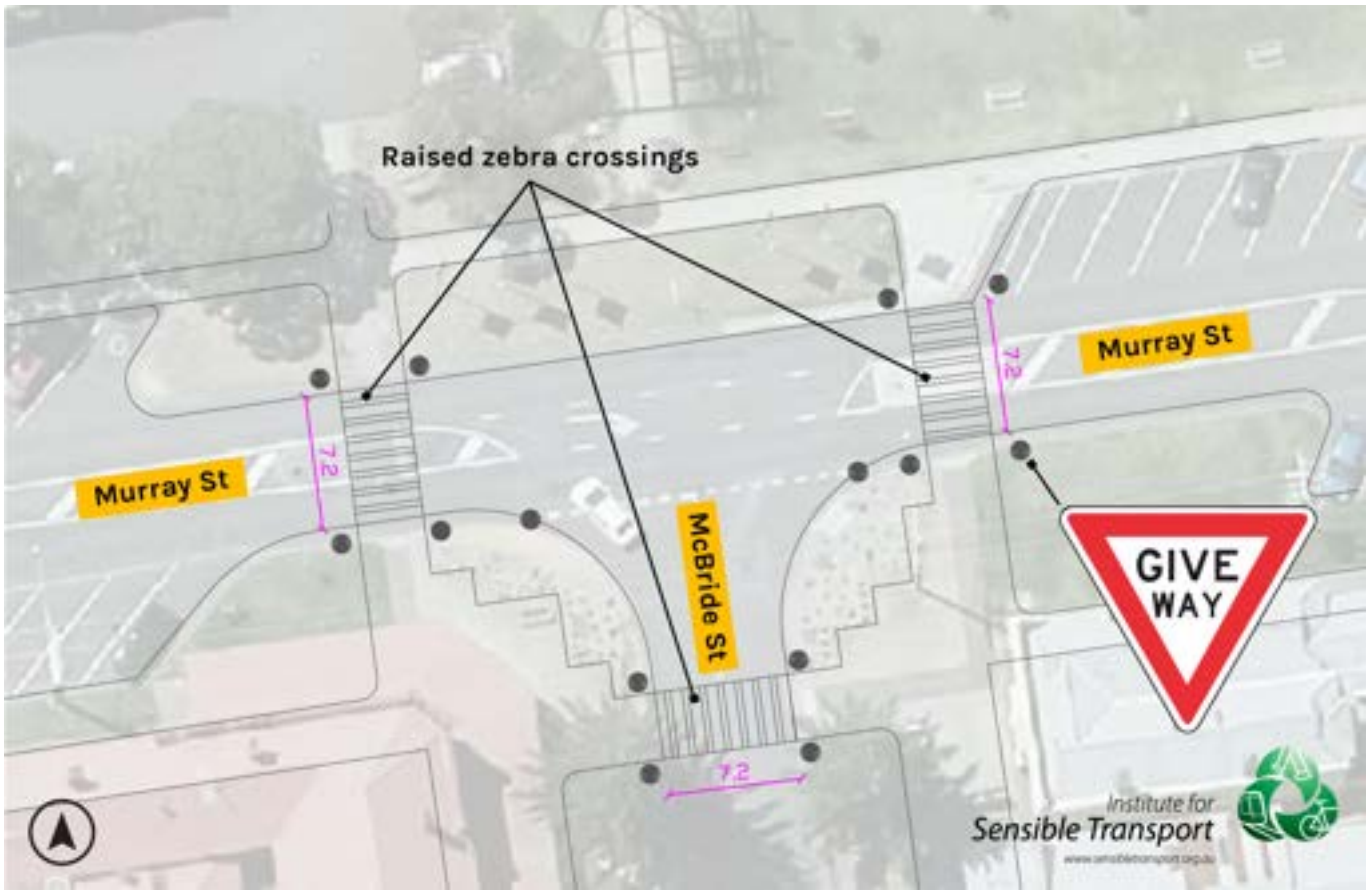


Figure 44 Upgrade of McBride and Murray, Stage 1
Nb. These drawings are conceptual only. Further detailed work would be required to determine the final design outcome.

Stage 2 of this intersection upgrade (see Figure 45) involves resurfacing the entire intersection with a textured and vibrant look and feel. This alteration would signal a lower speed environment to vehicles and improve the public realm.

A full safety audit should be undertaken prior to delivering stage 2 to ensure the final designs achieve the intended outcomes: pedestrian priority at the crossing points and slow vehicle movements.

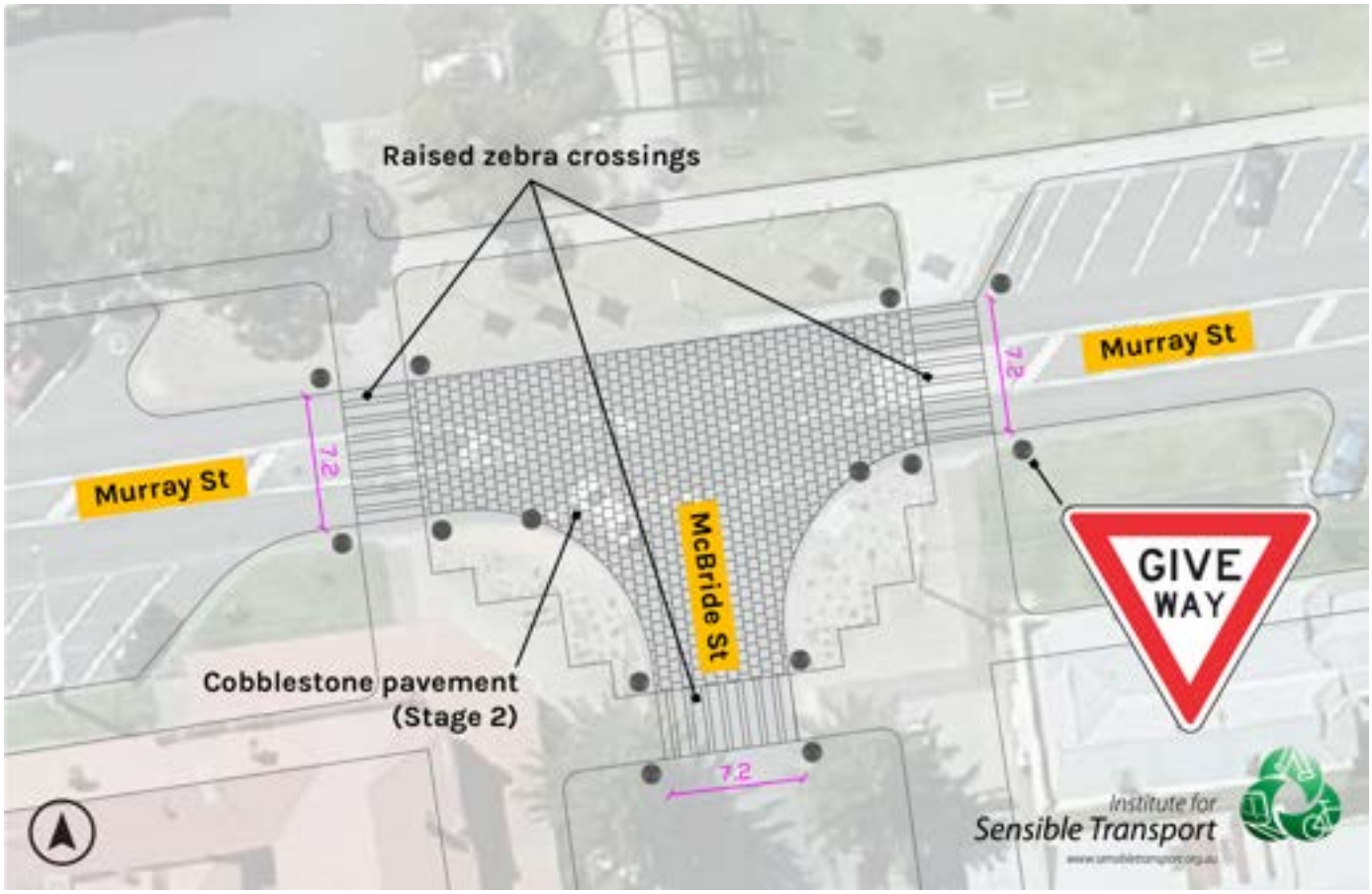


Figure 45 Upgrade of McBride and Murray, Stage 2
Nb. These drawings are conceptual only. Further detailed work would be required to determine the final design outcome.

9.2.3.6 Upgrade of Bass Highway (McKenzie Street) and Murray Street

The intersection of Bass Highway (McKenzie Street) and Murray Street should be altered to reflect desired road prioritisation and increase pedestrian amenity and safety, as shown in Figure 46. The right-hand turn lane from Bass Highway (McKenzie Street) southbound into Murray Street should be removed and replaced with a painted hashed traffic island.

Movements into and out of Murray Street should be restricted to left only. A raised threshold should be constructed on Murray Street, acting to improve the priority of pedestrians crossing Murray Street, and slowing vehicles approaching the intersection.

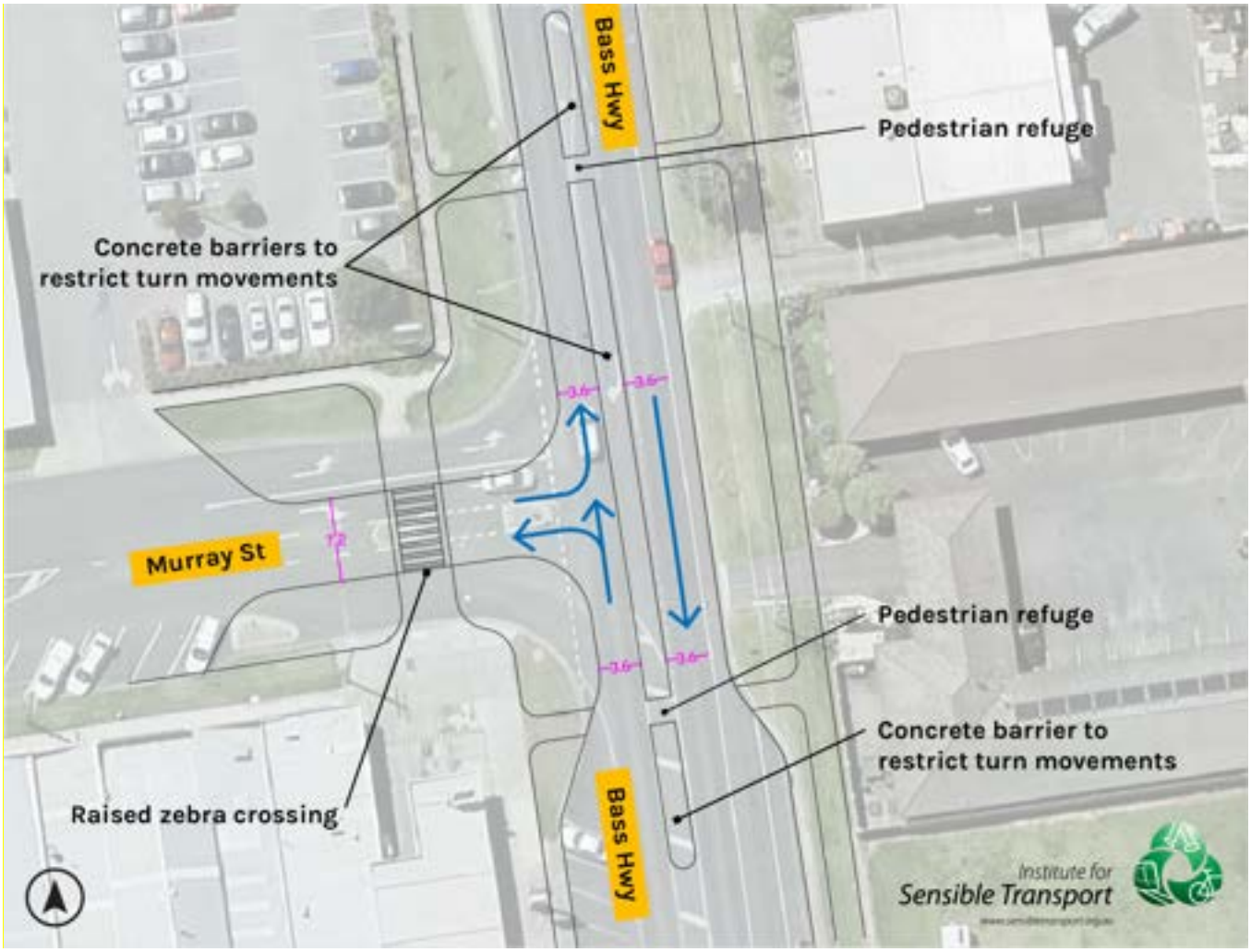


Figure 46 Redesigned intersection at Bass Hwy (McKenzie) and Murray
Nb. These drawings are conceptual only. Further detailed work would be required to determine the final design outcome.

9.2.3.7 Upgrade of Graham Street intersections

The intersection of Graham Street and McBride Avenue should be altered to improve pedestrian prioritisation and pedestrian crossing safety. The intersection currently has a roundabout, allowing free-flowing vehicle movements. As the road is a declared road, and key freight route, the thresholds are wide, as are the lane widths through the roundabout. Combined, these factors reduce the appeal of Graham Street as a people oriented, shopping strip in Wonthaggi's centre. Pedestrian movements are not currently prioritised, with road stencils telling pedestrians to 'giveway to vehicles' placed on all intersection legs and on all pedestrian islands. Imagery from Google Street view shows these stencils were in place in 2008 and have been reapplied in the intervening years.

Recommended upgrade

All pedestrian crossings should be converted to raised zebra crossings, giving legal priority to pedestrians, and creating a road environment which slows vehicles down. Examples of this type of change follow international best practice and are common in Victoria. Ultimately, the road surface should be altered to increase texture and vibrancy, which would help reduce vehicle speeds and improve the public realm.

Other roundabouts on Graham Street should also have raised zebra crossings, even if only on Movement and Place defined 'Activity Streets & Boulevards' legs. Doing so would reduce through traffic vehicle volumes on Graham Street, reinforcing the key vehicle routes, while signposting a changed environment on Movement and Place 'Activity Streets & Boulevards'.

In future, if traffic volumes increase, the intersection of Bass Highway (Mc Kenzie Street) and Graham Street should be considered for signalisation. This would replace the current roundabout. Signal priority should favour vehicles travelling along the Bass Highway (i.e., southbound to eastbound and westbound to northbound). This would allow priority to be enforced on the major declared route, while acting as a traffic metre for the minor routes. A signalised intersection would also increase pedestrian safety, and potentially reduce pedestrian delay.

9.3 Freight

9.3.1 Introduction

Wonthaggi has several key freight corridors running through it. Freight movements are primarily along the Bass Highway, although secondary routes carry significant numbers of truck movements. There is potential to alter the prioritisation of routes, to improve movement and place outcomes in Wonthaggi.

9.3.2 Analysis

The key freight routes through Wonthaggi are shown in Figure 47. These freight routes are largely declared roads, although there are some council owned roads which are freight routes. These routes are the same as has previously been identified in VicRoads SmartRoads hierarchy analysis.

Figure 47 Key freight routes through Wonthaggi

The key freight routes are shown as:

- Bass Highway
- South Dudley Road

- Graham Street (between South Dudley Road and Billson Street).
- Korumburra Road
- Biggs Drive – Billson Street.

Most key freight routes are declared roads: The Bass Highway (B460); Korumburra Road (C437); and Billson Street, Graham Street (C435). The freight routes for Wonthaggi included in the SmartRoads network essentially include the same streets as the preferred traffic routes, except for the section of Graham between Billson St and McKenzie. It is not clear how the co-existence of a priority pedestrian and freight street might be successfully implemented.

Figure 48 shows the average daily truck volumes on key roads within Wonthaggi. The numbers were drawn from VicRoads Traffic Volume dataset for arterial roads. Council traffic volume data was used for traffic along Korumburra Road (including the non-declared section west of McKenzie Street) and Biggs Drive. The numbers show the Bass Highway is the busiest truck route through Wonthaggi, with 300-400 daily trucks. The data also indicates that a significant proportion of trucks use the informal Briggs/Korumburra town bypass. Unfortunately, the VicRoads traffic counts do not appear to provide figures specific to Graham Street.

However, truck volumes can be estimated, based on flows along other routes at the intersection of Graham Street and the Bass Highway. There are 74 more trucks travelling east along Bass Highway, than from the south, indicating at least this many trucks travel east along Graham Street. There are 40 more trucks travelling north along Bass Highway than west, indicating that at least this many trucks must be travelling west. It can be surmised that at least 114 trucks travel along Graham Street each day. It can further be surmised that at least 79 trucks travel west along Korumburra Road each day, which aligns with Council traffic counts. VicRoads traffic counts show that ~290 trucks use Billson Street per day. It can be surmised that approx. two thirds of trucks heading east-west through Wonthaggi already use the non-declared route of Korumburra Road. Declaring and formalising this route would further reduce truck movements along Graham Street.

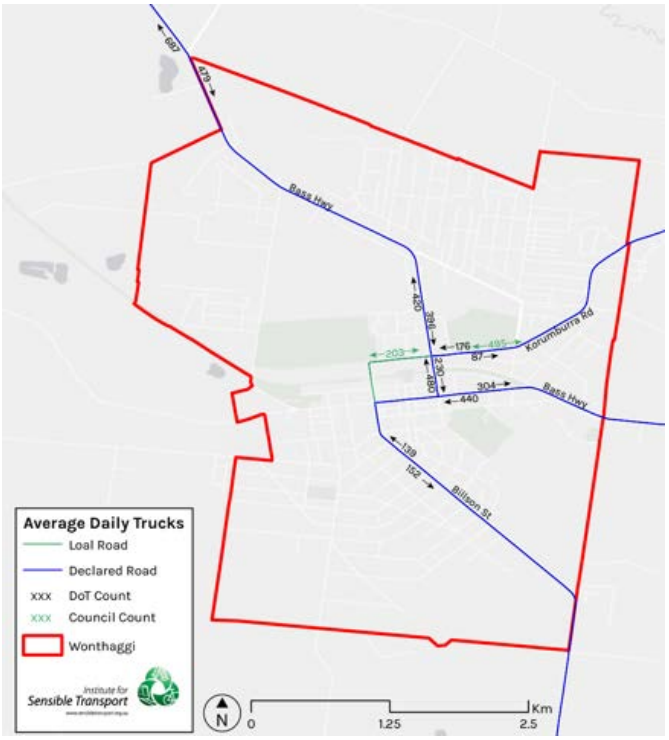


Figure 48 Truck Volumes

Approximately two thirds of trucks heading east-west through Wonthaggi already use non-declared route of Korumburra Road.

Truck volumes through Wonthaggi are expected to increase significantly to 2050, due to extractive industries. In 2019, Freight Victoria published the *Extractive Industries in South Gippsland Supply Chain Study*, which projected an increase from 600 truck movements per day, to almost 4,000 per day in the South Gippsland area. These trucks will be carrying hard rock, sand, and gravel to support the construction industry, with a significant portion originating from the tract of land between Inverloch and Leongatha. While the report does not estimate truck volumes through Wonthaggi, a significant proportion of the 3,400 new daily movements could be anticipated to use the Bass Highway.

Significantly increased truck movements through Wonthaggi would be highly detrimental to amenity and liveability of central Wonthaggi. A Wonthaggi freight bypass was also recommended in the 2018 Wonthaggi Structure Plan. This bypass largely follows Kirrak Road and Heslop Street, both unmade roads at present, as well as approx. 1.6km of new alignment from the intersection of Heslop Road and Korumburra-Wonthaggi Road to the intersection of Kirrak Road and Shepherd Road. The proposed bypass would straddle the norther edge of the North East Precinct Structure Plan, with road works able to be incorporated into the development of the area.

9.3.3 Recommendations

A recommended freight route is proposed in Figure 49. Most key freight routes are appropriate, and match with a Department of Transport road use hierarchy and Movement and Place assessment. This recommended change in the gazetted freight network within and around Wonthaggi is conceptual in nature. Further work, in partnership with key State Government agencies, is required to ensure infrastructure delivery is delivered in-line with projected freight volumes increases. This will include changes to the street signage within town to reflect the objective of encouraging freight movements to avoid the town centre.

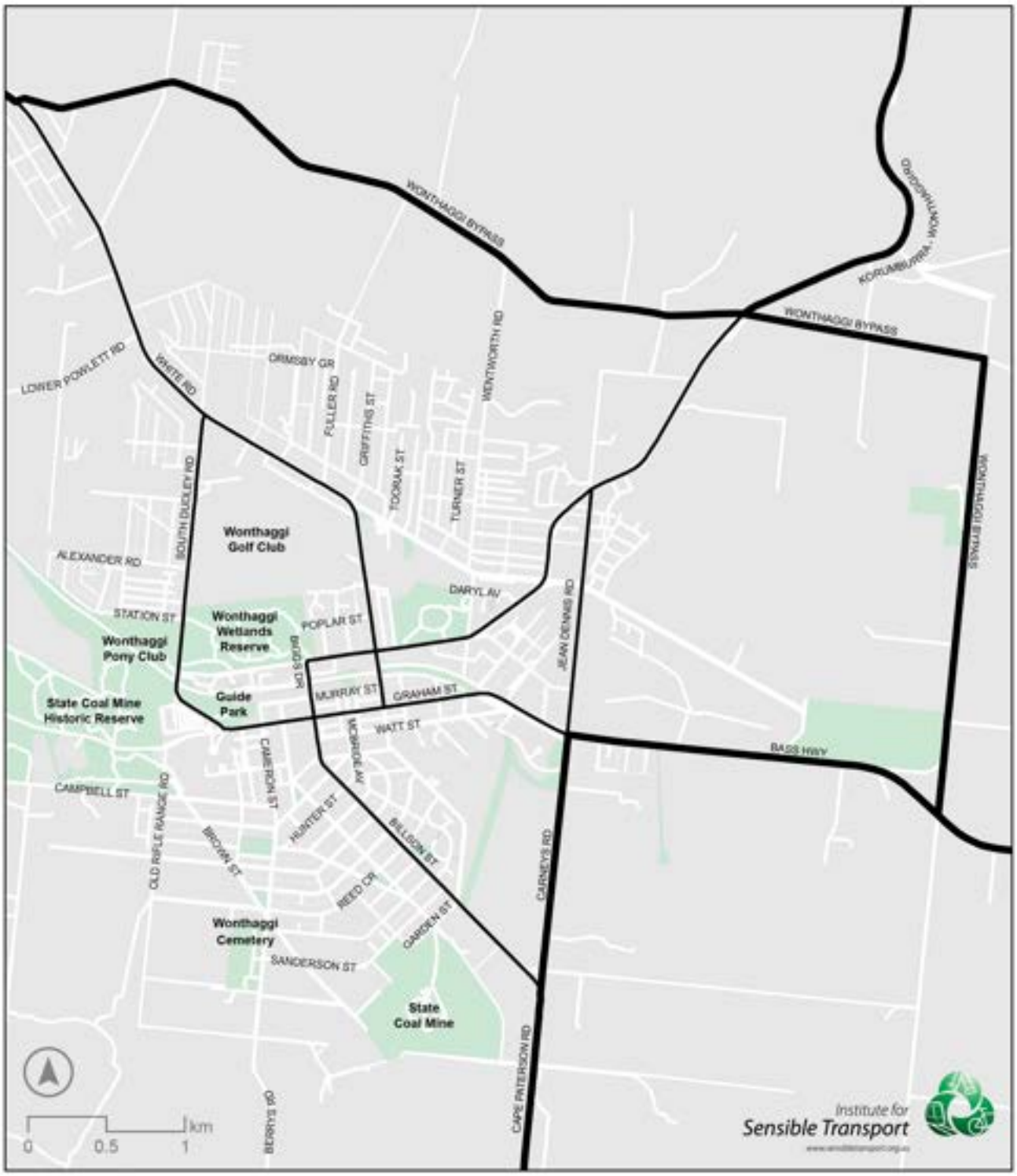


Figure 49 Recommended freight routes in Wonthaggi

Nb. These proposed freight routes are conceptual only. Further detailed work, in partnership with relevant State Government agencies, would be required to determine the final design outcome.

Korumburra Road is already suitable for truck movements, with width and clearances suitable for large vehicle movements. Billson Street is already a declared road south of Graham Street and is also suitable for large vehicle movements. Biggs Drive is generally acceptable, however, the geometry of the roundabout between the rail trail and Korumburra Road is not ideal for large vehicles. This roundabout should be rebuilt with lower profile kerbing on the traffic circle. Council should also investigate the need for softening the thresholds of the intersection (as is the case with the eastern edge of the roundabout on the corner of South Dudley Road and Graham Street. These modifications would retain the roundabout as a traffic circulation and management device, while making it more suitable for truck movements.

To encourage vehicle movements along this key freight route, turning options along Bass Highway (McKenzie Street) should be reviewed. The traffic light at Korumburra Road and Bass Highway may need adjustment to allow more green time for southbound to westbound and eastbound to northbound traffic movements. Right hand turns from Bass Highway (McKenzie Street) into Murray Street (westbound) should be banned, moving more traffic movements north, and relieving east-west traffic congestion at the intersection of Biggs Drive/Murray Street/Billson Street.

With increased residential development along South Dudley Road, there may be conflict between vehicle types. Truck movements along South Dudley Road should be assessed periodically, and modifications to traffic management made if necessary. In future, there may be a need to upgrade South Dudley Road, including lane widening and/or installation of hard shoulders. Conversely, Council may decide to de-prioritise South Dudley Road as a key freight route, shifting truck travel onto the Bass Highway and the declared road network.

The potential Wonthaggi freight bypass has the potential to remove many vehicle movements, especially truck movements, from the streets of central Wonthaggi. This would be a substantial boon to amenity and liveability. To fully capture the value of this bypass, movements on the Bass Highway through Wonthaggi should be discouraged – failure to do so would simply increase vehicle movements through and around Wonthaggi. Examples of similar value capture can be seen from changes to Maroondah Highway, Ringwood, made possible by the opening of the Ringwood Bypass, and Lonsdale Street, Dandenong, made possible by the opening of EastLink. These have been highlighted in *Case Studies* found in Appendix 2.

The proposed Wonthaggi bypass has the potential to remove many vehicle movements, especially truck movements, from the streets of central Wonthaggi. To fully capture the value of this bypass, movements on the Bass Highway through Wonthaggi should be discouraged – failure to do so would simply increase vehicle movements through *and* around Wonthaggi.

The Wonthaggi bypass along the proposed alignment should be supported under the following conditions:

- Heslop Road and Kirrak Road are remade with bituminous surface, with lane widths of at least 3.5m and shoulders installed;
- The intersection at Heslop Road and Bass Highway is improved, as a regional roundabout or signalised intersection;
- The intersection at Heslop Road and Korumburra-Wonthaggi Road is improved, as a regional roundabout or signalised intersection;
- The intersection at Kirrak Road and Bass Highway is improved, potentially with a new alignment east of the bushland reserve to meet with Boundary Road and Bass Highway, and as a regional roundabout or signalised intersection;
- Regional Roads Victoria declare the bypass as Bass Highway B460, placing the current Bass Highway alignment from Heslop Road to Kirrak Road under Council control.

9.3.4 Actions

- Work with RRV to identify a freight network that bypasses Wonthaggi.
- Wok with RRV to develop upgrade of Carney's road to an arterial road.
- Modify the roundabout on Biggs Drive between the rail trail and Korumburra Road.
- Work with RRV to un-declare Graham Street in the long-term.
- Alter signal sequence at the intersection of Bass Highway and Korumburra Road to facilitate increased turning movements.
- Forbid right hand turns from Bass Highway into Murray Street.
- Periodically assess truck movements along South Dudley Road.
- Support the future development on the Wonthaggi Bypass, pursuant to conditions listed in Section 9.3.3.

9.4 Public transport

9.4.1 Introduction

Wonthaggi is served by regional and local buses, from several operators. V/Line coaches connect Wonthaggi to Dandenong and Inverloch, with four weekday services and two weekend services. Coach routes also connect Wonthaggi to Coronet Bay, Phillip Island, Cape Paterson, Inverloch, Leongatha and Traralgon. A local bus services is provided by South Coast Bus. As highlighted earlier, buses account for only ~1% of trips to work in Wonthaggi.

Analysis

Four routes are currently provided through the Wonthaggi town area, shown in Figure 50. Three of these routes are operated as loops, through the north-east, north-west, and southern parts of Wonthaggi, while a fourth route connects Wonthaggi to Cape Paterson.

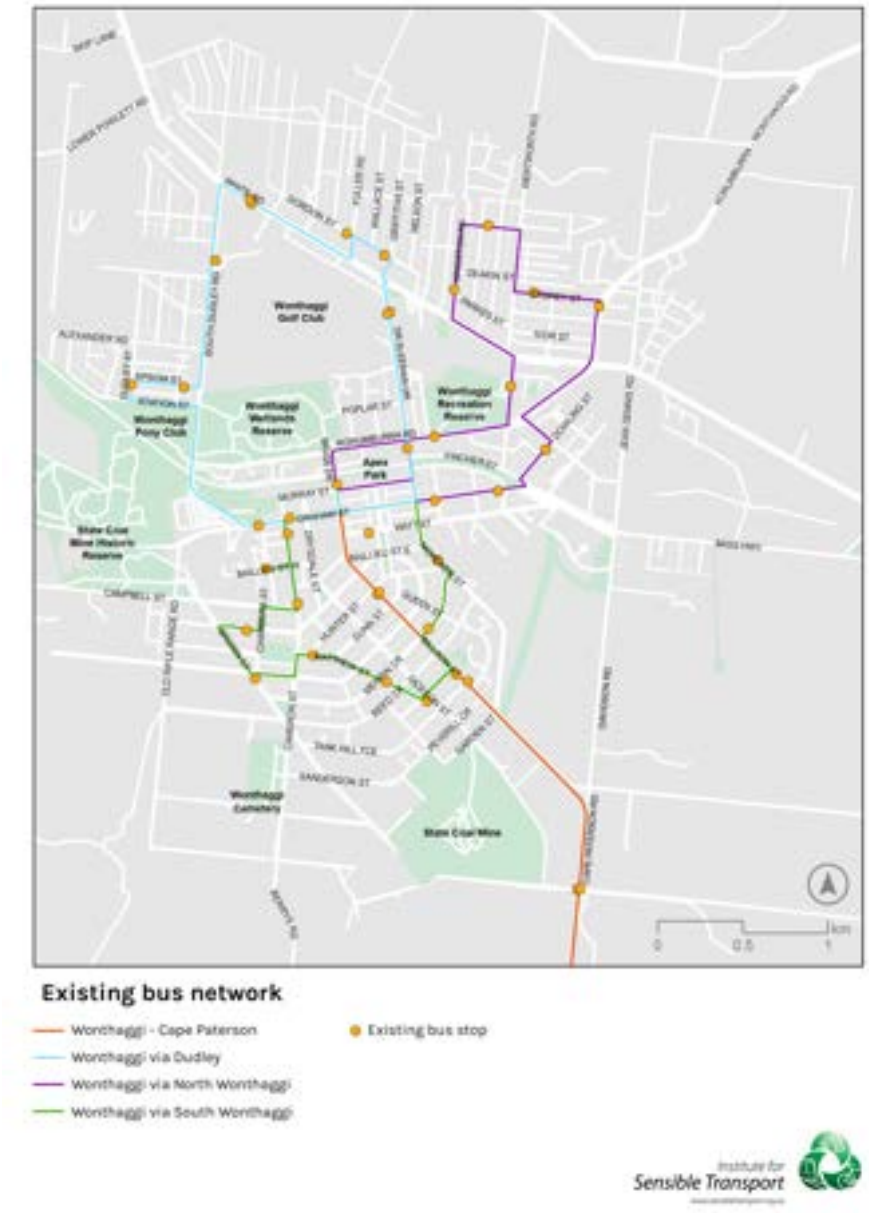


Figure 50 Wonthaggi town bus network

Collectively, these four routes serve 30 bus stops in the Wonthaggi town area. These four services provide excellent public transport coverage, as shown in Table 3, with 61% of properties being within 200 metres of a stop, and 90% being within 400 metres. Almost every property in Wonthaggi is within 800 metres of a bus stop. However, as the town expands into the north-east, this is likely to decrease. To maintain this high level of coverage, route expansions must be made.

Table 3 Proximity to bus stops in Wonthaggi

Proximity to bus stop	Number of properties	Percentage of all properties	Cumulative percentage
Within 200 metres	3205	61%	61%
200 metres to 400 metres	1570	30%	90%
400 metres to 600 metres	405	8%	98%
600 metres to 800 metres	76	1%	99%
More than 800 metres	25	>1%	100%
Total	5281		

While the Wonthaggi bus network has excellent coverage, the frequency is poor. Analysis of the bus timetables reveals that the four routes are run as a chain, with one bus cycling through all four routes on a two-hour rotation (i.e., Wonthaggi via North Wonthaggi, Wonthaggi via Dudley, Wonthaggi via South Wonthaggi, Cape Paterson, then repeat the cycle). This means that the wait at almost all bus stops (except the bus interchange) is two hours. Buses only run on weekdays, with no weekend services offered. As three of the bus routes operate at a loop, the trip time can be very long for a very short distance (e.g., the penultimate stop of the loop is likely to be only a few hundred metres from the bus interchange, but a rider would have to complete the entire loop of approximately 15 minutes).

The combination of poor frequency and long journey times is a limiting factor on the appeal of the bus network. While it might be acceptable to those without time pressures (and tolerable by those with no other choice), it is likely to be unacceptable to many commuters and others with time sensitivities. There is significant scope to increase the service frequency. One option which would significantly increase frequency and decrease journey times is to run a counter directional service.

There is scope to investigate optimisation of bus stop locations. The current bus interchange is on the edge of Wonthaggi's heart, and this may not be the best location from a user experience perspective. Further research, especially with regular bus users is required to confirm this. Similarly, there are no other bus stops (other than the interchange) in the centre of Wonthaggi. Lastly, key tourist destinations, such as the State Coal Mine have no bus stop. Minor alterations to bus routes and stop locations have the potential to greatly improve the quality of the bus network.

Criteria that should be used to assess potential locations for a future V/Line Bus Stop could include:

1. Proximity to key destinations
2. Integration with other bus services
3. Space for shelter and seating
4. Proximity to existing public access toilet that it disability accessible or potential for its construction at bus stop
5. DDA Compliance, or potential for upgrade to DDA Compliance, including footpaths that lead to the bus stop
6. Community support from existing bus users
7. High activity area with passive surveillance
8. Solar access, to enable real time digital timetable, and other service information, as well as USB charger for mobile devices and other service information
9. Potential for bike parking.

9.4.2 Recommendations

There is significant potential to improve the attractiveness of the bus system in Wonthaggi. Improvements to the frequency, route alignment and bus stop location will make the existing routes more attractive. There is also a need for a new

route, to serve areas in the north east which are in planning for development. Proposed changes are shown in Figure 51, and described below.

It is recommended that service frequency and options be improved by implementing counter flow bus routes on the three loop lines (Wonthaggi via North Wonthaggi; Wonthaggi via Dudley; and Wonthaggi via South Wonthaggi). This would effectively half the waiting time at all stops in the Wonthaggi bus system. Further, it would drastically reduce travel time for passengers boarding in the first few stops of the route and passengers wanting to alight at the last few stops. This would require only one extra bus, and would more than double the service usability for many in the community.

The Wonthaggi via Dudley route should have its alignment modified in future, to better serve the growing community in the north and provide all abilities access to the Bass Coast Hospital. There are large parcels of land subdivided for development west of South Dudley Road. When development occurs here, the Wonthaggi Via Dudley route should travel along Dudley Street and May Street, rather than the current alignment. This would require the relocation of the bus stop at the corner of Epsom Street and Dudley Street, to the north side of Epsom Street and installation of new bus stops. There is also development occurring north of White Road, which the Wonthaggi via Dudley route could serve be being rerouted to the new road north of the intersection with Sherwood Court and White Road, along Gordon Street, rather than along White Road and James Street, with new bus stops installed to increase catchment.

Figure 51 Proposed changes to the Wonthaggi town bus network

The Wonthaggi via South Wonthaggi should have its alignment modified in future, to better serve the existing community in the south west and south. The route currently travels along Hagelthorne Street, but only as far as Brown Street. Rerouting along Old Rifle Range Road and Wishart Street would increase public transport opportunities to newly developed areas which are currently over half a kilometre from the nearest stop. The Broome Crescent stop should be relocated to Broome Crescent (currently on Merrin Crescent), with Wonthaggi via South Wonthaggi straight-routed along Broome Crescent to Matthew Street (rather than doglegging along Cameron Street). The Wonthaggi via South Wonthaggi route should also be extended further south along Dickson Street and Garden Street. These alignment changes would increase catchment, and straighten the route in key places. In future, the southern extension will

also allow for services to deviate to the State Coal Mine.

The alignment of the Wonthaggi via North Wonthaggi route is convoluted. Unfortunately, this is a response to the road network, which has many cul-de-sacs and no through roads. There are no route alignment choices that can be recommended without alterations to the road network. Development and alteration of the road network in this area should consider options to alter the alignment of the Wonthaggi via North Wonthaggi in future. Residents near Oates Road have poor public transport. With large amounts of development earmarked for this area, improvements are desirable. If a new connection was made between Oates Road and Wentworth Road (in the vicinity of Oxford Way and Regency Drive), Wonthaggi via North Wonthaggi should be run along this new road.

A new bus service should be introduced with the development of the Wonthaggi North East area. This route, shown in Figure 51, should run from the terminus along Biggs Drive, Korumburra Road, the Bass Highway, Griffiths Street and Fuller Road, then along the new boulevard through the newly developed area, then along Carneys Road, the Bass Highway, Graham Street and Billson Street. This route alignment will serve the new community, and currently underserved areas of Wonthaggi. There are also interchange and co-running spots, which will increase the network effect of the bus system, and increase frequencies along key sections.

The Wonthaggi Public Transport Interchange, located on Biggs Drive, acts as a central location for all buses to Wonthaggi to stop. This location is not ideally located in the centre of town, but does have operational benefits, being on a major road, and near amenities. There are also likely to be many users who have become accustomed to the location. Due to the COVID-19 pandemic, it has been difficult to assess the utility of the interchange, and properly consult the community on its future. Therefore, it is not recommended that the bus interchange be moved at this time, although, the future of the interchange could be the subject of a future study. However, it is recommended that the public transport permeability of Wonthaggi be increased with the addition of more bus stops in the central area. These stops are shown in Figure 51, and would allow bus users to board and alight from more places, and allow for new interchange opportunities once service frequencies are increased and the second counter-loop is started. In future, these stops could be considered as options for replacement as the key interchange for Wonthaggi, subject to community consultation.

9.4.3 Actions

- Implement counterflow loops on Wonthaggi via North Wonthaggi; Wonthaggi via Dudley; and Wonthaggi via South Wonthaggi
- Alter the alignment of Wonthaggi via Dudley to run along Dudley Street and May Street, with new bus stops.
- Alter the alignment of Wonthaggi via Dudley to run along to the new road north of the intersection with Sherwood Court and White Road, along Gordon Street, with new bus stops.
- Alter the alignment of Wonthaggi via South Wonthaggi to run along Old Rifle Range Road and Wishart Street, with new bus stops.
- Alter the alignment of Wonthaggi via South Wonthaggi to run along Broome Crescent to Matthew Street Dickson Street and Garden Street, with new bus stops.
- Alter the alignment of Wonthaggi via North Wonthaggi, when a new connection is made between Oates Road and Wentworth Road, with new bus stops.
- Implement a new bus route to serve the Wonthaggi North East development area.
- Install more bus stops in the central Wonthaggi area.
- Investigate appropriateness of other proposed bus stops as alternative locations for the interchange.

9.5 Active transport

9.5.1 Introduction

Creating high levels of amenity and priority for walking and cycling is an important step towards the development of a more sustainable and liveable Wonthaggi. As highlighted in Section 3.2, walking and cycling are zero emission, healthy, space efficient and affordable. For those too young or old to drive, walking is a crucial mode of transport for accessibility.

The previous analysis conducted for this project revealed that while there are some good shared paths in Wonthaggi, the walking and cycling environment could be enhanced considerably. The development of a more conducive street environment for active travel will help support the policies and strategic direction established by Council and highlighted in the Policy Review section.

9.5.2 Analysis

The data analysis conducted for this project and described in Appendix 1 found that a third of all Wonthaggi workers live within 2.5km and half live within 5km of their work. Yet despite this, the overwhelming majority of trips are by car. There is considerable potential to change the street environment in order to provide a more diverse set of transport options.

Despite the very low cycling levels recorded in the Census (journey to work), the study team observed that cycling is a common activity in Wonthaggi, for non-work purposes, such as visiting shops, socialising and recreation/fitness.

It was shown in the Policy and Data Analysis Report (Appendix 1) that almost 70% of the bicycle network is '*proposed*'. Completing this network and building a more compelling value proposition to choose cycling for the many short trips that take place in Wonthaggi will help achieve the goals identified in Section 7. This will help to free up road and car parking space for those that must drive, in addition to the numerous other benefits associated with sustainable mobility discussed in Section 3.2.

9.5.3 Recommendations

9.5.3.1 A local bike network

Figure 52 shows the proposed local bike network in Wonthaggi. This would provide safe and convenient bike access to the majority of jobs and services for the majority of Wonthaggi residents. Table 4 provides a description of each segment of the network and recommended action.

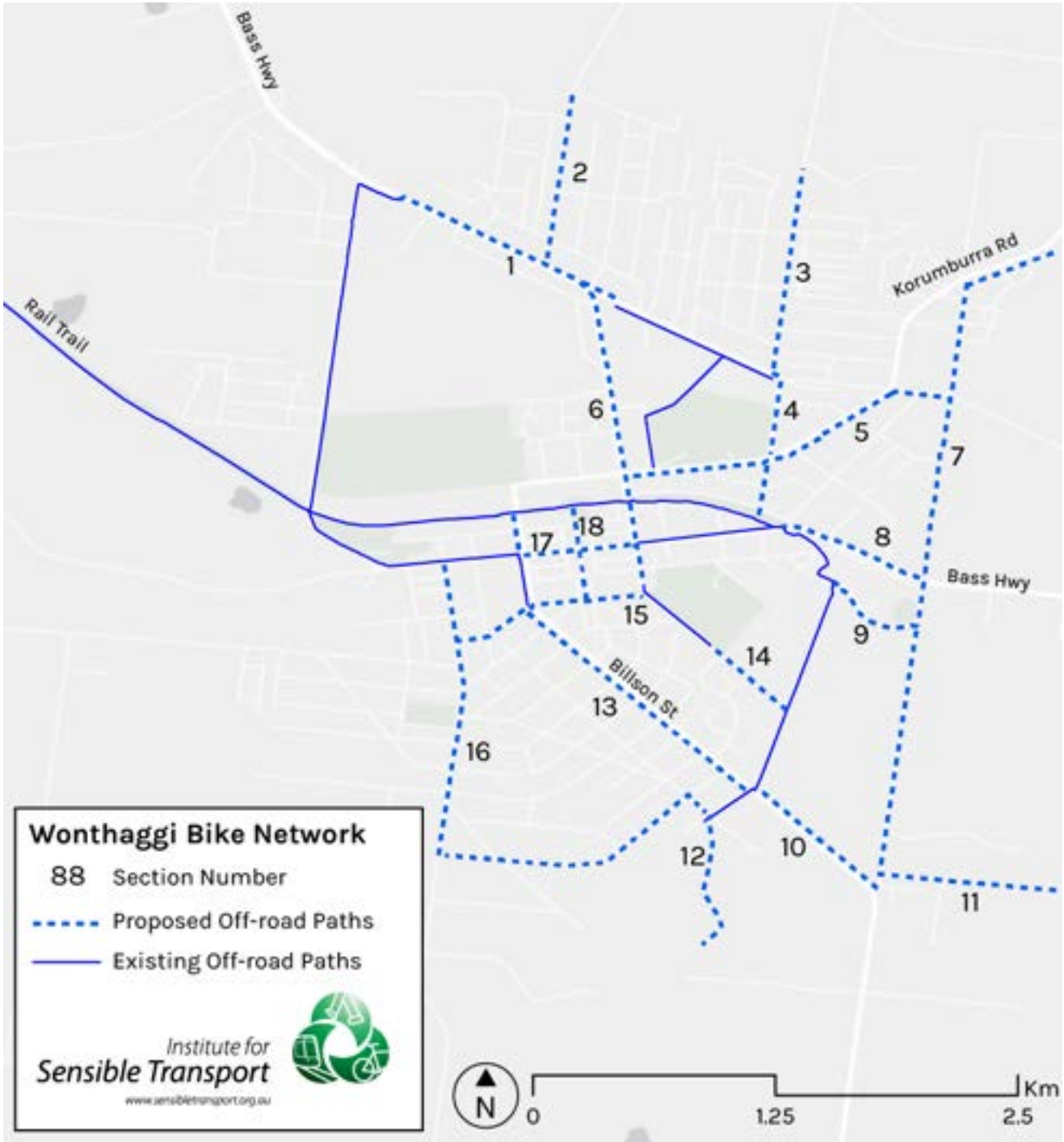


Figure 52 Local Bike Network

Table 4 Local Bike Network Segments

Section	Street Name	Action	Timeframe
1	Bass Highway - White Road	Starting at South Dudley Road, the separated path should run south-east on the southern side of Bass Highway until the school crossing in front of 192 Bass Highway. It should then cross over to the northern side of the road and continue along the wide nature strip until the eastern end of the kindergarten car park. A raised zebra crossing should be installed to provide safe crossing over to the existing shared path on the southern side.	Short
2	Fuller Road	Starting at the Bass Highway, the path should run along the western side of Fuller Road until Vicars Ave, then to Helslop Road as development occurs. It is recommended this be provided as part of footpath construction program for Fuller Road.	Medium
3	Wentworth Road - North	Starting at White Road, a raised zebra crossing should be provided to allow safe crossing at the existing school crossing in front of the school. The path should use the eastern side of Wentworth Road as part of a footpath construction program, ending at Oxford way initially, and Helslop Road once development occurs.	Medium
4	Wentworth Road - South	Starting at the primary school, the path should extend south on the western side of the road until Korumburra Road. Path users may then use the school crossing over Korumburra Road, after which the path should continue south and connect into the Rail Trail.	Short
5	Korumburra Road	Starting at Bass Highway, the path should run on the southern side of Korumburra Road. Raised zebra crossing facilities should be provided over Wentworth Road (south) and at each of the school access points. The path should continue to the east along Mcgibonys Rd, ending at Jean Dennis Road.	Short
6	Bass Highway	Starting at the White Road turn-off, the path should continue south along the eastern side of Bass Highway until the street turns into McKenzie Street	Short
7	Benetti Road - Jean Dennis Rd	Starting at Korumburra Road, this path continues south until it connects with Billson Street. It is recommended this path be provided when development of the North-East Precinct occurs and the road is sealed, as the existing Rail Trail provides a suitable alternative in the mean-time.	Long
8	Bass Highway - East	Starting at the Rail Trail and Fincher Street, the path should run on the northern side of the road until Carneys Road and connect with the future path that runs north-south.	Medium
9	Loughran Drive	This path runs along Loughran Drive and connects the future north-south path with the rail trail.	Long
10	Billson Street - South	This path runs along the northern side of Billson Street between the Rail Trail and Carneys Road. It is recommended to form part of the regional bike network (Segment 18).	Short
11	Moores Road	This path begins at Moores Road and Carneys Road before following along the property boundary as a new off-road trail. It is Segment 17 of the regional bike network. Compacted gravel trail is preferred for this section.	Short
12	State Coal Mine Access Road	This section connects the Rail Trail to the State Coal Mine site and across to section 16 via Peverill Crescent or Tank Hill Terrace.	Medium

13	Billson Street - North	Starting at the Rail Trail, this path heads north towards Watt Street. It is recommended to be delivered as part of any future drainage upgrade works on the southern side of Billson Street.	Medium
14	McKenzie Street	This section connects the Rail Trail to McKenzie / Baillieu Street and the new school precinct. The path should run along the northern side of McKenzie street to provide safe access for school students.	Short
15	Baillieu Street	This section links the McKenzie Street path to Billson Street and west to Cameron Street and section 16. It is recommended it be placed on the southern side of the street. It should be completed as part of any future resheeting of Baillieu Street.	Medium
16	Cameron Street	This section connects the existing path at Graham Street / South Dudley Road in the north and runs south until Shandley Street. Providing a path on both sides of the street is recommended.	Medium
17	Graham Street	Provides key east-west connection in the Wonthaggi CBD. Our estimates show that separated bike lanes can be provided by tightening parking bays to 5.5m and travel lanes to 3m. This enables the creation of physically protected lanes between the ends of parked cars and the footpath.	Short
18	McBride Ave	Provides key north-south connection in the Wonthaggi CBD. Created separated bike lane either via a tightening of parking bays and lane widths or the conversion of one side of the street from 45 degree to parallel parking.	Short

9.5.3.2 A Regional Trail Network

A regional trail network connecting the townships of Wonthaggi, Cape Paterson, and Inverloch together would deliver multiple benefits to the area. First, it would boost tourism, capturing the fast-growing rail trail/cycle tourism market. Second, it would enable more tourists to visit local attractions and neighbouring towns by walking or bike riding, rather than taking car trips. Third, it would support inter-town travel for residents, providing the opportunity to ride for some trips. This is especially pertinent given the growth of e-bikes. Figure 53 shows the proposed routes to connect the three townships together and identifies existing and new infrastructure required.

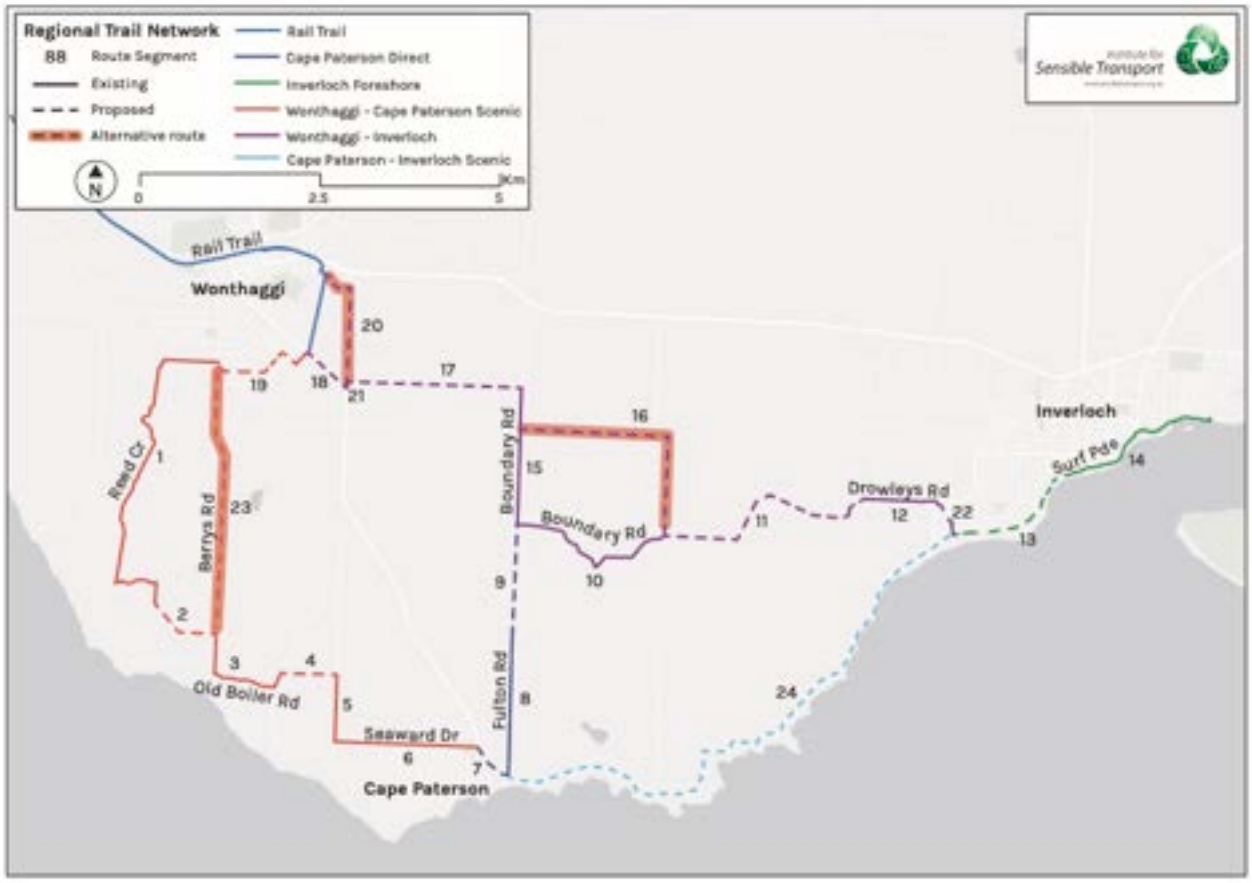


Figure 53 Proposed regional trail network

The following page will describe each route and then This route provides high tourism potential

Table 5 provides detailed actions for each segment of the trail network.

Rail Trail

This is the existing rail trail that runs from Woolamai to Wonthaggi. The path currently terminates at the intersection of Bilson Street and Garden Street, near the Mitre 10.

Wonthaggi – Cape Paterson Scenic Route

This route is proposed to connect the townships of Wonthaggi and Cape Paterson, using predominately existing low-traffic unsealed roads through the Wonthaggi Heathlands Nature Reserve. The route is approximately 10 km long, with only 2km of new track required to complete the route.

and would require low level separation via paving the road shoulder and placing small dividers between the travel lane and the road shoulder.

The proposed sections of new track are set along property boundary lines to minimise costs and impacts to land owners. Because the route is already 80% complete, it is recommended that this route be completed first.

Cape Paterson Direct

This route uses Fulton Road and new track to link up to Boundary Road and the Wonthaggi – Inverloch Route. This would provide a more direct route between Cape Paterson and Wonthaggi and provide connectivity between Cape Paterson and Inverloch. This route is already 50% complete.

Wonthaggi – Inverloch

This route provides connectivity between the areas two biggest townships, Wonthaggi and Inverloch. Several changes have been made from Councils proposed route in order to leverage off existing unsealed road, including Boundary Road and the Rail Trail. It is approximately 13km between the two townships via this route, 5km of which already exists.

Inverloch Foreshore

This route connects the Wonthaggi – Inverloch route to the foreshore and into the centre of town. It is approximately 4.5km long, of which 2.5km is already built.

Cape Paterson – Inverloch Scenic

This route provides high tourism potential and would require low level separation via paving the road shoulder and placing small dividers between the travel lane and the road shoulder.

Table 5 Regional Trail Network Route Segments

Segment	Route	Status	Time frame	Action	Length (m)
0	Rail Trail	Existing	NA	Install wayfinding signage at key decision points	16565
1	Wonthaggi - Cape Paterson Scenic	Existing	NA	This section begins at 170 Reed Cres, where it turns south through the Heathland. Signage should be provided at the start, including time and distance to Cape Paterson and tourist destinations available from this route, such as Cutlers Beach. Signage should be provided every kilometre to confirm to users that they are on the right path. The path should be checked to confirm it is level and in sufficient condition for an off-road bike to use.	5152
2	Wonthaggi - Cape Paterson Scenic	Proposed	Short	This is a new section of track that connects with the end of the Heathland, travelling south-east along the property boundary, connecting with Berrys Road, just south of Manuka Lane. Signage should be provided at this intersection. At Harmers Haven, there is a walking track to reach Cutlers Beach. Linking up to Reed Cres/Chisolm Road. Should it be possible to widen this section to accommodate bike usage, this may be a preferred alternative to this section of the route.	1031
3	Wonthaggi - Cape Paterson Scenic	Existing	NA	The trail then continues along existing roadway, using Berrys Road and continuing along Old Boiler Road. Signage should be provided at the turn-off to Viminaria Road and again at the turn-off to the beach path. The path then continues 200m north along Old Boilers Road to provide the new section of track along the wind break lines.	1640
4	Wonthaggi - Cape Paterson Scenic	Proposed	Short	This new section of track connects Old Boilers Road with Wilsons Road. It is about 770m long. Wayfinding signage should be provided at each end of this section.	775
5/6	Wonthaggi - Cape Paterson Scenic	Existing	NA	The route then heads south along Wilsons Road, turning east at Seaward Drive. Again, signage should be provided at the turning point and to trails that provide beach and town access.	2899
7	Cape Paterson Direct	Proposed	Short	This section connects Cape Paterson township to Fulton Road, via Cape Paterson – Inverloch Road. Signage from town should indicate time and distance to Inverloch and Wonthaggi, and to any attractions along the way. A sealed shared path along the road shoulder on the southern side of the road is recommended until Fulton Road. Signage warning drivers of pedestrians and bike riders crossing is recommended.	600
8	Cape Paterson Direct	Existing	NA	Signage should be provided at the start of Fulton Road, including signage indicating to drivers to look out for pedestrians and bike riders.	1884
9	Cape Paterson Direct	Proposed	Short	This section is proposed to link Fulton Road and Boundary Road together. Signage should be provided at the junction with Boundary Road, indicating distance to Wonthaggi and Inverloch.	1694
10	Wonthaggi - Inverloch	Existing	NA	This section uses the existing right of way along Boundary Road. Aerial imagery indicated that this may require upgrading of the track to meet quality standards.	2506
11	Wonthaggi - Inverloch	Proposed	Short	This Is a new section of track, linking Boundary Road to Drowleys Road. A rest stop should be provided along this section.	3396
12	Wonthaggi - Inverloch	Existing	NA	This section uses Drowleys Road. Again, signage for trail users and drivers should be provided, including crossing signage across Toorak Road.	1044

13	Inverloch Foreshore	Proposed		This is a new section along Surf Parade. It is recommended that this follow the same typology as the existing section (14). If this is not possible, then advisory bike lanes (see Fig XX) may be appropriate.	1915
14	Inverloch Foreshore	Existing	NA	This is an existing section of the trail network and is of a high-quality. Wayfinding signage should be provided to inform trail users of time and distance to key attractions and to the town centre.	2471
15	Wonthaggi - Inverloch	Existing	NA	This is the north-south section of Boundary Road, linking section 9, 10, and 17 together. Wayfinding signage should be provided at each end of this section.	2407
16	Wonthaggi - Inverloch	Proposed	Alternative	This section forms part of Council's initial plans for a trail connection between Wonthaggi and Inverloch. Sections 10 and 15 provide the same access using existing rights of way, allowing for the path to be constructed faster and easier. This section should be considered as an alternative should Sections 10 and 15 be unable to proceed.	3326
17	Wonthaggi - Inverloch	Proposed	Short	This is a new section of trail between section 15 and 21, following property boundary lines.	2417
18	Wonthaggi - Inverloch	Proposed	Short	This section links section 17/21 to the Rail Trail and is the final section in the Wonthaggi – Inverloch Route. It is recommended that this section be a shared path on the northern side of Billson Street, using the remnant space in the road reserve.	710
19	Wonthaggi - Cape Paterson Scenic	Proposed	Medium	This section links Reed Cres to the Rail Trail. From the intersection with Reed Cres and Cameron Street, it heads south along Cameron Street for 50m before turning onto Shandley Street. A path would then be constructed along the rights of way along Tank Hill Terrace and Stewart Street. The section then turns south along Dickson Street, linking with the Rail Trail at Garden Street. Wayfinding signage is recommended at every street turn to aid trail users.	1500
20	Wonthaggi - Inverloch	Proposed	Short	This section formed Council's initial plans for the beginning of the Wonthaggi – Inverloch Route. As the Rail Trail extends to Billson Street, it would be easier and more cost-effective to construct section 18 rather than 20.	2156
21	Wonthaggi - Inverloch	Existing	NA	This is a small section of existing unsealed road along Carneys Road, linking sections 17 and 18. Signage should be provided at each end of this section to aid trail users.	97
22	Wonthaggi - Inverloch	Proposed	Short	This section runs through the new development in Inverloch, linking sections 12 and 13 together. Signage should be provided through this section to navigate people along Paperbark Place and Seaview Street.	511
23	Wonthaggi - Cape Paterson Scenic	Proposed	Short	This is an alternative route option, using Berrys Road rather than Reed Crescent through the Heathlands. Advisory bike lines would be required and a 60km/h speed limit for motor vehicles.	4200
24	Cape Paterson-Inverloch Scenic	Proposed	Medium	This route provides high tourism potential and would require low level separation via paving the road shoulder and placing small dividers between the travel lane and the road shoulder.	10,000

9.6 Public realm

9.6.1 Introduction and analysis

A number of Council reports reviewed in Section 3 of Appendix 1 found that more needs to be done to enhance the vibrancy and public realm quality of central Wonthaggi streets. The site analysis found that a number of key streets (e.g. Graham Street) lack any green space and the sense of place could be enhanced considerably via:

- Street trees
- Public seating and other street furniture
- Wayfinding
- Public meeting and gathering spots in central activity areas in the core of Wonthaggi.

9.6.2 Recommendations

9.6.2.1 Encourage McBride Avenue and Graham Street to be used as a 'place'

While this report details the physical and infrastructure changes that are recommended to improve the safety and amenity of Wonthaggi, it is important to show people the possible changes in the way the Wonthaggi CBD could be used.

Holding street festivals designed to celebrate Wonthaggi and the region can be an important way of showcasing Wonthaggi's unique character and the produce of the region, while at the same time highlighting the benefits that could be realised if the way Graham Street and McBride Avenue is changed. Food festivals, linked to key harvest times can serve to increase tourism and support local growers and those in the hospitality industry. These festivals also provide an opportunity to test and demonstrate how street space can be used differently. If popular, some of these changes may become permanent.

A Graham and McBride Street Festival is recommended that will help celebrate Wonthaggi and provide a unique opportunity for the community to showcase its town and region. This could be through an annual local produce festival, or a smaller scale monthly farmers market.

Figure 54 Sydney Road Festival
Source: The Age

Public realm enhancements have been embedded in all the earlier sections, such as intersection upgrades, key street changes etc.

9.7 Car parking

9.7.1 Introduction

Car parking, as previously identified, is plentiful in Wonthaggi. In many cases, it is surplus to requirements. The Site Assessment, outlined in Section 5.1.2 found that the 45-degree angle parking is creating a *disconnect* between both sides of the street (e.g. Graham and McBride) and these streets will benefit from street greening, bike lanes and other measures to create a more people focused environment. It is important to recognise that accessible (disabled) parking is crucial to an inclusive Wonthaggi and therefore any changes to parking must not put those that rely on accessible parking at a disadvantage.

Summary of facts related to car parking

- Cars sit idle for 95% of the time
- Historically, car parking policies have shaped cities into car dominated landscapes
- On average, 40% of off-street, residential parking is vacant
- On- and off-street parking can account for 50% of all land use in a city
- Car parking adds $30,000 - $122,500 to the price of a residential dwelling in multi dwelling developments
- Up to 30% of all traffic is caused by people seeking no-fee kerbside parking space

Box 6 Key parking facts

9.7.2 Analysis

Figure 55 shows the publicly available parking bays within the Wonthaggi town centre (excluding private parking, such as employee parking behind shops, and special use bays such as disabled parking).

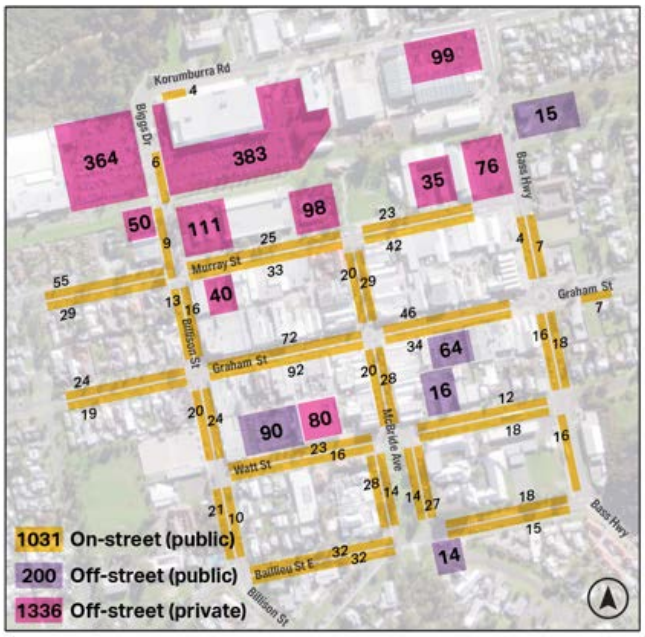


Figure 55 Publicly available parking in Wonthaggi

There are approximately 1,336 private, 200 public off-street parking bays, and 1,031 on-street parking bays within the Wonthaggi activity centre.

The street and built form environment of central Wonthaggi is dominated by car parking. Key streets (i.e. McBride and Graham) have 45-degree angle parking on both sides of the street, which reduces the width for other potential users and, as highlighted earlier, severs the connection between both sides of the street. Currently, there are no mid-block crossings and while crossing the street mid-block does happen, informally, this activity is being suppressed and made unpleasant and unsafe by the current street layout. As previously mentioned, some 25% of crashes involving pedestrians take place on Graham Street. Figure 56 provides a typical street in central Wonthaggi with generous, 45-degree parking bays.

Figure 56 Generous on-street parking provision, central Wonthaggi

Overall, there are approximately 1,031 on street parking bays.

There are several large off-street parking facilities in central Wonthaggi. There are approx. 1,621 off street car parking bays in Wonthaggi (not including small private parking with restricted access, such as employee parking). No real time information displays were identified during the site assessment, and such technology may assist motorists to more efficiently find an available bay. Finally, better utilisation of off-street parking may reduce the need for on-street parking on selected streets, where a high value use has been recognised. Figure 57 offers an illustration of the large off-street car park at Watt Street.

Figure 57 Off street parking in central Wonthaggi

Adjacent to the car park shown in Figure 57 is an undercover parking site that is currently closed to the general public. Figure 58 shows the current state of the off-street parking lot. It is estimated to hold around 80 bays.

Figure 58 Locked undercroft parking

The demand for car parking is made higher due to the high level of car use for short trips that has emerged as a consistent theme during this project. Wonthaggi's role as a regional centre is likely to add to parking demand, with residents and visitors of satellite towns, such as Cape Paterson and Inverloch, visiting Wonthaggi for shops and services. It is likely that some parking assets may be heavily under-utilised outside of the peak summer period. As such, increasing the supply of parking through newly constructed parking bays may result in large amounts of space remaining unused for most of the year and restricting it for other uses for the majority of the year.

Car parking analysis

A number plate survey was conducted on a weekday in late May for vehicles parked in key locations in central Wonthaggi. Number plates were recorded using video and the number plates were then detected. This data was then sent to the Department of Transport, requesting the postcode of vehicle registration.

The map shown in Figure 59 illustrates the catchment of the vehicles parked in central Wonthaggi. This serves as a proxy for the likely origin of those vehicle parked in central Wonthaggi.

Box 7 Understanding where parked cars originate

Figure 59 provides the results from the car parking analysis described in Box 7. It shows that just over 1 in 4 cars parked in central Wonthaggi are registered to an address within Wonthaggi itself, suggesting many trips of less than 2km. Wonthaggi is clearly a destination for Inverloch residents, with some 15% of vehicles surveyed registered in Inverloch.

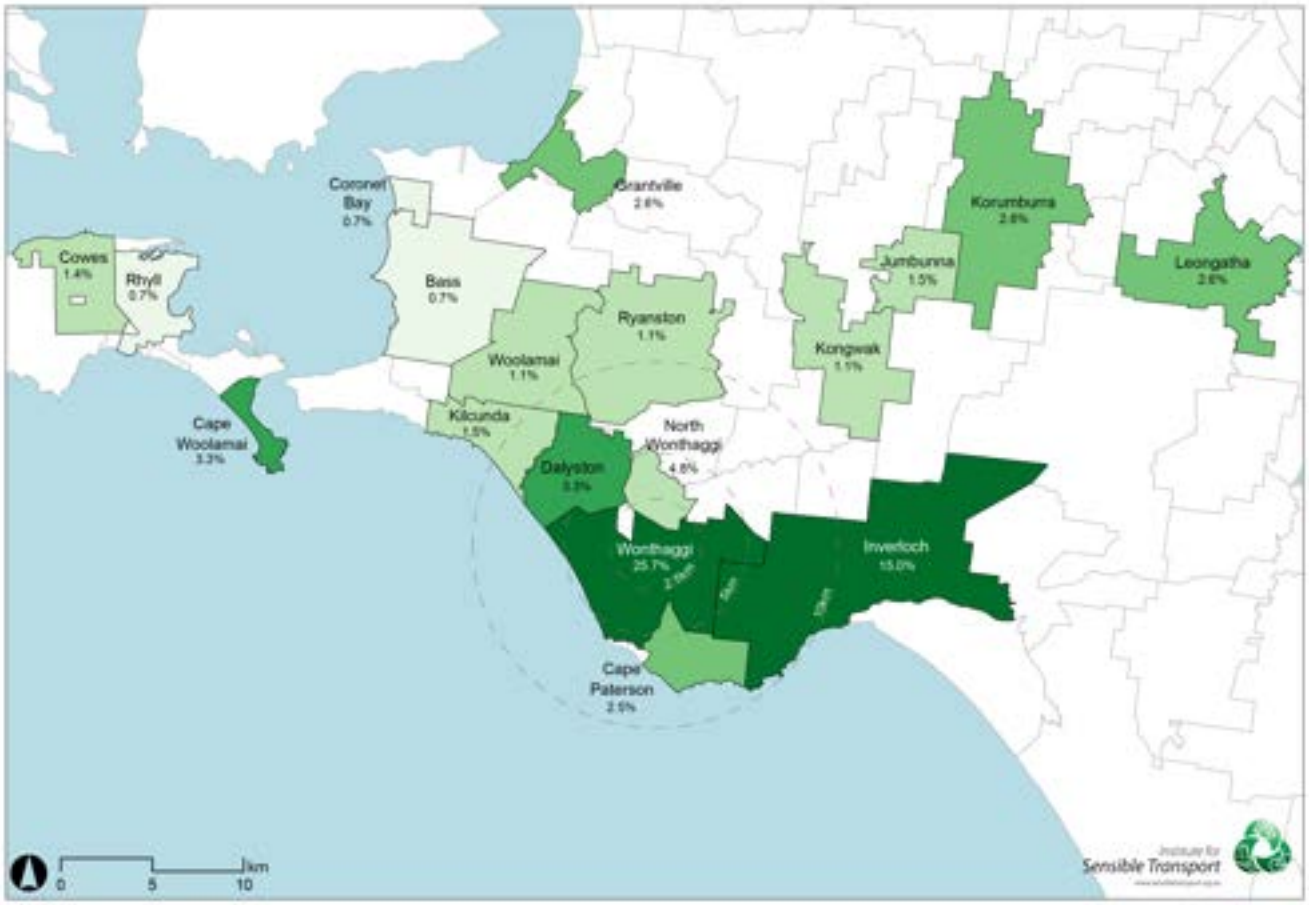


Figure 59 Postcode of registration for vehicles parked in central Wonthaggi

9.7.3 Recommendations

9.7.3.1 Shift on-street parking to consolidated sites at the edge of the CBD

The large amount of space used up by angled on-street parking and wide travel lanes creates barriers for people to freely move from one side of the street to another. This creates a disjointed and unattractive city centre. Relocating on-street parking to the edge of the Wonthaggi CBD frees up space for a more amenity rich environment, including more trees and landscaping, public seating, al fresco dining, and places for children and young people to enjoy. Council should seek to gradually reduce the amount of on-street parking within the town centre, particularly along Graham Street and McBride Avenue. This parking should be replaced to existing and new off-street parking sites at the edge of the CBD, providing people with a short walk into the centre. This would function in much the same way that a shopping mall does – people drive to the edge of the site and park before walking into the shopping area, which is pedestrianised and amenity rich.

Several Council and Private-owned sites could be used to provide the additional relocated parking. These sites have also been identified in the Draft Wonthaggi Activity Centre Structure Plan. They include:

- The former High School
- Woolworths
- Bunnings/Harvey Norman
- IGA car park
- Big W

Conversely, the Council-managed car park at 97 Graham Street is not a recommended location for increases in parking supply through a multi-deck site and is more likely to be suited for redevelopment.

Sites that have access from the future movement corridors (Biggs/Bilson, Bass Hwy, Korumburra, Baillieu St E) are preferred as they are best able to accommodate vehicle movements and supports reduced vehicle movements on key activity streets of Graham and McBride.

Figure 60 shows our recommended changes to parking in Wonthaggi, focusing on shifting parking from the centre to the periphery of the CBD.

Figure 60 Recommended parking changes

9.7.3.2 Parking Overstay Detection System (PODS)

To ensure Wonthaggi is able to manage growth in a manner that protects and enhances its liveability, vibrancy and productivity, best practice parking management principles are essential. Best practice parking management considers how best to allocate scarce space to deliver the greatest public benefit.

It is recommended Council undertake a feasibility study to determine if PODS should be installed within Wonthaggi. This should include an assessment of different parking management technologies, including in-ground sensors and camera systems. This study should also include an assessment on the upfront costs and ongoing management costs, as well as mechanisms for cost recovery – including paid parking options.

PODS could be installed in on street parking bays with a 2 hour or less limit, and Council owned off street bays. PODS are small in-ground sensors linked to a central computer system that provides Council with precise data on the length of time spent by each car in a PODS parking space. It is used to increase parking enforcement and improve parking compliance. It is also useful for providing Council with detailed occupancy data for high-demand areas.

9.7.3.3 Real time parking availability information

PODS can be integrated with real-time parking information. This can improve the efficiency of existing parking supply by directing drivers to available parking spaces. This reduces congestion caused by cars cruising for a free space and provides the community with an accurate and up-to-date understanding of car occupancy in the area. See *actions* for specific locations recommended.

Figure 61 provides an example of a real time parking information display. These assist motorists find a park with less circulating around Wonthaggi's core while looking for an available bay.

Figure 61 Real time parking availability

9.7.3.4 Paid parking

In order to reduce demand for car parking, especially for short trips it is recommended a paid parking system be further investigated. Based on parking management best practice (Shoup, 2017), the intention is to introduce a price that supports 85% occupancy, meaning that 15% of spaces are available at any given time. The introduction of paid parking on all streets in the Wonthaggi CBD is recommended, bordered by Korumburra Road, Billson Street and Watt Street.

The objectives of paid on street parking are to:

- Incentivise active travel for short trips.
- Keep 15% of spaces available at all times.
- Encourage 'park once' habits, rather than driving from shop to shop.
- Encourage visitors to stay in Wonthaggi for longer by having lower marginal costs for longer stays.

Table 6 provides an indicative fee schedule. The intention is to deter excess movement and reduce the incentive drive for short trips by pricing the first hour at $2, dropping to $1 for each additional hour.

Table 6 Scaled paid parking - example

Hour	Rate	Total Cost
0 – 1	$2.00	$2.00
1 – 2	$2.00	$4.00
2 – 3	$1.50	$4.50
3 – 4	$1.00	$4.00
4 – 5	$1.00	$5.00
5 – 6	$1.00	$6.00
6 – 7	$1.00	$7.00
7 – 8	$1.00	$8.00

In accordance with best practice, it is recommended that traders and other in the community are given an opportunity to help choose what the revenue should be directed towards. In many instances, cities have chosen to enhance the amenity of the streetscape in which the revenue was generated.

Managing peak demand car parking

As has been identified earlier, it is understood that Wonthaggi has surges in demand for parking at summer and Easter school holidays, as well as during special events. It is plausible that it is primarily during these events that Wonthaggi's parking approaches capacity. For much of the year, parking supply is likely to be significantly greater than demand.

It is recommended that creating a peak demand overflow area on the edge of the CBD (e.g. Wishart Reserve, Wonthaggi Primary School, former Secondary School Site etc), which could serve to accommodate the higher demand at peak periods, as well as long vehicles (e.g. caravans, trailers).

Box 8 Peak demand parking - recommendation

9.7.3.5 Electric vehicle charging

The Wonthaggi region does not currently have any fast chargers for electric vehicles. Two slow charges exist; one at the State Coal Mine, and another at the Ecoliv Display Centre. As electric vehicle ownership continues to grow rapidly in Victoria, Wonthaggi is able to benefit from a fast charger as it will attract people to the town centre, and they may contribute to the community during the 30min – 2 hours they may spend while the vehicle is charging.

It is recommended that a dual port 50kW. DC charger be installed in a Council owned off street car park. An example of what this looks like is shown in Figure 62. Management of the bays should be in line with existing Council policy. In the future, Council may need to review how EV charging is managed and if or how charging costs are recovered. We recommend that Council should charge slightly higher than the market rate for electricity, to cover maintenance costs. There is a very competitive electric vehicle charger market in Victoria, and Council should exercise the competitive forces of this market to deliver the most efficient outcome for the community. A 50kW DC charger costs between $32,000 and $55,000. While it can be tempting to provide EV charging at no cost to the end user, this is discouraged, as it effectively means the Council '*becomes the market*', and it deters private investment in the EV charging network.

Figure 62 Example of a DC Fast Charger, Launceston

9.7.4 Actions

- Investigate option to implement Parking Overstay Detector System (PODS) in all on-street car parks that have a 2hr or less parking limit
- Install real time, digital information displays at key entry points into central Wonthaggi (Graham

St just east of intersection with McKenzie, Biggs Drive and Murray, Billson St and Watt St)

- Investigate options to implement paid parking on streets within the CBD.
- Initiate discussion with the private land holder of the undercroft off street parking facility off Watt St, with the view of opening it to be public.
- Work with the Wonthaggi Primary School community and other potential sites to create a seasonal pop up holiday parking area, to operate during peak holiday periods.
- Install a dual port 50kW DC electric vehicle charger in an off-street car park, close to suitable electricity supply, in a high (people) traffic area.
- Monitor use of EV charger and when demand has increased, it may be necessary to install additional chargers. Council should charge slightly higher than the market rate for electricity, to meet maintenance costs.
- Include provision for sufficient accessible (disabled) parking in all streetscape upgrades.

9.8 Behaviour change

9.8.1 Introduction

While this report primarily focuses on the infrastructure changes required to support the future vision for Wonthaggi, social programs for the local community and Council officers support the transition to new transport patterns and behaviours.

This section will briefly discuss the key identified behaviour change and social program actions that will best fit with the local Wonthaggi context.

9.8.2 Recommendations

9.8.2.1 Program for workers

The biggest potential mode-shift opportunities are from commuters that drive to work in Wonthaggi, including Council workers. Our data analysis found that almost half of all trips to work in Wonthaggi, start within the town itself. Most of these trips, at least from a distance perspective, can be comfortably done by most able-bodied people by more sustainable modes.

There have been several innovative behaviour change programs that have recently been implemented in Australia. Most focus on providing increased incentives for people who switch from driving to another mode and generally have been able to achieve a 5 – 15% reduction in car use.

Initiatives could include:

- Salary sacrificing for e-bikes
- Personalised travel plans for each staff member / business
- Internal car-pooling club with preferential car parking.

Many habits form during new life stages or after major disruptions (e.g. COVID-19). One major change is when we start a new job. This provides an opportune time to encourage more sustainable modes of transport. This could be through providing a personalised travel plan during the induction phase of starting work and sign-up offers to sustainable transport schemes.

Conversely, many people chose to drive to work because car usage is heavily subsidised by their job. This includes the provision of free parking for staff, salary sacrificed vehicles, free or discounted staff cars for executives, and car usage for work-related trips. Subsidies and incentives for car use should be reviewed and wound back where it competes with a corresponding sustainable transport incentive.

Examples of existing programs can be seen in the following links:

https://swisse.com.au/ride-to-work-scheme

https://www.cyclescheme.co.uk/

https://www.cityofsydney.nsw.gov.au/explore/getting-around/cycling/courses/workplace-cycling-courses

https://www.e-stralian.com.au/

9.8.2.2 Program for shoppers / visitors

Many people who visit Wonthaggi also come from within the broader local area. Many of the barriers to greater uptake in sustainable travel is due to missing infrastructure and public transport access. However, there remains a sizeable portion of the local community who live within a walk or ride of key destinations within the town centre.

Programs to encourage more walking and bike riding to shops and services within Wonthaggi include:

- Implementing a rewards program for walkers and riders, including shop signage for participating businesses.
- Discounted shopping jeeps (see Figure 63), bike baskets and panniers, and other accessories to make completing sustainable trips easier.
- Implementing a simple and engaging wayfinding system to highlight the short distance to services (https://walkyourcity.org/).

An example, drawn from Melbourne's west can be seen here:

https://www.maribyrnong.vic.gov.au/Business/Support-for-existing-business/Bikes-are-great-for-business

Figure 63 Shopping Jeep

Finally, it is crucial to recognise the marketing of sustainable mobility options should only occur once the actions to improvement the environment for walking and cycling have been implemented. Promoting modes that provide low levels of service have little impact and can serve to *'put people off'* attempting to travel more sustainably in the future.

9.8.3 Tourists

Wonthaggi is also an important tourist hub for people visiting the Bass Coast region. Many of these tourists stay at caravan parks or bed and breakfasts and visit local attractions. Developing a 'park once' tourist program where guests staying in the area are provided with maps and information to help them make as many trips by foot or bike as possible will ease pressure on Wonthaggi's transport and parking infrastructure, and also provide visitors with the ability to explore Wonthaggi and the Bass Coast's unique environmental and historical attractions. This would support local businesses, through hire bike schemes and providing Cellar Door / Provedore-type opportunities for visitors to engage with local produce.

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11. Appendix 1 Policy Review and Data Analysis

See following page for Appendix 1.

Note to readers: It is important to recognise that the Policy Review shown in Appendix 1 was undertaken in the preliminary stages of the study and may not reflect the recommendations of the main report.

Appendix 1: Policy Review & Data Analysis

Wonthaggi Access and Movement Study

Revision 1, June 2020

Institute for Sensible Transport

Prepared by

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Executive Summary

This is the first in a series of reports to be delivered as part of the *Wonthaggi Access and Movement Study*. This report is focused on providing a review of existing policies pertaining to transport and land use planning in Wonthaggi, as well as an analysis of the transport related data.

Policy review – key themes

The draft *Wonthaggi Activity Centre Plan* (2019) acts as the catalyst for the current project. The Plan's goal is for the Wonthaggi Activity Centre to embrace its role as a key centre servicing the Gippsland region. It declares that Wonthaggi will become a vibrant place for people by reducing the impact of car use on the town centre and creating a more inviting environment in which to walk, cycle and use public transport. Indeed, the policy review found this to be a consistent theme throughout the many policies covered in this document.

This report has reviewed the key policy documents and strategies influencing access and movement for Wonthaggi. It found strong support from Local and State Government planning documents for continued population and employment growth in Wonthaggi in the next 30-50 years. Wonthaggi's population is expected to more than double between 2020 and 2036.

It also identified a need to act to ensure existing traffic and parking congestion is not exacerbated by the planned growth. Opportunities to reduce conflict between the township and road freight have also been identified in several documents, with several bypass options explored.

The Wonthaggi population was found to be underactive, threatening quality of life and life expectancy. Almost two-thirds (59%) of Bass Coast residents do not meet the required activity physical activity guidelines. Sustainable mobility has been found an effective method of achieving physical activity guidelines. The current street network in Wonthaggi does not support active transport choices. The policy review also found that walking was ranked number one favourite activity by residents.

Recent documents, including the draft *Wonthaggi Activity Centre Plan* point to a more sustainable and amenity rich town centre, with a more diversified transport mix and increased amenity. The projected growth, particularly in the north-east, provides opportunities to expand active transport (walking and cycling) infrastructure to the Wonthaggi CBD and key destinations.

A lack of public transport access reduces young people's engagement in the community.

Data analysis – key insights

Wonthaggi is highly car dependent, with over 90% of trips to work being driven. The next highest mode for trips to work is walking, at 4%. Despite the heavy car use that the Census data reveals, many motor vehicle trips are quite short. Indeed 1 in 3 Wonthaggi workers live within 2.5km of their workplace, almost all of whom drive.

Wonthaggi is highly car dependent, with over 90% of trips to work being driven.

The data analysis conducted for this report found a strong local connection between jobs within Wonthaggi and those living within the township. About 88% of Wonthaggi workers live in Bass Coast Shire, and 46% live in Wonthaggi itself.

1 in 3 Wonthaggi workers live within 2.5km of their workplace

Wonthaggi was also found to have high concentrations of residents aged 65 or more. Improving safe pedestrian infrastructure for these residents to access local services will be considered in the next steps of the project.

Approximately 10% of occupied dwellings in Wonthaggi do not own a motor vehicle, with another 46% owning only one vehicle. This means over half of the local population are very likely to conduct some of their trips by active or public transport. This highlights the need to ensure these residents can access shops and services in town safely and comfortably.

Approximately 10% of occupied dwellings in Wonthaggi do not own a motor vehicle.

Site analysis – key findings

The site analysis, as well as the desktop infrastructure audit showed very strongly that street design, crossing points and posted speed limits prioritise motor vehicle traffic, resulting in an unwelcoming environment for people wishing to walk and cycle.

Dominance of high volume and speed vehicular movement, at the expense of other road users has led to the loss of character and sense of place and streetscape quality in Wonthaggi's town centre.

An analysis of the bus service found the combination of poor frequency and long journey times is a limiting factor on the appeal of the bus network.

Our parking analysis found that there are approximately 2,650 publicly available parking spaces within the Wonthaggi activity centre. This includes a mix of on-street (1,031) and off-street (1,621) bays but excludes private employee parking and special use bays. Further demand analysis would need to be done across the year to determine the extent that parking stress is experienced, particularly outside peak summer times.

Next steps

While the next report will focus on recommendations, it has become apparent to the study team that are some compelling options for enhancing street and public realm within Wonthaggi.

1. Prioritising pedestrians, especially at key crossing points. Pedestrian priority treatments will be illustrated, providing better alignment between the stated policy position and the actual environment offered to people walking in Wonthaggi.
2. Formalising the freight route on Korumburra Rd, Biggs/Billson. This may open up important possibilities for Graham Street to achieve its full potential as the core retail corridor in Wonthaggi’s town centre.
3. Better utilisation of car parking assets, to ensure high value space is used effectively and Wonthaggi continues to be able to accommodate spikes in demand during holidays and special events.
4. Building a comprehensive, connected and high quality bike network. A significant number of trips in Wonthaggi are of a cyclable distance. A set of recommended routes and infrastructure typologies will be recommended, to diversify the travel options for Wonthaggi community and its visitors.
5. Activating Wonthaggi's laneways, as walking and cycling corridors and social and economic engagement. Wonthaggi has an underappreciated asset in the form of its laneways and recommendations will be developed to ensure they are utilised to their full potential.

1. Introduction

The Bass Coast Shire Council has commissioned this *Access and Movement Study* for the Wonthaggi township. The town experiences significant fluctuations in population and is expected to accommodate further urban growth in the future. This growth places pressure on the transport system and requires smarter, more sustainable transport options to support Council's ambition to reinforce the township's status as a Regional Centre. Overall, the project will set a holistic 30-year vision and will be based on the draft *Wonthaggi Activity Centre Plan*.

1.1 Context and project area

Wonthaggi is located some 132km south east of the Melbourne CBD and is the largest town in the Bass Coast Shire. The former coal mining town currently has a total population of 7,700, which is expected to grow up to an estimated 18,000 residents by 2036. The Shire experiences large numbers of visitors each year, reaching a summer holiday population of over 80,000 people, of which 33,317 people are permanent residents. The Bass Highway crosses the town and runs from Inverloch on Victoria's South-East coastline to Metropolitan Melbourne.

Wonthaggi performs an important role as a commercial and service centre for the Gippsland region. With this Bass Highway running through the town, it is also an important transit pathway for the agriculture and forestry sector of the Gippsland region. The area is also a popular destination for tourists during summer months. The township is expected to accommodate further peri-urban growth in the future. This growth is mainly going to take place in the North East Precinct.

1.1.1 Key issues

The study area is experiencing traffic safety issues, heavy vehicle movement through the town's centre and parking difficulties that are putting pressure on Wonthaggi's future growth and liveability.

The key issues identified in the *Draft Wonthaggi Activity Centre Plan* include (synthesised):

- Pedestrian and cyclist safety, access and convenience
- High car parking demand and dominant on street car parking
- Poor connectivity of active and public transport network
- Heavy freight transport crossing the town's centre
- Dominance of high volume and speed vehicular movement, at the expense of other road users
- Retail development in the town's centre that has led to the loss of character and sense of place and streetscape quality.

Wonthaggi can provide an affordable and attractive alternative to metropolitan living. However, strategies need to be developed now to support growth and protect its significant amenity, local character and attractiveness. Creating a diverse set of mobility options will help Bass Coast Shire Council achieve its growth in a more sustainable manner and reduce the dependence the area currently has on single occupant vehicles.

1.2 About this report

The objective of this report is to provide a review of the existing policies related to Wonthaggi, related to transport and to offer an analysis of travel data for the region.

This review takes a comprehensive analysis of recent and pertinent policies, strategies, data, and plans relevant to the transport issues of Wonthaggi. It includes a range of Bass Shire Council documents, as well as State Government documents that guide transport and land use

planning. The data analysis includes Council provided data, as well as ABS and State Government datasets.

1.2.1 COVID-19

This report, including the site visit, was conducted during the partial lockdown caused by the COVID-19 pandemic. This has had significant impacts on travel patterns and behaviour within Wonthaggi – both by reductions of travel by residents and the almost total disappearance of tourists to the town. The has meant that the number plate and parking occupancy studies that were scheduled to occur early in this project will need to be postponed. Once normal travel patterns have returned, it will be possible to undertake these activities. Doing so during the COVID-19 restrictions would have led to unrepresentative findings that would have limited application.

When travel restrictions are wound back, our team will conduct another site assessment, to better understand how people move around Wonthaggi.

2. Policy review

2.1 Draft Wonthaggi Activity Centre Plan (2019)

The *Draft Wonthaggi Activity Centre Plan* (WACP) provides strategic guidance for the development and reinforcement of Wonthaggi as a Regional Centre for the next 20 years. The overarching vision is as follows: *The Wonthaggi Activity Centre will embrace its role as a key centre servicing the Gippsland region. It will become a vibrant place for people by*:

- Offering a range of uses and spaces for activities that support the activation of the retail core and its fine grain uses
- Enhancing the safety, functionality and presentation of McBride Avenue, a key amenity and food and entertainment corridor; and Graham Street, a key retail and movement corridor
- Enhancing pedestrian and cyclist movement and safety through street improvements
- Creating community nodes and local destinations that anchor the north and south of McBride Avenue
- Reinforcing Wonthaggi's character through streetscape and open space improvements that tell Wonthaggi's story

Special consideration has been taken into four key strategic sites/public spaces. These sites have the opportunity to activate Wonthaggi Activity Centre:

- Apex Park; former railway station, now Wonthaggi Historical Society and a mine whistle tower
- McBride Avenue; primary retail and hospitality strip, north-south connection
- Graham Street: primary arterial road linking to Bass Coast Highway, it is a Regional Road and offers secondary retail and commercial buildings
- Secondary school site; Wonthaggi Secondary College McBride Campus has moved and is an opportunity for urban renewal.

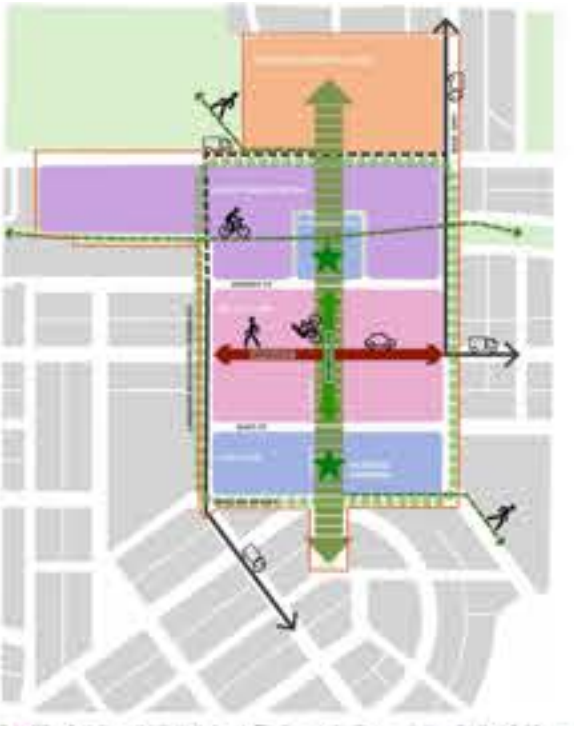

Figure 1 Urban Form Diagram
Source: Draft Wonthaggi Activity Centre Plan

2.1.1 Key directions and objectives

The Draft Activity Centre Plan is based on four key directions:

6. Land Use and Activity
7. Access and Movement
8. Built Form
9. Public Realm.

Access and Movement outcomes highlighted in the Draft *Wonthaggi Activity Centre Plan*

The specific outcomes that are sought to be achieved for access and movement are:

- To create a movement network that prioritises pedestrian and cyclist amenity and safety
- To provide convenient and safe car parking that meets the needs of the whole centre
- To enhance access to public transport.

Box 1 Access and Movement Outcomes

Source: Draft Wonthaggi Activity Centre Plan

2.1.2 Access and movement

Heavy vehicle traffic through the Wonthaggi township is an issue identified by the WACP. The WACP proposes the redirection of traffic from Graham Street to Briggs Drive and Korumburra Road. The central axes along McBride Avenue and Graham Street could improve its pedestrian and bicycle infrastructure. The Plan outlines how McBride Avenue could then become a north-south bicycle connector. Safe mid-block pedestrian and cyclist crossings are proposed for the intersection with Graham Street. The WACP proposes further investigation to be undertaken for the relocation of the current bus stop to the former secondary school site.

Figure 2 provides an indication of a future design for McBride Avenue.

The laneways within the town centre remain important pedestrian movement corridors. Car parking is a key concern for residents. There are opportunities for examining an expansion of Council-owned car parks and under croft parking on the former secondary school site.

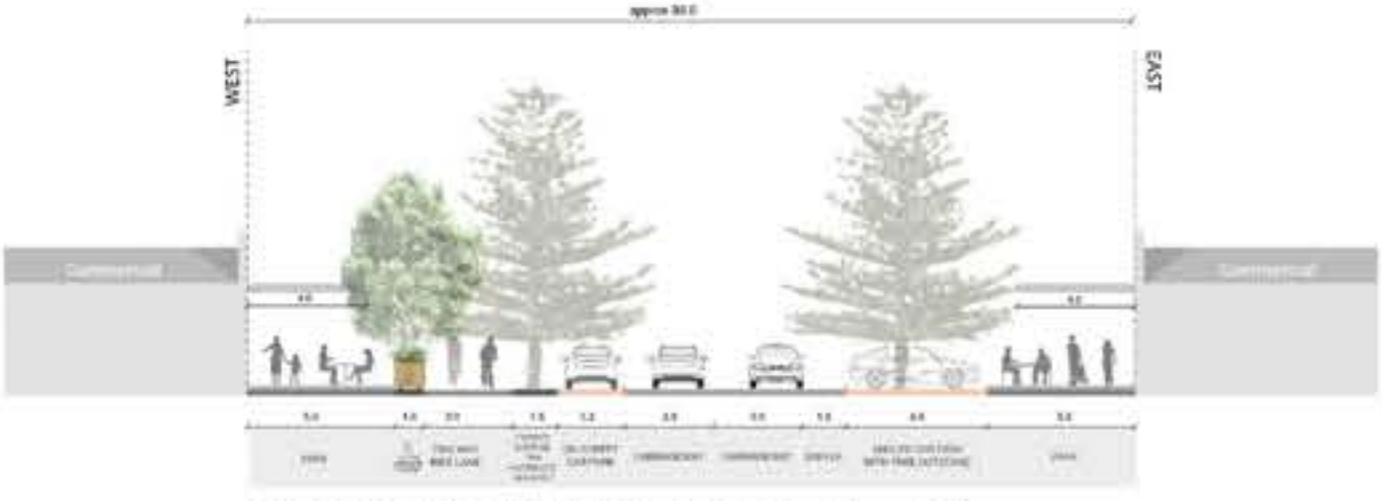

Figure 2 Proposed indicative McBride Ave cross section

Source: Draft Wonthaggi Activity Centre Plan

2.1.3 Issues

Wonthaggi has a strong coal mining history, which is still visible in the structure and built form of the town centre. Some more recent developments such as 'big box' shopping centres have altered the local character and sense of place of the town centre and they have created a division in the retail economy between traditional strip shops and large format retail.

Several streets within the Wonthaggi CBD have high vehicle volumes and speeds. This creates conflict between motor vehicles and people walking and cycling and diminishes the amenity of the CBD. Graham Street is seen to experience some of the highest volumes of heavy vehicles. Graham Street was also identified as requiring further landscaping and public realm enhancements.

2.1.4 Opportunities

The WACP presents several opportunities to improve access and movement to and through Wonthaggi. It outlines strategic moves to divert freight traffic around the centre of town, increase pedestrian and bike riding infrastructure, and greatly improve amenity. In order to achieve the outcomes in the WACP, further consideration for car parking management and access and movement from the existing and future residential areas is required.

2.2 Wonthaggi Structure Plan (2018)

Preceding the *Draft Wonthaggi Activity Centre Plan* was the *Wonthaggi Structure Plan* (2018). The *Structure Plan* takes in the future growth of the Wonthaggi township and includes consideration for open space, community infrastructure, strategic site management, and land use change needs. Wonthaggi has been identified in State Policy as a peri-urban centre, capable of growth. The town has been growing consistently and now has an estimated population of 8,229 people. The Wonthaggi District (includes Wonthaggi North, South Dudley and Cape Paterson) is expected to grow to 14,355 inhabitants by 2036. This means an annual average growth of 2.26%. Growth is likely to continue across the next 30-50 years as in-fill and new development housing comes online. The population of Wonthaggi is significantly older on average compared to regional Victoria in general.

2.2.1 Vision and outcomes

The vision stated in the *Structure Plan* is as follows: *to meet the anticipated needs of the community by facilitating land use and development that:*

- Supports the ongoing development of Wonthaggi as the Regional Centre for south west Gippsland
- Encourages physical activity
- Facilitates community interaction
- Respects the environment.

Six objectives have been outlined in order to achieve this vision (with those of particular relevance to transport in **bold)**:

1. Respond to the housing needs of existing and future residents of Wonthaggi
2. Plan for future local opportunities and maximise employment opportunities in Wonthaggi through consolidation of industrial and commercial precincts
3. **Respect the character of Wonthaggi, the CBD and enhance the town entrance/gateway and streetscapes**
4. **Enhance network of diverse, accessible and quality public open spaces and respect the environment**
5. **Enhance connectivity by prioritising creation of pedestrian friendly walkable and cycle-able town**
6. Strengthen the role of Wonthaggi as the regional centre providing health and education services

2.2.2 Settlement and housing

Wonthaggi has a high spatial growth capacity within the township boundary, particularly within

the north east growth area. This area has a sufficient amount of vacant lots residentially zoned to meet the demand for the next 30-50 years. This includes 4,500 dwellings in the north-east growth area and 1,991 with vacant lots (364 lots) and existing broadacre land (1627). The Strategy advises to encourage medium density infill developments close to the CBD as well as higher density on the periphery of the CBD.

The Structure Plan encourages medium density infill developments close to the CBD as well as higher density on the periphery of the CBD.

2.2.3 Economic development

Wonthaggi provides 32% of all jobs in the Bass Coast Shire, generally within the wholesale trade sector (42%) and transport, postal and warehousing sector (37%) Wonthaggi is also the prime industrial location within the Shire. The main entrance of the town via Bass Highway on the west is dominated by car dealerships and light industrial development, resulting in poor visual appeal.

Figure 3 Employment precincts in Wonthaggi
Source: Wonthaggi Structure Plan 2018

All retail floor space is located in the CBD and is expected to meet future demand.

2.2.4 Built Environment and Character

Wonthaggi has a wide range of built form typologies, ranging from old heritage houses from the early stages of mining in the area, to contemporary buildings. Overall, the density is low and it is recognised that there is a lack of street trees. The Structure Plan states the compact nature of the Activity Centre should be maintained and an open space link from Murray Street to Korumburra Road to provide a continuous north-south pedestrian space through Wonthaggi, should be investigated.

2.2.5 Public Open Space, Recreation and Environment

Wonthaggi has a wide variety of passive and active public open space, except for the North East Precinct. Community feedback during the preparation of the Council Plan (2017-21) identified the need to improve pathways and trails and access to public open space. Several strategic goals from the previous Strategy (2008) remain relevant:

- Providing pedestrian/bicycle links between open space nodes (such as Guide Park and the rail trail)
- Providing pedestrian/bicycle linkages between open space nodes and the Wonthaggi commercial area
- Providing pedestrian/bicycle linkages between the Wonthaggi commercial centre and the educational precinct.

2.2.6 Connectivity

The Bass Highway passes through the township of Wonthaggi. The town also has a high level of car dependency. The *Structure Plan* predicts that Wonthaggi is expected to have a significant congestion problem within 15 years, at intersections on VicRoads managed roads. The Structure Plan advises to continue to advocate to VicRoads to upgrade the Graham Street/McKenzie intersections as well as other intersections.

2.3 Wonthaggi North East Draft Precinct Structure Plan

This *Precinct Structure Plan* (PSP) guides the planned growth and delivery of infrastructure and services in Wonthaggi North East. The area is expected to grow from 8,000 to 20,000 residents through the construction of 4,500 homes over the next 30 years. One of the objectives of the PSP is to identify a potential alignment for a future Wonthaggi bypass.

The PSP also outlines road projects to be delivered to facilitate the development of the growth area. This includes new and upgraded roads and intersections. Open space, waterways, and community infrastructure is also outlined.

There are opportunities to build on the work outlined in the PSP to further improve pedestrian and bike riding access to and through the township. In particular, streets that form part of the future bike riding network could provide separated infrastructure. Additionally, roundabouts and other intersections in the built-up area should have a stronger focus on safe pedestrian access. The proposed waterways also offer opportunities to provide recreational and transport active travel links.

Without the inclusion of sustainable transport principles, and a strategic shift to reduce car dependence, the PSP risks embedding a '*predict and provide*' mentality that can in fact exacerbate the very congestion issues it aims to 'solve'.

2.4 Representing our community: shaping our future (2019)

During the development of the *Council Plan*, extensive community consultation was undertaken. One of the topics Council is advocating for is investment for key visitor infrastructure. One of the planned pathway projects is a shared path from Wonthaggi to Inverloch. This 12-km long path would complete the tourist trail from Cowes to Inverloch. This path could either be constructed through farmland or coordinated by VicRoads and be constructed alongside the Bass Highway. The estimated costs are $5-$5.5 million.

Another project Council is advocating for is the previously discussed Wonthaggi North-East Precinct Structure Plan. In order to meet current and future project growth there will be pressure to deliver key infrastructure upfront.

2.5 Gippsland Freight Strategy (2013)

The Gippsland region produces 85% of Victoria's electricity, 90% of Victoria's natural gas and 20% of Australia's oil. The region also supports a strong agriculture and forestry industry. These latter industries together with a large tourism sector generates large volumes of freights and passenger vehicles, particularly along Bass Highway. Wonthaggi houses one of the few export-focussed meat processing plants in the region. The Strategy identifies the need for a bypass of the Bass Highway to take heavy vehicles out of the centre of Wonthaggi. Figure 4 provides a high-level overview of key Gippsland freight routes.

Figure 4 Gippsland Freight Transport Network
Source: Gippsland Freight Strategy

While much of the *Gippsland Freight Strategy* remains pertinent, several areas of the document, including a focus on growing coal demand, may require updated analysis. The potential growth of freight movements, tourism growth, and increased development within Wonthaggi place increasing and conflicting demand on the local transport network.

2.6 Active Bass Coast 2018-2028

This Plan sets out Council's aspirations and vision for recreation and open space up to 2028. The vision for Active Bass Coast is: '*A healthy and connected community that regularly participates in recreation and social activities in both natural and structured open spaces.*' This vision falls into three key categories:

1. Active people
2. Active places
3. Active partnerships.

Almost two-thirds (59%) of Bass Coast residents do not meet the required activity physical activity guidelines. A high percentage of people are overweight or obese.

A high percentage of Bass Coast residents are overweight or obese.

Community engagement feedback informed the development of *Active Bass Coast*. A popular topic raised was about walking and cycling trails, with fifteen residents asking for a shared path between Wonthaggi and Inverloch. Walking was ranked number one favourite activity by residents.

Walking is favourite activity of Wonthaggi residents.

2.7 Disability Action Plan 2016-2020

The *Disability Action Plan* aims to ensure mainstream participation and universal access to every person living, working and visiting Bass Coast. The 2011 Census data indicates that approximately 6.4% of the people living in the Bass Coast Shire have a disability, which is above Victoria's average of 5%.

Community consultation support the development of the Action Plan. Some issues raised by participants were in relation to transport (buses and taxis), crossings and pedestrian and bike paths. Council states that it will continue to work with VicRoads to meet the relevant disability legislation and standards for access and mobility in high activity areas. Special consideration needs to be focused on road crossings and street furniture.

2.8 Youth Action Plan 2016-2020

The Bass Coast Shire developed the *Youth Action Plan* together with 20% of the young people aged 12-25 years living within the municipality. Some of the issues raised were drugs, bullying and insufficient things to do for youth. Another issue is the lack of access to public transport for young people. Some smaller towns have very limited or non-existent public transport.

A lack of public transport access reduces young people's engagement in the community.

2.9 Plan Melbourne 2017-2050

Plan Melbourne is the principal planning document guiding transport and land-use planning in Greater Melbourne and surrounding regional areas.

One of the seven outcomes outlined in *Plan Melbourne* focuses on regional Victoria. Within this outcome, one of the directions is to invest in regional Victoria to support housing and economic growth. Wonthaggi is specifically identified as one of the peri-urban towns that have the capacity for more housing and employment-generating developments.

Plan Melbourne also highlights support for improving connectivity between Melbourne and

regional areas, shown in Figure 5. For Wonthaggi, improved regional bus connections and Freight movements will be important.

Figure 5 Victoria's connected cities and regions

Source: Plan Melbourne 2017-2050

2.10 Aspirational Network Pathways Plan 2016

The *Aspirational Network Pathways Plan* outlines the future walking and cycling trails throughout Bass Coast Shire. In Wonthaggi (Figure 6), the rail trail forms a key part of the existing network. It is proposed that this link continues towards Inverloch. It proposes to do this through an off-road trail that uses existing unsealed roads and connections along property boundary lines. To maximise the usability of such a pathway, it will be necessary for the path to be direct and avoid unnecessary topographical challenges.

A secondary link is shown to connect south to Cape Paterson Road. This is provided through a painted bike lane in the road shoulder. While this link may be suitable for confident fitness and recreational cyclists, it is unlikely to be sufficient for a broad cross-section of the population. Consideration for a similar off-road connection would likely provide safer and more attractive bike riding facilities for the Wonthaggi and Cape Paterson communities.

Figure 6 Aspirational Path Network for Wonthaggi

2.11 VicRoads "Smart Roads" Bass Coast Road Use Hierarchy Plan

A Smart Roads Hierarchy was developed by VicRoads in 2016 for Bass Coast Shire Council. This includes an assessment of the streets within the Wonthaggi transport network. Many of the recommendations included significant changes to how the streets currently operate, from a mode hierarchy perspective. Many streets that were found in the Site Assessment (see Section 4) to have no pedestrian priority have been designated as '*pedestrian priority*' areas within the VicRoads SmartRoads hierarchy. VicRoads define the Road Use Hierarchy Principles as follows:

> *The set of guiding principles that allocates priority road use by transport mode, place and time of day is call the Road Use Hierarchy. These principles are being used to determine the priority use of both arterial and local road networks.*

SmartRoads was developed in order to provide better outcomes for communities and transport networks. SmartRoads recognises the importance of *place* in Activity Centres, and provides priority for sustainable transport in these locations.

Providing for larger numbers of pedestrians to safely and easily move across arterial roads in these centres is increasingly important, as is the movement of public transport

- VicRoads, 2016

Figure 7 provides an overview of the road user hierarchy principles offered by VicRoads.

Figure 7 Road user hierarchy principles

Source: VicRoads

2.11.1 Pedestrians

Figure 8 offers an overview of the Wonthaggi activity area and the very limited principal pedestrian network.

Figure 8 Pedestrian priority areas - overview

Source: VicRoads

Figure 9 provides a more detailed indication of the streets in which VicRoads has decided that more pedestrian priority is required in central Wonthaggi. Pedestrian priority areas are identified at the following locations:

- Briggs Drive from Korumburra Rd to Baillieu St
- Watt St between Billson and McBride Ave
- Graham St, between Billson and McKenzie
- Murray St between Billson and McKenzie

- McKenzie St between Baillieu St and just north of Korumburra Rd.

Figure 9 Central Wonthaggi pedestrian priority areas

Source: VicRoads

Importantly, Figure 9 also details high demand crossing points. Some of these are at existing formal crossing points (which do not currently include any pedestrian priority) and others are at mid-block locations that do not currently have any formal crossing opportunities. The high demand crossing locations indicated by VicRoads in Figure 9 will be investigated in the next component of this project. Currently, a mid-block zebra crossing exists on Murray Street between Billson and McBride and another on Graham Street near Hospital Drive. These, and other opportunities will be examined for enhancing the pedestrian friendliness of Wonthaggi in the Access and Movement Strategy.

2.11.2 Cyclists

Figure 10 provides an overview of the Principal Bicycle Network and Strategic Cycling Corridors for Wonthaggi. The overwhelming majority of the network shown in Figure 10 is *proposed*, and even some of the existing network would not qualify as bicycle infrastructure as it does not contain any bicycle symbols, and is more akin to wider shoulders than specific bike lanes (e.g. some sections of Billson St). Similarly, McKenzie Street outside the Secondary School is said to include a bike lane, although an inspection reveals that the paint is severely faded and terminates abruptly at intersections. The only *Strategic Cycling Corridor* is the rail trail.

Proposed on road bike infrastructure is only suggested for one street - Billson Street. All other proposed bike infrastructure is for *off road paths* and includes:

- Cameron Street
- South Dudley (which has now been completed)
- Graham Street (but no bike infrastructure between Biggs and McKenzie)
- McKenzie Street from White Rd to Historical Railway Line Bushland Reserve
- Western border of the Wonthaggi Bushland Reserve
- King Street – Baillieu Street from Cameron Street to McKenzie Street.
- Korumburra/Wonthaggi Road
- White Road (which has now been completed)
- Wentworth Road

Figure 10 Road User Hierarchy – Cyclists

Source: VicRoads

2.11.3 Buses

The bus preferred routes are indicated in Figure 11. See Section 3.5 for additional introductory information on Wonthaggi's bus network. The next report for this project will provide recommendations for increasing the efficiency and attractiveness of the bus network/service.

Figure 11 Road User Hierarchy – Buses

Source: VicRoads

2.11.4 Private motor vehicles

The preferred traffic routes and primary local access routes are shown in Figure 12.

Figure 12 Preferred traffic routes

Source: VicRoads

The preferred traffic routes are shown as:

- Bass Highway – McKenzie Street
- South Dudley Road
- Graham Street (between South Dudley Road and Billson Street). This does *not* include the section of Graham Street between Billson and McKenzie.
- McKenzie Street to Bass Highway
- Korumburra Road
- Biggs Drive – Billson Street.

2.11.5 Freight

The freight routes for Wonthaggi included in the SmartRoads network essentially include the same streets as the preferred traffic routes, with the exception of the section of Graham between Billson St and McKenzie. It is not clear how the co-existence of a priority pedestrian and freight street might be successfully implemented. In future components of the projects, a critical analysis of this, with an exploration of alternative options will be undertaken.

Overall, SmartRoads provides an important basis upon which to reimagine how streets might function in Wonthaggi to more effectively align with Council and community's strategic ambition.

2.12 Wonthaggi CBD Traffic Impact Study Final Report (2011)

This report offers a '*predict and provide*' approach to the management of traffic in Wonthaggi. It describes Wonthaggi as suffering from significant 'grid-lock' and predicts queue lengths 'several kilometres long'. Outside of annual events, such as the Moto GP, it is difficult to imagine such queue lengths occurring at a frequency that would provide meaningful disruption to the Wonthaggi community. The report continues along a similar line, suggesting that '*severe congestion issues make it highly unlikely that the expected developments will occur, as new residents and businesses would be discouraged from Wonthaggi give the poor road network performance*'.

Little attention is given to sustainable mobility or place making within this report, and of the limited content on the pedestrian and cycling environment, some of it conflicts directly with best practice. For instance, when describing Wonthaggi's cycling network, it notes: '*Despite the lack of dedicated facilities, the extensive amount of on-street parking (i.e. Graham Street), roadside shoulders (i.e. Billson Street) and large lane widths (i.e. Watt Street) provide sufficient space for cyclists to travel between intersections within the study area without conflicting with motor vehicles*'. This does not align with contemporary understanding of *Level of Traffic Stress* experienced by people on bikes or the minimum levels of comfort/safety '*would be*' cyclists say they require in order to make the decision to ride.

Given the length of time since this report was published, the change in development that has occurred since this time as well as the growth in interest in sustainable mobility, place making and safety (Vision Zero), it is unlikely this URS report offers much to the current project.

3. Data Analysis

This section offers a synthesis of key transport data related to access and movement to and within the Wonthaggi township. It describes how people travel to and from work, the distances they travel and where they come from. It also looks at crash data, demographic and density profiles, as well as key transport network data. The overall objective is to provide an overall understanding of travel patterns and opportunities to make the transport system safer, more sustainable and help Wonthaggi become a more liveable township.

3.1 Journey to Work

The Census asks respondents to nominate the mode of transport they used on Census day to get to work. This is the only transport question the Census asks. This section explores Census data related to journeys to work and relates to the 2016 Census. It will first look at journeys to work *to* Wonthaggi.

Figure 13 shows the mode share split for journeys to work *to* Wonthaggi. Approximately 93% of those travelling to Wonthaggi for work do so by car (5% of which as a passenger).

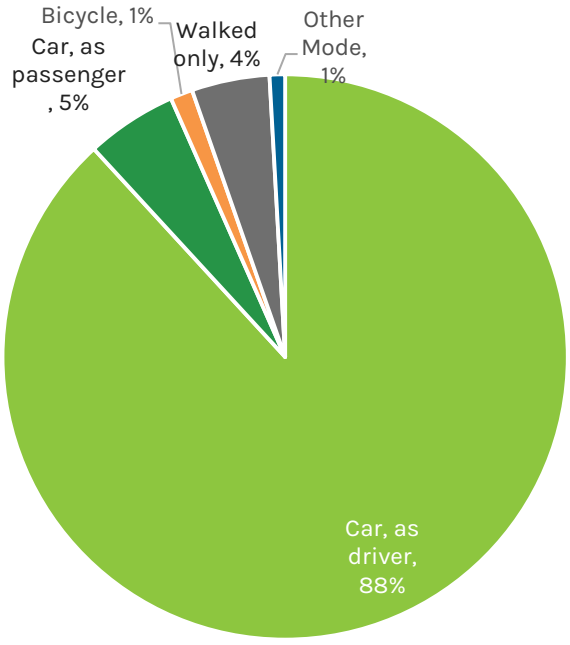

Figure 13 Mode Share - Journey to Work to Wonthaggi
Source: ABS
NB: Public transport was only 0.4% and this is why it is not represented in the graph.

Over 9 in 10 work trips to Wonthaggi are by car. About 88% of workers live in Bass Coast Shire, and 46% live in Wonthaggi itself.

Figure 14 shows where people live who work in Wonthaggi. It shows that almost all workers live within the Bass Coast (88%) and almost half (46%) of all Wonthaggi workers live within the township itself.

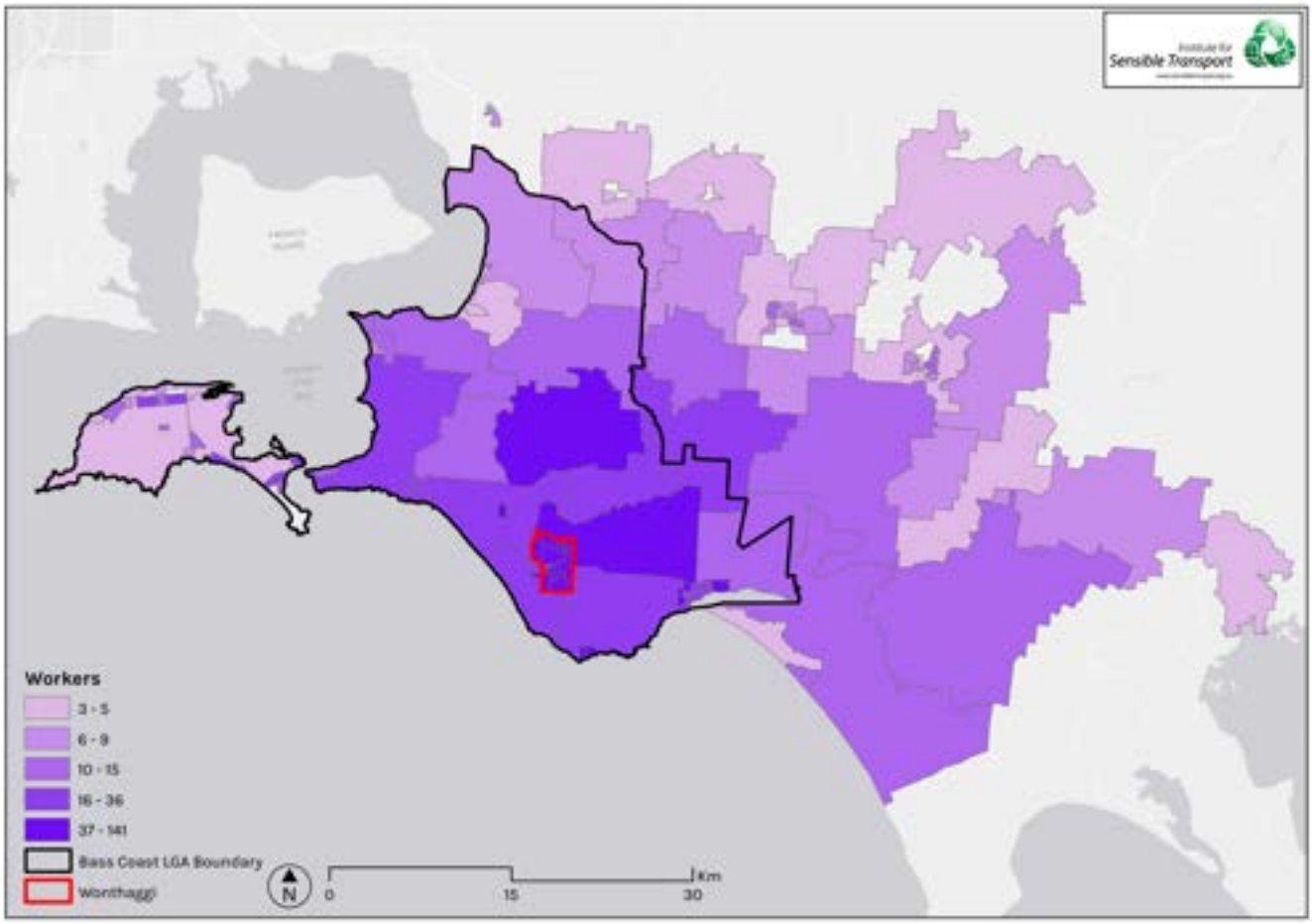

Figure 14 Where people live who work in Wonthaggi

Source: ABS

While 46% of jobs in Wonthaggi are filled by people living in town, they make up about 70% of the working residents in Wonthaggi. This highlights the strong connection of the local population with local jobs. It also highlights the potential for providing realistic alternatives to car use, given the dominance of short car trips.

Figure 15 shows a dot density map of journeys to work within Wonthaggi (outlined in red). Approximately half of all trips to work in Wonthaggi are shown. It shows a very large number of people live *and* work within the red boundary of Wonthaggi. The dot colours show that almost all of those commuters drive to work, with some limited walking and bike riding evident. CarD (the majority of the dots), refers to car drivers.

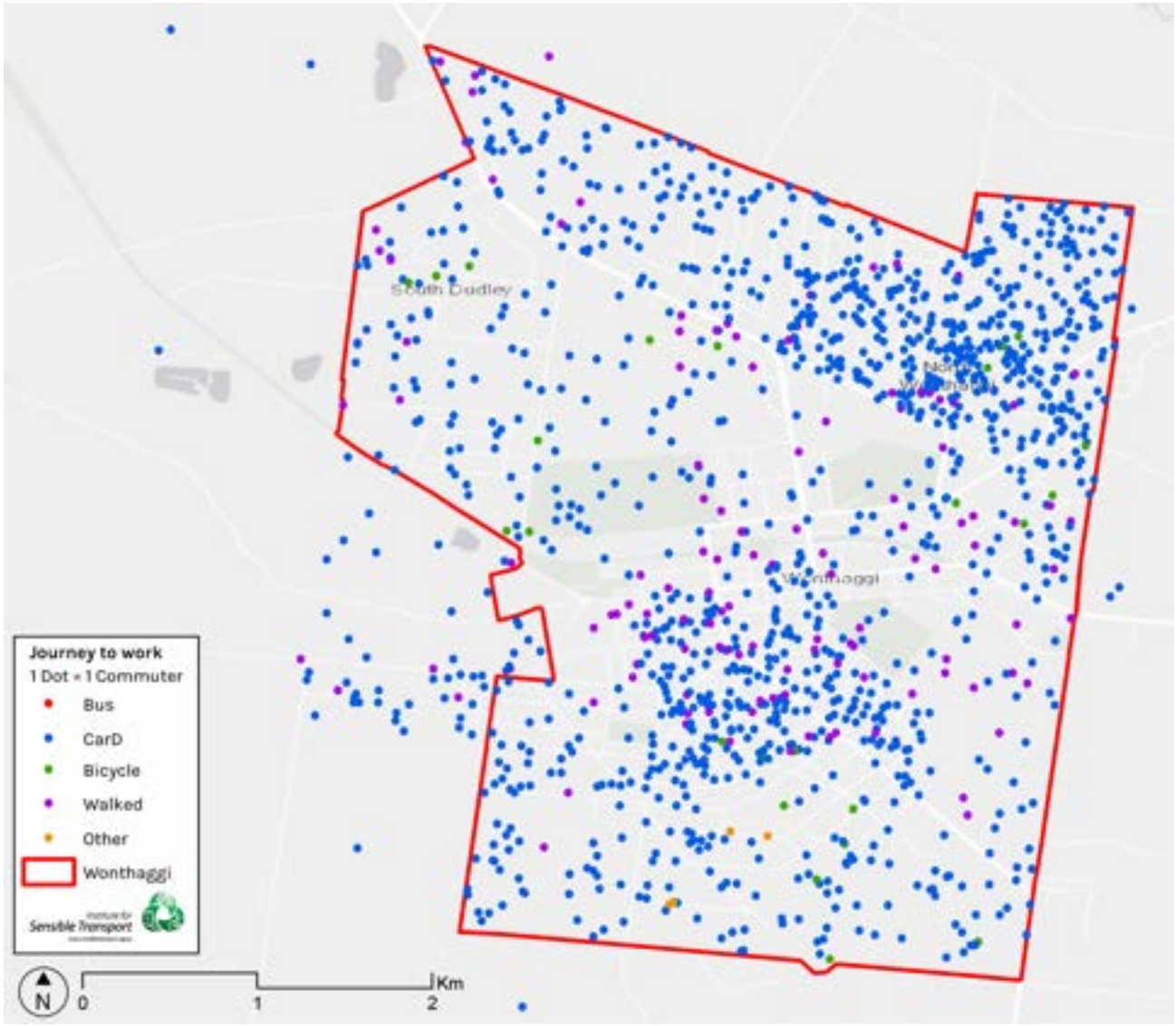

Figure 15 Journey to work to Wonthaggi

Source: ABS

3.2 Distance to work

The close proximity of workers shown in Figure 15 is also evident when analysing distance travelled to work in Wonthaggi. Figure 16 shows that one-third of all workers in Wonthaggi live within 2.5 km of work and almost half live within 5 km. Approximately 10-15% live within 1.5km or a 20-minute walk.

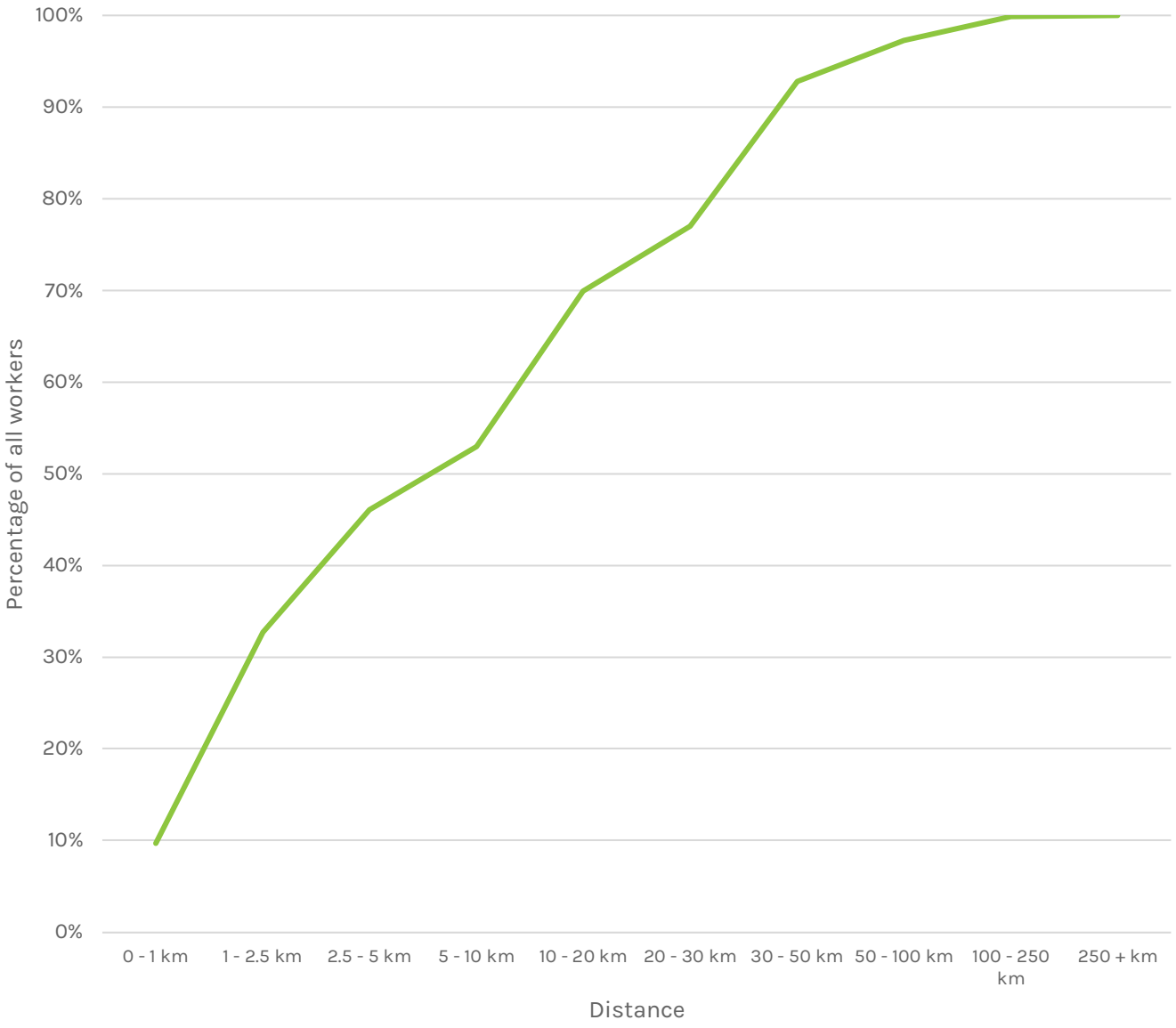

Figure 16 Distance Wonthaggi works travel to work

Source: ABS

One third of all Wonthaggi workers live within 2.5km of their workplace, and almost all arrive by car.

3.3 Road Network

This section analyses the current road network in Wonthaggi.

Figure 17 shows the road network in and around Wonthaggi by road type. This map was generated using Department of Transport road classification data. Most roads within Wonthaggi are classed as local streets, with only a limited number of roads identified as serving a higher vehicle function. Bass Highway is shown as the principal movement corridor, with Korumburra Road and White Road to the east and Billson Road and Graham Street providing sub-arterial functions.

It is evident that the current classification does not meet the existing travel patterns and future strategic objectives of Wonthaggi. Graham Street is unlikely to succeed as a key shopping street while maintaining a high traffic function, while current traffic volumes on Korumburra Road (west) are much greater than the local street classification it is given. A review of the appropriate road classification will be conducted as a future component of this project. This will serve to ensure future plans are undertaken in a way that works towards the desired outcome for each street within Wonthaggi.

Figure 17 Road Network

3.3.1 Freight

3.3.1.1 Truck Volumes

Figure 18 shows the average daily truck volumes on key roads within Wonthaggi. The numbers were drawn from VicRoads Traffic Volume dataset for arterial roads with the exception of Korumburra Road (west of McKenzie Street) and Biggs Drive, which was sourced from Council traffic volume data.

The numbers indicate that the majority of truck movements through Wonthaggi follow the Bass Highway and McKenzie Street with 300-400 daily trucks. The data also indicates that a significant proportion of trucks use the informal Briggs/Korumburra town bypass. Unfortunately, the VicRoads traffic counts do not appear to provide figures specific to Graham Street.

Figure 18 Truck Volumes

3.3.2 Laneways

Figure 19 shows the extent of the laneways across Wonthaggi. The town is unique in the density of laneways in all the residential areas. Likely built to provide access for a night porter, the laneways now provide rear property access and some front property access for subdivided lots.

The laneways could offer improved walking and bike riding access for local residents, avoiding high-traffic streets. Within the activity centre, they could also provide an improved shopping experience through laneway activation, and help to increase the *'surface area'* of the CBD, to facilitate social and economic exchange. As will be explored in future stages of this project, there are also opportunities to extend the laneway network to provide key north – south links through the CBD for active travel.

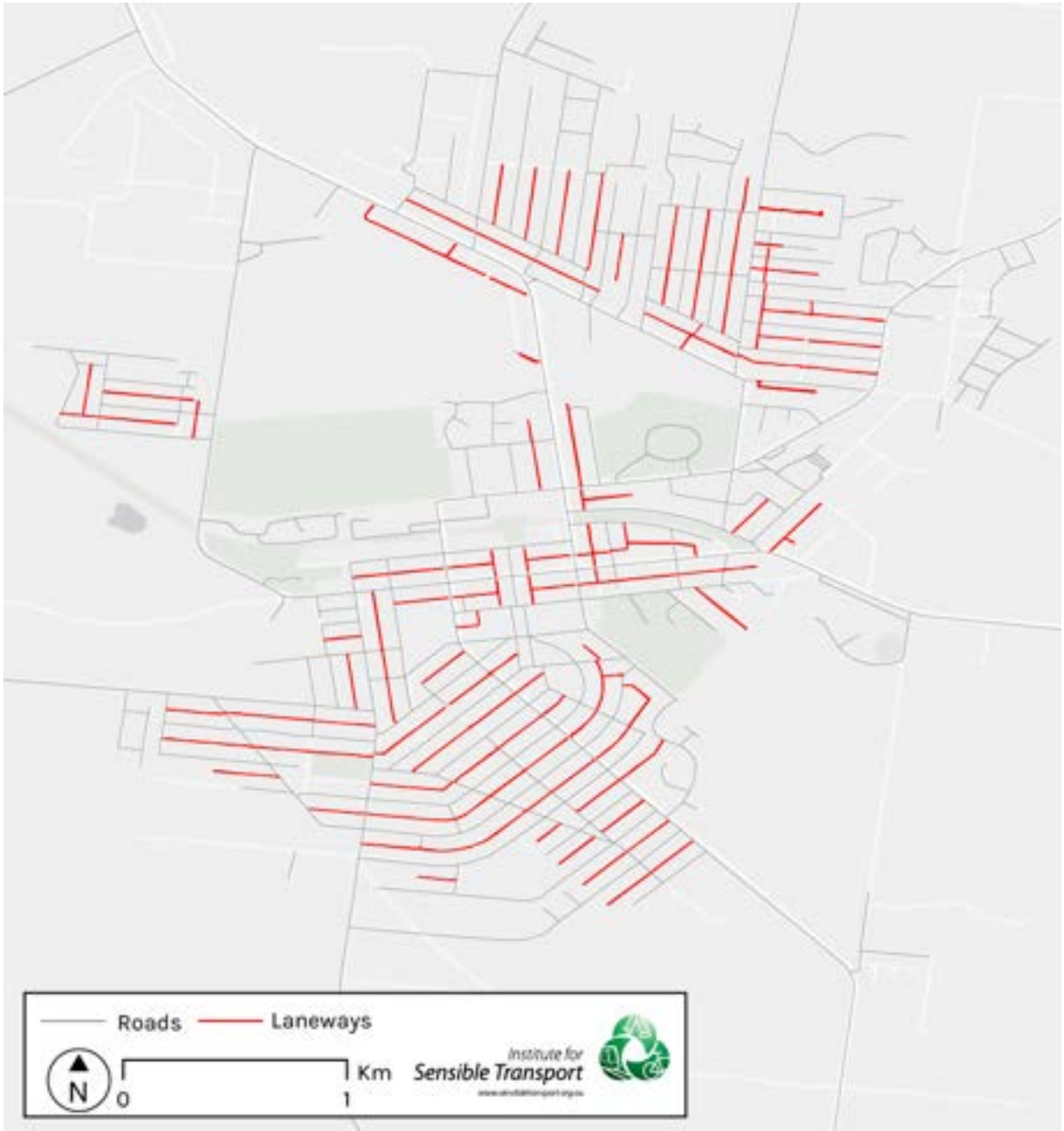

Figure 19 Laneways

3.3.3 Intersection vehicle volumes

Figure 20 show the average daily vehicle volumes for the Bass Highway and Korumburra Road intersection. The average figures were taken from one week of in-ground loop detector readings between 04/02/20 to 10/02/20. The figures show that Bass Highway carries around three times the vehicles as Korumburra Road. A similar number of vehicles turn from Bass Highway onto the eastern and western legs of Korumburra Road.

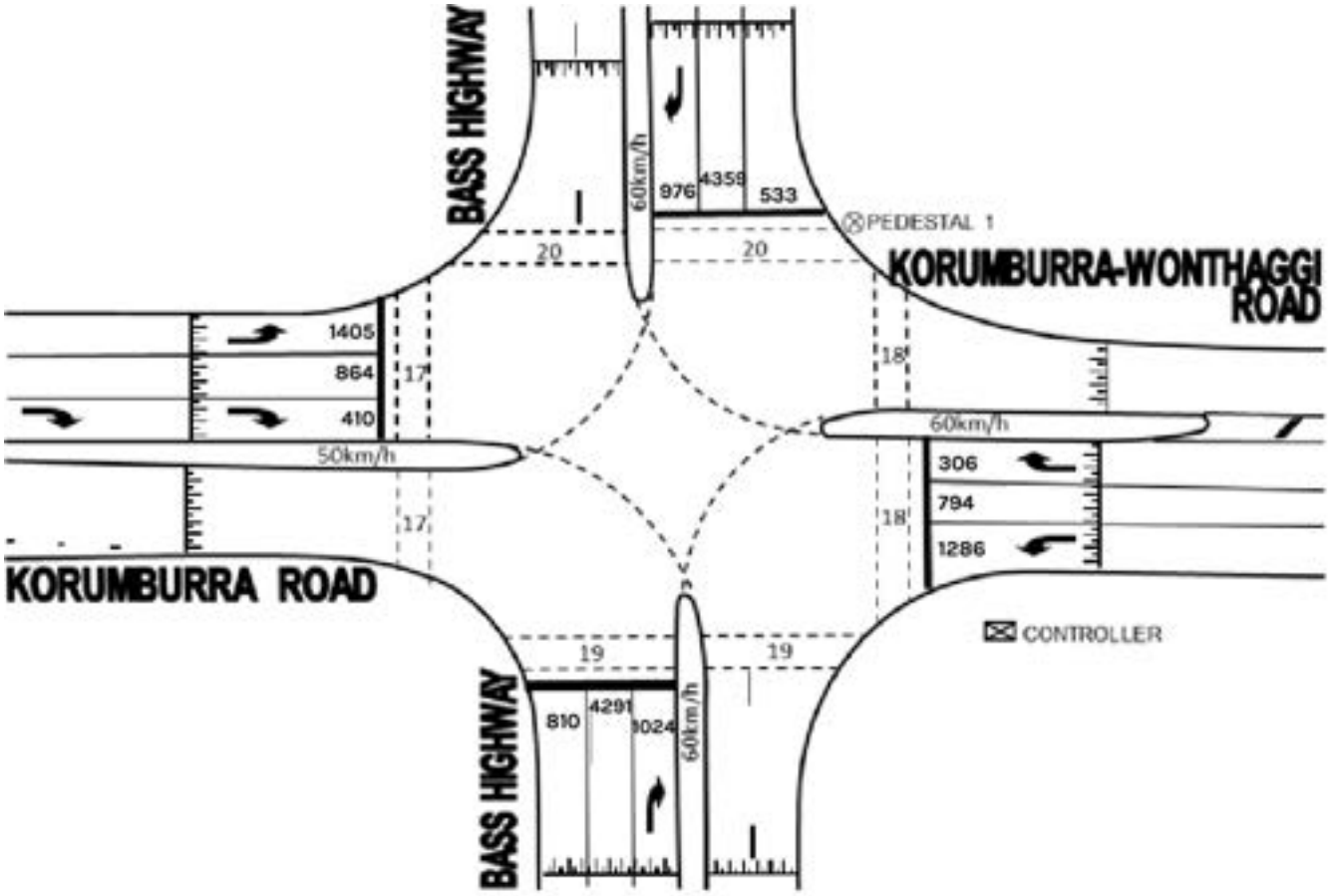

Figure 20 Intersection Korumburra Rd / Bass Hwy

3.3.4 Yearly Traffic Volume Trends

Figure 21 shows the total number of vehicle movements across the Korumburra Rd / Bass Hwy intersection for each month of 2019. Vehicle volumes are approximately 20% higher during the summer months and during the Easter holiday period, compared to the rest of the year. Note that vehicle volumes were not available for 10 days at the start of May 2019. It is not known whether this is missing data or due to road works. The rest of the month corresponds with volumes similar to April and June.

The volumes indicate that traffic congestion and, consequently, parking stress corresponds with peak holiday periods.

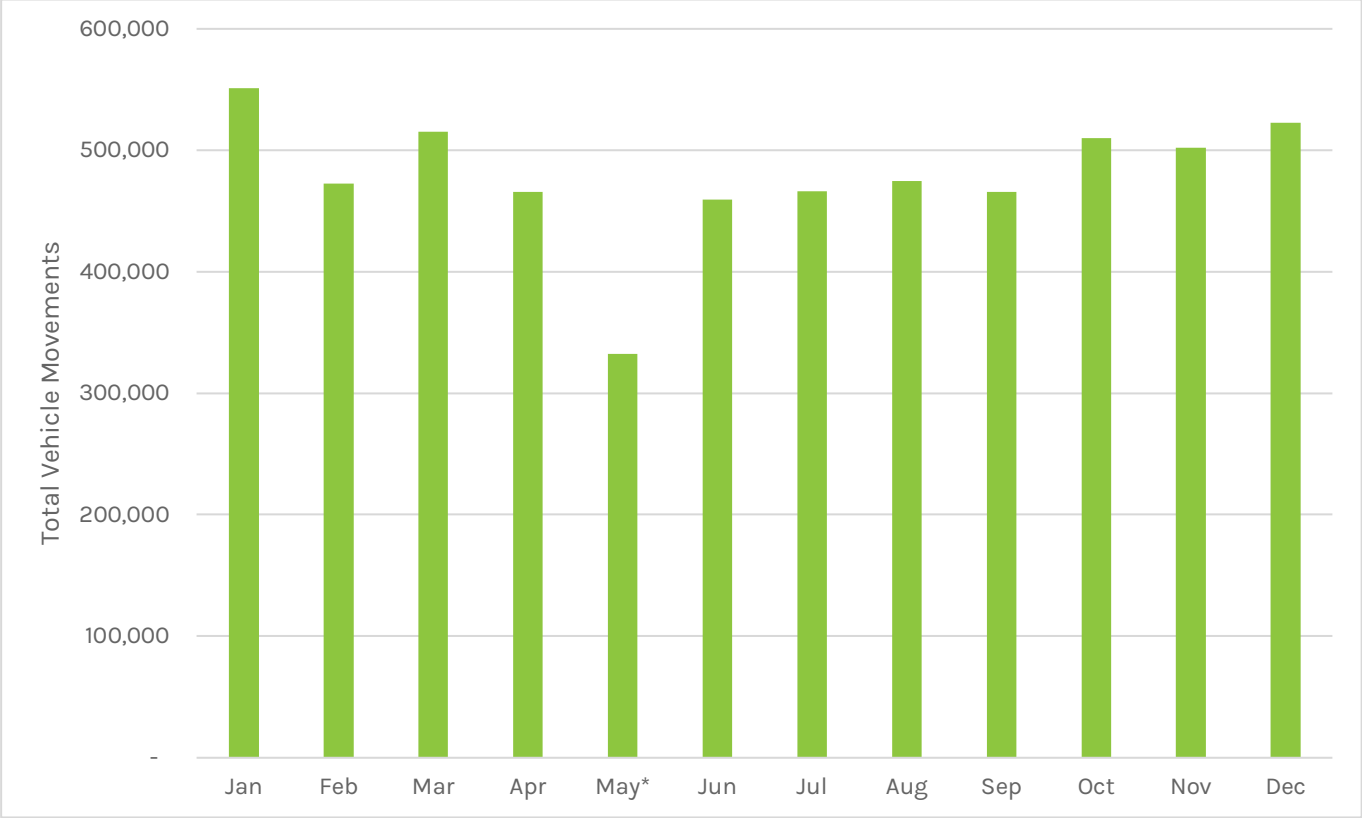

Figure 21 Total Vehicle Movements per Month

* Traffic volume data was not available between 1 May and 10 May, 2019

3.4 Bike Network

Figure 23 shows the existing and proposed bike network in Wonthaggi, drawn from data provided by Council. It shows a mix of off-road paths and Rail Trails with some limited on-road bike infrastructure. These existing links form a backbone of bike infrastructure to and through Wonthaggi. The proposed network shows linkages that extend into the residential catchments surrounding the township. This is shown to be predominately through off-road path extensions, with some painted lanes. Only about 30% of the network is existing, while 70% is proposed (shown in Figure 22). Readers are encouraged to also view the SmartRoads network of cycling infrastructure shown in Section 2.11.2.

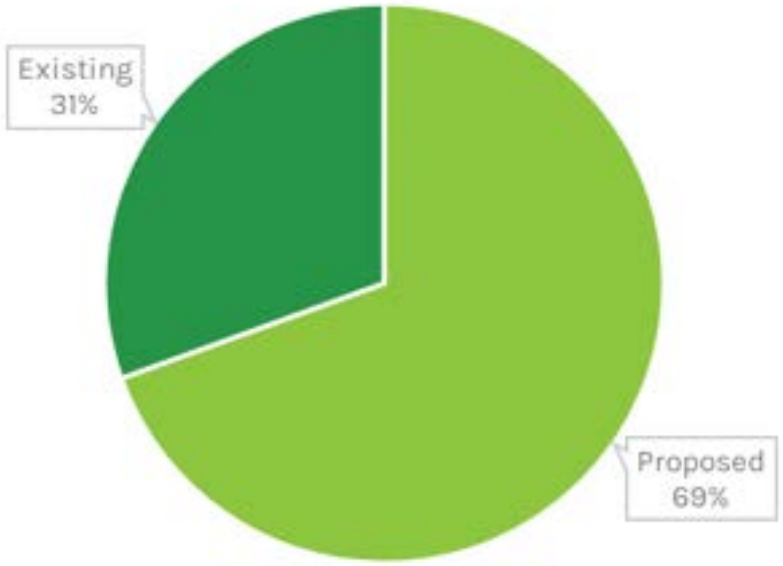

Figure 22 Proportion of bike infrastructure - existing and proposed

Should the proposed network be constructed in its entirety, this would significantly improve bike transport options for Wonthaggi residents. With a contained residential catchment and an average distance to the centre of town of roughly 2-3km, Wonthaggi is well placed to convert many local trips to walking and bike riding should the right mix of safe and convenient infrastructure be provided.

With an average distance to the centre of town of ~2-3km, Wonthaggi is well placed to boost ridership through the provision of a high-quality network

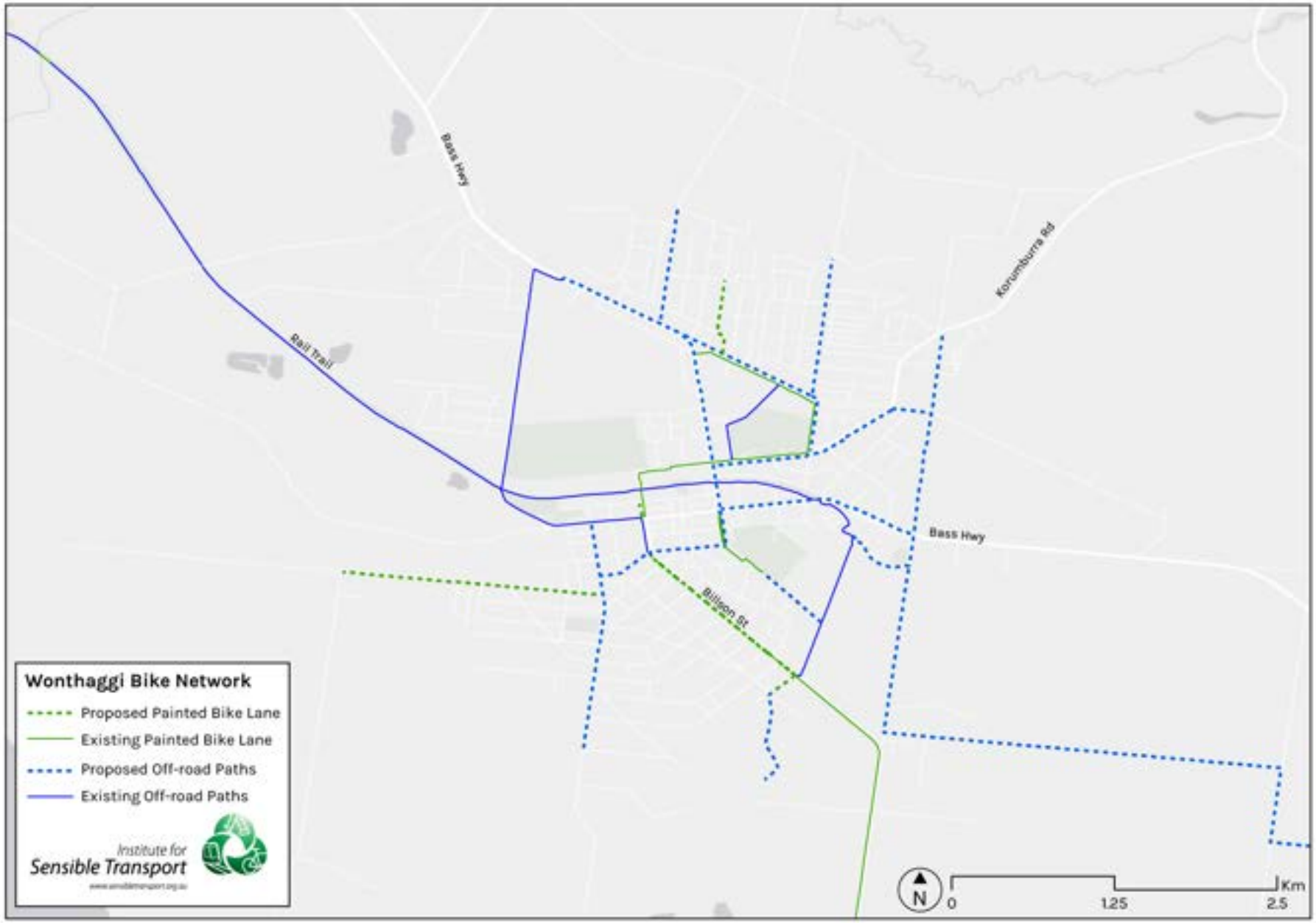

Figure 23 Bike Network - Existing and Proposed

Source: Council

3.5 Bus Network

This section provides an analysis of the current bus network offering services within Wonthaggi. Wonthaggi is served by regional and local buses, from a number of different operators. V/Line coaches connect Wonthaggi to Dandenong and Inverloch, with four weekday services and two weekend services. Coach routes also connect Wonthaggi to Coronet Bay, Phillip Island, Cape Paterson, Inverloch, Leongatha and Traralgon. A local bus services is provided by South Coast Bus.

Four routes are provided through the Wonthaggi town area, shown in Figure 24. Three of these routes are operated as loops, through the north-east, north-west, and southern parts of Wonthaggi, while a fourth route connects Wonthaggi to Cape Paterson.

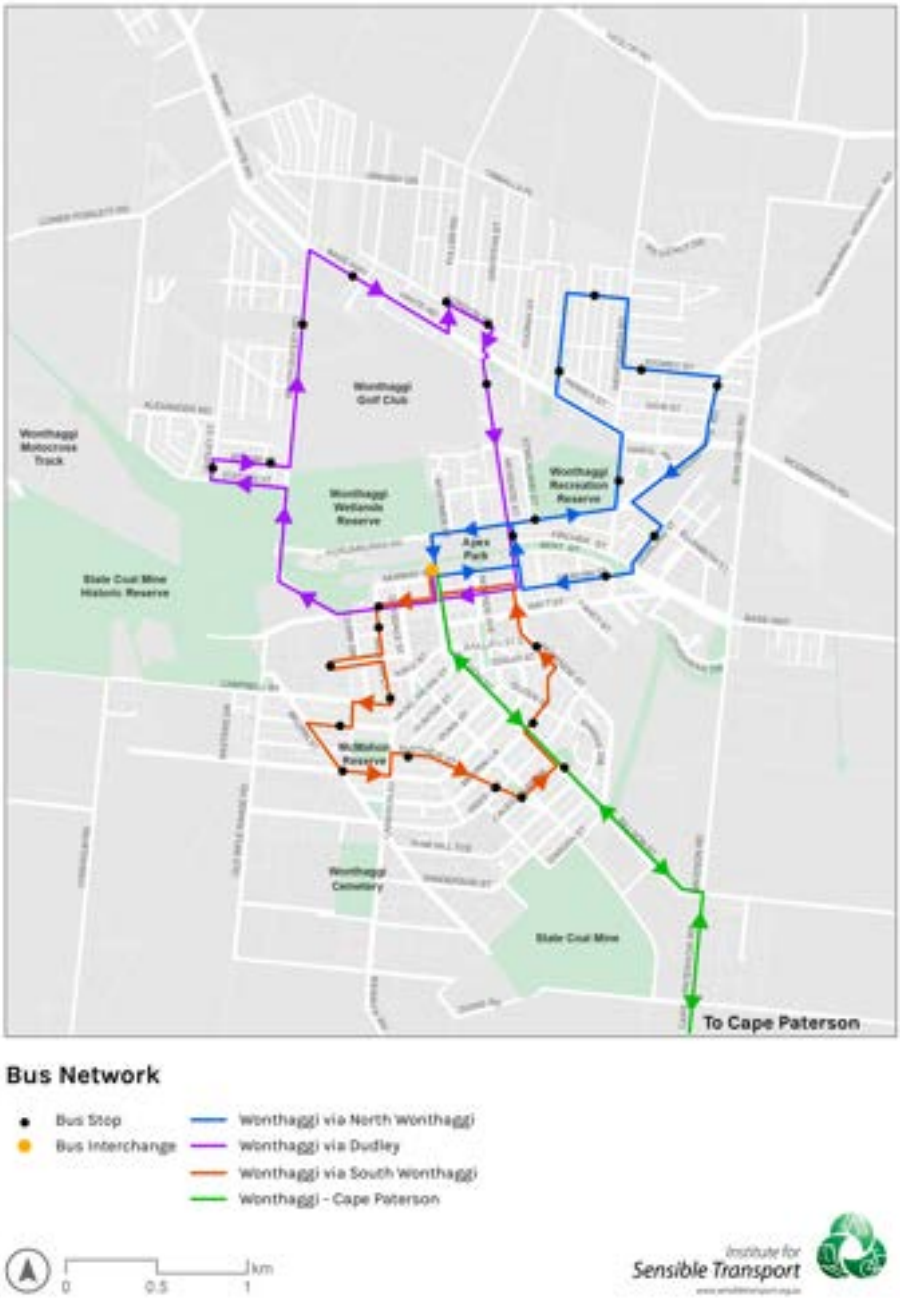

Figure 24 Wonthaggi town bus network

Collectively, these four routes serve 30 bus stops in the Wonthaggi town area. These four services provide an excellent public transport coverage, as shown in Table 1, with 61% of properties being within 200 metres of a stop, and 90% being within 400 metres. Almost every property in Wonthaggi is within 800 metres of a bus stop. However, as the town expands into the north-east, this is likely to decrease. To maintain this high level of coverage, route expansions must be made.

Table 1 Proximity to bus stops in Wonthaggi

Proximity to bus stop	Number of properties	Percentage of all properties	Cumulative percentage
Within 200 metres	3205	61%	61%
200 metres to 400 metres	1570	30%	90%
400 metres to 600 metres	405	8%	98%
600 metres to 800 metres	76	1%	99%
More than 800 metres	25	>1%	100%
Total	5281		

While the Wonthaggi bus network has excellent coverage, the frequency is poor. Analysis of the bus timetables reveals that the four routes are run as a chain, with one bus cycling through all four routes on a two-hour rotation (i.e., Wonthaggi via North Wonthaggi, Wonthaggi via Dudley, Wonthaggi via South Wonthaggi, Cape Paterson, then repeat the cycle). This means that the wait at almost all bus stops (except the bus interchange) is two hours. Buses only run on weekdays, with no weekend services offered. As three of the bus routes operates at a loop, the trip time can be very long for a very short distance (e.g., the penultimate stop of the loop is likely to be only a few hundred metres from the bus interchange, but a rider would have to complete the entire loop of approximately 15 minutes).

The combination of poor frequency and long journey times is a limiting factor on the appeal of the bus network. While it might be acceptable to those without time pressures (and tolerable by those with no other choice), it is likely to be unacceptable to many commuters and others with time sensitivities. There is significant scope to increase the service frequency, one option which would significantly increase frequency and decrease journey times is to run a counter directional service.

The combination of poor frequency and long journey times is a limiting factor on the appeal of the bus network.

There is scope to investigate optimisation of bus stop locations. The current bus interchange is on the edge of Wonthaggi's heart, and this may not be the best location from a user experience perspective. Further research, especially with regular bus users is required to confirm this. Similarly, there are no other bus stops (other than the interchange) in the centre of Wonthaggi. Lastly, key tourist destinations, such as the State Coal Mine have no bus stop. Minor alterations to bus routes and stop locations have the potential to greatly improve the quality of the bus network.

3.6 Car Parking

This section will analyse the existing car parking assets within Wonthaggi.

Figure 25 shows the publicly available parking bays within the Wonthaggi town centre (excluding private parking, such as employee parking behind shops, and special use bays such as disabled parking).

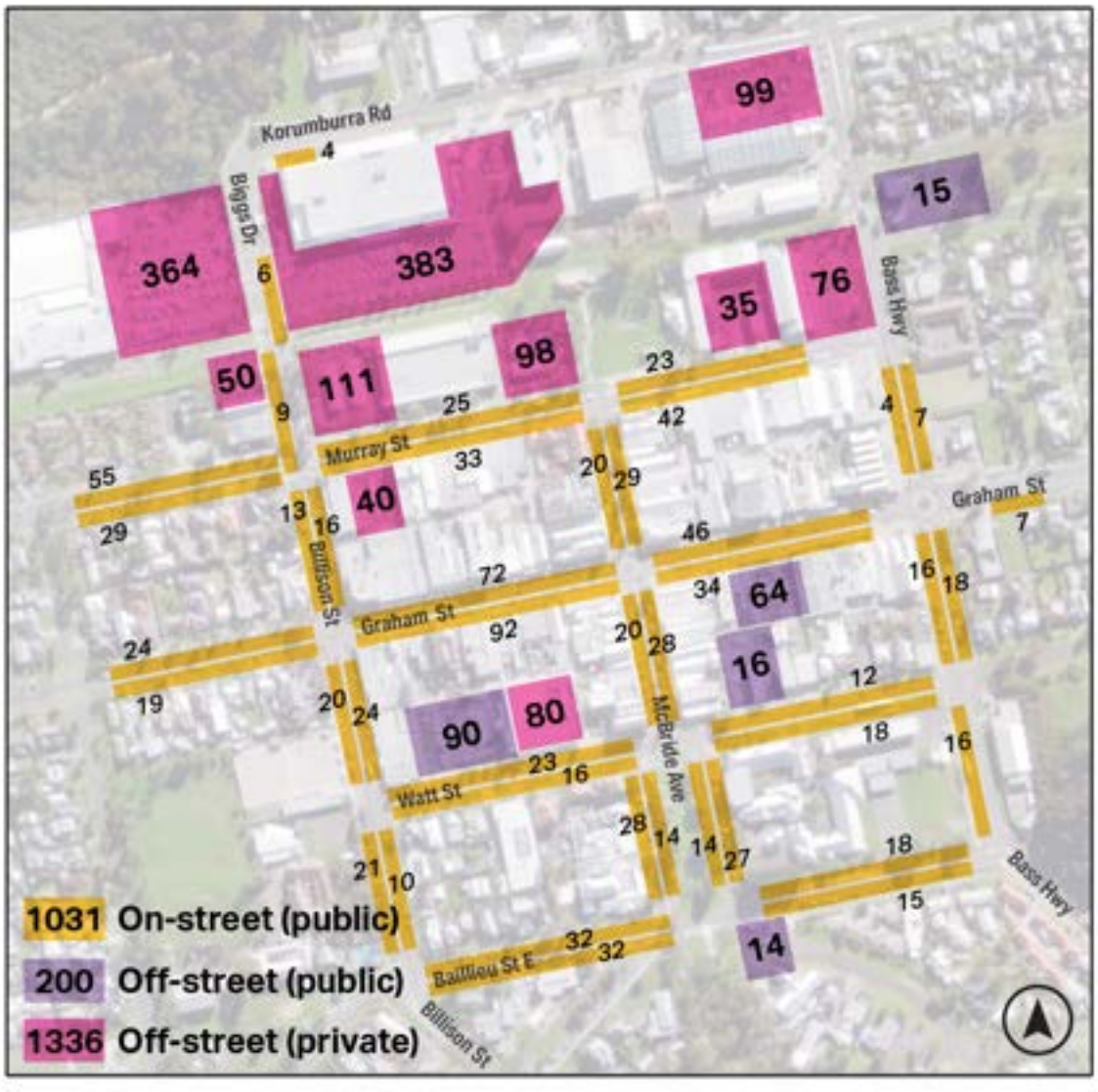

Figure 25 Publicly available parking in Wonthaggi

There are approximately 1,336 private, 200 public off-street parking bays, and 1,031 on-street parking bays within the Wonthaggi activity centre.

The off-street site between Graham and Watt Street showing '80' bays (an estimate) is an undercover parking site that is currently closed to the general public. Figure 26 shows the current state of the off-street parking lot.

Figure 26 Locked undercroft parking

Despite the large volume of publicly available parking, there is anecdotal evidence of parking pressures. This is most prominent during the peak summer period, where the population of Wonthaggi swells with visitors.

Other contributing factors include the relatively high level of car usage for visitors and residents, even over short distances. Wonthaggi's role as a regional centre is likely to add to parking demand, with residents and visitors of satellite towns, such as Cape Paterson and Inverloch, visiting Wonthaggi for shops and services. Further analysis and discussions will need to be undertaken with Council and other key stakeholders to determine the levels of parking demand outside peak summer times. It is likely that some parking assets may be heavily under-utilised outside of the peak summer period. As such, increasing the supply of parking through newly constructed parking bays may result in large amounts of space remaining unused for most of the year and restricting it for other uses for the majority of the year.

3.7 Crashes

This section will explore the police recorded crashes within the Wonthaggi area across the last five years. First, it will analyse crashes based on *severity*, followed by an analysis looking at crashes by *mode* of transport. It will focus on key areas within Wonthaggi and identified hot spots.

Within the Wonthaggi destination zone, a total of 61 crashes were reported to police between July 2013 and April 2019 (6 years, 9 months).

As shown in Figure 27, the majority of reported crashes take place at intersections. Hotspots for crashes include White Rd (Bass Hwy), McKenzie St, Murray St, Graham St, and Billson St.

Figure 27 Wonthaggi Crash Count

Between July 2013 and April 2019, there had been 1 fatality, 12 serious injuries, and 57 with other injuries. Figure 28 shows that intersections represent the majority of serious injuries. The one recorded fatality took place at Billson and Baillieu Streets.

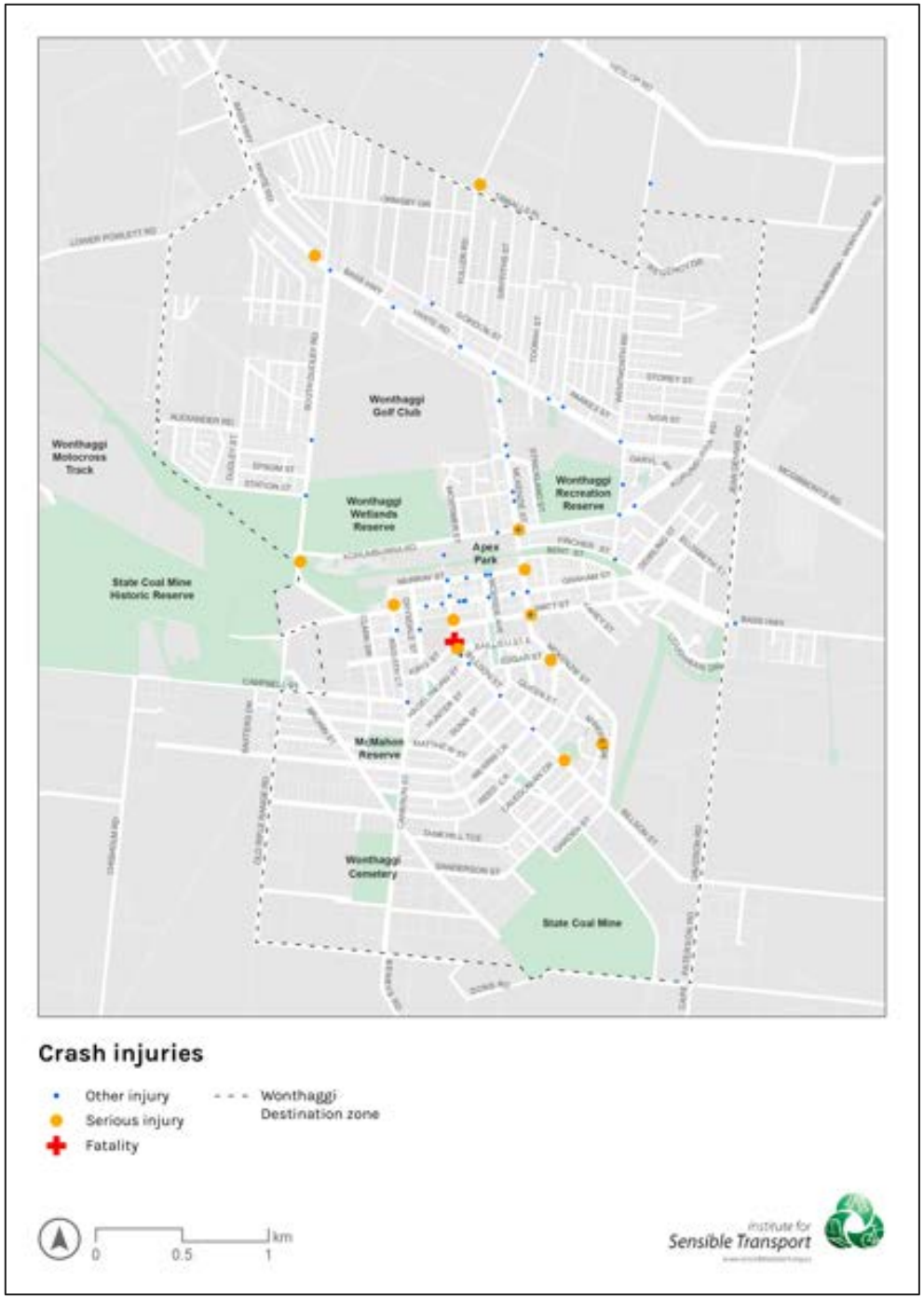

Figure 28 Crash Severity

When analysing crashes by *mode* of transport within this period and destination zone, every recorded crash involved a passenger car. A majority of pedestrian crashes have occurred in the town centre. Approximately a quarter of crashes involving pedestrians took place along Graham St. A total of three bike crashes occurred on Billson St, with one on McKenzie St.

Figure 29 Crash Mode

A detailed set of options to reduce traffic injury likelihood and severity will be undertaken in subsequent components of this project.

3.8 Population analysis

The town area of Wonthaggi currently had a population of 7,913 people at the 2016 Census: with a slight skew towards females (4163 compared to 3743 male). There was a total of 3,925 dwellings, of which 3,498 were occupied, and 417 unoccupied. Most dwellings are separated housing (91%) with the remainder largely being semi-attached housing (5%) and cabins (3%).

3.8.1 Dwelling structure

There is an average of 2 people per dwelling, counting all dwellings in the area. However, when considering only occupied dwellings, this rises to 2.25. The relatively high number of unoccupied dwellings is likely a reflection of the tourist nature of Wonthaggi, with people owning holiday houses, or housing being used as part of the short-stay accommodation sector. In both cases, these dwellings are likely to be used more in peak tourist season, and less so in other times of year (noting that the Census was in August, on off-peak period).

Amongst those dwellings that are occupied, 38% are owned outright, 24% are being purchased (with a mortgage), 27% are rented and 5.6% are social rental housing. This reflects a higher ownership rate than the Victorian average, with below average purchasing and renting rates. Residents of Wonthaggi are mostly long term, with over 55% having lived at the same address for the five-year period preceding the 2016 Census. In many cases, this means their transport habits will be relatively solidified, and they will have regular routes they take, and regular patterns of travel.

While there may be an average of two people per dwelling, there is considerable variation in household composition. As shown in Figure 30, a majority of households are family units, with lone person households being next. Of these family units, 1087 households contain children, approximately one third of all households in Wonthaggi. Children will be either reliant on the public and active transport networks of Wonthaggi, or parents, for transport needs, as such, providing a safe high-quality public and active transport network is key to meeting the needs of Wonthaggi's young.

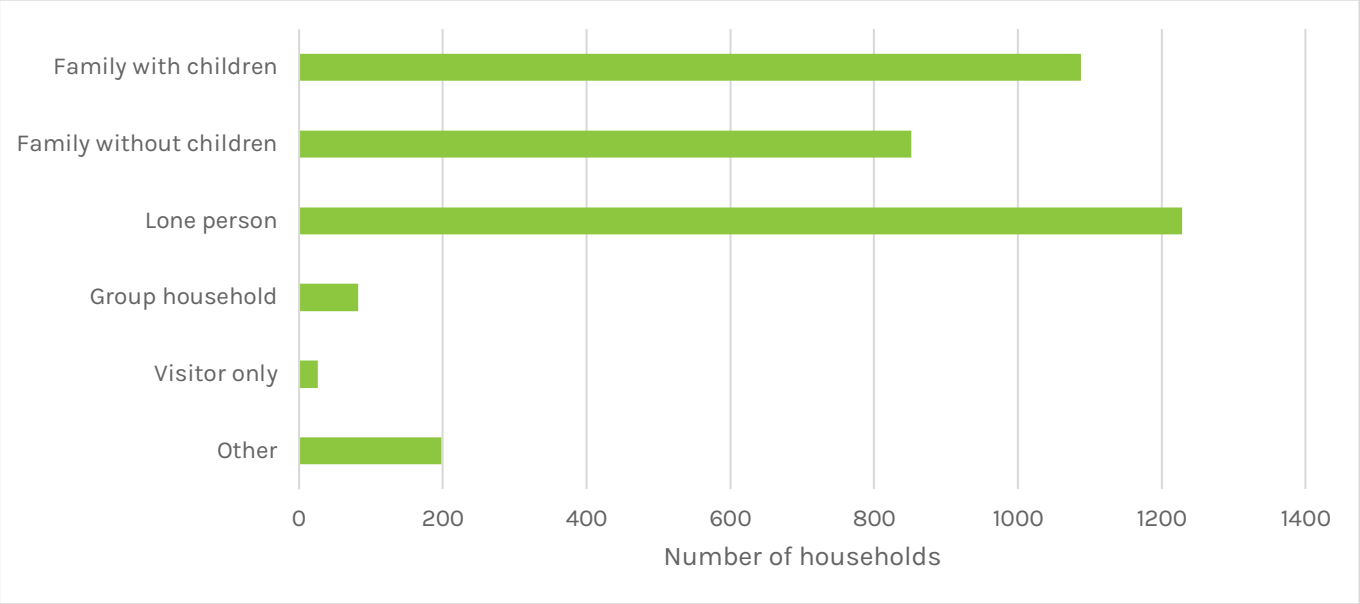

Figure 30 Household composition in Wonthaggi

Source: ABS

Just as there is variety in household composition, there is also significant variation in the numbers of residents per household, as shown in Figure 31. Almost 63% of households have two or more occupants. However, when counting population, 82% of residents live in dwellings with two or more people, and almost half live in dwellings with three or more.

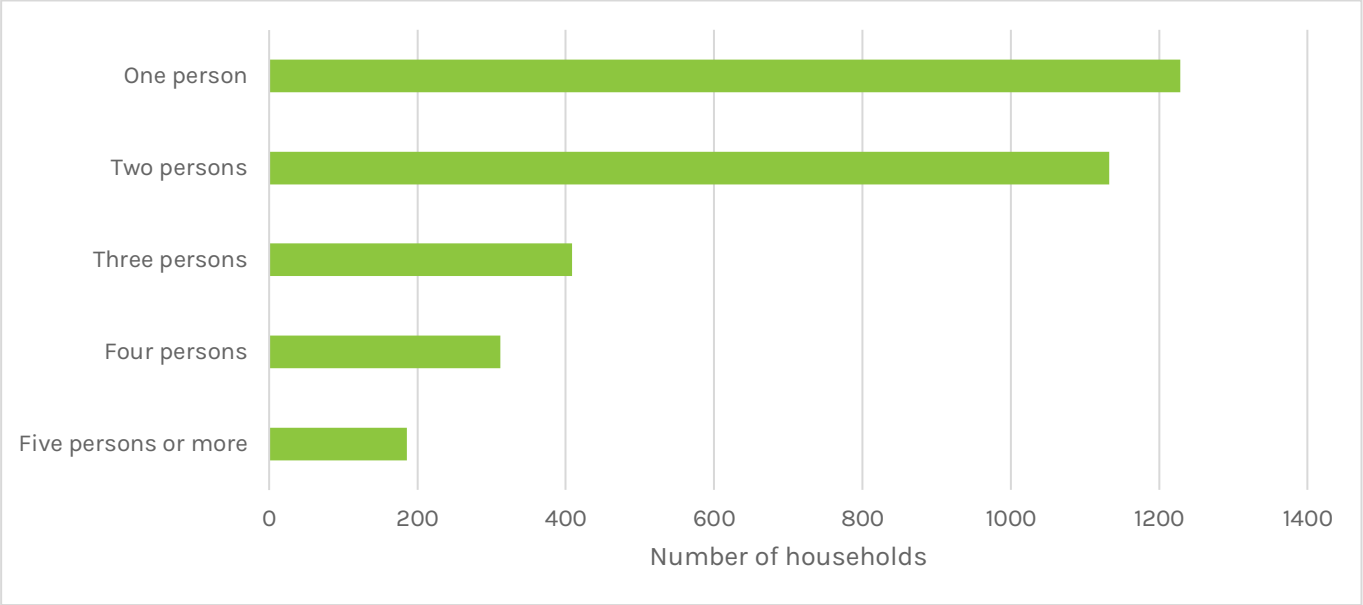

Figure 31 Residents per household in Wonthaggi

Source: ABS

3.8.2 Cars per household

The number of cars per household in Wonthaggi is shown in Figure 32. While most households have a motor vehicle, it is noteworthy that 300 do not, this is approximately 10% of all occupied dwellings. Further, 46% of dwellings have one vehicle, meaning that in cases where more than one person lives in the house, for multiple residents to make journeys, they must either car share, or one must take active or public transport. Cars will play a significant role in aiding the movement of Wonthaggi residents into the future, but consideration must be given to other means of travel, to assist in the mobility of the 56% of households who have one or no cars.

Some 10% of households in Wonthaggi do not own a car. Another 46% only have one car.

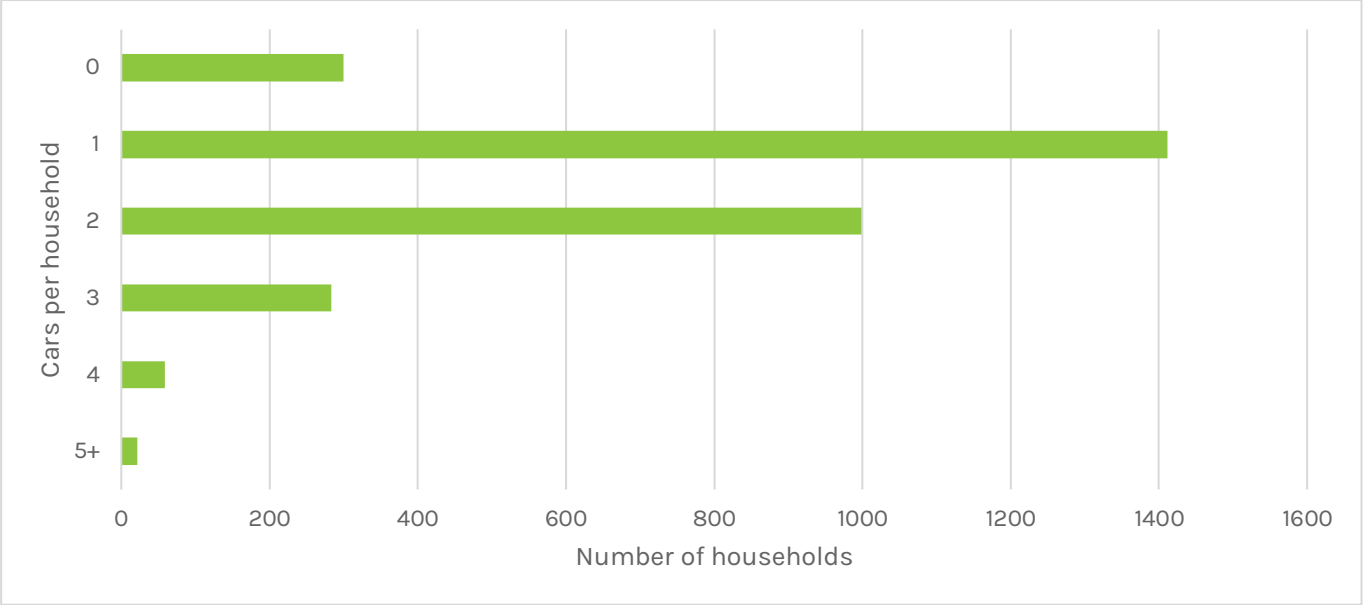

Figure 32 Cars per household in Wonthaggi

Source: ABS

3.8.3 Age distribution

Wonthaggi also has an ageing population, relative to the rest of Victoria. The proportion of people aged 60 or more is approximately twice the State average. This age-group are more likely to have higher rates of walking and increased mobility needs, particularly when crossing the street. Older people have been shown to be less able to judge the speed of vehicles and can make poor calculations regarding crossing decisions. Figure 33 shows the geographic distribution of this cohort. There are pockets of Wonthaggi where over 80% of residents are 60 plus, including the west and immediate north of the Wonthaggi CBD. A focus on improving safe pedestrian access to services for these residents will be important in subsequent stages of this project, with an emphasis on Vision Zero principles and ensuring all age groups are able to participate in society.

The proportion of people aged 60 or more in Wonthaggi is approximately twice the State average.

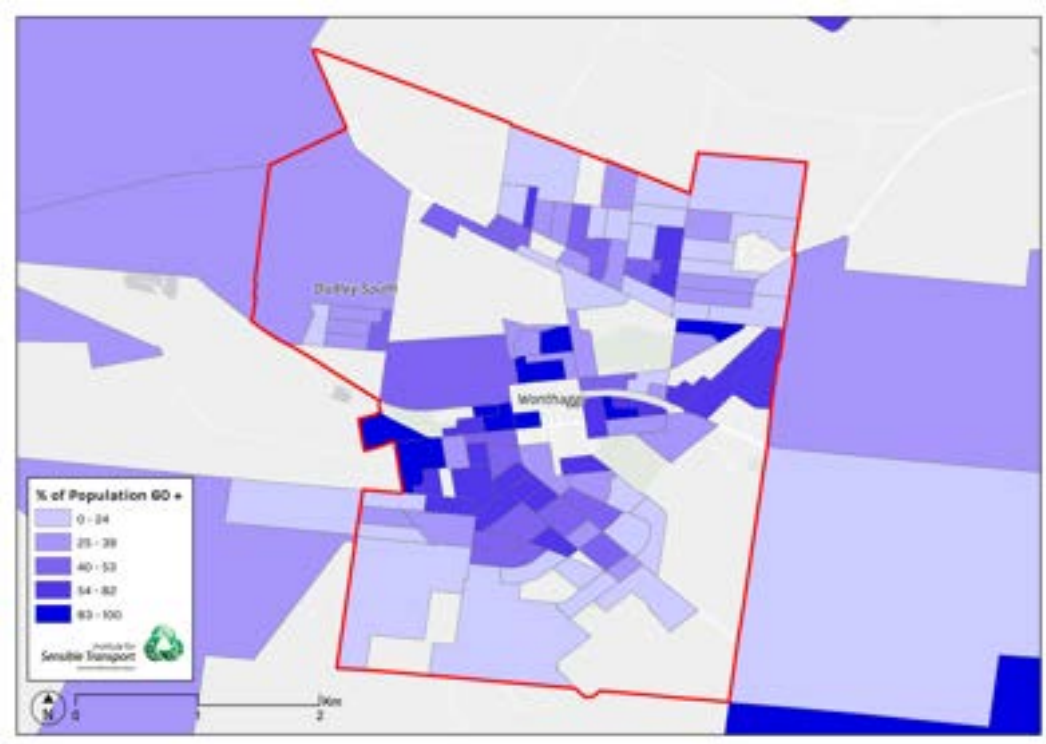

Figure 33 Percentage of population aged 60 plus

Source: ABS

3.8.4 Employment and income

Employment in Wonthaggi is largely based in services, public sector, and construction, as shown in Figure 34. The six largest sectors – retail trade, health care and social assistance, construction, accommodation and food services, education and training, and public administration and safety – account for approximately two-thirds of all employment for Wonthaggi residents. These major employment sectors are largely urban (construction is variable), and do not generally require a vehicle to carry associated equipment (except construction which often requires the movement of tools). In many cases, it may be possible that enhanced active and public transport systems could meet the commuting requirements for some of these workers.

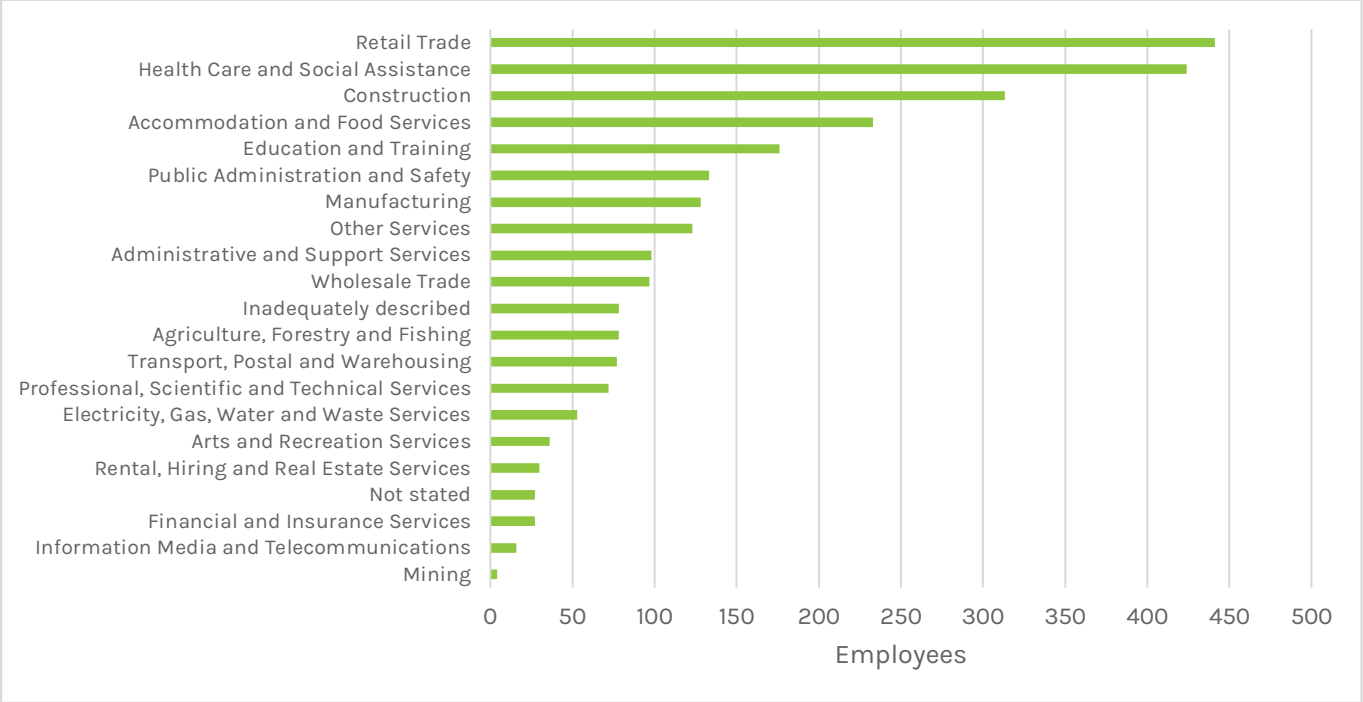

Figure 34 Employment per sector in Wonthaggi

Source: ABS

Income levels for households in Wonthaggi are shown in Figure 35. The two largest single categories are $20,800-$25,999 and $33,800-$41,599, which align with the single and partnered pension rates in 2016, likely an artefact of Wonthaggi's population at retirement age. Notwithstanding this, a substantial number (over 72%) of households have incomes below the Victorian average household income of $73,788. While high rates of outright homeownership will often lead to lower living costs, this indicates significant numbers of households are living on far less than the state average. Having a comprehensive, multimodal transport system can assist in providing affordable, convenient mobility for those on limited household budgets. Enabling households to function with one rather than two cars can contribute to savings of around $10,000 per year, based on RACV estimates.

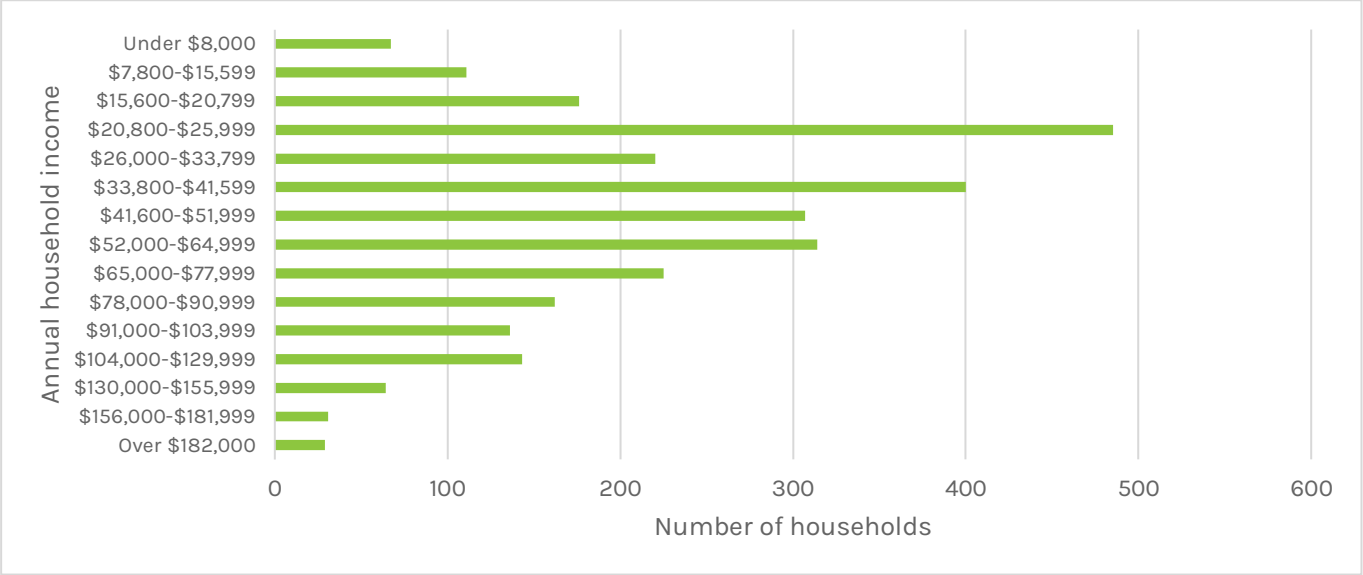

Figure 35 Annual household incomes in Wonthaggi

Source: ABS

Over 72% of Wonthaggi households have incomes below the Victorian average.

3.8.5 Population growth

The population is projected to increase substantially in the years to come, with a Precinct Structure Plan (PSP) currently under development in the north-east of the town. Figure 36 shows the current population distribution (black dots) and the projected growth through new housing (purple dots). With an estimated 4,500 dwellings to be constructed and based on current people per dwellings in Wonthaggi (two people per dwelling), there are an estimated 9,000 additional people projected to live in Wonthaggi in the next 30-50 years. This is on top of the approximately 2,000 additional dwellings likely to be constructed within the township, through vacant lots and residential-zoned broadacre.

Without significant improvements to bolstering space and environmentally efficient transport options such as walking and bike riding infrastructure, Wonthaggi will likely experience increased traffic and parking congestion.

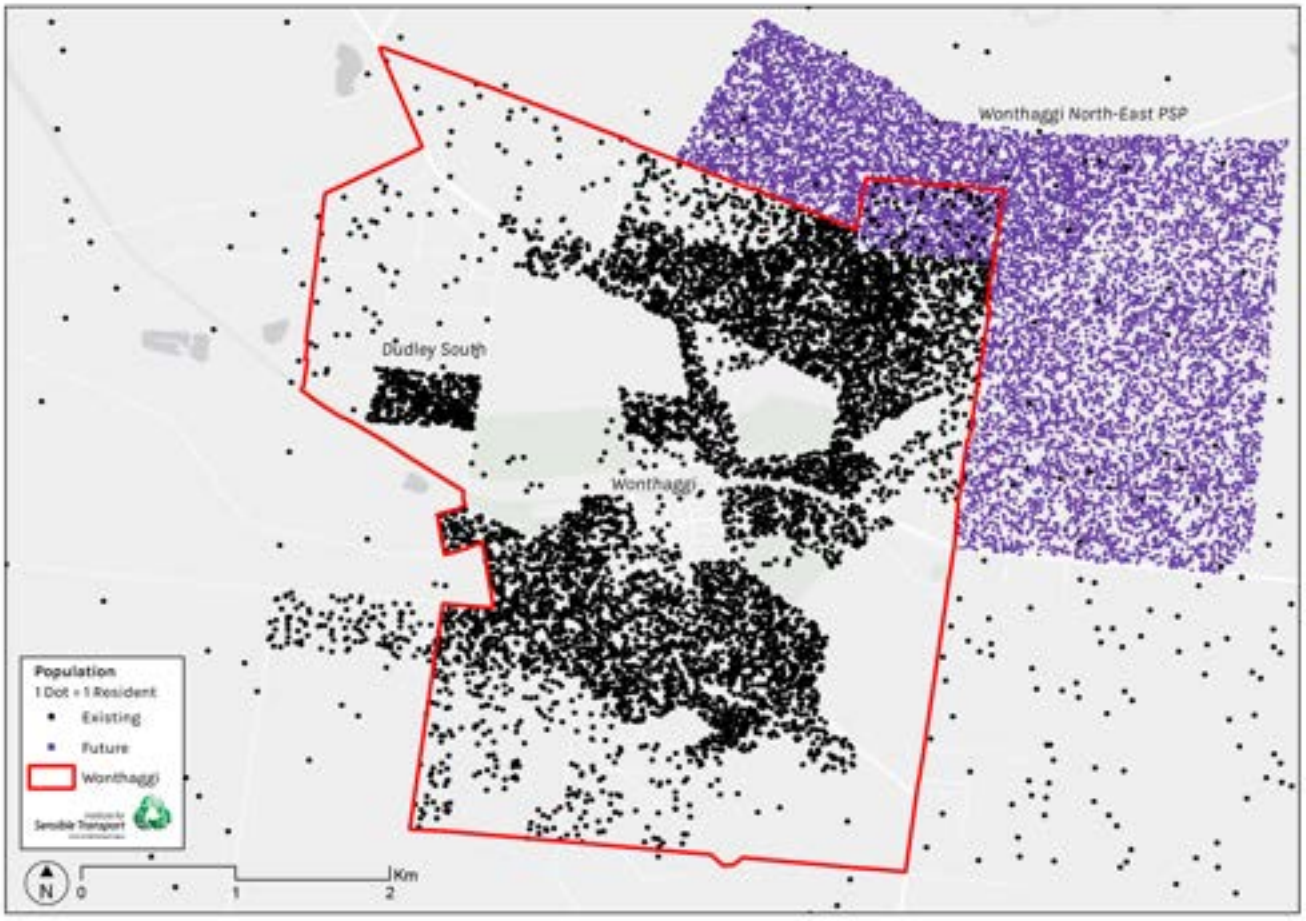

Figure 36 Population – Wonthaggi now and in 30 years

4. Site Surveys

A one-day site visit was conducted, to gain a deeper understanding of the barriers and opportunities for safer, more sustainable travel in Wonthaggi. Additionally, opportunities for enhancing the quality of place/street amenity was also considered during this site visit.

4.1 Record collecting procedure

A mobile site assessment App was customised for this project (Fulcrum App) and was used to document the findings. The survey took place on the 6th April, and only included one staff member, due to COVID-19 restrictions. Figure 37 provides an indication of the different categories used to enter site visit information into the Fulcrum App.

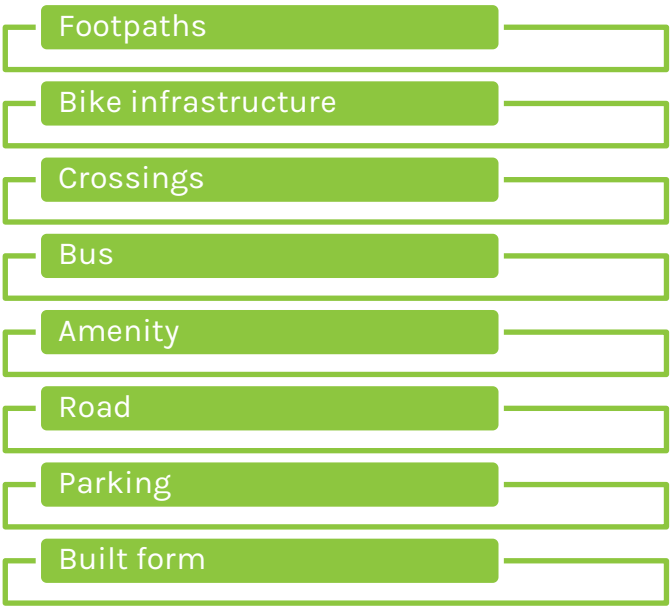

Figure 37 Fulcrum App Categories for site assessment

For each of these categories, a drop-down menu of options was provided, in order to log whether the spot was:

a. good example
b. needs improvement/change required or
c. missing.

The App also allowed a comments/description section, as well as the ability to upload/attach a photograph to the record. Each point was geotagged and has been captured in Figure 38 below.

Figure 38 Site visit of Wonthaggi

An online interactive map has been set up for stakeholders to explore each of the points in more detail. It can be found at the following link:

https://drelliotfishman.maps.arcgis.com/apps/mapviewer/index.html?webmap=06515e341cb04f8e8fc7421699918cae

4.2 Key insights

The overall finding to emerge from the site assessment was that the street environment in Wonthaggi has not adapted to the changing societal needs and preferences of the contemporary community. The alignment between the policy direction captured in Section 2 and Wonthaggi's street design is yet to occur. The following provides a snapshot of the key, overarching insights gained from the site assessment.

4.2.1 No circulation plan

There does not appear to be any functional traffic management/circulation plan to direct traffic to certain streets and away from others. The SmartRoads street categories prepared by VicRoads, and described in Section 2.11 show little sign of implementation. For instance, the pedestrian priority areas indicated in SmartRoads have no treatments or signage to suggest pedestrian priority.

The lack of circulation plan can be seen in many streets that make up the CBD. For instance, McBride Avenue, which does not have a large role to play from a motor vehicle traffic throughput perspective, and yet every possibility is offered in terms of direction of flow and turning movements. During the next stage of this project, closer attention will be given to whether changes can be made to the circulation of motor vehicle traffic in the CBD, in a manner that continues to allow necessary access of vehicles, but in a manner that bolsters the attractiveness of the street and safety and convenience of other modes of transport. A Circulation Plan will be offered with the objective of reducing harmful vehicle flows and strategically directing traffic movements to provide access without unnecessarily diminishing the quality of the urban environment and safety of other modes.

As previously identified, the declared road network does not reflect the use of Wonthaggi streets, particularly regarding heavy vehicles. There is a strong case for undeclaring Graham street and changing its structure to better reflect its position as the key shopping street within Wonthaggi's centre.

4.2.2 Dominance of car parking

Wonthaggi is both blessed and cursed with plentiful parking. While there is a common perception in most towns that there is '*not enough parking*', when looked at from a parking spaces per job, or parking spaces per unit of area, Wonthaggi has a generous supply of parking. This makes accessing the central Wonthaggi area relatively easy by car and helps to explain why more than 9 in 10 trips are by car. The ease with which one can usually access a car park may also result in intra-Wonthaggi car trips being made, as people move, shop-to-shop. Finally, the level of car parking provision, on street, prevents this space being used for other purposes, such as kerb outstands, street greening or public gathering places.

See Figure 25 for a map of publicly available car parking in Wonthaggi. Box 2 provides some early thoughts on options to accommodate peak seasonal demand for parking.

Peak demand parking

As has been identified earlier, it is understood that Wonthaggi has surges in demand for parking at summer and Easter school holidays, as well as during special events. It is plausible that it is primarily during these events that Wonthaggi's parking approaches capacity. For much of the year, parking supply is likely to be significantly greater than demand.

The next stage of this project will examine options for creating a peak demand overflow area on the edge of the CBD (e.g. Wishart Reserve, Wonthaggi Primary School etc), which could serve to accommodate the higher demand at peak periods, as well as long vehicles (e.g. caravans, trailers).

Box 2 Peak demand parking

4.2.2.1 On street

The street and built form environment of central Wonthaggi is dominated by car parking. Key streets (i.e. McBride and Graham) have 45-degree angle parking on both sides of the street, which reduces the width for other potential users and severs the connection between both sides of the street. Currently, there are no mid-block crossings and while crossing the street mid-block does happen, informally, this activity is being suppressed by the current street layout. As highlighted earlier, some 25% of crashes involving pedestrians take place on Graham Street.

Overall, there are approximately 1,031 on street parking bays.

4.2.2.2 Off street

There are several large off-street parking facilities in central Wonthaggi. Overall, there are approx. 1,621 off street car parking bays in Wonthaggi (not including small private parking with restricted access, such as employee parking). No real time information displays were identified during the site assessment, and such technology will be explored in the next component of this project, as it is likely to assist motorists find a car park, reduce circulation, and mitigate the frustration that can be experienced when looking for car parking. Finally, better utilisation of off-street parking may reduce the need for on-street parking on selected streets, where a high value use has been recognised.

4.2.3 Vehicle speed

There is a disconnect between the role of the street and the speed limit. An example can be seen in Graham Street, which is the principal shopping street in the historical centre of Wonthaggi. The street has high number of pedestrians, reversing cars from 45-degree angle parking, and yet, has a posted speed limit of 50km/h. Conversely, Watt Street has few pedestrians and reversing cars, and has a posted speed limit of 40km/h. Additionally, on initial observation, few cars on Graham Street move at 50km/h, as it does not feel safe, and many of these cars are either looking for a car park, or have just left one.

As part of this project, speed limits will be reviewed, in order to align with the Safe System (Vision Zero) Approach and the wider policies adopted by Bass Shire Coast Council.

4.2.4 Lack of street greenery

The natural environment of South Gippsland is one of the key features enjoyed by local residents and visitors. The site assessment found that more could be done to introduce street trees and other elements into key streets in Wonthaggi. Graham Street for instance has no street trees or other green features (see Figure 39), and yet would benefit from them, in terms of making the street more pleasant, offering shade/shelter and acting to slow motor vehicles. As this project progresses, opportunities to introduce more street trees will be explored.

Figure 39 A lack of greenery on Graham Street

4.2.5 Pedestrians at intersections

To walk in central Wonthaggi can have the effect of feeling like a second-class citizen. While the footpaths on streets like McBride and Graham are generous in width and often shaded, the crossing points in almost all situations prioritise vehicular traffic over pedestrians. Even when crossing streets with a very minor traffic function, the pedestrian is made to give way to vehicles. On other streets, the lack of pedestrian priority is exacerbated by relatively high vehicle speeds. This is partly caused by very wide streets and intersection radii[1] that facilitates vehicles to navigate intersections at higher speeds than is warranted.

Figure 40 A pedestrian navigating the intersection of Murray Street and Briggs Drive

Figure 41 offers a typical intersection design, with radii that facilitate the vehicle turning movement speeds inconsistent with pedestrian amenity and safety that should be the priority within central Wonthaggi. While long freight vehicles do require wider turning angles, there is a need to restrict the pathways these long vehicles take within Wonthaggi's CBD. Minimising the impact large freight vehicles have on the Wonthaggi CBD will be a focus of the Access and Movement Strategy.

Moreover, in cases such as that shown in Figure 41, it may be necessary to provide a raised threshold treatment to slow vehicles and raise the profile of a pedestrian when crossing McBride.

Figure 41 Crn Watt St and McBride Ave

Figure 42 provides a typical example of many of the streets in Wonthaggi, characterised by wide intersection mouths, promoting higher than safe speeds. This intersection, which appears to have newly constructed kerbs and surface does not offer a crossing point (pram ramp) or island for pedestrians. This intersection was the site of a fatality in the recent past.

[1] See https://nacto.org/publication/urban-street-design-guide/intersection-design-elements/corner-radii/

Figure 42 Wide intersection radii and no pram ramp, Crn Billson St and Baillieu St E

The next phase of this project will include a more detailed assessment of suitable treatments that improve the quality and quantity of pedestrian crossing points, including mid-block crossing opportunities in high demand areas. Treatments that will be considered (not exhaustive) include:

- Kerb outstands
- Raised threshold treatments
- Zebra crossings
- Textured paving
- Kerb elimination
- Radii changes at intersections to promote safer turning speeds.

4.2.6 Few bike lanes

While there are some good, recent developments in terms of shared paths (e.g. see Figure 43), on the whole, Wonthaggi streets offer considerable potential to grow cycling through the creation of a comprehensive network of paths and lanes.

Figure 43 Excellent example of new shared path, S Dudley Rd

Although it was common to see people riding bikes in Wonthaggi, this occurred *despite* rather than because of the bicycle infrastructure provided. There is a very limited network of shared paths, but no coherent street network of bicycle infrastructure. The only on road bike lane that was apparent during the site visit was on Bass Hwy/Graham Street and this ends abruptly at the approach to the intersection with McKenzie.

Most cyclists observed were using the footpath or rail trail shared path. There are opportunities to grow the street cycling network in and to Wonthaggi, helping to diversify the groups in the population who would be willing to cycle. The high number of short distance car trips suggests that if the conditions were made to feel safe and attractive, Wonthaggi could become a leading Victorian regional centre in the promotion of riding as part of everyday life.

Figure 44 Cycling in mixed traffic, Wonthaggi

4.2.7 Very wide streets

A large number of streets in Wonthaggi are very wide for the function they serve within the transport network. There appears to be significant scope that rationalise the street width, in order to:

a. Promote safer speeds

b. Provide more 'complete streets', in which more space is dedicated towards other modes including pedestrian and cycle usage.

c. Provide a more vibrant urban amenity, helping to make the street more attractive.

5. Opportunities

This policy review and data analysis has uncovered a range of opportunities to improve access and movement to, within, and through Wonthaggi. This section will briefly outline some of the key opportunities that will be considered into the next stage of this project.

5.1 Changes to the declared road network

Our analysis, which is supported by previous reports by Bass Coast Shire, highlight the mismatch between declared roads in Wonthaggi and how they currently perform as an Activity Centre street. Graham Street has been identified as an important shopping street and *place* within Wonthaggi and no longer suited to be a declared road. Road signage, and recent intersection upgrades show Korumburra Road and Biggs Street as providing an appropriate bypass for through vehicles and freight movements. There is an opportunity to undeclare Graham Street and to declare Korumburra Road and Biggs Street in order to support the vibrancy of Graham Street and improve freight movement around the town centre.

South Dudley Road has also been identified as a potential declared road. This route would principally support vehicle movements passing through towards Cape Paterson. Road signage already encourages South Dudley Road for this purpose.

In both instances, traffic volume data and existing road signage indicate the two proposed changes are already performing as arterial through roads. Declaring them would formalise this as the preferred traffic function of these roads. Undeclaring Graham Street would provide Council with greater control to make changes to the street to encourage economic activity and improve the amenity of the shopping strip.

5.2 Pedestrian priority

As highlighted earlier, in general, motor vehicle traffic is prioritised over pedestrians, including in key locations highlighted by VicRoads as warranting pedestrian priority. Subsequent phases of this project will provide a detailed set of actions to enhance the pedestrian environment in Wonthaggi. This will serve to not only make walking a safer activity, but also a more convenient and attractive mode of transport, helping to provide a compelling alternative for the many short distance car trips that currently occur.

5.3 Relocate Bus Stop

The existing bus stop location has been identified as not providing a satisfactory level of service. Consideration for relocating the bus stop should be undertaken with the intention of improving access to shops and existing public amenities, providing better passive surveillance, shade, lighting, toilets, and a comfortable waiting area. The next stage of the report will consider potential sites for a new and upgraded bus stop.

5.4 Leverage laneways as active travel paths

Wonthaggi has a unique network of laneways across the township. Historically, they would have provided access for a night porter, while they currently provide rear property access with some emerging front access on subdivided sites. There is an opportunity to use these laneways to encourage greater uptake in walking and bike riding for local trips. These laneways offer a low-traffic alternative to using the roads. A consistent urban design framework for upgrading laneways to attractive pedestrian and bike riding paths should be considered, including plants, property interfaces, and lighting.

5.5 Building a bike network

Wonthaggi has a contained urban footprint. Most trips that start and finish within the township are less than 3km long. This distance makes bike riding a suitable alternative to car trips within town. There are some existing shared paths and a rail trail that provide an excellent starting point for building out a connected network within the town. Some streets, such as Dickson Street offer low-traffic bike boulevard opportunities for bike riding to be encouraged, connecting employment areas with other key destinations.

The planned north-east development of Wonthaggi also provides opportunities to embed best-practice bike infrastructure from the start. With the population of Wonthaggi set to more than double over the next 30 years, providing a more diverse mix of transport options will ensure existing traffic and parking concerns are not exacerbated.

Finally, Wonthaggi is situated within range of several other townships and tourist destinations. Providing high-quality off-road bike trails between these townships, particularly Cape Paterson and Inverloch, will strengthen the tourism sector and local economy and enable families to ride safety.

5.6 Better utilise existing car parking assets

There is a substantial amount of on and off-street car parking throughout the centre of Wonthaggi. There are approximately 1,400 off-street and a similar number of on-street parking bays in Wonthaggi. One site, which had 80-100 undercover parking bays, was observed to be closed off from the public. Negotiating a deal with the owner of the site could quickly and cheaply increase the number of available parking bays.

It is likely that much of the parking pressure experienced by the town takes place during the summer peak, where the population of the town swells with visitors.

Constructing additional parking bays, including through multi-decking, may result in large parking structures remaining under-utilised for almost the entire year.

Instead, select open space sites could be utilised to provide overflow parking during busy periods of the year. This could be managed by community groups through charging a gold-coin donation to access all day parking.

6. Next Steps

The findings from this report will feed into the next stage of the project. A set of concise case studies will be prepared that detail examples of where other towns have implemented an environment more conducive to sustainable mobility and place making enhancement. This will serve to provide practical inspiration for Wonthaggi, to create a more diverse set of transport options for the community. A major component of the next report will focus on a more detailed set of issues and opportunities, including recommendations, across the following areas:

- Active transport
- Public transport
- Motor vehicles and parking, and
- Freight.

This plan will identify the key moves Council should make to improve access and movement to and within Wonthaggi. It will provide a detailed map showing the proposed changes and providing functional layout diagrams where appropriate (e.g. the problematic intersections identified in the RFQ). It will also provide policy recommendations, including car parking management.

Draft actions across each of the above areas will be presented to Council via a workshop, in which professional stakeholders will be able to provide their feedback, which will be analysed and integrated into a Final Access and Movement Report.

12. Appendix 2 Case Studies

See following page.

Appendix 2: Case Studies

Prepared for Bass Coast Shire Council

June 2020

Institute for Sensible Transport

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Contents

List of figures

1. Introduction

This set of case studies are offered as relevant examples where other jurisdictions have successfully undertaken projects relevant to Bass Coast Shire's future vision for Wonthaggi.

We have compiled four different examples where local governments have created amenity rich and pedestrian-oriented main shopping strips. Each offers insights into the feasibility for delivering similar actions for Wonthaggi and shows the incremental steps required to get there.

After these regional case studies, we will then explore two examples of how town or suburb bypasses were used as a catalyst for making street improvements, both to improve the amenity of the street for visitors and to incentivise through traffic and heavy vehicles to use the new bypass.

Bypass roads have the potential to transform the town or suburb that the new link bypasses. It does this by diverting large volumes of through traffic and heavy vehicles from local streets onto roads better suited to their trip purpose. As the case studies show, these improvements in town centre amenity are only able to be achieved if the town centre's streets are upgraded and traffic management techniques are implemented.

Should a future bypass be constructed for Wonthaggi, the success of the bypass will only be fully realised if traffic is provided with a disincentive for travelling through central Wonthaggi.

2. Regional Town Centres

2.1 Sale

Sale is a town located in Eastern Gippsland, approximately two hours north-east of Wonthaggi. The two towns share many similarities, including population size, employment sectors, demographics, and transport conditions. Sale is also situated within a popular regional tourism area.

Raymond Street and Cunninghame Street are the principal shopping streets in Sale. They contain a diversity of local businesses with some large format retail bordering the area. At the centre of the two streets, significant enhancements have been implemented to improve pedestrian safety and amenity.

Raymond Street has approximately 120 metres of shared space, consisting of the following features:

- Kerb elimination
- Widened footpaths with al fresco dining
- 10km/h speed limit
- Narrowed carriageway
- Limited parallel parking
- Bollards to protect pedestrian spaces
- Seating
- Trees and shading
- Artwork and design reflecting the history of the area.

These treatments make it easy for visitors to move between one side of the street and the other.

Figure 1 Raymond Street, Sale

Cunninghame Street is the second key shopping street in Sale. Where it intersects with Raymond Street, it then becomes a pedestrian mall to the west before returning to a vehicle access street after Desailly Street. The pedestrian mall includes the following attributes:

- Green spaces to rest and play
- A mix of seating options
- Trees and shading
- Integrated art pieces and design elements

Figure 2 Cunninghame Street Pedestrian Mall, Sale

The pedestrian mall provides a central civic and activity space within the heart of Sale.

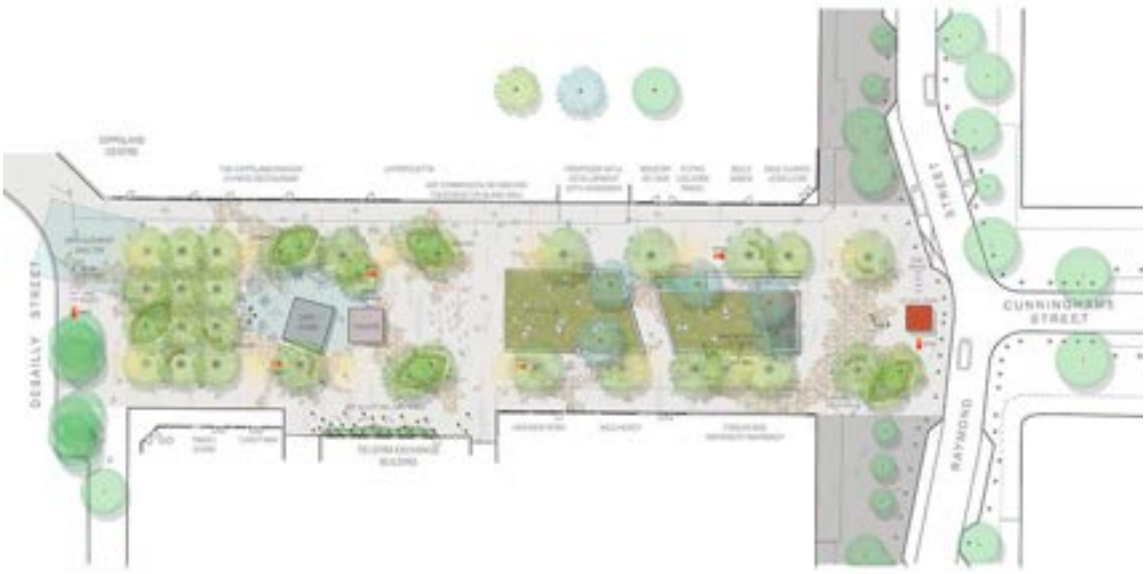

Figure 3 Cunninghame Street Mall, Plan

Source: ACLA Consultants

2.2 Warrnambool

Warrnambool is a regional centre in the western district of Victoria. It is larger than Wonthaggi, at 35,000 residents, however, consists of many of the same demographic and employment characteristics.

Liebig Street is the main shopping street in Warrnambool. It is very similar to Graham Street and McBride Avenue in Wonthaggi, with wide lanes, angled parking, and a mix of local businesses lining the street. Liebig has recently undergone a major uplift. The key changes to the street include:

- Repaving and widening the footpath
- Replacing some parking bays with trees
- Easing the kerb between the street and footpath
- Extra seating and shading
- Electric Vehicle charging
- Raised zebra crossings on each leg of the roundabouts
- Reduction in speed limit to 30km/h.

Google Street View provides an excellent time series of change for Liebig Street. Figure 4 shows the street in 2008, with wide travel lanes, no pedestrian priority, and limited street amenity.

Figure 4 Liebig Street (2008), Warrnambool

Figure 5 shows the roundabout being tightened up, pedestrian refuges installed, and street amenity improvements.

Figure 5 Liebig Street (2010), Warrnambool

Figure 6 shows the latest iteration of the street, with zebra crossings installed, more trees and street greening, seating, and a speed limit reduction to 30km/h.

Figure 6 Liebig Street (2018), Warrnambool

Figure 7 and Figure 8 show the change between 2014 and 2020 for the same intersection, from a bird's eye view. Liebig Street is an excellent example of making substantial change over time through an incremental approach.

Figure 7 Liebig Street (2014), bird's eye view, Warrnambool

Figure 8 Liebig Street (2020), bird's eye view, Warrnambool

2.3 Ocean Grove

Ocean Grove is a township that lies on the ocean side of the Bellarine Peninsula, approximately 25km south-east of Geelong. The town has an estimated 14,000 residents and is a popular tourist town. The Terrace is Ocean Grove's key shopping street, running perpendicular to the declared road, Hodgson Street. The Terrace has several unique features, including:

- One-way traffic
- 20km/h speed limit
- Elimination of the kerb
- Rumble line markings to slow traffic
- Design elements reflecting the local surf culture
- Removal of some parking for al fresco dining and tree planting
- Zebra crossings at key crossing points

The vibrancy of the street is clearly evident, with the blurring of footpath and roadway creating a pedestrian-oriented space where people feel comfortable stopping in the street to chat or using the seating to people watch.

Figure 9 The Terrace, Ocean Grove

2.4 Main Street, Mornington

Main Street, Mornington is the principal shopping street in this bayside town on the Mornington Peninsula. Unlike the previous three examples, Main Street is a Department of Transport managed arterial road. Despite its status as a declared road, the street contains many features conducive to a safe and attractive pedestrian shopping environment.

Main Street is a relatively long shopping strip, at almost 1km. Despite this length, there are regular mid-block zebra crossings to aid pedestrian movements between each side of the street.

Figure 10 shows the entrance of Main Street, with several 'gateway features', including a raised platform, textured paving, and signage all indicating to drivers that they are entering a pedestrian-prioritised space.

Figure 10 Main Street, Mornington

Zebra crossings are provided, on average, every 80-100m along the street. Figure 11 shows that all of the crossings are raised and are provided at key pedestrian crossing points. However, most of these crossing upgrades have been provided in the last two years.

Figure 11 Main Street, Mornington crossings

Many stretches of the street do not have car parking at all, instead opting for wider footpaths with al fresco dining, civic seating, and trees instead. To compensate, most of the car parking is provided at the rear of Main Street, with walkway access points allowing people who drive to easily access the street. Figure 12 shows how this declared road is used for community festivals.

Figure 12 Main Street, Mornington, al fresco dining

Main Street, Mornington shows that partnerships with the Department of Transport are possible to provide a high-quality public realm with frequent safe crossing points for pedestrians.

3. Public realm upgrades associated with bypasses

This section provides two Victorian examples of where the development of new roadways that allowed for a traffic bypass was used as the impetus for the renewal of activity centre streets.

3.1 Lonsdale Street, Dandenong

Lonsdale Street is the main shopping street of Dandenong, nicknamed 'the golden mile' in the 1950s. As shopping patterns changed over time, Lonsdale Street failed to maintain its retail strength. By the early 2000s it had become an urban blight. Figure 13 shows the wide reserve had mostly been allocated for cars with service road parking on both sides and two or three lanes of traffic in each direction.

Figure 13 Lonsdale Street between Foster Street and Walker Street, Dandenong, 2009

Source: Nearmap.com

Lonsdale Street has also been an important arterial traffic route as it forms part of the Princes Highway and South Gippsland Highway, which converge just south of Lonsdale Street.

Figure 14 shows that Lonsdale Street had limited amenity to attract shoppers. A lack of trees, and fences preventing jay walking, and insufficient lighting all compounded to make Lonsdale street an unattractive place.

3.1.1 Reinventing Lonsdale Street

In 2006 a joint project between the City of Greater Dandenong and the Victorian State Government, set about to revitalise Dandenong as a hub of retail in south-east Melbourne. One of the key projects to revitalise Dandenong was upgrading Lonsdale Street. bkk architects were contracted to design a boulevard to become one of the premier boulevards of Melbourne. The project involved completely rebuilding and reallocating the road space.

Changes to Lonsdale Street were able to be made due to the construction of the Dandenong Bypass and Eastlink Freeway providing a viable alternative to through vehicles and freight traffic. Making Lonsdale Street more traffic calmed and pedestrian friendly would improve the viability of the shopping street and provide an effective disincentives for through-traffic to avoid the area and instead use the newly constructed highways.

Figure 14 Lonsdale Street, 2007
Source: Google Maps

3.1.2 Calming Traffic

Through traffic was confined to the central roadway and reduced to 40km/h between 8am and 12am with right hand turning from Lonsdale Street banned within the new boulevard. The service lane parking was retained, although with reduced capacity and surfaced with a finish similar to the footpath, blurring the distinction between vehicle and pedestrian space. Blurring the division between pedestrian and vehicle space encourages vehicles to drive slower and more carefully, improving safety for pedestrians.

3.1.3 Improving amenity

Pin Oak trees were planted along with a variety of hedges and planter boxes, shown in Figure 15. These devices help break up the wide road reserve, and in the process, shields the shops and footpaths from heavy traffic. Seating is positioned amongst the trees to providing desirable space for people to dwell. The trees provide shade, further improving the amenity of the street. New lighting ensures the boulevard is well lit and still has visual interest at night.

Figure 15 Lonsdale Street, 2018

Source: Google Maps

3.1.4 Improving accessibility

Pedestrians once found it hard to cross Lonsdale Street due to the focus on through traffic. Now six new, wide, pedestrian crossings, placed at both end-of-block and mid-block ensure that pedestrians can quickly and easily change sides of the street in a safe manner.

3.1.5 Lonsdale Street today

The rebuilding of Lonsdale Street was completed in 2011. The project won the AILA Victoria Design Excellence Award 2012, Joseph Reed Urban Design Award 2013, Walter Burley Griffin Award - Urban Design 2013 and AILA National Award for Excellence in Urban Design 2014.

The project achieved its aim of revitalising Dandenong's traditional main street making it an inviting space for people to visit, shop, and relax along Lonsdale Street. The updated design (Figure 16) reduces the scale of the street and generates a positive sense of place.

Figure 16 Lonsdale Street between Foster Street and Walker Street, Dandenong, 2020

Source: Nearmap.com

3.2 Maroondah Highway, Ringwood

Maroondah Highway is a major arterial road in Melbourne's east, linking outer suburbs to the inner-city. Like many roads in Melbourne, Maroondah Highway serves as a key arterial road and an important shopping destination. In Ringwood, the highway runs straight through the central shopping district and forms a major obstacle preventing easy pedestrian movements between Eastland Shopping Centre and Ringwood Station. Pedestrian movement between the station and Eastland required the crossing of three roads. Footpaths were narrow, and pedestrians had little separation from road traffic travelling at 60km/h.

Figure 17 shows the bird's eye view of how Maroondah Highway looked, with an intense and disjointed connection between Ringwood Station and Eastland. Figure 18 shows the intersection at the street level.

Figure 17: Ringwood in 2009 before the Maroondah Highway was upgraded

Source: Nearmap.com

Figure 18 Maroondah Highway, 2009

Source: Google Maps

3.2.1 Reinventing Maroondah Highway

In 2003 as part of building the Eastlink freeway, a short spur was built from Eastlink to the Maroondah Highway, running north around the central shopping district. This bypass provides an alternative route for through traffic around the heart of Ringwood. It also has the added benefit of providing quicker and more convenient access to inner Melbourne, via Eastlink.

3.2.2 Joint planning

In 2013, the Victorian State Government announced a project to redevelop Ringwood Station. Key to this project would be providing a new, pedestrian friendly corridor, linking the station with the stage five extension of Eastland. Co-planning of the two projects meant the stations new forecourt flows seamlessly into Eastland's new plaza and new entrance.

3.2.3 Prioritising pedestrians

Key to achieving the seamless transition between the two sites was implementing traffic calming on Maroondah Highway and safe pedestrian crossings. Slowing traffic and reducing the priority of through traffic was justified on the basis that the Ringwood Bypass provided an alternative route. Eastland also removed various at grade car parks which were between the shopping centre and the station to provide space for a new plaza civic. This plaza is activated by the various shops which front onto the new, green, pedestrian only space.

To calm the road, the speed limit was reduced to 40km/h and a new, raised, signalled pedestrian crossing was installed.

An avenue of street trees, on each side and in the median was planted to provide shade, make the area more attractive to pedestrians and to scale down the wide road reserve to a comfortable scale, shown in Figure 19.

Figure 19 Maroondah Highway, 2019

Source: Google Maps

3.2.4 Maroondah Highway today

The aim of this project was to revitalise the shopping district of Ringwood. Street trees, raised crossings at points of conflict, and pedestrian only spaces were all used to help create a more people focused environment. This project is a good example of leveraging upstream transport projects to improve local amenity and connectivity between key transport nodes and activity centres. Figure 20 shows the final outcome of the Eastland redevelopment, Ringwood Station upgrades, and Maroondah Highway enhancements.

Figure 20: Ringwood in 2020 after the upgrades had been completed

Source: Nearmap.com

13. Appendix 3: Action table

The following provides a condensed list of actions.

Action number	Category	Action Specific ID	Action	Location	Priority
1	Walking	1	Raised Zebra	West Graham St / Bass Hwy	Short
2	Walking	2	Raised Zebra	Mid-block west Graham St	Short
3	Walking	3	Raised Zebra	Mid-block east Graham St	Short
4	Walking	4	Raised Zebra	East Billson St & Watt St	Medium
5	Walking	5	Raised Zebra	West McKenzie St & Watt St	Medium
6	Walking	6	Signalised crossing	West Murray St & Bass Hwy	Medium
7	Walking	7	Raised Zebra	Mid-block west Murray St	Short
8	Walking	8	Raised Zebra	Mid-block north McBride Ave	Short
9	Walking	9	Raised Zebra	Mid-block south McBride Ave	Short
10	Walking	10	Raised Zebra	South McKenzie St & Bass Hwy	Medium
11	Walking	11	Pedestrian Refuge	North McKenzie St & Bass Hwy	Medium
12	Walking	12	Pedestrian Refuge	East McKenzie St & Bass Hwy	Medium
13	Walking	13	Raised Zebra	Mid-block east Watt St	Medium
14	Walking	14	Raised Zebra	Mid-block west Watt St	Medium
15	Walking	15	Raised Zebra	Mid-block east Murray St	Medium
16	Walking	16	Raised zebra	East Murray St & Biggs Dr	Short
17	Walking	17	Raised Zebra	Rail Trail / Biggs Dr	Medium
18	Walking	18	Signalised intersection	Biggs Dr and Shopping Centres	Medium
19	Walking	19	Raised Zebra	Graham St & Biggs Dr	Short

20	Walking	20	Raised Zebra	East Murray & McBride Ave	Short
21	Walking	21	Raised Zebra	West Murray & McBride Ave	Short
22	Walking	22	Raised Zebra	South Murray & McBride Ave	Short
23	Walking	23	Raised Zebra	North McBride & Watt St	Short
24	Walking	24	Raised Zebra	West McBride & Watt St	Short
25	Walking	25	Raised Zebra	East McBride & Watt St	Short
26	Walking	26	Raised Zebra	South West McBride & Watt St	Medium
27	Walking	27	Raised Zebra	South East McBride & Watt St	Medium
28	Walking	28	Raised Zebra	North Graham & McBride	Short
29	Walking	29	Raised Zebra	West Graham & McBride	Short
30	Walking	30	Raised Zebra	South Graham & McBride	Short
31	Walking	31	Raised Zebra	East Graham & McBride	Short
32	Walking	32	Pedestrian Refuge	Murray Street & Bass Highway	Medium
33	Walking	33	Raised Zebra	West Murray & Biggs	Medium
34	Freight		Work with RRV to identify a freight network that bypasses Wonthaggi.		Medium
35	Freight		Wok with RRV to develop upgrade of Carney's road to an arterial road.		Short
36	Freight		Modify the roundabout on Biggs Drive between the rail trail and Korumburra Road.		Short
37	Freight		Work with RRV to un-declare Graham Street in the long-term.		Long
38	Freight		Alter signal sequence at the intersection of Bass Highway and Korumburra Road to facilitate increased turning movements.		Medium
39	Freight		Forbid right hand turns from Bass Highway into Murray Street.		Short

40	Freight	Periodically assess truck movements along South Dudley Road.	Shot
41	Freight	Support the future development on the Wonthaggi Bypass	Long
42	Bus	Implement counterflow loops on Wonthaggi via North Wonthaggi; Wonthaggi via Dudley; and Wonthaggi via South Wonthaggi	Short
43	Bus	Alter the alignment of Wonthaggi via Dudley to run along Dudley Street and May Street, with new bus stops.	Medium
44	Bus	Alter the alignment of Wonthaggi via Dudley to run along to the new road north of the intersection with Sherwood Court and White Road, along Gordon Street, with new bus stops.	Medium
45	Bus	Alter the alignment of Wonthaggi via South Wonthaggi to run along Old Rifle Range Road and Wishart Street, with new bus stops.	Medium
46	Bus	Alter the alignment of Wonthaggi via South Wonthaggi to run along Broome Crescent to Matthew Street Dickson Street and Garden Street, with new bus stops.	Medium
47	Bus	Alter the alignment of Wonthaggi via North Wonthaggi, when a new connection is made between Oates Road and Wentworth Road, with new bus stops.	Long
48	Bus	Implement a new bus route to serve the Wonthaggi North East development area.	Long
49	Bus	Install more bus stops in the central Wonthaggi area.	Short
50	Bus	Investigate appropriateness of other proposed bus stops as alternative locations for the interchange	Short

51	Local Cycling	1	Starting at South Dudley Road, the separated path should run south-east on the southern side of Bass Highway until the school crossing in front of 192 Bass Highway. It should then cross over to the northern side of the road and continue along the wide nature strip until the eastern end of the kindergarten car park. A raised zebra crossing should be installed to provide safe crossing over to the existing shared path on the southern side.	Bass Highway - White Road	Short
52	Local Cycling	2	Starting at the Bass Highway, the path should run along the western side of Fuller Road until Vicars Ave, then to Helslop Road as development occurs. It is recommended this be provided as part of footpath construction program for Fuller Road.	Fuller Road	Medium
53	Local Cycling	3	Starting at White Road, a raised zebra crossing should be provided to allow safe crossing at the existing school crossing in front of the school. The path should use the eastern side of Wentworth Road as part of a footpath construction program, ending at Oxford way initially, and Helslop Road once development occurs.	Wentworth Road - North	Medium
54	Local Cycling	4	Starting at the primary school, the path should extend south on the western side of the road until Korumburra Road. Path users may then use the school crossing over Korumburra Road, after which the path should continue south and connect into the Rail Trail.	Wentworth Road - South	Short
55	Local Cycling	5	Starting at Bass Highway, the path should run on the southern side of Korumburra Road. Raised zebra crossing facilities should be provided over Wentworth Road (south) and at each of the school access points. The path should continue to the east along Mcgibonys Rd, ending at Jean Dennis Road.	Korumburra Road	Short

56	Local Cycling	6	Starting at the White Road turn-off, the path should continue south along the eastern side of Bass Highway until the street turns into McKenzie Street	Bass Highway	Short
57	Local Cycling	7	Starting at Korumburra Road, this path continues south until it connects with Billson Street. It is recommended this path be provided when development of the North-East Precinct occurs and the road is sealed, as the existing Rail Trail provides a suitable alternative in the mean-time.	Benetti Road - Jean Dennis Rd	Long
58	Local Cycling	8	Starting at the Rail Trail and Fincher Street, the path should run on the northern side of the road until Carneys Road and connect with the future path that runs north-south.	Bass Highway - East	Medium
59	Local Cycling	9	This path runs along Loughran Drive and connects the future north-south path with the rail trail.	Loughran Drive	Long
60	Local Cycling	10	This path runs along the northern side of Billson Street between the Rail Trail and Carneys Road. It is recommended to form part of the regional bike network (Segment 18).	Billson Street - South	Short
61	Local Cycling	11	This path begins at Moores Road and Carneys Road before following along the property boundary as a new off-road trail. It is Segment 17 of the regional bike network. Compacted gravel trail is preferred for this section.	Moores Road	Short
62	Local Cycling	12	This section connects the Rail Trail to the State Coal Mine site and across to section 16 via Peverill Crescent or Tank Hill Terrace.	State Coal Mine Access Road	Medium
63	Local Cycling	13	Starting at the Rail Trail, this path heads north towards Watt Street. It is recommended to be delivered as part of any future drainage upgrade works on the southern side of Billson Street.	Billson Street - North	Medium

64	Local Cycling	14	This section connects the Rail Trail to McKenzie / Baillieu Street and the new school precinct. The path should run along the northern side of McKenzie street to provide safe access for school students.	McKenzie Street	Short
65	Local Cycling	15	This section links the McKenzie Street path to Billson Street and west to Cameron Street and section 16. It is recommended it be placed on the southern side of the street. It should be completed as part of any future resheeting of Baillieu Street.	Baillieu Street	Medium
66	Local Cycling	16	This section connects the existing path at Graham Street / South Dudley Road in the north and runs south until Shandley Street. Providing a path on both sides of the street is recommended.	Cameron Street	Medium
67	Local Cycling	17	Provides key east-west connection in the Wonthaggi CBD. Our estimates show that separated bike lanes can be provided by tightening parking bays to 5.5m and travel lanes to 3m. This enables the creation of physically protected lanes between the ends of parked cars and the footpath.	Graham Street	Short
68	Local Cycling	18	Provides key north-south connection in the Wonthaggi CBD. Created separated bike lane either via a tightening of parking bays and lane widths or the conversion of one side of the street from 45 degree to parallel parking.	McBride Ave	Short
69	Regional Cycling	0	Install wayfinding signage at key decision points	Rail Trail	NA

70	Regional Cycling	1	This section begins at 170 Reed Cres, where it turns south through the Heathland. Signage should be provided at the start, including time and distance to Cape Paterson and tourist destinations available from this route, such as Cutlers Beach. Signage should be provided every kilometre to confirm to users that they are on the right path. The path should be checked to confirm it is level and in sufficient condition for an off-road bike to use.	Wonthaggi - Cape Paterson Scenic	NA
71	Regional Cycling	2	This is a new section of track that connects with the end of the Heathland, travelling south-east along the property boundary, connecting with Berrys Road, just south of Manuka Lane. Signage should be provided at this intersection. At Harmers Haven, there is a walking track to reach Cutlers Beach. Linking up to Reed Cres/Chisolm Road. Should it be possible to widen this section to accommodate bike usage, this may be a preferred alternative to this section of the route.	Wonthaggi - Cape Paterson Scenic	Short
72	Regional Cycling	3	The trail then continues along existing roadway, using Berrys Road and continuing along Old Boiler Road. Signage should be provided at the turn-off to Viminaria Road and again at the turn-off to the beach path. The path then continues 200m north along Old Boilers Road to provide the new section of track along the wind break lines.	Wonthaggi - Cape Paterson Scenic	NA
73	Regional Cycling	4	This new section of track connects Old Boilers Road with Wilsons Road. It is about 770m long. Wayfinding signage should be provided at each end of this section.	Wonthaggi - Cape Paterson Scenic	Short
74	Regional Cycling	5 and 6	The route then heads south along Wilsons Road, turning east at Seaward Drive. Again, signage should be provided at the turning point and to trails that provide beach and town access.	Wonthaggi - Cape Paterson Scenic	NA

75	Regional Cycling	7	This section connects Cape Paterson township to Fulton Road, via Cape Paterson – Inverloch Road. Signage from town should indicate time and distance to Inverloch and Wonthaggi, and to any attractions along the way. A sealed shared path along the road shoulder on the southern side of the road is recommended until Fulton Road. Signage warning drivers of pedestrians and bike riders crossing is recommended.	Cape Paterson Direct	Short
76	Regional Cycling	8	Signage should be provided at the start of Fulton Road, including signage indicating to drivers to look out for pedestrians and bike riders.	Cape Paterson Direct	NA
77	Regional Cycling	9	This section is proposed to link Fulton Road and Boundary Road together. Signage should be provided at the junction with Boundary Road, indicating distance to Wonthaggi and Inverloch.	Cape Paterson Direct	Short
78	Regional Cycling	10	This section uses the existing right of way along Boundary Road. Aerial imagery indicated that this may require upgrading of the track to meet quality standards.	Wonthaggi - Inverloch	NA
79	Regional Cycling	11	This Is a new section of track, linking Boundary Road to Drowleys Road. A rest stop should be provided along this section.	Wonthaggi - Inverloch	Short
80	Regional Cycling	12	This section uses Drowleys Road. Again, signage for trail users and drivers should be provided, including crossing signage across Toorak Road.	Wonthaggi - Inverloch	NA
81	Regional Cycling	13	This is a new section along Surf Parade. It is recommended that this follow the same typology as the existing section (14). If this is not possible, then advisory bike lanes (see Fig XX) may be appropriate.	Inverloch Foreshore	Short

82	Regional Cycling	14	This is an existing section of the trail network and is of a high-quality. Wayfinding signage should be provided to inform trail users of time and distance to key attractions and to the town centre.	Inverloch Foreshore	NA
83	Regional Cycling	15	This is the north-south section of Boundary Road, linking section 9, 10, and 17 together. Wayfinding signage should be provided at each end of this section.	Wonthaggi - Inverloch	NA
84	Regional Cycling	16	This section forms part of Council's initial plans for a trail connection between Wonthaggi and Inverloch. Sections 10 and 15 provide the same access using existing rights of way, allowing for the path to be constructed faster and easier. This section should be considered as an alternative should Sections 10 and 15 be unable to proceed.	Wonthaggi - Inverloch	Alternative
85	Regional Cycling	17	This is a new section of trail between section 15 and 21, following property boundary lines.	Wonthaggi - Inverloch	Short
86	Regional Cycling	18	This section links section 17/21 to the Rail Trail and is the final section in the Wonthaggi – Inverloch Route. It is recommended that this section be a shared path on the northern side of Billson Street, using the remnant space in the road reserve.	Wonthaggi - Inverloch	Short
87	Regional Cycling	19	This section links Reed Cres to the Rail Trail. From the intersection with Reed Cres and Cameron Street, it heads south along Cameron Street for 50m before turning onto Shandley Street. A path would then be constructed along the rights of way along Tank Hill Terrace and Stewart Street. The section then turns south along Dickson Street, linking with the Rail Trail at Garden Street. Wayfinding signage is recommended at every street turn to aid trail users.	Wonthaggi - Cape Paterson Scenic	Medium

88	Regional Cycling	20	This section formed Council's initial plans for the beginning of the Wonthaggi – Inverloch Route. As the Rail Trail extends to Billson Street, it would be easier and more cost-effective to construct section 18 rather than 20.	Wonthaggi - Inverloch	Short
89	Regional Cycling	21	This is a small section of existing unsealed road along Carneys Road, linking sections 17 and 18. Signage should be provided at each end of this section to aid trail users.	Wonthaggi - Inverloch	NA
90	Regional Cycling	22	This section runs through the new development in Inverloch, linking sections 12 and 13 together. Signage should be provided through this section to navigate people along Paperbark Place and Seaview Street.	Wonthaggi - Inverloch	Short
91	Regional Cycling	23	This is an alternative route option, using Berrys Road rather than Reed Crescent through the Heathlands. Advisory bike lines would be required and a 60km/h speed limit for motor vehicles.	Wonthaggi - Cape Paterson Scenic	Short
92	Regional Cycling	24	This route provides high tourism potential and would require low level separation via paving the road shoulder and placing small dividers between the travel lane and the road shoulder.	Cape Paterson-Inverloch Scenic	Medium
93	Car Parking		Investigate option to implement Parking Overstay Detector System (PODS) in all on-street car parks that have a 2hr or less parking limit		Short
94	Car Parking		Install real time, digital information displays at key entry points into central Wonthaggi (Graham St just east of intersection with McKenzie, Biggs Drive and Murray, Billson St and Watt St)		Medium
95	Car Parking		Investigate options to implement paid parking on streets within the CBD.		Medium

96	Car Parking	Initiate discussion with the private land holder of the undercroft off street parking facility off Watt St, with the view of opening it to be public.	Short
97	Car Parking	Work with the Wonthaggi Primary School community and other potential sites to create a seasonal pop up holiday parking area, to operate during peak holiday periods.	Shot
98	Car Parking	Install a dual port 50kW DC electric vehicle charger in an off-street car park, close to suitable electricity supply, in a high (people) traffic area.	Short
99	Car Parking	Monitor use of EV charger and when demand has increased, it may be necessary to install additional chargers. Council should charge slightly higher than the market rate for electricity, to meet maintenance costs.	Medium

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